

**Physical Activity Promotion of Ethnic Populations in
Deprived Communities:
From Determinants to Intervention**

Masoumeh Minou

A thesis submitted in fulfilment of the requirements of Liverpool John Moores University for
the degree of Doctor of Philosophy

February 2011

Abstract

Despite the clear health benefits of being physically active (DH, 2006), people from ethnic backgrounds show low levels of physical activity (PA) (HSE, 2006) and are recognised as a hard to reach group. Furthermore research approaches need to discover a process by which BRM groups can be reached in both planning and evaluation phases of programme development. Influencing physical activity behaviors among BRM population requires investigation from an individual level and socio ecological perspective. According to the socio-ecological model Sallis et al. (1997) the effective promotion of physical activity is based on an understanding of the interaction between the physical and social environment (Hesketh et al., 2005). From a social environment perspective social relationships and social support are key aspects that encourage positive health behaviours and health status (Springer et al., 2006). Furthermore family support and parental influence play a significant role in the development of children's health behaviours (Trost et al., 2003). Understanding the impact of a different culture on physical activity behaviour among the BRM populations is important in order to design the interventions which would result in behaviour change.

Study 1 aimed to work closely with BRM, neighbourhood managers and community researchers to identify perceived constraints to PA and to develop a framework for a comprehensive intervention to promote PA, advised by and based in the BRM communities. Local women were consulted and a bespoke survey based on socio-ecological model was constructed which effectively engaged 213 hard to reach individuals from BRM population. Major findings of this survey indicate that participation in PA was influenced by a number of intrapersonal (attitude), interpersonal (time), social (language barrier) and environmental (facilities, resource and information) factors.

A qualitative approach, utilising individual interviews based on socio-ecological model was adopted for **Study 2** and sought to explore the physical activity determinants among 4 BRM families and whether BRM individuals' beliefs and attitudes towards and knowledge about physical activity have changed since living in the UK. The role of family support and parental role modelling in promoting physical activity in the family unit was also examined. Findings revealed that the determinants of PA were not influenced by immigration to the UK, they were more related to age, life style, increased knowledge about PA. Parents influenced their children's physical activity levels by encouraging them verbally and supporting them. Boys received more support to engage in physical activities compared to girls.

Study 3 whilst not aimed entirely at a BRM population sought to apply the RE-AIM framework (Glasgow et al., 1999) to evaluate the multi-component community based intervention which aimed to tackle health inequality through increased participation in physical activity and engagement in the community in a deprived disadvantaged population. The intervention the "Work-Out Project" was designed to address the barriers identified in studies 1 and 2 in the context of the socio-ecological model and was tailor made to the needs of disadvantaged individuals including the BRM groups. Findings from the evaluation indicated that the formulation and development of the Work-Out project was linguistically and culturally appropriate as this intervention used local "fitness activators" to support the participants and resulted in increased physical activity.

Conclusion: This research demonstrated the significance of cultural and community partnership in advocating and empowering communities to collect robust evidence for health promotion and the development of needs-based over product-led based services.

LIVERPOOL JOHN MOORES UNIVERSITY

Candidate's declaration form
(This form must be typed)

Note: This form must be submitted to the University with the candidate's thesis.

Name of candidate: **Masoumeh Minou**

School: **Sport and Exercise Sciences**

Degree for which thesis is submitted: **Degree of Doctor of Philosophy**

1. Statement of related studies undertaken in connection with the programme of research (see Regulations G4.1 and 4.4)

Study 1: Identifying physical activity determinants in BRM women living in deprived areas in Liverpool. The Kensington Women Get Lively Project

Study 2: Identifying physical activity determinants in the BRM families who have migrated to the UK. Parental influence on children's physical activity behavior- A qualitative study

Study 3: Evaluation of a community based intervention. The Work-Out Project

2. Concurrent registration for two or more academic awards (see Regulation G4.7)

either * I declare that while registered as a candidate for the University's research degree, I have not been a registered candidate or enrolled student for another award of the LJMU or other academic or professional institution

3. Material submitted for another award

either * I declare that no material contained in the thesis has been used in any other submission for an academic award

Signed.......... Date20th May 2011
(Candidate)

Acknowledgment

I would like to take this opportunity to thank my supervisory team Dr. Rebecca Murphy, Professor Gareth Stratton and Dr. Martin Littlewood for their continued support and guidance throughout my study.

Many thanks to Dr. Zoe Knowles for her encouragement, speedy feedbacks and support.

Special thanks to the following people and organisations for their support and contribution to this thesis:

Dr. Denise Peerbhoy, Rebecca Connolly, Sarah Halliwell, Magie Williams, Kate Bull for their support and contribution to this thesis.

Liverpool Active city, Kensington New Deal, Kensington New regeneration, Sport and Physical Activity Alliance

All the women, families and participants for giving me the opportunity to engage in the research.

Dedications

To my two beautiful children Sahar and Saeid for their love, constant support and patience. I owe so much to you guys for believing in me and making this thesis possible. Thank you.

To Reza for providing the opportunity for me to start the PhD and for all the contribution and help. Thank you for your support.

To my family, my mum and dad, my brother and sister for believing in me and for their love and support.

Table of Contents

	Content	Page
Chapter one: Introduction		
1.1.	Introduction	1
1.2.	Physical activity	1
1.3.	Sedentary behaviour	1
1.3.1.	Prevalence and trends of physical activity	2
1.4.	Background to the project	4
1.5.	Research question	7
1.5.1.	Aim	7
1.6.	Structure of the thesis	8
Chapter two: Review of the literature		
2.	Health and health inequality	10
2.1.	Health Literacy	11
2.2.	Ethnicity and health	13
2.3.	Physical activity and health	14
2.3.1	Physical Activity definition	15
2.4.	Physical activity policy	15
2.4.1.	UK health policy on physical activity	16
2.4.1.1.	Specific policies on priority populations	17
2.5.	Physical activity determinants	18
2.6.	Theoretical models	19
2.7.	Self efficacy	23
2.8.	Socio-ecological model	24
2.9.	Individual determinants	26
2.10.	Environmental determinants	27
2.10.1.	Social environmental determinants	29
2.10.1.1	Social deprivation	31
2.10.1.2.	Social capital	32
2.11.	Physical activity determinants amongst ethnic minority groups	32
2.11.1.	Acculturation	34
2.11.2.	Theories of acculturation	35
2.11.3.	Acculturation and physical activity	36
2.12.	Promoting physical activity	36
2.12.1.	Physical activity interventions in BRM populations	37
2.13.	Evaluation of health promotion Interventions	41
2.14.	Definition of community	44
2.15.	Research methodology	45
2.15.1.	Quantitative approach	45
2.15.2.	Qualitative approach	45
2.16.	Mixed methodology	46
2.17.	Research design	48
2.18.	Ethical consideration	50
2.19.	Summary	51
2.20.	Thesis study map	52

Chapter three: Study 1- Kensington Women Get Lively

3.	Introduction	53
3.1.	Rationale for the research	53
3.2.	Physical activity trends in the city and north-Liverpool	53
3.2.1.	Funding and policy supporting research	54
3.2.2.	Black and Racial Minority populations' participation	55
3.3.	Theoretical basis	55
3.4.	Women get lively project	57
3.5.	Aims and objectives	58
3.5.1.	Aim 1	58
3.5.2.	Aim 2	58
3.6.	Study 1 Part (I) method	59
3.6.1.	Developing structures for research implementation	59
3.6.2.	Community engagement structure	59
3.6.3.	Setting up the steering/advisory groups	60
3.6.4.	Participants and settings	65
3.6.4.1.	Recruitment and Sampling	65
3.7.	Methodology	66
3.7.1.	Quantitative approach	66
3.7.2.	Hypotheses	67
3.7.3.	Qualitative approach	68
3.8.	The Structure of the questionnaire	69
3.9.	Piloting the questionnaire	71
3.10.	Survey delivery	71
3.11.	Data collection	72
3.12.	Survey analysis	73
3.12.1.	Descriptive data for ethnic groups	73
3.12.2.	Coding	74
3.12.3.	Testing the reliability of the predefined codes	75
3.13.	Survey results	75
3.13.1.	Demographic data	75
3.13.2.	Self reported physical activity data	77
3.13.3.	Reports on social and environmental factors	78
3.13.4.	Perceived constraints and barriers around physical activity	79
3.13.5.	What would encourage women to do more physical activity	80
3.14.	Inferential statistics	81
3.14.1.	Further analysis	81
3.14.2.	Results by the ability to speak English	81
3.14.2.1.	Transportation	81
3.14.2.2.	Frequency of physical activity	82
3.14.2.3.	Involved in a community group	82
3.14.2.4.	Aware of local facilities	82
3.14.2.5.	Participation in physical activity	82
3.14.3.	Results by the employment status	83
3.14.4.	Results by age	83
3.14.5.	Results by involvement in the community	83
3.14.6.	Results by transport group	83
3.14.7.	Results by ethnic group	84

3.15.	Summary of the survey results	84
3.16.	Study 1 Part (II) Qualitative approach	85
3.16.1.	Design of focus groups	85
3.16.2.	The setting	85
3.16.3.	Focus group structure	86
3.16.4.	Recruitment of participants	87
3.16.5.	Number and duration of focus groups	88
3.16.6.	Composition the focus groups	88
3.16.7.	Moderator's role	89
3.16.8.	Focus groups delivery	90
3.16.9.	Participants	92
3.17.	Analysis of focus group/group interviews data	96
3.18.	Study 1 Part (II) group interview results	97
3.19.	Summary of the group interviews findings	107
3.20.	Discussion	108
3.20.1.	Interpersonal/social determinants	110
3.20.2.	Environmental determinants	113
3.20.3.	Encouraging factors	116
3.21.	Limitations	118
3.21.1.	Survey limitations	118
3.21.2.	Group Interview Limitations	119
3.22.	Conclusions	119

Chapter four: Study 2- Physical Activity Determinants in Muslim families

4.	Introduction	122
4.1.	Rationale for the study	122
4.2.	Parent's influence on physical activity behaviour	125
4.3.	Aims and objectives	126
4.4.	Methodology	127
4.4.1.	Interview design	127
4.4.2.	Interview structure for the parents	128
4.4.2.1.	Phase 1	128
4.4.2.2.	Phase 2	128
4.4.2.3.	Phase 3	128
4.4.2.4.	Phase 4	129
4.4.3.	Interview structure for the children	129
4.4.4.	Participants and settings	129
4.4.5.	Procedure	129
4.4.6.	Description of the families	130
4.4.7.	Data analysis	133
4.4.8.	Results	134
4.4.9.	Results and Discussion	135
4.5.	Conclusion	155
		168

Chapter five: Study 3- The Work-Out Project

5.	Health promotion interventions	171
5.1.	Rational for a physical activity intervention in Liverpool	172
5.2.	Project partners	174
5.3.	Design of the Work-Out intervention	175
5.4.	Project Design	176
5.5.	Aims and objectives of the Work-Out project	176
5.5.1.	Objectives	176
5.6.	Participants' recruitment	178
5.7.	Project delivery (Implementation)	178
5.8.	Support mechanisms	179
5.9.	Project locations	179
5.10.	Activity types	180
5.11.	Activity times	180
5.12.	Rational for evaluating the Work-Out project	181
5.13.	Evaluation aim	181
5.14.	Aims of evaluation of the Work-Out project	182
5.15.	Evaluation method	182
5.16.	Methodology	183
5.17.	Phase 1: Quantitative investigation	185
5.17.1.	Participants and settings	185
5.17.2.	Instruments and procedures	185
5.17.3.	Design and analysis	186
5.17.4.	Ethics	186
5.18.	Survey results (Part I)	186
5.18.1.	Beneficiary data	186
5.18.2.	Survey data	187
5.19.	Type of activity	188
5.20.	Further analysis	189
5.21.	Analysis of frequency of physical activity over time	191
5.22.	Analysis of the intensity of physical activity over time	192
5.23.	Survey results part (II) qualitative data	193
5.24.	Summary of the results	199
5.25.	Phase 2: Qualitative investigation	202
5.25.1.	Research design and methodology	202
5.25.2.	Participants and settings	202
5.26.	Participants' pen profile	204
5.27.	Procedure	205
5.28.	Data analysis	206
5.29.	Findings	207
5.29.1.	Qualitative results-interviews with the fitness activators and the managers	213
5.29.1.1	Reach	213
5.29.1.1.1.	Marketing strategy	214
5.29.2.	Effectiveness	215
5.29.2.1.	Description of fitness activators	217
5.29.2.1.	Fitness activators' role	217
5.29.3.	Adoption	218
5.29.4.	Project implementation	220

5.29.5.	Project maintenance	221
5.30.	Discussion	222
5.30.1.	Reach	223
5.30.2.	Effectiveness	225
5.30.3.	Adoption	232
5.30.4.	Implementation	235
5.30.5.	Maintenance	236
5.31.	Limitations	238
5.32.	Recommendation	238
5. 33.	Conclusions	239

Chapter six: Synthesis & Conclusion

6.	Synoptic Discussion	242
6.1.	Synthesis	242
6.2.	Key findings and implication of the research	243
6.3.	Methodologies	244
6.4.	Identifying barriers to physical activity to reduce their effects	247
6.5.	Limitation	254
6.6.	Conclusion	256
6.7.	Recommendations	258

Chapter seven: Personal Reflection

7.	Personal reflection	261
7.1.	Personal development	261

References	264
-------------------	-----

List of tables

Table 3.1.	Main questions explored in the survey	70
Table 3.2.	General demographics of the cohort being studied	76
Table 3.3.	Self reported physical activity data	77
Table 3.4.	Social and environmental perceptions	78
Table 3.5.	Summary of the barriers to participating in physical activity	79
Table 3.6.	Encouraging factors for participating in physical activity	80
Table 3.7.	Participant details of International Women's Day (Kensington Junior School, Kensington) *A	93
Table 3.8.	Participant details of Al Ghazali Centre (Wavertree/Kensington)*B	94
Table 3.9.	Participant details of Kensington Infant School (Kensington, Liverpool) *C	94
Table 3.10.	Participant details of Asylum Link Merseyside (Wavertree)*D	95
Table 3.11.	Content analysis of the 4 group interviews on the BRM women's involvement and perceived benefits of physical activity (PA)	98
Table 3.12.	Content analysis of the 4 group interviews on the BRM women's perceptions regarding integrating PA at home	100
Table 3.13.	Content analysis of the 4 group interviews on Provision of indoor and outdoor activities in community centres/venue, group size, facility, type	101
Table 3.14.	Content analysis of the 4 group interviews on walking and safety	103
Table 3.15.	Content analysis of the 4 group interviews regarding the best means to receive information and the role of cultural organisations in relation with leisure centres	104
Table 3.16.	Content analysis of the 4 group interviews regarding the role of transport in promoting physical activity	105
Table 3.17.	Content analysis of the 4 group interviews regarding the motivational factors to participate in physical activity	106
Table 4.1.	Family A: Libyan post graduates	131
Table 4.2.	Family B: Libyan postgraduate students	132
Table 4.3.	Family C: Iranian family self employed	132
Table 4.4.	Family D: Iranian family postgraduate student and academic	133
Table 4.5.	Participants' demographic data	134
Table 4.6.	Definition of physical activity	135
Table 4.7.	Levels of physical activity	136
Table 4.8.	knowledge and awareness of the benefits of physical activity	137
Table 4.9.	Physical activity in comparison to other health measures-diet, non-smoking	138
Table 4.10.	Sources of beliefs about physical activity	140
Table 4.11.	Determinants of Physical Activity and whether they have changed since living in the UK	142
Table 4.12.	Perceptions of the environment, suggestions to promote PA	147
Table 4.13.	Barriers to participation in physical activity	151
Table 4.14.	Motivational factors/religious/cultural motives/environmental motives	154
Table 4.15.	Parents' influence on their children's PA behaviour	155
Table 4.16.	Factors influencing children's physical activity behaviour	159
Table 4.17.	Barriers to participation in physical activity among the children	163
Table 4.18.	Summary of key themes identified from interviews with parents	166

Table 4.19.	Summary of themes identified for barriers to participation in parents	166
Table 4.20.	Summary of key themes identified from interviews with children	167
Table 4.21.	Summary of key themes of barriers to participation for girls identified from interviews	167
Table 4.22.	Summary of key themes of barriers to participation for boys identified from interviews	167
Table 5.1.	Frequency and intensity of physical activity at time 1 and 2 by ethnic group and fitness activator	190
Table 5.2.	Participants' demographic information	204
Table 5.3.	Categories and themes from the individual interviews based on the Socio- ecological mode	207

List of Figures

Figure1.1	Outline of thesis	9
Figure 3.1.	Partnership model developed for the Women get lively Project	61
Figure 5.2.	Percentage of respondents' frequency of activity before and during the programme	187
Figure 5.3.	Percentage of respondents' intensity of activity before and during the programme	188
Figure 5.4	Interaction plot between the fitness activators for frequency pre and post	191
Figure 5.6.	Interaction plot between the fitness activators for intensity pre and post	193
Figure 5.7.	Interaction plot for ethnicity and frequency pre and post	193
Figure 5.8.	Main themes from the Participants' comments on the Work-Out Project	195

Chapter one

Introduction

1.1. Introduction

This chapter places the thesis within the wider context of the field and identifies the challenge of determining barriers to physical activity participation among the Black and Racial Minority (BRM) groups. It goes on to present the aims, objectives and structure of the thesis.

1.2. Physical activity

It is widely documented that physical inactivity is a modifiable risk factor for cardiovascular disease and a widening variety of other chronic diseases, including diabetes mellitus, cancer (colon and breast), obesity, hypertension, bone and joint diseases (osteoporosis and osteoarthritis), and depression (Lee and Skerrett, 2001; Bouchard and Shephard, 1994). The Healthy People 2010 objectives have identified physical activity as one of the 10 leading health indicators. This categorisation demonstrates that physical activity is located at the top of the public health agenda and highlights the need to allocate valuable resources to remove the gap between the active and inactive people (Crespo et al., 2005).

1.3. Sedentary behavior

Sedentary behaviors refer to the time spent sitting during commuting, in the workplace, at home and during leisure time. Sedentary behaviors such as TV viewing, computer use, or sitting during commuting are in the energy expenditure range of 1.0-1.5 METs (multiples of the basal metabolic rate) (Ainsworth et al., 2000). Therefore, sedentary behaviors involve sitting and low levels of energy expenditure. On the contrary, moderate to vigorous intensity physical activities such as walking, running, cycling or swimming require an energy expenditure of 3-8 METs (Ainsworth et al., 2000). Thus, light-intensity activity behaviors are those done while standing that require an expenditure of no more than 2.9 METs. Sedentary behaviours are associated with increased risk of obesity and cardiovascular disease independently of moderate to vigorous activity levels (Owen et al., 2010; Stamatakis et al., 2009). The association of sedentary behaviour in adults with all-cause and cardiovascular mortality, diabetes, some types of cancer and metabolic Dysfunction is evident (Owen et al., 2010). Also the possible association between sedentary behaviour and weight gain or the development of obesity has is evident (DH, 2010). Thus programmes for physical activity promotion and obesity prevention are needed among all populations.

NICE (2006) indicated that the most effective ways of engaging sedentary and/or obese people in physical activity depends on the target population. However it is evident that interventions that easily incorporate into everyday life are likely to be more sustainable and can be tailored to the participants' circumstances and preferences.

1.3.1. Prevalence and trends of physical activity and sedentary behaviour

According to self-reported measures, physical activity has increased among both men and women since 1997, with 39% of men and 29% of women meeting the recommended levels in 2008 (at least 30 minutes of at least moderate intensity activity at least 5 times a week) compared with 32% and 21% respectively in 1997. (Statistics on obesity, physical activity and diet: England, 2010). Also Accelerometer's data for adults shows that in 2008, those who were not overweight or obese spent fewer minutes on average in sedentary time (591 minutes for men, 577 minutes for women) than those who were obese (612 minutes for men, 585 minutes for women). Active People Survey (APS) (2008/2009) reported that 6.9 million adults (4.2 million men and 2.7 million women) participated in sport and active recreation three times a week for 30 minutes. Agreement (PSA) aimed to increase the numbers who participate in active sport at least twelve times a year by 2008, by 3% among those in priority groups (black and minority ethnic, limiting disability, lower socio-economic groups and women) (Statistics on obesity, physical activity and diet: England, 2010). However 60% of the population are still not sufficiently active to benefit their health status (World Health Organisation, (WHO) 2011). The sufficient levels of physical activity for adults to achieve general health benefit is at least 150 minutes of moderate-intensity aerobic physical activity throughout the week or at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week or an equivalent combination of moderate- and vigorous-intensity activity. Aerobic activity should be performed in bouts of at least 10 minutes duration. Children and youth aged 5–17 should accumulate at least 60 minutes of moderate to vigorous intensity physical activity daily. This could be continuous activity or intermittent (WHO, 2011). Low levels of physical activity are evident in almost all sections of the adult population in England and there are increasing concerns regarding some groups of children, such as teenage girls (Department of Health, (DH) 2004a). Over the past 20 to 30 years physical activity levels as part of daily routines have decreased in

England, but the number of people taking physical activity for leisure has slightly increased (DH, 2004b). Participation levels vary according to demographic factors. Within the UK males (37%) are more likely to meet the current recommended activity guidelines than females (25%) (DH, 2004b). Participation levels also decrease with age for both men and women and, men from certain racial minority backgrounds (Indian, Pakistani, Bangladeshi and Chinese) are less likely to attain physical activity guidelines (DH, 2004a). Data shows that in all minority ethnic groups women were less likely than men to meet the physical activity guidelines. Health Survey for England (HSE), (2008) revealed that 21% of women in the general population met physical activity guidelines, and among ethnic minority groups 28% of Black Caribbean and 26% of Irish women also met the recommended guideline. However the proportions meeting the recommended guideline were lower than the general population for Chinese (18%), Indian (17%), Pakistani (16%) and Bangladeshi (10%) women. Sedentary time is at least as important as moderate intensity physical activity as a disease risk factor. According to HSE (2008) similar proportions of men and women were reported to be sedentary for six or more hours on weekdays (32% and 33% respectively). However, on weekend days, men were more likely to be sedentary for six or more hours than women (44% of men and 39% of women). Self-report data of sedentary behaviour indicated that approximately two thirds of adults spend more than 2 hours per day watching TV and using the computer (DH, 2010). On average, both men and women spent 2.8 hours watching television per weekday. Men averaged 3.2 hours of watching television on weekend days and women averaged 3.0 hours (DH, 2010).

1.4. Background to the Project

Focusing on one indicator of health, weight, there has been an increase in population weight and obesity in recent years (Liverpool Primary Care Trust, 2008). The Liverpool Lifestyles Survey shows 36% of the population to be overweight and 18% obese, with some minority ethnic groups showing obesity levels above that of the general population (Liverpool City Council, 2007). In general, Liverpool trends illustrate an increase in immigrant populations from 8.3% in 2001 to 10.7% in 2008 (National Statistics Office, 2008). Such figures highlight the scale of demand for health promotion activity in the population of Liverpool. One way of tackling obesity is to increase physical activity. The promotion of physical activity has been at the core of several community projects that have taken place across Liverpool as part of the Liverpool Active City Vision 2005-2010 (Liverpool City Council, 2005).

Kensington New Deal for Communities located to the east of Liverpool city centre is one of the 50 most deprived wards in the country. Within the area there has been a rapid increase in the Black and minority ethnic population over the last 15 years; from less than 5% in 1991 to an estimated 20% today (Liverpool Census, 2001). The Kensington New Deal (Black and Racial Minority) BRM community is extremely diverse: according to the latest research, the largest minority group is Chinese (including both Mandarin and Cantonese speakers), followed in size by Black African communities (French -speaking Africans are most significant in number, followed by Anglophone and Arabic-speaking communities), Eastern Europeans and communities from Central Europe, South East Asia and Arabic peninsula, as well as British minorities (particularly Irish and Irish Traveller communities and people of Welsh heritage) (Kensington Regeneration, 2009). It was also found that, “more than half of all BRM Kensington residents were born outside the UK compared with 42.6% for [Liverpool] as a whole”. It described how “over 70% of the BRM population have not lived in Kensington for more than 5 years.”

Sport England community surveys carried out in two Sport Action Zones (SAZ) (Liverpool and Bradford) in 2001 illustrate that women living in deprived communities participate less than the national average. Around 66% of women (aged 16 and over) in the Liverpool SAZ and 62% in the Bradford SAZ took part in at least

one sports activity (including walking) in the previous year. This compared to the national average for women of 77% (Ploszajski Lynch, 2005).

According to Ploszajski Lynch (2005), 46% of women from Black and Minority Ethnic communities carry out sport at least once a month. Women are less involved in sport and physical activities than their male counterparts, particularly in areas of multiple deprivations. Anecdotal evidence confirms that this is the case in Kensington New Deal for Communities (Kensington Regeneration, 2009).

Barriers that might inhibit female participation in physical activity include:

- Cultural or religious barriers (for example, a Yemeni woman in Kensington wanted to go to the gym but there are no facilities in Kensington where she can exercise without her hijab);
- Language barriers;
- Poor knowledge of facilities available;
- Pregnancy;
- Lack of child-care provision or sessions that clash with family commitments (there is a women's only swimming session in the region of Liverpool 8 but it takes place during the evening when some people are preparing the family meal);
- Poor transport links;
- Fear of harassment on the journey to and from the activity or during the session

Kensington New Deal in partnership with the Kensington Regeneration initiated a research project called "Kensington Women Get Lively". The project consisted of a survey on BRM women's involvement in physical activity in deprived areas in Liverpool. Liverpool John Moores University was commissioned to assist carrying out this project through establishing a partnership with various relevant organisations to conduct the survey and disseminate the findings. The project was a part of the health promotion campaign to increase BRM Women's participation in physical activity. Kensington Regeneration developed partnership with local women, Kensington New Deal, Liverpool Active City, Liverpool John Moores University,

Merseyside Network for Change and the Women's Health, Information and Support Centre (WHISC), plus other local organisations. The overall aim of this project was to identify the barriers to participation in physical activity programs among women who lived in deprived areas as well as promoting future provision of physical activity among BRM women in Kensington.

This project aimed to explore ways to increase participation of local women in and close to the Kensington New Deal Area, particularly (though not exclusively) those from the BRM backgrounds, in physical activity.

The project also aimed at using a unique methodology approach by engaging the local communities and carrying out a consultation with local people, voluntary and community organisations, sports providers and other mainstream agencies (such as the Primary Care Trust) to:

- Identify physical activity facilities, public and private, lending themselves to physical activities (including parks);
- Explore current adult female involvement in physical activities;
- Identify actual and perceived barriers inhibiting participation in physical activity
- Identify opportunities to increase participation in physical activity of women in the Kensington or the local area

The project aimed to go beyond the known practical and rational barriers to psychological and emotional factors hindering participation and feed into the development of pilot projects, with the ultimate aim of rolling out examples of good practice on a national scale.

1.5. Research question

1.5.1. Aim

The aim of the thesis was to explore physical activity determinants among BRM population using a socio-ecological frame work and to identify barriers for the lack of engagement in physical activity. In addition the research aimed to investigate the effectiveness of a multi component community based intervention to promote physical activity behaviour among this population. In order to achieve these aims the following objectives were addressed:

1. To identify the key barriers to and determinants of participation in physical activity among BRM women living in deprived areas using a socio-ecological framework.
2. To establish a partnership with the local agencies in order to engage the hard to reach population in the research.
3. To identify physical activity determinants among BRM families and investigate the role of family/social support in promoting physical activity in the family unit within the socio-ecological framework.
4. To explore whether BRM individuals' beliefs and attitudes towards and knowledge about physical activity have changed since living in the UK.
5. To evaluate a community based intervention tailor made for BRM and people with low socio-economic status.

All objectives are guided by the socio-ecological model. Objective 1 and 2 are addressed in Study 1 of the research and utilises a survey questionnaire and focus group/group interview methodology, whilst objective 3 and 4 are explored within Study 2 which employs a qualitative approach. Finally, objective 5 is addressed in Study 3 of the thesis which is guided by the RE-AIM framework using mixed methods.

1.6. Structure of the thesis

The content of the thesis is organised into 7 chapters.

- Chapter 1 presents the introduction to the thesis and the concept of physical activity as well as giving an outline of the research project and the aims of the whole thesis. Chapter 1 also includes a summary of the structure of the thesis.
- Chapter 2 includes a review of literature and outlines the overall methodology approaches utilised in studies 1, 2 and 3. The key topics addressed in the literature review are health and health inequality, ethnicity and health, physical activity and health, physical activity determinants, theoretical models, physical activity interventions and research methods to evaluate physical activity interventions. The review attempts to critique the current literature, and highlight gaps which provide a rationale for the present research.
- In chapter 3, study 1 presents the investigation of the barriers to physical activity in BRM women in Kensington. Study 1 was also used to develop the process of research engagement with community partners.
- Chapter 4 outlines study 2 which developed qualitative research approaches with Muslim families using interview techniques.
- Chapter 5 outlines study 3 which details the evaluation of a large and novel physical activity and health intervention aimed at increasing physical activity in deprived areas of Liverpool with a large population of BRM groups.
- Chapter 6 is the synthesise of the whole thesis, conclusion and recommendations. This chapter includes a synthesise, integration and discussion of the key findings from the studies outlined in chapters 3,4 and 5.
- Chapter 7 is my personal reflection throughout the whole research, indicating methodological issues and my personal development.

Each chapter starts with an introduction specific to the study including the aims and objectives of the study, methodology used for the study, results of the study, followed by a discussion that explores the findings of the study in relation to the literature and a short conclusion for each study.

The outline of the thesis is presented in the following figure.

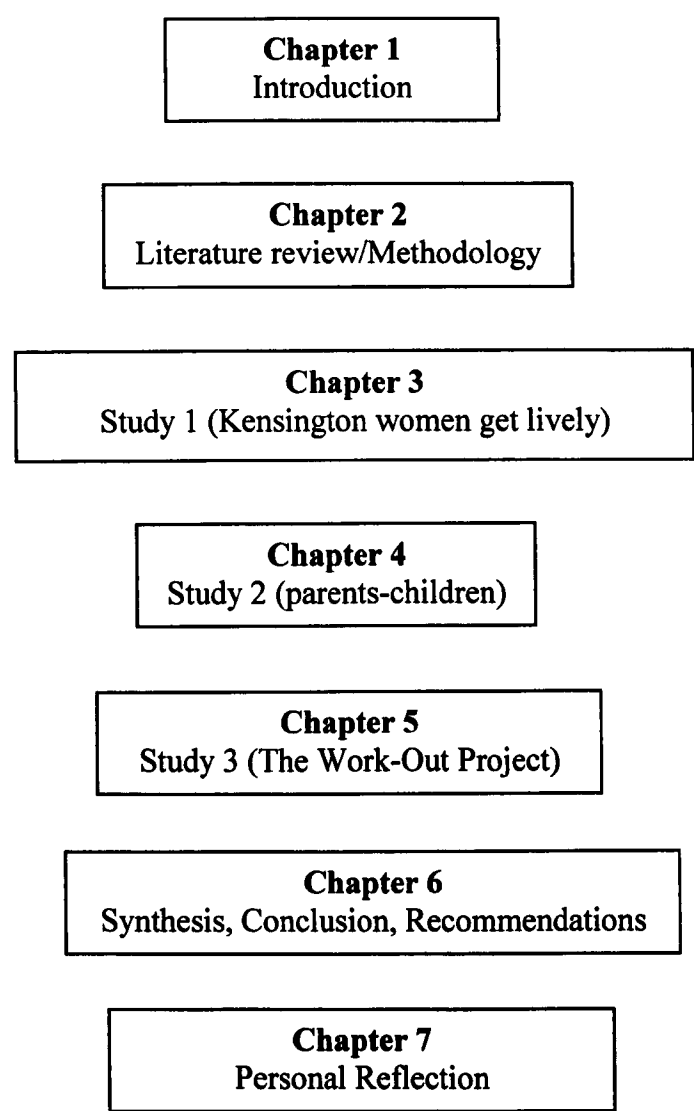


Figure1.1 Outline of thesis

Chapter two

Review of Literature & Methodology

2. Health and health inequality

Whilst there is no perfect definition of health, the most widely used is that by The World Health Organisation's Constitution (WHO). This says that health is "a state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity" (WHO 1948, cited in Nutbeam, 1998, p. 351). Therefore, health refers to a positive concept including social and personal assets as well as physical abilities. This definition identifies health as both a positive and holistic conception with great emphasis on physical, mental and social factors. On the contrary, health may also be defined as absence of disease, dysfunction or injury by biomedical models of health (Naidoo and Wills, 2000). Further health status is influenced by a number of factors such as: individual, social, economical, political and environmental factors (Keleher and Murphy, 2004).

The Marmot Report (2010) focused on the need to reduce inactivity or the cause of it as a form of health inequalities at a time when a range of health outcomes are improving but at a slower rate in lower Socio Economic Status (SES) compared to higher more affluent groups. Marmot (2010) argues that social gradient in health is directly linked with a person's social position; however, health promotion policies should focus on the entire population not solely on the most disadvantaged groups.

Individual's health is strongly influenced by the social conditions in which they live. A number of factors such as poverty, social exclusion and discrimination, poor housing condition, unhealthy early childhood conditions and unemployment have been identified to be important determinants of most diseases, deaths and health inequalities between and within countries (WHO, 2004). The framework of the WHO Commission on Social Determinants of Health (CSDH, 2008) proposed the existence of health inequalities that are associated with different aspects that influence an individual's position in society, such as social class, gender and ethnicity (Solar and Irwin, 2007). Inequalities faced by people from the BRM populations have been widely described in countries such as the US and UK, which have a very long history of migration, combined with slavery and colonialism, and established minority groups (Nazroo, 2003).

The social determinants of health have been the focus of investigation by policy makers, academics, former chiefs of state and former ministers of health (WHO Commission on the Social Determinants of Health, 2008). Socioeconomic status has been identified as one of the determinants of health and health inequality (Berkman and Epstein, 2008). However, WHO (2008) suggested that economic growth and rising incomes does not necessarily increase national health. Without equitable distribution of benefits, national growth can even aggravate inequities.

People from BRM populations usually reside in poor socioeconomic neighbourhoods and experience poor health, which can be intensified by additional effects of discrimination and racism. The health of the residents from poor socioeconomic areas is influenced by material deprivation such as income, housing tenure, access to a car or class or education as well as social and psychological deprivation.

Inadequate access to essential health services has been identified as one of several determinants of social inequities in health (WHO, 2007). Furthermore, the financial burden for health services is a major concern for socially vulnerable groups in deprived communities (Ziglio et al., 2003). WHO (2007) proposed two other types of access as economic access and cultural access. Economic access refers to local and close by health services which could be unaffordable for people from deprived areas to use them. Cultural access refers to acceptability and respect. Particular groups including ethnic minority groups experience cultural barriers to available services, rendering the acceptability of the services. Language issues and cultural sensitivities, could prevent minority ethnic groups or recent immigrants from accepting and benefiting health care even when it is offered free.

2.1. Health literacy

Low levels of literacy have been identified to impede educating individuals about important health issues (Silk et al., 2008). Although there is no universally agreed definition of health literacy but Department of Health defined health literacy as “the ability to make sound health decisions in the context of everyday life – at home, in the community, at the workplace, the health care system, the market place and the political arena. It is a critical empowerment strategy to increase people’s control over their health, their ability to seek out information and their ability to take

responsibility” (DH, 2009). Earlier studies developed a model for health promotion Nutbeam (1996) demonstrating the association between health promotion actions, the health determinants and the associated outcomes. Health promotion outcomes signify personal, social and structural factors that can be adapted to change the determinants of health. Within this stage of the model, health literacy indicates the personal, cognitive and social skills which determine whether individuals are able to obtain access to, understand, and use information to promote and maintain good health.

The level of literacy influences people’s ability to make informed decisions regarding health and life style (WHO, 2009). People with the lowest health literacy are commonly those from socially excluded groups who are unable to navigate the healthcare system (WHO, 2009).

According to (DH, 2009) over half of England’s adult population have low level of literacy (below level 2- the level of skills needed to discuss a condition interactively with a doctor or specialist). Low health literacy is associated with poor socioeconomic status and subsequently poorer health outcomes that underpin health inequalities. Making healthy choices is a compound process that needs high levels of health literacy (Hahan, 2008). People with low level of health literacy are often unable to a) manage their own health effectively, b) access health services effectively, c) understand the information available to them and therefore make informed healthy choices (DH, 2009).

The barriers that people with low health literacy face in terms of difficulties with reading and understanding health literature i.e. medical forms and leaflets, restrict them from gaining social support and advice (Sudore et al., 2006). It has been reported that low health literacy is more prevalent among specific racial and ethnic minority groups (Paasche et al., 2010).

Low health literacy has been identified as an individual trait that can determine or restrain individuals’ ability to obtain appropriate care for their health needs (Lee et al., 2004). However the importance of social support can be overlooked by focusing too much on individualistic model of health literacy. Lee et al. (2004) argue that social support and the support and resources available in social environment are potentially important factors to improve the negative implications of low health literacy. Recent

studies have documented the significant role limited health literacy plays in racial and ethnic disparities in health outcomes (Nielsen-Bohlman et al., 2004).

2.2. Ethnicity and health

The Health Survey for England (HSE, 2008) revealed significant differences in health between minority ethnic populations. Research conducted in the UK has demonstrated ethnic specific trends in death rates (Harding et al., 2008). The highest death rates for coronary heart disease have been reported in migrants of Indian origin and the highest death rates for stroke in migrants of Caribbean and African origin (Harding et al., 2008). The latest figures indicate an increasing rate of CVD in particular ischemic heart disease (IHD) deaths among South Asian population in the UK (Zaman and Brunner, 2008). Type 2 diabetes has also been found to be more prevalent in the ethnic minority groups residing in developed countries; and South Asian and African-Caribbean populations in the UK (Oldroyd et al., 2005). However South Asians have shown a lower incidence of cancer compared to the general population in the UK (Zaman and Mangtani, 2007).

Individual status (e.g. employment, education, and ethnicity) or socio-economic status of different populations has been identified to play an important role in determinants of health (e.g. access to resource). Also some ethnic groups encounter certain barriers when trying to enter into the health care delivery system due to cultural or religious requirements (e.g. women only centres for Muslim women) (Nazroo, 2003). Moreover ethnic minority immigrants mostly get involved in unpopular and often unpleasant employment, with very limited training, qualifications and promotion which could result in socio-economic disparity among them (Nazroo, 2003). Most studies on the health of ethnic minority populations have concentrated on the US populations and results indicate a higher prevalence of CVD, diabetes, stroke and hypertension among the BRM (Wilbur et al. 2003a; Wilbur et al. 2003b; Young and Voorhes 2003).

2.3. Physical activity and health

The health benefits of regular physical activity have been widely acknowledged (Cochrane and Davey, 2008; Ali and Lindstrom, 2006; Chief Medical Officer, 2004). The association between fitness, regular physical activity and low rates of mortality are consistent in different populations (Blair et al., 1996). Physical activity has been identified to improve the health and fitness levels of individuals by contributing to a lower risk of cardiovascular diseases (Kohl, 2001) including coronary heart disease (Kohl, 2001) and stroke (Wannamethee and Shaper, 2002), high blood pressure (Whelton et al., 2002) adverse blood lipid profiles (Durstine et al., 2001) and insulin resistance (Ryan, 2000). Physical activity also helps to maintain a healthy weight (Blundell et al., 2003; American College of Sports Medicine, 2001) and reduces the risk of type 2 diabetes (Kriska, 2003). Also musculoskeletal health improves by increasing bone mineral density and reducing the risk of osteoporosis (Vuori, 2001), and decrease the risk of low back pain (Iversen, 2003; Vuori, 2001). Physical activity is also associated with a reduction in the overall risk of cancer. The most active individuals have a 40-50 per cent lower risk of developing colon cancer than the least active (McTiernan et al., 1998).

Regular physical activity further contributes to the improvement of psychological well-being and mental health by reducing depression (Mummery and Schofield, 2004; Dunn et al., 2001) improving the mood and reduced state and trait anxiety and reducing psychological reactions to stress (Taylor, 2000) as well as improving self esteem (Fox, 2000). Social well being of individuals as group type physical activity helps develop social networks and relationships (Acheson, 1998).

Whilst physical activity behaviour is important to promote health and well-being fitness is also a key factor and in particular aerobic fitness. Whilst the interaction of the relative contribution of genetics and the environment on physical fitness and health are unclear current evidence places great emphasis on maintaining high levels of physical activity and fitness (Blair et al., 2001). Therefore in summary physical activity is a significant independent protective element against all cause mortality in both men and women (Oguma et al., 2002).

2.3.1. Physical activity definition

The importance of defining this term is evident as its interpretation will influence the researcher's perception of what should be classified as a physical activity for the purpose of this research. Physical activity refers to any bodily movement produced by skeletal muscles that require energy expenditure (Caspersen et al., 1985). This definition has been utilised by (WHO, 2008). Exercise is the subgroup of physical activity that is planned, structured, and repetitious for the intention of increasing some factors of physical fitness (Bouchard and Shephard, 1994; U.S. Department of Health and Human Services [DHHS], 1996). Physical activity has different ranges of 'volume (how much), duration (how long), frequency (how often), intensity (how hard) and mode (what type)' (Cale and Harris, 2005, P. 7). A broad range of activities are therefore considered as physical activity including: activities of daily life (housework, gardening, stair climbing), work-related activity (walking, lifting and packing), transportation physical activity (walking, cycling), recreational activity (exercise, sports recreation or hobbies), or engagement in specific prescribed interventions (Dugdill and Stratton, 2007).

Consideration of all physical activities is particularly applicable for women, because physical activity in this group is otherwise underestimated if housework and occupational energy expenditure are not considered (Dan et al., 1990). Two new categories of physical activity, volunteer work and religious activities have been added to a compendium of energy expenditure (Ainsworth et al., 2000). These activities are particularly important with older adults and minority older adults, respectively. This inclusion reflects the broad range of lifestyle physical activities within community life (Dunn et al., 1998). This research has used the definition by Capersen et al. (1985) to define what represents physical activity.

2.4. Physical activity policy

According to (Schöppe et al., 2004) public policy has a significant role in developing strategies to stop the trend of sedentary lifestyles. Public policy needs to be adjusted more towards "active living". Policy encompasses governmental, regulatory, or policy-making actions that can influence people's behaviour such as physical activity. Governmental and regulatory approaches are formal legal actions taken by local, or federal governments. Policies are organisational statements or rules that are intended to influence behaviour. Policies could be explicit or implicit, and their influence can

be intentional or unintentional. Policies are classed as socio-cultural factors because people often make policies to address the perceived needs or desires of their constituents (King et al., 1995).

More importance has been put on physical activity as an important public health issue. Governmental and non-governmental organisations have recognised the need of political changes to increase physical activity across the whole population to tackle the adverse effect of the prevalence of inactivity (Brownson et al., 2001). Policy can influence physical activity behavior by offering opportunities and physical environments to facilitate people's decision to become physically active (Bauman and Bellew, 1999; Sallis et al., 1997). Physical activity policies encompass a wide-range of aspects such as those related with health, sport and recreation, education as well as transport, environment and economic. These aspects need to be taken into account in physical activity promotion. It is evident that focusing only on individual-oriented behaviour change strategies would produce small changes on population levels of physical activity. Therefore more holistic approaches are required to address the physical and social environmental aspects in facilitating people's choice to become active (Bauman et al., 2002; Brownson et al., 2001; Blair et al., 1996).

2.4.1. UK health policy on physical activity

In the UK, promoting health through increased physical activity levels is a cross-government issue. Various organisations and agencies prioritise this issue. The Chief Medical Officer, (2004) pointed out that to find out a solution for this issue several organisations should work together. Government should work in partnership with the NHS, leisure and sport centres, schools and colleges, employers and workplaces and families and children to promote physical activity. However, the Department of Health has taken the lead for the government policy on physical activity (Cavill, 2008).

The Health Education Authority promoted the new message about moderate physical activity through an integrated mass media campaign from 1996 to 2000. This campaign promoted people's awareness and knowledge about physical activity recommendations and was supported by professionals in their local work promoting

activity, but the influence in people's behaviour was too minor to be measurable at the population level (Hillsdon et al., 2001).

Choosing Activity was another strategy initiated by the Department of Health in (2005) which was similar to one of the five principles of the 1986 Ottawa Charter for Health Promotion (Chief Medical Officer, 2005). This initiative highlighted the significance of environment as an important element to promote physical activity through increasing opportunities and facilities for physical activity and maintaining public spaces and the countryside accessible and attractive to encourage physical activity. The Chief Medical Officer, (2005) recommended that children and young people should achieve a total of at least 60 minutes of moderate-intensity physical activity each day. At least twice a week this should include activities to improve bone health (activities that produce high physical stresses on the bones), muscle strength and flexibility. Recommendation for adults is to achieve a total of at least 30 minutes a day of at least moderate-intensity physical activity on five or more days of the week for general health benefits. Game Plan (2002) also stated that the Government implements an ambitious target to increase levels of participation in physical activity and sport of 70% of individuals undertaking 30 minutes of physical activity five days a week by 2020. The report planned a provisional target of 50% participation by 2011. The department for Transport (2004) also proposed a policy to promote walking and cycling for travel which is known as Transport's walking and cycling action plan. The policy emphasises on the role of environment in promoting walking and through providing access to well-maintained, safe walking and cycling routes, attractive and affordable leisure and sports facilities, playgrounds, parks and the countryside (DoH, 2005).

2.4.1.1. Specific policies on priority populations

Most policies appear to focus on general population or target specific populations like younger/older/disabled. NICE, (2005) provided recommendations for local policy makers, commissioners and managers, together with primary care practitioners, to meet the needs of hard to reach and disadvantaged communities, including minority ethnic groups, when developing service infrastructures to promote physical activity.

2.5. Physical activity determinants

Understanding the determinants of physical activity is important in designing policies, recommendations and guidelines that better facilitate individuals and communities to adopt a more physically active lifestyle and help to develop appropriate interventions (Sallis et al. 1997). Influencing physical activity behaviours and identifying physical activity determinants require understanding and approaching it not only from the individual level but also from a broader socio-ecological perspective (Owen et al., 2000). That is, understanding the individual's connection with their family, community, culture and life.

Guinn and Vincent (2008) reported age, health, education, and marital status as determinants influencing physical activity participation in the general adult population. Age relates negatively to adults' leisure-time physical activity as the prevalence of activity participation declines with age. Healthy individuals have greater participation level and are more likely to sustain their involvement in physical activity compared to those with poorer health (Crespo et al., 2000; Wiest and Lyle, 1997; U.S. Department of Health and Human Services, 1996). Education, as a measure of socio-economic status is also related to health behaviour (Strain, et al. 2002; Verbrugge et al., 1996). Individuals with high educational achievement are more likely to be physically active than those with lower educational level due to having better economic status and fewer physical and social restraints to leisure activity (Green and Ottoson, 1999). Also, educated people tend to be more willing to modify their lifestyles related to physical activity in response to appeals from health professionals (US Department of Health, 2000; Lanz et al., 1998; Liberatos et al., 1988). Individuals' marital status relates positively to a number of health-related behaviours due to the organised life that marriage can offer (Green and Ottoson, 1999). Married people besides being more physically active generally enjoy better health and greater life expectancy than single whereas widowhood and divorce are associated with lower activity participation as a result of social isolation and changes in economic status (Green and Ottoson, 1999).

Another study has classified physical activity determinants as modifiable factors including personal characteristics (knowledge, motivation, skills), community settings

and living and environmental circumstances, education levels, support network and cultural factors) and non- modifiable factors including age, gender, race, ethnicity, health condition and socio-economic status (Seefeldt et al., 2002). Modifiable factors such as knowledge, intention and motivation are within individual's control whereas socio-economic status, social status, access to resources, etc are influenced by external factors (Cohen et al., 2000). However, there is little research about multiple factors that affect physical activity levels in different populations including ethnic minorities, disabled people, and people from low income groups (Sallis and Owen, 1999).

2.6. Theoretical models

Three key theoretical approaches, namely social cognitive theory (Bandura, 1986), behavioural choice theory (Rachlin, 1989; Epstein, 1998) and ecological theory (Sallis and Owen, 1999) outline the principle that physical activity behaviour change may be influenced by a number of individual, social and environmental level factors, including self-efficacy, social influences, which includes family dynamic, family support, the family environment and rules; and the local community environment. Personal characteristics such as attitudes, beliefs, and values have been found to have an impact on physical activity behaviour (Buckworth and Dishman, 2002). Consistent with socio-ecological model Eyler et al. (2003) concluded that the ability to be physically active could be influenced by personal factors (e.g. time and lack of motivation); social factors (e.g. family responsibilities, lack of role models, and support from family and friends), environmental factors (e.g. safety from crime and need to travel to exercise facilities) and policies (e.g. few workplace policies that encouraged physical activity). U.S. Department of Health and Human Services (1996) stated that family income is an element of socio-economic status which is negatively linked with inactivity for both male and female and every ethnic group.

The majority of theories have common factors influencing behaviour change, such as attitudes, social influence, self-efficacy and intervention or stage of change (Noar et al., 2008). Whilst the theories and models are useful in providing possible explanations for behaviour, the extent to which most predict diet and physical activity behaviour is modest (Baranowski et al., 1999). Furthermore, Baranowski et al. (2003) argued that there is no clear dominance of one model in its ability to predict

behaviour, however the Theory of Planned Behaviour consistently exceeds this level of prediction by a small amount in adults. However, Baranowski et al. (1999, 2003) have applied the theories to the area of diet and weight gain.

The theories have usually been applied to studies which aim to change a single behaviour. However, Noar et al., (2008) argue that studies of single behaviours essentially remove the behaviours from the context of multiple behaviours in which they take place. This raises the question about how individuals change multiple health behaviours, and whether the changes occur sequentially or simultaneously.

Several psychosocial, cognitive, and emotional factors have been recognised to explain physical activity determinants (Sherwood and Jeffery, 2000). However, there are other social, economical, political, and physical environmental factors, in addition to certain individual factors, which influence the health outcomes and behaviours. Li et al. (2005) believe that greater attention to social environmental factors should be placed as a necessary next step in research on physical activity. Trying to promote healthy behaviour among people without considering social standards for activity, resources and opportunities for engaging in physical activity, and environmental restrictions such as crime, traffic or unpleasant surroundings, is unlikely to influence behaviour change (McNeil et al., 2006).

For physical activity to contribute to reversing the trend in non communicable diseases and obesity, a multi-factorial and multi-dimensional solution will be required that involves intrapersonal, interpersonal, social, environmental, psychological and biological factors consisting of schools, home and neighbourhood. Godin (1994) identified the role of applications of health behaviour theories to physical activity for environmental influences, in terms of “barriers,” “facilitating conditions,” or “contextual influences.” Relatively Bandura (1986) proposed the interactions of environmental, personal, and behavioural factors within the Social Cognitive Theory. However the relative influence of these interacting factors depends on the type of activities, individuals, and different conditions. Bandura (1986) suggested that when environmental factors apply influential limitations on behaviour, they appear as the dominant determinants. Furthermore, Bandura (1986) added that the environmental factors, in the case of physical activity, may be particularly significant.

Theory of Reasoned Action (Ajzen and Fishbein, 1980) or Theory of Planned Behaviour (Ajzen, 1985) is based on the relationship between attitudes and behaviours; a behaviour is more likely when it is intended. The individual's attitude and subjective norm cause intention. The motivating factors are the values of the outcomes of the behaviour. The theory of planned behaviour is an expansion, including that intention is influenced by perceived behavioural control.

The transtheoretical model (TTM) is a multi-dimensional model of behaviour change. The TTM model includes the components of the stages of change, the processes of change, self-efficacy, and decisional balance (Prochaska and Velicer, 1997). Each stage of change symbolises the chronological aspect of the transtheoretical model and reflects the readiness to change. This model consists of five distinct phases as follows:

- Pre-contemplation: refers to individuals who have no intention to take action within the next 6 months.
- Contemplation: refers to individuals who intend to take action within the next 6 months.
- Preparation: signifies individuals who plan to take action within the next 30 days.
- Action: signifies individuals who meet a condition of sufficient physical activity for less than 6 months.
- Maintenance: refers to individuals who meet a condition of sufficient physical activity for 6 months or longer.

The concepts of self-efficacy and decisional balance are often used in combination with the stages of change model for physical activity interventions to help individuals progress through the various stages. The self-efficacy theory is based on the belief that the degree of confidence an individual has in his/her ability to perform a behaviour under a number of specific circumstances, is positively linked with his/her actual ability to perform that specific behaviour (Bandura, 1977). Self-efficacy beliefs are associated with stage of change, with precontemplators showing the lowest self-efficacy levels and individuals in the maintenance stage having the highest level self-efficacy (Marcus and Owen, 1992). The transtheoretical model is considered one of the more promising approaches for enhancing physical activity behaviour (Calfas

et al., 1996). Using the stages of change framework, self-efficacy and decisional balance have been used to better understand how individuals engaged and maintain physical activity.

Despite the wide use of this model in health-related behaviour areas including tobacco use, diet and physical activity (Bucksch et al., 2008; Spencer et al., 2006) some commentators have criticised the effectiveness of TTM-based health promotion and physical activity interventions (Bridle et al., 2005; Adams and White, 2003).

Adams and White (2003) concluded that TTM-based physical activity promotion interventions are reasonably effective in promoting physical activity adoption but have less influence on long-term maintenance of increased activity levels. Bridle et al. (2005) reviewed 7 physical activity behaviour change interventions and only found one effective TTM-based intervention. On the basis of these findings, it could be suggested that the TTM-based activity promotion interventions may be less effective than initially suggested. The lack of support for TTM-based interventions has been described by a number of previous studies. One explanation is that physical activity behaviour is more complex than single behaviours such as smoking and that individuals could be in various stages of change depending on the type of activity they were involved (Adams and White, 2005). Interventions that consider physical activity as a single behaviour may therefore fail to identify the complication and distinction required for physical activity interventions. Furthermore it was concluded that physical activity behaviour could be influenced by a number of factors not identified by the TTM. Adams and White (2005) suggested that the TTM emphasises on personal motivation for behaviour change and does not recognise external and social factors such as age, gender, and socio-economic position. Bridle et al. (2005) included that many of the TTM-based health behaviour interventions were designed only to stage of change and ignored the other aspects of the model (processes of change, self-efficacy, level of change and decisional balance). Therefore, some TTM-based interventions fail to represent the model because they are based on a single dimension such as the stages of change. However, Brug et al., (2005) proposed that the evidence provided by Adams and White (2005) can support TTM-based interventions. They suggested that such interventions seem to encourage short-term behaviour change and short-term changes in motivation and other potential mediators

of change. Therefore, the model evidently has some advantage for physical activity behaviour change.

2.7. Self-efficacy

The concepts of self-efficacy and decisional balance are often used in combination with the stages of change for physical activity interventions to help individuals' progress through the different stages of behaviour change. Self-efficacy is defined as the degree of confidence an individual has in his/her ability to perform a behaviour under a number of specific circumstances (Bandura, 1986). Self-efficacy has been identified as an important predictor of a number of different health behaviours, including reducing alcohol consumption (Oei & Burrow, 2000) and smoking cessation (Baldwin et al., 2006)

In relation to physical activity self-efficacy refers to an individual's beliefs about their capabilities to perform physical activity even when constrained with barriers. Self-efficacy originates from personal factors such as: age, gender, health and environmental factors (e.g., safe facilities, transportation, and social support). Many of these factors associated with self-efficacy are challenges for individuals with disabilities and older adults (Peterson et al., 2008). Self efficacy is a determinant and an outcome of physical activity (McAuley and Blissmer, 2000). For older adults increased self efficacy through intervention is a predictor of participation specially in the early stages of the intervention and declines after a period of inactivity. The role of self efficacy as a determinant of physical activity is significant in physical activity adoption, maintenance and post intervention follow ups (McAuley and Blissmer, 2000). Measuring self efficacy would require the behaviour to be associated with effort, perceived and actual potential barriers and behavioural self regulation rather than habitual exercising (Stewart and Mutrie, 2008).

Self-efficacy has been shown to be positively associated with the adoption and maintenance of physical activity behaviour and motivational readiness for physical activity participation (Troost et al., 2001). According to the Social Cognitive Theory (Bandura, 1997) self efficacy mediates between social support and physical activity behaviour in general population. Targeting interventions to individual stage of change for physical activity can assist with achieving increased physical activity, enhanced

readiness to adopt physical activity, and improved stage progress toward physical activity adherence. (Luszczynska et al., 2011).

2.8. Socio-ecological model

Stokols (1996) and McLeroy (1988) proposed that “Ecological” models of health behaviour provide explanation of the interaction of people with multiple levels of determinants within their physical and socio-cultural environments. Given the complications of ecologic frameworks, behaviour-specific models have been proposed and applied to physical activity, aiming to provide an integrated account of the complex patterns of possible determinants (Owen et al., 2000; Sallis et al., 1997). Ecological models encompass the influence of the physical environment, identifying that social and organisational elements manipulate the environments and people’s behaviour within them. In this regard, the “behaviour settings” concept (Sallis and Owen, 1999) is useful, emphasising how physical activity can be encouraged within some environments, whereas it could be more difficult or constrained in others. These models are complex and conceptualise behaviour as being determined by multiple levels of influence, i.e. intrapersonal, interpersonal, institutional, community and legislative or policy level (Owen et al., 2000; Sallis et al., 1997; Stokols, 1992). For instance, individuals in the lower socio-economic groups have been found to be more physically active because of the sort of jobs they undertake, such as construction work and household chores. Many people who belong to this group do not own a car and therefore are likely to walk more and use the public transportation (Amesty, 2003).

Thus BRM group are largely placed within socio-deprived areas suggesting that maybe physical activity levels are higher. These are set against key cultural aspects related to the social and physical environment that determine physical activity.

Sallis et al. (1999) developed a social cognitive model of physical activity behaviour, highlighting the role of environmental factors within a context where multiple determinants interact at several levels. “Ecological” models of health behaviour provide explanation of the interaction of people with multiple levels of determinants within their physical and socio-cultural environments (Stokols, 1996; McLeroy, 1988).

The ecological model which was proposed by McLeroy et al., (1988) introduced a holistic approach, categorising health behaviour determinants under five factors including: intrapersonal factors (e.g. biological and psychological factors), interpersonal factors (e.g. immediate network such as family and other formal and informal social network and support systems such as friends, and colleagues), institutional factors (e.g. social institutions, such as schools, health agencies, and companies), community factors (e.g. organisational, and informal networks), and public policy (local, state, and national laws and policies). Ecological models address individual factors as well as emphasising many correlates that influence physical activity behavior such as community standards and the role of environmental and policy changes. Accordingly, these models have been identified to develop understanding of the determinants of physical activity behavior in ethnic minority women because they recognise external restraints from the society, community and organisations that could constrain their participation. Physical environmental factors as another critical influencing factor was added to ecological model and a more inclusive socio-ecological model was proposed by (Sallis et al., (1998).

The socio-ecological model provides a comprehensive framework for understanding and modifying intrapersonal, interpersonal, environmental, organisational, community, and public policy influence on determinants of physical activity behaviour and health promotion (Owen et al., 2000). Theoretical models to account for the influence of environmental factors on physical activity should be particularly helpful in the new public health perspective for physical activity, within which environmental and policy interventions are being developed and applied (Sallis et al., 1998; King et al., 1995).

A socio-ecological approach to physical activity promotion proposes that the interaction between individuals and their environment is inevitable. Although individuals choose their own unique life-styles their decision is influenced by a complex combination of social and community relationships. In addition, environmental factors can dynamically facilitate or obstruct personal change. In this sense, behaviour change is more likely to occur and be sustained once a person's environment is adjusted to promote and sustain physical activity (Sallis et al., 1992).

The socio-ecological model addresses the internal relationship between environmental aspects and human behaviour and well being. Environmental factors encompass physical, social and cultural elements that can influence a variety of health outcomes such as: physical health status and social cohesion (Sallis and Owen, 1999; Stokols, 1996).

Socio-ecological model also emphasises the relationship between situational and personal factors rather than focusing only on environmental, biological or behavioural determinants of well being. Other environmental factors such as population density, change of residence, or economic status could also influence people's health depending on their personality, perceptions and socio-economical status (Sallis and Owen, 1999; Stokols, 1996).

Since there is a lack of clarity in literature surrounding the definition of interpersonal factors and social factors related to physical activity. This study defines individual factors as intrapersonal factors e.g. attitude, beliefs, intention, skills, motivation and health issues and interpersonal factors e.g. time, social support including family support. Social support would refer to the individual's relationship with others outside the family unit that includes the influence of community, friends, colleagues and peer groups. Environmental factors in this study are defined as physical environmental/structural factors such as health policy, community's ability to implement health promotion interventions, opportunities for physical activity, e.g. information and resources, weather, safety, distance etc.

2.9. Individual determinants

Literature about physical activity determinants has mainly focused on individual-level factors. This could be because of the complication of addressing social and structural determinants of health (Smedley, 2000). Individual factors can be defined as past or present knowledge, attitudes, behaviours, personality characteristics, biomedical qualities, and demographic factors that may influence physical activity behaviour (Smedley, 2000).

Knowledge of and belief in the health benefits of being physically active may prompt individual's initial engagement in physical activities, but feelings of enjoyment and

general well-being are stronger factors for maintaining participation in physical activity programs (Sallis and Owen, 1999).

In addition an individual's physical activity determinants may be influenced by personal factors such as lack of time (due to lifestyle or household commitment) and/or the perceptions about physical activity (Eyler et al., 2003). Individuals' socio-economic status has consistently been documented as having a contrary relationship with physical activity (Proper et al., 2007; Varo et al., 2003). It is important to note the potential interactions of these relationships. The relation between physical inactivity and reduced health and well being can be associated with the behavioural inequalities in terms of prevalence of physical inactivity in various sectors of society and the presence of health inequality across socio-demographic levels within society (MacIntyre et al., 2003).

On the contrary, Amesty (2003) concluded that individual characteristics like race and economic status are less important determinants of behaviour in comparison with condition of life, satisfactory housing, safe neighbourhood and employment status.

A number of behaviours have been identified to be influencing individuals' healthy lifestyle. Most individuals find it difficult to start, maintain or continue their involvement in healthy activities such as physical activity (Biddle and Mutrie, 2008). Chief Medical Officer, (2004) pointed out that people's current involvement in physical activity is a reflection of their personal attitudes and perceptions about the time available to them and how they use their time and their cultural and social values. Motivation has been defined as the type of behaviours that individuals choose to do, how constant they are, how committed they remain over time and how serious their involvement in certain behavior is (Biddle and Mutrie, 2008).

2.10. Environmental determinants

It is evident that environmental factors significantly influence individuals' diet, physical activity, and obesity (Saelens et al., 2003; Humple et al., 2002). Environmental correlates of physical activity have been defined as the built environment which broadly includes patterns of human activity at different levels of geography within the physical environment including: a) urban design which refers to

the design of a city and its physical elements; b) land use referring to the location of housing, industrial, green areas and others; and c) transportation system and infrastructure of roads, pavements, bike paths and so on (Handy et al., 2002). Environment has also been defined as the macro- and community-level factors, including physical, legal, and policy factors that have an external impact on household and individuals' options (Popkin et al., 2005). Environments could be encouraging or preventing physical activity behaviours through factors such as, access to safe recreation and leisure centres, accessibility of recreation facilities, and transportation options (Popkin et al., 2005). Taking into consideration that physical activity is influenced by several factors, understanding the population impact of environmental determinants is important to design population wide interventions to promote physical activity (Sallis et al., 2000).

Access to facilities and opportunities to exercise have been identified to have a positive association with physical activity behavior in children and adolescents (Sallis et al., 2000). Also the presence of places to exercise, pleasant pavements, and spatial access to open space have been identified to be related to physical activity in adults (Ainsworth et al., 2003; Evenson et al., 2003).

A number of studies have reported that 'convenient' environment such as easy access to amenities increases the possibility of walking (Ball et al., 2001; Booth et al., 2000) and also access to exercise and/or leisure facilities increases walking as well as participation in physical activities (Li et al., 2005; Addy et al., 2004). Furthermore, physical features of neighbourhoods such as pleasant pavements, parks, green spaces, and sports fields are more likely to encourage walking and physical activity behavior (Li et al., 2005; Addy et al., 2004; Foster et al., 2004). Whereas living in unsafe and unpleasant environment discourages walking and overall physical activity (Li et al., 2005; Brennan et al., 2003; Ball et al., 2001).

Wilbur et al. (2003a) argue that although environmental factors have been found to influence individuals' physical activity, there can be a difference in the real environment and the way people perceive the environment. A few studies have not found a positive association between physical environmental factors and physical activity Sanderson et al. (2003) found no physical environmental variables that were

significantly associated with physical activity levels among rural African-American. Voorhees and Young (2003) also reported no significant relation between the physical environmental determinants and physical activity recommendations for Latina women. One explanation for the contradictory findings from these studies could be that these studies have been conducted with ethnic minority populations and that maybe individual predictors were stronger than environmental correlates of physical activity among this population.

A number of studies have investigated the environmental influences on physical activity level in women (Thompson et al., 2009; Eyler, 2003). Studies which have looked at minority groups and environmental factors influencing their physical activity level have mainly focused on African American or Latin American women (Young and Voorhees, 2003; Wilbour et al., 2003a; Wilbour et al., 2003b; Evenson et al., 2003; Voorhees and Young, 2003) .

2.10.1. Social environmental determinants

Considerable attention has been given to the influence of social environmental factors as well as physical environmental factors as key modifiable determinants of physical activity (Smedley, 2000). The influence of social factors as an important determinant of health has been widely documented (Emmons, 2000; U.S. Department of Health and Human Services, 1996). This is because physical activity is a behavior that is essentially shaped by individual's social environment in that most activity takes place within the boundaries of families, communities, and neighborhoods (Li et al., 2005).

Although social scientists have not agreed upon a definition of social environment it is well established that the social environment in which individuals live influences their behaviour by determining standards, implement models of social control, providing or hindering environmental opportunities to engage in particular behaviours, decreasing or increasing stress, and limiting individual's options (Institute of Medicine, 2003). An individual's social environment (e.g. support and encouragement to be active from family and friends) has been found to influence adults' participation in physical activity (Sallis et al., 1992). However these social factors have been referred to interpersonal factors by (Matson-Koffman et al., 2005). Mostly there are social patterns for health outcomes and behaviours in society,

however for those who live in resource-deficient social and physical environments this would have a negative impact (Berkman and Kawachi, 2000). Those who live in these environments face a greater risk of getting involved in unhealthy behaviours, such as physical inactivity, often as a result of influence of stressful and unsafe environments (Geronimus, 2000; King, 1997).

Social support and social networks have an influence on health behaviour and health status. Social support refers to the resources provided by other persons (Cohen and Syme, 1985), and social networks have been defined as collective construction of social relationships that encompass an individual, and identifies how an individual is integrated with others (Institute of Medicine, 2001). Communities with high levels of social capital have been identified as having the potential to provide support for positive health behaviours, such as sports and physical activities, and help to minimise nonstandard health behaviours, such as smoking and alcohol abuse (Kawachi and Berkman, 2000). Some social environmental factors such as not seeing others being physically active in the neighbourhood regularly could hinder leisure time physical activity (King et al., 2000).

In a study conducted by Stahl et al. (2001) individuals with low perceived levels of social support were twice as likely to be physically inactive in comparison to individuals who reported high levels of social support. Social support from family and friends has been positively related to physical activity (Springer et al., 2006; King et al., 1992). Lack of social networks was found to be one of the barriers to physical activity in a group of minority women which included Latin women (Eyler et al., 2002). Individuals who start regular physical activity are more likely to be supported by their families of their choice to maintain their behavior (Hooper and Veneziano, 1995). Those with low physical activity social support are less likely to engage in physical activity (Eyler et al., 1998). Carron et al (1996) identified the major sources of social influence on physical activity to include significant others as physicians or co-workers, family members, exercise instructors, exercise buddies, and members of exercise groups. The commentators also graded the extent of influence of each source on a small - moderate - large effect scale. Family support and attitudes about exercise were identified to have moderate to large effect, followed by task cohesion and adherence, significant others and attitudes about exercise, family support and

compliance behaviour respectfully. However social support could change over time and have an impact on adoption and retention of physical activity behaviour (Oka et al., 1995).

King et al., (1992) proposed that there could be gender differences in the effect of social influence on physical activity. Troped and Saunders (1998) investigated gender differences in social influence on physical activity behaviour for men and women in different stages of exercise adoption. They found that women were more likely than men to follow family members or significant others in adopting physical activity behavior.

On the contrary a number of studies did not find the positive association between social support and health behaviour on the determinants of moderate physical activity (Laitakari, et al. 1996; Courneya and McAuley, 1994). However most of these studies have examined relationships between vigorous physical activity and social support (Sallis and Owen, 1997), therefore there is a lack of evidence concerning regular physical activity and less vigorous more moderate physical activity.

2.10.1.1. Social deprivation

Social deprivation has been defined as a decline or impediment of culturally normal interaction between an individual and the mainstream society. This social deprivation is included in a broad system of associated factors that lead to social exclusion. These factors consist of mental illness, poverty, poor education, and low socioeconomic status. Socially deprived people may encounter deprivation from basic abilities due to a lack of freedom, rather than just low income. This lack of freedom could encompass less opportunity, political voice, or dignity (Bassouk and Donelan, 2003).

Pierson (2002) suggested that socially excluded individuals are denied access to the resources that allow for healthy social, economic, and political relations. Pierson (2002) proposed five key factors that contribute to social exclusion: poverty, lack of access to jobs, denial of social supports or peer networks, exclusion from services, and negative perception of the local neighbourhood.

Marmot Report (2010) emphasises on social, educational, and health inequalities associated with neighbourhood and community deprivation in England.

2.10.1.2. Social capital

The study of social capital has recently been given attention when addressing health inequality (Kunitz, 2004; Pearce and Davey, 2003). Social capital refers to the interconnection of individuals and their community. It describes the social structures including trust, norms, and connections that help individuals and the group to which they belong to gain shared benefit (Mummery et al., 2008). However, the study of social capital and its application to health is a new concept and it has mostly been studied in areas of mortality (Kawachi et al., 1997), violent and crime (Sampson et al., 1997), self-rated health status (Veenstra, 2000), binge drinking (Weitzman and Kawachi, 2000), neighbourhood mortality rates (Lochner et al., 2003) and smoking (Lindstrom, 2003). However, the relation of social capital with physical activity behaviour is under researched (Greiner et al., 2004). The association between social capital and physical activity was measured in a study by Greiner et al. (2004) using measures of community rating and community involvement. This study indicated that individuals, who rated their community highly in terms of a place to live, were more likely to engage in physical activities in comparison to those who provided a low community rating. However, this study was limited because it did not consider socio-economic factors which might have influenced individuals' physical activity behaviour (Mummery et al., 2008).

2.11. Physical activity determinants amongst ethnic minority groups

Most studies on physical activity determinants or correlates in BRM populations are conducted in the US and they have mainly focused on women (Brownson et al., 2000). Research indicates that several social, environmental, political and organisational factors influence physical activity determinants in BRM groups (Banks-Wallace, 2002; Brownson et al., 2000). Physical activity behaviour among African American women is mainly influenced by intrapersonal (i.e. personal and family histories of heart disease and other risk) and interpersonal (i.e. cultural values and roles, social support, social norm) (Banks-Wallace, 2002). These women also reported that their perceptions and knowledge about the benefits and barriers to

physical activity are major physical activity determinants (Banks-Wallace, 2002; Wilcox et al., 2000). Eyler et al. (1998) conducted a qualitative study on determinants of physical activity on women from BRM groups including African American, Hispanic, Filipino, Chinese and American Indian. Their study identified that personal barriers (lack of time, health concerns, and lack of motivation) and environmental barriers (safety, availability, and cost) influenced participants' choice for living a physically active life.

It is however evident that physical activity determinants are different in women from BRM groups compared to white women. In a group of women contemplating physically active lifestyles African Americans reported lacking safe place to exercise or walk, Hispanics, lack of time and being too tired and white women self conscious and too tired as influencing factors on their physical activity levels (Heesch et al., 2000).

Findings from a study by Gordon-Larsen et al. (2003) also suggested that activity and inactivity patterns vary by race or ethnicity, with minority groups engaging in less physical activity and more inactivity than their indigenous counterparts. Their study was conducted on a population of people from different ethnic background including white and black Hispanic, and Asian. However, differences among racial/ethnic groups are often confounded by type of physical activity measured. White women are more likely to engage in recreational activities whereas BRM women do more occupational or household physical activity (Sternfeld et al., 1999).

A study by Young et al. (1998) revealed that black women can be classified as physically active when work-related physical activity and walking for transportation is assessed as physical activity. In contrast, Wilbur et al., (1998) reported no differences between black women and white women in either their household or leisure time activity patterns.

A number of studies have suggested a positive association between education level and physical activity behavior in black (Macera et al. 1995; Ainsworth et al., 1991) white (King et al., 2000; Anderssen et al., 1996), Hispanic (King et al., 2000) and

American Indian women (King et al., 2000) as well as studies on women from multiple ethnicities (He and Baker, 2005; Brownson et al., 2000; Duelberg, 1992).

2.11.1. Acculturation

It is evident that the health status change process differs due to acculturation among ethnic groups (Castro, 2007). Acculturation has been defined as the process of adopting the dominant or mainstream culture, specifically language, norms, values, beliefs, and behaviours that are influenced by interaction with the environment and media (Abraido et al., 2006). This process includes a continuous, direct contact with the host culture functioning at both group and individual levels and access to certain services and products including health care (Castro, 2007). Recent studies have examined the relationship between acculturation and the healthy lifestyle components of diet and physical activity (Ayala et al., 2008; Pérez-Escamilla and Putnik, 2007). While there is a lack of robust evidence, due to the use of different assessments of acculturation and healthy lifestyle habits, the negative association between acculturation and the consumption of fruit and vegetable and the positive association between acculturation and physical activity is evident.

Acculturation and adapting to a different lifestyle influence individuals' behavior (Perez-Escamilla and Putnik, 2007). The process of acculturation, for instance, the length of residence in a new environment influences health-related behaviours, such as dietary patterns and physical activity of migrants (Perez-Escamilla and Putnik, 2007). Migrants' past and present contact with the socio-cultural norms of their home country could minimise the impact of the new environment and affect the behaviours which are related to these norms, such as dietary patterns, alcohol consumption or tobacco use (Parkin and Khlat, 1996). Acculturation could also relate to the use of illicit drugs and alcohol and tobacco, patterns of unhealthy dietary practices, and obesity among those who are more acculturated compared with those who are less acculturated (Gordon-Larsen et al., 2003; Crespo et al., 2001).

2.11.2. Theories of acculturation

Literature suggests that the theories of acculturation are not current with the research on acculturation and public health (Abraido et al., 2006). One of the early acculturation theories was proposed by one of the sociologists from the human ecological school of thought (Park, 1928). This theory suggested that as the process of acculturation occurs the original culture is lost. Multi-dimensional theories indicate classification of acculturation based on the cultural awareness and ethnic adherence (Padilla, 1994). Clark and Hofsess (1998) and LaFromboise et al. (1993) proposed that immigrants choose certain behavior from the host culture that could lead to enhanced social and economical status, while maintaining certain beliefs and values from their original culture. However, more modern theories refer to remaining relations between the original and the new culture that includes biculturalism (strong obedience to both the original and the host culture) (Berry, 2003).

Acculturation can be measured on different scales which is a controversial issue in public health literature. Nativity, generational status, length of stay in the host country and the language spoken are the most common proxy measures of acculturation among the immigrants or people from ethnic minority groups (Abraído-Lanza et al., 2006). Although these indexes of acculturation are useful in establishing the ground for acculturation and for explaining the diversity of the ethnic minority groups but they do not include all aspects of acculturation such as food, music preference, the extent of direct contact and social ties with friends and people from the same ethnic background, parents and relatives and the degree of loyalty to the mainstream culture (Abraído-Lanza et al., 2006).

Behavioural changes associated with acculturation have been well documented Padilla and Perez (2003) but the factors that influence the different ways in which people acculturate varies. A number of elements influence the process of acculturation. These include the family structure and function, practicing certain religious beliefs, gender, relationships between the majority and minority groups, personality characteristics, and the age of individual on their arrival to the host country (Bhugra, 2004).

2.11.3. Acculturation and physical activity

The literature lacks a clear relation between acculturation and physical activity prevalence among the ethnic minority population. However Sternfeld et al. (2000) proposed that in measuring physical activity behaviour, the cultural background of individuals should be taken into consideration as an important factor.

A number of studies have identified the relationship between acculturation and physical activity (Slattery et al., 2006; Evenson et al., 2003; Voorhees and RohmYoung, 2003; Wilbur et al., 2003; Crespo et al., 2001). More recently Jurkowski et al. (2010) studied selected cultural factors associated with physical activity among Latino women. They proposed that Latinas with a greater acculturation level to the mainstream culture engaged in more physical activity than those who were less acculturated. However this study indicated that religious attendance was positively related with participating in more physical activity, although below the recommended guidelines. Jurkowski et al. (2010) suggested that religious organisations could accommodate and promote physical activity in Latino women. People from the BRM populations tend to live in the same area and would therefore be less in direct contact with the mainstream culture. Community centres and religious organisations can bridge the gap between the BRM culture and the new culture and contribute to the process of acculturation (Jurkowski et al., 2010).

2.12. Promoting physical activity

One way to reduce health disparities is to increase physical activity participation among minority populations (Lee, 2005). Physical activity is listed as a leading health indicator in the Healthy People 2010 national health objectives (US DoH, 2000). Targets to improve physical activity levels among adults, adolescents, and children have been set. High prevalence of sedentariness has been reported in industrialised countries with a large percentage of the population not participating in regular exercise (Titze et al., 2001). There is evidence that to decrease the sedentary behaviour among the general adult population a behaviourally-based lifestyle intervention approach is more effective than a structured exercise program in improving physical activity. This is because a behaviourally-based lifestyle intervention helps the participants to develop behavioural skills to increase their physical activity levels by incorporating moderate-intensity physical activity into their

daily lives (Sevick et al., 2000). By implementing effective interventions in increasing physical activity levels, policy makers, stakeholders and public health providers can assist communities to reach these targets as well as using community resources efficiently. A comprehensive model that targets specific subpopulations and uses a variety of delivery methods should be employed to promote physical activity to the public health (DoH, 2004). Literature lacks evidence on physical activity interventions that are designed on evidence based and can demonstrate long-term effectiveness (NICE, 2009). NICE also suggested that the gaps in the evidence base should be bridged through further inclusive research studies. In the light of this fact it is important to continue to develop more effective approaches to physical activity promotion. It is evident that controlling sedentary processes could represent further strategy in the promotion of physical activity (Rhodes and Blanchard, 2006; Salmon et al., 2003). Rhodes et al. (2008) studied indications to sedentary behaviour as processes of physical activity action control among adults. They suggested that sedentary processes are negatively related to physical activity.

However literature indicates the effectiveness of behavioural lifestyle interventions in helping adults to become more active (Wilcox et al., 2008). The components of these effective interventions have been identified to help participants to adopt cognitive and behavioural skills including goal-setting, self-monitoring, accepting social support, cognitive restructuring, decisional balance, and relapse prevention (Shilts et al., 2004). These interventions take a unique approach by meeting participants' needs, integrate with their daily lives, their attitudes, and their stage of readiness to change behaviour (Marcus et al., 2007). The rest of this chapter will review the literature on selected physical activity promotion projects. These projects will have aimed to promote physical activity, in BRM groups, women, families or people from those of low socio-economic status.

2.12.1. Physical activity interventions in BRM populations

Increasing participation and involvement in regular physical activity is a long term process requiring inclusive approaches involving both providers and consumers. Studies on the effectiveness of physical activity promotion interventions which have targeted populations from the BRM women or people from low socio-economic status are under researched (Yancey et al., 2004; Taylor et al., 1998). One explanation could

be because most interventions that target general populations usually do not report separately on BRM or low-income populations or do not have enough people in their research to carry out subgroup analyses (Yancey et al., 2004).

However there are a small number of studies which have specifically targeted BRM and low-income populations for physical activity promotion interventions indicating mixed findings and weak results (Yancey et al., 2004; Taylor et al., 1998). Despite the methodological problems for conducting research (e.g. recruiting participants) in physical activity interventions in BRM and low socio-economic status population; more recent and well-designed studies show positive results for interventions targeted to specific populations of racially and/or ethnically diverse and low socio-economical status individuals (Fahrenwald et al., 2004). The majority of studies on BRM population have reflected on the problems to recruit and maintain racially and/or ethnically diverse populations, rather than focusing on how to achieve and sustain participation in regular physical activity (Yancey et al., 2003). Studies which have broadly targeted or included BRM population have placed more emphasis on the process of intervening and on collecting data on the BRM groups who are not included in other studies (Yancey et al., 2003). These processes include involving communities and building capacity; targeting the existent audiences; engaging individuals or organisations from within the different communities to represent the community, promoting social networks; and cultural designing of messages and messengers (Yancey et al., 2003). Earlier studies also suggested that hard to reach population are difficult to locate. Furthermore, the researcher needs to have some previous knowledge about the population underrepresented in order to identify initial respondents. Such previous knowledge is not easily available to researchers and it could be very time consuming to acquire (Fahrenwald et al., 2004).

Lifestyle change programmes focus greatly on individual behaviour change and overlook other factors such as environmental factors (Stokols, 1996). Sallis and Owen (1999) suggested applying the socio-ecological model to develop practical guidelines for designing, implementing and evaluating community health promotion interventions as the model goes beyond behavioural or environmental change by addressing individuals, groups and their social and physical environment.

The socio-ecological model encompasses 3 main elements in evaluating health promotion which are; behavioural change and lifestyle modification, environmental enhancement and restructuring; and social ecological analysis of health promotion (Stokols, 1996). Health promotion interventions based on the socio-ecological model place great importance on the role of individuals, groups and organisations as active instruments in developing health practices and policies to enhance both individual and the communities well being (Green and Kreuter, 1991).

Hillsdon et al. (2005) conducted a review of reviews on studies from (1996- 2001) which was a synthesis of high quality systematic reviews and meta analysis to increase physical activity among adults. Out of 70 studies 10 papers met the inclusion criteria. The main reason for excluding studies was that they were not systematic reviews. They reviewed studies on public health and primary care interventions to increase physical activity in adult populations. Five systematic reviews were conducted on the effectiveness of interventions in health care settings, which in summary suggested that GP referrals based in primary care settings are likely to promote a short-term (6-12) weeks effect on PA, whereas Exercise referrals based in the community had a longer effect of (+8 months). Two systematic reviews examined the effectiveness of interventions in community settings (Dunn et al., 1998; Hillsdon and Thorogood, 1996). Reviews suggested that community-based physical activity interventions targeting individuals could have a short-term or middle to long-term effect on physical activity behaviour. These reviews also suggested that theory-based interventions which focus on behavioural skills and are tailor made to individuals' needs have a longer effect on physical activity behaviour. Interventions that provide regular contact with an exercise specialist are more likely to have long-term and sustained changes in physical activity behaviour (Hillsdon et al., 2004).

These reviews however were limited in studies which were carried out in the US and only included interventions which were found from systematic reviews that met the inclusion criteria. These reviews also lacked review level evidence on the effectiveness of physical activity interventions in disadvantaged population including ethnic minority groups, people from low-income households and from lower social classes. The reviews also did not include reviews of interventions at the community,

policy or environmental level and only focused on individual level interventions (Biddle and Mutrie, 2008).

Van den Berg et al., (2007) reviewed 3 types of physical activity intervention studies; home-based physical activity interventions (n=9), group-based physical activity interventions (n=38) and educational physical activity interventions (n=10). They found that all 3 types of intervention resulted in change in physical activity behaviour even though the changes were not significant and sustainable. Most studies that have examined the effectiveness of interventions included white adults (Van den Berg et al., 2007), and children (Lubans et al., 2008) and were internet based (Van den Berg et al., 2007), or were health care based (US Department of Health and Human Services, 2004), or school based (Harris et al., 2009) or family based (Khan et al., 2002). The literature lacks evidence on multi-component community-based interventions on ethnic minority or disadvantaged population and the interventions that target families.

Multi-components, large scale, community based interventions have been identified to be effective in increasing physical activity (Kahn et al., 2002). Most community based interventions have addressed a range of risk factors, not only physical activity. They have emphasised on communication and educational aspects and included a wide range of clients. These interventions however took place in the US or Europe including both rural and urban areas and all socio-economic groups.

Health promotion interventions in general have under-represented hard to reach populations including low income, BRM or people with disabilities and these groups are more likely to be less active or inactive compared to other population groups (Biddle and Mutrie, 2008; Taylor et al., 1998).

2.13. Evaluation of health promotion interventions

Although literature has seen two decades of research that have demonstrated the effectiveness for certain health promotion intervention strategies, there is little evidence suggesting that these strategies are being translated into regular practice (Estabrooks et al., 2008). The health promotion programs are progressing, but research methods designed to evaluate the public health significance of interventions are still in their infancy stage (Glasgow et al., 2004). Evaluation has been defined as “the systematic examination and assessment of features of an initiative and its effects, in order to produce information that can be used by those who have an interest in its improvement or effectiveness.” (WHO, 1996).

CDC (1999) published the framework for programme evaluation in public health proposing a strategy to evaluate the health promotion interventions. The strategy was based on six steps including: a) engaging the stakeholders, b) describing or planning the Program, c) focusing the evaluation, d) gathering credible evidence, e) justifying conclusions, f) ensuring use and share lessons learned. Moreover, they proposed the application of the logic model for planning and evaluation the physical activity interventions simultaneously. A logic model was defined as an iterative tool, which provides a framework to revisit throughout program planning, implementation, and evaluation. CDC (2002) suggested that the logic model can be used as an evaluation tool to measure implementation and maintenance of an intervention.

The logic model was developed to measure 1) Process evaluation which assess the implementation of the programme and 2) Outcome evaluation (sometimes called impact or summative evaluation) measuring the effects of the program on the short-term, intermediate, or long-term outcomes. Martin and Heat (2006) applied the six-steps programme evaluation to evaluate a community based Diabetes Prevention Programme. The six-steps guide provided more insight of the Diabetes Prevention Programme and set examples for evaluating physical activity programs. Their study found evidence-based strategies for promoting physical activity in a community setting, and how the diabetes programs across the nation could implement the strategies. Dwyer et al. (2003) applied the logic model to inform the stakeholders about effective physical activity interventions for children. Their consultation provided key stakeholders with the opportunity to design a comprehensive approach

to promoting physical activity at all levels and through multiple channels in the community.

Although the evaluation method applied in these studies contributed to useful results but there was a need for a more robust and comprehensive method of programme evaluation. Glasgow et al. (2004) put forward that intervention evaluation methods have mainly relied on the efficacy-based research concept which is limiting as it fails to measure other aspects of an intervention such as the implementation of the program. It has been recognised that rigorous research methods should be utilised to evaluate health promotion interventions. Using just quantitative or qualitative methodology may not be adequate to evaluate multi-components interventions (Glasgow et al., 1999). Effectiveness of physical activity interventions has been measured based on interventions that provided information, interventions that used behavioural skills and social support and interventions that focus on environmental or policy changes (Biddle and Mutrie, 2008). The effectiveness of health promotion interventions has been measured using quantitative methods such as questionnaires and surveys (Kahn et al., 2002). There are issues regarding the robustness translatability and public health impact of the interventions compared to the reporting of the effectiveness of the interventions. Therefore, a more in depth approach is required to better understand how these interventions work and how they have been implemented. Qualitative methods including semi-structured individual interviews and focus groups should be utilised to better understand the underlying mechanism of how the interventions work and why they are effective. The influence of large-scale interventions to increase physical activity behaviour is not specifically evident. However there are some evidence of change in people's awareness and knowledge (Biddle and Mutrie, 2008).

Estabrooks and Gyurcsik (2003) concluded that the type of research that has been employed to evaluate physical activity interventions counts for the lack of translational and impact information on intervention evaluation. It was identified by an earlier study (Flay, 1986) that different types of research or methodologies are required to determine the efficacy, effectiveness, and dissemination potential for health promotion interventions. Glasgow et al. (2004) reported that the physical activity interventions that have used efficacy trials do not report on issues related to

generalisability and the potential for intervention translation into regular practice. Furthermore, Glasgow et al. (2004) proposed that evaluations of community based physical activity interventions should be included in the literature to ensure programme sustainability.

On most interventions there is information available on the effect of the interventions but there is no widely-available systematic framework to evaluate potential for translation and public health impact.

Glasgow et al. (1999) designed an evaluation framework to develop assessment of intervention further than their efficacy to multiple criteria which could identify the robustness and public health promotion interventions. They proposed a model containing the five following dimensions that best evaluate the impact of interventions on public:

Reach — the absolute number, proportion, and representativeness of individuals who are willing to participate in a given initiative, intervention, or program.

Efficacy/Effectiveness — the impact of an intervention on important outcomes, including potential negative effects, quality of life, and economic outcomes.

Adoption — the absolute number, proportion, and representativeness of settings and intervention agents (people who deliver the program) who are willing to initiate a program.

Implementation —implementation refers to the intervention agents' fidelity to the various elements of an intervention's protocol, including consistency of delivery as intended and the time and cost of the intervention.

Maintenance — the extent to which a program or policy becomes institutionalised or part of the routine organisational practices and policies. Within the RE-AIM framework, maintenance also applies at the individual level. At the individual level, maintenance has been defined as the long-term effects of a program on outcomes after 6 or more months after the most recent intervention contact (www.re-aim.org).

The application of the RE-AIM framework to evaluate physical activity programme has been supported by a number of studies. Bopp et al. (2007) used the RE-AIM framework to evaluate the effectiveness of physical activity intervention in churches. They reported that the RE-AIM framework served as a model for a comprehensive

evaluation of the health effects of community programs to promote health. The RE-AIM framework guided an evaluation in a study by Eakin et al. (2004) in promoting physical activity in primary care setting. Their results provided evidence to enable the primary care settings to bridge the gap between the research and practice by suggesting that evidence-based primary care physical activity counseling protocols can be translated into routine practice. Dzewaltowski et al. (2004) applied the RE-AIM framework to community based behavior change interventions to identify whether the results were generalisable. Their findings suggested that to translate community research findings to practice, a greater emphasis should be placed on the importance of external validity information such as representativeness. A number of studies have used the RE-Aim framework to evaluate physical activity interventions. Bopp et al. (2007) applied the RE-Aim framework to their evaluation for physical activity interventions in churches. Buis et al. (2009) used the RE-AIM framework in their study of an Internet-mediated physical activity program. Their evaluation indicated the effectiveness of the internet-mediated physical activity interventions. Glasgow et al. (2006) evaluated a computer-assisted diabetes self-management intervention based on the RE-AIM framework. This intervention evaluation produced robust results across various patient and delivery characteristics. The interventions that used the RE-AIM framework produced results on the percentage reach of the participants, the effectiveness of the evaluation, the percentage adoption, the implementation and percentage maintenance of the interventions.

This research study adopted the RE-AIM Framework (Reach, Effectiveness, Adoption, Implementation, Maintenance) to evaluate a multi-component community based intervention. The framework examined impact at the individual level and was compatible with the socio-ecological model (Glasgow et al., 1999).

2.14. Definition of community

In this thesis community refers to a social unit that usually includes a geographic region in which inhabitants live and interact socially. In this case the inhabitants may share common background, values, religion, ethnicity, culture and norms (DoH, 2010).

2.15. Research methodology

2.15.1. Quantitative approach

Quantitative research approaches are intended to ensure objectivity, generalisability and reliability (Weinreich, 1996). In quantitative methodology participants are usually selected randomly from the study population. Quantitative techniques usually use validated questionnaires and statistical methods to test predetermined hypotheses conducting this type of research is considered external to the actual research, and results are expected to be replicable no matter who conducts the research (Weinreich, 1996). Quantitative data encompasses closed-ended information. This information could be collected on attitude, behaviour or performance instruments, using checklists, census records and questionnaires (Creswell and Clark, 2007).

One of the advantages of the quantitative approaches is that it produces quantifiable and reliable data that are usually generalisable to some larger population. One limitation of the quantitative approach is however the fact that it de-contextualises human behaviour in a way that removes the event from its real world setting and does not consider the effects of variables that have not been included in the research (Weinreich, 1996).

2.15.2. Qualitative approach

Qualitative methodology in the field of sport and exercise psychology is becoming well established (Patton, 2000; Dale, 1996). There are diverse approaches to qualitative inquiry such as case studies (Patton, 2000) and ethnographic design Faulkner and Sparkes, (1999) but Cote et al. (1993) suggested that the most common approach within the domain of sport and exercise psychology is that of semi-structured interview followed by content analysis. This approach is supported by a number of researchers for conducting qualitative research in sport and exercise psychology (Bloom et al., 1998; Meyer and Wenger, 1998).

Qualitative data foregrounds open-ended information obtained through interviewing participants individually or through focus groups by observing participants, gathering information forms, diaries or minutes of meeting or from audiovisual materials such as videotapes. These methods help researchers understand the meanings people give to social events and to explain the mental processes underlying behaviours

(Weinreich, 1996). The format of open ended questions in qualitative approaches encourages the participants to express their views and perceptions in their own words (Creswell and Clark, 2007). Qualitative research methodologies provide the researcher with the perception of target population members through engagement in a culture or situation and direct interaction with the individuals under research (Weinreich, 1996). In qualitative approach hypotheses are produced during data collection and analysis, and measurement is often subjective. In the qualitative methodology, the researcher is engaged in the research to a large extent and becomes the instrument of data collection, and results are not replicable and may vary significantly depending on who conducts the research (Weinreich, 1996).

The strength of qualitative methods is that they produce rich, detailed data that gives integral perception of the participants and provide a context for health behaviour. One of the limitations of qualitative approach is that data collection and analysis is usually very time-consuming and labour intensive (Weinreich, 1996).

2.16. Mixed methods

Employing mixed methods research in nursing and health science has been recommended due to the complexity of the phenomena studied (O'stlund et al., 2010). Combining both quantitative and qualitative approaches or mixed methods can provide more insight to research problems in comparison to using just a single quantitative or qualitative approach. Creswell and Clark, (2007) argued that mixed methods produces greater accuracy and better research credibility by using an additional form of measurement that could verify or contradict the results. On the other hand mixed methods approaches can also have limitations especially where findings are not the same. Mixed methods also known as triangulation which is broadly defined by Denzin and Lincoln (2000) as "the combination of methods in the study of the same phenomenon." However, the integration of qualitative and quantitative approaches continues to be one of much debate and there is a need for an accurate framework for designing and interpreting mixed methods research (O'stlund et al., 2010). Mixed methods can employ different analytical approaches (i.e. parallel, concurrent or sequential) and use triangulation as a methodological metaphor for drawing conclusion from qualitative and quantitative findings originating from such analyses. (O'stlund et al., 2010).

In mixed methods approach the strengths and perspectives of each method is considered. This approach recognises the existence and importance of the physical, natural world as well as the significance of reality and influence of human experience (Johnson and Onuegbuzie, 2004). Furthermore, in supporting mixed methods approach Bryman, (2007) pointed out that by combining qualitative and quantitative findings, an overall explanation of the findings can be produced. Mixed methods can also help to highlight the similarities and differences between particular aspects of a phenomenon (Bernardi et al., 2007). This thesis employed a mixed method approach by combining quantitative and qualitative methodologies. A sequential data analysis, in which data are analysed in a particular sequence with the purpose of informing, rather than being integrated with, the use of, or findings from, the other method was utilised to discuss the findings and draw conclusions (Onwuegbuzie and Teddlie, 2003).

The use of triangulation as a methodological metaphor has been recognised in social and health research methods (O'stlund et al., 2010). Triangulation can facilitate the combination of qualitative and quantitative findings, help researchers to clarify their theoretical propositions and the basis of their results. Triangulation can offer a better understanding of the links between theory and empirical findings, challenge theoretical assumptions and develop new theory (O'stlund et al., 2010).

Evaluation of the health promotion programs could include a broad range of methods, including quantitative methods such as surveys and questionnaires combined with qualitative methods including semi-structured individual interviews, ethnography and focus groups (Denzin and Lincoln, 2000). Quantitative research method offers precise measurement and analysis and therefore has been identified as effective approach to scientific research (Creswell, 2009). Health promotion programs such as physical activity interventions however are a multifaceted process which requires more in-depth understanding of their elements such as individuals' behaviour (Creswell, 2009). Qualitative research methods offer detailed data capturing aspects like behavioural science, sociology and psychology by allowing spontaneity and adaptation of the interaction between the researcher and the study participant (Denzil and Lincoln, 2000).

2.17. Research design

A mixed methods approach was employed to conduct the present research study by using a process of combining quantitative and qualitative approaches (Tashakkori and Teddlie, 2003). It was decided to use a mixed method approach for this research study, based on the target population and the strategies which were required to address the gap in “hard to reach population”.

In study 1, quantitative and qualitative methods are mixed and the priority is given to the quantitative method. The qualitative method in study 1 complemented the findings from the quantitative method. This means that the data from the quantitative method informed the qualitative method and a sequential data analysis was employed to draw conclusions of the findings from both methods. Study 1 also utilised triangulation by conducting quantitative (survey) approach to obtain data and qualitative approach (focus groups) as a complementary approach. The combination of two methods resulted in triangulating convergent outcomes.

Face to face interview survey was employed for study 1. This type of personal interviews are known as structured interviews when they include a combination of standardised questions mostly demographic questions in a closed format and open ended questions where the respondents' answers were written in verbatim on the questionnaire (Bowling, 2002).

Kvale and Brinkmann (2009) state that focus groups are not about finding solutions to issues or reach agreement but they aim to generate different views on an issue. Focus groups have been identified as organised group discussion based on a singular theme or set of themes (Bloor et al., 2001). Focus group is a qualitative research methodology that is employed to collect rich and original data (Lytle-Trenkner and Achterberg, 1991). Focus groups are also frequently used in the fields of health and education (Murphy et al., 1992; Porcellato et al., 2002). Engaging in a focus group methodology complemented the findings from the survey as it enabled the researcher to further explore the survey findings and emerging themes with a range of BRM women.

Using focus group methodology for collecting data rather than other approaches such as: individual or group interviews has been supported in the literature as the group interaction to generate data during focus groups is the main distinguishing element to individual or/ and group interviews (Bloor et al., 2001). Employing focus groups provides the opportunity for each member of the group to contribute responses to the same question (Kitzinger and Barbour, 1999). "Focus group presents a more natural environment than that of the individual interview because participants are influencing and influenced by others just as they are in real life." (Kreuger and Casey, 2000:11). However such approaches could limit the conversational feature of the focus groups, which is the primary element of the procedure (Fern, 2001). Even though the researcher has to ask initial questions to encourage responses from the participants, the aim of the present study was to explore how BRM individuals' perceptions and determinants of physical activity in the context of socio-ecological model were constructed and expressed on a number of pre-defined themes emerged from the survey results. Porcellato et al., (2002; p 311) pointed out that the focus groups were developed to "...elicit perceptions, feelings, attitudes and experiences through interaction from the participants in a permissive, non-threatening manner."

The focus groups in the present study aimed to explore a range of BRM individual's perceptions and attitudes about physical activity and perceived and/or actual barriers to participation and their views on how to best promote participation among this population. The background knowledge built up from the survey results subsequently developed the design and management of the focus groups in part II of study 1. In this study, the large survey acted as a critical means in the production of background knowledge for the focus groups and subsequently for the interview questions in study 2. The survey enabled a mapping of the participants' views to specific physical activity determinants. Moreover I became more aware of the contextual and culturally specific language that was used by participants from various origins and backgrounds. Such experience and knowledge assisted in creating and understanding the emerged categories and the coding system during focus group in study 1 and individual interview procedures in study 2 (Bloor et al., 2001). The focus groups were therefore designed based on pre-defined themes that were specifically informed by the survey results. The themes were open and flexible and allowed for intensive researcher exploration (Murphy et al., 1992). The open and flexible design

contributed to identifying how information and opinions expand within a cultural context (Porcellato et al., 2002). Trenker and Achterberg (1991) concluded that the outcomes of the focus group are less controlled by the moderator who facilitates the focus groups.

Study 1 adopted a mixed methods approach to achieve the research aim and its associated objectives and employed a unique methodology by engaging community research workers and volunteers in the process of designing questionnaires and data collection. This research also looked at an under-researched population in England, Liverpool. Therefore, it is believed that the present thesis is unique and novel in nature and one that would contribute in developing methodologies for undertaking research among BRM population as an underserved population and community based interventions.

Study 2 used a single method approach. A qualitative method was employed for study 2. However study 2 was informed by the sequential conclusions of study 1 and was therefore linked to the findings from both the quantitative and the qualitative methods used in study 1. The logical relationship between the quantitative and the qualitative methods in study 1 facilitated the qualitative method used in study 2 as it helped to improve understanding of the findings and potentially generate new findings.

Study 3 used a similar approach to study 1 in terms of the design of the methodology. Quantitative methods were used as a development of a qualitative approach. However, the conclusions for study 3 were drawn from integrating the quantitative and qualitative methods together and the priority was given to the expected outcome rather than a single approach. Both the quantitative and the qualitative data demonstrated a triangulating convergent results.

2.18. Ethical consideration

It is argued that in qualitative research, the researcher has an ethical responsibility to the individuals who agreed to participate in the study (Silverman, 2000). This is because the qualitative researcher would need to have a degree of intimate engagement with a range of individuals to conduct interviews and focus groups (Silverman, 2000). As such the researcher is required to consider the relevant ethical

issues. In the context of the present research ethical approval was obtained from Liverpool John Moores University's ethics committee for conducting both quantitative (survey) and qualitative (interview, focus group) studies and for the researcher to meet with individuals on a one to one basis or in groups when required. At the beginning of each interview the researcher informed the participants of the aims of the interview and verbal and for families and their children written consent was obtained. Also in designing the survey questions, and conducting interviews and focus groups the researcher was clearly aware of not influencing the research environment by taking any specific view on the different aspects of the survey or by giving the participants too much information about the concept of the research (Silverman, 2008).

2.19. Summary

It has been documented that levels of physical activity are low in BRM populations and there is also health inequality resulted from social and economical status. Although the number of studies indicating high prevalence of physical inactivity among minority population is increasing (Young and Voorhees 2003; Wilbur et al. 2003a; Wilbur et al. 2003b; Amesty 2003), research on UK BRM groups is limited. Moreover key factors that determine inactivity in ethnic groups are under researched. Therefore the determinants of physical activity and sedentary behaviour as well as effective means of physical activity promotion need to be investigated in ethnic populations. Race or ethnicity shape a range of social contextual factors that could be related to health behaviors, from cultural norms and patterns of interactions with family and the broader community, to potential exposure to discrimination (Marmot, 2010). There is a gap in literature on BRM physical activity determinants and interventions to promote physical activity among this population. Multiple factors influence individuals health behaviour and therefore a holistic approach should be taken to identify the underlying factors. A number of models which have attempted to determine different individual and social elements influencing the health behaviour were reviewed. Socio-ecological models propose that environments are composed of physical aspects (ecological) and people (social). The environment can affect health through behaviour. These models do not include cognitive variables. Possible indications to prompt behaviours are availability. The models have been used to include personal and physical and social environmental factors (Sallis et al., 1999).

There is a need for empirical research to investigate the BRM physical activity determinants and design a tailor made intervention to increase their participation in physical activity.

2.20. Thesis study map

At the beginning of each chapter I will include an outline of the study to help the reader locate aims and objectives, track the key research findings, and demonstrate where each study fits in to the overall thesis.

Studies	Aims
Study 1 Kensington women get lively	Aim 1: To develop a process to enable a research investigation to take place among BRM populations (hard to reach group). Aim 2: To identify physical activity levels and its determinants among BRM women living in deprived areas using a socio-ecological framework.
Study 2: Qualitative approach exploring the key <u>barriers to participation</u> in physical activity among the BRM families to identify the influence of family dynamic in relation to physical activity in more depth.	
Study 3: Mixed methodology (survey+ Socio-ecological model & RE-AIM framework) utilised to evaluate a community based <u>multi component intervention</u> designed to target the low income BRM and disadvantaged people in derived areas.	

Chapter three:

Study 1-

**Kensington Women Get
Lively**

3. Introduction

3.1. Rationale for the research

Liverpool ranks as one of the most deprived local authorities in England with wards such as Kensington ranking amongst the most deprived and disadvantaged areas in the UK (Liverpool City Council, 2006). Socio-demographic data for the Kensington and Fairfield ward revealed that of the 14,400 inhabitants just over half are female and 13.3% are from BRM groups, which is 5% greater than the BRM population in Liverpool as a whole. Kensington and Fairfield ward is the fifth most deprived ward in Liverpool, where 8.7% of houses are unoccupied, 36% of the population are unemployed and 20% are on incapacity benefit and only one fifth of the population are educated to degree level. The standard all cause mortality rate (SMR) is 152.3, which is 10 points higher than the average (Liverpool City Council, 2007).

Liverpool data trends demonstrate an increasing immigrant population from 8.3% in 2001 to 10.7% in 2008 (National Statistics, 2008). Over the last few years there has been a significant increase in the BRM population in Kensington Ward due to recruitment of migrant workers e.g. overseas students by the Liverpool Universities; recruitment of overseas nurses/doctors by the National Health Service and relocation of refugee and asylum seekers (Census, 2001). Thus, if the BRM population in Liverpool is increasing and these populations engage in less physical activity than their indigenous counterparts, then it is possible that physical activity levels could decrease and inequalities in physical activity uptake and opportunities may widen.

3.2. Physical activity trends in the City and North-Liverpool

At the turn of the last century 70% of males and females in Liverpool were not active enough to benefit their health (HSE, 2008). Further, physical activity inequalities exist across the 5 Liverpool neighbourhoods (APS, 2007). The North Liverpool neighbourhood had the highest number of people (85.8%) who were not active for 30 minutes 3 times per week including recreational walking and cycling. Moreover, the prevalence of obesity was highest in North Liverpool with 22.4% obese or morbidly obese. However these data were not specific to BRM populations or the Kensington ward which is situated in the City and North Neighbourhood. There are high numbers of BRM groups residing in Kensington. Part of the reasons for the physical activity inequality in City and North maybe due to the large BRM population as physical

activity levels in these groups are consistently lower than the indigenous population and are even lower in women of Asian origin (HSE, 2008).

The Liverpool Active City strategy used national and regional physical activity participation targets to set physical activity targets between 2005 and 2010 using the following guidance publications: (DH, 2004; Game Plan, 2002; North West on the Move, 2004). These targets were as follows:

- By 2010, achieve a 5% increase in people participating in moderate physical activity for 30 minutes or more at least 3 times a week.
- By 2010, achieve a 5% increase in people participating in vigorous physical activity for 30 minutes or more at least 5 times a week.

Although this strategy aimed to increase participation in physical activity across the whole city, several priority groups were identified by different sectors and agencies during the consultation process. BRM groups were amongst the priority groups for this strategy. In order to meet the targets a large number of physical activity programmes such as: Sport and Recreation Services of Liverpool City Council, GP referrals, Exercise for Health and Fit for Life schemes were offered. These programs have aimed at increasing physical activity levels, reducing social isolation, increasing independence and reducing the risks of falling in older people and improving the health of individuals (Liverpool Active city: 2005-2010 strategy). However there are lack of specific programs targeting individuals from BRM groups who live in deprived areas.

3.2.1. Funding and policy supporting research

The Commissioning Framework for Health and Wellbeing Agenda (DoH 2007), Merseyside Strategy for Sport and Physical Activity 2006-2010, and Liverpool Active City 2005:2010 Vision, all of which have objectives around increased physical activity in local populations. In support of research looking at increased participation in physical activity across black and minority ethnic populations the following local policy has been put in place.

3.2.2. Black and Racialc Minority populations' participation

There appears to be no specific policy around BRM work either nationally or locally. Most policies focus on general population or are specified to younger/older/disabled. Liverpool Active City (Liverpool City Council, 2005) has policies for general population with an aim to target ethnic groups by developing communication Information citywide and making sure that more people are aware of massages and opportunities. Physical activity in the North West of England (2005) however emphasises the cultural and sporting opportunities and has a target which aims by 2008, to increase the take-up of cultural and sporting opportunities by people aged 16 and above from priority groups. This will be achieved through increasing the number of people aged 16 or above from priority groups (physical or mental disability, ethnic minority or black, socio-economic groups who participate in sports, excluding walking, at least 12 times a year by 3% and, increasing the number of people aged 16 or above from priority groups who take part in at least 30 minutes of moderate intensity level sport, including walking, at least three times a week, by 3%. (Cavill, et al., 2005). The Healthy Weight: Healthy Liverpool Strategy (Liverpool PCT, 2008) also recognises BME groups as a key risk group that need to be targeted for health improvement.

3.3. Theoretical basis

Although beliefs, attitudes, values, and other individual characteristics have been identified as influential factors, much less is known about potentially modifiable social and environmental characteristics and how these might be influenced to enhance behaviour change. The socio-ecological model outlined in the literature review will provide the theoretical basis and will inform this study. Essentially social and physical aspects of the environment can affect physical activity. Furthermore inequalities exist in both physical and social aspects of the environment and research is required to locate the correlates of physical activity inequalities within the socio-ecological framework (Marmot, 2010; APS, 2009).

Given the fact that people from disadvantaged and ethnic minority groups experience more health disparities due to social-cultural factors and conditions, it is important to investigate and understand this issue from a socio-ecological perspective. This is because socio-ecological models recognise the interwoven relationship that exists

between the individual and their environment. Although individuals are responsible for adopting and maintaining the lifestyle changes necessary to reduce risk and improve health, individual behaviour is determined to a large extent by social environment, e.g. community norms and values, regulations, and policies (Robinson, 2008). (food and veg)

The socio-ecological model (Sallis et al., 1999) provided the focus for this study on intrapersonal (motivation, internal perceptions, values), interpersonal (social relationships, norms, social support), and social and physical environmental (safe, affordable facilities, environmental influences) resources that exist/do not exist for minority populations. Broader investigation of such factors could provide a better foundation to understand the barriers and design a tailor-made physical activity program (King et al., 2002).

Socio-ecological model proposes that the barriers to healthy behaviours i.e. physical activity are shared among the community as a whole. Therefore if these barriers are lowered or removed, behaviour change is more likely to be achieved and maintained. Thus the most effective approach to promote healthy behaviours is a combination of the efforts at all levels; intrapersonal/individual, interpersonal, social and environmental factors (Sallis et al., 1997).

To influence physical activity behaviours among BRM population it is important to understand people from an individual and broader social ecological perspective. The way that an individual relates to his or her family, community, culture, and life stage are all part of the physical activity equation. With this approach a fuller understanding of the determinants of physical activity becomes the basis in setting policies, recommendations, and guidelines that better enable individuals and communities to engage in physical activity as part of a healthier lifestyle and helps to guide the design and evaluation of interventions.

Women from BRM backgrounds experience health inequality as they are categorised as disadvantaged groups who are socially excluded based on racial discrimination, economic deprivation and sexism (Karlsen and Nazroo, 2002). The Health Survey for England (2008) also reported that women in BRM groups are at risk for inactivity.

Individual's health status can be influenced by the environment, housing, education and employment (Sallis, 2000). BRM women are however significantly influenced by their families including husbands, fathers, brothers and members of their community and religious leaders who restrict them from participating in activities outside their home and socially exclude them (Karlsen and Nazroo, 2002). It is therefore necessary to consider these wider aspects of the local community provision for promoting health behaviour.

Physical activity is an issue of significant importance in the domain of public health and thus there is a need to identify physical activity determinants to promote health and tackle health inequality. BRM populations are the hard to reach groups and under researched (Yancey et al. 2004; Taylor et al. 1998). Thus there was a need to reach individuals from this population and engage the local communities in the research study. The process of engaging the local communities and people from different cultural organisations is included in the method section of this chapter.

The study is multidisciplinary and includes different approaches to writing and reporting data and findings. Therefore in explaining the methodology there are some narratives of my personal reflection throughout the process of setting up the steering groups. Therefore I will speak in the first person as being in the whole process from recruiting the advisory groups to attending meetings to discuss issues about designing and developing the survey questionnaire, recruiting participants, conducting the survey, translating the survey, data collection, data collation, analysing the data, feed back to the advisory groups, writing up the report and disseminating and presenting the findings.

3.4. Women Get Lively project

As part of the health promotion campaign to increase women's participation in physical activity (Ploszajski Lynch, 2007), a four-month pilot project was carried out by Kensington Regeneration in partnership with local women, Liverpool Active City, Liverpool John Moores University, Merseyside Network for Change and the Women's Health, Information and Support Centre (WHISC), plus other local organisations such as the Healing Space, Eastern Liverpool Economic Fund Community Trust (ELECT), Kensington Community Sports Centre, Liverpool Arabic

women's Community Group, Liverpool Yemeni Association, Association of African Nurses and Midwives. The partnership aim was to provide physical activity opportunities for women in Kensington.

3.5. Aims and objectives

The study had 2 major aims

3.5.1. Aim 1

To develop a process to enable a research investigation to take place among BRM populations (hard to reach group).

The Objectives of aim 1 were to:

- Establish a community research partnership
- Increase local community's participation in, and understanding of the research study in their environment
- Bridge the gap between the researcher(s) and the hard to reach population.
- Develop a process for the implementation of the research project

3.5. 2. Aim 2

To identify physical activity levels and its determinants in a population of BRM women in a deprived area in Liverpool.

Objectives were to:

- Identify the amount of physical activity that BRM women take part in
- Identify individual and environmental determinants of physical activity in BRM women and ways to overcome barriers to physical activity.

3.6. Study 1 part (I) method

3.6.1. Developing structures for research implementation

This research study adopted a model to engage representatives from local communities. A similar framework to community engagement has been reported by the Centre for Ethnicity and Health, University of Central Lancashire, which is based on actively challenging traditional research and consultation procedure in socially excluded communities (Fountain et al., 2007). The process consists of community representation, involvement, participation, empowerment and development in the research process. This model is particularly useful for health and social services studies. There is a view that communities or populations are not hard to reach, but there is a lack of access to them and to obtaining the desired data for the researchers (Fountain et al., 2007). This may be due to barriers such as language or experiencing discrimination that impede access to health and social services. Therefore it seemed appropriate for the present study to use a 2 phase approach. Phase 1 aimed to ask local communities to address local issues and facilitate research procedure and advice on the research process while phase 2 aimed at structuring a survey questionnaire to address the research question. This study aimed to engage members of the community to help recruit hard to reach BRM individuals and subsequently to build capacity by providing the appropriate resource and training for the community members. Individuals who agreed to take part in the research project were not necessarily community leaders or key figures, but represented diversity within a community and had access to members and could therefore bridge the gap between the researcher and the population under study.

3.6.2. Community engagement structure

The WHISC project manager and the Kensington Regeneration Coordinator acted as facilitators and managed the project by creating an environment where the community research workers and representatives from the other organisations worked together. The project was funded by the Kensington Regeneration. The two facilitators were responsible for advertising, recruiting and selecting the community organisations to participate in the study. They also managed the team of administrative staff supporting the community research workers. This study was hosted by Kensington Regeneration as the community organisation that had good links with the target communities which enabled them to recruit members. The host community

organisation was responsible for coordinating the research study as well as providing arrangements for the day-to-day activities such as places for meeting, access to telephones and computers and a financial system.

From the start and throughout the research study the partners provided support for the community members and organisations in terms of training, funding and also helped by forming a steering group as the community research workers and the organisations who participated in this research study had little or no prior experience.

3.6.3. Setting up the steering/advisory groups

The following diagram is the model which was developed for the two advisory groups called the Partners Advisory Group (**PAG**) and the Community Researchers Advisory Group (**CRAG**). The model demonstrates all the organisations which were involved in the conduct of the survey. Two organisations the (WHISC) and (KR) and LJMU representatives sat on both groups.

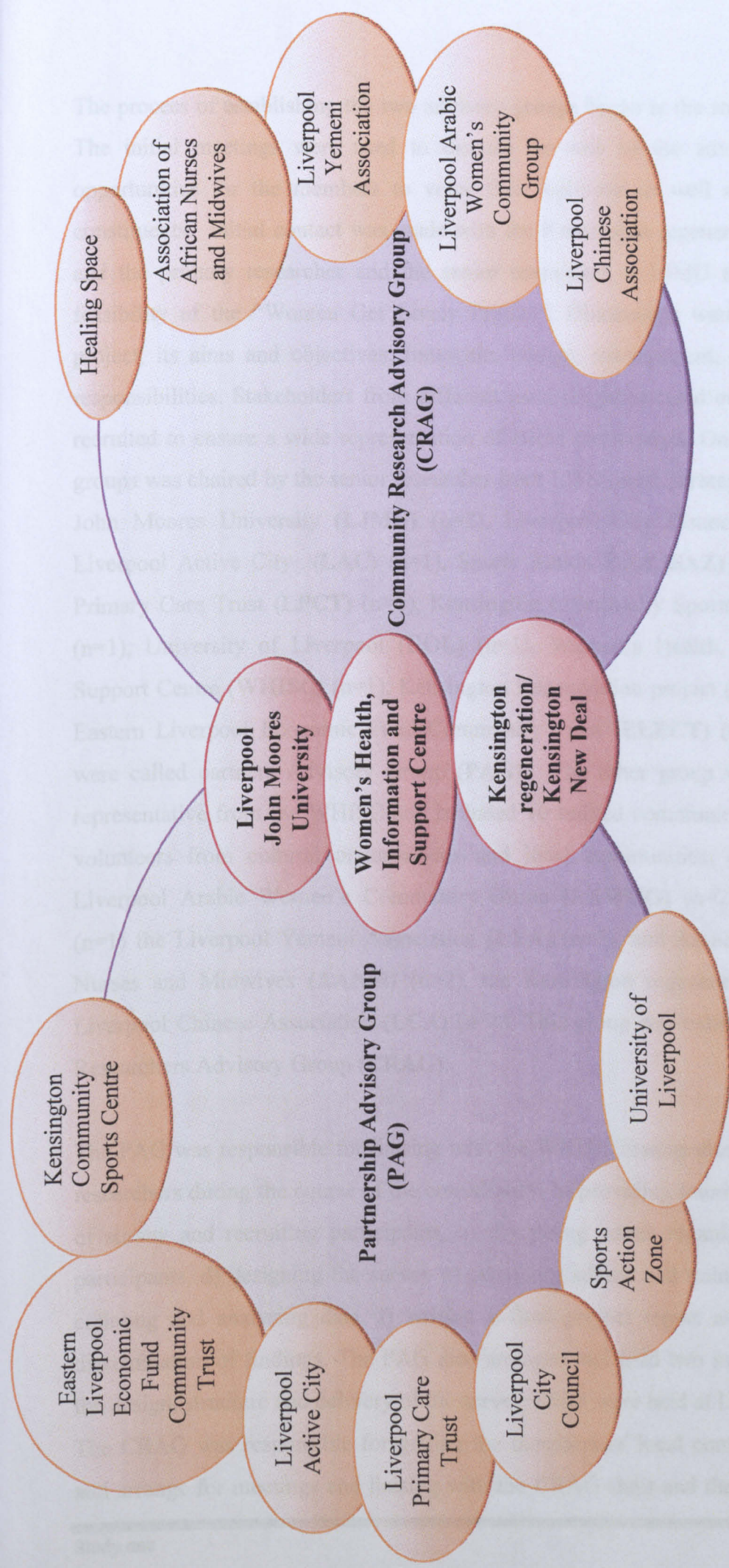


Figure 3.1. Partnership model developed for the Women Get Lively Project

The process of establishing the two advisory groups began at the start of the project. The initial meetings were used to discuss the role of the advisory group and opportunities for the members to voice their opinions as well as those of their constituents. Initial contact was made with the Kensington regeneration coordinator and the primary researcher and the senior researcher at LJMU to investigate the feasibility of the “Women Get Lively Project”. Discussions were held about the project, its aims and objectives, timescale, budget, management, coordination and responsibilities. Stakeholders from different local neighbourhood organisations were recruited to ensure a wide representation of BRM participants. One of the advisory groups was chaired by the senior researcher from LJMU with partners from Liverpool John Moores University (**LJMU**) (n=2), Liverpool City Council (**LCC**) (n=1), Liverpool Active City (**LAC**) (n=1), Sports Action Zone (**SAZ**) (n=1), Liverpool Primary Care Trust (**LPCT**) (n=1), Kensington Community Sports Centre (**KCSC**) (n=1), University of Liverpool (**UOL**) (n=1), Women’s Health, Information and Support Centre (**WHISC**) (n=1), Kensington Regeneration project (**KRP**) (n=2), and Eastern Liverpool Economic Fund Community Trust (**ELECT**) (n=2). This group were called partners Advisory Group (**PAG**). The other group was chaired by a representative from the WHISC and included 10 trained community researchers and volunteers from cultural organisations and local communities; (**WHISC**) (n=1), Liverpool Arabic Women’s Community Group (**LAWCG**) (n=2), Healing Space (n=1) the Liverpool Yemeni Association (**LYA**) (n=2), and Association of African Nurses and Midwives (**AANM**) (n=2), the Kensington regeneration (**KR**) (n=2), Liverpool Chinese Association (**LCA**) (n=1). This group was called the Community Researchers Advisory Group (**CRAG**).

The PAG was responsible for liaising with the WHISC management and community researchers during the course of the consultancy, b) providing training on the conduct of survey and recruiting participants, c) discussing issues regarding recruiting the participants, d) designing the survey e) providing advice and training on collecting, collating and analysing data, f) writing a final project report as part of a wider dissemination of findings. The PAG also arranged and held two meetings to discuss the design, structure and delivery of the survey which were held at LJMU premises.

The CRAG was responsible for getting the members of local communities together and arrange for meetings and liaising with the CRAG chair and the PAG chair. The

CRAG held general meetings to discuss the conduct of the survey and the role of each community research worker as a researcher. They were also involved in data collection and collation.

These two groups were set up to provide an effective sounding board for the community and the stakeholders' concern and to address a number of issues regarding promoting physical activity and tackling health inequality in Kensington, Liverpool. Although there was no written mission statement between the groups, all members were aware of the aims of the project including concerns about recruiting participants, conducting the survey and language problem. An operational structure of the two groups was established. This consisted of the procedure of how the members would contribute to the conduct of the survey and determining their roles, positions and responsibilities. Members of the two groups communicated via email and phone and the Kensington Regeneration coordinator organised meetings and circulated agendas.

The CRAG was set up to promote community empowerment by having representatives from different communities and organisations as well as hard to reach population including the low-income and BRM groups. Having the local women representing their community in this consultation helped with recruiting participants as people are more likely to listen to people and groups they already know and trust. These local women who volunteered to sit on the advisory group were from the major foreign-language groups in Liverpool including: Arabic, French and Chinese who also helped with translating the materials and the conduct of the survey.

A number of conceptual frameworks have addressed the challenges in recruiting participants from ethnic minority backgrounds. However these frameworks apply in clinical settings and are patient focused (Paskett et al., 2003). Brown et al., (2000) suggested that for an effective recruitment process, it is important that the participants are willing to take part in the research. The willingness to participate in research is determined by the extent of awareness, acceptability, and access. Therefore, the interventions focused on education, generating social support from community leaders, and removing access barriers could result in improved recruitment of individuals from minority groups.

Killien et al., (2000) proposed that the frameworks used in clinical settings to recruit the underserved population suggest that the relevant communities must be involved in planning the research as the history of the community's experience are of significance. Furthermore Kumanyika (2003) highlighted that understanding the culture and intracultural difference of the target community is important in successful recruitment of underserved and minority populations.

By establishing the PAG and CRAG we were able to identify participants through own communities and use members of the target population in planning and designing the research and the recruiting strategies. Using members of the target communities enabled the research partners to provide personal and culturally appropriate comments which assisted in designing an appropriate recruitment approach i.e. using multiple sites such as churches, community centres, schools and to construct a bespoke culturally sensitive questionnaire. Every attempt was made to ensure that the research process has as low burden as possible placed on participants in terms of the requirements from them. The length of the questionnaire was therefore an important feature as well as the content and also the venue where the questionnaires were completed. The questionnaire was designed linguistically and culturally appropriate for the participants avoiding long questions as well as questions that could have been considered culturally sensitive such as questions about dress code and outdoor activities for Muslim women. The involvement of the community members in the design and the conduct of the research helped overcoming problems such as, staffing change, administrative issues, contacting potential participants and communication with the hard to reach individuals from underserved populations.

My role as the primary researcher was to work alongside the senior researcher to assist in constructing the two advisory groups and implementation of the survey. I was involved in the process of gathering representatives from local communities by contacting them via email, explaining about the project and inviting them to the meetings. However the decision as to whom to contact was made by the senior researcher and the project manager from WHISC. Throughout my involvement in this process I discovered that working with non-researcher and local people can be very difficult and challenging at times. This was mainly because they saw the situation and the research question from a different perspective to researchers. Nevertheless this

involvement helped me understand that to achieve the research's aims the audience needed to be approached through a simple and clear message avoiding complicated difficult terms.

I developed my knowledge and skills of understanding how to engage with the public, gather information and views from them, discuss with them, understanding audience objectives and catering for different learning styles, etc.

Aim 2

The second aim of the present study was to identify physical activity levels and its determinants in a population of BRM women in a deprived area in Liverpool. The following section is presenting the details of the survey conduct relating to the second aim of the study.

3.6.4. Participants and settings

3.6.4.1. Recruitment and sampling

Two hundred and twenty five women were approached to take part in the study, of which 213 consented to participate. Participants were between 18 and 60 years of age and were predominantly from Black and Racial Minority (BRM) backgrounds.

The sample for this study was designed to reflect the diversity of the BRM population in Liverpool. This was to better understand the differences within communities in attitudes and behaviour in perceptions and behaviour in relation to physical activity. Therefore the recruitment criteria ensured that individuals participating in the study were included from the main communities in BRM, and they also reflected a variety of other characteristics in terms of age, level of education, employment status, and whether children were in the household. The focus was on women who lived in one of the most deprived areas in Liverpool however it was an inclusive survey and included women from other deprived areas of Liverpool.

Several discussions between the two partnership groups took place to establish strategies to effectively recruit participants. For example, the researcher explored which population would take part in which social event or which community researcher should be in charge of which site to make sure interpreting and interview facilities were provided. An opportunistic sampling strategy (Patton, 1990) was then

used to identify and recruit the participants. The target BRM participants represented similar characteristics such as gender, ethnicity and household economic status. Specific social events and venues were targeted within key deprived areas of Liverpool. Venues included churches, mosques, community centres, work places and offices. In addition participants were approached at their homes in areas with large populations of BRM residents. To reach those who were not involved in the community or did not attend the social events, interviewers were instructed to ask participants about other women who may be interested in participating in the survey. In using word of mouth referral approach it was recognised the research team could also access harder to reach members of the community.

3.7. Methodology

3.7.1. Quantitative approach

A mixed methodology was employed combining quantitative (survey questionnaire) and qualitative approaches (focus groups/group interviews) (Tashakkori and Teddlie, 2003). The priority was however given to the quantitative approach. Questionnaires are a standard method of measurement and a control document. Questionnaires result in each respondent completing responses to standard questions, providing the same opportunities for response, in the same order. Questionnaires are designed to collect information directly related to the research question. Questionnaires are well-used in survey research as they can produce a mass of reliable and valid data in a short time (Lancaster and Massingham, 1993). Subsequently a questionnaire, based on the socio-ecological model (Sallis et al., 1997) was designed to collect data for this study. As previously mentioned in the literature review socio-ecological models in addition to individual factors, take into consideration contextual or social and physical environmental factors (e.g. access to recreational facilities, safety of the neighbourhood). These factors influence whether and how a person takes part in physical activity. The questionnaire consisted of demographic items plus a combination of multiple choice and open ended questions which were adapted from the socio-ecological model encompassing interpersonal and socio-environmental perspective to ascertain information about present involvement in physical activity, constraints and barriers to involvement, and potential facilitators of physical activity. The PAG also contributed to the design of the questionnaire which resulted in a

pragmatic context specific tool being developed in partnership with the community as opposed to a validated questionnaire being used (Appendix 1).

3.7.2. Hypotheses

It was hypothesised that a number of determinants will influence the BRM women's physical activity participation level. These determinates were selected based on the socio-ecological model and included interpersonal, social and physical environmental factors. The following hypotheses were tested using inferential statistics:

Hypothesis	Determinant
1. BRM people who converse in English are more active than those who do not.	Interpersonal
2. Involvement in a community group predicts greater participation in physical activity than non-involvement.	Interpersonal
3. Awareness of local facilities as well as their quality are related to physical activity participation.	Social-environmental
4. Those who perceive walking opportunities and seeing other people active in the area are more active than those who do not.	Social-environmental
5. Those in full time employment (or equivalent) are less active than those who are not.	Interpersonal
6. Physical activity significantly decreases with age.	Intrapersonal
7. Those involved in a group are more aware of facilities than those were not.	Social-environmental
8. Those choosing active transport modes are more physically active and aware of facilities than those not.	Physical-environmental

3.7.3. Qualitative approach

The qualitative and quantitative datasets were connected where quantitative survey data findings were enriched by data from the qualitative aspect of the study. The quantitative data informed the qualitative approach. The qualitative method complemented the quantitative method and the results were convergent. Qualitative method in the form of focus group/group interviews were used as an effective addition to the survey findings in to generate new insights on earlier findings (Bloor et al., 2001). Engaging in a focus group/group interview methodology complemented the findings from the survey as it enabled the researcher to further explore the survey findings and emerging themes with a range of BRM women.

Using focus groups in exploratory studies has been supported by Kvale and Brinkmann (2009) as the interchange in focus groups produces more impulsive open and emotional view points than an individual interview. However, the group interchange can limit the moderators' control over the discussion and make the transcripts chaotic.

The focus group interviews aimed to explore a range of BRM women's perceptions and attitudes about physical activity and perceived and/or actual barriers to participation and their views on how to best promote participation. The background knowledge built up from the survey results subsequently developed the design and management of the focus groups in part II of study 1. The survey enabled a mapping of the participants' views to specific physical activity determinants. The focus groups were therefore designed based on pre-defined themes that were specifically informed by the survey results. The themes were open and flexible and allowed for intensive researcher exploration (Murphy et al., 1992). The open and flexible design contributed to identifying how information and opinions expand within a cultural context (Porcellato et al., 2002). Trenker and Achterberg (1991) concluded that the outcomes of the focus group are less controlled by the moderator who facilitates the focus groups.

Focus groups were employed as qualitative methodology to allow BRM women to discuss their attitudes, experiences, values and perceptions of physical activity and barriers to participation, and the social meaning they connect to the concept of physical activity, in a friendly and informal atmosphere. Although key issues can be

identified from marginal responses in group discussion, qualitative research does not allow measurement of the extent to which a particular attitude is held. This is due to the small sample which is not selected to be statistically representative of the population under study (although it somehow reflects the diversity of the population as described below). This methodology aimed to investigate the range of perceptions and views held and the way in which attitudes and behaviour have been formed and could be modified.

3.8. The structure of the questionnaire

The instrument was developed in partnership with the CRAG and the PAG. The decision to develop a bespoke questionnaire rather than using a pre designed version was made based on a number of reasons. Both the PAG and CRAG felt that the validated questionnaires such as IPAQ (International Physical Activity Questionnaire) (Craig et al., 2003) did not include all the questions which would answer the aims and objectives of the study. The aim was to get in depth responses from the target population regarding physical activity determinants and the key barriers to participation. Also standard questionnaires like IPAQ did not include open ended questions as it was intended in this study to gain more detailed responses. The questionnaire contained formal demographic questions in a set order, so that responses were controlled with some open-ended questions which the participants could discuss their responses with the community researcher who had administered the questionnaire (Foddy, 1994). Extra care was taken to prepare the survey so that the initial questions were introductory followed by more specific questions and technical terms were not used to avoid confusion. Extra attention was given to making questions non-biased and non leading, for example questions did not indicate what type of activities were considered as physical activity or how much physical activity was sufficient. The length of the questionnaire was designed for efficient completion.

The sequence of questions on the survey was as follows:

- Demographic questions (6 questions)
- Closed format questions about participants' physical activity level (5 questions)

- Open format questions about physical and social environmental determinants/influences (12 questions)

The combination of closed and open format questions allowed the collection of both quantitative and qualitative data. The overall design of the survey reflected a socio-ecological perspective (Eyler et al., 2003; Booth et al. 2001; Sallis and Owen, 1997; Stokols et al., 1996; McLeory et al., 1988). The questionnaire was developed based on the socio-ecological model recognising that physical activity participation is influenced by various individual, social and environmental factors. Within the socio-ecological model, physical activity participation is described as the result of interactions among the categories included in the model. Table 3.1. illustrates examples of items included in the survey questionnaire.

Interpersonal and social factors
<p>Do you have children?</p> <p>Were you born in the UK?</p> <p>What languages do you speak?</p> <p>What is your employment status?</p> <p>How long have you lived at your current address?</p> <p>Do you participate in any physical activity? (type, frequency, who with, reasons not)</p> <p>Are you involved in any community groups or activities?</p> <p>How physically active do you think that people are in your area</p> <p>What would encourage you to participate/increase your participation in physical activity?</p>
Environmental/community factors
<p>If you travel to do physical activity, how long is your journey?</p> <p>What form of transport do you use to travel to places for physical activity?</p> <p>Are there any activities you would like to see offered in your area?</p> <p>How do you feel about walking in your area?</p> <p>Do you know of any local places where you could participate in physical activities?</p> <p>What do you think of the public facilities in your area?</p> <p>Do you have any suggestions about what might encourage women in the area to make more use of sport and leisure activities?</p>

Table 3.1. Main questions explored in the survey

3.9. Piloting the questionnaire

Once the questionnaire was designed, it was piloted to identify its possible weaknesses, flaws and inefficiencies. This was to ensure that the data collected would be as accurate and reliable as possible. Two pilot studies were carried out for this questionnaire. First the questionnaire was reviewed by representatives from the CRAG and the PAG for clarity and appropriateness. The 2 advisory groups discussed the questionnaire's format, content, appearance and importance of items and whether the questions were appropriate for the targeted population according to their assumed level of literacy and English. Reviewing the questionnaire also indicated that to avoid biasing the responses multiple choice questions should be changed to more open-ended questions. A conscious decision was also made, by both advisory groups, not to ask women precise questions about the amount of time they were involved in physical activity to avoid confusion over what kind of activity would be considered as physical activity. This decision was made by the PAG and CRAG and contributes to one of the limitations of the survey. The questionnaire was then piloted on a small sample (N=3; 1 Chinese, 1 Arab, and 1 African) of community volunteers as a selection of the target population and in the light of the results some minor alteration was made. The question "Do you feel that most people in the area can be trusted?" was removed from the questionnaire as community volunteers felt that this was not an appropriate question.

3.10. Survey delivery

Two researchers from LJMU (myself and a senior researcher), the Kensington regeneration project coordinator and the WHISC project manager held training sessions for community researchers to conduct the survey. There were 3 training sessions which lasted about 2 hours each and they took place in a local job centre in Kensington. The sessions focused on the rationale of the project, structure, content and delivery of the questionnaires. Community volunteers were also briefed on definitions of physical activity. In present study physical activity is referred to behaviour that included walking and gardening, as well as more structured physical activities. Community volunteers were also trained on how to approach and recruit participants and how to conduct the survey. Interviewers were required to explain persuasively to the potential respondents why they should answer the questions. Training sessions also involved practicing the questionnaire with follow up discussion

and debate focusing on potential problems identified with delivery. These problems were related to differences between face to face and telephone interview and language and interpretation of questions. At the end of the training sessions, consistency, interpretation and approaches to delivery were agreed on by the primary researchers and community volunteers. This process ensured adequate training for community researchers who, in turn, felt confident in conducting the survey and collecting data.

3.11. Data collection

The survey for study 1 was administered using the following approaches:

- Face to face survey completion (N=198)
- Telephone surveys (N= 15, 5 Iranian women, 2 Yamani women, 3 Chinese, 5 Eastern European women)
- Postal questionnaire (N= 15), WHISC sent out 15 questionnaires to their clients.

A total of 213 surveys were completed and only a few people refused consent to complete the survey. Community researchers estimated that as few as 12 people refused to complete the survey. None of the posted questionnaires were returned. A letter was provided that outlined the aims of the survey and the importance and value of participation. The letter was administered among the participants to read and to tick the box as their consent to participate in the study (Appendix 2). For pragmatic reasons (owing to language barriers) the survey was translated into the five languages spoken by the participants. These included French, Arabic, Czech, Persian and Chinese. The questionnaire was delivered by trained community researchers (n=8), project manager (n=1), project coordinator (n=1) and the primary researcher at LJMU (n=1). Questionnaires were distributed among six community research workers, the project manager (n=1), the project coordinator (n=1) and the primary researcher (n=1) Each individual conducted 23-24 surveys on average. Each questionnaire was uniquely identified by a participant number followed by the initials of the person who carried out the survey prior to distribution. This was to track the person and to locate the participants in case the questionnaire was not completed or further information was needed. However only those participants who had given consent to be followed up were contacted. Community volunteers conducted the survey in participants' first language and noted the responses in English for the purpose of analysis.

For those who could not speak English the questions were read and the responses recorded in English by the community researchers. Telephone surveys were also carried out in participants' first language. A translated letter was also sent where the questionnaires were administered by post. Stamped addressed envelopes were provided for each postal questionnaire.

3.12. Survey analysis

Using Microsoft Excel for data management, responses were entered in English into an Excel database, by community researchers. The data was then imported from Excel to SPSS for analysis. All data checking and analyses were then conducted by the primary researcher, using the Statistical Package for the Social Sciences (SPSS for Windows, version 17, (From the 213 surveys completed, 20 surveys were excluded from the analysis because of an incomplete data and poor compliance to the questionnaire (i.e. only age or postcode completed). A decision was made to convert the qualitative data into quantitative based on the fact that the findings needed to be disseminated within the communities and were therefore presented in percentages so they were easy to understand. This was in line with the realist approach (Silverman, 2005), where responses to open-ended questions in the survey could be coded numerically. A triangulation approach was used to verify the coding. This involved discussions with the senior researcher, project manager and one of the supervisors.

3.12.1. Descriptive data for ethnic groups

There were initially 16 ethnic groups located in the 213 respondents. Data in table 1 demonstrate that categories were more evenly distributed when recoded. For practical reasons white and mixed were merged as most were British nationals, South Asian, African and Arab were also viable groups. The Chinese population were discrete and distinct and even though their numbers were smaller, they were kept as a separate group. Moreover, Liverpool has a distinct Chinese community with their own demographics and support systems. Seven participants were excluded from the analysis as they did not fit into the 5 viable categories, 2 were Caribbean and 5 were from "other ethnic groups" that could not be categorised. Eighteen participants failed to report their ethnicity. In total 188 participants were included for analysis by ethnic group.

3.12.2. Coding

Collected data was coded in a process of conceptualising the data and classifying them into pre-identified themes and relevant categories. A number was then assigned to each category which is called the code (e.g. with the variable “Are you physically active?” code 1 is assigned to participants who are physically active and code 2 to those who are not. Both quantitative and qualitative data were coded numerically in spreadsheet and were then converted into SPSS. To manage the data a code manual of words was developed. This further helped with organising sections of similar or related text to assist in interpretation (Crabtree and Miller, 1999). The use of predefined categories provided a clear trail of evidence for the credibility of the study. For the present study, the categories were developed based on the research questions and theoretical concepts regarding physical activity determinants (Booth et al. 2001; Sallis et al., 1999; Stokols et al. 1996).

Four main categories formed the coding for the survey questions including: (intrapersonal, interpersonal, social environmental and physical environmental factors). The subcategories for each main category were also defined i.e. Intrapersonal factors: attitude, lack of motivation and health condition, interpersonal factors: lack of time, social environmental factors: language barrier, not having someone to do exercise with, physical environmental: access to information, resources, childcare, free or low cost access to public facilities, weather and safety issues.

The categories and subcategories were coded numerically to perform further analysis in SPSS. This consisted of a descriptive analysis to identify frequencies and subsequent cross tabulation was used to identify the association between independent variables (age, ethnicity, physical activity levels, speaking English involvement in the community awareness of public facility). Frequencies including percentage scores for each item were computed. Some variables were transformed into manageable categories (ethnicity, age, transport, employment status). Cross tabs for each independent variable such as ethnicity, employment status, age category, English speaking were carried out. Chi squared analysis was chosen in the cross tabs option to determine significant differences between independent variables. Alpha was set at .05.

Data were not deemed to be representative and although efforts were made to reflect the local population, a conservative approach suggests that these results are only applicable to the population being studied. For each variable studied the frequency and valid percent (as opposed to the total percent as valid percent does not consider missing data) were reported. Further analyses using the “k” independent samples test from the non-parametric option in SPSS 17.0 were applied where appropriate.

3.12.3. Testing the reliability of the predefined codes

Checking that the codes used to define the raw information is essential (Boyatzis, 1998). Three transcriptions from the participants’ responses were selected as test pieces. Following the coding process using the predefined categories, one of the supervisors checked over the codes to ensure accuracy. No modifications to the predetermined code template were required.

3.13. Survey results

The following section reports the main findings from the descriptive analysis. The full report is enclosed in the tables 3.2. to 3.6.

3.13.1. Demographic data

Descriptive analysis indicated that the most common age range was 26-35 years 35%. The majority of women were from the African origin 32% followed by white or mixed 21%, Arab 17.4%, South Asian 16.4% and Chinese 10%. The majority of the participants were students 29% and 20% were unemployed, 42% were employed either full-time, part-time or self-employed. Only 7% were born in the UK and 60% had lived in their current address for 2 years or less. Seven percent of the women reported some disability, 32% were non English speakers and 58% had children living with them. Table 3.2. demonstrates the participants demographic data in more detail.

Table 3.2. General demographics of the cohort being studied.		
	Frequency %	Missing data
Age (yrs)		2
18-25	26%	
26-35	35%	
36-45	22%	
>45	18%	
Ethnicity		9
African	32%	
Arab	17.4%	
White or mixed	21%	
Chinese	10%	
South Asian	16.4%	
Employment status		5
Employed full time	28%	
Employed part time	9%	
Student	29%	
Self employed	5%	
Unemployed	20%	
Volunteers, carers, retired	11%	
Born in Liverpool	7%	1
Resident in the current address		6
2 years or less	60%	
2-5 years	15%	
>5	25%	
Disability	7%	9
Language		9
English speaking	68%	
Non English speaking	32%	
Have children living with them	58%	9

3.13.2. Self reported physical activity data

More than half of the participants 59% reported to be engaged in some sort of physical activity and 42% were doing physical activity on their own. Thirty nine percent reported doing physical activity every day and 57% were involved in indoor/group activities. The majority of women (40%) suggested they would like outdoor e.g. group walks, cycles, runs to be offered in their area. See table 3.3. for more details.

Table 3.3. Self reported physical activity data		
Do you participate in any physical activity	Frequency% 59%	Missing data 10
How often do you participate in physical activity		39
Every day	39%	
Once a week	13%	
Type of activity involved		7
Indoor activities/group activities	57%	
Any type	29%	
Outdoor activities	8%	
Ball games	6%	
Type of activities would like to be offered		41
Outdoor (group walks, runs, cycles)	40%	
Mixed (outdoor and indoor)	30%	
Indoor(group, gym)	27%	
Ball games	2%	
Who do you do it with		37
Alone	42%	
Friend	34%	
Family	22%	
Colleague	2%	

3.13.3. Reports on social and environmental factors

Nearly half of the respondents 49% perceived other people in their area to be fairly active. The majority 66% were aware of the local facilities and 63% thought the conditions of the public facilities are good. Sixty nine percent of the women perceived walking in their area to be safe and only 23% reported to be involved in a community group. Of those travelling to partake in physical activity 33% reported that they use active transport (walking). Table 3.4. shows a range of social and environmental perceptions reported by the BRM women.

Table 3.4. Social and environmental perceptions		
	Frequency%	Missing data
Are people in your area active		3
Fairly active	49%	
Not very active	43%	
Very active	5%	
I don't know	2%	
Are you aware of local facilities	66%	4
What do you think of your public facilities		13
Good	63%	
Not good	14%	
Don't know	11%	
Not safe	7%	
Lack of facilities	5%	
What do you think of walking in your area		10
Safe, good	69%	
Unsafe , not easy	28%	
Don't walk	3%	
Are you involved in your community	23%	11

3.13.4. Perceived constraints and barriers around physical activity

Women's relationships with others/society (i.e. interpersonal factors 65%) were the main reasons for women not participating in physical activity at all. For those women who were participating in physical activity reasons for not participating more were similar to those reported for not participating at all. Table 3.5. documents the predominant social and environmental factors for both groups of women who were engaged in some physical activity and those who were not active at all. A quote from participants has also been included to contextualise variables.

Table 3.5. Summary of the barriers to participating in physical activity	
Barriers (%)	Specific barriers
Interpersonal 65%	Lack of time due to work/family/study commitment, Life style, language barrier, not having someone to do physical activity with <i>"I have two disabled girls that I have to look after, I can't be more active than this"</i> African female 35-46
Environmental 15%	Lack of access to information about the place and type of activities available locally, lack of resources e.g. childcare, women only activities, poor weather condition, safety <i>"I don't know about Physical Activity programmes and I am not aware of places because I'm new in Liverpool and there is little information."</i> African female, 26-35
Intrapersonal 12%	Lack of motivation, health issue <i>"I am not interested in physical activity at all."</i> Arab female 26-35
Combination 6%	Lack of time and motivation, no access to information and lack of resources <i>"I don't know what activities are available, also there is crime in the area and I experience racism."</i> Black Female 18-25

3.13.5. What would encourage women to do more physical activity

Approximately one third of the encouraging factors listed had an environmental/interpersonal basis and included aspects such as resources and facilities, location/proximity, information weather conditions, knowing someone who is already doing physical activity etc. Other aspects were focused on individual (intrapersonal), with time issues and motivational issues being important for 14% and 7% of women respectively. Table 3.6. demonstrates the range of encouraging factors suggested by the BRM women to increase participation in physical activity.

Table 3.6. Encouraging factors for participating in physical activity	
Factors (%)	Description
Environmental 40%	Resources and facilities, local centres, access to information concerning physical activity programs, favourable weather condition safety issues <i>"I would do more physical activity if there was somewhere my daughter could go while I was there."</i> Arab female 18-25
Interpersonal 23%	Having more time, knowing someone who is already doing physical activity and meeting new people <i>"If I had more time and less responsibilities I would go for a walk or join the gym, African female 36-45"</i> <i>"Seeing people active in my neighbourhood or my friends being physically active, encourage me to become active."</i> Arab female, 36-45
Intrapersonal 20%	Being motivated , gain health benefits <i>" keeping fit and relaxing will motivate me,"</i> African female 46-60
Combination 16%	A combination of some or all the above factor <i>"Classes at times that I can attend, a Crèche facility, even one that you would have to pay for and a gym closer to home would motivate me."</i> African female, 26-35

3.14. Inferential statistics

The data generated from the questionnaire were non parametric in nature. The questionnaire included items that required categorical type responses. Some of these questions were related to demographics whilst the rest were individual factors that were aimed at recording physical activity type behaviour or aspects related to participation in physical activity. The variables suitable for further analysis using inferential statistics were the ability to speak English, age, ethnic group, involvement in the community, awareness of the public facilities and employment status. We used these independent variables to analyse between group differences using non-parametric statistics.

3.14.1. Further analysis

The Mann-Whitney rank-sum tests were used to compare two independent conditions whereas the Kruskal-Wallis test was used to assess differences between several independent groups (Field, 2005). Where data were neither normally distributed nor continuous in nature the Mann-Whitney test was used to analysis group data from the questionnaire. The Mann-Whitney test was used where items had 2 independent conditions and the Kruskal Wallis was used when there were more than 2 independent conditions. Significance for analysis was set at $P \leq .05$. The independent variables (number of categories in brackets) generated were, age (4), employment status (6), ethnicity (5) and English speaking (2).

3.14.2. Results by the ability to speak English

It was hypothesised that being able to converse in English would influence transportation mode, participation in PA, frequency of activity, involvement in a community group, awareness of the local facilities. Thus we merged the English speakers and multi-lingual groups together for further analysis. There two groups of English speakers and non English speakers.

3.14.2.1. Transportation

Cross tabulation results showed that of the 80 valid respondents 29 travelled actively, 19 of whom were English speakers and 10 were not English speakers and 51 used motorised transport with 36 of these being English speakers and 19 not English

speakers. There was no significant difference in active ($\chi^2=6.9$; $P=.23$) or motorised ($\chi^2=8.4$; $P=.13$) travel mode between these groups.

3.14.2.2. Frequency of physical activity

The cross tabulation analysis revealed that of the 111 valid respondents 68 were active 3-5 times per week, 48 of whom were English speakers and 20 were not English speakers. Twenty six were active 1-2 times per week with 23 of these being English speakers and 3 not English speakers. Seventeen were active once per month or less with 13 of these being English speakers and 4 not English speakers. There was a significant difference in the 3-5 times per week group ($\chi^2=12.8$; $P=.03$). We were not able to complete a valid analysis of the 1-2 per week and the once a month group because of low numbers in the not English speaking group.

3.14.2.3. Involved in a community group

In the cross tabs analysis we found that of the 166 valid respondents 38 were involved in a group, 31 of whom were English speakers and 7 were not English speakers and 128 were not involved in a group with 85 of these being English speakers and 43 not English speakers. There was a significant difference in the involvement in a group ($\chi^2=19.6$; $P=.003$). We were not able to complete a valid analysis of participants involved in a group because of low numbers in the not English speaking group.

3.14.2.4. Aware of local facilities

Results demonstrated that of the 175 valid respondents 118 were aware of local facilities, 90 of whom were English speakers and 28 were not English speakers and 57 were not aware of local facilities with 30 of these being English speakers and 27 not English speakers. There was a near significant difference in the number of English and not English speakers who were aware of local facilities ($\chi^2=12.0$; $P=.06$). Cross tabulation analysis also showed that more women who were aware of their local facilities were engaged in physical activity.

3.14.2.5. Participation in physical activity

We ran a cross tabs analysis and found that of the 159 valid respondents 91 took part in physical activity, 70 of whom were English speakers and 21 were not English

speakers and 68 did not take part in physical activity with 37 of these being English speakers and 31 not English speakers. There were no significant differences in the group taking part (chi sq=7.6; P=.27) or not taking part (chi sq=7.3; P=.29).

3.14.3. Results by the employment status

Significantly more unemployed and self employed respondents reported that they were active (chi sq=22.2; P<.01) and significantly more unemployed people perceived that more people were active than all other groups (chi sq=12.1; P<.02) There were no significant between group differences in awareness of local facilities (chi sq=3.9; P=.42), involvement in a group (chi sq=2.5; P=.64), frequency of activity (chi sq=4.0; P=.4) or active/motorized transport (chi sq=4.3; P=.37).

3.14.4. Results by age

Significantly more 18-25 year olds were aware of their local facilities than 36-45 year olds whereas 26-35 year olds were significantly more aware of facilities than both other groups (chi sq=10.71; P<.01). There was no difference by age group in participation in physical activity or involvement in a community group. The perception of whether other people were active in the area by different age groups neared significance (chi sq=5.1; P=.08).

3.14.5. Results by involvement in the community

Significantly more respondents involved in a group were active than those who weren't (chi sq=8.5; P<.004) the same was found for those using active transport (chi sq=4.6; P<.03). There was no difference by involvement in a community group and awareness of local facilities (chi sq=.33; P=.56), seeing other people active (chi sq=.03; P=.86) or frequency of physical activity (chi sq=0.1; P=.91).

3.14.6. Results by transport group

Significantly more respondents who chose active transport were involved in a community group than those who weren't (chi sq=4.6; P<.03). There was no difference by transport group in awareness of local facilities (chi sq=1.46; P=.23), whether other people were active (chi sq=.04; P=.84) or in the frequency (chi sq=1.2; P=.28) or participation in physical activity (chi sq=0.3; P=.86).

3.14.7. Results by ethnic group

There were no significant ethnic group differences in any of the results although the perception of other people being active neared significance (Chi sq =8.0; P=,.09)

3.15. Summary of the survey results

- Nearly 2/3 of women reported to be physically active.
- The main activity reported was indoors/group activities.
- There was no difference between the ethnic groups in physical activity participation, awareness of local facilities, involvement in a community group or seeing other people active in the area.
- There was a difference in being employed or student and participating in physical activity.
- Active transport significantly influenced involvement in a group and participation in physical activity. Respondents who chose active transport were involved in a group and were more active.
- More than half of the BRM women preferred indoor and/or group activities.
- The ability to speak English influenced the BRM women's participation in physical activity, involvement in a community group and awareness of the local facilities.
- The main barriers for not participating in physical activity were the lack of time (53%), access to information (4%) resource (6%), motivation (17%).
- Encouraging factors for participation in physical activity were the type of activity and facilities (19%), access to information (3%), weather and safety issue (4%), being motivated (9%), health benefits (8%), knowing someone who is active and or meeting new people (3%).

3.16. Study 1 part (II) Qualitative approach

Results from the survey indicated that a number of social environmental and interpersonal factors influenced the BRM women's ability to be physically active. Key findings indicated a lack of time due to household commitments (interpersonal) and lack of resources in the neighbourhood (environmental). However it was recognised that more in depth information is needed to be able to remove the barriers to the BRM women's participation in physical activity. The best approach to gather more in depth information on the BRM women's attitudes and perceptions of the determinants of physical activity seemed to be conducting individual or group interviews. This approach was discussed between the PAG and the CRAG and a decision was made to interview women in a group to ask further questions in a group setting rather than individual interviews. This decision was based on the issues raised by the community representatives such as ensuring that the women felt comfortable and trusted to be interviewed and not intimidated by being questioned directly on their own. Therefore it was recognised that focus group interviews would be the most appropriate and pragmatic approach.

3.16.1. Design of focus groups

There is a large body of guidance on focus group methodology in social research (Krueger, 1994; Kitziener and Barbour, 1999; Bloor et al., 2001; Fern, 2001). The guidance includes essential factors that need to be considered by researchers in the preliminary stage of research. These factors include the setting, structure, recruitment of participants, number and duration of focus groups, composition the focus groups, moderator's role and the delivery of focus group. These factors are introduced below in the context of the study.

3.16.2. The setting

The setting for the focus group is important for its successful conduct (Porcellato et al., 2002). Participants should be afforded simple access to the setting for the focus group (Kitziener and Barbour, 1999) whose ambience should allow open and frank discussion (Murphy et al., 1992; Bloor et al., 2001). This approach should encourage the participants to express and share their opinions and experiences in an open and honest way, without risk of intimidation, judgement or dissatisfaction (Porcellato et al., 2002).

Prior to conducting the focus groups it was essential to consider the key factors outlined above. Subsequently arrangements with the relevant organisations/community centres were made (i.e. the person that supplies and sustains access to the research setting). Whilst making these arrangements emphasis was given to the need for a setting that ensured privacy and confidentiality. This promoted participants ability to talk openly and honestly to both myself as the primary researcher and the other researcher, without interruption.

The four focus groups took place and were distributed across cultural community organisations/centres in Liverpool which were familiar settings for the participants.

Focus group venues were as follows:

- International Women's Day (Kensington Junior School, Kensington, Liverpool)
- Al Ghazali Centre (Wavertree/Kensington, Liverpool)
- Kensington Infant School (Kensington, Liverpool)
- Asylum Link Merseyside (Wavertree, Liverpool)

A small number of BRM women who attended the international women's day were recruited for one group. These women were invited to this event as they had given their consent to be followed up after taking part in the Kensington Women Get Lively Survey. The second focus group was conducted in a women's community centre where the BRM women were attending cultural and educational activities such as art and craft and English classes. The third focus group was conducted in a primary school when the BRM women dropped their children off in the morning. A fourth focused group was held in a church where the Asylum Link Merseyside is based to provide help and advice for asylum seekers as well as running cultural and leisure activities such as snooker games, table tennis and quizzes. Arrangements with the above venues had been already made and a quiet room was allocated for the focus groups to ensure there was no interruption during the discussion.

3.16.3. Focus group structure

The decision with regards to the exact group structure was a shared decision between the PAG and the CRAG. Given the participants' diverse range of ethnic background, our intention was to explore a wide range of the cohort's opinion (Kitzinger and Barbour, 1999). Therefore it was decided to select participants purposefully so they

represented a cross-section of the BRM population. The group size was restricted to four women, with the exception of one which had 5 women participating. However recruiting women from the BRM population for a focus-group interview was a significant challenge. Lack of confidence and low self esteem prevents BRM women from participating in a group discussion (Rabiee, 2004). However it was recognised that the BRM women would find it easier to participate in a focus group/group interview rather than individual interviews.

3.16.4. Recruitment of participants

Participants for the focus groups were recruited from the data base which was created for the “Kensington Women Get Lively Survey”. Initial contacts were made via telephone by the LJMU researchers only to those women who gave consent for follow up contacts. Forty phone calls were made and 17 women consented to participate in the focus groups. Telephone conversations outlined the rationale and aims of the focus group and the precise requirement of its conduct. Kitzinger and Barbour, (1999) suggested that it is also necessary to inform the participants of the general area of discussion. However since these women were already familiar with the area of research as they had taken part in the survey, it was recognised that disclosing too much information could serve to contaminate the focus group by restricting the spontaneous reactions of the participants (Silverman, 2000). Participants who consented to attend the focus groups had a number of homogeneous characteristics. Participants were all female, from BRM population, lived in deprived areas in Liverpool and shared similar cultural values. Their age however varied from 25 to over 60. Due to pragmatic reasons it was not possible to group all the participants according to their employment status. Therefore two of the focus group consist both unemployed and employed (part-time/full-time) participants. However it was felt that the nature of the group structure would accommodate flow and interaction throughout the focus groups (Kitzinger and Barbour, 1999).

Participants were later informed of the venues, times and the length of the focus groups to ensure that they were available and happy to participate. It was also made explicit to them that they could withdraw at any time, which acted as verbal informed consent (Kitzinger and Barbour, 1999). In order to maximise participation it was important to obtain an agreed date from the participants well in advance of the focus

group sessions and that they were reminded a few days before the agreed date by phone. The senior researcher at LJMU and I informed the participants about the length of each session and the time commitment as an ethical issue (Rabiee, 2004).

3.16.5. Number and duration of focus groups

It is suggested that for most investigations the number of focus groups necessary may only be three or four (Krueger 1994; Burrows & Kendall, 1997). In the present study four focus groups were conducted in order to gain a diverse range of perceptions, attitudes and experiences towards the structural themes under research. With regards to focus group duration, Kitzinger (1995) suggested that sessions may last one to two hours or extend into a whole afternoon or a series of meetings. Murphy et al. (1992) stated that the ideal time should be between 1-3 hours. Given the participants' time limitation due to their family commitments and the availability of the rooms provided for the venues it was decided that the focus groups would not exceed 1 and a half hours.

3.16.6. Composition of the focus groups

The senior researcher at LJMU and I introduced the topics for open discussion and attempted to stimulate the interaction by encouraging the participants to express their personal views and experiences about the topic. Careful consideration and planning was given for preparation of the content and structure of the focus groups. Three meetings were held between the PAG and the CRAG and one of the supervisors of the present study. The WHISC and Kensington Regeneration project managers, both LJMU researchers had previously utilised focus groups as a research technique. Through a continual course of discussion and reflection it was decided that based on the survey results the following issues were explored with the participants. The themes encompassed interpersonal, intrapersonal, social and environmental factors in relation to physical activity determinants and the survey results:

- Involvement in physical activity/ type of PA/how PA make them feel (Environmental and intrapersonal factors)
- Holding physical activity sessions inside the house (Social support)
- Preferred time and place for doing PA (Interpersonal factors)

- Motivational factors for participation in physical activity (intrapersonal factors)
- Safety issues (Environmental factors)
- Useful ways to receive information about the community events/physical activity programs (Access –Environmental factors)
- How cultural community organisations can work with leisure services (Access – social environmental factors)
- Views about transport and physical activity patterns (Physical and social environmental factors)

It was also felt that the participants would be more willing to discuss general issues with regards to physical activity determinants and the actual and perceived barriers to participation (i.e. the role of community centres in promoting physical activity) as well as some personal and cultural issues influencing their physical activity behaviour which were evident in the latter phase (i.e. lack of time, women only activities). This aimed to enable a comfortable relationship between the moderators and the participants as well as facilitating a free-flow conversation that are vital elements of a focus group (Bloor et al., 2001).

3.16.7. Moderator's role

The importance of the moderator in the conduct of the focus groups has been emphasised by a number of commentators (Porcellato et al., 2002; Bloor et al., 2001; Kitziinger and Barbour, 1999). Moderators' skills influence the dynamic of the focus groups with regards to managing the existing moderator-participant relationship and also creating an atmosphere where participants feel relaxed and encouraged to engage and exchange feelings, opinions and ideas about an issue (Rabiee, 2004). The moderators' skill, discernment and sensitivity could determine the depth and relevance of the findings obtained (Murphy et al., 1992). In this sense, LJMU researchers' experiences and listening skills were determined to be crucial for the success of the focus groups. The presence of two researchers from LJMU, the primary researcher and the senior researcher was useful as whilst one researcher was facilitating the session, the other researcher was taking notes and observing non-verbal interactions and noting which statement is made by which particular individual, this could complement the oral text and enable a fuller analysis (Kitziinger, 1994,

1995). The researchers in the present study were not specifically trained as moderators however they were aware of the principals that guided the focus group/group interviews sessions including the person centred-approach to counselling (Kitzinger, 1994).

3.16.8. Focus groups delivery

All focus group/group interviews were recorded using a flip chart and the sessions lasted approximately 50 minutes each. Discussions were not audio-taped as only two women gave consent for the sessions to be recorded. Therefore the senior researcher and the primary researcher (myself) tried to capture all the responses in writing. This was carried out in a manner that one of us would ask questions and probe the participants whilst the other person would write the responses on the board. At the start of each session the researchers thanked the participants for coming, welcomed them and tried to make them feel comfortable by some friendly conversation, avoiding the research topic (Ritchie and Lewis, 2003). Following the guidelines in some literature (Ritchie and Lewis, 2003; Porcellato et al., 2002; Kintzinger and Barbour, 1999) researchers then made a more formal start to the session by introducing themselves, outlining the research topic and background information on the purpose of the research, details on why the research was being undertaken, how it would be used and research funding. It was emphasised that although the findings from the present study would be published and a general report was being provided for the stakeholders such as Primary Care Trust, and Liverpool Active City, but individuals would not be identified in the reports or publication (Ritchie and Lewis, 2003).

The details, procedure and ground rules (i.e. giving way to each other, not speaking all at once) were also made explicit to the participants prior to the start of each focus group. The researchers then explained what was expected from the participants and that the session was a discussion about specified topics and that the participants should not wait to be asked for their contribution. It was made clear that there were no right or wrong answers, everybody's view point was valuable, that there could be different ideas or experiences among the group, and that participants should feel free and comfortable to say what they think whether it is agreeable or disagreeable with other participants (Ritchie and Lewis, 2003). It was also made clear that the

participants could withdraw from the session whilst in progress if they did not wish to continue. Furthermore, the participants were informed that their views, attitudes and experiences were of significant value and importance to the research being carried out (Kitzinger, 1995). Researchers also made it clear that the discussion needed to be recorded using notes on the flip chart in order to make a full account of everything which was said. Confidentiality as per participants' information sheet was then explained and an explanation was also given of what will happen to the data and the proposals for reporting and publishing the findings.

Participants were then asked to briefly introduce themselves and also write their names on a post it note which was then placed on the flip chart. This practice served a few purposes. It created a friendlier atmosphere among the participants prior to the start of the discussion as recommended by (Porcellato et al., 2002), so that the anxiety could be reduced, whilst it also enabled the researchers to identify and speak to participants by their names as they wished to be addressed. This was also useful in transcription process when it was required to track individuals' responses through the discussion.

In order to ease flow of understanding questions and conversations by participants, each question was written on the flip chart prior to the session and the two researchers took turns in writing the answers, probes and specific clarifications on the flip chart. This ensured consistent depth of questioning across the group interviews (Frey and Fontana, 1991). Researchers aimed to promote discussion and engage as many of the participants as possible by being verbally active, asking further questions for rephrasing the same question around the particular topic and probing generally about other people's ideas to open out the response (Ritchie and Lewis, 2003). However despite the researchers' effort to promote discussion and engage all the participants, respondents found it uncomfortable to discuss the issues and only answered the questions which were put to them. This prevented interaction between the groups and therefore the data gathered was based on individual responses rather than group interaction. Careful attention was given to the final stage of the focus group sessions to pace the end of the session in order to allow time for the group to be prepared for it and to avoid too sudden a finish. The senior researcher from LJMU and I (we) therefore indicated this approach by mentioning of the final topic and asking

participants questions like: “Is there anything else you wish to add before we finish the session?” or “has anyone got any further comments to make before we finish?” (Ritchie and Lewis, 2003). We ended the session by thanking the participants again for their time and valuable views.

3.16.9. Participants

A total of 17 women from different BRM population participated in 4 focus groups. To ensure participants confidentiality, names have been omitted. The coding system was then developed to identify the participants, their ethnicity, age and employment status and subsequently used in the process of transcription, analysis and representation is demonstrated in the tables. Each participant has been given a unique code name consisting of a number from (1-4 or 1-5) their age band code, and employment status. Data was also collected on participants' qualification. However most of the participants who were not UK born and/or had not lived in the UK for some time had no qualifications in English other than the compulsory education in their home countries. Also since most participants were unemployed they were only coded in employed and unemployed whether they were working part-time or full-time. A Summary detail of each focus group consisting of the participants' characteristics including ethnicity, qualification, employment status, number of children, number of years lived in the UK and their specific codes have been presented in tables 3.7 – 3.10.

Table 3.7. Participant details of International Women’s Day (Kensington Junior School, Kensington) *A

Participants Number (P)	Ethnicity	Age*	Qualification	Employment Status*	Number of children	Number of yrs lived in UK	Complete participant code
P1	Pakistani	37	None	unemployed	4	3	P1(3UA)
P2	Bangladeshi	42	None	unemployed	5	3	P2(3UA)
P3	Afghan	28	None	unemployed	2	2	P3(2UA)
P4	Indian	34	University degree	Full time employed	3	UK born	P4(2EA)
P5	Black British	32	College degree	Part time employed	None	UK born	P5(2EA)

* Venues = A, B, C, D

*Age band codes 18-25= 1, 26-35=2, 36-45=3, 46-60=4, 60+ =5

*Employment Status: unemployed=U, employed = E

Table 3.8. Participant details of Al Ghazali Centre (Wavertree/Kensington)*B

Participants Number (P)	Ethnicity	Age*	Qualification	Employment Status*	Number of children	Number of yrs lived in UK	Complete participant code
P1	British Arab	39	College degree	Full time Employed	6	British born	P1(3EB)
P2	African-Kenyan	30	none	unemployed	1	5	P2(2UB)
P3	Arab-Yamani	42	none	Self employed	5	20	P3(3EB)
P4	Arab-Syrian	34	none	unemployed	3	17	P4(2UB)

Table 3.9. Participant details of Kensington Infant School (Kensington, Liverpool) *C

Participants Number (P)	Ethnicity	Age*	Qualification	Employment Status*	Number of children	Number of yrs lived in UK	Complete participant code
P1	Polish	27	College degree	Unemployed	1	8	P1(2UC)
P2	Chinese	23	College degree	unemployed	2	5	P2(2UC)
KP3	African-Tanzanian	24	none	Unemployed	3	6	P3(2UC)
P4	African-Cameron	33	none	unemployed	3	4	P4(2UC)

Table 3.10. Participant details of Asylum Link Merseyside (Wavertree)*D

Participants Number (P)	Ethnicity	Age*	Qualification	Employment Status*	Number of children	Number of yrs lived in UK	Complete participant code
P1	African-Ugandan	57	none	Unemployed	3	23	P1(4UD)
P2	African-Rwandan	52	none	unemployed	2	25	P2(4UD)
P3	Somali	26	none	Unemployed	4	5	P3(2UD)
P4	British mixed	49	none	unemployed	3	UK born	P4(4UD)

3.17. Analysis of focus group/group interviews data

Using focus groups/group interviews provided the opportunity to combine the structured and unstructured approach (Pole and lampard, 2002). The aim of the project was to conduct a focus group with participants. In practice this was not achieved and a group interview format was adapted.

Group interviews gather a number of individuals together with a moderator to discuss a particular issue or a set of issues as opposed to one – to- one interview. The significance of focus groups is the interaction between the respondents which generates rich data (Pole and lampard, 2002). However there was no observation of a significant group dynamics in the focus group interviews in the present study because the participants did not interact or engage in discussions with each other. This could be partly due to the language barrier as some of the respondents (UK born/lived in the UK for some time) felt more comfortable to speak and dominated the discussion somehow which meant those with lower ability to speak English either kept quiet or only offered a few words. Participants tended to respond individually to each question rather than responding to each other's views as characterised by a focus group. Therefore the responses though individual in nature were clustered and compared in order to identify themes from each group.

Silverman (2008) pointed out that the procedures to analyse focus group/group interviews are similar to analysing individual interviews. Data obtained from the group interviews were in-depth and rich and the analysis process was typically difficult and time consuming (Kvale and Brinkmann , 2009). There are a number of analytical techniques for such dynamic data, which include a conversational analysis technique (Myers and Macnaghten, 1999), framework analysis (Krueger, 1994), approaches that focus on group dynamics (Kitzinger and Farquhar, 1999) and content analysis, which includes many similarities to analytic induction (Frankland and Bloor, 1999; Myers and Macnaghten, 1999). However the present study employed notions of content analysis due to the fact that the respondents in this study did not fully engage in group discussions and had limited interaction. Content analysis was utilised to analyse the focus group data in present study by associating similar parts of conversation around specific deductive and inductive themes. These themes are presented and discussed in relation to their contextual meaning. The procedure

ensures that data analysis is systematic and follows a number of pre-defined stages to ensure a balanced approach to analysis (Frankland and Bloor, 1999).

Furthermore, I engaged in a number of approaches during the procedure of analysis. First, I tried to familiarise myself more with the data, by reading several pages of flip charts which were used during the sessions to record the responses. The aim was to immerse in the details and get a sense of the interview as a whole before breaking it into segments (Rabiee, 2004). The next stage focused on indexing, highlighting, sorting out quotes and re-arranging the quotes under pre-defined categories (Rabiee, 2004). This systematic data analysis procedure then allowed the data to be investigated to construct meaning in relation to the area of study (Biddle et al., 2001). Attempt was made to identify similar sections of responses around specific deductive (taken from survey results and based on the socio-ecological model) and inductive (emerging) themes. In doing this, the process of categorising took place by clustering similar responses to each question together within the raw data, then first and possible second order themes were identified for each group. A general dimension was then identified for each series of clustered responses. A meeting was held between the senior researcher and myself after each focus group, which allowed critical discussions about different ideas (Kitzinger and Barbour, 1999). Triangulation was also employed, which was 2 meetings with experienced qualitative researchers from the PAG who acted as critical friends to review the meanings, interpretations and constructions that emerged from the analysis phase (Patton, 1990). Triangulation for the content analysis was the discussion of the results between the primary researcher (myself) and two of the supervisory team members (Biddle et al, 2001). This was to ensure that the emergent themes were categorised accurately.

3.18. Study 1 Part (II) group interview results

This section presents a rationale for each structural theme and the analysis of the data from group interviews. The structural themes are offered and discussed in the order that they were explored within the group interviews. The following tables demonstrate findings from content analysis and some quotes from the participants to exemplify the emerging themes. Each table includes the raw data (quotes) first and second order themes and the general dimension. Following each table a summary discussion is presented. (pen profile for all focus groups are enclosed in appendices- appendix 3)

Table 3.11. Content analysis of the 4 group interviews on the BRM women's involvement and perceived benefits of physical activity (PA)

Raw Data Themes	First Order Themes	Second Order Themes	General Dimension
<u>BRM women's current Involvement in PA</u> I walk 3 times a week for 30-40 minutes P2(3UA) I have given up my car and go walking with my boyfriend 3 times a week P2(3UB) I walk to and from work for an hour every day P1(3EB) I walk to the bus stop and to connections, I walk to this centre every day P2 (4UD) I do walk a lot P4(4UD) I walk a lot. I walk to town. I go shopping P1(4UD)	Unstructured forms of PA (Walking)	Incorporated in daily life	Active life style that facilitated BRM women's engagement in physical activity Interpersonal/ environmental determinants
I go horse riding once a week P5(2EA) I go to yoga and the gym 3 days a week P4(4UD)	structured forms of PA		
Work full time, not active P4(2EA) Not active anymore P3(2UA) Not involved in any activities P4(2UB) I am so busy around the house, picking up toys, climbing the stairs P1(3UA)	Inactive Lack of time	Work/family commitments	Interpersonal determinants that prevented the BRM women's engagement in physical activity
<u>How does physical activity make you feel</u> I think it's [PA] something that I should have done P5(2EA) [PA] Makes me feel I am more healthy P3(2UA) feel healthy when I go to the gym P2(4UD) [helps] Release a lot of stress P3(3EB) [while doing PA]Thinking, get worries off chest P2(3UB)	Positive attitude Feel healthy Positive psychological well being	Awareness of PA benefits	Referring to Intrapersonal and social Determinants of physical activity
Go together, keep company P4(2UB) I'm being a role model for my children [by doing PA] P4(2UC)	Social benefits	Awareness of PA benefits	
feel too shattered P3(2UC) when I stop going to the gym I gain weight P2(4UD),P1(AUD)	Negative effect		

The first structural theme that was explored with the BRM women was their level of involvement in physical activity. The decision to explore this theme was to identify what counts as physical activity in the BRM women's views and also to determine what type of physical activity is available for them to engage in or what type of

activity they are interested in participating. Two general dimensions emerged from the raw data; women mainly chose walking as a form of physical activity and incorporated it into their daily lives (i.e. going shopping or active commuting). This could be related to interpersonal determinants such as a lack of time to do any sort of structured activity, or environmental determinants such as the cost for using the facilities or childcare problems. The emerging theme however suggests that these BRM women perceived their environment to be safe for walking. The second general dimension referred to a non-engagement in physical activity relating to interpersonal determinants as there was a lack of time due to work or family commitments which restricted the BRM women's participation in physical activity. Only two women from all across the four groups were engaged in structured physical activity.

The second theme that was explored with the BRM women aimed at identifying the extent of their awareness of the benefits of being physically active. Respondents referred to a number of psycho-social and physiological health related benefits of physical activity. The emerging general dimension was a combination of intrapersonal determinants (feeling good and healthy after PA, feeling shattered, and weight gain) and social determinants (doing PA with someone else, being a role model for children).

Table 3.12. Content analysis of the 4 group interviews on the BRM women’s perceptions regarding integrating PA at home

Raw Data Themes	First Order Themes	Second Order Themes	General Dimension
<p>I used to put disco music on in the house and dance P3(2UA)</p> <p>I’d rather do that [activity at home by a community person] than starting a new activity P2(3UA)</p> <p>yeah that [activity at home by a community person] would be very motivating P2(2UB)</p> <p>little Mr/Mrs motivator is a good idea P3(2UC)</p> <p>if the environment of the house is appropriate and as long as they[community people] have had CRB checks P4(2UC)</p> <p>I don’t mind if someone comes to my house P2 (4UD)</p> <p>it’s good that someone encourages you to do physical activity P4(4UD)</p>	<p>Motivation Environment safety</p> <p>Sessions run at home</p>	<p>Social support</p>	<p>Require Social support to engage in physical activity</p>
<p>don’t feel comfortable with someone in the house P1(3UA), P1(3EB)</p> <p>not inside the homes, sport centresP5(2EA)</p> <p>community centres should run sessionsP4(2EA)</p> <p>I like my family time at homeP4(2UB)</p> <p>people coming in would change the pattern [of life] P3(3EB)</p> <p>I want to do it of my own backP1(2EC)</p> <p>I like walking everywhere, I like to go to the park 2 (2UC)</p> <p>not in the house, somewhere that women can meetP1 (4UD)</p>	<p>Appropriate Venue Family dynamic</p> <p>Resources outdoor</p>	<p>Community centres</p>	<p>Referring to Social environmental determinants of physical activity participation</p>

The third theme explored whether the BRM women would like to have physical activity sessions run inside their homes. The decision to explore this theme was because it was identified from the survey results that the main barrier for participation in physical activity is a lack of time and the fact that the BRM women find it difficult to make some time to get out and do something for themselves due to a lack of family/social support and motivation.

The emerged general dimension from the responses indicated the significance of social support (somebody to motivate them) and social environmental determinants (provisions of local venues and resources for participation in physical activity).

Furthermore having a community person at home would address the issue of lack of access to information about the type of activities and the venues as well as encouraging the BRM women to become physically active. It was hypothesised that running physical activity sessions at home would motivate the BRM women and provide them with some knowledge and skills about physical activity and information about what is available in their area so they could continue the activities at home or outside.

Table 3.13. Content analysis of the 4 group interviews on Provision of indoor and outdoor activities in community centres/venue, group size, facility, type

Raw Data Themes	First Order Themes	Second Order Themes	General Dimension
<p><u>Venue</u> Schools that our children go, pre-picking up P4(2EA),P1(3UA),P2(3UA), after school P4(2UC), P1(2UC), P3(2UC)</p> <p>gyms are expensive P3(2UA) not gyms because the gym image intimidates meP2(2UB), P1(3EB), P4(2UB) Use this centre[community centre] for activitiesP1(4UD) activities for women in this centre P294UD) women only activities in this centreP3(2UD), P4(4UD) happy with community centresP3(3EB)</p> <p><u>Type of physical activity</u> anything that improves you moving your armsP2(3UA) basic aerobic with musicP2(2UB) possibly yoga, meditation, Pilates, or general keep fit, Activities for different age groupsP4(2UC) weight training, little exerciseP3(2UC) Kick fit. use a lot of body and musclesP1(2EC),P3(2UA),P1(3UA) P4(2EA) all my body is involved, body toningP2(4UD) prefer something like gymnastic or dancingP4(4UD) swimming to teach the biggenersP1(4UD) swimming pools for mums and kidsP3(2UD)</p> <p>I like outdoor activities P5(2EA) TennisP2(2UC) anything [PA]that involves household things, appropriate in the homeP3(3EB) use stairsP4(2UB) has to be something I can do while I'm watching coronation streetP1(3EB)</p> <p><u>Size of the group</u> size of the group depends on the activity, not too crowded P2(3UA),P1(3UA),P5(2EA),P3(2UC),P1(2UC),P2(2UB) large groups with people that you knowP4(2EA),P3(2UA) the more the merrier-all womenP4(2UB) fun factor with large groupsP4(2UC) size doesn't matter as long as they are all womenP1(4UD) it's what people wantP3(3EB) good to have beginners, easy and difficult option in a classP2(2UB) any size for both parents and kidsP3(2UD)</p>	<p>Schools</p> <p>Cost Gym image Communit y centres</p> <p>Women only activities</p> <p>All body and mind exercise</p> <p>Outdoor activities</p> <p>Incorporat ed in daily life</p> <p>Group size depends on the type of activity</p> <p>Women</p>	<p>childcare</p> <p>Gyms are inappropriate</p> <p>Social factor</p> <p>Fun factor</p> <p>adjust activity levels</p> <p>childcare</p> <p>Resource</p> <p>Venue</p> <p>Resource</p>	<p>BRM women expressed different types of physical activity</p> <p>Social environmental determinants influencing the BRM women's engagement in physical activity</p>

small size, women onlyP2(4UD)	only
number of people matters in terms of the attention	activities
the instructors would give to everyoneP4(4UD)	
not overcrowdedP1(3EB)	
<u>Provision of Facilities</u>	Not too
Crèche – when you just had a baby, that’s	crowded
when you need to exercise more p1 (2EC)	Parents-
Closer swimming pools P2(2UC)	kids
Children would go with mums P3(2UC)	childcare
Beauty incentives, hair dressers, gym, child	facilities
pamper for girls P4(2UC)	
<u>Preference for outdoor activities</u>	mums and
tennis, badminton, group exercise in the school	children
grounds P1(3UA)	activities
group cycling P5 (2EA)	Local
family events in the parks P4(2EA)	Facilities
walking in groupP2(3UA), P3(2UA)	
British military fitness in the parkP2(2UB)	Organised
basketball P2 (2UC), P4(4UD)	activities
outdoor activities depending on the weatherP1(4UD)	
tennis, baseball P2 (4UD)	Sport
netball P3(2UD)	
organised tennis/rounders/netball for	Family
teenagersP3(3EB)	activities
boxing groups for children (5-10 years) P1(2EC)	
depends on the time of the year P1(3EB)	Season
feel uncomfortable in the parkP4(2UB)	School
indoors run in schools P3(2UC)	based
drama classes and dancing run in schoolsP4(2UC)	Activities
after school clubsP3(3EB)	
there should be incentives to do activitiesP1(3EB)	
link with taste for health initiatives 5 a day fruit and	
Vegetables P2(2UB)	

This question aimed to explore the provision of indoor and outdoor activities which could be offered in the neighbourhood. Also issues regarding the group size, facilities and type of activities were discussed. The reason to explore this theme was again based on the findings from the survey (study1, part1), as women referred to the environmental determinants including lack of resources e.g. women-only activities and child care facilities, hindering their participation in physical activity. Survey results also suggested that women would like to engage in group indoor activities.

The emerging general dimension was social and physical environmental determinants for almost all topics. The identified themes referred to a range of resources and facilities including local community centres, schools and local sport centres as the most appropriate venues for PA. It was recognised that the BRM women feel more comfortable to do PA in their local community centres where they may feel more socially supported and accepted and is closer to where they live. Also community

centres could offer free activity sessions which meant removing the cost barrier for the BRM women who were living in deprived areas. Gyms did not seem to be appropriate venues because they were expensive and the BRM women expressed feelings of intimidation by the body image at the gym. There was also a theme regarding incorporating PA into daily life. Although the respondents gave a lot of preferences regarding the type of indoor and/or outdoor activities but it was implied that they preferred to do group activities which can again refer to social support and social capital determinants of physical activity participation. Women only activities were also an emerging theme and most respondents implied the need for childcare resources. Proximity and the season were also emerged as physical environmental determinants.

Table 3.14. Content analysis of the 4 group interviews on walking and safety

Raw Data Themes	First Order Themes	Second Order Themes	General Dimension
big group of young peopleP3(2UA) if I saw groups of louts P5(2EA), P4(2EA) I go to the park with my children, some people disturb us, 16-18P1(3UA) Wouldn't walk down short cuts. lads with caps look intimidating P3(2UC) lads look out for people P2(2UC)	Groups of young boys with caps make it unsafe for women to walk	safety social support	Physical and social environmental determinants
walking on your ownP3(3EB) I don't take short cuts if I'm on my ownP2(2UB) I wouldn't go after darkP4(2UB) things that have happened; attack/rape, I am always aware P1(3EB) not when you are in another areaP4(2UC) if it's really late P4(4UD), P3(2UD) maybe at night P1(4UD) well lit, busy area is safer P1(2EC) safe at day time P2(4UD) you have to cross so many roads where there is trafficP2(3UA)	Darkness, Walking alone makes it unsafe for women	Social support	

The emerging general dimension was physical and social environmental determinants. The respondents referred to a number of physical environmental issues such as safety and the potential danger from the gangs in the streets and the dark. They also implied that having somebody to go with will make them feel safe which indicates the social support factor.

Table 3.15. Content analysis of the 4 group interviews regarding the best means to receive information and the role of cultural organisations in relation with leisure centres

Raw Data Themes	First Order Themes	Second Order Themes	General Dimension
Little circulars/advertisements through schoolsP1(3UA),P3(2UC)	information through Schools	access	Social and environmental determinants
local communityP2(3UA), P3(2UA),P3(3EB),P1(4UD),P4(4UD) difficult for non-english speakers to accessP5(2EA) advertised in the mosqueP3(3EB)	Information through local community centres	access	
ladies day P4(2EA) someone takes the lead to organise events and let everyone know P2(4UD) radio,TVP3 (2UD) government letters, text messages P1(2EC)	Public announcement	access	
depending on the area-flyersP1(3EB) flyers in shop windowsP4(2UB), P4(2UC) old-fashioned leaflet dropP2(2UB), P2(2UC) finding appropriate activities P1(2EC) covering all ages P4(2UC) engaging younger and older teenagers in physical activity P3(2UC),P2(2UC)	Public advertisement Access to information/needs Bridge the gap	access	

The emerging general dimension regarding the best means to receive information and the link between the cultural organisations and leisure centres was identified as the social and environmental determents. The respondents suggested a number of methods for accessing information. The main emergent theme was through being informed through the local community centres followed by schools and public announcement.

The role of cultural organisations in relation with leisure centres was identified to be significant. The respondents perceived cultural organisations as a source from which they can access information and resource and to inform the stakeholders and policy makers of their needs and interests with regards to physical activity.

Table 3.16. Content analysis of the 4 group interviews regarding the role of transport in promoting physical activity

Raw Data Themes	First Order Themes	Second Order Themes	General Dimension
public transport eats more of your time P2(3UA), P3(2UA) nature of the neighbourhood forces people into cars P4(2EA) need transport with kids, buses are too expensive P3(2UC)	Convenience of cars safety time cost	interpersonal determinants	Social and physical environmental determinants Interpersonal determinants
indication of how far the next bus stop is P5(2EA) minibus to pick people up at a certain point P3(3EB) limited time, after the dark, opt for the bus P4(2UB) during the day to pick up the kids P3(3EB) it could be arranged with certain friends P4(2UB) shared bus reduces the carbon footprint P2(2UB) bus services for specific activities P3(3EB) minibus comes round and takes everyone to the gym P1(2EC), P2(4UD) improving bus connections P4(2UC) distance places take the bus P1(4UD), free transport P2(4UD)	Information Resources/cost /organised transport Safety Social support Environmental factors Proximity		
it's good to breath in fresh air P1(3UA) I'm happy to walk up to a mille a day P2(3UA) walk to local places P1(4UD) depending on where you are going P3(2UD) if it's local then it's not a problem P1(3EB) I enjoy walking to a destination P2(2UB) I walk everywhere P2(2UC)	Physical activity proximity	Active transport	

The emergent general dimension regarding the role of transport in increasing physical activity was social and physical environmental determinant. The main emergent themes were identified as proximity, resources (condition of public transport), safety, convenience and cost. Respondents mentioned that organised transport to places for physical activity could encourage participation. For the respondents who had children public transport did not seem an appropriate option due to its cost, difficulties with children and waiting time. However a number of respondents stated that they would choose the active transport and walk to places as far as it is local. Organised transport seemed to be an encouraging determinant to participate in physical activity which can be resourced and organised.

Table 3.17. Content analysis of the 4 group interviews regarding the motivational factors to participate in physical activity

Raw Data Themes	First Order Themes	Second Order Themes	General Dimension
<p>that first step-getting people through the door P4(2EA) competetive, physically painful, committing for 6 months, and exercise to lose weight discourages meP5(2EA) where it's [PA] expensive I wouldn't go P3(2UA) LocationP1(3UA) wouldn't like a mixed groupP3(2UA) women only activitiesP4(2EA) group activity followed by information P2(3UA) make more activities P1(2EC) kids get encouraged from other sourcesP4(2UC) kids influence parentsP3(2UC) kids are great sources of motivationP2 (2UC) fun Friday P3 (2UC) after school clubs and cheering childrenP4(2UC)</p>	<p>Non competitive Moderate activities Low/no cost Location Informative sessions</p> <p>Parent-child relationship in motivating each other</p>		
<p>My health status concerns me as I am getting older, so to keep my cholesterol and blood pressure down I would do physical activity P1(4UD) I used to exercise and feel so light and fit, I have gained weight now and my fitness level is low, getting my fitness back encourages me P2(4UD) Oh my god have you seen what happens to overweight people, the documentaries on TV make you realise how important physical activity is P2(2UB) When you are inactive and sitting around all day you feel down and unhealthy and then you think you need to look after your health and do something about it P4(4UD)It is very encouraging for me to know I am actually doing something only for myself P1(3EB) If I know I would look good and I would feel good then I get motivated to get engaged in physical activity P3(2UD) I tell you what motivates me the most, to escape from the commitments and pressure of family responsibilities that I have at homeP2(3UA)</p>	<p>Age related Weight management Fitness Mood/feelings Personal beliefs Media influence</p> <p>Self esteem Time to oneself Body image</p>	<p>health benefits</p> <p>Social factors</p>	<p>Intrapersonal Interpersonal Social Social and physical environmental determinants</p>
<p>I like to engage in physical activities to meet new people and make new friends P3(2UD) It's an opportunity to mix with people from all walks of life, you get to socialise with people as you are doing physical activity P2(4UD) It motivates me to know I can get out of the house for a couple of hours and engage in some physical activity in a group or class. It's just different to my routine." P1(4UD) I would see physical activity sessions as a place where you can speak to other people about life experiences and stories and have fun P4(4UD)</p>	<p>Meeting new people socialising</p>		

A whole range of components of the socio-ecological model emerged as the general dimension with regards to the factors which would motivate the BRM women to participate in physical activity. Respondents referred to a number of elements about the type of activity, resources and barriers. Women perceived their children to be a source of encouragement maybe through the information that they may pass on to their parents or just by being active. Intrapersonal determinants such as increased self esteem, concerns about age, health and fitness, positive feeling as well as having time to oneself were identified to be motivating. Another emergent theme was the social determinants including meeting up with new people and socialising by participating in physical activity.

3.19. Summary of the group interviews findings

The BRM women's involvement in physical activity was mainly through walking and activities of daily living.

- The BRM women's perception about the safety of their environment was somehow mixed as they stated their area is safe for walking but later expressed some concerns about the presence of the gangs in the area. They however mentioned having company to do outdoor activities will make them feel safe.
- Main barriers constraining the BRM women from being physically active were interpersonal; lack of time due to work or family commitment and social environmental; access and resources.
- Women were aware of the health related benefits of PA such as psycho – social and physiological benefits.
- Women were agreeing with the idea of having a community person to run activity sessions to motivate them.
- Women stated that local community centres, schools and local sport centres were the most appropriate venues for physical activity.
- Women preferred group activities and women only activities.
- The best means to receive information were through the local community centres, schools and public announcement. Also linking cultural organisations and leisure centres was found as a source of information.
- The BRM women reported that having organised transport might remove barriers such as proximity, safety and cost.

- Motivational factors for the BRM women to become physically active were the health-related benefits of physical activity the type of activity and resources and the social aspect of engaging in physical activity i.e. meeting new people and socialising.

3.20. Discussion

The first stage of this study aimed to develop a process to enable the research investigation to take place with the BRM populations. The present study consulted local women to construct a bespoke survey that aimed to explore the factors that determined physical activity for women in the Kensington area. Hard to reach individuals who were otherwise socially excluded were consulted through this process. In line with previous studies (Cheadle et al., 2010) engaging local communities removed the perceived barriers such as language which hindered accessing the BRM individuals in research. Community researchers from the target community were recruited and capacity was built by providing support and appropriate resources through an external facilitator. This process enabled the research group to identify the needs of the BRM women and sustained the engagement of the community researchers and the partnerships that had been established during the project and the work that has been identified by the needs assessments.

The training provided for the community researchers gave them a basic knowledge of research methods and of the area they were researching, i.e. the concept of physical activity and its provision. The establishment of the steering group made it clear with whom the community researchers were engaging. It also maximised the maintenance of the partnership through the course of the research. The steering group ensured that the aims and objectives of the study were compatible with the local strategies, providing a mechanism for dissemination the research findings and recommendations. Cheadle et al. (2010) support community engagement in conducting research and in particular a community-led approach to promoting physical activity in older adults. They concluded that networking among stakeholders led to the creation of a number of senior physical activity programs that served previously underserved communities within South East Seattle. Data from our approach concur with Cheadle et al. (2010) work in that engaging communities in evaluation from the outset improves the

efficacy of the research approach and quality of data generated and more importantly, used.

Further on, a study on drug misuse needs assessment project by (Winters and Petal, 2003) applied community engagement approach to carry out their research. They pointed out that the project was radical in that it consulted, involved and maximised active participation by communities.

The second aim of this investigation was to identify the current levels of physical activity and, apply the socio-ecological model, to identify perceived barriers, constraints, and ways to overcome such barriers amongst BRM women residing in deprived areas of Liverpool, particularly in the Kensington area. A socio-ecological model guided this study and it was identified that efforts to change physical activity behaviour should be based on the understanding of the interrelationship between the levels of the socio-ecological model: intrapersonal/individual, interpersonal and social and environment. Findings from this study suggest that physical activity interventions are more likely to be successful when they target multiple components of the social-ecological model.

Survey results suggested that two thirds of the BRM women questionnaire were not involved in sufficient physical activity to promote their health with a third being involved in physical activity which that was below recommended levels of physical activity (DH 2004). Group interview findings also revealed that only half of the BRM women were active. They were mainly involved in walking as a part of their daily routine. These findings supports previous research specific to women from ethnic minority populations (Eyler et al. 2003; Wilbur et al., 2003a, 2003b; Crespo et al., 2001) which also found low levels of physical activity in women from ethnic backgrounds. The present study however did not objectively measure the frequency, intensity and duration of walking. Results from the group interviews suggested that the overall attitude towards physical activity was positive. Based on group interviews most women who were involved in physical activity were aware of its benefits which could be argued was related to acculturation and the number of years these women have been exposed to the British culture. Previous studies (Hosper et al., 2008) suggest that the more migrant women become culturally oriented and embrace the

culture in the host country the more their attitudes towards physical activity become less traditional and more positive. Hosper et al. (2008) examined the association between acculturation and participation in physical activity in a group of Turkish and Moroccan migrant women in the Netherlands. They assessed which motivational factors mediate this association. The motivational factors were attitudes, social influences, and self-efficacy. Their result suggested that acculturation was strongly associated with participation in sport among Turkish women, but not among Moroccan women. Although their findings were sport related but it indicated that to increase participation in low acculturated Turkish women, the culturally specific beliefs should be taken into account when developing a culture-sensitive intervention. The findings from their study cannot be generalised to all ethnic groups as each ethnic group has their own culturally specific beliefs and attitudes toward physical activity and sport participation. Jurkowski et al. (2010) conducted a similar study on Latino women and their findings also suggest that low physical activity levels are related to low acculturation. They indicated that more specific cultural factors need to be examined to understand the relationship between physical activity participation and acculturation.

3.20.1. Interpersonal/social determinants

The application of the socio-ecological model to our results indicated that the main barriers to participation in physical activity were intrapersonal (lack of motivation, attitudes towards physical activity, health status), interpersonal/social factors (lack of time due to family/work/study commitments, not having company to go with) and factors which were related to environment (lack of access to information, lack of resources e.g. childcare, women only activities, free access to sport/leisure centres). However our survey findings suggested that the influence of individual determinants prevailed over the role played by social and physical environmental determinants of physical activity. Findings from the group interviews suggested that a number of factors influenced women's perception and participation in physical activity. Many individual (lack of time) and social environmental (type of activity, resources) enablers and barriers to physical activity participation in BRM women were identified. The results revealed that not participating in physical activity or not attending the structured forms of activity were related to interpersonal determinants i.e. lack of time (Eyler et al., 2003; Kelly and Abraham, 2004) or environmental

determinants including the cost or childcare. Kelly et al. (2003) concluded that a lack of time constrained women from getting involved in physical activities. Findings of Juarbe et al. (2002) suggested personal roles such as household tasks, childcare, studying and work were key barriers to physical activity for women. Huston et al. (2003) reported that neighbourhood environmental characteristics, including access to places for physical activity may play a role in leisure activity patterns.

However these barriers may be bigger for women from the BRM population due to cultural factors as women from the BRM population are responsible for the housekeeping and all the care giving duties. Our findings are similar to those of Wilcox et al. (2000) who investigated the determinants of leisure time physical activity in rural compared with urban older and ethnically diverse women in the United States. Their findings indicated that care giving duties were barriers to leisure time physical activity by the largest percentage of rural women. Although our study was carried out in deprived areas and not necessarily rural area but the findings are similar and consistent albeit with a BRM population.

One key finding from the survey was the influence of the ability to speak English with participation in physical activity and being involved in the community. This element as an interpersonal/social factor influenced a number of determinants in relation to participation in physical activity. However only a quarter of women spoke English, resulting in a small number of them being involved in the community. Findings from the group interviews did not support the survey results as although all the BRM women who participated in the group interviews were able to converse in English but they were not involved in the community other than working full time or part time. While the qualitative findings contradicts with the survey results, findings from the survey confirm past findings (Evenson et al., 2002) where not speaking English was negatively associated with physical activity participation amongst Latin women. Their study found out that Latin women who did not speak English lacked the confidence to attend activity classes or enrol at a gym. It could therefore be argued that the ability to speak English would empower the BRM women to make decisions more freely and access opportunities for physical activity. A study on Hispanic adolescents by Li et al. (2009) also found non-English speaking predicted failure to attain recommended physical activity levels. Crespo et al., (2000) also pointed out that racial and ethnic

minorities engaged in less leisure time physical activity than the indigenous population. They reported low levels of leisure time physical activity among Mexican American who did not speak English at home suggesting that acculturation by language influenced participation in physical activity in BRM women.

According to TTM, it could be argued that participants who led inactive lifestyles or engaged in physical activity occasionally (i.e. precontemplation contemplation, and preparation stage) perceived the barriers to participation to exceed the benefits. Although not directly measured, one explanation could be that these women had low self efficacy in their ability to take part in physical activity.

Most respondents had lived in their current address for 2 years or less which could contribute to the lack of access to information about physical activity programmes in their area. However more than half of the women reported they were aware of their local facilities and found the conditions of the public facilities good. One explanation for this could be due to the lack of ability to speak English for the BRM women which could subsequently contribute to the lack of access to information even though they were aware of the local facilities. Therefore it could be argued that although a number of social environmental factors can act as physical activity promoters such as: seeing other people active in the area, awareness of the local facilities, good conditions of the public facilities and involvement in a community group, interpersonal factors such as lack of time due to family commitments (children) constrained them from participation in physical activity. Nearly half of the BRM women reported to be doing activities on their own which indicated the lack of social network or social support. As having company to do physical activity was identified as a promoter determinant to engage in physical activity. However women reported to be mainly involved in outdoor activities i.e. walking which suggested they didn't participate in structured activities.

The findings also referred to a lack of social support in terms of involvement in the community and close contact with ones' own social network (Lee et al., 2004). Health literacy as a means of information transmission through contact in individuals' close network enhances access and therefore people's self efficacy to choose healthy behaviour such as physical activity. It has been suggested that an individual's position

in the social structure e.g. social contacts and community could enhance the possibility of accessing support and resources and subsequently reducing the likelihood of adverse impact of low health literacy (Ali, 2002). Women in this study were mainly migrants to the UK and lived away from their home country and also their social network. Lack of social network and social support in the form of emotional support has a negative impact on individuals' self esteem and confidence (Lee et al., 2004). Emotional support can enable individuals to accept and effectively cope with their own limitations and capabilities including low health literacy and their negative implications.

Furthermore, survey findings suggested that more unemployed and self employed respondents took part in physical activity. One explanation for this could be that more time was available to these women for engaging in physical activities. This finding is not in line with our qualitative results where the BRM women who were employed either half time or full time reported to be more active. Also an earlier research by Lopez et al. (2008) who also used the socio-ecological model as the basis for their research carried out a qualitative study among Latina women who were involved in activities outside their homes. They reported that women who were working outside homes had positive attitudes about physical activity and found their neighbourhood to be safe and access to physical activity facilities to be easier.

3.20.2. Environmental determinants

Survey results indicated that participation in physical activity was influenced by social environmental determinants including: awareness of the local facilities, perceptions of walking in the area and the public facilities available. This supports the earlier research on the influence of social environmental factors and low physical activity participation in the BRM women (Pan et al., 2009; Brownson et al. 2001; Brownson et al., 1998; Hovell et al., 1992). Observing other people being active in the neighbourhood also influenced the BRM women's participation in physical activity confirming results from previous studies (Duncan and Mumery, 2004; King et al. 2000). The survey suggested that women did not perceive their environment as unsafe. Given that women lived in a deprived area this may be surprising, however the association of safety and physical activity is not consistent in the literature. For example the lack of neighbourhood safety did not influence walking trail users in one

study (Brownson et al., 2000), whereas in an earlier study lower levels of physical activity participation were reported due to perceived neighbourhood safety (Centre for Disease Control and Prevention, 1999). However, findings from the group interviews were somehow mixed and did not support the survey results about the perceptions of safety. During the interviews women reported that safety was a barrier to physical activity which is consistent with some findings (Giles-Corti and Donovan, 2002) where BRM women's perceptions about the safety of their neighbourhood suggested that the provision of safe and accessible public open space is an important community resource. However a number of factors should be taken into consideration for park usage such as its proximity, size, design characteristics and safety (Giles-Corti and Donovan, 2002). Women from the group interviews however mentioned going with someone else made them feel safe. Both survey and interviews results suggested that women preferred group women only activities which refers to the lack of resources and the social environmental determinants in line with earlier research (Duncan and Mumery, 2004; Giles-Corti et al., 2003). Kirby et al. (2007) also concluded that walking with a group rather than alone could protect participants from unsafe situations.

Access to the local venues for physical activity was identified to be an influential factor for participation in physical activity. Some commentators (Pan et al., 2009; Billie Giles-Corti et al., 2003) referred to the importance of access to resources including free activity sessions and childcare and their relation with social support, social cohesion and social capital. There is limited research in the area of social support and physical activity in minority groups (Eyler et al., 1998). Providing resources and access in the community may provide the social support required for the initial motivation for participation in physical activity. In support of our argument (Mummery et al., 2008) concluded that individuals engagement in their community and the relation between the interconnectedness of the individual and their community influences their physical activity behaviour. Survey results indicated that lack of access to information about the activities available was a barrier to participation in physical activity. Furthermore findings from the group interviews suggested that local community centres, schools and cultural organisations were the best sources for information and resource about physical activity. They also suggested that local centres should link with the leisure centres to better provide the information and the

resources needed. Since access to information and places for physical activity was identified to impede the BRM's women physical activity participation they were asked if they would like the idea of running physical activity sessions inside their homes by a member of the community. Findings from the group interviews suggested that the women appreciated the idea of community group providing information and demonstrations about physical activity that they could do in the household. Women stated that having somebody to motivate them and provide the support they need to sustain their activity would be very beneficial. This confirms the past studies (Eyler et al., 1999) concluding that higher levels of physical activity are related to social support. Those individuals with family or friends encouragement are more likely to participate in physical activity. Community people's engagement with the BRM women to encourage them to become physically active and running activity sessions for them as well as providing information with regard to places and programmes they can go to would create a social network as a catalyst to behaviour change. It could be argued that incorporating social support into physical activity by initiating friendly social activities can promote physical activity among the BRM population. Not all women appreciated that this take place in the home, reporting that it would feel uncomfortable, awkward, or impose on the family space. Community activity participation seemed an encouraging factor to increase physical activity among the BRM women. This suggested that one potentially effective way to increase physical activity among the BRM women is to facilitate greater access to community based physical activity opportunities. Consistent with earlier research (Kahn and Heath, 2001) suggested that a behavioral intervention that occurs through establishing, empowering, and maintaining social networks that create supportive relationships for behavior change may be effective in promoting physical activity in a community. Such interventions could include walking groups, buddy systems, exercise contracts, and exercise groups.

Survey results suggested that lack of access to information about the programmes and venues constrained the BRM women's physical activity participation. Women from the group interviews suggested that the best means to get informed were through the local community centres, schools and public announcement. They also indicated that the cultural organisations should link with the leisure centres and act as a source of information. This again highlights the significant role of the community centres in

promoting physical activity in the BRM women. In line with our findings Cheadle et al. (2010) identified networking between organisations led to promoting a number of physical activity programmes for the older adults.

Fleury and Lee, (2006) also concluded that the relationships between community organisations, institutions, neighborhoods, and community networks can serve as positive change agents for health promotion. Integrating resources for physical activity, physical features of the community and/or the presence of programs that support activity may influence behavior change.

Survey results showed that the respondents who chose the active transport mode were significantly more involved in a community group and participated in physical activity. More over findings from our group interviews referred to social environmental determinants, indicated that organised transportation would influence the BRM women's physical activity participation since it could reduce barriers such as distance, safety and cost. Our results are consistent with Everson et al., (2002) about a lack of transportation as a barrier to engaging in physical activity programmes.

The results from the survey suggested that the influence of individual and social environmental determinants were greater than those from physical environmental. Individual and social environmental determinants appeared to directly determine the BRM women's participation in physical activity. Therefore it could be suggested that having access to venues and facilities for being physically active is necessary but insufficient to ensure BRM women's participation in physical activity programmes.

3.20.3. Encouraging factors

Although it was identified from the survey results that a large number of personal factors i.e. attitudes and perceptions prevented the BRM women from participating in physical activity. They identified environmental factors encouraging to take part in physical activity. From the survey the majority of the respondents reported access to physical activity in their area as an encouraging to take part in physical activities. Similar findings were reported in other studies (Pan et al., 2009; Brownson et al., 2001). Group interviews revealed that encouraging factors for participation in physical activity were mainly individual based including health benefits of physical

activity i.e. physiological, psychological and social factors. Previous commentators such as (Franz Zunft et al., 1999) suggested that the lack of specific information about health benefits of physical activity may cause a lack of motivation to increase the individual level of exercise. In contradiction Sabha and Achterberg, (1997) pointed out that health beliefs and knowledge of health benefits of physical activity is not necessarily associated with health related action of an individual i.e. becoming physically active. Also some women showed an interest in the types of physical activity that they would be able to incorporate into their lives. This could be related to the lack of time that most BRM women face due to their family and household responsibilities. Furthermore, women with children and family responsibility agreed that family orientated physical activity would be most appropriate. This is referring to the lack of family support the BRM women experience for childcare and the lack of social support in providing childcare facilities and resources for them to enable them to be physically active. These findings support the previous studies (Pan et al., 2009; Billie Giles-Corti et al., 2003) pointing out the significance of social support in physical activity behaviour in women from minority groups. It is evident from the findings of this study that people from ethnic minority populations have several individual, social, environmental, and community factors influencing physical activity levels.

3.21. Limitations

3.21.1. Survey limitations

There were several limitations to our study.

- First the study relied on self-reported survey data to measure the physical activity levels and identify determinants, for which there could be a number of potential bias such as possible underestimation or overestimation of physical activity levels among the BRM women and perceived barriers to physical activity.
- Second, the present study did not use a validated questionnaire the items included in our survey were developed by the PAG and CRAG.
- Third, because our study included participants from various ethnic backgrounds, maybe findings could not be generalised among all the BRM women.
- Fourth, although the survey collectively provides responses across different ethnic groups, when categorised by age groups, not all ethnicities were represented evenly across those different groups. In general African, Arabic and British peoples have the highest representation across different ages groups. Also some ethnicities were not present in certain age brackets i.e. Chinese or British Chinese representation was only present in the 18-25 year age range.
- Fifth, there were some missing values on the survey which caused the data to be unfit for analysis for some variables.
- Finally, our investigation enabled an understanding of the key barriers to participating in physical activity, an understanding of factors that would encourage BRM women to engage in more physical activity. However it could be argued that engaging local community people in a research study limited the methodology and subsequently the outcome of the study. The community researchers' contribution in the design of the questionnaire resulted in excluding questions about the time and intensity of physical activity as they felt that there was too much detail for BRM women to understand.

3.21.2. Group interview limitations

There were a number of limitations with this data collection phase as follows:

First the sessions could not be voice-recorded making it difficult for us to ensure all the responses were recorded, this also made it very difficult to track the respondents from the notes on the flip chart as not everybody's initials were written against their responses.

A second limitation was the lack of discussion and interaction between participants, we made every possible effort to make sure participants engaged in discussions. Unfortunately the respondents failed to engage in debate but tended to answer questions briefly and individually. This resulted in the data being treated and analysed as individual interviews. Therefore the interview approach did not meet the criteria set out for running group interviews, so as to not disregard the data, *individual responses* were converted to themes related to the determinants of physical activity.

A further limitation for focus group research in the present study was that the results from different groups cannot be generalised because the minority groups who participated consist of many subcultures within broad categorisation of BRM. For example the information gained from a group of African ladies may not be generalised to Muslim Arab ladies.

3.22. Conclusions

Using frameworks such as the socio-ecological model emphasise the importance of addressing problems at multiple levels and stress the interaction and integration of factors within and across all levels (i.e. individual, interpersonal, social and physical environment). The survey findings indicated that, for many women, being physically active was limited by women's social situation, their relationships with others, and the environment they lived in i.e. they were limited by interpersonal and environmental factors. A second limiting factor, although not to the degree of interpersonal/environment factors, was women's lack of motivation, non-positive attitude towards physical activity and feeling that they had no or little time for physical activity i.e. they were limited by intrapersonal factors. All of these factors could ultimately be managed by women, yet it appeared that support was needed in helping them with these factors which limited involvement in physical activity. Although some women referred to non-modifiable factors influencing physical activity patterns e.g. weather, the overall findings from this evaluation highlighted

that women's physical activity levels could change given the correct individual and environmental support. Given this, it is critical that interventions are not only provided in the community to assist women to be more physically active but provide a framework of support in relation to service provision ranging from making sure that women are aware of events and activities taking place through to providing appropriate transport and venues in order to get women to a place where they can start to lead more physically active lifestyles.

This study prides itself on having instigated partnership-working between members of the community who can work together to design and deliver interventions which have a greater chance of being utilised by the local population due to planned awareness raising and delivery of services which seeks to be inclusive and target those who have already expressed an interest in leading a more physically active lifestyle. It is also anticipated that the methods employed as part of this process will encourage other members of the population to become more physically active.

Our results highlighted the importance of social support for BRM women living in deprived areas. In reviewing the barriers to physical activity many of the barriers appear to be modifiable and could be addressed through a multi-component community based intervention.

Viewing our findings in the context of a socio-ecological model suggested that appropriate changes in the social environment i.e. providing culturally tailored and client based resources such as women only activities could result in changes in individuals health related behaviour. Supporting individuals in a population particularly if they belong to a disadvantaged group seemed crucial for implementing environmental changes. Social support was a reported determinants of physical activity. Identifying perceived barriers and benefits, self-efficacy, and stage of exercise change to adopt physical activity within the BRM population is essential to developing effective physical activity educational programs. Program developers must also obtain information on the learning methods and activities that would appeal and attract the target audience. Findings of this study suggest that physical activity interventions should not only target individuals but also their family, friends, and their communities. Therefore the next study will aim to explore the concept of family support and social support in the BRM groups.

Studies	Findings
Study 1: Kensington Women Get Lively Project Survey= 213 BRM women Focus groups= 17 BRM women	
Aim 1: To develop a process to enable a research investigation to take place among BRM populations (hard to reach group).	Local women were consulted and a bespoke survey was constructed that aimed to explore the factors that determined physical activity for women. The survey effectively engaged 213 hard to reach individuals from BRM population.
Aim 2: To identify physical activity levels and its determinants among BRM women living in deprived areas using a socio-ecological framework.	Survey: <ul style="list-style-type: none"> • Higher than expected self reported PA levels. • Barriers included lack of motivation time access to information, resource and the ability to speak English. Focus groups: <ul style="list-style-type: none"> • women only activities • Access to information through schools and community centres • Community based/group activities were asked for. • Exercise professionals required to motivate women to get active. • Organised walks, ball games and indoor group exercises were preferred
Study 2: Muslim Families Project Individual interviews, 4 families (n=16)	
Aim1: To identify physical activity determinants among BRM families and to explore whether BRM individuals' beliefs and attitudes towards and knowledge about physical activity have changed since living in the UK.	
Aim 2: To investigate the role of family support and parental role modelling in promoting physical activity in the family unit within the socio-ecological framework.	
Study 3: Mixed methodology(survey+ RE-AIM framework) utilised to evaluate a community based multi component intervention designed to target the low income BRM and disadvantaged people in derived areas	

Chapter four

Study 2-

Physical Activity

Determinants in Muslim

Families

4. Introduction

4. 1. Rationale for the study

Data from the first study suggested that there is a need for a better understanding of physical activity determinants within the family setting. Using the socio-ecological model identified that key components to increase participation in and access to physical activity programmes is the examination of broader social and environmental factors, such as cultural influences, social support, social norms, adequate facilities, and safe neighbourhood. From a socio-ecological perspective environments are multidimensional and complex. Social or physical environments can be described as including a variety of features or attributes, such as the size, temperature, facilities and safety. Environments can also be described in terms of their actual or perceived qualities. The variable nature of environments has a direct implication on the design of initiatives to promote physical activity participation. This has been identified and supported by previous studies (King et al., 2002; Banks- Wallace, 2000; Crespo, 2000). The social environment comprises the relationships, the culture and the society with whom the individual interacts. The social environment has a significant influence on physical activity behaviour. However it remains unclear whether low levels of participation in the BRM individuals is a result of broader sociocultural influences rather than personal choice.

Results from study 1 found that key barriers to participation in physical activity in BRM families were lack of time due to household commitments, childcare and studying which also indicates a lack of family support. BRM women also mentioned they lack motivation to participate in physical activities and their attitude towards being physically active was not positive. Environmental factors such as lack of access to information about programs and childcare facilities as well as women only activities also impeded BRM women's physical activity. However as discussed in previous chapter no access to information can be a result of language barrier in BRM groups as well as their social interaction pattern. The lack of childcare facilities as mentioned by the participants is an environmental factor which could also be tied in with the lack of family and/or social support in BRM families. This study therefore aims to investigate the interconnectivity between these factors and develop the findings from study 1 by using qualitative techniques to gather insights and perceptions about physical activity and daily living from BRM families living in the

UK. Further study 2 aims to specifically identify factors that determine Muslim families' engagement in physical activity and exercise by developing more detailed qualitative insights and adding detail to and enriching the findings from study 1. These more detailed insights about Muslim families and their physical activity and exercise are required before designing physical activity programs that are adapted to the particular needs of Muslim families.

The effective promotion of physical activity is vital based on an understanding of the interaction between the physical and social environment (Williams et al., 2005). Further the physical environment has the capacity to influence large numbers of people through providing settings that can influence physical activity behaviours (Barker, 1968) and offer opportunities, obstacles and indications that can help or hinder these behaviours (Sallis and Owen, 1999; Stokols, 1992; Wicker, 1979; McIeroy et al. 1988). However given that much research has been published little work has focussed on ethnic groups and their engagement in physical activity particularly in the UK.

As previously discussed in the literature review from a social environment perspective social relationships and social support are key aspects that encourage positive health behaviours and health status (House et al. 1988; Antonucci, 1990). Heaney and Israel (1997) reported a positive link between social relationships and health behaviour choices in that physical activity engagement may be affected by friends, family or significant others. Social support is a key if opportunities to take part in physical activity are to be taken. For example, mothers wishing to exercise may need childcare which is often provided by spouses. On the other hand families may take part in activity all together and this requires a different kind of social support (Stahl et al, 2001). Social support can be split into 4 dimensions, emotional, appraisal, informational and instrumental (House, 1988). Study 2 will focus on emotional support which comes from within the family and informational support including advice suggestions and directives. These 2 aspects of social support have been chosen because the findings from focus groups in study 1 suggested that time and more importantly childcare were significant barriers to physical activity participation. Most women who took part in the survey found it difficult to engage in physical activities due to household chores and family commitment suggesting a lack of family support.

Trost et al. (2003) found a positive association between the social support from spouse and family and physical activity levels. It is also important to note that females from BRM groups particularly in Muslim families are the main facilitators at home. This requires them to complete most domestic chores and housework for the comfort of the family (He and Baker, 2005).

Although the positive effects of social support on health are strongly documented the processes causing this effect remain unclear (House et al., 1988). Furthermore a number of studies have found that the influence of social support on health behaviour is not always positive (Antonucci et al., 1998; Baranowski et al., 1996; House et al., 1988). Furthermore the theory of reasoned action by (Fishbein and Azjen, 1975) also proposes that social norms for health related behaviours affect actions. For example in Liverpool only 18% of the adult population are active for 3, 30 minute periods per week (Ploszajski Lynch, 2005) meaning that activity is not the social norm. A number of studies did not find a positive association between social support and health behaviour on the determinants of moderate physical activity (Laitakari et al., 1996; Coureya and McAuley, 1994). However most of these studies have examined relationships between vigorous physical activity and social support (Sallis and Owen, 1998). And therefore there is a lack of evidence concerning regular physical activity and less vigorous more moderate physical activity. The Active Peoples Survey (2007) provides the most up to date data on factors affecting physical activity and sports participation in ethnic groups. Much of the findings relate low physical activity and sports participation to a lack of social support, availability of appropriate facilities, limited awareness of physical activity programmes, non-targeted marketing and finally dress code particularly for women.

It is evident that social, cultural, and environmental factors influence physical activity patterns more strongly among minority populations (Lee, 2004). Therefore a socio-ecological focus would allow researchers to identify broader needs. For instance, the identification of social norms, cultural influences, characteristics of the physical environment, and access to community-based facilities may all influence physical activity behaviours more than any individual/intrapersonal factor. Socio-ecological model will assist identifying and eventually addressing these influences.

4.2. Parent's influence on physical activity behaviour

The limits that women experience in participating in physical activities are a concern. Especially as Muslim women may act as role models for activity (or inactivity) within their families thus perpetuating low physical activity levels. Little is known about the role of modeling in development of activity levels in children, therefore parental support is an important area of research. Family dynamic and family support in promoting healthy behaviour is still under researched (Biddle and Mutrie, 2008). The study by (Sallis et al., 2000) on youth aged 13-18 and parental influence on their physical activity levels showed positive association of parents' direct help in physical activity (e.g. providing transport) and support with increased levels of physical activity.

More over the social cognitive theory of behaviour points to the importance of model learning from parents' behaviour and of receiving encouragements from significant others (Andersen et al., 1998). They refer to family as an effective object for interventions to increase children's physical activity, and to prevent and improve management of childhood obesity. It has been shown that parents influence their children's activity by modelling (being active themselves), but also by encouragement and support. Parents may influence their children's vigorous activity level regardless of their own activity patterns (Andersen et al., 1998) although other elements, such as parental beliefs and attitude about physical activity and parental encouragement, may be more important predictors (Brustad, 1996). As children move into adolescence parental modelling may be an inadequate influence on physical activity as parent's activity itself does not eliminate important barriers (Stewart et al., 2003), such as the facilitation of activity or skill development, contact with active peers, or providing transport to places where they can be physically active. In younger children parental supportive behaviours including transport, observing activity, and encouraging activity, has appeared to be more important (Stewart et al., 2003). Fogelholm et al. (2000) found that the parent - child relationship of inactivity is stronger than that of vigorous activity. However, the clustering of inactivity (time spent in sedentary activities) within families has not been investigated. Thus BRM families and in particular Muslim families may offer social support in a different way which may relate to their family dynamics which are driven by cultural and religious rules and

beliefs. Physical inactivity may be another fruitful area of investigation in Muslim families.

4.3. Aims and objectives

The overall aims of this study were to:

- Explore the physical activity determinants within the socio-ecological framework among the BRM families living in the UK
- Identify how best to promote physical activity among BRM families/population

The objectives were:

- To explore the influence of physical and social environment and social support on physical activity behaviour within BRM families.
- To explore whether the personal (beliefs attitudes, and knowledge about physical activity), social environmental (cultural/religious issues, social support, sense of community), and physical environmental(weather, access) determinants of physical activity for these families have changed since they have migrated to the UK.
- To identify the parents-child relationship among BRM families with regards to physical activity behaviour from a cultural/religious perspective.

4.4. Methodology

A qualitative research approach was adopted involving in depth interviews with each participant in order to examine attitudes towards, determinations and barriers for engaging and the influence of family support and parents-child relationship in physical activity. This method was informed from the mixed methods used in the previous study and aimed at enriching the data and complementing the findings from study 1. Individual interviews are broadly used in qualitative research (Denzin and Lincoln, 2000). This type of approach allows respondents to discuss their understanding, beliefs, knowledge and attitudes in an informal atmosphere. The semi structured interviews have an intrinsic structure that guides the process as well as having the flexibility regarding the issues that the participant (interviewee) would like to follow (Dale, 1996).

4.4.1. Interview design

A series of pre-determined questions, in the form of an interview guide (Patton, 2002) was used. It is suggested that interview topics should be based upon a review of the established literature, preliminary research findings, suggestions made by experienced colleagues and researcher intuition (Gaskell, 1995). Considering these factors, the design and structure of interview content was guided by the findings of the earlier research in study 1 part I and part II and was adopted from the context of the socio-ecological framework (Sallis et al., 1997). As suggested by Frey and Fontana (1991) some clarification and explanation probes were used to ensure consistent depth of questioning across interviews. This was to ensure a deeper level of understanding of the responses by the researcher. The interview framework was similar in design for all participants with specific questions for parents and for their children, however it was necessary to explore unique individual perceptions in each interview to allow specific views to emerge. A flexible questioning and progression method was employed while interviewing to ensure an open dialogue between the researcher and the participants as inflexibility in the process of an interview could restrain the ability of the researcher (interviewer) from successfully capturing a participant's experiences (Dale, 1996). This flexibility aimed to create a comfortable and relaxed atmosphere and facilitated openness and flow (Kvale, 1996). Participants also filled out a short questionnaire about their demographic information. This questionnaire asked the basic questions

(age, ethnicity etc.) as well as their employment status, household, education level, health condition, car owner, travel mode, and the length of their residency in the UK.

4.4.2. Interview structure for the parents

Each individual interview for parents consisted of 4 phases (See Appendix 5 for the interview questions).

4.4.2.1. Phase 1

First phase aimed at identifying physical activity determinants and individual and social determinants of physical activity among the BRM parents. First Question was about participants' attitude toward physical activity and asked about the definition of physical activity, what counts as physical activity, how much physical activity is enough to keep fit/healthy, frequency, intensity and the type of physical activity. Participants were also asked whether they considered themselves to be physically active enough. Next series of questions focused on individual determinants of physical activity and how living in the UK has influenced these determinants. The determinants were the knowledge and awareness of the benefits of physical activity, sources of beliefs about physical activity and motives for being physically activity.

4.4.2.2. Phase 2

Second phase asked questions about the influence of the BRM parents on their children's physical activity behaviour. Questions were about parents' role, what motivated their children to be physically active, how supportive they were for their child's active lifestyle, how their attitudes and beliefs encouraged or discouraged their children's physical activity, how did they try to motivate/encourage their children to become more physically active, their perceptions of possible barriers for their children's physical activity, whether they think they were a good role model and was this changed since they have been living in the UK.

4.4.2.3. Phase 3

The third phase emphasised on the influence of social and physical environmental determinants on physical activity in the BRM groups. The series of questions in this phase tried to identify how the environment was perceived by the BRM families and how its determinants influenced their physical activity behaviour. Questions consisted

of what they thought of their neighbourhood in terms of access and characteristics, the barriers to physical activity, the role of community, awareness of facilities and resources in their area and how they usually got informed about the physical activity programmes.

4.4.2.4. Phase 4

The last phase of the interview was about clarification and explanations of the responses. Participants were asked if they wished to add anything to their answers, whether they liked to raise any concern about the interview and the manner in which the interview was conducted and if they had any further comments.

4.4.3. Interview structure for the children

The first series of questions for children evolved around their involvement in physical activity and PE lessons in school, benefits of physical activity, what counted as physical activity, activities they were involved in after school/at home, time spent inactive i.e. watching TV, computer games, facilities and opportunities available to them for physical activity. Next series of questions were about the parental role modelling and their influence on children's physical activity behaviour including: what their parents thought of physical activity, how supportive/encouraging their parents were for them to be physically active, how their parents encouraged them, whether their parents were concerned about their weight and whether they joined in with them in physical activities. The rest of the questions aimed to identify the influence of social and physical environmental determinants and the role of culture/religion in children's physical activity behaviour. (See Appendix 6 for a copy of the questions).

4.4.4. Participants and settings

In current qualitative research the sample was small and not selected to be representative of the population. The sample for this study was designed to reflect the cultural and religious issues among BRM population and therefore Muslim families were approached to take part. The recruitment criteria included people from two BRM communities reflecting similar characteristics such as: age, religion, socio-economic status, and children in the household. These were the families of the women who took

part in the first study and agreed to participate in more in depth research with their families.

4.4.5. Procedure

All participants were interviewed on one occasion. The timing of interviews varied for each participant. Participants were approached following their initial involvement with the survey (study 1). Seven Muslim families were initially invited to participate in the study. Three families refused to consent, of which two families stated that they were not happy with their responses being audio recorded whilst the other family did not provide any reasons for not participating. The aims of the research were explained and participants were asked if they would be willing to take part in the study. Then a letter explaining the purpose of the study together with details about the conduct of the interview and voice recording was put together in a package with the consent forms for each participant (Appendix 4). Following reassurance of participants' confidentiality and anonymity, participants' consent to engage in the study was obtained via written consent. The interviews determined the date, time, and venue of the meeting. Interviews took place in participant's homes in a private room, free from interruptions and distractions. The interviews were conducted in a relaxed and informal manner. Interviews lasted between thirty and fifty minutes. All interviews were conducted in English. The interview began with the researcher explaining the purpose and method of the study and obtaining the participant's written informed consent before proceeding. In addition to the individual interviews each participants was asked to fill out a short questionnaire about their demographic information including: gender, age, ethnicity, marital status, employment status, household income, educational level, health condition, car owner, travel methods, using the public transport, walking patterns and time lived in the UK. Each interview was audio taped and later transcribed. The main question in the interview was what physical activity meant to the participant, but participants were also asked to identify factors that influenced their decision whether or not to engage in any form of physical activity.

4.4.6. Description of the families

Each selected family unit was complete with between 1 and 3 children, a mother and father. Children were all aged between 8-16 years old. All participants with the exception of two girls were born outside the UK. These families were mostly inactive and reflected similarities in terms of community background, age, and religion who have migrated to the UK for work or study purposes, three families had 2 parents studying or have studied at post-graduate level. Families lived in urban setting in Liverpool in the North West of England. The other family had no qualification. Two families were from Libya and the other two were Iranian (parents aged 40-50).

The parents in one of the Libyan family were from a deprived area in Liverpool, both post graduates in north West Universities. The family consisted of 5 children; 3 boys aged 16, 12 and 7 and 2 girls aged 15 and 14. The second Libyan family was also living in the same area in Liverpool and the parents were postgraduate students. They had 3 boys ages 18, 16 and 7. Both families were socio-economically comfortable. The other two families were from Iran. One family was highly educated with both parents involved in academia, whilst the other family came to the UK as asylum seekers with no qualifications and subsequently set up their own business. The first family had one female sibling aged 13, whilst the other family had 1 boy aged 21, and 2 girls aged 16 and 10. All families were Muslims. Both Libyan were Sunni and the two Iranian families were Shia Muslims respectively. The presence of Hijab in one Lybian family reflected the more orthodox approach to Islam, whereas the other 3 families were more progressive in their religious practice. The interviews took place in participants’ homes. The following tables present each family’s profile.

Family A	Ethnicity	Libyan	Yrs in UK	3	Household Income	10,000-20,000	No. Children	5
		Age	Qualification		Employment Status			
Mother P1A		42	University Degree		F/T postgraduate student			
Father P2A		46	University Degree		F/T postgraduate student			
Child 1 P3A		16	GCSE		Student			
Child 2 P4A		15	N/A		Student			
Child 3 P5A		14	N/A		Student			

Table 4.1. Family A: Libyan post graduates

Family B	Ethnicity	Libyan	Yrs in UK	3	Household Income	10,000-20,000	No. Children	3
		Age			Qualification	Employment Status		
Mother P1B		44			University Degree	F/T postgraduate student		
Father P2B		46			University Degree	F/T postgraduate student		
Child 1 P3B		16			GCSE	Student		
Child 2 P4B		8			N/A	Student		

Table 4.2. Family B: Libyan postgraduate students

Family C	Ethnicity	Persian	Yrs in UK	13	Household Income	35,000+	No. Children	3
		Age			Qualification	Employment Status		
Mother P1C		43			High school	Housewife		
Father P2C		47			High school	Self employed		
Child 1 P3C		16			GCSE	Student		
Child 2 P4C		10			N/A	Student		

Table 4.3 Family C: Iranian family self employed

Family D	Ethnicity	Persian	Yrs in UK	13	Household Income	35,000+	No. Children	1
		Age			Qualification	Employment Status		
Mother P1D		40			University Degree	F/T postgraduate student		
Father P2D		46			University Degree	F/T academic		
Child 1 P3D		12			N/A	Student		

Table 4.4. Family D: Iranian family postgraduate student and academic

4.4.7. Data analysis

Interviews (n=16) were recorded using a dicta phone and were subsequently transcribed verbatim by the primary researcher (Masoumeh Minou). As soon as possible after meeting with the participants, the transcription of interviews was reviewed line by line to identify themes. The identified themes were organised into related areas to construct descriptive themes and to further develop analytical themes (Thomas and Harden, 2008). The responses mainly addressed the research aims and objectives directly. Content analysis was conducted based on pre-defined categories derived from the socio-ecological model (Sallis et al., 1997). This type of analysis is theory driven and therefore deductive, that is, the themes emerge from the data are categorised under the pre-defined categories (Thomas and Harden, 2008). Using the interview guide as a “descriptive analytical framework” (Patton, 2002, p.376) category labels were applied to interview transcripts using a “cut and paste”, procedure, as outlined. This is a process whereby quotations from interview transcripts were copied and grouped together into a new word document under pre-defined categories. The demographic data of each parent is presented in the following table.

4.4.8.Results

Table 4.5. Participants' demographic data

Participants	Gender	Age	Ethnicity	Marital Status	Employment Status	Household Income	Education	Health Condition	Car Owner	Travel to work	Using public transport	Walk to work/shopping places	Time lived in UK
1	Female	43	Asian-Persian	Married	Unemployed	35,000+	High School	No	yes	N/A	Never	Twice a week	13 yrs
2	Male	47	Asian-Persian	Married	Self employed	35,000+	High School	No	Yes	Car	Never	Seldom	13 yrs
3	Female	40	Asian-Persian	Married	Part time education	35,000+	University degree	Chronic Constipation and irritable bowl	Yes	Car	Very rarely	Once a week	12 yrs
4	Male	46	Asian-Persian	Married	Employed	35,000+	University degree	No	Yes	Car	Very rarely	Rarely	12 yrs
5	Female	44	Mixed-Arab	Married	Full time education	10,000-20,000	University degree	No	No	Bus	Twice a week	3 times a week	2 yrs
6	Male	46	African-Arab	Married	Full time education	10,000-20,000	University degree	No	Yes	Car	Never	Rarely	2 yrs
7	Female	42	African-Arab	Married	Full time education	10,000-20,000	University Degree	No	No	Bus	Every day	Twice a week	3 yrs
8	Male	46	African-Arab	Married	Full time education	10,000-20,000	University degree	No	Yes	Car	Never	sometimes	3 yrs

4.4.9. Results and Discussion

Data from the individual interviews was analysed deductively based on the socio-ecological model. Similar responses to each question were identified and clustered together within the raw data, then first and possible second order themes were identified for each group. A general dimension was then identified for each series of clustered responses. Similar to the methodology in study 1 triangulation was employed for the content analysis which was the discussion of the results between the primary researcher (myself) and one of the supervisory team members. This was to ensure that the themes were categorised accurately (Biddle et al., 2001). The following section presents a rationale for each structural theme and the analysis of the data from the individual interviews. The structural themes are offered and discussed in the order that they were explored within the individual interviews. A general discussion of the finding together with links to the literature is presented with the results.

Table 4.6. Definition of physical activity

Raw data themes	First order themes	Second order themes	General dimension
What counts as physical activity <i>-Any movement you do is activity. Any movement that's to do with your body is physical activity. Swimming, cooking, playing snooker, studying is physical activity. (P2A)</i> <i>-Exercise and irregular activities, like not just walking normally. (P1B)</i> <i>-I think its all acts or physical acts that human being does such as walking and jogging and whatever. (P1B)</i> <i>-In my idea its sports, walking, running, anything that's to do with walking around and using your legs. (P3C)</i> <i>-Everyday moves, walking, jumping running. (P3B)</i>	Body movement Exercise, Walking, jogging Running Sport	Everyday move	Most responses referred to structured activities
Type of activity involved <i>-Not involved (P2B)</i> <i>-an hour of dance or exercise (CD) 2-3 times a week</i> <i>Not active enough recently due to studies. (P1B)</i> <i>-work related activities: bending, lifting heavy parts, walking 1-2 P/W. (P2A)</i> <i>-not involved. (P1A)</i> <i>-not active. (P1C)</i> <i>-job related. (P2C)</i> <i>-Not involved. (P2D)</i> <i>-Every day walking, housework. (P1D)</i>	Mainly inactive	Job related	Inactive participants

In general respondents defined physical activity ranging widely from anything that involved body movement to specific forms of exercise or sport. However reference was mainly made to physical activity as being a separate activity from daily housework (e.g. structured exercise), rather than an integral concept in daily routine lifestyle (e.g. doing housework). Respondents reported to be inactive and not involved in any form of physical activity other than what was required by their job.

The definitions and the concept of physical activity perceived by the participants of this study are somehow consistent with the literature. Physical activity in daily life has been defined as occupational, sports, conditioning, household or other activities (Caspersen et al., 1985). However it was felt that physical activity is more perceived as sport, exercise and/or some kind of activities that are not integrated in daily routine such as jogging or running. Exercise is a division of physical activity that is structured, planned, and repetitive and has an objective to improve or maintain physical fitness (Caspersen et al., 1985).

Table 4.7. Levels of physical activity

Raw data themes	First order themes	General dimension
How much physical activity is enough to keep fit/healthy		
<i>I think at least half an hour per day is needed, more than normal- moderate to hard (P1C)</i> <i>I don't know, actually I don't know the specific but you should have. I heard that you should have 20-30 minutes a day of physical activity, really good hard exercise. (P2A)</i> <i>Maybe like an hour, form one hour more or less. At least twice a week. 1 hour more/less twice a week, easy (P2B)</i>	30 minutes to an hour of daily physical activity	Respondents were not aware of the recommended PA guidelines to benefit their health

This study tried to identify participants’ perceptions on how much physical activity was enough and whether they were aware of the recommended guidelines by (DH, 2004). Views on acceptable type of physical activity and on the level and extent of involvement were almost similar among all participants. However it was evident that the participants were not aware of the recommended physical activity guidelines. This could be the reason for low levels of physical activity among the respondents. Ronda et al. (2001) suggested that a lack of awareness of the physical activity guidelines can be the reason some individuals do not intend to increase their activity levels. Their

study was however guided by the stages of change model and explored the relationship between the awareness of adequate physical activity and the levels of participation.

Table 4.8. Knowledge and awareness of the benefits of physical activity

Raw data themes	First order themes	Second order themes	General dimension
How is physical activity important			
<i>-Physical activity is important in terms of fitness and body status, weight management, maintaining joint, flexibility, preventing age related issues such as arthritis, heart problem, blood pressure and general well being. (P1D)</i>	Fitness		The respondents were aware of the mental physical and
<i>-Well it's the process of the human body really. It's good for the muscles, good for growing. (P3C)</i>	Weight management		
<i>-It's really good, it's supposed to be excellent for every one because it makes me like healthy, and like free mind and think longer and live long as well. (P4A)</i>	General well being		
<i>-Yeah it is good, so you're always keeping fit. (P3B)</i>	Muscle strength		
	Growth, mental health		
<i>-Personally I always think about my future because you don't stay young forever. I think about the age where I am unable to exercise and be physically active so I think that being physically active now will help me as I age. (P1C)</i>	Ageing process		
<i>-Important for mental health, physical health, weight control even for social relations the more we move the more we have chances and opportunities to meet people to talk. (P1B)</i>		Meet new people	social benefits of physical activity
<i>-Very important for health, loose weight, heart, mental health and general well being and social life. (P1A)</i>		Social life	

Awareness of health benefits, particularly the link between physical activity and weight management and general well being seemed high in almost all adult respondents. Participants indicated different health benefits related to physical activity including physiological, psychological and social benefits. Two female respondents mentioned that physical activity has social benefits, through increasing opportunities to meet new people and socialising.

Although respondents were aware of the health-related benefits of physical activity but they were not sufficiently active to meet the recommended guidelines (DH, 2004). Respondents were mainly highly educated and therefore aware of the benefits of physical activity but this fact was no associated with higher levels of physical activity. This is however inconsistent with the recent literature indicating that the high level of education is related to higher levels of physical and leisure activity (Borodulin et al., 2008; Cassetta et al., 2007). There is a lack of clarity in literature with regards to the level of education and participation in physical activity. Shea et al. (1991) reported that Hispanic women with a college degree or higher are less active than Hispanic women with some college education. Whereas Bild et al (1993) pointed out that higher education is associated with higher physical activity scores in white women but not in BRM women. Some other commentators concluded that there is no positive association between the level of education and physical activity participation (King et al., 2000). However (Strenfeld et al., 1999) pointed out that education was positively related to exercise and leisure time physical activity but negatively related with household or care giving physical activity.

Table 4.9. Physical activity in comparison to other health measures-diet, non-smoking

Raw data themes	First order themes	Second order themes	General dimension
<u>How does physical activity compare to other things you might do for your health; diet/non-smoking</u>			
<i>-Obviously not smoking is very important. (P2C)</i> <i>-Physical activity is a lot more important than dieting. Not smoking is more important than dieting. (P1C)</i> <i>-Actually my concern is that I'm a smoker, so I always wish that I can give up smoking, this is my first choice. (P2B)</i> <i>-As important as not smoking and diet, less heart disease and obesity.(P2A)</i> <i>-[PA] is more important than diet, less important than non smoking. (P1D)</i>	Not smoking more important	Physical activity more important than dieting	The smoker respondents considered non smoking more or as important as physical activity , Diet as important as physical activity

This question aimed to identify the importance of physical activity as one of the major health determinants compared to other health measures such as diet and non-smoking. It was hypothesised that individuals from BRM groups would put less importance on physical activity and would consider diet and non-smoking more important. However

when compared with other health measures physical activity was generally considered as important as diet and non-smoking. Furthermore the smoker respondents and their spouse perceived physical activity less important than non-smoking but more important than diet. There appeared to be some level of awareness of the medical effects of smoking.

Smoking, diet and physical activity are important health-related behaviours influencing disease and mortality rates (WHO, 2003). A number of studies have indicated that positive views about smoking are related to more negative views on exercise, and vice versa (Paavola et al., 2004; US Department of Health and Human Services, 2000). This could therefore support the findings of this study where smoker participants put more importance on non smoking behaviour in comparison to physical activity.

Studies applying the stages of change model have found that motivational stages of change for smoking are not strongly related to readiness to change physical activity, fruit consumption and vegetable consumption or to eat less fat (Kremers et al., 2004). However motivational stages and cognitive factors have been identified to cluster across health behaviour, thus changing one behaviour may induce changes in other behaviours too (Kremers et al., 2004). In this study respondents who smoked seemed to be more concerned about improving their health by changing their smoking habit whereas others could be apt to increase their level of physical activity. Therefore it could be argued that in implementing health promotion strategies targeting the clustering of lifestyle factors is more important than a single behaviour approach. Although some commentators argue that targeting multiple health behaviours could complicate health promotion efforts (Yancey et al., 2004) but offering a target group the opportunity of choosing which health behaviour to improve, represents an attractive element for designing interventions.

Table 4.10. Sources of beliefs about physical activity

Raw data themes	First order themes	Second order themes	General dimension
What or who is important in shaping your beliefs about physical activity?			
<p>-Friends as well because I have too many friends who are concerned about and interested in or specialised in physical education and we talk a lot and discuss these topics or subjects and they provide me with very important information that the more we move or the more we have physical activities it will benefit our health and all the stuff. GPs just ask you do you exercise that's it. We have some lady champions, some of these ladies in physical education they run some programmes on TV to encourage women to join sport centres and to provide effective information about physical activity's effect on their health .We have no role model. TV, radio, internet, mass media, books(P1B)</p> <p>-Yeah. The environment around you, and as I mentioned your partner and your friends, if they're fit and you're not then you will feel the difference. So that's an influence because you always try to be like the others. Documentary on TV shows programmes about obesity.(P2B)</p>	<p>Friends Partner Peers</p> <p>No role models in the community</p> <p>Mass Media-TV, magazines and newspaper are influencing.</p>	<p>using role models to promote physical activity</p> <p>The environment around you</p> <p>Family environment, upbringing</p> <p>Positive attitudes from family and friends</p>	<p>family, friends, spouse are the main sources in shaping beliefs about physical activity</p>
<p>-My past knowledge, career being a GP, family environment, my upbringing, emphasis on physical activity by the family, friends with positive attitude. [media] is very influencing, talking about health and diet and physical activity (P1D)</p> <p>-I study in this field so my knowledge influences me. TV influences me.(P1A)</p>	<p>Own knowledge</p>		
<p>-My husband always encourages me to be more physically active. TV and magazines are influential. (P1C)</p> <p>-My wife encourages me to go to the gym also TV and newspaper. (P2C)</p>	<p>Spouse</p>		<p>Significance role of community centres to promote physical activity</p>
<p>-Living the life to full, self motivated, self belief. [TV] is not positive as they follow commercial purpose. (P2D)</p>	<p>Self motivated</p>		
<p>-Community centres and religious leaders have no role to play here. I don't think community centres have such activities here. I have never been to the mosque here. (P1B)</p> <p>-Community could influence and encourage but its not happening for me here we have no role models either. I have</p>	<p>No influence from the religious leaders or community centres, no role models</p>		

<i>never had a GP referral for exercising. (P1D)</i> <i>-There is some Ayat for that, and it mentions riding horses and it says teach your kids how to ride horses. I cannot remember the Ayat exactly but. Yeah. Riding horses and I think throwing the arrows and swimming. (P2B)</i>	Recommendations from the Holly book
--	--

This part of the study looked at the range of sources which could influence respondents’ attitudes, beliefs, and knowledge regarding physical activity. The emerging general dimension identified that main sources of influence were family and friends. The role of community centres to promote physical activity was also identified to be significant. Sources for information and beliefs about physical activity varied. Some respondents stated they are self motivated whereas family members and friends seemed to play a significant role in terms of encouraging healthy behaviour. Family members and friends were referred to as people with whom information could be exchanged and ideas discussed, and who also tended to be sources of encouragement and advice. This supports the previous findings about the role of family and friends and social support in promoting physical activity.

Media including TV, radio, magazines and internet also influenced participants’ beliefs attitudes and knowledge about physical activity. Other factors were self awareness and self belief. The media, particularly TV was also important in influencing attitudes and knowledge regarding the health related benefits of physical activity. TV and internet were perceived as the most available sources of information for the respondents. However none of the respondents seemed to be aware of mass media health campaigns as no mention was made. The role of mass media in promoting healthy behaviour and increasing individual’s physical activity levels has been reviewed by (Kahn et al., 2002). This review however looked at the physical activity interventions using mass media and information technology to promote physical activity among people by raising their awareness and knowledge about the health related benefits of being physically active. The main means used in studies reviewed were paid advertising, publicity and donated promotions and included print, electronic and outdoor media.

Religious leaders or community organisations and GPs did not influence or promote physical activity. This was contradictory to the findings of (Agurs-Collins et al., 1997) concluding that the support from health care providers and community and religious leaders was a key strategy to recruit participants to an intervention aiming to promote physical activity in African American. WHO (2005) also refers to engaging religious leaders in promoting physical activity and interventions in developing countries. Respondents referred to the importance of health and physical activity and that some scriptures from the Quran has justified a physically active lifestyle. This however did not influence their physical activity behaviour which supports the earlier research by (Shuval et al., 2008).

The emerging theme indicated that community centres can have a significant role in promoting health and that they lack role models in their communities. It was evident that the respondents were not aware of any health promotion or/and physical activity intervention in their community or neighbourhood which indicated a lack of access to information. This supports our previous findings from the survey and also earlier studies (Sallis et al., 1998; Sherwood and Jeffery, 2000) where a lack of access as a social environmental barrier hinders participation in physical activity.

Table 4.11. Determinants of physical activity and whether they have changed since living in the UK

Raw data themes	First order themes	General dimension
<u>Have your attitudes toward physical activity changed since living in the UK</u>		
<i>-Attitude is the same I love to be active but my lifestyle has changed because I am studying and spend a lot of time sitting at my desk, so I am not physically active or fit enough. (P1B)</i>	<i>Lifestyle change</i>	The change in attitudes was more related to age and the influence of spouse, although the social environmental determinants were also influential
<i>-Since I have come to the UK I try to exercise more and have more physical activity, and also I try to think more about being physically active seeing other people active. (P2C)</i>	<i>Seeing other people active influencing attitude</i>	
<i>-My attitudes have changed since I have come to the UK but it could be age related and just because I am more aware of physical activity health benefits. (P1D)</i>	<i>Age related</i>	
<i>-No they changed because of my wife to do with the physical activity, not because of England because of my wife. (P2A)</i>	<i>Spouse influence</i>	
<i>-Living the life to the full, self motivated, self belief. (P2C)</i>	<i>Self motivated</i>	

Have your knowledge and understanding of physical activity changed since living in the UK

- My knowledge has stayed the same it hasn't changed, but personally because I'm not a very active person it has not influenced me much, it hasn't made me become more or less active. (P1C)
- No, even before coming here I knew that physical activity is very very essential to be fit and enjoying our well being and being in good health. (P1B)
- Yeah, you know, I mean, I'm 48 years old so you always worry about your fitness and your body, you wish that you can manage to walk all day in your age; you can bend down whenever you want to pick up something, I mean you need to be fit, and nowadays there are too many programmes and documentaries on the TV channels and they consider fitness too much. (P2B)
- not because of coming over because of my age and getting concerned about healthy ageing it could have happened to me regardless of where I was. (P1C)
- I study in this area so it has increased. (P1A)

Knowledge
not changed
Inactive

Age related
health issues
changed
Impact of
TV

Study related

Knowledge and understanding not changed due to living in the UK, other factors such as age and studying have been influential

Have your motivations to be physically active changed since living in the UK

- I am very much Less motivated because of the weather always cold and rainy. (P2B)
- They have increased a bit. Because when I came to the UK I gained weight and the reason was that I wasn't physically active and so I decided to be more physically active.(P1C)
- Can't see much difference in that, can't take it as a fact of being here, when I was young I had different friends and you know used to go out and spend our time differently, for the first few years here I was studying and we had gatherings every week, we used to attend the tournament inside the university, not for being here, Lifestyle has changed as well as job. (P2D)
- My motivation has increased, for having a good figure. (P2C)

Less
motivate,
bad weather
condition

More
motivated
Weight
issues

No difference
Lifestyle
change

Self
motivated

Weather condition and the lifestyle has resulted in less motivation to be physically active
Losing weight and

Keeping in shape was motivating

The series of questions aimed to identify how immigration and living in a different environment and culture could have influenced individuals' attitude toward knowledge and understanding of and motivation for physical activity behaviour. These questions tried to indirectly measure the extent to which the participants have adopted the British culture and lifestyle and have incorporated specific health behaviours such as physical activity in their lives. It was hypothesised that increased acculturation of the immigrant participants would result in increased participation in physical activity (Hosper et al., 2008). It was also assumed that the influence of acculturation on health related behaviour can be explained by changes in more

immediate factors, such as attitude, knowledge and motivation as people acculturate to the host culture. Theory of planned behaviour indicates that such factors influence physical activity levels in many different populations (Bopp et al., 2006; Eyler et al., 2003; Ajzen, 1991).

Respondents' views about whether or not their attitude, knowledge and understanding of physical activity have changed since they have immigrated to the UK varied. They mainly believed their attitude has not changed much but it was their lifestyle and the priorities which have changed and resulted in them being less active. Social environmental factors like seeing other people being physically active influenced their attitude which supports the previous findings. Eyler et al. (2003) conducted a study based on an ecological model on the factors that influenced physical activity among white, African American, Latina, and Native American women residing in rural, suburban, and urban living environments. Their results indicated that knowing people who exercise and attending religious services were the only social environmental factors which significantly influenced participation in physical activity.

Findings suggested that changing attitude toward physical activity in this study was mainly age-related and resulted in an increase in respondents' knowledge of the health benefits of physical activity. In one case the respondent's attitude was changed because the spouse was studying in the field of physical activity and that has increased their knowledge about physical activity. However this view cannot be generalised as living in the UK did not influence the attitude but knowing more about health benefits of physical activity influenced the attitude. So the change in attitude could have happened anywhere. Two respondents believed that their knowledge and understanding of physical activity has not changed since they have been living in the UK. Key findings from other responses identified that participants mainly believed that their knowledge and understanding about physical activity has increased as a result of getting older and becoming more aware of the importance of healthy aging and the health related benefits of living an active life. TV programs seemed to have raised some individual's knowledge and understanding of physical activity and its importance and benefits. However since there was no direct indication of the influence of living in the UK this change could have happened anywhere. Only one female respondent believed that her knowledge and understanding about physical

activity increased since she has come to the UK and that was because she was studying in the same field however this change was due to education and not as a result of living in the UK. Respondents stated that they were more aware of the health related benefits of physical activity and the importance of being active because they were older and were therefore more concerned about their health. It appeared that what had influenced respondents' knowledge and understanding of physical activity were the health issues that they were experiencing such as bad back or inflexible joints. However the knowledge of the health benefits of physical activity did not associate with increased physical activity levels. There is a lack of clarity in literature with regards to the level of education and participation in physical activity. Shea et al. (1991) reported that Hispanic women with a college degree or higher are less active than Hispanic women with some college education. Whereas Bild et al (1993) pointed out that higher education is associated with higher physical activity scores in white women but not in BRM women.

The emerging theme for motivation to take part in physical activity identified that more than half of the respondents were more motivated since living in the UK. However they felt restricted to be physically active mainly due to a lack of time or the weather condition in the UK. In addition there was no direct association of being more motivated to do physical activity and living in the UK as respondents did not think living in the UK has resulted in increased motivation but getting older and becoming more concerned about health and well being motivated them to become more physically active. Respondents who reported to be less motivated since living in the UK also perceived a lack of time which supports our survey results (study 1) and the previous findings (Ball et al., 2006; Eyler et al., 1999) and weather condition in agreement with (Brownson et al., 2001) to constrain them from being physically active.

It was evident that that individuals' choice to be physically active was more their responses to circumstances that would enable or constrain them to live an active life which confirms previous finding (Owen et al., 2000). Our study identified that individuals' determinants of physical activity did not directly relate to their knowledge, attitude, beliefs, and motives and was rather restricted by their lifestyle and every day commitments. Results demonstrated how the respondents perceived

and assessed the importance of the benefits and opportunities of physical activity, the normative behaviour and influences of others, their lifestyle and perceived time available to them. One explanation could be that people learn to think and behave in relation with what is recognised as valuable within their social norm and culture (Berry, 2003). In the present study what seemed to be more valuable and somehow more important than physical activity was studying and maintaining the cultural values.

It is evident that with increased acculturation, physical activity levels among immigrants will increase (Abraido-Lanza et al., 2006; Lara et al., 2005; Evenson et al., 2004; Crespo et al., 2001). It has been identified that although acculturation could be a risk factor for many unhealthy behaviours, such as tobacco use or unhealthy diet, there is also some evidence that it is positively associated with healthy behaviours, such as greater exercise and leisure-time physical activity (Abraido-Lanza et al., 2006). Findings from these series of questions however suggested that the respondents have not been acculturated to the extent that would influence their health behaviour if at all. The only proxy measures of acculturation in this study however included length of residency in the UK and age at the time of arrival to the UK (Abraido-Lanza et al., 2006; Marin, et al., 1987). None of the adult participants met the criteria of age at arrival to the UK as they were all aged above 25. English language acculturation was not directly assessed. However, based on the primary researcher's observation 3 families with post graduate education background were confident in speaking English and only one family who has also lived the longest in the UK was less confident in speaking English. The language spoken at home by participants, however, was not English. This contradicts the previous findings that the length of residency is positively associated with the extent of acculturation (Evenson et al., 2004).

Overall, respondents did not perceive much change in their attitude, knowledge and understanding of physical activity. Where there was a change they tended to associate it with their age and/or the level or area of study and, therefore, not linked with their immigration to the UK and becoming acculturated. Findings of this study suggested that there was no positive relation between living in the UK and better attitude, knowledge, understanding and motivation for becoming more physically active. One explanation for this could be due to a lack of exposure to health promotion campaigns

and a lack of access to information due to busy lifestyles and commitment. This finding confirmed previous research by Hosper et al. (2008) that some potential contextual barriers such as work or study related commitments, and lifestyle in general could moderate the effect of acculturation on physical activity. Balcazar et al. (1995) claimed that culture is a major determinant of lifestyle and health outcomes. However, Pe´rez-Escamilla and Putnik (2007) studied Latino women and the role of acculturation in association with health risk factors. They argue that the literature on acculturation, nutrition, other lifestyles, and health outcomes among ethnic minority groups is inconsistent. However, the results from the Latino women could be too limited to be generalised to all ethnic groups.

Table 4.12. Perceptions of the environment, suggestions to promote physical activity

Raw data themes	First order Themes	General dimension
<u>Your ideas about access to parks/sport centres/pleasant pavements/street lights/dogs in the streets</u> <i>-good access, nearby places (all respondents)</i> <i>-good street lights (all respondents)</i> <u>Pavements</u> <i>-lots of holes and hazardous condition, it could be a barrier to people (P2B)</i> <i>-good and pleasant for the rest of the respondents</i> <u>Dogs</u> <i>-no problem with dogs in the street (all respondents)</i> <u>Social factors</u> <i>-[not] having company(P1B)</i> <i>-no social barriers for the rest</i> <u>Environmental barriers</u> <i>-built environment, air pollution, traffic, Busy roads, not enough open spaces (P2B)</i> <i>-weather, too dark, not safe (P1B)</i> <i>-weather, lack of information (P2A0)</i> <i>-weather (P1A)</i> <i>-dark nights, safety issues (P1C)</i> <i>-none (P2C)</i> <i>-no real barrier (P2D)</i> <i>-weather (P1D)</i> <u>Personal factors: time, lifestyle</u> <i>-issues [lack of time]for everyone nowadays, for me sometimes(P2B)</i> <i>-lack of time, don't enjoy exercising at home</i> <i>On my own, its more encouraging and enjoyable when</i>	<p>Good access Good street light Pleasant pavements No problem with dogs</p> <p>No social barrier</p> <p>Weather Safety Lack of information</p> <p>Lack of time Lack of company</p>	<p>Weather and safety issues prevented the BRM families from being physically active</p> <p>Lack of time due to work or family responsibilities restricted PA</p>

You have a friend to go with, family support
e.g. transport, money, household commitment (P1B)
-lack of time (P2A)
- lack of time, lifestyle changed because of my studies,
kids are grown up and busy studying too (P1A)
-I have a lot of time but I'm not motivated(P1C)
-lack of time due to my job (P2C)
-lack of time as an excuse (P2D)
-lack of time, family commitments, house work,
I have the family support(P1D)

Feelings about PA

-all positive

Barriers for you, family, your people

-cost, you have to pay
Free exercise opportunities back home, sun, sea (P2B)
-no barriers, don't care about what others think
Some of my people make fun of women who exercise
at home. Perceived as modern concept by older
generation. Going to sport centres for women is not
acceptable (P1B)
-no barriers just lack of time and the weather (P2A)
- no time (P1A)
-no barriers for me. Some Muslim women find the
presence of a man as a barrier, too much commitments
and responsibilities for Muslim women at home, not
enough family support(P1C)
-none (P2C)
-swimming could be problematic when it's mixed
for ladies (P2D)
-lack of women only swimming session, Ramadan cant'
Exercise. Financial problem (fees too high) (P1D)

Awareness of public resources/activities in the area

-yes, park is around, sport centre nearby (P2B)
-one place I know, 1 swimming pool, no
activities in mosques or schools for families(P1B)
-not much (P2A)
-yes (P1A, P1C,P2C, P2D,P1D)

How do you become aware

-leaflets, mail, lack of information (P1B)
-from school or local newspaper on
Thursdays and Fridays (P2A)
-from my children and their school(P1A)
-weekly newspaper (P1C)
-I go to the gym and other centres (P2C)
- newsletters from local council (P2D)
-search for them, we get some leaflets about the
facilities which are available (P1D)

What changes would you like to see for more physical activity

-better encouraging environment, safe and pleasant(P2B)
-not aware of the area I'm living, having women
community centre to liaise and gain information
exchange ideas, socialise, with play area for kids (P1B)
-being more encouraged, more information about where

Transport
Money
Lack of motivation

Positive feeling
from PA

Cost
Lack of time
Weather
Lack of family
support for Muslim
women
Lack of women only
activity

Aware of some public
resources
Limited facilities

Leaflets
Schools
Local newsletter

Perceived physical
and social
environmental
barriers for the
BRM engagement in
PA

Most respondents
were aware of the
resources and
activities which

Best means to get
information was
through leaflets,
schools and the local
newsletter

Social and physical
environmental
factors seemed to be
encouraging PA

<p><i>We can do exercise, type, time, quality (P2A)</i></p> <p><i>-more choices for ladies, more hours (P1A)</i></p> <p><i>-women only sessions for Muslim women with strict views, Muslim women need to be encouraged to become more physically active (P1C)</i></p> <p><i>-separate places for men and women (P2C)</i></p> <p><i>-motivating and encouraging people (P2D)</i></p> <p><i>-women only swimming places with no male instructor (P1D)</i></p> <p><u>Who can make the change</u></p> <p><i>-government (P2B)</i></p> <p><i>-multiple group effort, families, communities and government together (P1B)</i></p> <p><i>-we should search for information and they should motivate lazy people like us (P2A)</i></p> <p><i>-government or community centres (P1A)</i></p> <p><i>-more information via TV or newspaper on health Benefits and also they need to become more open Minded, get more support from their husbands (P1C)</i></p> <p><i>-government (P2C)</i></p> <p><i>-government with the help of communities (P2D)</i></p> <p><i>-government (P1D)</i></p>	<p>Safe encouraging environments</p> <p>Role of community centre</p> <p>Access to more information</p> <p>Resources, more activities, women only activities</p> <p>Getting motivated</p> <p>Government</p> <p>Community centres</p> <p>Educating people via media</p> <p>Family support</p>	<p>The role of community centres and their link with the government to educate people on the PA benefits and providing social support was significant</p>
--	--	--

The next series of questions aimed to explore the BRM families' perception on the provision of outdoor facilities and the physical and social environment. The emerging general dimension regarding the BRM families' perceptions of their environment indicated that the weather condition and safety issues limit their participation in physical activity. Even when respondents reported having access to nearby places however they remained inactive due to a lack of time, motivation or cost. Although they reported that their immediate neighbourhood is pleasant and the streets are lit, but they perceived the area to be unsafe for them to engage in physical activity. The BRM families perceived similar physical and social environmental barriers for taking part in physical activity for other members of their family and community.

Although the emergent theme about the awareness of public resources and activities in the area suggested that most respondents were aware of what was available to them but it was evident that the public resources were very limited, e.g., women only swimming once a week. It was evident that resources were not allocated by the government or local community to accommodate physical activity among Muslim population.

The BRM families suggested that the best means to obtain information about the activities in their area was through schools, local newsletter and leaflets. This confirms the results from study 1 and earlier research (Cheadle et al., 2010) about the significant role of the schools and community centres in liaising with the relevant organisations to disseminate information about the activities and resources and educating people on the benefits of physical activity as well as providing social support.

The emergent general dimension about what changes the BRM people would like to see to increase participation in physical activity was identified to be the social and physical environmental factors which confirm the earlier studies (Eyler et al., 2003) and the results from study 1. Providing access to safe and culturally appropriate physical activity facilities has been identified to promote physical activity (Brownson et al., 2001; Henderson and Ainsworth, 2003).

Facility related barriers were also mentioned. The main concerns were related to inappropriate facilities (e.g. lack of single sex provision, different dress codes). Views about women only facilities seemed more important for female respondents from more religious backgrounds. This view was strongly supported by male respondents from the same family. All respondents were aware of the public facilities and parks. None of the fathers had used any facilities at all. Female participants had concerns about safety for using the parks nearby and did not think the facilities in their area were appropriate for their cultural requirements. Boys however were the only facility and park users who seemed to be happy with them. Yet, boys also expressed some concerns about the safety in winter time when it gets darker quite early. This was, due to the type of activity available to boys from Muslim families as they are allowed to play and engage in any type of indoor or outdoor activity whereas it is more restricted for girls due to their dress code. Regardless of annual family income level, BRM individuals participated in less physical activity.

Table 4.13. Barriers to participation in physical activity

Raw data themes	First order themes	Second order themes	General dimension
How would you describe the barriers to participation in physical activity			
<i>-I have a lot of time if I want to do something but I am not motivated. (P1C)</i>	Lack of motivation	age	A number of intrapersonal, social and physical factors prevented the respondents to participate in PA
<i>-Lack of time could be a good excuse if you want to make one, but in general I think its no excuse for being inactive, I think you can make time if you really want to be active. I used to be more active because of the age I was in my late thirties then it was studying and working, I think what happened was becoming too busy and also entering a different style of life as well you tend to become a little less active Specially in our academic job there is a lot of mental work rather than physical work (P2D)</i>	Lifestyle Job		
<i>-Well at our age we don't really play around. If we go out we just walk around. (P3C)</i>	PA decline with age	Not motivated to exercise at home/ the social aspect of PA	
<i>-In school at break times in our age I just have a chat with my friends or do some art work. (P3A)</i>			
<i>-I feel very upset about my health condition that I have which has stopped me from doing my activities but I'm kind of a person who likes to do activities, I used to play football very much, since I was 5, nearly 6 years old all the way to when I was 16 I used to play football all day, or swimming, I used to be really slim and healthy, I have some photos at home, but as I mentioned 1993 I was lifting something at the airport and I injured my back. (P2B)</i>	Health issues		
<i>-I am exercising at home now. I feel there is a difference, before going and joining sport centres was much better from social point of view. I used to socialise, meet friends have more friends more relations but now just alone I feel the difference now. Exercising with other people is more encouraging you know In my new lifestyle that is being again a student I need to sit a lot, so I can't move. (P1B)</i>	Lifestyle change		
<i>-My lifestyle has changed because of my studies, my kids are now grown up and busy studying too. My priorities have changed subsequently. (P1A)</i>	Lifestyle change		
<i>-Where I come from, its a Mediterranean climate so we have nice beaches, we do swim and walk and sometimes run, sometimes we play with friends, so you need to move, you need to make physical movement from time to time (P2B)</i>			
<i>-The weather isn't too good here, especially in the night, obviously if the weather was good then it would motivate you into being more physically active. (P2D)</i>	Weather condition		
<i>-We don't have good weather here in England, it's raining or cold, actually both yes. The climate is actually in fact everything nowadays, everything even your work (P2A)</i>			

This question aimed at determining the perceived barriers to participation in physical activity in the BRM families. The emerging general dimension referred to a number of barriers consisting of: intrapersonal (lack of motivation, lack of time, lifestyle, job, health issues), which were related to attitudes and belief in terms of lack of motivation and will power or interest, being lazy or not enjoying physical activity even though some respondents seemed to have a lot of spare time in hand. The emerging personal barriers were lack of time and no motivation which is consistent with the findings of Owen et al., (2000). Socio- economic status did not seem to be associated with physical activity, which is not consistent with previous findings where socio-economic status had a profound impact on individuals' capacity to participate in physical activity (Amarasinghe et al., 2009; Contoyannis, and Jones, 2004; Eyler et al., 2003).

Social barriers were not enjoying exercising at home and physical barriers include weather condition. These findings confirm the results from study 1 and earlier studies (Sallis et al., 1998; 1997b). Poor weather condition appeared to be a significant obstacle for engaging in physical activities. One explanation could be the fact that the families who took part in this research study were from hot and dry African or Middle East climate. Therefore they found it difficult to go out in cold rainy conditions.

Lifestyle change also played a significant role in the physical activity pattern of these families. They had immigrated to the UK to improve their financial situation or to study and given the important commitment they had to make to fulfil their intentions they lacked time to engage in physical activities. Parents in particular mothers seemed to have prioritised their time for what seemed more important to do i.e. studies and the household responsibilities. Passing through different life stages seemed to have an impact on different patterns of lifestyle. Different responsibilities and different sets of pressure were seen to have influenced the pattern of their life style. Opportunities for physical activity have become less in these circumstances as the priorities for these respondents have changed. Reasons varied from starting a new stage in life with a different job to do to have other high priority responsibilities in life including studying. Parents often seemed to give a low priority to physical activity in comparison to other responsibilities related to different life stages. Mothers tended to

feel an obligation for household chores and their studies against making some time for physical activity.

It also appeared that for the fathers getting older means slowing down and doing less activity. Getting older was seen to be related to less physical activity. There was a feeling that one should be more active at younger age and less active when older. Changing the style of life as growing older led to being less active. This decline in physical activity as growing older was cited by some of the adolescents too. Similar to our findings Caspersen et al. (2000) reported a significant decline in physical activity levels with age. Their cross-sectional study also examined the gender difference and found that women engage in lower levels of physical activity in comparison to men.

Participants reported that one of the reasons for not engaging in physical activity was having no one to do activities with. Doing physical activity on ones' own was not seen as enjoyable and encouraging and therefore difficult to maintain. This is in line with an earlier study by (Eyler et al, 2003) suggesting that seeing other people being physically active as a social environment encouraging factor increases the likelihood of taking part in physical activity.

Our findings confirm the results from study 1 and a number of previous findings on barriers to participation in physical activity. Interpersonal barriers such as lack of time, intrapersonal barriers such as lack of motivation (Brownson et al., 2001) and environmental barriers including poor weather condition and lack of access to appropriate facilities have been identified to hinder opportunities for engaging in physical activity (Popkin et al., 2005). Eyler et al. (1999) conducted a qualitative research study with minority women. The purpose of their investigation was to explore patterns of physical activity among minority women. The most common environmental barriers to participation in physical activity were safety, availability, and cost. Participants also reported personal barriers including lack of time, health concerns, and lack of motivation. Eyler et al. (1999) concluded that many barriers are modifiable and can change with policies and interventions. Furthermore, a study by (Humple et al., 2002) also revealed that weather condition and safety were not strongly associated with low levels of physical activity whereas accessibility,

opportunities, and aesthetic attributes had significant associations with physical activity.

Table 4.14. Motivational factors/religious/cultural motives/environmental motives

Raw data themes	First order themes	General dimension
<u>what would motivate you to become more physically active</u> <i>-seeing other active people/friends. Our community [back home]values PA a lot we have nearby gym, sport centres, sunny weather. (P2B)</i> <i>-health benefits of PA, less responsibilities, self determination, my mum motivates me, she is 70 and is very active. (P1B)</i> <i>-none [motivational factor] here, back home community was a great influence. (P2A)</i> <i>-friends (P1A)</i> <i>-Being healthy (P1C)</i> <i>- Being healthy, live longer, my brother influences me. (P2C)</i> <i>-health issues, being healthy and around your family for longer. (P2D)</i> <i>-having the right knowledge about healthy ageing Friends motivate me, no religious motive, we are now become multicultural, not influenced by our own culture, nearby gyms and sports centres motivate you. (P1D)</i>	Friends Community centres Health benefits Nearby gym and sport facilities	A combination of intrapersonal social and physical environmental factors influenced physical activity levels among the BRM families
<u>Environmental factors</u> <i>-Designing places to do PA in parks and Streets like China. UK setting is not very Motivating. (P2B)</i> <i>-better climate so you wear simple clothes to go for a walk/jog. (P1B)</i> <i>-walking in spring and summer time not in winter.(P2A)</i> <i>-good weather and friends to go with. (P1A)</i> <i>-good neighbourhood, having a gym nearby.(P2C)</i> <i>-there are lots of encouraging places around that are motivating. (P2D)</i> <i>-pleasant walking path, safe path, seeing a lot of active people</i> <i>Pleasant area motivates me. (P1D)</i>	Pleasant, safe neighbourhood Access to facilities Good weather	

This question tried to identify what factors encouraged the BRM families to engage in physical activities. The emergent general dimension referred to a combination of interpersonal, social and physical environmental factors influencing the BRM families’ participation in physical activity. Main motivating factors to participate in physical activities were identified as health related. It was evident that the respondents were aware of the health benefits of physical activity and this knowledge encouraged them to become physically active. Having someone to do physical activity with was also identified to be a motivating factor which refers to the significance of social support. Other determinants were access to local and nearby sport and leisure centres, pleasant and safe neighbourhood. These findings were similar to the survey result in study 1 and support the earlier studies. Henderson and Ainsworth (2003) studied perceptions of physical activity among African American and American Indian women. They found that individual behavioural choices such as adopting a physically active life are influenced by a combination of personal, cultural, and environmental factors. Brownson et al. (2001) also suggested that appropriate changes in the social environment could make changes in individuals, and that social support in a population is essential for implementing environmental changes.

Table 4.15. Parents’ influence on their children’s PA behaviour

Raw data themes	First order Themes	Second order Themes	General Dimension
<u>What is your role as a parent in relation to your children’s physical activity</u>			
-encourage them verbally, I can’t be a role Model performance wise. (P2B) -encourage them, set good example, being a role model myself by being active, peer influence is stronger. (P1B) -encourage them, I can’t be a role model, I’m a bad example. Advise them on their eating habits. (P2A) - encourage them, make them aware of the [PA] benefits. (P1A) -encourage them, I am not a good role model myself. (P1C) - I don’t have a role because I don’t see them.(P2C) -try to encourage, practice what we preach, educate Her on the importance of PA. (P2D) -important role, I am not a good example, I am not physically active. (P1D)	Verbal encouragement Setting good example by being active No role Setting a bad example	Parents perceived themselves inactive and not good role models	Parents perceived their role as encouraging their children verbally setting good example educate them on the benefits of PA

What would motivate your child/children to participate in physical activity

-keeping good body shape, being fit.
 Don't know if friends influence them. (P2B)
 -being young, don't like staying at home,
 socialising with friends, football in the park. (P1B)
 -their friends, facility and school, the resources here are encouraging. (P2A)
 -friends. (P1A)
 -my girls are not motivated. (P1C)
 -having a good role model. (P2C)
 -social environment, school' pressure on diet and health(P2D)
 -being encouraged and educated on health benefits of PA/ friends

Fitness

Peers
 school
 and friend's
 influence
 Resources
 and facilities

Having a role
 model

Knowledge of
 PA benefits

Girls not
 motivated

Social
 environment
 Friends and
 school
 And
 educating
 children
 on the
 benefits
 of PA
 motivate
 children

How does your attitude about PA influence your children

-what we think about PA is important for them. (P2B)
 -they always watch you and it's important what you think (P1B)
 -I think positive about the benefits of PA that controls their weight, they get influenced. (P2A)
 -they look up to parents and what we believe influences them and their behaviour (P1A)
 -they copy you (P1C)
 -my attitude could be encouraging for them. (P2C)
 -she [the child] believes the same things that we do with regards to importance of PA. (P2D)
 - beliefs have impact on behaviour, our middle eastern beliefs and attitude of not being very active has impact on our children (P1D)

Parents'
 attitude and
 beliefs
 influence
 children's PA

Children look
 up to and copy
 their parents

Children's
 physical
 activity
 behaviour
 is influenced
 by
 their parents
 attitude,
 beliefs
 and thoughts

How supportive are you for your child/ren's physical activity

-encourage them, pay the fees (P2B)
 -encouraging them a lot, pay the fees for sports/leisure centres,
 Suggesting to spend more times playing and being active (P1B)
 -encouraging them (P2A)
 -very supportive, encourage them (P1A)
 -I encourage them, pay membership fees for them, provide transport for them, buy exercise equipment for them at home (P1C)
 -encourage them, pay fees for them (P2C)
 -yes financial, time wise, spiritually, providing transport (P2D)
 -very supportive, financially, providing transport, encouraging her and make time for her

Verbal
 encouragement

Support

Provide
 transport, pay
 fees
 Make time/give
 time

Parents
 with higher
 socio-
 economic
 status
 provide and
 facilitate
 PA
 behaviour

Parents were
 supportive
 of their
 children's
 physical
 activity
 either
 verbally or
 by providing
 transport and
 paying fees
 depending
 on their
 socio-
 economic
 status

<p><u>Are you aware of the problems that could get in the way of your children's participation in PA?</u></p> <p><i>-no I support them financially, not for boys, some cultural problems for girls in some families maybe (P2B)</i></p> <p><i>-no problem (P1B)</i></p> <p><i>-lack of time/too much to do in both English and Arabic school(P2A)</i></p> <p><i>-safety issue, weather, short days (P1A)</i></p> <p><i>-only laziness (P1C)</i></p> <p><i>-no I don't know (P2C)</i></p> <p><i>-habit/ attitude to enjoy PA as much as other things (P1D)</i></p>	<p>No problem for boys</p> <p>Lack of time</p> <p>Safety</p> <p>Weather</p> <p>Attitude</p> <p>Not enjoying</p>	<p>No perceived barriers for boys safety issues</p>
<p><u>Social and physical environmental barriers</u></p> <p><i>-not for boys (P2B)</i></p> <p><i>-not safe at night/rain and cold (P2A)</i></p> <p><i>-safety and weather (P1A)</i></p> <p><i>-safety(P1C)</i></p> <p><i>-right place to go with friends (P2C)</i></p> <p><i>-weather (P1D)</i></p>	<p>No problem for boys</p> <p>Safety</p> <p>weather</p>	

The next series of questions aimed at exploring the parents' influence on their children's physical activity. This included their role as a parent, the mechanism of support, their attitude toward physical activity and their opinions about what motivates and what constrain their children to take part in physical activity. Parents saw their role mainly as verbal encouragement, setting good example and educating their children on the benefits of physical activity. Motivating factors were identified as social environmental factors, e.g. resources and facilities. The influence of peer groups, friends and school and children's awareness of the benefits of physical activity was also suggested by parents. The emerging general dimension suggested that parents' positive attitude and beliefs about physical activity influence their children's physical activity level. Parents reported to be supportive of their children's involvement in physical activity by verbally encouraging and accommodating them by providing transport and paying fees. Parents did not identify any barrier for boys. However, some individual barriers such as lack of time and motivation and physical environmental barriers including safety issues and weather condition were mentioned. The concern about the safety issue was only mentioned for girls which can indicate the gender difference in the Muslim populations.

Parental support seemed an important factor to promote children's physical activity. The findings of this study supports the previous study by Biddle and Goudas (1996) that parents encouragement and attitude is associated with their children's physical activity level. However, since according to the (DH, 2004) guidelines none of the children were active enough, it could be argued that parental verbal encouragement and positive attitude can only predict intentions and not the actual activity in children. According to DiLorenzo et al. (1998), family support in form of verbal encouragement or providing transport and facilities for children and also role modelling of physical activity seemed to be more important for girls important for boys. However, for girls, these might not be important. Mother's self efficacy for physical activity and mother's barriers to exercise has been found to be inversely related to later life predictors of physical activity for girls (DiLorenzo et al., 1998).

It was evident that the mechanism underpinning parental influence in these BRM families included verbal encouragements and providing facilities. Parents did not engage in activities or shared similar interest in engaging in physical activity. Parents were inactive and were not engaged in any type of structured activity and therefore did not set examples or standards through role modelling. However, they believed their attitudes toward physical activity positively influenced their children's physical activity behaviour. Jago et al. (2010) suggested that parents are likely to be an important influence on their children's behaviour. Some commentators (Jago et al., 2010; 2009) argue that the influence of parents on their children's physical activity varies by children's age. They suggested that parental influence on 10-11 year olds children's physical activity tends to be more facilitative rather than through modelling or copying of behaviours. Given the fact that most children participated in this study were aged 12+ with the exception of one boy it could be argued that parents' verbal encouragement and facilitative role was sufficient to promote physical activity among their children. Parents could also promote active travel to school and provide more indoor facilities for their children to engage in physical activities. Jago et al. (2010) suggested that parents can help their children to be active by encouraging active travel to school or promoting outdoor free-play in safe areas close to home. However, one of the concerns from the parents in this study was the safety of the area for their children to be involved in outdoor activities including active travel. McDonald et al. (2010) conducted a cross-sectional racially diverse study on the influence of the social

environment on children's school travel. They reported that a higher proportion of students walk to school when the built environment is supportive and parents believe neighbours will monitor the behaviour of children. In consistent with our findings in relation to gender difference and physical activity in the BRM families, McDonald et al. (2010) found that parents with negative or neutral perceptions of the social environment may limit girls' outdoor activities more than boys'.

Table 4.16. Factors influencing children’s physical activity behaviour

Raw data themes	First order themes	General dimension
<u>What or who is important in shaping your beliefs about physical activity</u>		
<p>-My parents and the grownups motivate me e.g. My sister and teacher. (P1C)</p> <p>-My friends, teachers, parents and my brothers motivate me. (P4B)</p> <p>-Sometimes like my dad and my mum. Most of the times when you watch TV you watch programmes they tell you like if you are overweight that's going to happen and this going to happen so you kind of see that you have to do exercise. I don't actually want this to happen to me. It's quite horrible. (P5A)</p>	<p>Parents/siblings Grown ups Teachers TV programmes</p>	<p>Parents and significant others influenced children's beliefs about PA</p>
<u>Parental influence</u>		
<u>Parental verbal encouragement</u>		
<p>-They think it's very good for children to have physical activity and to exercise and keep healthy. They are very supportive, like if it's a sunny day and I'm just sitting around they just tell me to go and play out or just run about have some exercise. I did go to some clubs after school, it was called multi-skills and each week we did different activities, as in sports like we did basketball one week and then we did football another, and each time we did different things. They tell me to do more activities that help me lose my weight (P4C)</p> <p>-They think of it as a good idea. As a positive option. Because my father is quite active himself he is very supportive. They don't push us, it depends if we've got time then they'll tell us we should do some activity. (P3C)</p>	<p>Emphasise on Diet</p> <p>Concerns about the weight</p> <p>Verbal encouragement Positive attitude toward PA</p> <p>Role modelling</p>	<p>Parents had positive attitude toward PA and they verbally encourage their children</p>
<u>Parental support</u>		
<p>-They think it's excellent for you. You should always keep fit and healthy. They pay for my gym, they bought me a bicycle. (P3A)</p> <p>-They say that, you have to do exercise and eat sensibly to grow your body properly. They get happy when you ask for a ball or ask for anything in sports they get happy and they say alright you can have it or something. (P5A)</p>	<p>Provide equipment Pay the fee</p>	<p>parents provided for their children's physical activity</p>

Parents’ engagement with children in physical activity

-They ask me to play with them they ask me to play outside. We go to the park together. (P4A)
-Sometimes, like if I’m cycling alone they come and help me and tell me how to do it better. Sometimes when they are going for a walk they take me too, to help me with physical activity. We do go shopping a lot, and we do walk a lot while we are shopping and we do go to parks but not as often. (P4C)

Engage in play
Walk together
Go shopping

parents engagement in physical activity encouraged children

Parental role modelling from children’s point of view

-My parents are not active, but their attitude is positive about physical activity. (P3A)
-Because I learned from my dad to go to the parks and that he always asks us let’s play and all that. (P4C)
-Yes I do think they are a good role model. When my dad is going to work, he walks sometimes and my mum has an exercise CD and she exercises with that.(P3C)
-I don’t think my dad is very physically active, he doesn’t walk too much he is always sitting or lying. But my mum she does physical activity because she walks to the bus stop and then she walks to her university, sometimes she travels around, shopping and those things. (P3B)

Inactive parents – positive attitude

Direct role modelling

Parents walk to work, shopping places, exercise CD

parents behaviour set examples for children

children saw their parents as role models

Parental role modelling from parents’ point of view

-I am encouraging them I used to encourage them and I still encourage them and I exercise as I told you two or three times a week at home and they watch or see or notice me. So they have to have a good example.(P1B)
- Honestly I always advise them to go to the gym and to be in good shape and good body because they would gain strength and it will back them up in the future. As I mentioned I feel very upset about my condition that I have which has stopped me from doing my activities but I’m the kind of person who likes to do activities. (P2B)
- I advise them. They cannot take me as an example, I’m a bad example, but I advise and tell them. I told them to stop eating too much, don’t eat if you are full, don’t try to eat unless you are hungry, and do some exercise. But I never say unless I do it, I encourage them. (P2A)

Verbal encouragement
Set good examples

Verbal encouragement
Advice on diet
Inactive; set bad example

Parents don’t see themselves as good role models but verbally encouraging their children

These series of questions aimed at determining factors influencing children’s physical activity behaviour. Children had mixed views about what or who is important in shaping their beliefs about physical activity. Children’s beliefs were influenced by a number of factors such as parents and other grown ups’ attitude, role modelling, encouragement and support as well as media and friends. All children believed that

their parents had positive attitude about physical activity and that they were supportive and encouraging of their physical activities. Parents seemed to give verbal support by encouraging their children to be more physically active and mentioning the benefits of it and also support them by providing equipment or transport for them, registering them on training courses and sometimes joining in with them in games and activities. Children's response to whether they saw their parents as good role models or not were somewhat different to how parents perceived themselves as being physically active. However parents' attitude seemed to be important regardless of their activity level. Children believed that their parents' attitude about physical activity was positive and they perceived their parents to be physically active with an exception of two children who mentioned their parents were not active.

Parents' perceptions however differed from their children as they mainly believed that they were not good role models for their children because they were not physically active enough themselves. Only one parent believed she set good example for her children by doing exercise at home herself. In line with our findings the significance of families' influence on their children's health behaviour during childhood and adolescence has been identified (Davison et al., 2003; Trost et al., 2003; Sallis et al., 2000).

The findings indicated that these Muslim parents only influenced their children's physical activity through verbal encouragement and not role modelling which does not support the earlier research on parental role modeling in relation between parents' and children's exercise patterns and other health behaviors (Biddle and Goudas, 1996). However, verbal encouragement, positive attitude, supporting children's physical activity and facilitating opportunities have been identified to result in behaviour change and positive health outcomes (Gustafson and Rhodes, 2006; Trost et al., 2003). One potential mechanism through which parents influence their children's physical activity behaviour is the influence on children and adolescence's emotional health. Parents can influence low self esteem and depression both of which are strongly related to physical activity through providing social support and encouragement (Neumark-Szainer, 2005; Eisenberg et al., 2004; Parker and Benson, 2003; Sargrestano et al., 2003). This study aimed to identify how parents from BRM populations would influence their children's physical activity behaviour and whether

this influence has changed since living in the UK. The results from this part of the study support the previous research suggesting that parental social support and role modelling influence children and adolescent's physical activity behaviour (Gustafson and Rhodes, 2006; Springer et al., 2006; Sallis et al., 2000; Strauss et al., 2001). Findings of this study also confirm previous findings indicating that social variables such as support from parents, peers, siblings, teachers, coaches and significant others as well as parental modelling represent some of the most important modifiable factors for children and adolescence physical activity (Gustafson and Rhodes, 2006).

The findings also suggested that boys received more support than girls to engage in physical activities. This is in accordance with previous research demonstrating that boys engage in higher levels of physical activity and receive more parental support for physical activity than girls (Gustafson and Rhodes, 2006; Raudsepp, 2006; Trost et al., 1999). However, it could be argued that girls in general, and BRM girls in particular, are less likely to participate in physical activity and could be more receptive to parental influences. Girls seemed to get less support to engage in physical activity due to expectations that they help with the household and also the perceived barriers for them to go to the gym because of the presence of the opposite sex and also the safety issues for engaging in outdoor activities. However, in their own right, the girls seemed less motivated to participate in physical activity in comparison to the boys. Therefore, parents' encouragement could be compromised given the girls' attitude. Findings indicated that the home environment did not seem to be facilitating or encouraging physical activity for children. Behaviours such as TV viewing or computer games prevented some children's physical activity particularly the girls. In line with our findings Jago et al., (2010) pointed out that girls are more likely to spend more sedentary time viewing TV or playing computer games.

Similar to previous work (Tavares et al., 2009; Eyler et al., 2003) our findings suggested that parents were unable to engage in physical activity because they had to prioritise their time toward study or work commitment and the family caretaking tasks. Parents also reported low levels of physical activity which restricted them in becoming an active role model for their children. However, it is suggested that parents should encourage physical activity and support their children's physical activity regardless of their own activity level.

Table 4.17. Barriers to participation in physical activity among the children

Raw data themes	First order themes	Second order themes	General dimension
How would you describe the barriers for you to physical activity			
<p>-At home, actually I am quite busy studying or doing homework, If there is no Arabic school I just do my school work like and sometimes I think shall I watch TV? Its better because I don't like doing exercise. Also There is only one place for females to go swimming and that's only on Fridays. (P5A)</p> <p>-Actually I do more activities when its summer compared to winter. If it was raining I wouldn't go running or walking.</p> <p>Because its cold in winter and I have two schools (English and Arabic)to go and do a lot of homework and loads of things so maybe weather is a barrier and I am very busy when I come back from school I cook and I clean the house, help my younger brother and that (P4A)</p> <p>-I don't enjoy it, nothing to encourage me to make more room for myself in the house so I just leave it as it is and we don't really have anything at home encouraging. I have lots of school work to do and my classes are on Sundays so I can't do anything on Sundays, I'm doing Farsi class (cultural class)and on week days I don't have that much time if I really wanted to. Outside is too dark, it's too cold. Too dark and too rainy (P3D)</p> <p>-It depends, if it's too cold then of course you don't go but if it's ok then you can wear a tracksuit or something warm and then go. I'll be honest. I used to go to the gym a lot before I got held up with all my studies. (P3C)</p> <p>-At home there is more stuff around me, like there is more electrical stuff that I could use, like watch TV instead, or play video games. That kind of stuff stops me from being active. (P4C)</p> <p>-When I come home from school I will have something to eat if I didn't have anything to eat in school, then go out with my friends, study sometimes, go out go to gyms, go round with my bicycle. Sometimes my studies get on my way that's If I have exams. I don't do much, not every day. I haven't got full time school, I have like three lessons and I don't go to school from morning till about 4 o'clock. The weather is not a problem because they have gyms which are indoors with a swimming pool indoor, so everything is inside and you don't have to be outside. But Sometimes it's dangerous like one time we were playing football in the park and we were fighting with guns, sometimes you have to be aware.(P3B)</p> <p>-I always play football or go for a walk in the park, sometimes my studies get in the way but I still manage to do lots of activities at school too. My friends are always active and we go cycling, swimming or to the gym. In winter when it gets too dark and it's cold and rainy it would stop me from going out. I have lots of spare time to be active but I think Muslim girls are restricted specially for swimming because they have to cover up (P3A)</p>	<p>Lack of time, lack of enjoyment from PA, lack of resources</p> <p>Weather condition</p> <p>Lack of time</p> <p>Lack of enjoyment</p> <p>Lack of time</p> <p>Weather</p> <p>Weather</p> <p>Lack of time</p> <p>TV video games</p> <p>Studies/ Exams</p> <p>Safety</p> <p>Studies</p> <p>Weather</p>	<p>Women only activities</p> <p>Cultural activities</p> <p>Expectations from a girl to do the chores</p> <p>No room in the house, cultural</p> <p>Activities</p> <p>Home environment not encouraging</p> <p>No restrictions for the boys</p>	<p>Intrapersonal /intrapersonal limited children from engaging in physical activity</p> <p>cultural factors a lack of family support and environmental factors impede children's PA</p>

This question aimed to examine the barriers that prevented children from the BRM families to take part in physical activity. Similar barriers restricted children's and parents involvement in physical activity. However, the barriers were different for boys and girls. Main barriers for girls were intrapersonal (lack of motivation), interpersonal/cultural (lack of time due to family and cultural commitments) social environmental factors (women-only activities) physical environmental factors (weather condition). Girls reported that they do not find their home environment to be encouraging for physical activity and the culture of TV viewing and video games and computers were limiting their activity levels (Jago, 2010).

In spite of being aware of the health benefits of physical activity girls were not motivated to do physical activity or were restricted by cultural activities, studies and household commitments. Lack of women-only activities seemed to constrain girls from participating in physical activities, as they were expected to observe the Islamic dress code and the presence of male staff at sports/leisure centres prevented them from participating. However, this was the case in the more religious family. Girls also mentioned that the weather condition prevented them from doing outdoor activities and there was a lack of space and equipment in the house and therefore they did not have many opportunities for being physically active. Dwyer et al. (2003) reported barriers regarding culture, gender, lack of transportation, accessibility and safety for children's outdoors activities. Daskapan et al. (2006) also reported a lack of motivation, time and facility as barriers to physical activity in adolescents. Their study was carried out in an ethnically diverse city and investigated adolescent girls barriers to engaging in physical exercise. Dwyer et al. (2006) conducted a study among ethnically diverse adolescents, identifying key intrapersonal, social environment and physical environment factors as barriers. Main perceived and actual barriers to being physically active were identified as: lack of time, involvement in technology-related activities, influence of peers, parents and teachers; concern about safety; inaccessibility of facilities and cost of using them. The study's of Dwyer and colleagues (2006) suggested a complex interaction of various factors that can act together to determine adolescent girls physical activity levels. Findings from their study did not indicate that adolescents from different ethnic groups have different barriers, suggesting that the findings can be generalised across diverse groups.

However boys' perspectives on physical activity and barriers to physical activity was different from those of girls. Boys seemed to be more involved in various types of physical activity allowing for the weather and their spare time. School work did not constrain their physical activity as much as it did for girls. Also, boys did not mention about having to do chores or something at home which could suggest that expectations were only from girls in the household. Gender has been considered as a potential factor of the link between the perceived environment and physical activity (Bengoechea et al., 2005). Women and girls are seen to perceive more barriers to participate in physical activity than men. These barriers include: lack of safety, access to places, seeing other people active in the area, pleasant neighbourhood and self esteem (Bengoechea et al., 2005). They also reported that boys participated and enrolled in organised sport and physical activity more than girls. They also concluded that the support, encouragement and the influence from significant others including parents and siblings are greater in boys in comparison to girls. These findings are consistent with our study results. Our findings suggest that the gender disparities in physical activity should be tackled and the perceived and actual barriers for girls and women's participation in physical activity should be removed.

A summary of the qualitative findings are presented in the following tables.

Table 4.18. Summary of key themes identified from interviews with parents

Domain	Theme
Definition of physical activity (PA)	Body movement, exercise, sport, attending leisure centres, housework
Knowledge of recommended activity level	Not aware of the recommended activity level, however similar views on type, level and the intensity of activities
Perceived benefits of physical activity	Link between physical activity and weight management, general well being, indication of knowledge about physiological and social benefits
Physical activity in comparison to other health measures	As important as diet and non smoking
Influence upon beliefs in physical activity	Broad range of factors such as: social factors (family members, friends, teachers) (personal factors: self awareness) environmental factors (mass media)
Change in attitude about PA since living in the UK	Mainly no change since living in the UK, change in lifestyle and priorities resulted in less activity, change in attitude due to social environmental factors (seeing others active), or age related factors
Change in Knowledge and understanding about PA since living in the UK	Mainly age related, studying in the field of physical activity
Change in parental role modelling since living in the UK	Changed for worse due to parents being too busy to be active since living in the UK, only one parent is a better role model since living in the UK

Table 4.19. Summary of themes identified for barriers to participation in parents

Intrapersonal	Attitude and beliefs-feeling lazy, lack of motivation, age
Interpersonal/cultural	Lack of time due to studies , different lifestyle or family commitments,
Environmental: Social and Physical	Social: no one to do activities with, Physical: weather condition

Table 4.20. Summary of key themes identified from interviews with children

Influential factors for children	Attitudes and role modelling from Parents, significant others, grown ups,
Children’s perspectives on their parents’ attitude	Positive attitude, verbal encouragement, supporting them by providing equipment or transport, registering them on training courses, joining in games and activities
Parental role modelling (children’s perception)	Parents were perceived to be active and have positive attitude about PA
Parental role modelling (parents’ perception)	Mainly not good role models, inactive

Table 4.21. Summary of key themes of barriers to participation for girls identified from interviews

Intrapersonal factors	Lack of motivation or enjoyment
Interpersonal/cultural factors	Lack of time due to school work, house work, family expectation, cultural/religious activities, dress code
Environmental factors	Weather condition, lack of women only places
Media culture	TV, video games, computers

Table 4.22. Summary of key themes of barriers to participation for boys identified from interviews

Personal factors	Lack of time due to studies
Environmental factors	Safety issues, weather

4.5. Conclusion

This study's interpretation was guided by the socio-ecological model. It aimed to explore determinants, beliefs, attitudes towards, and knowledge and understanding of and motivation for physical activity within the BRM families living in the UK. The secondary aim was to identify the barriers to participation in physical activity and to examine the influence of the Muslim parents' influence on their children's physical activity levels.

Definitions of physical activity varied. They ranged from any body movement to structured exercise. The concept of physical activity was mainly perceived as a separate issue and not integrated in daily lifestyle. Physical activity was seen to have a range of benefits consisted of physiological, psychological and social benefits. Respondents' physical activity did not seem to have been influenced since living in the UK. They reported that age, education and the media has affected their attitudes, knowledge beliefs and motivation about physical activity.

The results demonstrated that BRM parents reflected positive attitude towards physical activity and supported their children through verbal encouragement and providing means for participating in physical activity for example paying gym fee. This was despite their own low levels of physical activity. One family in particular put more importance on keeping their children in close contact with their origin through classes and additional activities related to their religion and culture which seemed to restrict their children's time to engage in physical activity. There also seemed to be a great deal of expectations that girls in the same household to do house work and help out which again limited the time available to the girls for physical activity.

From a socio-ecological perspective this study suggested that although a community may have good access to parks which are easily accessible and well equipped with play equipment for children, however parental perceptions about traffic safety on the road to the park and other dangers may prevent children from using this aspect of their physical environment. This issue could be more magnified among individuals from the BRM population with lower acculturation level. Although not objectively measured but acculturation appeared to be associated with physical activity components including: beliefs, attitude, participation, role modelling and so on.

Findings from this qualitative study were similar to the findings from study 1. A number of intrapersonal, interpersonal, social and physical environmental aspects influenced participants' physical activity behaviour. The individual and environmental impediments to physical activity in the BRM population should be taken into an account before designing interventions to promote physical activity among this particular group.

Findings of this study emphasises on the significant role of social support and communities in encouraging and facilitating physical activity opportunities. These findings although limited in sample size should be taken into consideration whilst designing an intervention for an ethnically diverse population.

Findings from this study suggested that the individual, social and physical environments impact on the ability or likelihood of individuals participating in physical activity. Human behaviour is difficult to change, especially in an environment that does not support change. In order to increase physical activity, efforts need to focus not only on the behaviour choices of each individual but also on factors that influence those choices. The socio-ecological model can help identifying opportunities to promote participation in physical activity by recognising the multiple factors that influence an individual's behaviour. Efforts to change behaviour are more likely to be successful when the multiple levels of influence are addressed at the same time. However our conclusions must be considered within the context of study limitations. Measures of physical activity levels, and parenting behaviours and role modelling were all based on parents and children's self reports.

Studies	Findings
Study 1: Kensington Women Get Lively Project Survey= 213 BRM women Focus groups= 17 BRM women	
Aim 1: To develop a process to enable a research investigation to take place among BRM populations (hard to reach group).	Local women were consulted, Partners Advisory Group (PAG) and Community Researchers Advisory Group (CRAG) were established. A bespoke survey was constructed that aimed to explore the factors that determined physical activity for women. The survey effectively engaged 213 hard to reach individuals from BRM population.
Aim 2: To identify physical activity levels and its determinants among BRM women living in deprived areas using a socio-ecological framework.	Survey: <ul style="list-style-type: none"> • Higher than expected self reported PA levels. • Barriers included lack of time, motivation access to information, resource and the ability to speak English. Focus groups: <ul style="list-style-type: none"> • women only activities • Access to information through schools and community centres • Community based/group activities were asked for. • Exercise professionals required to motivate women to get active. • Organised walks, ball games and indoor group exercises were preferred
Study 2: Muslim Families Project Individual interviews, 4 families (n=16)	
Aim1: To identify physical activity determinants among BRM families and investigate the role of family support and parental role modeling in promoting physical activity in the family unit within the socio-ecological framework.	<ul style="list-style-type: none"> • Low levels of PA were reported. determinants of PA were not influenced by immigration to the UK, they were more related to age, lifestyle, increased knowledge about PA
Aim 2: To explore whether BRM individuals' beliefs and attitudes towards and knowledge about physical activity have changed since living in the UK.	<ul style="list-style-type: none"> • Parents influenced their children's physical activity levels by encouraging them verbally and supporting them. This however was not the case in one family. Boys received more support to engage in physical activities compared to girls.
Study 3: The Work Out Project Survey=148 participants Individual interviews (n=14) with participants, practitioners, and the manager : Using the RE-AIM framework	
Aim: To evaluate a community based intervention tailor made for BRM and people with low socio-economic status	

Chapter five:
Study 3- Intervention
“The Work-Out Project”

5. Health promotion interventions

Health promotion interventions set within a socio-ecological model emphasise the role of individuals, groups and organisations as active instruments in developing health practices and policies to enhance individual and community well being (Green and Kreuter, 1991). Sallis and Owen (1999) suggested applying the socio-ecological model to develop practical guidelines for designing, implementing and evaluating community health promotion interventions. Multi-component, large scale, community based interventions can be an effective means at increasing physical activity (Kahn et al., 2002). Most community based interventions have emphasised on communication and educational aspects and included a wide range of clients (Kahn et al., 2002).

Studies that aim to promote physical activity in hard to reach populations including low income, BRM or people with disabilities are rare (Yancey et al., 2004). The main problem is that physical activity interventions that target general populations usually do not report data separately on BRM or low income groups because they do not carry out subgroup analysis, usually due to the low number of participants from the underserved populations (Yancey et al., 2004). This is particularly unfortunate as these groups are more likely to be less active or inactive compared to other population groups (Biddle and Mutrie, 2008; Taylor et al., 1998). Clearly, effective physical activity intervention on a public health level requires an inclusive concept that integrates approaches that target diverse subpopulations and uses various delivery approaches to meet their specific needs (Yancey et al., 2004).

In recent years there have been issues regarding the translation and public health impact of physical activity interventions compared to their effectiveness which is readily available. The problem is that until recently there is no widely used systematic framework to evaluate potential for translation and public health impact. Glasgow et al. (1999) have addressed this deficiency and have designed an evaluation framework. This framework (RE-AIM) has been developed to assess intervention efficacy including multiple criteria that could identify the robustness and public health promotion interventions. Glasgow et al. (2004) concluded that RE-AIM provides a framework that determines the effectiveness of interventions, thus helping policy makers and commissioners to make informed decisions related to sustained investment in projects set in real world environments. It is evident that the RE-AIM

framework and social-ecological approach (Stokols, 1996) can be integrated to provide a conceptual research approach to investigating physical activity interventions (Green and Johnson, 1996). To this end RE-AIM will be used as a planning and evaluation framework to aid in the design of the project as well as assess the effectiveness and translation of a community based intervention that was targeted at specific sub-populations.

5.1. Rationale for a physical activity intervention in Liverpool

Socio-ecological model identified how the health status of individuals is influenced not only by the attitudes and practices of that individual, but also by their personal relationships, as well as community and societal factors. This model was also used to inform the development and the implementation of the intervention by describing the multiple levels of intervention, beginning with individual level change and concluding with community change. The previous studies in this thesis have sought to identify the key barriers and determinants to physical activity participation. Study 1 found that engagement in physical activity in BRM groups varied widely although few had knowledge about activities opportunities in their community. Intrapersonal lack of motivation, interpersonal (lack of time) and environmental factors lack of access to information and places for physical activity were implicated in women who had low levels of activity. Further participants in study 1 expressed their need for a community based program which would be motivating, accessible, free/low cost and tailored to their personal needs. Study 2 focussed on physical activity in Muslim families and found that intrapersonal (attitude, lack of motivation), interpersonal (lack of time, lifestyle) and environmental factors (lack of resources: women only activities) constrained women from engaging in physical activity. Families maintained their social ties by attending cultural/religious activities. Some lack of exposure to mainstream culture resulted in less acculturation and limited opportunities for engaging in the wider community. This was at times problematic as their own communities did not offer many opportunities for physical activity. The findings from studies 1 and 2 suggested that programmes that promote physical activity in ethnic and deprived groups by engaging their communities need to be trialled. In support of this, WHO (1986) concluded that promoting physical activity in inactive communities or groups will result in their improved health. Moreover, the Ottawa Charter (1987) identified the five key components of community health promotion as: building

healthy public policy, creating supporting environments, strengthening community action, developing personal skills, and reorienting health services to include health promotion.

Thus there was a need to develop a physical activity intervention that would “reach” the BRM and deprived groups in Liverpool. In this community nearly 80% of inhabitants failed to engage in physical activity for 30 minutes on 3 days of the week (APS, 2009). The “Work-Out” project involved practitioners from the local communities and was designed to meet the specific needs and interests of the targeted population (Bauman et al., 2002). The socio-ecological model provided a useful model for achieving a better understanding of the multiple factors and barriers that impact physical activity behaviour, and therefore can provide guidance for developing culturally appropriate and sensitive community-based multi-components intervention strategies for the disadvantaged, BRM groups. It is an integrative model that shows great promise in moving the field closer to attaining the goal of improving healthy behaviours and promoting physical activity among the BRM and disadvantaged populations. The Socio-ecological model seemed an appropriate approach to health promotion that offers this broader perspective. Recognising that most public health challenges are too complicated to be adequately understood and addressed from single level analyses, the socio-ecological model includes a more comprehensive approach that integrates multiple levels of influence to impact health behaviour and ultimately health outcomes. Those levels of influence include intra- and interpersonal factors, social and physical environment and community and organisational factors (Sallis et al., 1997)

The intervention programme primarily aimed to help individuals overcome personal, social and environmental barriers to physical activity, and to enhance the capacity of the local community to promote physical activity. The secondary aim of the intervention was to tackle health inequalities, improve positive health and develop strategies to increase the control individuals have over their own health. Disadvantaged people were the target of this health promotion programme because they were considered to be more vulnerable to physical activity and health inequality. Given these criteria a partnership of key stakeholders were brought together to design the intervention approach and subsequent bid to the European Social Fund.

5.2. Project partners

The stakeholder group included a number of partners who operated in the South Central Neighbourhood area: This project also formed part of the wider Liverpool Active City strategy. This strategy was directed by a multi-agency partnership which came together to form the Liverpool Sport and Physical Activity Alliance (SPAA). The bid writing team was also constituted in the (SPAA) and subsequently this group managed the project. Other key stakeholders were HEAL 8, Liverpool PCT, Liverpool City Council (Sport and Recreation Service), Walk and Cycle for health, Mersey Forest, Pertemps Employment Agency, South Central JET, Job Centre Plus, Kensington New Deal for Communities (KNDC) BRM support team, Sure Start, Kensington Youth Inclusion Programme, Workers Educational Association, Housing Associations, and Resident Housing Associations. In addition, there was links between (SPAA) and community based providers of physical activity programmes, including the Kuumba Imani Centre, Dingle Community Leisure Enterprises, New Belvedere Community Recreation Centre and Friends of Princes Park, Churches – St Lucks Dovecot, St Philomena's in Toxteth, LCVS, Step Closer to Work, Conditional Management, Hostels – Salvation Army, Unite Union, Eduk8 – Training organisation, Community Groups such as: Liverpool Arabic Centre, Pagoda Centre, Somali Muslim Group, Pakistani Centre, Black Sisters and Caribbean Centre.

Whilst all stakeholders made a valuable contribution to the conception and planned implementation of the project, SPAA, Liverpool PCT, Liverpool Active City, Liverpool City Council and the Belvedere and Kuumba Imani Centres were the main partners responsible for programme implementation with Liverpool John Moores University acting as the main partner responsible for programme evaluation.

5.3. Design of the Work-Out intervention

The Work-Out project was conceived by the main partners who aimed to develop local community capacity and focused on:

1. The provision of resources and
2. Increased use of the facilities by local communities

The RE-AIM framework was used to both plan and evaluate the Work-Out project. The project aimed to stimulate activity in the inactive population with BRM, low income groups and people with physical and/or mental limitations being prioritised. In consultation with the stakeholder group two Sports and Physical Activity Alliances (SPAA) managers designed the programme. The SPAA manager (SPAAM1) who wrote the bid to ESF subsequently took on the responsibility for managing the Work-Out project.

The strategy used to improve the “reach” of the project was to have people working in the community and to engage stakeholders who had both resources and credibility to provide more people capable of delivering a range of activities. SPAAM1 designed a “one to one” system where support could be provided for the most sedentary, socially excluded and at risk people. It was also SPAAM1s decision to name the “one to one” instructors “fitness activators.” Essentially “fitness activators” acted as professional personal trainers who aimed to befriend participants in their particular geographic community. Together with SPAAM1 fitness activators considered local facilities, flexible activity time and specific types of activities referred by the targeted population to design this culturally sensitive, client based intervention. Using the RE-AIM framework the initial implementation strategies were set up to ensure an effective delivery of the service. This was achieved through establishing aims and objectives with main members of the stakeholder group and by scheduling regular meetings for quality assurance of the project.

5.4. Project design

This intervention aimed to use the following components for promoting physical activity:

- a) An informational approach: Communitywide marketing campaign
- b) A social support intervention approach in community settings (e.g., setting up the fitness activators system in local community centres)
- c) An environmental approach: Enhanced access to the local places for physical activity combined with stakeholder engagement, outreach activities and ongoing support.

5.5. Aims and objectives of the Work-Out project

The main aims of the project were to:

- Increase participation in physical activity among people living in a deprived neighbourhood
- Use a different approach to increase physical activity by employing community/lifestyle instructors

5.5.1. Objectives

The objectives for the delivery (not evaluation) of the Work-Out project within the Liverpool east neighbourhood were threefold. First making sure that hard to recruit groups were reached, second, that participants who were at greatest risk from inactivity were “actively recruited” to the programme and third, to assist in maintaining physical activity behaviour change, ongoing support was planned. These three key objectives are explained in more detail in sections a, b and c below:-

a) To work intensively with individuals and groups to help them identify and overcome personal barriers to participation in physical activity

To be achieved by:

- Appointing three local Fitness Activators who will work as mentors and undertake both one-to-one and group work with participants
- Develop personal plans with each participant which will identify and address their barriers to participation (both real and perceived: e.g. financial, access,

opportunity, choice, disability, lack of confidence), develop goals and tailor an appropriate programme of activity to individual needs.

- Fitness activators to develop strong relationships with participants through a high level of face-to-face work and by accompanying participants to activity sessions and participating with them. This approach enabled fitness activators to motivate, encourage and support participants whilst at the same time help address confidence issues.
- To implement the programme by working with key stakeholders e.g. SPAA, sports centres, Liverpool SAZ, Cardinal Heenan, Dovecot Mac, community groups to ensure that participants have access to and awareness of the widest possible range of physical activity (walking, gardening, chair based exercise, climbing, dance as well as a programme of more traditional sessions)
- Provide free physical activity sessions for the first 12 weeks

b) To identify and recruit those most at risk of health problems associated with inactivity with a specific focus on women/girls, older people, people with disabilities, BRM groups and low income groups

To be achieved by:

- Working with stakeholders to access target groups e.g. Surestart, Age Concern, Help the Aged, Imagine, Integrated Services, Liverpool Association of Disabled People, Weight Watchers, (Kensington New Deal Community) KNDC BME support team and local community organisations
- Establishing referral schemes through health centres, GPs and stakeholders so that local residents who will benefit most from participation in physical activity can be effectively accessed
- Face-to-face publicity through local events, open days, project information displays and communicating information in public places. This will build rapport with potential participants, overcome literacy problems and make it easier for them to register on the project
- Producing leaflets which will be appropriately distributed across the area using local agencies.
-

c) To provide ongoing support to participants to ensure their continuing involvement in physical activity

To be achieved by:

- Developing flexible support mechanisms that take into account individual needs. Fitness activators will support participants as and when needed. There will be no fixed time limit to one-to-one support for the whole period of the project.
- Setting up monthly group meetings to provide additional support and motivation for participants who do not need one-to-one support and to keep participants informed of any new activities/sessions available

Once these key objectives were agreed participant recruitment and project delivery approaches were developed. Recruitment pathways were agreed with stakeholders and these involved agency and stakeholder referrals, face to face recruitment and marketing. The co-ordinator organised the activities of the fitness activators, developed sustained partnerships with organisations and ensured the project was monitored and evaluated.

5.6. Participants' recruitment

Recruitment of the beneficiaries were conducted in various ways, most participants were referred to the project by a range of agencies and stakeholders:

a) Agency Referrals: Specific target groups were reached through the establishment of a referral scheme in partnership with stakeholders. The referral pathway to the project occurred through Health Trainers, Health Centres, GP's, Sure Start, CHATs Team at PCT, older people's residential Homes, Age Concern, Help the Aged, Imagine, Liverpool Association of Disabled People, Mental health daycentres, Weight Watchers, KNDC BRM support team, and JET integrated Services, Step Closer to Work, Conditional Management for men and women who had experienced physical violence and lost their homes, Fitness Activators would then take the potential clients' details and set up a meeting with them in the following week.

b) Face to face work: A large number of face to face referrals were made by fitness activators during large scale community events and at shopping malls, churches and

mosques. During these events Fitness Activators were available to speak to people and describe the project.

c) Marketing strategy: The project was marketed using promotional leaflets flyers and posters aimed at target groups. The project was also promoted through local newsletters, press and community open days and events. A promotional partnership was established with Kensington Community Sports Centre, Peter Lloyd Leisure Centre, Cardinal Heenan Specialist Sports College, local community groups and local agencies to maximise awareness of the programme.

To ensure recruitment mechanisms and pathways were appropriately implemented, SPAAM1 and the senior fitness activator met on regular basis to review the recruitment strategy and referral system. The “reach” of the Work-Out project was measured using beneficiaries’ data (ethnicity, disability, income, gender, age, postcode) and matched to predetermined output targets.

5.7. Project delivery (Implementation)

The project was initially set to run for 18 months. Low income groups, women/girls, people with disabilities, older people (aged 60+) and BRM groups were specifically targeted. Work was community based with each Fitness Activator being housed at a strategic location within their area of work (Kensington Community Sports Centre, Peter Lloyd Leisure Centre and Cardinal Heenan Specialist Sport College). Fitness Activators booked induction sessions with individuals and identified their needs, abilities and interest and designed a programme with a range of activities. The project was delivered either on a one to one basis or in groups at community centres, gyms and local sport centres.

5.8. Support mechanisms

Participants were able to access either individual or group support throughout the duration of the project.

a) One-to-One support:

Initial support was provided on a one-to-one basis by the Fitness Activators. The Fitness Activators worked to build confidence with individual participants until they felt able to attend and participate in activity sessions on their own. There was no time limit to this level of support in order to take into account different needs.

b) Group support meetings:

Ongoing support was provided by monthly participant group meetings; initially these were led by the Fitness Activators with a view to them being led by voluntary mentors in the long term. Monthly meetings provided a local support network that gave participants the opportunity to informally discuss issues, problems, new activities and motivate others within a social environment. For those participants who had health problems outside the remit of the project Fitness Activators directed them to appropriate advisory and support agencies/groups.

5.9. Project locations

Activity sessions took place across the Eastern Link areas and added to the existing sessions already available via local community organisations and groups. Venues included: Kensington Community Sports Centre, Peter Lloyd Leisure Centre, Cardinal Heenan Specialist Sports College, The Life Bank, Dovecot Mac, Community Centres and Local Parks.

5.10. Activity types

Programs available were a wide range of indoor activities including: gym based exercises such as: cardio, core exercise, bike, rowers, yoga, Tai Chi, exercise band classes, fitness classes, swimming, circuits, kick boxing, running, aerobics, Pilates, bum/tum, boxing, line dancing, ballroom dancing, seated exercise, steps and so on. A full range of activities were available including women only sessions, closed classes for people with learning difficulties, physical disabilities and mental health problems.

5.11. Activity times

The times and locations of activities were client focused. Fitness activators worked with individuals to determine activity times and locations on a personal basis. Participants were able to attend organised activity sessions at sports centres/community centres or to develop an individual programme of activity with a Fitness Activator.

5.12. Rationale for evaluating the Work-Out project

Measuring whether the investment in a public health programme has been effective in creating behaviour change in community based settings is now central to the “world class commissioning” process operating within the NHS in England (DH, 2009). This process requires that the programme is worth investment from the beginning and that this investment is based on evidence. It was, therefore, imperative that given the investment in the programme the evaluation approach should utilise robust research approaches. Further, the opportunity to evaluate an intervention directly related to the outcomes from studies 1 and 2 presented itself during the idea-generating phase for the design of an intervention. Liverpool had successfully bid to the European Social Fund (ESF) to run a multi-level community-based intervention in the areas where participants in studies 1 and 2 resided. The ESF bid for the Work-Out project was successful and at this stage we integrated our research findings from studies 1 and 2 to influence programme delivery and evaluation. Moreover, the RE-AIM framework used to design and plan the Work-Out project could also be effectively used to evaluate it.

5.13. Evaluation aim

The effectiveness of physical activity interventions need to be measured to bridge the gap between research and practice (Glasgow et al., 2004). The evaluation of a physical activity program can demonstrate the progress, share the lessons learnt, and help to improve the program by recognising the weaknesses and strengths of the program (US Department of Health and Human Services, 2000). Moreover, in health promotion interventions, comprehensive evaluation of the strengths and weaknesses of different delivery approaches could lead to greater public health impact and more cost-effective health care (Glasgow et al., 2004). The evaluation aimed to measure the effectiveness of the Work-Out project in meeting its aims and objectives. The RE-AIM framework was the tool selected to combine the process and effect outcomes and translate them for use in future programme content and organisation. The evaluation approach therefore adhered to the main principles of the RE-AIM framework (Glasgow et al., 1999).

5.14. Aims of the evaluation of the Work-Out project

The evaluation for the Work-Out Project aimed to:-

- a) Assess whether the target audience were recruited into the project
- b) Measure the effectiveness of the project at increasing physical activity levels
- c) Determine whether aims and objectives of the Work-Out project agreed by the stakeholders were adopted and implemented,
- d) Assess whether changes in physical activity behaviour were maintained,

5.15. Evaluation method

To achieve these aims research and evaluation tools need to be selected. Most studies on the effectiveness of public health interventions for increasing physical activity have used quantitative methodologies (Hillsdon et al., 2005; Eaton and Menard, 1998; Ashenden et al., 1997). However, since the Work-Out project was a multi-component intervention, the complex process of behaviour change required a more in-depth approach to identify how the programme of recruitment and delivery worked to stimulate behaviour change. Therefore, a mixed methodology was used to evaluate this project. Using approaches for developing community relevant surveys in study 1 a short questionnaire was developed in partnership with the Fitness activators and the primary researcher. The questionnaire included demographic closed ended items aimed at identifying the age, gender, ethnicity, employment status, post code and physical activity levels prior to the project and an open ended question asking participants for further comments on the project and the service provided. The survey was complemented with semi-structured individual interviews with the project manager, senior fitness activator, two fitness activators and participants (Cresswell and Clark, 2007). The theme for the individual interviews was based on the principles of the RE-AIM framework (Glasgow et al., 1999). The qualitative method was given priority over the quantitative method in this study. The quantitative approach somehow acted like a gateway for the qualitative approach as it concluded brief and easy questions. Therefore the priority was given to qualitative method in this study.

5.16. Methodology

Quantitative and qualitative methods were used in this study. The “first phase” of this methodology includes a description of the “quantitative methods” and statistical analyses used and an overview and summary of results. The “second phase” includes a description of the qualitative methodology and a summary of results including pen profiles and content analysis. Each methodological phase is organised into three categories - participants and settings, instruments and procedure and design and analysis.

Phase 1

Quantitative

Investigation

5.17. Phase 1: Quantitative investigation

5.17.1. Participants and settings

Beneficiary data: Beneficiary data were collected and collated by the fitness activators as a condition of funding the project. There were 1200 beneficiaries to the project of which 719 provided personal information. These personal details included place of residence, age, national insurance number, gender, previous and current employment status, qualifications, ethnicity, single parent, disability, and programme completion. Data were collected during the registration to the project and was not part of the more detailed survey.

Survey data: Of the 719 participants who provided beneficiary data 153 participants agreed to take part in the survey. Participants were recruited by telephone and word of mouth. The survey was administered twice, once before the participants started the project and once 3 months after the project had finished (see appendix 7 and 8).

5.17.2. Instruments and procedures

Survey

The survey was designed by the project manager and was further developed by LJMU researchers. The project manager and fitness activators held two meetings to discuss how the survey was going to be conducted. The project coordinator first ran a pilot survey by contacting some of the participants and conducting the survey over the phone. The project coordinator then fed the results back to the team. Piloting demonstrated that the questions were appropriate and participants were happy to respond and provide information. As in study 1, fitness activators assisted the project manager in conducting the survey. Activators with initials: AW, TH and LR surveyed 58, 41 and 54 participants respectively. The survey was made up of 20 questions. These included demographic data, frequency, intensity and type of activities before, during and after the project, satisfaction with the service provided, training courses and further comments about the project and the fitness activators (see appendix 7). The survey was conducted over the telephone, at activity venues and in participant's homes.

5.17.3. Design and analysis

A non-controlled randomised design was used for the survey. Descriptive and frequency statistics were used to describe the population for both survey and beneficiary data. For survey data, Univariate ANCOVAs were used to estimate the change in the frequency and intensity of physical activity over time. The independent variables of interest were ethnicity (BRM/white), fitness activator (FAAW, FATH, FALR), age (<25, 26-45, 46-60, >65 years), gender (male, female) and time (time 1, time 2). The sample size was too small to use all IVs in one analysis. The main IV of interest was the change in intensity and frequency of activity, therefore time was used in all analyses. The covariate used in all analyses was individual IMD score. As there was no significant difference in the main or interaction effect for gender in the gender x time analysis for the frequency or intensity of physical activity, gender was not included as an IV in any further analyses. Moreover, nearly 80% of participants were female. Age was also excluded as an IV in the main model on the same basis as gender. Therefore, a 3-way ANCOVA including ethnicity, fitness activator and time were used in the main analyses. Alpha was set at $P \leq .05$. Models for frequency and intensity of physical activity including or excluding IMD were compared for the amount of variance accounted.

5.17.4. Ethics

The intervention received ethical clearance as part of the whole research study from the institutional ethics committee. Verbal consent was obtained over the phone or in person for conducting the survey. Written consent was obtained from the participants prior to individual interviews. Fitness activators, the project coordinator and the SPAAM1 gave their verbal consent for the individual interviews.

5.18. Survey results (Part I)

5.18.1. Beneficiary data

Of the 719 beneficiaries 94% resided in the post code area L8, three quarters were female, 45% were white British. Detailed data for ethnicity showed, 15% were black British African or Caribbean, 10% were mixed white and black African or Caribbean, 2% were British Asian or Pakistani, 2% were Chinese, non described other races and Asian and Black British other represented 15 and 8% of the beneficiaries respectively, 3% of beneficiaries refused to give the ethnicity or it was unknown. Data on disability

were also collected with 75% of respondents reporting no disability. Of those reporting a disability 2.5% had a long term health problem, and 1.7, 2.6 and 4% had multiple, physical or mental health issues respectively, whereas 1.2% had sight, hearing or learning disabilities. Over half the beneficiaries were age, 35 years. Only 220 beneficiaries responded to the single parent yes/no question with 43% affirming that they were bringing up children on their own.

5.18.2. Survey data

One hundred and fifty three participants completed the survey, of these (81%) were female and (19%) were male. Twenty five respondents were under the age of 25 (17%), 64 (42%) between the ages of 26-45, 17 (11%) between the ages of 46-60 and 42 (28%) respondents were over 60 years old. A range of indigenous white British (61%) and ethnic groups (39%) participated in the 12-week programme. Thirty four percent of respondents reported that they were active before the project whereas (62%) were inactive. One hundred and fifty three participants responded to the questions on frequency and intensity respectively before they took part in the intervention. After the intervention 135 participants responded to frequency and intensity of physical activity questions. Data on prevalence of frequency and intensity of physical activity are illustrated in figures 5.2. and 5.3. respectively.

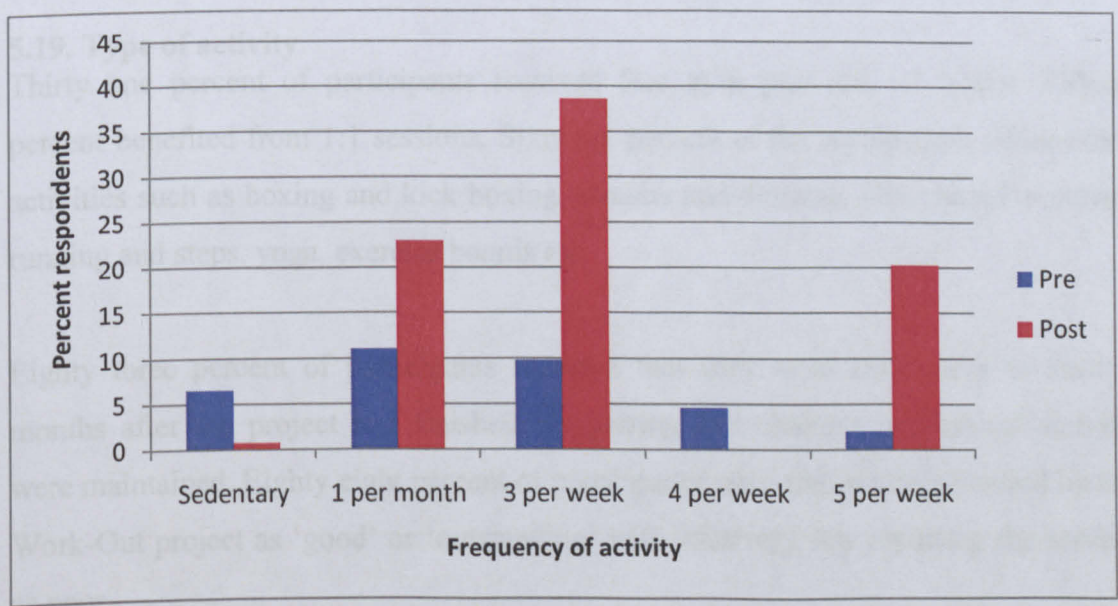


Figure 5.2. Percentage of respondents' frequency of activity before and during the programme

The percentage of respondents who were sedentary decreased from 6 to 1%. Those who were active once per month doubled, those who took part 3 times per week increased over three-fold and those who were active 5 times per week increased 8 times that recorded before the project started.

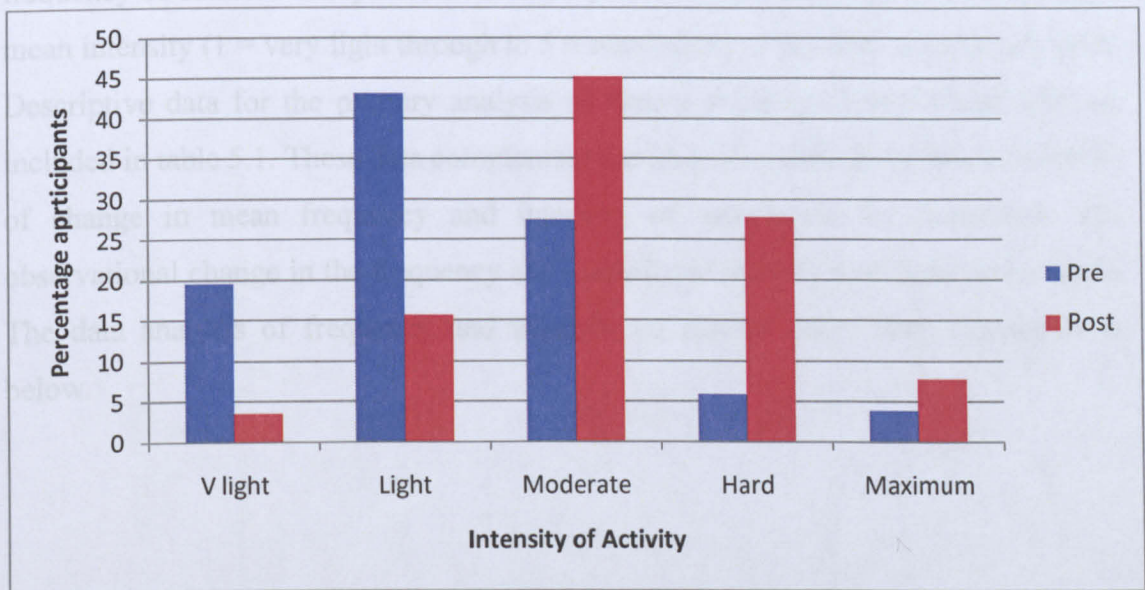


Figure 5.3. Percentage of respondents' intensity of activity before and during the programme

The percentage of respondents who took part in very light and light activity decreased whereas the percentage who took part in moderate, hard and maximum intensity activity all increased as a result of taking part in the project.

5.19. Type of activity

Thirty one percent of participants received free gym pass for 12 weeks. Fifteen percent benefited from 1:1 sessions. Sixty six percent of the participants chose other activities such as boxing and kick boxing, circuits and dancing, chair based exercise, running and steps, yoga, exercise boards etc.

Eighty three percent of participants reported that they were still active at least 6 months after the project had finished, suggesting that changes in physical activity were maintained. Eighty eight percent of participants rated the service provided by the Work-Out project as 'good' or 'outstanding' with relatively few reporting the service as poor.

5.20. Further analysis

Table 5.1. includes descriptive statistics for the mean frequency and intensity of physical activity with standard deviation of scores in parentheses. One hundred and thirty five participants completed the pre-post questions weekly physical activity. The frequency of sessions is reported in number per week and the intensity is reported as mean intensity (1 = very light through to 5 = maximum) of physical activity per week. Descriptive data for the primary analysis of time x fitness activator x ethnicity are included in table 5.1. These data complement the frequency data and allow an analysis of change in mean frequency and intensity of activity to be completed. The observational change in the frequency and intensity of activity over time was evident. The data analysis of frequency and intensity of activity have been completed as below.

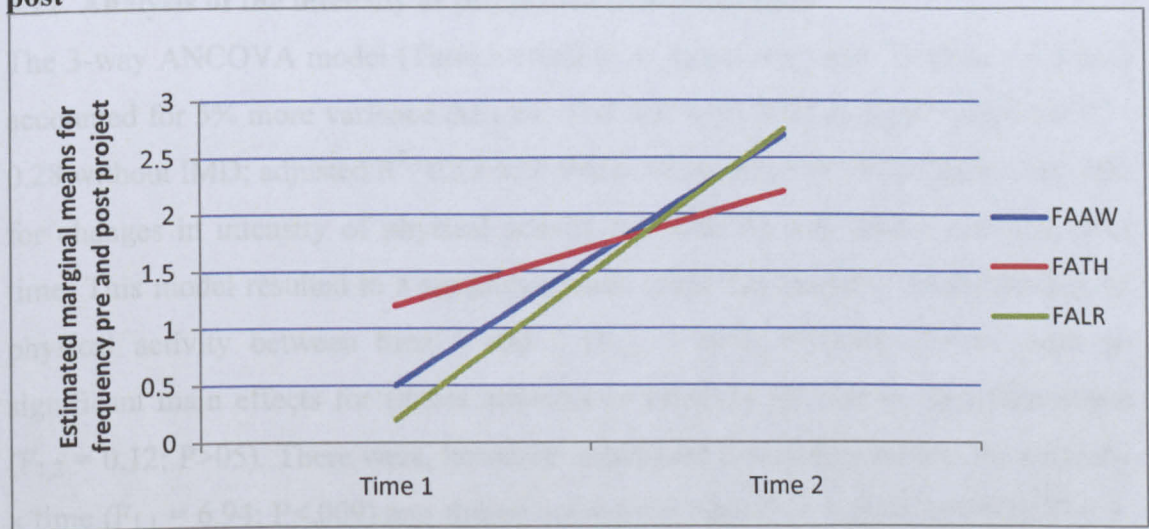
Table 5.1.Frequency and intensity of physical activity at time 1 and 2 by ethnic group and fitness activator

Fitness Activator (initials)		FAAW			FATH			FALR		
		White	BRM	White	BRM	White	BRM	White	BRM	White
Time (1=pre: 2=post)		1	2	1	2	1	2	1	2	1
Number of respondents		44	44	8	8	25	25	13	13	30
Frequency of PA (N° sessions/wk)		0.8 (1.5)	2.0 (1.7)	0.0 (0.0)	3.3 (1.3)	1.3 (1.5)	1.9 (2.0)	0.2 (0.4)	2.6 (2.0)	0.2 (0.9)
Intensity of PA (1= v light to 5= maximum)		0.7 (1.1)	2.4 (1.5)	0.8 (1.4)	3.5 (0.8)	1.2 (1.4)	1.6 (1.6)	0.5 (1.0)	2.7 (2.0)	0.3 (1.0)

5.21. Analysis of frequency of physical activity over time

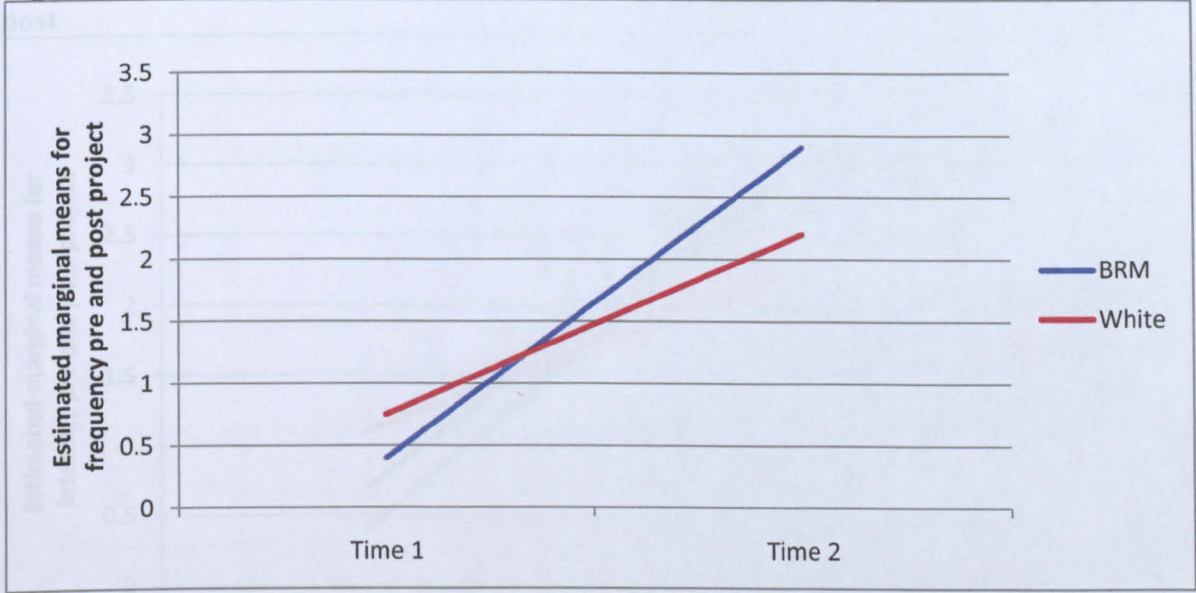
The 3-way ANCOVA model (Time x ethnicity x fitness activator: IMD as covariate) did not account for any more variance than the ANOVA with IMD excluded (adjusted $R^2 = 0.27$ without IMD; adjusted $R^2 = 0.28$ with IMD). Thus the ANOVA model was used for changes in frequency of physical activity by ethnicity and fitness activator over time. This model resulted in a significant main effect for increase in the frequency of physical activity between time 1 and 2 ($F_1 = 88.4$; $P < .0001$). There were no significant main effects for fitness activator or ethnicity ($P > .05$) or their interaction ($F_2 = 0.12$; $P > .05$). There were however significant 2-way interactions for ethnicity x time ($F_1 = 6.94$; $P < .009$) and fitness activator x time ($F_2 = 5.49$; $P < .005$). The 3-way interaction, time, ethnicity and fitness activator was not significant ($F_2 = 1.54$; $P > .05$). (See graphs 5.4. and 5.5.)

Figure 5.4. Interaction plot between the fitness activators for frequency pre and post



Demonstrating the interaction between the fitness activators and the frequency of physical activity over time. Fitness activators LR and AW encouraged more frequent physical activity in participants over the time 1 and 2 (pre and post).

Figure 5.5.Interaction plot for ethnicity and frequency pre and post

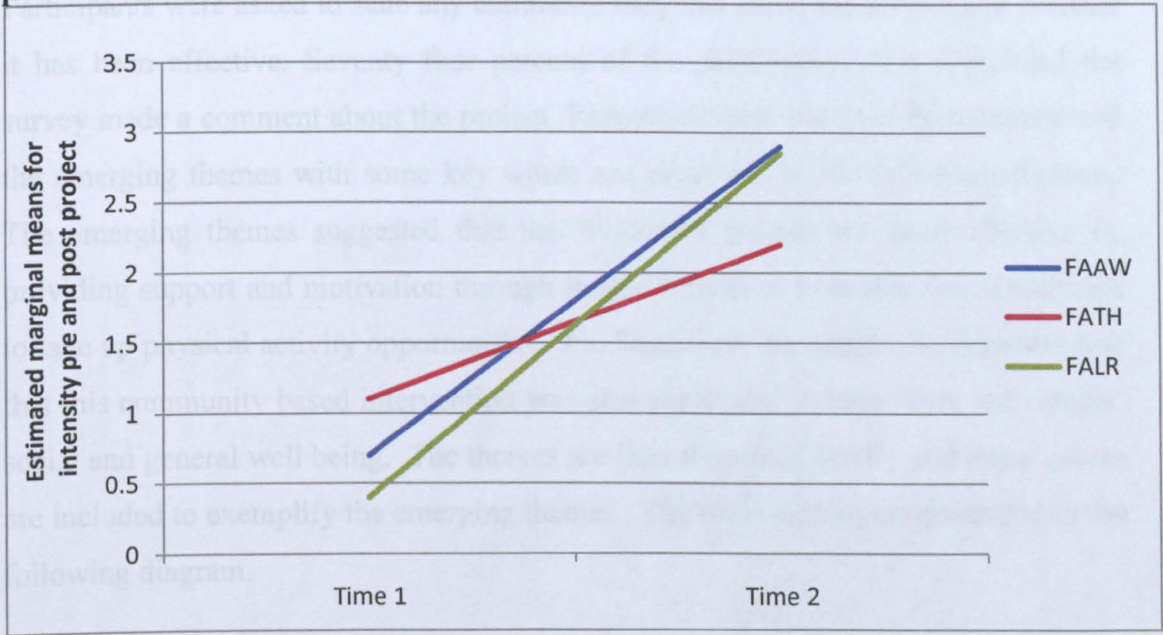


Demonstrating the significant difference in frequency of physical activity between the BRM and White population pre and post project. BRM showed higher physical activity frequency over the time.

5.22. Analysis of the intensity of physical activity over time

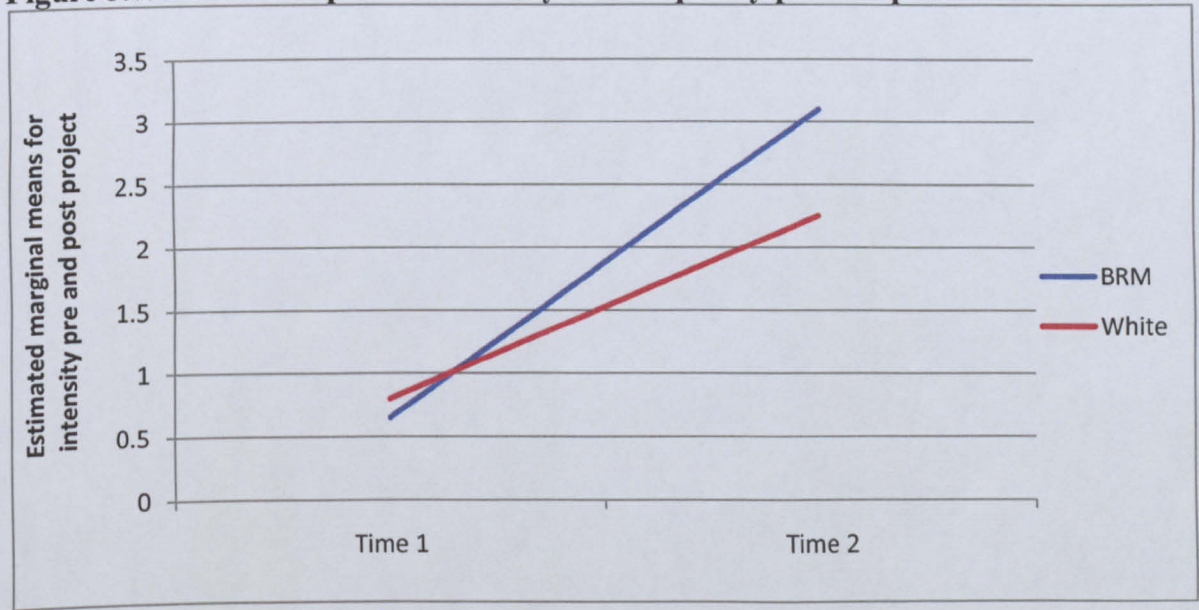
The 3-way ANCOVA model (Time x ethnicity x fitness activator: IMD as covariate) accounted for 5% more variance than the ANOVA with IMD excluded (adjusted $R^2=0.28$ without IMD; adjusted $R^2=0.33$ with IMD). Thus, the ANCOVA model was used for changes in intensity of physical activity by ethnicity and fitness activator over time. This model resulted in a significant main effect for increase in the intensity of physical activity between time 1 and 2 ($F_{1,1} = 88.4$; $P<.0001$). There were no significant main effects for fitness activator or ethnicity ($P>.05$) or their interaction ($F_{1,2} = 0.12$; $P>.05$). There were, however, significant 2-way interactions for ethnicity x time ($F_{1,1} = 6.94$; $P<.009$) and fitness activator x time ($F_{1,2} = 5.49$; $P<.005$). The 3-way interaction, time, ethnicity and fitness activator was not significant ($F_{1,2} = 1.54$; $P>.05$) (See graphs 5.6. and 5.7.).

Figure 5.6. Interaction plot between the fitness activators for intensity pre and post



Demonstrating the interaction between the fitness activators and the intensity of physical activity over time. The intensity of physical activity was higher by two fitness activators LR and AW over the time 1 and 2 (pre and post).

Figure 5.7. Interaction plot for ethnicity and frequency pre and post



Demonstrating the significant difference in the intensity of physical activity between the BRM and White population pre and post project. BRM showed higher physical activity intensity over the time (pre and post).

5.23. Survey results part (II) qualitative data

Participants were asked to state any comments they had about the project and whether it has been effective. Seventy four percent of the participants who completed the survey made a comment about the project. Responses were analysed thematically and the emerging themes with some key words are presented in the following diagram. The emerging themes suggested that the Work-Out project has been effective by providing support and motivation through fitness activators to enable the participants to take up physical activity opportunities. Findings from the qualitative data revealed that this community based intervention was also successful in improving individuals' social and general well being. The themes are later discussed briefly and some quotes are included to exemplify the emerging themes. The main themes are presented in the following diagram.

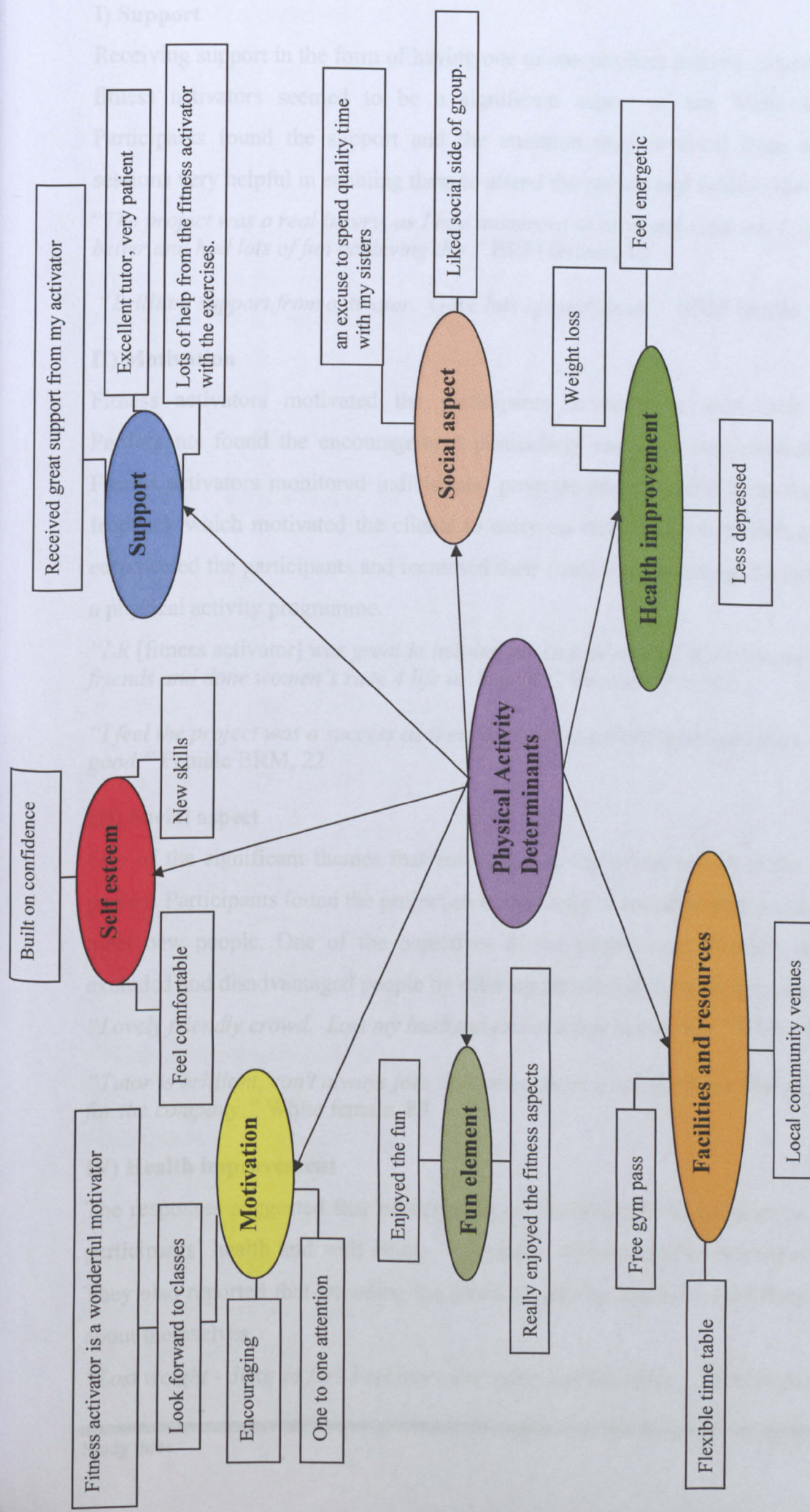


Figure 5.8. Main themes from the Participants' comments on the Work-Out Project

I) Support

Receiving support in the form of having one to one physical activity sessions with the fitness activators seemed to be a significant aspect of the Work-Out project. Participants found the support and the attention they received from one to one sessions very helpful in enabling them to attend the project and achieve their goal.

“The project was a real luxury, as I had numerous of personal sessions, I feel so much better and had lots of fun achieving this.” BRM female, 19

“Brilliant support from activator. Gave lots of confidence.” BRM female, 55

II) Motivation

Fitness activators motivated the participants to continue with their activities. Participants found the encouragement particularly useful to stay physically active. Fitness activators monitored individuals' progress and provided them with positive feedback which motivated the clients to carry on with the project. Being motivated empowered the participants and increased their confidence in taking the step to attend a physical activity programme.

“LR [fitness activator] was great in helping me stay motivated. I also made new friends and done women's race 4 life in June 08.” Female white, 44

“I feel the project was a success as it encourages us to look after ourselves and feel good.” Female BRM, 22

III) Social aspect

One of the significant themes that emerged was the social aspect of the Work-Out project. Participants found the project an opportunity to socialise with one another and meet new people. One of the objectives of the project was to reach the socially excluded and disadvantaged people by offering physical activity programmes.

“Lovely friendly crowd. Lost my husband and this has helped me.” White female, 86

“Tutor is brilliant, can't always join in because have a bad back but like meeting up for the company.” White female, 83

IV) Health improvement

The responses suggested that participating in physical activity programme improved participants' health and well being. A number of participants reported weight loss. They also reported that attending the physical activity sessions make them feel good about themselves.

“Lost weight - 30kg so far! Feel more energetic and healthier.” BRM female, 33

"lifted out of my depression, good for L8 area." BRM female, 42

"I feel the project was a success as it encourages us to look after ourselves and feel good." White male, 86

V) Self esteem

Respondents indicated that their self esteem and confidence have increased by attending the project. The support and motivation provided by the fitness activators created the opportunity for the participants to learn new skills and build on their confidence which later on enabled them to continue participating in physical activity.

"The project made me stay focused and gave me more confidence my dance projects as I had learnt new things." White female, 22

"I am more confident in joining new surroundings." White female, 23

"Hope extends it has helped with confidence and personal, friendship." White female, 43

VI) Fun element

The project had the fun element and the participants reported a great deal of enjoyment. They stated that the project changed their attitude about physical activity as it made them realise that physical activity can be fun.

"I enjoyed the classes had fun getting into shape, not active at present as I have an injury." BRM female, 18

"Enjoyed the step class. Already go dancing once a week." White female, 33

"I enjoyed the fun, I also had more fuel in my dance classes from the extra exercise." BRM female, 23

"This has been one of the best experiences of my life, I love working with LR." BRM female, 19

VII) Facilities and resources

The emerging themes revealed that the project had removed some barriers to participation in physical activity in low income, deprived areas. The free gym pass for 12 weeks was identified to be another significant element of this intervention as it offered physical activity sessions free of charge. Furthermore, participants indicated that the local venues where the activities took place provided easy access for them to take part in the programme. The project offered flexible time which was useful for the individuals with work and/or family commitments.

"I received my pass really quick, just had a baby so was just what I needed; I'm disappointed the project has to end as I never got the chance to be more involved." BRM female, 19

"The project was very beneficiary to myself as I work long hours, I had one-to-one sessions with LR which fitted around work. I feel the project has been a success in the community." BRM male, 31

"Great been able to use my local modernised gym free great as I'm on a low income." BRM male, 23

"Great service for the community also great for deprived youngsters." BRM female, 43

"Brilliant project for our community, delighted with opportunities I have been given." BRM female, 30

VIII) Implementation of the Project

Although this question was not directly asked from the participants, but some of the comments made indicated the delivery of the project has been successful and satisfactory. Respondents mentioned the classes were organised and the project was implemented well and felt very disappointed that the project had to finish.

"Good classes were scheduled from the project." BRM female, 22

"Great project, great team leaders." BRM female, 22

"Service from the project and at the lifestyles centre has been brilliant." BRM male, 43

"Fantastic instruction and organised classes. Miss it when don't go. Doctor said it is doing good." White female, 73

"Absolutely brilliant - dedicated staff, knew his stuff. Lost 10kg." White male, 63

The following table is presenting a summary of the survey results both quantitative and qualitative applied to the RE-AIM framework.

5.24. Summary of the results

Application of the RE-AIM framework	
REACH	Beneficiary: 1200 individuals from deprived areas were reached. Out of 719 registered beneficiaries 55% were aged 35 and under, 75% female, 55% BRM groups, 25% disabled, 31% single parent
	Survey: 153 participants took part in the survey/ 81% were female, 59% were under the age of 45, 64% unemployed, 39% BRM, 62% reported to be inactive before the project.
EFFECTIVENESS	<p>Quantitative: Participants significantly increased their intensity and frequency of physical activity during the project. Majority of participants increased their moderate activity to 3 times per week whereas a fifth met the Chief Medical Officer's recommendation (DOH, 2004) of 5 times of moderate physical activity per week. The percentage of respondents who were sedentary decreased from 6 to 1%. Those who were active once per month doubled, those who took part 3 times per week increased over three fold and those who were active 5 times per week increased 8 times that recorded before the project started.</p> <p>88% of the participants reported the service they received was good or outstanding.</p> <p>There was a significant interaction by ethnicity and time and there was a significant 2-way interaction by fitness activators.</p> <p>Qualitative: The project was effective in removing intrapersonal (lack of motivation), interpersonal (lack of time) social and environmental barriers (lack of access to information and facilities). Participants found the project to be effective due to the level of support and encouragement they received. Participants reported health improvement, increased self esteem and confidence and social inclusion. They enjoyed taking part in the project and improved their health by increasing their physical activity level. Participants reported that the Work-Out project was effective in improving their community cohesion and has been a success in their community.</p>
ADOPTION	<p>Quantitative: Fitness activators motivated 15% of the participants to take part in 1:1 sessions</p> <p>Two of the fitness activators were more successful to interact with the participants and significantly increased the intensity from 0 for the BRM to light and from light to moderate for the Whites and frequency from once a week to 2 and a half a week.</p> <p>Qualitative: inactive, hard to reach individuals were recruited from the deprived areas in Liverpool. Fitness activators played a significant role in encouraging and supporting the participants during the project. Participants developed personal skills which enabled them to maintain their activity levels post project. The sessions were adapted to the clients' ability and interest. Participants found themselves able to do the exercises and received</p>

	support and encouragement throughout the project.
IMPLEMENTATION	<p>Quantitative: There were more than 15 different activities that the participants could choose from. 33% received free gym pass. The sessions were organised and delivered efficiently.</p> <p>Qualitative: The delivery of the sessions were consistent. Sessions were run professionally and as they had planned. The organisation and delivery of the project was fantastic.</p>
MAINTENANCE	<p>Quantitative: 83% of participants maintained their activity after the project had finished. Main activities were 11% gym, 10% fitness or exercise classes, 12% outdoor activities e.g. walking, running, cycling, gardening.</p> <p>Qualitative: this element of the RE-AIM framework was not mentioned in the open ended question.</p>

Phase 2: Qualitative Investigation

5.25. Phase 2: Qualitative investigation

5.25.1. Research design and methodology

A qualitative research approach was then adopted involving in depth semi-structured interviews. This approach was given priority over the quantitative method. The triangle approach was then used to integrate the outcome results. The interviews were used to help the researcher identify how the project influenced participants' attitude towards physical activity, their confidence and self esteem, their perception about the project and the way it was delivered. Further, the concept of fitness activators, the level of family (social) support and the extent to which they maintained their physical activity levels after the project finished was assessed. Individual interviews were conducted with providers including the project manager, project coordinator, practitioners: fitness activators who delivered the intervention and also with the participants. Interviews were conducted 12-weeks post intervention to assess the levels of physical activity and explore the effectiveness and sustainability of the intervention. The questions were adopted from the socio- ecological model (Sallis and Owen, 1999) and the RE-AIM framework (Glasgow et al., 1999). (See Appendices 8-9 for the interview questions). This part of the research aimed to determine the effectiveness of the Work-Out project on the BRM and the low income groups' physical activity behaviour in the context of the socio-ecological model. Questions aimed to identify the influence of the immediate social and physical environment to the development and maintenance of healthy behaviour, i.e. physical activity.

5.25.2. Participants and settings

The sample selected was quasi-representative of the population who participated in the project. The sample was selected as evenly as possible across representative groups who took part in this intervention. Ten participants were interviewed who represented different age, ethnicity and gender groups and, used a different fitness activator and different modes of project delivery, i.e. free gym pass, one to one sessions. In depth interviews were also conducted with the project manager, project coordinator and two of the three fitness activators. This was to explore the project more from the management and deliverer's perspectives. Telephone calls were made to participants explaining the purpose of the research together with details about the conduct of the interview and voice recording. Forty phone calls were made and 10

individuals agreed to participate in the research. An incentive of a gift voucher was offered to attract the participants to the interviews. Those who refused to participate were unable to afford the time for the interview due to other commitments.

Two of the participants were Muslim females aged (25-35). Two of them were female from BRM population aged (25-35). Three of the participants' were female from the BRM population aged 46-60. One female participant was white British aged 46-60. One male participant was white British age 70+ with a cardiovascular condition and another male participant was from a BRM group and was aged 46-60. Table 5.1. demonstrates participants characteristics.

5.26. Participants' pen profile

Participants	1	2	3	4	5	6	7	8	9	10
Gender	female	female	female	female	Female	female	Female	Female	male	male
Age	24	23	25	54	47	28	43	41	78	47
Ethnicity	Arab	Arab	African	African	Mixed	Mixed	African	White British	White British	Mixed
Employment status	student	student	unemployed	unemployed	unemployed	unemployed	Employed	unemployed	retired	unemployed
Children	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Number of children at home	0	0	1	4	3	2	4	2	0	0

Table 5.2. Participants' demographic information

5.27. Procedure

The interview questions were developed in the context of the socio-ecological model (Sallis and Owen, 1999) and used the RE-AIM framework (Glasgow et al., 1999, 2004) for the practitioners (Appendix 9). The questions included all five dimension of the RE-AIM framework. The interview questions for the participants were adopted from the Socio-ecological model (Sallis et al., 1999) including intrapersonal, interpersonal, social-environmental and physical environmental factors (Appendix 10). However some items were added to the questions for the participants referring to changes in attitude, general well being, lifestyle, confidence and activity levels before and after the project. Eighty phone calls were made and 60 participants agreed to take part in the interviews. However, only 10 participants were able to make the schedule. Interviews took place either in participants' homes or in one of the community centres where the project was running. The face-to-face interview with each person took place in a quiet and comfortable setting, typically lasting 45-60 minutes. All interviews were conducted in English. The interview began with the researcher explaining the purpose and method of the study and obtaining the participant's verbal consent before proceeding. Each interview was audio-taped and later transcribed verbatim. Following table demonstrates participants' questions in the context of the socio-ecological model (Sallis and Owen, 1999).

Intrapersonal factors
<p>Impact of the project on your</p> <p>Attitude: benefits of physical activity/ awareness of physical activity guidelines?</p> <p>General well being</p> <p>Lifestyle</p> <p>confidence in using gym equipment</p> <p>self esteem</p> <p>learning new skills</p> <p>maintained activity levels</p>
Interpersonal/Social factors
<p>How did the project help with childcare?</p> <p>Family support</p>
Social/environmental factors
<p>How did you find out about the project? (access to information)</p> <p>Did you receive a free gym pass? (resources, cost)</p> <p>How did the gym pass improve your access to sport and leisure centres? (easy access to venues)</p> <p>What do you think of the project? (facility, resources, support)</p> <p>How did it help to remove the barriers?</p> <p>The role of the Fitness Activators</p>

Table 5.29.6. participants’ individual interview questions

5.28. Data analysis

As soon as possible after meeting with the participants, the transcription of the interviews were reviewed by the researcher line by line several times. The purpose of these repeated reviews was to identify, group, and label distinct but emergent topics. Those topics in turn were grouped into main themes. In addition, the participants' definitions and examples were carefully examined. Socio-ecological model (Sallis and Owen, 1999) was used to develop categories of improved access to information and resources, improved general wellbeing, improved awareness about the benefits of physical activity, improved attitude and motivation towards physical activity, improved self esteem and confidence, learning new skills, the concept of fitness activators, family support, environment, perception about the project, walking in their neighbourhood, and maintained activity levels. The responses from the fitness activators and the management team were categorised under the RE-AIM framework (Glasgow et al, 1999).

5.29. Findings

The individual interview data are categorised and presented in the following table. The table represents categories which were discussed during the interviews and the emerging themes. The categories are based on the socio-ecological model. The results are then discussed in relation to the key themes. Raw verbatim quotes are included within the analysis to exemplify themes.

Table 5. 3. Categories and themes from the individual interviews based on the socio-ecological model

Category	Themes
Social environmental factors Marketing strategy <i>Providing access to information</i>	<ul style="list-style-type: none"> • Word of mouth, • flyers, • direct approach by the fitness activators
Intrapersonal factors Change in attitude, self esteem, confidence, skills, enjoyment, general well being, feeling good , awareness about the benefits of physical activity, aware of the physical activity recommended guidelines, lifestyle	<ul style="list-style-type: none"> • Improved attitude, • increased self esteem • increased confidence in general and improved skills e.g. use the machines in the gym, exercise • increased awareness about the benefits of physical activity and recommended guidelines • changed lifestyle i.e. more active lifestyle
Social environmental factors Free gym pass	<ul style="list-style-type: none"> • very encouraging
Social environmental factors Access to places for physical activity, venue	<ul style="list-style-type: none"> • Improved access to places for physical activity e.g. gym • Local • Very close and convenient
Interpersonal/social factors Family/friends/social support	<ul style="list-style-type: none"> • Family and friends happy and supportive and motivated
Multi levels of the Socio-ecological model Removing barriers	<ul style="list-style-type: none"> • Provided information • Removed personal barriers (motivation, cost) • Social (1:1 support) • Environmental (access, resources, information)
Active before	<ul style="list-style-type: none"> • Not active before the project
Intrapersonal, interpersonal, social factors Role of fitness activators	<ul style="list-style-type: none"> • Motivating • Encouraging • Informing
Physical environmental factors Environment/walking in the area	<ul style="list-style-type: none"> • Ok to walk in the area • No environmental barrier
Intrapersonal/interpersonal factors Maintained activity	<ul style="list-style-type: none"> • Not maintained the physical activity to the same degree as during the project due to: • Lack of motivation • Lack of structure • Lack of access to places • Lack of time
How active now	<ul style="list-style-type: none"> • 3-4 times a week moderate activity
Describe the project/	<ul style="list-style-type: none"> • Encouraging • Motivating • Good

The first question aimed to explore the ways the participants were informed about the project. This was to identify whether the marketing strategy used in this intervention was effective to attract the people into the project. The participants were mainly informed through leaflets through their mail box or the word of mouth. Leaflets and flyers were distributed in community centres and local sport centres where people would see and spread the words.

"Basically it was just a flyer through the door so I rang up and queried about it." P1

"My sister found out about the project from someone from the Yemeni community and then she told me about it. Then I applied for the 3 months membership." P2

"In Kensington there is a newish gym and I went in to have a look at it but, at first I was sorta put off by it, but then I bumped in to a friend of mine and she was going there and she said it's fantastic." P4

The next series of questions aimed to identify how participating in the intervention improved participants' attitude, confidence level, general well being, their awareness of physical activity benefits and the recommended guidelines and how they felt about themselves

I) Attitude

"My attitude has improved but before that I didn't really bothered with it."P2

II) Awareness

"It did improve my knowledge about physical activity and its benefits, I didn't know physical activity can have positive effect on your psychological well being."P8

"It did improve my knowledge about pa and its benefits, I didn't know physical activity can have positive effect on your psychological well being."P8

III) Lifestyle

"Yes, I walk more, I walk to Asda now whereas before I used to take the taxi."P5

IV) Feeling good

"Yeah, because I used to get up early and go to the centre at a certain time and generally feel better about myself."P3

V) Skills

"Yes I learned loads of boxing skills"P1

VI) Confidence

"For going to the gyms and exercising with others my confidence has grown, at first I was a bit wary, but now I can easily get in to places and exercise."P2

VII) Self esteem

*"it (attending the project) did (improved my self esteem), people also commented on my weight loss."*P1

VIII) How did the project help to remove the barriers to participation in physical activity?

The Work-Out project offered some unique aspects to the participants such as the free 12 week gym pass and the fitness instructors. A number of questions were therefore asked to explore how these aspects contributed to the success of the project. Overall the respondents found the free gym passes very encouraging and motivating.

*"The free gym pass for 3 months really helped and I would still go to the gym if I had no financial problems."*P7

*"very encouraging specially for a single mum like me."*P6

Free gym passes also enabled the disadvantaged inactive individuals to have access to a place for physical activity by removing the barrier of cost which constrained them from participation in physical activity. Therefore the emerging theme referred to improved access to gym and other places for physical activity.

*"Yes I was told about a few places I could go such as Picton... the lifestyle centres, places in park road and a few other places I could use, I chose to stay in Kumbbi Imani because it was more convenient for me."*P3

*"Yes, I could use any lifestyle."*P10

In addition to free access the intervention removed a number of barriers for the disadvantaged, BRM people living in deprived areas. The Work Out project provided access to information about the physical activity opportunities which were locally available to a deprived community through its marketing approach.

*"By inviting you in the first place and informing you what was going on and giving the choice to you to choose the activity you like and remove the cost. Meeting other people, not excluding anyone because of their condition"*P9

Many people in the targeted area were from BRM population with language barrier. These people could access the information through other people in their communities.

"Basically by helping us getting there more. Because most Moslems don't speak English as their first language so if you leave them to do it all by themselves they'll get nowhere with it, but this course helped us along the way to get in there, let us

*know about the classes, let us know what we need, in kick boxing there was a lady who never thought she would go to kick boxing, and it has helped the community come together."*P2

Further on the project provided continuous support and encouragement by the fitness activators which contributed towards motivating the inactive socially excluded individuals and help them gain more confidence to engage in their community and participate in physical activity programme.

*"Motivating, free pass, encouraging for me to make time and go."*P6

*"It removed lack of motivation barrier and financial barrier for everyone man or woman."*P10

*"It built up on my confidence, and once you get through the confidence thing there are no barriers then."*P4

The project was designed based on individuals' needs and interest and was therefore flexible in its delivery in terms of the time and the type of activities. Lack of time has been identified the most significant barrier limiting individuals from taking part in physical activity and this barrier was removed by offering activity times which suited individuals' lifestyle. Because of the flexibility of the activity times those individuals who perceived child care as a barrier could adjust their childcare need by choosing a time when either support was available for them from family or friends or when their children were at school.

*"It was easy because there were classes in the afternoon that I could attend so the time was not an issue. The time on the project was very flexible."*P1

*"I would arrange my time so my daughter could take care of my young child."*P7

The project also offered women only activities which removed the barrier for a lot of women from the BRM groups who weren't engaged in physical activities due to a lack of women only sessions.

*"The project offered women -only classes and that suited a lot of Muslim women."*P1

*"Providing women only sessions, the type of activity, the venue and time."*P3

Furthermore the activities were held in community centres and local venues which provided easy access and convenience for the participants.

"Very close to me, in my own community and very convenient." P6
"local-walking distance" P10

Participants were asked what their family, friends and other people thought of the project and whether they were supportive of their participation. The emerging theme indicated that their family, friends and contacts were happy for them to be doing some activity to improve their health. some friends were encouraged to join the project themselves.

"They thought it was really good, one of my friends actually went on the project."
P10

"They were happy that there was something out there for us some activity which would improve our health, because there are lots of activities but exercising is different." P2

None of the participants were active prior to taking part in the project. All participants who were interviewed stayed on the project for the whole 12 weeks and they identified no environmental barriers. The survey result suggested that 85% of the participants of this intervention increased their physical activity after the project had finished. However, the emerging theme from the individual interviews indicated that the respondents did not maintain the intensity of their activity level to the same extent as during the project. They reported doing some gentle to moderate physical activity 3-4 times a week. Their main activity was walking as part of their daily routine. Only two participants maintained the same activity level 6 months after the project, while the rest maintained their activity for the first few weeks. They referred to the gym being far away from them and not having the time to go to the gym. Other reasons for not maintaining the activity levels were lack of support and encouragement, lack of structure and lack of access to places. It was evident that for some individuals the behaviour change cannot be sustained for a long time unless they are motivated for longer and change can be supported by other environmental factors including free/low cost access and flexible, client-led activities.

"The centre close by is closed and the women-only gym is too far." P6

"Just too much going on, going to work and being at university, having social life." P1

"When you don't have that someone to give you inspiration, it's not the same." P4

"No one to structure me."P3

"Lost motivation, also have financial barriers."P5

IX) The role of fitness activators

This intervention offered a unique way of social support through the fitness activators who acted as professional friends. Fitness activators played a significant role in attracting the inactive disadvantaged people into the project and providing one on one continuous support, identifying individuals' needs and interest, setting targets for them and motivate them to remain physical activity. The fitness activators monitored participants' progress and provided encouragement as well as specific training for those who needed. Fitness activators were key concept of this project and the participants perceived their role as helpful, understanding, motivating, supporting, and caring.

"[fitness activators were] Very helpful and motivating."P2

"Really motivating and if you couldn't do something they would lesson it for you, so you can get on to that level"P1

"[fitness activators were] Helpful, understanding, easy to understand, motivating"P6

"The activator was fantastic, he was so down to earth and he really made you feel you are doing well and he'd encourage you and support you all the way." P4

X) Description of the Project

Participants were asked to describe the project in their own words. They were extremely satisfied with the service and the level of support offered to them during the project and found the project very useful and enjoyable.

"Beneficial, helped the minority, brought the community closer together." P2

"Everyone who was there, was there to work and that's what it was about/ it was fantastic, because I started doing things I never thought I could do." P4

"I was surprised how helpful the activators were, how encouraging to look after yourself, it was quite fun, gives us a goal to reach." P9

5.29.1. Qualitative results - interviews with the fitness activators and the managers

The results from the interviews with fitness activators and the managers are presented in relation to the RE-AIM framework. Findings for each element of the RE-AIM framework are briefly discussed in the result section. Quotes from the managers and the fitness activators are also included to exemplify the findings. These qualitative results together with the results from the survey are discussed later in this section. The discussion is also presented under each element of the RE-AIM framework and in the context of the socio-ecological model. There are some quotes included in the discussion section to support the findings.

5.29.1.1. Reach

Reach was assessed by calculating the number of participants recruited from target groups. Reach also identified the characteristics of the beneficiaries by assessing the demographic data available on the project (Glasgow et al., 2004). The project had a strategy to target the hard to reach; the most disadvantaged population residing in deprived neighbourhoods in Liverpool.

“There were target groups that were the standard target groups, including older people, women and girls and BRM population and people who would participate less, however because of ESF funding we also included people from low income groups as targets as well.” Manager

“I worked with elderly and also people who had mental health issues and they were hard to reach people, I went to residential homes where they wouldn’t generally do any type of physical activity apart from maybe walking to the shops. The main strategy was to look for hard to reach populations. And it was generally the older population for me.” Fitness activator, male

Beneficiaries came from different walks of life, different backgrounds and age groups. Many disabled and people with mental health problems and other health issues, elderly from residential houses, young women, single mums, Muslim women, unemployed people and people from BRM groups were recruited.

“I worked with 16 year olds, Muslim women and disabled people. I ran yoga sessions with disabled people, I learned to work with people with disabilities, young, single mums, elders, people with alcohol problem, people who have just come out of prison

with no bright path in front of them, we were getting them back in the gym and getting them more positive.” Fitness activator, female

Further, IMD analysis revealed that over 65% of the participants were deprived with the local area in the top 10% of most deprived lower super output areas in England. The project targeted unemployed, sedentary people living in deprived areas specified by the ESF.

“The target groups were the sedentary, which is quite difficult to identify” Manager

“I would say the majority of the beneficiaries were not working because that’s how they would have been able to access the day time provisions.” coordinator

5.29.1.1.1. Marketing strategy

Fitness activators were asked to describe the marketing strategy used in the project to recruit the targeted individuals onto the project. The responses indicated that the project was advertised in local shops, super markets, sport centres, community centres, and park events where the activators would physically approach people and introduce the project to them.

“First of all we did advertising in local shops, we had all sort of flyers, we also advertised in the main building that we were based in, so people started coming in and after a few months, we would go to shops and ask them we could put the flyers in the shop, we also advertised in Mersey mart, I think occasionally we did some in the Liverpool Echo as well.” Fitness activator, male

“We used to go out to Asda and Tesco where we would give out loads of information about the project. Because we were trying to target the older people we would stand at Asda for Tesco for an hour a week to give out flyers, we used to go to loads of events in the community, park events, loads of different centres, communities it was that and it was also through the health trainers. We would meet up with them and they would give us referrals as well, it was word of mouth as well.” Fitness activators, female

A large number of flyers were also given out to people and were delivered to people’s homes. Word of mouth was an important method of advertising the project, when people started telling each other, friends and people from their community. A large

number of participants were reached through word of mouth. Older people were reached through GP referrals and different health organisations, community organisations, health visitors and self referrals.

word of mouth just spread it all and that was like the main way of advertising, everyone would tell friends and family and they would get in touch with us." Fitness activator, male

5.29.2. Effectiveness

Effectiveness of the project was measured against the behavioural outcomes (increased physical activity) for participants and for the fitness activators who delivered the intervention including approaching the clients, delivering the service, making follow up contacts, and the commissioners who were responsible for physical activity strategy and policy. The follow up interviews with participants allowed themes to talk about changes in their physical activity behaviour, satisfaction and the impact of the delivery practices.

The activities were mainly client-focused; type, time and the location of the activities were discussed and agreed between the fitness activators and the clients on the induction day. The activators were very flexible in their approach and arranged their working time according to the clients' needs. Fitness activators gave an outline of the delivery of the project in proving the effectiveness of it. The effectiveness of the project was measured against its aims and objectives which was the number of the individuals (1200) reached from deprived low socio-economic status and the change in physical activity behaviour.

"I think it was successful because it hit its target, which was getting as many clients as possible, so that was one way of measuring its success, but from the quality point of view, I've got case studies where people achieved what they set out to achieve when they first came to see me, so whether that was weight loss or improvement of health and fitness." Fitness activator, male

The proportion of participants who were active 3 or more times per week increased from 16 to 58 per cent, whereas the proportion who engaged in activity that was of moderate intensity or more increased from 36 to 81 per cent of the group. These

significant increases in frequency and intensity of physical activity indicated that the project was very successful at increasing the physical activity of the population.

“The report says that 83% of people changed their physical activity behaviour and that indicates an incredibly successful project. That meets the aim of the project so I would say yes the project has been effective.” Manager

“There was such high percentage of people on the project carried on their activities even after three months.” Coordinator

The specific role of the fitness activators who acted as professional friends to individuals who were reticent to overcome physical activity barriers was key to the success of the programme.

“The concept of fitness activators was the key element for the project being effective, because they acted professional friends and motivated people.” Manager

Furthermore, the project was also effective because it was tailored to individuals' needs and interests. There were various types of activities to choose from. Also it was free and local and therefore attracted a large number of individuals where money and access were barriers to physical activity participation.

“Another element of success was the fact that it was all free, so anybody who had the barrier of finances that was removed straight away, it was based in the local area, so it very much supported, so being local made it easy for people to travel.” Fitness activator, male

From fitness activators' perspective the project was successful because a large number of people were recruited and benefited from the project. Fitness activators also observed how individuals' health and fitness improved as physical activity levels increased.

“There were clients in their mid 40s who were unfit with ill health, they came on the project and they maintained their activity so I can tell what an impact it had had on people, a lot of younger girls tried to express themselves through fitness.” Fitness activator, female

During interviews fitness activators stated that the process of consultation and response to local need to reduce barriers to physical activity were key ingredients for the success of the project.

“People were consulted and asked what they wanted and what their needs were, so we could feed back and we responded to what they wanted.” Coordinator

5.29.2.1 Description of Fitness activators

Fitness activators were asked to give a brief introduction of their background and how they got this job. Fitness activators came from fitness and sports background. One was a qualified PE teacher and held fitness qualifications and the other one was a fitness instructor and a qualified martial art instructor with over 20 years of experience. The post was advertised in job centre plus and Jet and both activators applied for the post through the job centres. It was not possible to interview the third fitness activator as he had changed jobs and left no forward contact details. The required person specifications for the post were mainly people skills, knowledge of fitness and physical activity, mentoring, and good communication skills.

5.29.2.2.. Fitness activators’ role

This question asked the fitness activators to describe their role in the Work-Out project. Their responses suggested that their role was to recruit inactive, hard to reach people from disadvantaged areas and to increase their physical activity level and their involvement in training programs by working on a one to one basis with the clients, identify their barriers to physical activity participation, identify the type of activity they were interested in, the appropriate time and the location for each individual as well as setting targets and goals for them to achieve.

“The clients would come and have an induction, we would ask them to talk us through why they were inactive and what their barriers were. We had a point scoring sheet that we used to assess their fitness level. Some clients would come in who were capable of working on their own like going for brisk walking or using the gym facilities, and they only needed some encouragement to go and do it and they didn’t need a gym pass or 1:1 sessions. Some clients like women from BRM population needed more support because they were not confident enough to mix with other people and some needed less, we would then get them a free gym pass which lasted for 3 months. We would then monitor them and contact them regularly to see how they are doing. ” Fitness activator, female

Fitness activators worked on a one to one basis to help those who would find it otherwise difficult to start a physical activity programme on their own in the gym or attend the group sessions. They monitored the clients’ progress and tried to keep them motivated.

“I would bring someone in or people would come to see and we would have quite an informal chat about what they would like to achieve from the programme and from seeing me, giving them a brief induction of how to use the fitness equipment and it could vary from a 40 minute session to an hour and half, depending on how hard they wanted to work. ” Fitness activator, male

This continued till the clients had built enough confidence to work on their own initiatives, attend group sessions and felt motivated enough to maintain their physical activity level.

5.29.3. Adoption

Based on the qualitative data from the interviews it was evident that adoption at the setting level indicated that common patterns of delivery were adopted in all different settings e.g. community centres, schools, sport/leisure centres, and nursing homes by the fitness activators. The responses from the managers supported the fact that the principles and practices outlined in the ESF bid were ambitious such as the unique use of “fitness activators”. Fitness activators were mainly consistent in their adherence to the guiding principles of the program.

“As far as I am aware fitness activators adopted the principals and practices behind the project. From speaking to the fitness activators, they understood and loved the project, all of them without a doubt were inspired about the project and the changes they were personally making in to people’s lives.” Manager

Three of the fitness activators were fully involved in supporting and delivering this program. Fitness activators’ pattern of work matched the participants’ requirements as intended and designed by the managers.

“Team acted with high quality work and good attitudes of principles, working and engaging the community.” Coordinator

Fitness activators adopted the principals and requirements of the program and showed willingness to offer the program as designed by the stakeholders in terms of recruiting the targeted population on the project, interacting with the clients and providing ongoing support and encouraging the participants throughout the project.

“Our sessions were client based and flexible and participants found the routines easy to follow. We made sure that we are following the standards of the project as designed” Fitness activator, male

Three of the fitness activators and the managers adopted the same standards to their full capacity and expertise to add value to the service they offered. All the staff worked together to determine strategies that would overcome concerns regarding program adoption.

“Yeah, I think the strategies were adopted by everyone, we had team meetings and would exchange ideas about what to put in, our ideas were taken on board and our contribution was recognised .we developed this marketing strategy to get as many inactive and socially isolated people on to the project as possible” Fitness activator, female

5.29.4. Project implementation

Implementation was assessed by measuring the extent to which fitness activators delivered the project as initially intended. Senior members of the Work-Out project monitored the consistency of the project delivery on a regular basis.

“The management and implementation was just regular meetings, we met quarterly (returns), so at the end of each quarter there was a meeting to assess what we needed to do for the next quarter in terms of meeting targets and projects.” Manager

“The activators delivered the service as intended and they were monitored regularly to reassure the consistency of the delivery by all of them. My role as the team leader – I would monthly hold meetings. Monthly, I would do 1:1 sessions for each member of the team. I arranged for each fitness activator to develop their coaching portfolio – they attended many forms of training.” Coordinator

Qualitative results from interviews demonstrated some inconsistency in the implementation of the Work-Out project.

“Near the end we brought more activities in, we had loads of team debate over this because as activators we were saying we needed more qualifications related to what we were doing.” Fitness activator, female

Although the delivery of the sessions was consistent and the progress was monitored regularly some changes were made to the promotion and recruiting methods towards the end of the project. Fitness activators made some changes to the implementation of the project by modifying the marketing strategy towards a more serious approach to recruit more participants onto the project. They made more effective flyers and distributed some of them in person to ensure higher recruitment rates. This modification however resulted in greater impact of participants' health.

“We almost recreated it because we had nice new flyers reproduced. We went out and basically targeted different people. We just tried to give it a little bit of life because. For the final 9 months we wanted to make the delivery more professional, we were sharing the same office, we all had computers and we had all sort of new stationary,

the advertising was done a bit more seriously, we would go to shops and ask them we could put the flyers in the shop, we also advertised in Mersey mart, I think occasionally we did some in the Liverpool Echo as well.” Fitness activator, male

5.29.5. Project maintenance

Individual level

Maintenance measured the sustainability of the behaviour change at an individual level. The survey results and the follow up interviews with the participants 12 weeks after the project indicated the maintenance of the behaviour change. Although participants did not maintain the same level of intensity, frequency and in some cases the type of activity but they maintained their physical activity level after the programme ceased. The frequency and intensity was however not measured objectively and is only based on 10 responses. Participants tried to include activity in their daily life routines and continued to be active.

Organisational level

At an organisational level the maintenance of this project was assessed by measuring the extent to which this project became institutionalised or part of the routine organisational practices and policies.

“To make sure that the project was maintained and the policies and standards of the project became part of the routine strategy for all the staff, monthly meetings for with the fitness activators were held – agendas and minutes, monthly one to one sessions with fitness activators were held, completion of quarterly ESF forms and monthly reports given to senior managers were all evidence of the maintenance of the project.” Coordinator

The consistency of the project delivery and its implementation indicated that the project maintained its main aims and principals throughout the whole 18 months.

“The project coordinator would have regular meetings with the activators she wanted to get the people together and motivate them and she would feed it back to me to make sure the project objectives and strategies are maintained and fully embraced by the staff.” Manager

The new strategies implemented for promoting the project were also maintained by the fitness activators to the end of the project. Fitness activators sustained the practice of promoting health and encouraging and supporting the clients as the norm of their organisation. Their responses referred to the implementation of the project being monitored through regular meeting to ensure its maintenance.

“We did maintain the project in a way. In our team meetings we tried to find solutions about the issues that would come up.” Fitness activator, female

“We would discuss the issues about the project and try to find the best way to remove them and we would all maintain the policies.” Fitness activator, male

5.3o. Discussion

The results were derived using qualitative and quantitative methodologies. These methodologies generated data that were subsequently applied to each section of the RE-AIM framework. Further concepts from the socio-ecological model were integrated into the discussion of results and a critical analysis of findings was undertaken. The aim of the intervention was to increase physical activity in hard to reach populations using a novel approach. This approach used fitness activators who embedded themselves into the community in an attempt to stimulate behaviour change in target groups. These target groups resided in deprived neighbourhoods (most deprived category according to IMD scores) where the “fitness activator” type approach would be novel. Thus the first key aspect for discussion was the degree to which the project reached, recruited, engaged, implemented and maintained physical activity participation in participants. Thus the first point to discuss is whether the project reached the target population (women/girls, older people, people with disabilities, BRM groups and low income groups) who were most at risk of health problems associated with inactivity.

5.30.1. Reach

All sub-sections of the RE-AIM framework depended on the reach of the programme. Findings suggested that the recruitment strategies used in the Work-Out project were implemented through existing social structures which provided pathways to reach and influence the target population. Beneficiary and survey data revealed that three quarters of the participants were female and under the age of 25 and over half were from BRM groups living in the top deciles of deprived areas in England (IMD local council web site). Two thirds of the survey participants reported to be inactive before the project. Data also illustrated that a quarter of participants had some form of disability. Given the limitations of data and survey methodologies, combined with the fact that only 20% of the beneficiaries completed the more detailed survey these results indicated the significant success of the project in reaching the target population. Results from the qualitative data also suggested that the disadvantaged, BRM, women and socially excluded individuals were reached.

The Work-Out project was delivered at a neighbourhood level and therefore the recruitment occurred through the community setting. Participants were recruited through word of mouth, leaflets and flyers and also through direct approach by the fitness activators in local community centres, shops and leisure centres at the targeted areas.

“My sister heard about the project in the Yamani community centre.” Female BRM

“I had a leaflet through the door.” Female BRM

This method of recruitment influenced how representative the participants were on key socio-demographic characteristics. The marketing strategy for this intervention played a significant role in delivering an effective intervention as the information about the project was communicated at a level of understanding suitable for multi-ethnic local communities by local fitness activators who were reliable source for selling the message to appropriate target population.

“My friend told me to go to the gym with her, AW [fitness activator] explained about the project. He was so down to earth, he encouraged me to go [to the project].”

Female BRM

The leaders of the Work-Out project recognised individual needs and offered a wide range of activities and opportunities for the target population (Eadie and Leathar, 1988 in Biddle and Mutrie, 2008). Fitness activators approached residents from disadvantaged areas and introduced the project in a face to face manner. This enabled the fitness activators to describe the programme of activities in a simple manner whilst it also allowed them to gauge whether the activities offered were acceptable to everyone. This was important as the way information about health programmes is presented is related to successful recruitment Maibach and Parrott (1995). Promoting the project through a combination of local advertisements (leaflets and posters administered at local community centres, mosques and shops) face-to-face contact between fitness activators and residents and word of mouth (social networks) proved to be effective in recruiting the target population. The reason that the recruitment approach was successful was related to the fact that the recruitment process was multi-faceted. However, this approach did not allow the research group to determine whether one facet (e.g. face to face), was more effective than others. For example, Hildson et al., (2004) found that local advertising was not effective in recruiting participants to physical activity programmes. This may have been the case in this study, however the results from the “Work-Out Project” suggested that the “overall” marketing strategy was effective in reaching the targeted population. Furthermore, in the context of the socio-ecological model the marketing strategy utilised findings from studies 1 and 2 and reduced a main barrier for taking part in physical activity in the BRM and the low-income groups which was a lack of access to information about the physical activity opportunities.

A recent systematic review (Netto et al., 2008) on promoting physical activity in BRM communities identified, minority status, deprivation, linguistic diversity and differential access to information, cultural or religious values and heterogeneity as factors that affected physical activity participation. Netto et al, (2010) consequently proposed five main principles to address the barriers in promoting health in the target communities. The five principles are as follows:

1. Use community resources to publicise the intervention and increase accessibility;
2. Identify and address barriers to access and participation;
3. Develop communication strategies which are sensitive to language use and information requirements;

4. Work with cultural or religious values that either promote or hinder behavioural change;
5. Accommodate varying degrees of cultural identification.

One of the principles refers to developing communication strategies which address language use and differential information requirements. These requirements were addressed through the direct approach marketing and recruitment strategy employed by the Work-Out project.

The limitation to the reach reported in this study was that we were only able to report the reach from those recruited not from the number of residents living in the targeted areas. Other studies (Abildso et al., 2010; Reid et al., 2010) have reported reach at the neighbourhood levels but have failed to report the detail of reach described in this study such as characteristics of the participants.

5.30.2. Effectiveness

From a socio-ecological perspective barriers such as a lack of time, motivation, social support and access to information and facilities were identified in studies 1 and 2. These barriers were considered by the programme designers and fitness activators as the target population in the Work-Out project were similarly located to participants in studies 1 and 2. Barriers to physical activity were reduced by providing free gym passes, 12-weeks of one-to-one sessions, local accessible venues and a wide choice of physical activity sessions. Furthermore, the individual level and flexible approach instigated by the fitness activators engaged the participants and helped them overcome a lack of motivation, confidence, time and childcare provision. Although self efficacy was not measured in the intervention phase or the two previous studies, but it is evident that physical activity self-efficacy increased when participants' confidence level was enhanced. The one-to-one support from the fitness activators, receiving positive feedback from them and the free access to the gym and sport centres raised the participants' beliefs that they too possess the capabilities to master the type of activities they were involved in. The belief resulted in enhanced confidence in general and in using the gym equipment and performing the activities. This finding is consistent with other studies Ashford et al. (2010) indicating increased self efficacy would increase physical activity participation.

Health literacy was another factor which was not measured in this study but as mentioned in the literature and study 1 is an attribute which influences individuals' health behaviour. The concept of social support and the resources available to individuals in the Work-Out project contributed to increased levels of health literacy. The one-to-one approach by the fitness activators and marketing strategy utilised in the Work-Out project increased participants' capacity to obtain, process, and understand the basic health information and available services needed to assist them make appropriate health decisions. Consistent with previous studies Lee et al. (2004) the findings of the evaluation suggested that the availability of resources and social support in individuals' social networks can improve their ability to acquire and understand the benefits of adopting health behaviour. The presence of social support and resources, would be particularly important for individuals with low health literacy in facilitating the establishment of healthful attitude and behaviour, and improving health status in deprived and disadvantaged populations.

The Work-Out project did not directly increase participants' literacy, however participants' perception and belief could have changed so that they felt more informed about physical activity opportunities and more confident in their ability to adopt a healthy behaviour i.e. physical activity (Lee et al., 2004).

The Work-Out project significantly increased participants' engagement in both frequency and intensity of physical activity. Quantitative results revealed that 62% of the participants were not physically active prior to the project. However, during the project participants significantly increased the frequency of their activity levels by twice the amount and intensity of their activity levels over time from light to moderate and from moderate to hard or maximum intensity. These changes were independent of gender, age and ethnicity which indicated that the participants' physical activity behaviour changed regardless of their demographic characteristics. Therefore, activity levels exceeded the target of three periods of moderate physical activity per week, whereas a fifth met the recommendation of five periods of moderate intensity physical activity per week (DH, 2004). Considering that physical activity is historically low in ethnic and disabled groups (HSE, 2008), the increases in physical activity in the Work-Out project were very encouraging. Moreover the increases in physical activity over time were not significantly between white and BRM populations suggesting that differences were independent of ethnicity. This is an important issue to note as the

IMD difference between BRM and white participants neared significance and the fact that both groups had similar changes in physical activity suggests that the approaches used by the fitness activators engaged ethnic groups equally. The Work-Out project was set in a specific community and the behaviour changes found in this project support Hildson et al.'s (2005) who suggested that interventions targeting individuals in community settings were effective in producing short-term changes in physical activity levels. Data from this study develop Hildson's findings in that activity levels were also measured 12 weeks after the project was finished although these results are presented in the maintenance section of the discussion. However, our results are also limited by the self report method used to measure physical activity As the HSE report (2008) suggested, adults over-estimate their activity levels when compared to objective measurement.

The intervention also aimed to improve health and well-being. Qualitative evidence from the survey and fitness activators' interviews found that the participants' health and well being improved as a result of increased physical activity levels. There was evidence of self-reported improved health, weight loss, lower levels of depression, feeling more energetic, improved mobility and general well being.

"It [the (Work-Out) project] increased my confidence so much because I learned how to use the machines in the gym." Female BRM

"I lost weight and started feeling good about myself it [the (Work-Out) project] improved my well being." Female BRM

These findings were expected as physical activity has many proven health benefits (Pedersen and Saltin 2010:CMO, 2004) Pedersen and Saltin (2010) report that physical activity improves a number of health conditions including weight issues, mobility and muscle strength, diabetes, general well being, depression and the quality of life. The findings from this investigation suggest that increasing physical activity levels holds further promise for improving quality of life and reducing health care costs, and, as a result, a significant public health impact can be achieved.

The Work-Out project made significant changes in physical activity behaviour in the targeted population. Hildson et al. (2005) argue that interventions based on theories of

behaviour change, which train individuals in behavioural skills and are tailored to individual needs, produce longer-term changes in behaviour than interventions without a theoretical base. The theory basis of this intervention was set within the socio-ecological model. The aim was to reduce the barriers to enable participants to take part. Fitness activators adopted this strategy effectively and provided professional on-going support as well as monitoring the participants' progress offering follow ups to ensure that physical activity opportunities were accessible, affordable and time efficient. Stewart et al. (2001) investigated the effect of face-to-face counseling on physical activity levels. The counseling programme resulted in a significant increase in physical activity and supports the findings from this study.

"I was very encouraged to continue with the project because TH [fitness activator] was so friendly. We would chat about my heart condition and he would show me easy exercise and how to use the machines." Male, White

The Work-Out project effectively addressed social and environmental factors among disadvantaged population and encouraged healthy behaviour change. Stringhini et al. (2010) and Dunn (2010) proposed that social and environmental factors play a significant role in influencing healthy behaviours and exposure to modifiable risk factors (e.g., obesity).

Social support is made of four dimensions: emotional, appraisal, informational and instrumental or material support (House, 1988). The lack of social support among the disadvantaged population was catered for in the Work-Out project study design and participants reported a degree of emotional support through the one-to-one sessions with the fitness activators. Participants also received information support through the advice given to them by fitness activators. Fitness activators frequently approached and interacted with potential participants in many settings within the community and informed them about the availability of the program as supported by earlier studies (Olson and Zanna, 1993). The behaviour change in this intervention was achieved by creating new social systems and providing professional friends who worked intensively on one to one basis within pre-existing networks in a social setting outside the family, such as the community and sport/leisure centres. The intervention involved setting up a "fitness activator system", providing ongoing support and making "contracts" with the clients to complete specified levels of physical activity, or setting

up walking or other group activities to provide friendship and support as well as promoting physical activity levels. The social support provided by the fitness activators is one of the most significant features of this intervention. Foster et al. (2005) conducted a systematic review of the effectiveness of physical activity intervention in adults aged 16 and above. Consistent with the Work-Out project strategy for using fitness activators (Foster et al., 2005) referred to the concept of professional support as one of the components of an effective health promotion interventions.

Other supporting interventions are social support interventions where the intervention recruits people into voluntary groups in which support and companionship could be provided for attaining physical activity related goals (Kahn et al., 2002). Social support interventions provide support through telephone and discussion groups. These interventions have been effective as they have influenced individual's physical activity level through strengthening local support networks and exercise contacts and considering strategies to overcome barriers and buddy systems to increase participation in physical activity. However the Work-Out project was unique in its social support approach through using the fitness activators who provided social support on a one-to-one basis.

The Work-Out project utilised a focused marketing strategy on the targeted population and resulted in an effective behaviour change which is also supported by (Marcus and Simkin, 1994). One of the effective approaches in this project was encouraging activity through informational approach that focused on informing, motivating and enabling people to change behaviour and to maintain that change over time by through the role of fitness activators and the marketing strategy to recruit participants. These strategies implemented by the Work-Out project are supported by earlier studies. The person-centred exercise consultation method to encourage participation in physical activity and the model of physical activity counselling supports the role of fitness activators in this intervention (Latakari and Asikainen, 1998; Loughlan and Mutrie, 1995). The Transtheoretical Model of stages of change (TTM) (Prochaska and Velicer, 1997) proposes that individuals move through different stages of decision-making and behaviour change and health professionals can help the individuals to

move to a more advanced stage through suitable methods of support, advice and counselling (Cox et al., 2003; Marshall and Biddle, 2001). Furthermore, the Work-Out project provided material support in terms of facility and resources which were identified as physical activity barriers in studies 1 and 2. The lack of access to facilities and resources was removed by running the activity sessions in local and accessible venues, providing free gym passes equipment. Offering free access to physical activity sessions addressed the financial conditions in a deprived area. Removing the financial barrier encouraged the participants to take part in the project and benefit their health from physical activity. The elements of the intervention assisted with behaviour change by helping individuals to explore and resolve the conflict they were experiencing when considering the cost and benefits of taking action. Fitness activators acted as health professionals and provided encouragement and advice on an individual basis which prompted the participants decide to fit physical activity into their schedules. On-going encouragement and motivation as well as free access to local venues assisted the clients to overcome the conflict of a lack of time, motivation and facilities. Consistent with our findings Frieden (2010) refers to “health impact pyramid” interventions that address socio-economic conditions at the base of the pyramid as having greater effects on population health than clinical actions taken against obesity and other behavioural risk factors. Earlier studies (Stroebe and Stroebe, 1995; Taylor et al.1994) also concluded that removing barriers such as cost and distance contributes to positive behaviour change in participants with low socio-economic status. Further, Powell et al. (2006) suggested that barriers to facilities that enable and promote physical activity may account in part for the lower levels of physical activity observed among low-income and ethnic minority populations. Their findings in part support the findings from the Work-Out project which also modified environmental factors that constrained physical activity participation evident in studies 1 and 2. The Work-Out project successfully increased the availability of such facilities among underserved populations which helped increase physical activity levels. Studies 1 and 2 recognised that enhanced availability of more accessible facilities is important among low-income and deprived populations given that such groups are less likely to have private means of transportation to reach facilities outside of their immediate community.

The Work-Out project enhanced access to information through direct marketing and leaflets and improved access to places by using the local community centres and schools which removed the environmental barriers and encouraged engaging in physical activity. The study conducted by Simons-Morton et al. (1998) recognises the effectiveness of such multi-component interventions that include behavioural strategies in comparison to advice only interventions. The effectiveness of the project was also assessed through participants' satisfaction with the service. Eighty eight percent of the participants reported that the service was good or outstanding. Overall, the evaluation revealed that the Work-Out project successfully met its aims and objectives. This community based intervention has been supported by earlier studies (Mummery et al., 2006; Kahn et al., 2002) since they approached community levels to promote physical activity that addressed the social structure and environment as well as the individuals' motivation, skills, values and health related knowledge. Mummery et al. (2008) concluded that targeting populations with people from low income backgrounds and ethnic minority groups through community-based interventions produce greater public health benefits.

This multi-component community based project was effective in empowering individuals and strengthening the social cohesion by increasing participation in physical activity as well as addressing other socio-ecological aspects influencing physical activity behaviour. The Work-Out project recognised the influence of environmental factors on health behaviour including relationships between community centres, neighbourhoods, and community networks. The impact of these relationships on behaviour change and health promotion has been acknowledged by previous studies. Fleury and Lee (2006) concluded that integrating resources for physical activity, physical features of the community and the availability of physical activity programs can influence behaviour change. Netto et al. (2010) also confirmed the use of community resources to increase intervention accessibility in primary health care settings.

Socio-ecological models of health and theories of behavioural change emphasise on the importance of opportunities and constraints compelled by the environment in which people live, work and study (Adler and Stewart, 2010; Brownell et al., 2010). From an ecological perspective through which multi levels of intrapersonal,

interpersonal, organisational, and community environment factors, all influence the health status (Fleury and Lee, 2006), the Work-Out project encompassed these layers of socio-ecological influence. This intervention addressed interpersonal (attitude, motivation), intrapersonal (lack of time), social support (fitness activators) and physical environmental factors (access locally based venues, free gym pass, women only activities, activities for older people and outdoor activities) as supported by Sallis and Owen (2002).

5.30.3. Adoption

Qualitative results suggested that the adoption of the Work-Out project aims were fully performed by the fitness activators in terms of marketing and recruitment strategies, delivery of the sessions both individual based or group based and encouraging and supporting the participants. Fitness activators were trained and qualified to deliver the Work-Out project according to the aims of the ESF stakeholders. They adopted the principles of the intervention and used their skills and experience to recruit inactive and hard to reach individuals, identify their barriers, set targets and goals with the clients and deliver activity sessions as planned. Larkey et al., (2008) indicated that it is not possible to distinguish which recruitment strategy and/or implementation is the most effective one. One key element of the Work-Out project was the importance of being able to modify recruitment strategies after the intervention begun and adhere to community based, multilevel frameworks, while maintaining systematic integrity as an important lesson learned by the evaluation of the intervention.

Furthermore, the survey results and the statistical analysis of the survey revealed some differences in the way the intervention was adopted by the fitness activators. One of the fitness activators was more successful at increasing physical activity frequency and intensity than the other two. However, this could be due to a number of different intra and inter personal factors as well as the number of participants and their demographic characteristics. The type of physical activity session delivered by the fitness activators was different. The difference was due to the characteristics of the clients that each fitness activators was working with. For example, TH was a male fitness activator with university degree and fitness qualifications delivered lots of chair-based exercise sessions at residential homes and care homes. Survey results

showed low difference in intensity and frequency for this TH which could be due to the age group he worked with, i.e. elderly and also their health condition i.e. disabled, ill. Forty individuals who completed the survey were TH's clients out of which 23 reported being inactive before the project. Survey results showed that 32 of them maintained their activity levels post project.

"I worked with older people who needed rehab exercise due to a recent illness. We had easy gym based in a community centre. I also delivered chair-based exercise for mentally disabled people in a care home." TH

Fitness activators were based in different settings such as: community centres, sport centres, schools or the local gym. They delivered sessions to different size groups and they also came from different background themselves.

These factors probably influenced the degree of behaviour change (increase in physical activity) which may in turn have been affected by the proportion of participants, and their characteristics e.g. gender, age, ethnicity. The significant difference in intensity and frequency of physical activity levels could have been influenced by the settings where participants attended. It proved difficult to collect data on factors related to the adoption of the intervention because the settings varied and changed over time, fitness activators delivered different activity types to different participants from various age, ethnicity and gender groups. One of the fitness activators delivered more one-to-one sessions and worked closely with women, young girls, BRM groups and disabled people in community centres and schools.

"I had lots of one-to-ones with the BRM and women, I also delivered sessions to disabled people at Kumbi Imani [community centre]." LR

LR was local to the area, had 20 years experience of martial arts and fitness qualifications. The majority of the participants who took up a training course from the Work-Out project were LR's clients. This suggests that LR was more successful to inform the participants from the opportunities available on the project and motivate them to take up the opportunity. Also the majority of LR's clients reported to be

inactive before the project (42) out of 54 and interestingly enough (47) of the participants maintained their activity after the project.

"L. [fitness activator] told me I can go on a first aid course to have better chance to find a job." Male, BRM

The third fitness activator AW who was not available for the interview had the highest intensity score among the three. Out of 58 clients that AW worked with 30 were inactive before the project and 49 reported to have maintained their physical activity levels. This could simply be due to the type of activities AW delivered. AW delivered lots of gym sessions, one-to-ones and aerobics. Participants who worked with AW mixed gender, mixed ethnicity and from different age groups. He mainly delivered his sessions at a sport centre and some at community centres.

"AW showed us very good work out in the gym, made us sweat a lot and laugh a lot."
Female White

"We were a very nice group in the gym and we did aerobics with AW." Male BRM

In a classical RE-AIM evaluation adoption rate is also assessed by the proportion of facilities, venues and resources in the targeted community who take up the intervention. This was not possible in this study as settings and interventions changed during the project and other settings were programmes which did not require a dedicated facility such as walking for health.

*"Some people liked outdoor activities, so I would send them to (RC) the coordinator to join the walk for health group. It [type of activity] was up to the people."*LR

It was also very difficult to decide which settings were suited to delivery of the project to the target population. Thus, classic data were difficult to collect in this study meaning that adoption was only evaluated at the individual level.

5.30.4. Implementation

Implementation was assessed by measuring the extent to which fitness activators delivered the project as intended. The intention of the project was that fitness activators would work on a one-to-one basis, to maintain support and encouragement for the clients and throughout the project. Fitness activators were also expected to make follow up calls to monitor client progress and help reduce the barriers for participation (e.g. lack of time) through offering flexible hours and availability. Fitness activators also attempted to increase motivation by using typical goal-setting techniques with clients. Information gathered during the interviews suggested that the project was not fully implemented as initially intended. Fitness activators used a point scoring sheet to assess the participants' fitness level at the start of the intervention. This data however was not collated and the fitness level was not administered at the end of the project to measure health improvement as an outcome measure. Therefore, measures for the health improvement only relied on self report data from the survey and interviews. Fitness activators made some creative changes to marketing strategy of the project to be able to accommodate more people and make better use of the resources available. This meant that the implementation of the project was modified towards the end of the project as the fitness activators started adjusted their marketing strategy to allow for better within-community networking and communication and by promoting the "local credibility" of the project. This credibility was garnered from participants' comments and feedback about the programme and this is supported by the programme satisfaction data collected in this project.

"Good classes were scheduled from the project." BRM female, 22

"Service from the project and at the lifestyles centre has been brilliant." BRM male, 43

"Fantastic instruction and organised classes. Miss it when don't go. Doctor said it is doing good." White female, 73

"Absolutely brilliant - dedicated staff, knew his stuff. Lost 10kg." White male, 63

Over 1200 people made at least one visit to the facilities on offer in the project. Fitness activators reported that attendance increased towards the middle and the end of the project as the marketing strategy was modified. Because of this more people were informed about the project and word-of-mouth spread more widely. The

programme delivered consistently as intended within the time and the budget allocated to the project. The project coordinator monitored and provided feedback for the fitness activators. Any success was recognised and the delivery was regularly monitored. Implementation of this project was assessed by fitness activators reporting on what percentage of process objectives was achieved (e.g., what proportion of clients were recruited, how many one to one sessions were held, etc.).

5.30.5. Maintenance

Individual level

Participants were asked whether they still perceived themselves as being active 12 weeks after the project had finished. Of the 153 respondents 84% reported that they had remained active which also demonstrated the effectiveness of the project. The qualitative arm of the project revealed that those individuals who received one to one support maintained their activity levels after the project albeit less frequent.

Although participants who were interviewed did not maintain the same level of intensity, frequency and in some cases the type of activity, their physical activity behaviour remained higher than reported at the start of the project. The maintenance of behaviour change could be a result of the nature of the intervention. The intervention was a developmental initiative which was implemented at a community level with community consultations and built on some of the results from studies 1 and 2. Further it was facilitated by local staff as fitness activators. Staff were local to Liverpool and were also representative of the BRM population. The Work-Out project simultaneously influenced multiple levels and multiple settings which maybe one of the reasons that it maintained behaviour change in participants. It was also based on evidence from studies 1 and 2 and used this local research to develop a programme that reduced the barriers to physical activity participation and tailored the programme to the needs of participants. However, Wolf et al. (2010) and Brownell et al. (2010) have found that people who continue to remain or modify their life styles is a personal choice although these choices are also affected by the environment (Brownell et al., 2010, Alder and Stewart, 2010). The follow up qualitative data from the interviews with the participants revealed that a number of factors have influenced participants' choice of maintaining physical activity levels.

The Work-Out project participants were disadvantaged individuals from deprived areas who were not able to afford private means for participation in physical activity. The intervention provided social and environmental support and effectively removed the barriers and therefore attracted socially excluded and low-income groups from deprived areas to take part in the project. Participants referred to the lack of support in the absence of the fitness activators. They reported not to be as motivated as they were during the projects. Another inevitable factor which influenced the level of physical activity behaviour in participants was their commitment and the lack of time.

"The centre close by is closed and the women only gym is too far." P6

"Just too much going on, going to work and being at university, having social life." P1

"When you don't have that someone to give you inspiration, it's not the same." P4

"No one to structure me." P3

"Lost motivation, also have financial barriers." P5

Setting level

At a setting level, the main practices and strategies of the Work-Out project became routine and norms of the project and they were maintained by the fitness activators during the intervention. Findings from the qualitative data indicated that the Work-Out project was incorporated by the fitness activators so that it was delivered over the period of the intervention. Although there were some inconsistency in the implementation of the project but the senior members and the fitness activators maintained the project.

5.31. Limitations

The findings of this research study were limited by a number of methodological and practical factors that only allowed an investigation into parts of the socio-ecological model. Further no control group was used to compare results. The investigations were also pragmatic and applied the socio-ecological model in the “process” of the design of study. These aims were driven by Liverpool Active City strategies, neighbourhood needs and local area agreements. Further unlike studies 1 and 2 the reach of the project was not exclusively BRM women, they were residents (BRM and white British) living in disadvantaged.

Nevertheless, the Work-Out project captured significant numbers of BRM women as one key objective was to recruit women and girls. It was not pragmatic to segregate the participants but including all ethnicities did not allow a focus on any specific need of BRM groups. Ultimately the common demographic issue was that participants resided in a deprived area. However, with the exception of cultural and religious issues many of the participants had similar barriers that prevented participation in physical activity as those highlighted in studies 1 and 2. Finally the use of objective measures of physical activity would help confirm these results however there are cultural issues related to wearing accelerometers and in some cases paper based methods maybe the only ones available.

5.32. Recommendation

Health promotion that targets the BRM population should link local needs and cultural diversity when planning physical activity programmes.

Further disadvantaged people from low income backgrounds and from the BRM population should be involved in a systematic constant consultation process in order to identify their physical activity and health related needs.

There are also methodological issues to consider when aiming to generate robust research results from complex interventions. Research interventions constructed using the theoretical constructs from the socio-ecological model should use mixed methodology in order to obtain robust data. In doing so it is recommended that future studies deploy a validated questionnaire for the quantitative phase of the research or objective measures of physical activity where culturally acceptable.

5. 33. Conclusions

Given the complex interplay of personal, cultural, and environmental factors that can influence physical activity behaviour, the socio-ecological model offered a broad perspective to design and implement an intervention. Individuals' social support system, the community structures and processes that can positively or negatively affect their health behaviour; community-mediating structures such as schools, neighbourhoods, and churches; community networks and power structures; and the content of public policies are the key components of a broad socio-ecological perspective and essential determinants of health and health behaviour. The aims of the project were to assess whether the project "reached" the target audience, whether participants increased their physical activity levels, whether the project was implemented as intended and whether physical activity behaviour was maintained. A significant number of community residents were reached through the marketing approach adapted by the project and its use of local fitness activators. Fitness activators used an approach that reduced potential barriers to physical activity. This was clearly effective as participants increased their physical activity frequency and intensity and maintained their increases in activity 12 weeks after they finished the structured project. Further analysis demonstrated that interactions between time and ethnicity and time and fitness activator were significant. We can conclude that there were differences in how effective fitness activators stimulated activity and how BRM groups increase in frequency and intensity of activity was slower rate than the white participants but that the main effect for BRM was still significant. The lack of control groups hindered fuller analysis of results. The principles of social marketing for health promoting intervention hold considerable importance and should be directed to the targeted population. The programme was implemented as intended and participants were more than happy with the content and delivery of session. This intervention prides itself in identifying and addressing key factors in maintaining regular physical activity in deprived populations. The concept of the local fitness activators contributed in empowering individuals and strengthening social networks in the community through engaging the socially deprived individuals in the project. The mixed methodological approach also enabled a range of qualitative and quantitative data to be used to confirm the effectiveness of the community intervention.

The issues of access to and availability of places for physical activity appeared to be the driving forces for targeting components of the physical environment. The lack of support in the community and the role of fitness activators in encouraging and promoting physical activity indicated the importance of interpersonal and social environmental factors. These highlight the importance of tailoring intervention strategies to be more culturally appropriate and sensitive to the characteristics and realities of the targeted population group, which can be facilitated by applying the socio-ecological model. Findings from the evaluation offers concrete examples of personal, cultural, and social environmental aspects to consider when developing physical activity programmes in disadvantaged, BRM and low income groups.

Studies	Findings
Study 1: Kensington Women Get Lively Project Survey= 213 BRM women Focus groups= 17 BRM women	
Aim 1: To develop a process to enable a research investigation to take place among BRM populations (hard to reach group).	Local women were consulted and a bespoke survey was constructed that aimed to explore the factors that determined physical activity for women. The survey effectively engaged 213 hard to reach individuals from BRM population.
Aim 2: To identify physical activity levels and its determinants among BRM women living in deprived areas using a socio-ecological framework.	Survey: <ul style="list-style-type: none"> • Higher than expected self reported PA levels. • Barriers included lack of time, motivation access to information, resource and the ability to speak English. Focus groups: <ul style="list-style-type: none"> • women only activities • Access to information through schools and community centres • Community based/group activities were asked for. • Exercise professionals required to motivate women to get active. • Organised walks, ball games and indoor group exercises were preferred
Study 2: Muslim Families Project Individual interviews, 4 families (n=16)	
Aim1: To identify physical activity determinants among BRM families and to explore whether BRM individuals' beliefs and attitudes towards and knowledge about physical activity have changed since living in the UK.	<ul style="list-style-type: none"> • Low levels of PA were reported. determinants of PA were not influenced by immigration to the UK, they were more related to age, lifestyle, increased knowledge about PA
Aim 2: To investigate the role of family support and parental role modelling in promoting physical activity in the family unit within the socio-ecological framework.	<ul style="list-style-type: none"> • Parents influenced their children's physical activity levels by encouraging them verbally and supporting them. Boys received more support to engage in physical activities compared to girls.
Study 3: The Work Out Project Survey=153 participants Individual interviews (n=14) with participants, practitioners, and the manager : Using the RE-AIM framework	
Aim: To evaluate a community based intervention tailor made for BRM and people with low socio-economic status	<ul style="list-style-type: none"> • Community based, multi-component physical activity intervention targeted disadvantaged (BRM) people living in deprived areas was effective in changing individual physical activity behaviour and increase activity levels by 85%.

Chapter six:

Synthesis & Conclusion

6. Synoptic discussion

The increasing diversification of the population highlighted the need to address ethnic minority health disparities and evaluate the importance of using a cultural sensitivity concept in the design and dissemination of health interventions targeting ethnic minority groups.

This research considered the concept of cultural sensitivity by taking into account the cultural characteristics, norms, values, behavioural patterns, beliefs and social forces of the target population. This was achieved by establishing the PAG and the CRAG as two steering groups to facilitate and accommodate the research process and appointing “Fitness activators” to deliver the intervention. Current literature fails to adequately describe factors related to physical activity or to identify health interventions that respond to cultural aspects of specific subpopulations. One of the main findings of this research was the significance of social support in initiating and maintaining physical activity (Ingram et al., 2009). Previous research (Darbes et al., 2008) confirms that the concept of addressing the individual needs and sociocultural background of ethnic minorities in behavioural interventions could result in statistically significant health-outcome adaptations among participants.

6.1. Synthesis

Social ecology is the study of people in an environment and the influences on one another (Sallis et al., 1997). The social ecological model provided the conceptual framework for this thesis. Thus the interactions between individuals (interpersonal) and their environment (organisations, strategies, policies) have been investigated. The research has been limited to studying the barriers to physical activity behaviour in BRM populations residing in deprived areas in Liverpool. The first two empirical studies investigated barriers to physical activity first in women and second in families. The final study attempted to utilise findings from studies 1 and 2 and apply these to a community wide intervention project that included changes in physical activity as its primary outcome.

The aim of the synthesis is to link the findings from the three studies and to provide a critical analysis of the body of research included in the thesis within the socio-ecological model. The main aims of the three studies forming this thesis were to:

1. To identify the key barriers to and determinants of participation in physical activity among BRM women living in deprived areas using a socio-ecological framework.
2. To establish a partnership with the local agencies in order to engage the hard to reach population in the research.
3. To identify physical activity determinants among BRM families and investigate the role of family/social support in promoting physical activity in the family unit within the socio-ecological framework.
4. To explore whether BRM individuals' beliefs and attitudes towards and knowledge about physical activity have changed since living in the UK.
5. To evaluate a community based intervention tailor made for BRM and people with low socio-economic status.

6.2. Key findings and implication of the research

This work provided insight into the determinants of physical activity among the BRM and low income groups. The socio-ecological model helped identifying the influence of individual, interpersonal, social and physical environmental factors on physical activity participation and maintenance of the health behaviour. Participants in this thesis were representative by ethnicity and gender of the neighbourhoods from which they were recruited and these were located in deprived parts of the city.

Low levels of regular physical activity were reported in studies 1 and 2 and at baseline in study 3. Main barriers for participation in physical activity were a lack of time and access to resources and facilities. The ability to speak English and a lack of motivation also hindered women from engaging in physical activity. Low levels of physical activity were reported in Muslim families. Living in the UK did not influence the determinants of physical activity and the change in physical activity behaviour was due to the participants' age, lifestyle and education. Parents influenced their children's physical activity levels by encouraging them verbally and supporting them by providing transport and paying fees. Boys received more support to engage in physical activities compared to girls.

A range of factors were reported to be influencing the respondents' participation in physical activity including: women only activities, access to information about the

physical activity programs, community based activities and being motivated by community exercise professionals.

A community based, multi-component physical activity intervention was implemented and evaluated. The intervention targeted disadvantaged people living in deprived areas. This included a large proportion that was not entirely made up of BRM populations. The intervention was effective in removing some of the barriers such as: lack of time, motivation, access to information, providing local resources and free facilities and also social support and in changing individual physical activity behaviour and increased activity levels by 85%. One key component of the Work-Out project was the concept that although it was designed to reach the disadvantaged and hard to reach population it was tailor made to each individuals needs (i.e. easy access, free pass, adequate schedules) through its implementation and delivery. Social support within the social environment had an impact on individuals' health behaviour. Another key component of the Work-out project was improving participants' health literacy through access to information and subsequently increasing self esteem to take part in physical activity programmes. Work-Out project provided information and tangible social support through fitness activators which helped reducing uncertainty about participating in physical activity. The project provided a sense of control over literacy problems through access to information and support.

Drawing on the literature of social support, it can be suggested that the availability of resources and support in individual's social networks could reduce the negative health implications of low health literacy and low self esteem.

6.3. Methodologies

This thesis contributes to research addressing the need for the development of a methodology to engage the hard to reach individuals from the BRM and low income population within the socio-ecological model in research. A novel contribution of this study was the research design and the process of engaging the local community representatives and consulting community members. The challenge of recruiting a representative sample of individuals from the BRM and low income groups was successfully overcome through engaging lay, local community representatives in the process of designing, recruiting and implementing data collection. The research

design for this thesis allowed an effective recruitment of the BRM individuals to take part in the research as well as constructing a culturally sensitive survey questionnaire and scheduling culturally appropriate interview questions to identify the physical activity determinants and participation level in hard to reach population. Furthermore this thesis was original in applying the socio-ecological model and using mixed methods to answer the research question.

The three studies have attempted to develop a deeper insight into the place physical activity has in the lives of BRM people living in a major urban area in the north west of England. We recognised the need to develop research ideas and processes with the community using the socio-ecological model as a guide. This process consisted of approaches to recruit the hard to reach individuals from the local communities and ensure their engagement and maintenance in the research. In particular some of the inactive communities are difficult to engage in research because of issues such as language barriers and low confidence. To increase our chances of achieving our research aims we used a 2 stage approach in study 1. First key strategic leads and key community members who would act as stakeholders in the research were located. The community was empowered to engage in implementing the research. This approach enabled us to develop a community adapted research methodology and gave us direct access to the population under-study. The initial measure of success for this thesis was the fact that data were collected on a very large number of BRM women demonstrating the positive effect of empowering the community to contribute towards the design and delivery of the research project. This approach was the key to the success of the whole thesis. This process identified that a number of significant steps were required to engage the BRM population. The first step was to develop a unique methodology to ensure an effective recruitment of the hard to reach population. This was achieved through establishing the two steering groups the CRAG and the PAG. The second step was to engage and consult the local individuals in designing and conducting the research. Key leaders in the community were identified and a value was placed on physical activity through the research process. Thus recruiting families for study 2 became an adjunct from the process of engaging the community in study 1. Further study 3 whilst not aimed entirely at a BRM population also benefited from the processes put in place alongside key community leaders residing in a deprived area in Liverpool.

Developing the methodology in study 1 was treated as a priority over and above issues related to existing research tools that may have been validated. We also recognised the need to use both quantitative and qualitative methodologies in response to the needs of the populations involved in the research. Thus, study 1 used a combination of survey and group interview approaches to identify the barriers to physical activity. The qualitative methodology was further developed as the most appropriate tool for investigating barriers in the family setting in study 2 and this generated a deeper qualitative set of data, which also developed further insights in qualitative work. Study 3 used a survey approach that was developed with the fitness activators and project coordinators in similar approach to the PAG input in study 1. Further, study 3 built upon the approach used in study 2 as opposed to study 1. For this reason individual interview with practitioners managers and participants were used. In essence, the process and relationship set up through the PAG and CRAG in the first study set the scene for engaging the community in the research for the rest of study 1, for the qualitative work with families in study 2 and the intervention project in study 3. Whilst the design of study 3 was influenced by the results from the first 2 studies a new research and evaluation framework was introduced. The RE-AIM framework was an effective tool for planning and evaluating the effectiveness of a community based physical activity intervention project such as the “Work-Out. Further the research process was also developed with the socio-ecological model in mind by engaging the community in research design and delivery. This was a unique aspect of this project.

Whereas studies 1 and 2 investigated barriers to physical activity in a descriptive fashion. This was informed by the socio-ecological model. Study 3, the “Work-Out Project” required a methodological framework appropriate for the evaluation of an intervention whilst allowing a clear integration with the socio-ecological framework. Thus the RE-AIM framework was introduced and used to construct the evaluation. Each aspect of the RE-AIM framework was applied to the survey data as well as the qualitative data collected during individual interviews with the participants, practitioners and managers. The survey was mainly used to collect data on the Reach, Effectiveness and Maintenance parts of the project whereas the interview data was applied to the adoption and implementation aspects of the framework.

The Work-Out project intervention programme effectively reduced some of the barriers to participation in physical activity reported by the participants from studies 1 and 2. The programme increased physical activity levels by engaging disadvantaged people in local community centres and facilities. The programme included key elements: one-to-one support, free access to resources and flexible times to the participants who resided in deprived communities. Many of the participants were unemployed and one fifth of participants surveyed took part in a training course offered by the Work-Out project to increase their chances of employability. The evaluation of the Work-Out project demonstrated that the majority of the participants maintained their activity levels 3 months after the project had finished. The project enabled the participants to establish regular physical activity in their daily lives as they were motivated by the fitness activators and many barriers to physical activity such as access, cost and time were reduced. The follow up interviews with participants indicated that they maintained their physical activity level which was incorporated into their daily routines such as walking to the shops and using the public transports instead of own cars and taxis. However, the respondents preferred to have free access to facilities and be motivated by the fitness activators. Findings from the Work-Out project evaluation suggested that participants who have low confidence in their ability to engage in physical activity and believed that the barriers to adopt physical activity exceed the benefits could be encouraged through tailor made interventions that focus on enhancing self-efficacy and provide support for participation while eliminating negative attitudes and perceived barriers.

6.4. Identifying barriers to physical activity and reducing their effects

Socio-ecological model was used to help and understand physical activity behaviour and the factors that influenced the behaviour in BRM population. This model helped identifying factors related to physical activity participation in the BRM populations and therefore enabling the design of a more effective intervention. Socio-ecological model was used to develop the strategy, type of programme and the implementation of the intervention to maximise the impact on physical activity participation in the disadvantaged “hard to reach” populations.

The findings in this thesis adds to the existing literature indicating that physical activity levels were low among the BRM and low income groups. The main barriers

to participation in physical activity in ethnic minority and low income populations were a lack of time, access to resources and facilities, ability to speak English, a lack of motivation and social support. This thesis explored that low English proficiency affected participation in physical activity. Language proficiency shaped women's opportunities to get involved in the community and find out about, access and participate in physical activities, and poor English skills left women feeling socially isolated and uninformed. This work also highlighted that although participants were mainly aware of the public facilities for physical activity in their neighbourhood but perceptions of access to places for participation are poor in underserved neighbourhoods. The main factors which impacted on women's access to physical and recreational activities included attaining the appropriate information, the provision of appropriate activities and facilities. These findings reflected both a lack of availability of appropriate activities in certain geographic areas for the BRM women and a lack of understanding of what may be available in their own local community. Therefore, access constraints based on lack of provision were noted, but these were also related to insufficient information about local activities and this issue is exclusive to the BRM women. The availability of safe, comfortable and culturally appropriate facilities was identified as an important motivating factor on women's participation. The most important issue was access to women-only exercise sessions. It was evident that culturally inappropriate facilities or dress requirements generally pushed some groups of ethnic minority women into non-organised, informal physical activities, such as walking which was mainly incorporated in their daily life. These highlighted the significance of social environmental factors and social support as enabling factors for adopting physical activity behaviour in the target population.

A lack of time due to family commitments was consistently reported as an interpersonal barrier in the first 2 studies. Being able to converse in English emerged as an interpersonal barrier only in study 1. Other persistent barriers were categorised as social-environmental (lack of women only activity and access to information and facilities) and intrapersonal (lack of motivation) which were reported as significant in studies 1 and 2. The significance of local communities in providing information and facilities for physical activity opportunities was mentioned in studies 1 and 2. These barriers across studies 1 and 2 referred to the lack of social support from the community. However study 2 deployed a qualitative approach to better understand the

immigrant BRMs' physical activity determinants in the context of family. Study 1 revealed that there was no difference between the ethnic groups in physical activity participation, awareness of local facilities, and involvement in a community group or seeing other people active in the area. The qualitative data provided valuable information which assisted in understanding the perceptions and experiences of BRM individual's participation in physical activities and. Findings suggested that some practical strategies were required to address the barriers including: offering childcare, engaging community centres, implementing strategies at educational and community levels to encourage ethnic minority women to join physical activity programmes, offering knowledge and skill building opportunities, and providing social support.

Study 2 therefore purposefully recruited families from the higher social class and similar background and characteristic to investigate the physical activity determinants in more detail. These families were either highly educated and/or from high socio-economic status. Although the level of education contributed to a better knowledge about the health benefits of physical activity and more positive attitude but it did not influence participation in physical activity. Also socio-economic status did not affect participation in physical activity as reported in study 1. Participants in study 2 were constrained by a lack of time or resources in their neighbourhood regardless of their socio-economic status. Choosing active transport in both studies 1 and 2 was related to increased physical activity. Intrapersonal factors (motivation) and social factors (meeting new people) were emerged from both studies 1 and 2 as motivating factors to participation in physical activity. Both studies 1 and 2 suggested that being employed or studying full time limited participants' engagement in physical activity.

Parents in study 2 indicated that their attitudes, beliefs, knowledge and motivation for physical activity were influenced by their age or education in physical activity and were to some degree affected by the media in particular TV. Participants stated that their activity was not influenced by living in the UK or by the British culture. Study 2 further explored the influence of parents on children's physical activity. Findings suggested that parents' attitudes, beliefs and role modelling influenced their children's physical activity behaviour. Support for engaging in healthy behaviours was however mainly through verbal encouragement (social), paying for classes and providing transport (logistical).

Findings of study 2 developed those found in study 1 as they revealed a gender difference in physical activity. This thesis found that traditional gender roles, which relegate the domestic duties of marriage and childcare to women and girls, influenced levels of participation among the female participants. Also parental support for participating in physical activity was through verbal encouragement and gender-based as more support was given to the boys to take up physical activity opportunities. It was identified that in the Muslim families who participated in study 2 the priority was given to education and career and physical activity was less valued in comparison. This thesis recognised the role of acculturation and adapting to the mainstream culture as a promoter or hinder to participation in physical activity. Some evidence was found for family pressure to contain their own culture by not engaging in the host culture and subsequently participating in physical activity programmes.

The prevalence of traditional gender roles among Arabs/Libyan indicated that boys had fewer responsibilities for doing chores at home and more freedom to take part in activities outside their homes whereas girls were restricted by doing chores and helping in the house. This refers to the Muslim females' role as care givers in the family unit and the expectations from women in this population which limits the time available to them to participate in physical activity programmes. It was evident that to remove lack of time it was required to address a number of time management issues and these were considered in the design of the intervention in study 3. Increasing time for leisure could be achieved by eliciting support from family members and friends, choosing activities that required minimal time on a flexible basis and identifying available time. Combining the findings from group interviews in study 1 and individual interviews in study 2 suggested that a process which could help design strategies to overcome the barriers among the BRM population would be to seek cooperation and involvement with community centres and/or schools. This strategy could ensure targeting the defined population in order for the behaviour change to take place as well as involving local community organisations. Also results from the first two studies suggested that the intervention needed to provide activity opportunities at a time when the need for social support from mothers for their children was low.

The opportunity to evaluate an intervention directly related to the outcomes from studies 1 and 2 emerged during the idea-generating phase for the design of an intervention. Liverpool had successfully bid to the European Social Fund (ESF) to run a multi level intervention in the areas where participants in studies 1 and 2 resided. A major aim of the intervention was to increase levels of physical activity in both men and women in a deprived area of the city. The ESF bid for the Work-Out project was successful and at this stage we integrated our research findings from studies 1 and 2 to influence programme delivery and evaluation.

The Work-Out project was a multi-component intervention which considered multiple factors to change people's physical activity behaviour. This intervention responded to the needs of individuals from the BRM and low income groups. The intervention was informed by the socio-ecological model and addressed the following factors:

- Intrapersonal factors; lack of motivation through appointing fitness activators who encouraged individuals to adopt physical activity behaviour
- Interpersonal factors; lack of time through offering flexible and client-based time for activities
- Social support; through providing one-to-one approach by fitness activators
- Social environmental factors; through marketing strategy, free access to resources and facilities, type of activities (e.g. women only), time of the activities to minimise the need for childcare.

Findings of the evaluation of the Work-Out project contribute to the field of community based health promotion interventions. The RE-AIM framework (Glassgow et al., 1999) was applied to evaluate the Work-Out project. This framework allowed determining the number of individuals who were reached as well as their demographic characteristics. The effectiveness of the project was also identified based on the aims and objectives of the intervention. The RE-AIM framework assessed the degree of the adoption of the project in terms of staffing pattern, delivery of the sessions, marketing strategy and the intervention setting. The implementation of the intervention and the behaviour change maintenance in addition to the setting behaviour were also assessed by using the framework.

Whilst the “Work-Out Project” included multiple aims (such as reducing unemployment) the intervention was designed based on the socio-ecological model to address the barriers identified in studies 1 and 2. The barriers were identified as intrapersonal factors: lack of motivation, interpersonal factors: lack of time, lack of social support, social environmental factors: lack of access to information and/or places for physical activity, lack of facilities and resources e.g. women only activities, childcare. The Work-Out project used the unique concept of the fitness activators who provided social support and acted as professional friends to encourage participants to adopt physical activity. The project also addressed other social environmental factors which were identified to influence physical activity including access to information about physical activity and access to facilities and local resources. The intervention was tailor made to the needs of disadvantaged individuals including the BRM groups.

The Work-Out project used unique approaches to motivate and support participants and address barriers to physical activity participation such as lack of time. This was done by offering flexible time tables for activities to facilitate adoption of physically active lifestyles in low income, disadvantaged and BRM populations. The project offered flexible time for activities which addressed the need for childcare as the activities were offered at convenient time for the participants. The formulation and development of the Work-Out project was linguistically and culturally appropriate as this intervention used local “fitness activators” to support the participants.

Further, this project increased motivation and interest in taking part in physical activity and helped maintain healthy behaviour through promoting participants’ knowledge of the health benefits of physical activity and of safe, appropriate and client-based programs. Fitness activators promoted individuals’ knowledge and motivation to engage in physical activity and change behaviour. Results from study 1 showed a high percentage of unemployment among the BRM women. One of the objectives of the Work-Out project was to provide training courses such as first aid and health and safety alongside the physical activity sessions to get the participants fit for work.

The project targeted low income, unemployed individuals from deprived areas and was successful in addressing the social isolation among this population by removing barriers such as cost, access to information and facilities and providing social support through the fitness activators. Fitness activators targeted disadvantaged people residing in deprived areas of Liverpool and used a unique approach to recruit the participants to the project. Local fitness activators personally approached individuals in community centres, leisure centres and local super markets to inform them about the project. This strategy addressed findings from studies 1 and 2 where a lack of information was reported and also increased resident's awareness of facilities and physical activity opportunities that were available in the Work-Out project.

Studies 1 and 2 suggested that BRM individuals reported low levels of involvement in the community a problem and that this was overcome by the Work-Out project which "reached" 1200 individuals from deprived and disadvantaged backgrounds. Results from the first 2 studies further indicated that community centres should take a central role in promoting physical activity by offering local sessions (women-only) at the local centres. Our results from studies 1 and 2 influenced the programme of activities in the Work-Out project where women only activities were offered. This reduced an additional barrier for the BRM women who were culturally or religiously restricted to participate in mixed activities. "Fitness activators" also offered one to one sessions, the activities were adapted to individual needs and capabilities. Overall the concept of fitness activators to act as professional friends, offer a 12 weeks free gym pass, a variety of activities, flexible timing and easy access to venues removed barriers evident in study 1 and 2.

The concept of social support and facilitating opportunities for the participants to engage in physical activity enhanced confidence and self esteem of those participants with lower health literacy and therefore more vulnerable. Although financial limitations weren't measured or reported as key barriers to participation in this thesis, the Work-Out project offered free access to sport and leisure centres for the participants. Findings from the intervention evaluation reflected that removing the cost to participation enabled people from disadvantaged and deprived areas to engage in the programme.

6.5. Limitations

The findings of this research study were limited by a number of methodological and practical factors that only allowed an investigation into parts of the socio-ecological model. The investigations were also pragmatic and applied the socio-ecological model in the “process” of the design of the 3 studies. In study 1 part (I) although engaging the local communities helped with the process of recruiting and conducting the survey this resulted in adapting an already validated questionnaire into something usable in the community and by the community researches. The survey questionnaire was designed in partnership with the PAG and CRAG which was linguistically and culturally appropriate for the target population but it did not measure variables such as the time and intensity of the physical activity or individuals’ socio-economical status or education level. However this approach allowed access to members of the community who would not normally get involved in research projects. In study 1 this resulted in recruiting a significant number of BRM women in the research process.

Study 1 part (II) aimed to conduct focus groups with the BRM women, however due to a lack of interaction between the participants, focus groups were treated as group interviews and were analysed as individual interviews disallowing an analysis of social interactions. This would have been useful to analyse the social aspect of data generation usually available during focus groups. Further on it was recognised that the emerging results from the group interviews cannot be generalised to the whole BRM population under study as the participants were not representative of ethnic groups. The recruitment for study 2 was a purposeful recruitment approach in order to measure education level and socio-economic status of the participants.

Study 2 was limited by its small sample size (4 families). Further these 4 families only represented 2 ethnic groups which limited the findings in a way that this study could not capture more diverse insights in to the BRM families. Another limitation to study 2 was the fact that measures of physical activity levels and parenting behaviours and role modelling were all self reported and were not objectively measured.

Study 3 (the intervention) was influenced but not wholly designed on the results from studies 1 and 2 and were driven by neighbourhood needs and local area agreements. Further the reach of the project were not exclusively BRM women, they were residents (BRM and white British) living in disadvantaged areas where studies 1 and 2 took place. On the other hand the Work-Out project captured significant numbers of

BRM women as one key objective was to recruit women and girls. It was not pragmatic to segregate the participants but including all ethnicities did not allow a focus on any specific need of BRM groups. Ultimately the common demographic issue was that participants resided in a deprived area. Ultimately, with the exception of cultural and religious issues many of the participants had similar barriers that prevented participation in physical activity as those highlighted in studies 1 and 2. Finally whilst the Work-Out project management group required the evaluation to be all inclusive and this changed our research approach, this resulted in a broader and arguably more complete picture of the BRM community in its wider community and in some respects demonstrated that similar issues existed in the promotion of physical activity independent of BRM status.

6.6. Conclusion

This thesis was constructed using a pragmatic approach to the socio-ecological model. This was mainly applied to each of the three studies included in this thesis. This research study prides itself in having successfully engaged and consulted local communities in the recruitment process and the design and the conduct of the survey. The findings contributed to a better understanding of the socio-ecological model and the related key barriers to and determinants of participation in physical activity in BRM women residing in deprived areas of Liverpool. The socio-ecological framework helped to address the issue at a multiple level and identify the interaction and connectivity of the different factors all across the multiple levels of the framework. The key barriers were reported to be lack of time and lack of access to both information and facilities about physical activity, which indicated a lack of social support for this population. Therefore this research took a step further to investigate the aspect of social support in the context of family unit as well as examining the influence of living in the UK with regards to the immigrants BRM physical activity behaviour. Findings suggested that the life style and priorities set by these BRM families impede their participation in physical activity. However, other barriers such as lack of access to women only facilities and lack of information about the programs available in the neighbourhood were also identified. The BRM parents had a positive impact on their children's physical activity behaviour through verbal encouragement and providing logistical requirements (e.g. paying fees, transport). In depth interviews with the BRM families suggested that although they were aware of the health benefits of physical activity, they still remained inactive due to interpersonal factors. Findings of this research study highlighted the importance of the community centres in promoting physical activity and enhancing community cohesion among the socially excluded disadvantaged groups.

A lack of time due to the life style and family/work commitments as an interpersonal factor and a lack of access to information and facilities for participation in physical activity were reported as key barriers among the members of the BRM families. Although almost all respondents were aware of the health-benefits of physical activity but they demonstrated low levels of physical activity participation. Physical activity did not seem to have been influenced since living in the UK. Other factors like age,

education and the media were related to their attitudes, knowledge, beliefs and motivation about physical activity.

The BRM parents reflected a positive attitude towards physical activity and socially supported their children through verbal encouragement and logistic support, for example paying the gym fee. This was despite their own low levels of physical activity suggesting poor role modelling. However, there were gender differences in social support as boys were encouraged to engage in physical activities outside the house whereas this was not the case for girls. The conclusion from study 2 was that individual and environmental impediments to physical activity in the BRM families should be taken into an account before designing interventions to promote physical activity among this particular group.

The Liverpool Sport and Physical Activity Alliance management team together with the Sport Action Zone and Liverpool Active City completed a bid to ESF for a community project that aimed to engage deprived communities in physical activity. The bid was successful and the Work-Out Project naturally followed studies 1 and 2. Although the initial design of this intervention was not solely aimed at the BRM groups it was an inclusive programme which involved women and girls, people from deprived areas, low- income and disadvantaged people and people from ethnic minority groups. The findings of our research study informed the delivery of this intervention and therefore the intervention was evaluated comprehensively to assess its effectiveness in promoting healthy behaviour and physical activity among its participants.

Findings of this research study confirm the significant role that local neighbourhood management can play in the design and delivery of interventions based on community rather than theoretical need. This approach is more likely to be effective in changing behaviour, health and subsequently impact on physical activity inequalities that exist in Liverpool Both the Kensington Women Get Lively project and the Work-Out project indicated the importance of working in partnership with other local partners to identify communities and individuals' health needs and promote healthy living among communities. Targeting individuals and hard to reach groups has proven to be more effective through their local communities and local practitioners. This thesis used

these approaches to identify key barriers and used them to inform interventions which were effective in changing physical activity in deprived and BRM populations.

Despite the limitations, this study documented the process of engaging the local communities to better understand the determinants of physical activity in underserved and disadvantaged populations. The study also contributes to better understand how a multi-component community based intervention may change perceptions and attitudes about physical activity and facilitate behaviour change by reinforcing social support and reducing barriers to participation in physical activity.

6.7. Recommendations

This body of research recommends that future research invites communities to participate in the design and as importantly the evaluation of behaviour change programmes. However where communities are involved greater emphasis needs to be placed on research methodologies that meet the highest degree of rigour possible. This will require communities to recognise that robust measures are as if nor more important than community translation although we recognise that there will almost always be a compromise between researchers and communities on this issue.

Further we would recommend that health promotion programmes that target the BRM population should give priority to cultural orientation towards local community culture whilst recognising requirements specific to ethnicity. This implies that the barriers to physical activity found in this thesis should be utilised when panning physical activity programmes for the BRM women. These approaches required further research accounting for different age groups, different ethnicities in different cultures. It would also be interesting to undertake physical activity related research in BRM populations from higher SES groups or of those living in higher SES areas or from multi-ethnic families.

Further programmes that involve community centres, schools and leisure centres working together that give high priority to promoting physical activity among ethnic minorities need to be investigated and analysed within the socio-ecological framework. A wide range of culturally appropriate provision and opportunities as well as home-based schemes should be given to individuals from the low income and BRM

groups. The programs should be designed specifically to address the cultural, religious and socio-economic barriers that restrict the BRM and low income people from taking up physical activity opportunities. Disadvantaged people from low income backgrounds and from the BRM population should be involved in a systematic constant consultation process in order to identify their needs and long term funded programs and policies should be established based on good practice such as the Work Out project. Involving known and valued members of the communities in designing interventions as role models can increase participation in physical activity interventions.

Attempt should be made to ensure that people from disadvantaged, low income and the BRM population are receiving healthy messages about the benefits of physical activity. Resources should be allocated to provide organised transports to and from the venues for participation as well as considering the provision of organised group walks and or cycle rides. Creating a socially appropriate environment that encourages participation in the physical activity programs could also promote healthy behaviour among the disadvantaged people.

Community research interventions constructed using the theoretical constructs from the socio-ecological model should use mixed methodology in order to obtain robust data and to better solve research questions derived from complex interventions. In doing so it is recommended to deploy a validated questionnaire for the quantitative phase of the research such as using more objective measures e.g. pedometers or accelerometers where they are culturally acceptable to use.

Further observational and longitudinal designs that generate data for both genders and SES groups across the life course and in different contexts settings and environments are required to develop a clearer understanding of physical activity in BRM populations. In order to better understand the independent effect of the programme components, longer studies with greater power are required. More robust studies are required with larger numbers and with a greater variety of methods and longer follow-up periods. There was an extremely limited literature on physical activity promotion with BRM populations and we strongly recommend an increase in research activity in this area of health promotion.

However, Findings of the programme evaluation contribute to the field of community based health promotion interventions. There is a great need for translation and public health impact of physical activity interventions particularly among the underserved populations. The RE-AIM framework should be used to identify the potential for efficacy trials to translate into full trials. This framework could be used for planning health promotion interventions as well as programme evaluation. By applying the RE-AIM framework for planning interventions we determined some of the barriers to reach the target population and whether the intervention was flexible enough to meet the needs of the target audience. Staffing pattern, delivery requirement and the setting adoption of the interventions could also be identified at planning stage. The RE-AIM framework allowed determining inconsistencies in the implementation and inability to implement the interventions adequately.

Chapter seven:

Personal Reflection

7. Personal reflection

In qualitative research the true experience of conducting the research is not usually reflected (Hallowell et al., 2005). Describing the conduct of the research could help improve the quality and credibility of the research (Seale, 1999). The approach to this research was not clear and methodologies for this study were developed as the research progressed.

My own personal background was similar in some respects to the participants that were studied. I come from ethnic origin background myself, have children and migrated to the UK for further education. Living away from my home country and feelings of not belonging to the society and possessing different values and beliefs contributed to building up a rapport with the participants of this study and understand their view points better. However, in qualitative studies the researchers should recognise the biases and basic knowledge that they bring into the research environment (Krane et al., 1997). I was aware that my background and prior knowledge and experiences (e.g. perceived and actual barriers to physical activity such as lack of motivation or time) could influence the research findings. However I acknowledge that the influence of my personal characters as the main researcher and the social and local factors on the conduct of the qualitative research cannot be dismissed. To minimise the impact of subjectivity on the conduct and the findings of the research methods were used in data collection (e.g. voice recorder) and data analysis (e.g. discussing the findings with the supervisors).

My personal background and my previous understanding of the research question was beneficial to understanding participants perspectives. I felt that my requisite knowledge enhanced my ability to engage with the participants and to facilitate the conduct of the research. However my familiarities with the concept being researched and the participants could have had limitations on the findings. In study 2 the participants reacted very warmly to me and acted comfortable to share their views about the research questions. However their openness could have been limited as they may have tried to give the best possible response rather than the true response and therefore have not discussed the un-discussable (matters that will not be discussed in the context of research). At times I felt myself in an ethical dilemma as I wasn't able to ask follow up questions as I didn't want to seem too pushy or aggressive. Although

I managed to complete the interview schedule I was aware of not making the participants bored before the end of the interview. I however feel that I understood what participants told me and the data generated from this research is reliable.

7.1. Research Development

My motivation for research emerged after my MSc in exercise behaviour. My understanding of concepts and issues related to health and physical activity promotion have been challenged through my reading and understanding of the literature and open conversations and experiences during data collection.

The results of first part of study one informed the development of research in terms of research questions and methodological choices. It became clear from the findings of study one that more in depth method is required to develop the other phase of the study. Therefore, the next study (study 2) aimed to explore participants' determinants for and barriers to physical activity in the context of the family unit. Qualitative method was utilised since it involves a naturalistic approach to its subjects, with emphasis on processes and meanings (Denzin and Lincoln, 2000).

At the intervention phase the decision to interview the managers (n=2) and Fitness Activators (n=2) and a number of participants (n=10) was based upon the evaluation process using the RE-AIM framework. Furthermore the results from evaluating the intervention outlined the importance and influence of multi-component community based intervention and the concept of fitness activators.

The research was inter-disciplinary and consequently, complex in nature. This meant I had to be aware of knowledge from exercise science, physical activity determinants in general population and among BRM groups, health inequality and its implication, health promotion interventions, research methodologies, evaluation methods and to some extent government policies for health promotion.

Conducting this research in physical activity behaviour has been one of the biggest challenges in my life. During my time undertaking this research program I have had improved a number of characteristics and skills, including: communication skills, academic writing, and research methodology. In addition to these I have improved some personal skills such as organisational skills, time managing, people skills and

interacting with people from different walks of life. My capacity to build relationships with different people at all levels has improved significantly. I was required to communicate and conduct interviews with people in Sport and Physical Activity Alliance, Liverpool city council, primary care trust, managers or coordinators of different projects and ordinary residents within the community.

My knowledge about the concept of physical activity determinants among BRM population, theories and models which can be applied to specific population in order to better understand the underlying facts about BRM's physical activity behaviour has increased to a large extent. I have learnt so much about policies and strategies influencing populations' health behaviour and also learnt a lot about different activities and health promoting projects with a focus on physical activity in Liverpool. There were new skills I acquired through conducting this research including the ability to design questionnaire and to develop semi structure interviews and focus groups utilising themes. Analysing the qualitative data that I obtained for my research was very challenging for me. However these have all contributed to the improvement of my communication, writing skills, analytical thinking and research methodologies.

References

Abraído-Lanza, A. F., Chao, M. T., and Flórez, K. R. (2005). Do healthy behaviours decline with greater acculturation? Implications for the Latino mortality paradox. *Social Science and Medicine*, **61**(6), 1243-1255.

Abildso, C.G., Zizzi, S.J., Reger-Nash, B. (2010), Evaluating an insurance-sponsored weight management program with the RE-AIM Model, West Virginia, 2004-2008 *Prev Chronic Dis*. **7**(3):A46.

Abraído-Lanza, A.F., Armbrister, A.N., Flórez, K.R., and Aguirre, A.N. (2006). Toward a Theory-Driven Model of Acculturation in Public Health Research. *American Journal of Public Health*, Vol **96**, No. 8.

Acheson, D. (1998). *Independent inquiry into inequalities in health report*. London: The Stationery Office.

Active People Survey (APS) (2007). Spot England. www.sportengland.org

Active People Survey (APS) (2009). Spot England. www.sportengland.org

Adams, J. and White, M. (2003). Are activity promotion interventions based on the transtheoretical model effective? A critical review. *British Journal of Sports Medicine*, **37**, 106–114.

Adams, J., and White, M., (2005). Why don't stage-based activity promotion interventions work? *Health Education Research*, **20**(2): 237-243.

Addy, C. L., Wilson, D.K., Kirtland, K.A., Ainsworth, B.E., Sharpe, P., and Kimsey, D. (2004). Associations of perceived social and physical environmental support with physical activity and walking behaviour. *American Journal of Public Health*, **94**(3); 440–443.

Adler, N.E., Stewart, J. (2010), Health disparities across the lifespan: meaning, methods and mechanisms. *Annals of the New York Academy of Sciences*, 1186:5–23.

Agurs-Collins, T., Kumanyika, S., Ten Have, T., and Adams-Campbell, L. (1997). A randomized controlled trial of weight reduction and exercise for diabetes management in older African American subjects. *Diabetes Care*, **20**(10); 1503–1511.

Ainsworth B, Keenan N, Strogatz D, Garrett J, James S. (1991). Physical activity and hypertension in black adults: The Pitt County Study. *American Journal of Public Health*, **81**(11):1477-9.

Ainsworth, B.E., Haskell, W.L., Whitt, M.C., Irwin, M.L., Swartz, A.M., Strath, S.J., O'Brien, W.L., Bassett, DR Jr, Schmitz, K.H., Emplaincourt, P.O., Jacobs, DR Jr, Leon, A.S. (2000). Compendium of physical activities: An update of activity codes and MET intensities. *Medicine and Science in Sports and Exercise*, **32**(9 Suppl):S498-504.

Ainsworth BE, Wilcox S, Thompson WW, Richter DL, Henderson KA.(2003). Personal, social, and physical environmental correlates of physical activity in African-

American women in South Carolina. *American Journal of Preventive Medicine*; **25**(3 Suppl 1):23-9.

Ajzen I. (1991). The theory of planned behavior. *Organisation Behaviour in Human Decision Process*, **50**:179 –211.

Ajzen, I.M. and Fishbein, M. (1980). Understanding attitudes and practicing social behavior; Englewood Cliffs, NJ: Prentice-Hall

Ali, N. S. (2002). Prediction of coronary heart disease preventive behaviors in women: A test of the health belief model. *Women and Health*, **35**(1), 83–96.

Ali, S.M., Lindstrom, M. (2006). Psychosocial work conditions, unemployment, and leisure-time.

Allender, S., Cowburn, G., and Foster, C. (2006). Understanding participation in sport and physical activity among children and adults: A review of qualitative studies. *Health Education Research*, **21**(6), 826-835.

Allison DB, Fontaine KR, Manson JE, Stevens J, and Vanitalle TB. (1999). Annual deaths attributable to obesity in the United States. *Journal of American Medical Association*. **282**(16):1530-8.

Amarasinghe A, D'Souza G, Brown C, Oh H, Borisova T. (2009). The Influence of socio-economic and Environmental Determinants on Health and Obesity: A West Virginia Case Study *International Journal of Environmental Research and Public Health*, **6**(8):2271-87.

American College of Sports Medicine. (2001). Appropriate intervention strategies for weight loss and prevention of weight regain for adults. Position Stand. *Medicine and Science in Sports and Exercise*. **33**, 2145-2156.

Amesty, S.C. (2003). Barriers to Physical Activity in the Hispanic Community. *Journal of Public Health Policy*, **24** (1), 41-58.

Andersen RE, Franckowiak SC, Snyder J, Bartlett SJ, Fontaine KR. (1998). Can inexpensive signs encourage the use of stairs? Results from a community intervention. *Ann Intern Med*, **129**:363–9.

Anderssen N, Jacobs DR Jr, Sidney S, Bild DE, Sternfeld B, Slattery ML, Hannan P. (1996). Change and secular trends in physical activity patterns in young adults: A seven-year longitudinal follow-up in the Coronary Artery Risk Development in Young Adults Study (CARDIA). *American Journal of Epidemiology*. **15**;143(4):351-62

Anderssen N, Wold B. (1992). Parental and peer influences on leisure-time physical activity in young adolescents. *Res Q Exerc Sport*, **63**:341–8.

Annual report of the Chief Medical Officer. (2004). Public Health Policy, Department of Health.

Antonucci, T. C. (1990). Social Supports and Social Relationships. In Binstock, R. H. and George, K. (Eds.), *Handbook of Aging and the Social Sciences* (pp. 205-226). Academic Press, Inc.

Ashenden, R., Silagy, C. and Weller, D. (1997). A systematic review of the effectiveness of promoting lifestyle change in general practice. *Family Practice*, 14 (2): 160-76.

Ashford, S., Edmunds, J., and French, D.P. (2010). What is the best way to change self-efficacy to promote lifestyle and recreational physical activity? A systematic review with meta-analysis. *British Journal of Health Psychology*; 15, 265–288

At least five times a week. (2005) Evidence on the impact of physical activity and its relationship to health. *A report from the Chief Medical Officer*. Department of Health.

Ayala GX, Baquero B, Klinger S. (2008). A systematic review of the relationship between acculturation and diet among Latinos in the United States: implications for future research. *Journal of American Diet Association*. 108(8):1330–44.

Balcazar, H, Castro, F.G, Krull, J.L. (1995). Cancer risk reduction in Mexican American women: the role of acculturation, education, and health risk factors. *Health Education Quarterly*, 5 (22):61–84.

Baldwin, A. S., Rothman, A. J., Hertel, A. W., Linde, J. A., Jeffery, R. W., Finch, E. A., and Lando, H. A. (2006). Specifying the determinants of the initiation and maintenance of behavior change: An examination of self-efficacy satisfaction, and smoking cessation. *Health Psychology*; 25, 626–634.

Ball, K., Bauman, A., Leslie, E., & Owen, N. (2001). Perceived environmental aesthetics and convenience and company are associated with walking for exercise among Australian adults. *Preventive Medicine*, 33(5), 434–440.

Ball, K., Salmon, J., Giles-Corti, B., and Crawford, D. (2006). How can socio-economic differences in physical activity among women be explained? A qualitative study. *Women and Health*, 43(1):93–113.

Bandura A. (1997). *Self-efficacy: the exercise of control*. New York, NY: Freeman.

Bandura A. Self-efficacy: toward a unifying theory of behavioral change (1977). *Psychology Review*; 84:191-215.

Bandura, A. (1986). Social foundation of thought and action: A social cognitive theory. *Englewood Cliffs, NJ: Prentice Hall*.

Banks-Wallace, J., and Conn, V., (2002). Interventions to Promote Physical Activity Among African American Women. *Public Health Nursing*. 19(5), pp. 321–335

Baranowski T, Cullen KW, Nicklas T, Thompson D, Baranowski J. (2003). Are current health behavior change models helpful in guiding prevention of weight gain efforts? *Obesity Research*. 11 Suppl: 23S-43S.

Baranowski, T., Cullen, K.W., Baranowski, J., (1999). Psychosocial Correlates of Dietary intake: Advancing Dietary Intervention. *Annual Review of Nutrition*. 19: 17-40.

Barker, R.G. (1968). Ecological psychology: Concepts and methods for studying the environment of human behaviour. Stanford University Press.

Bassouk, E. L and Donelan, B. (2003). Social deprivation. In Green, B. L. (Ed.), Trauma intervention in war and peace. New York, NY: Kluwer Academic Publishers.

Bauman, A. and Bellew, B. (1999). Health in the Commonwealth. Sharing solutions 1999/2000, in: Environment and policy approaches to promoting physical activity, Kensington Publications Limited for the Commonwealth Secretariat, London, United Kingdom.

Bauman, A., Bellew, B., Brown, W., and Owen, N. (2002). Getting Australia active. Towards better practice for the promotion of physical activity. Melbourne, Australia: National Public Health Partnership.

Bengoechea, E.G., Spence, J.C. and McGannon, K.R. (2005). Gender differences in perceived environmental correlates of physical activity, *International Journal of Behavioural Nutrition and Physical Activity*, 2:12

Bennett, G., McNeill, L., Wolin, K., Duncan, D., Puleo, E., and Emmons, K. (2007). Safe to walk? Neighborhood safety and physical activity among public housing residents. *Public Library of Science. PLoS Medicine*, 4 (10):1599-60.

Berkman, L., Epstein, A.M. (2008). Beyond health care--socioeconomic status and health. *The New England Journal of Medicine*; 5;358(23):2509-10.

Berkman, L., and Kawachi, I. (2000). A historical framework for social epidemiology. In L. Berkman, and I. Kawachi (Eds.), *Social Epidemiology*. New York: Oxford University Press.

Bermudez OL, Falcon LM and Tucker KL. (2000). Intake and food sources of macronutrients among older Hispanic adults: association with ethnicity, acculturation, and length of residence in the United States. *Journal of American Diet Association*. 100(6):665-73.

Bernardi, L., Kleim, S., von der Lippe, H. (2007). Social influences on fertility: a comparative mixed methods study in Eastern and Western Germany. *Journal of Mixed Methods Research*; 1 (1), 23-47.

Berry J.W. (2003). Conceptual approaches to acculturation. In: Chun KM, Balls Organista P, Marín G, (2003). Acculturation: Advances in Theory, Measurement and Applied Research. Washington, DC: *American Psychological Association*. 17-37.

Bess H. Marcus, David M. Williams, Patricia M. Dubbert, James F. Sallis, Abby C. King, Antronette K. Yancey, Barry A. Franklin, David Buchner, Stephen R. Daniels

and Randal P. Claytor (2006). Physical Activity Intervention Studies: What We Know and What We Need to Know: A Scientific Statement From the American Heart Association Council on Nutrition, Physical Activity, and Metabolism (Subcommittee on Physical Activity); Council on Cardiovascular Disease in the Young; and the Interdisciplinary Working Group on Quality of Care and Outcomes Research. *Journal of the American Heart Association, Circulation*, **12**;114 (24):2739-52.

Biddle, S., Goudas, M. (1996). Analysis of Children's Physical Activity and its Association with Adult Encouragement and Social Cognitive Variables. *Journal of School Health*, 66(2); 75–78.

Biddle, S.J.H., Markland, D., Gilbourne, D., Chatzisarantis, N.L.D. and Sparkes, A.C. (2001). Research methods in sport and exercise psychology: quantitative and qualitative issues. *Journal of Sports Sciences*, **19**, 777-809.

Biddle, S., Mutrie, N. (2008). Psychology of physical activity determinants, well-being and interventions. (2nd edition). Routledge.

Bild D.E, Jacobs D.R, Jr, Sidney S, Haskell WL, Anderssen N, Oberman A. Physical activity in young black and white women: the CARDIA Study. *Ann Epidemiol* 1993;3:636–44.

Blair S.N and Church T.S. (2004). The fitness, obesity, and health equation: is physical activity the common denominator? *Journal of American Medical Association*, **292**(10):1232-4.

Blair, S.N., Cheng, Y. and Holder J.S. (2001). Is physical activity or physical fitness more important in defining health benefits? *Medicine and Science in Sports and Exercise*, **33**(6 Suppl):S379-99; discussion S419-20.

Blair S.N, Kampert J.B, Kohl HW, Barlow, CE., Macera, CA., Paffenbarger, RS., Gibbons, LW. (1996). Influences of cardiorespiratory fitness and other precursors on cardiovascular disease and all cause mortality in men and women. *Journal of American Medical Association*, **276**, 205–10.

Bloom, G.A. Durand-Bush, N., Schinke, R.J. and Salmela, J. (1998). The importance of mentoring in the development of coaches and athletes. *International Journal of Sport Psychology*, **29**, 267-281.

Bloor, M. (2001). Focus groups in social research. *Introducing Qualitative Methods*. London. Sage.

Blundell,J.E., Stubbs,R.J., Hughes,D.A., Whybrow,S., and King,N.A. (2003) Cross talk between physical activity and appetite control: does physical activity stimulate appetite? *The Proceeding of the Nutrition Society*. **62**(3):651-61.

Booth, M. L., Owen, N., Bauman, A., Clavisi, O., & Leslie, E. (2000). Social-cognitive and perceived environment influences associated with physical activity in older Australians. *Preventive Medicine*, **31**(1), 15–22.

- Bopp, M., Wilcox, S., Laken, M., Butler, K., Carter, R.E., McClorin, L., Yancey, A. (2006). Factors associated with physical activity among African-American men and women. *American Journal of Preventive Medicine*, 30(4): 340–346.
- Bopp, M., Wilcox, S., Laken, M., Hooker, S.P., Saunders, R., Parra-Medina, D., Butler, K. and McClorin, L. (2007). Using the RE-AIM framework to evaluate a physical activity intervention in churches. *Preventing Chronic Disease*. 4(4):A87.
- Borodulin K, Laatikainen T, Lahti-Koski M, Jousilahti P, Lakka TA. (2008). Association of age and education with different types of leisure-time physical activity among 4437 Finnish adults. *Journal of Physical Activity and Health*; 5(2):242-51.
- Bouchard C, Shephard RJ. (1994) Physical activity fitness and health: the model and key concepts. In: Bouchard C, Shephard RJ, Stephens T, editors. Physical activity fitness and health: International proceedings and consensus statement. Champaign (IL): Human Kinetics; p. 77-88.
- Bowling, A. (2002). Research methods in health. Investigating health and health services. Second edition. Open university press.
- Boyatzis, R. (1998). Transforming qualitative information: Thematic analysis and code development. Thousand Oaks, CA: Sage Publications.
- Bracht N, ed. (1990). Health promotion at the community level. Newbury Park, California: Sage.
- Brennan, L. K., Baker, E. A., Haire-Joshu, D., and Brownson, R. C. (2003). Linking perceptions of the community to behaviour: Are protective social factors associated with physical activity? *Health Education and Behaviour*, 30(6), 740–755.
- Bridle, C. Riemsma, R.P. Pattenden, J. Sowden, A.J. Mather, L. Watt, I.S. Walker, A. (2005). Systematic review of the effectiveness of health behavior interventions based on the Transtheoretical Model. *Psychology and Health*, 20(3), 283 - 302.
- Brockman, R., Jago, R., Fox, K.R., Thompson, J.L., Cartwright, K., and Page, A.S. (2009). "Get off the sofa and go and play": Family and socio-economic influences on the physical activity of 10–11 year old children *BMC Public Health* 2009, 9:253
- Brown, B.A., Long, H.L., Gould, H., Weitz, T., Milliken, N. A. (2000). Conceptual model for the recruitment of diverse women into research studies. *Journal of Women's Health Gender-based Based Medicine*; 9:625–32.
- Brownell K. D., Kersh R., Ludwig D. S., Post R. C., Puhl R. M., Schwartz M. B., Willett W. C. (2010). Personal responsibility and obesity: a constructive approach to a controversial issue. *Health Affairs (Millwood)*, 29(3):379-87.
- Brownson RC, Baker EA, Housemann RA, Brennan LK, Bacak SJ. (2001). Environmental and policy determinants of physical activity in the United States. *American Journal of Public Health*; 91(12):1995-2003.

Brownson RC, Housemann RA, Brown DR, Jackson-Thompson J, King AC, Malone BR, Sallis JF. (2000). Promoting physical activity in rural communities: walking trail access, use, and effects. *American Journal of Preventive Medicine*. **18**:235–241.

Brownson RC, Schmid TL, King AC, (1998). Support for policy interventions to increase physical activity in rural Missouri. *American Journal of Health Promotion*; **12**: 263–266.

Brownson R, Eyler A, King A, Brown D, Shyu Y, Sallis J. (2000). Patterns and correlates of physical activity among U.S. women 40 years and older. *American Journal of Public Health*. **90**(2):264-70.

Brug, J., Conner, M., Harre' N., Kremers, S., McKellar, S., and Whitelaw, S. (2005). The Transtheoretical Model and stages of change: a critique Observations by five Commentators on the paper by Adams, J. and White, M. (2004) Why don't stage-based activity promotion interventions work? *Health Education research*, **20** (2): 244-258.

Brustad RJ. (1996). Attraction to physical activity in urban schoolchildren: parental socialization and gender influences. *Research Quarterly for Exercise and Sport*, **67**(3):316-23.

Bucksch J., Finne E., Kolip P., (2008). The transtheoretical model in the context of physical activity in a school-based sample of German adolescents *European Journal of Sport Science*; **8**(6): 403- 412

Buckworth, J. and Dishman, R.K. (2002). Exercise Psychology. *Human Kinetics, Inc*.

Buis, L.R., Poulton, T.A., Holleman, R.G., Sen, A., Resnick, P.J., Goodrich, D.E., Palma-Davis, L., Richardson, C.R. (2009). Evaluating Active U: an Internet-mediated physical activity program. *BMC Public Health*. **10**:9:331

Burgio, L., Corcoran, M., Lichstein, K., Nichols, L., Czaja, S., Gallagher-Thompson, D. *et al.* (2001) Judging outcomes in psychosocial interventions for dementia caregivers: the problem of treatment implementation. *The Gerontologist*, **4**: 481–489

Burrows, D. and Kendall, S. (1997). Focus groups: What are they and how can they be used in nursing and health care research? *Social Sciences in Health*, **3**; 244–253.

Cale, L. and Harris, J. (2005) Young people and exercise: Introduction and overview. In: *Exercise and Young People: Issues, Implications and Initiatives* (Eds L. Cale and J. Harris), pp. 1–8. Palgrave Macmillan, London.

Calle EE, Rodriguez C, Walker-Thurmond K and Thun MJ. (2003). Overweight, obesity, and mortality from cancer in a prospectively studied cohort of U.S. adults. *The New England Journal of Medicine*; **348**(17):1625-38.

Calfas KJ, Long BJ, Sallis JF, Wooten WJ, Pratt M, Patrick K. (1996). A controlled trial of physician counseling to promote the adoption of physical activity. *Preventive Medicine*; **25**:255-233.

- Cantero PJ, Richardson JL, Baezconde-Garbanati L and Mark G. (1999). The association between acculturation and health practices among middle-aged elderly Latinas. *Ethnicity and Disease*; **9**(2):166-80
- Carron AV, Hausenblaus HA, Mack D. (1996). Social influence and exercise: a meta-analysis. *Journal of Sport and Exercise Psychology* **18**:1-16
- Casey, MM., Eime, RM., Payne, WR., and Harvey, JT. (2009). Using a Socio-ecological Approach to Examine Participation in Sport and Physical Activity Among Rural Adolescent Girls. *Qualitative Health Research*; **19**(7). 881-893.
- Caspersen, C.J., Powell, K.E., and Christenson, G.M. (1985). Physical activity, exercise, and physical fitness: Definitions and distinctions for health-related research. *Public Health Reports*, **100**(2), 126-131.
- Caspersen, C.J., Pereira, M.A., Curran, K.M. (2000). Changes in physical activity patterns in the United States, by sex and cross-sectional age. *Medicine and Science in Sports & Exercise*: Volume 32 - Issue 9 - pp 1601-1609
- Cassetta JA, Boden-Albala B, Sciacca RR, Giardina EG. (2007). Association of education and race/ethnicity with physical activity in insured urban women. *Journal of Women's Health*; **16**(6):902-8.
- Castro FG: Is acculturation detrimental to health? (2007). *American Journal of Public Health*. **97**:1162.
- Cavill, N., Dugdill, L. and Porcellato, L. (2005) Physical Activity in the North West of England: A Policy Audit. *Commissioned by Sport England North West and Government Office North West (public health)*.
- Cavill, N. (2008). Promoting physical activity through policy change; art, science or Policies? Concept for the development of physical activity practice. Pp. 43-47. In *Physical activity and health promotion: evidence-based approaches to practice*. (2009). By Lindsey Dugdill, Diane Crone, Rebecca Murphy. Wiley-BlackWell
<http://www.nwph.net/regional%20documents/nw%20physical%20activity%20policy%20audit.pdf> (accessed 28/01/08).
- Cavill, N., Dugdill, L., Porcellato, L. (2005). Physical activity in the North West of England: A policy Audit <http://www.sportengland.org/nwpaaudit.pdf>
- Cavill, N., Dugdill, L., Porcellato, L. (2005). Physical activity in the North West of England: A policy Audit <http://www.sportengland.org/nwpaaudit.pdf> Liverpool: Active City; 2005-2010 Action Plans. <http://www.liverpool.gov.uk/Images/tcm21-31091.pdf>
- Centers for Disease Control and Prevention. (1999). Neighbourhood safety and the prevalence of physical inactivity—selected states. *MMWR Morbidity and Mortality, Weekly Report*. **48**(7):143-6

Centers for Disease Control and Prevention. Marital Status and Health: United States, 1999-2002. Advance Data from Vital and Health Statistics. Hyattsville, MD: U.S. Government Printing Office; 2004.

Cerin E, Leslie E. (2008). How socio-economic status contributes to participation in leisure-time physical activity. *Social Science and Medicine*, **66**(12):2596-609.

Chamorro R, Flores-Ortiz Y. (2000). Acculturation and disordered eating patterns among Mexican American women. *International Journal of Eating Disorder*. **28**(1):125-9.

Cheadle, A., Egger, R., LoGerfo J.P., Walwick J. Schwartz S. (2008). A community-organizing approach to promoting physical activity in older adults: the southeast senior physical activity network. *Health Promotion Practice* **11**(2):197-204

Clark L, Hofsess L. Acculturation. (1998). In: Loue S, ed. *Handbook of Immigrant Health*. New York, NY: Plenum Press. 37-59.

Clark, D.O. (1995). Racial and educational differences in physical activity among older adults. *The Gerontologist*, **35**(4), 472-480.

Clifton, P. Nguyen, H. & S. Nutt (1992) Market Research Butterworth-Heinemann pp. 76

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine*, **38**, 300-311.

Cochrane, T., Davey, R.C. (2008). Increasing uptake of physical activity: a social ecological approach. *The Journal of the Royal Society for the Promotion of Health*, **128**(1), 31-40.

Cohen, D. A., Scribner, R., A., and Farley, T., A. (2000). A Structural Model of Health Behaviour: A Pragmatic Approach to Explain and Influence Health Behaviours at the Population Level. *Preventive Medicine*, **30** (2), 146-154.

Cohen, S., and Syme, S. L. (Eds.). (1985). Social Support and health. *Orlando, Florida: Academic Press*.

Contoyannis, P.; Jones, A.(2004). Socio-economic status, health and lifestyle. *Journal of Health Economics*. **23** (5):965-995.

Cote, J., Salmela, J., Baria, A. and Russell, S. (1993). Organising and interpreting unstructured Qualitative Data. *The Sport Psychologist*, **7**, 127-137.

Courneya, K. S., and McAuley, E. (1994). Are there different determinants of the frequency, intensity, and duration of physical activity? *Behavioral Medicine*, **20**(2), 84-90.

Cox, L. K., Burke, V., Gorely, J. T., Beilin, J. L., & Puddey, B. I. (2003). Controlled comparison of retention and adherence in home- vs. center-initiated exercise

interventions in women ages 40-65 years: The S.W.E.A.T. study (Sedentary Women Exercise Adherence Trial), *Preventive Medicine*, 36,17-29.

Crabtree, B., and Miller, W., (Eds.) (1999). *Doing Qualitative Research* (2nd edition). London: Sage,

Craft LL, and Landers DM. (1998). The effect of exercise on clinical depression and depression resulting from mental illness: A meta-analysis. *Journal of Sport and Exercise Psychology* 20, 339-357.

Craig, CL., Marshall, AL., Sjöström, M., Bauman, AE., Booth, ML., Ainsworth, BE., Pratt, M., Ekelund, U., Yngve, A., Sallis, JF., Oja, P. (2003). International physical activity questionnaire: 12-country reliability and validity. *Medicine and Science in Sports and Exercise*. 35(8):1381-95.

Crespo CJ, Smit E, Andersen RE, Carter-Pokras O, Ainsworth BE. (2000). Race/Ethnicity, Social Class and Their Relation to Physical Inactivity During Leisure Time: Results from the Third National Health and Nutrition Examination Survey, 1988–1994. *American Journal of Preventive Medicine*, 18(1):46 –53)

Crespo CJ. (2005). Physical activity in minority populations: overcoming a public health challenge. *Research Digest*. 2, 1-6.

Crespo CJ, Smit E, and Carter-Pokras O. Ainsworth BE. (2000). Race/ethnicity, social class and their relation to physical inactivity during leisure time: results from the Third National Health and Nutrition Examination Survey, 1988-1994. *American Journal of Preventive Medicine*. 18(1):46-53.

Crespo CJ, Smit E, Carter-Pokras O and Anderson RE. (2001). Acculturation and leisure-time physical inactivity in Mexican American adults: results from NHANES III, 1988-1994. *American Journal of Public Health*. 91(8):1254-7.

Creswell, J.W. (2009). *Research design: qualitative, quantitative, and mixed methods approaches*. Sage Publications, Inc.

Creswell, J.W., Plano Clark, V.L. (2007). *Mixed Methods Research*. Sage Publications, London.

Dale, G.A. (1996). Existential Phenomenology: Emphasizing the experience of the Athlete in Sport Psychology Research. *The Sport Psychologist*, 10, 307-321.

Dan, A.J., Wilbur, J., Hedricks, C., O'Connor, E., and Holm, K. (1990). Lifelong physical activity in midlife and older women. *Psychology of Women Quarterly*, 14, 531-542.

Darbes L, Crepaz N, Lyles C, Kennedy G, Rutherford G. (2008). The efficacy of behavioral interventions in reducing HIV risk behaviours and incident sexually transmitted diseases in heterosexual African Americans. *AIDS*; 19;22(10):1177-94.

Daskapan, A., Tuzun, E.H., and Eker, L. (2006). Perceived barriers to physical activity in university students, *Journal of Sports Science and Medicine*, **5**, 615-620

David Berrigan, Kevin Dodd, Richard P. Troiano, Bryce B. Reeve, and Rachel Ballard-Barbash (2006). Physical Activity and Acculturation Among Adult Hispanics in the United States. *Research Quarterly for Exercise and Sport*; Vol. 77, No. 2, pp. 147-157

Davison K, Cutting T, Birch L. (2003). Parents' activity-related parenting practices predict girls' physical activity. *Medicine and Science in Sports and Exercise* 2003, **35**(9):1589-1595.

De Meij, J.S., Chinapaw, M.J., Kremers, S.P., Van der Wal, M.F., Jurg, M.E., Van Mechelen, W. (2010). Promoting physical activity in children: The stepwise development of the primary school-based JUMP-in intervention applying the RE-AIM evaluation framework. *British Journal of Sports Medicine*; **44**(12):879-87.

Denzin NK, Lincoln YS, (2000) (eds.). *Handbook of Qualitative Research*. London: Sage Publications.

Department of Health. (DH) (1996). *Strategy Statement on Physical Activity*. Department of Health, London.

Department of Health. (DH) (2005). *Choosing Activity: A Physical Activity Action Plan*. Department of Health, London.

Department of Health. (DH) (2004). *At least five a week: evidence on the impact of physical activity and its relationship to health*. London.

Department of Health. (DH) (2004). *Walking and Cycling: An Action Plan*. Department of Transport. London.

Department of Health. (DH) (2001). *Exercise referral systems; a national quality assurance framework*. London.

Department of Health. (DH) (2007). *Tackling Health Inequalities: 2004-06 data and policy update for the 2010 National Target*. London

Department for Culture, Media and Sport. (2002). *London Strategy Unit. Game Plan: A strategy for delivering Government's sport and physical activity objectives*. *Department for Culture, Media and Sport*.

Department of Health (DoH) (2009). *World class commissioning - an introduction*. Publications policy and guidance. London.

Department of Health (2009). *Definitions of health literacy by Professor Ilona Kickbusch, Bad Gastein European Forum (2005). Public health*. Accessed 30/11/2009.

Department of Health (2009). Health inequalities – progress and next steps (June, 2008). Public health. Accessed 30/11/2009.

Department of Health (2010). Sedentary Behaviour and Obesity: Review of the Current Scientific Evidence. Department for children, schools and families.

Department of Health and Human Services (2010). Division for Heart Disease and Stroke Prevention, National Centre for Chronic Disease Prevention and Health Promotion

DiLorenzo TM, Stucky-Ropp RC, Vander Wal JS, and Gotham HJ. (1998) “Determinants of Exercise among Children. II: A Longitudinal Analysis.” *Preventive Medicine*; **27**: 470-77.

Dinesh, B., (2004). Migration, distress and cultural identity. *British Medical Bulletin*, **69** (1): 129-141.

Dowda M, Dishman RK, Pfeiffer KA, Pate RR. (2006). Family support for physical activity in girls from 8th to 12th grade in South Carolina. *Preventive Medicine*; **44**(2):153-9.

Duelberg S. (1992). Preventive health behavior among black and white women in urban and rural areas. *Social Science and Medicine*. **34**(2):191-8.

Dugdill, L. and Stratton, G. (2007) Evaluating Sport and Physical Activity Interventions. A Guide for Practitioners. University of Salford, Manchester.

Duncan, M, Mummery, K, (2005). Psychosocial and environmental factors associated with physical activity among city dwellers in regional Queensland. *Preventive Medicine*, **40**:363-72.

Duncan, M.J., Spence J.C., Mummery, W.K. (2005). Perceived environment and physical activity: a meta-analysis of selected environmental characteristics. *International Journal of Behavioural Nutrition and Physical Activity*, **2**:11.

Duncan, M., and Mummery, K. (2005). Psychosocial and environmental factors associated with physical activity among city dwellers in regional Queensland. *Preventive Medicine* **40**, 363–372.

Dunn, A.L., Andersen, R.E., and Jakicic, J.M. (1998). Lifestyle physical activity interventions. *American Journal of Preventive Medicine*, **15**(4), 398-412.

Dunn, A.L., Trivedi, M.H., O’Neal, H.A. (2001). Physical activity dose—response effects on outcomes of depression and anxiety. *Medicine Science in Sports and Exercise*, **33**(S6):S587-97.

Dunn JR. (2010). Health behaviour vs. the stress of low socio-economic status and health outcomes. *Journal of American Medicine Association*. **303**(12)1159 –200.

Durstine JL, Grandjean PW, Davis PG, Ferguson MA, Alderson NL, and DuBose KD. (2001). Blood lipid and lipoprotein adaptations to exercise: a quantitative analysis. *Sports Medicine* **31**, 1033-1062.

Dwyer JJ, Hansen B, Barrera M, Allison K, Ceolin-Celestini S, Koenig D, Young D, Good M, Rees T. (2003). Maximizing children's physical activity: an evaluability assessment to plan a community-based, multi-strategy approach in an ethno-racially and socio-economically diverse city. *Health Promotion International*, **18** (3):199-208

Dwyer, J.J., Allison, K. R., Goldenberg, E. R., Fein, A. J., Yoshida, K. K. and Boutilier, M. A. (2006). Adolescent Girls' Perceived Barriers to Participation in Physical Activity. *Adolescence*, **41**, 161, 75-89

Dzewaltowski, D.A., Estabrooks, P.A., Klesges, L.M., Bull, S., Glasgow, R.E. (2004). Behavior change intervention research in community settings: how generalisable are the results? *Health Promotion International*; **19**(2):235-45.

Eaton CB, Menard LM. (1998). A systematic review of physical activity promotion in primary care office settings. *British Journal of Sports Medicine*; **32**(1):11-16.

Eisenberg M, Olson R, Neumark-Sztainer D, Story M, Bearinger L. (2004). Correlations between family meals and psychosocial well-being among adolescents. *Archives of Paediatrics and Adolescent Medicine*. **158** (8):792-796.

Emmons, K. M. (2000). Health behaviors in a social context. In L. F. Berkman, & I. Kawachi (Eds.), *Social Epidemiology*. New York: Oxford University Press.

Esparza J, Fox C, Harper IT, Bennett PH, Schulz LO, Valencia ME, Ravussin E. (2000). Daily energy expenditure in Mexican and U. S. Pima Indians: low physical activity as a possible cause of obesity. *International Journal of Obesity and Related Metabolic Disorders*. **24**(1):55-9.

Estabrooks, P.A., Bradshaw, M., Dzewaltowski, D. A., Smith-Ray, R.L. (2008). Determining the Impact of Walk Kansas: Applying a Team-Building Approach to Community Physical Activity Promotion. *Annals of Behaviour Medicine*, **36**(1):1-12.

Estabrooks, P.A., Gyurcsik, N.C. (2003). Evaluating the public health impact of physical activity interventions. *Psychology of Sport and Exercise*, **4**: 41-55

Evenson KR, Sarmiento OL, Tawney KW, Macon ML. (2003). Personal, social, and environmental correlates of physical activity in North Carolina Latina Immigrants. *American Journal of Preventive Medicine*; **25**(3 Suppl 1):77-85.

Evenson, Kelly R. , Sarmiento, Olga L. , Macon, M. Lisa , Tawney, Kathy W. and Ammerman, Alice S.(2002) 'Environmental, Policy, and Cultural Factors Related to Physical Activity Among Latina Immigrants', *Women and Health*, **36**: 2, 43 — 56

Everson, KR, Sarmiento OL and Ayala GX. (2004). Acculturation and physical activity among North Carolina Latina immigrants. *Social Science and Medicine*. **59**(12):2509-22.

Eyler AA, Baker E, Cromer L, King AC, Brownson RC, Donatelle RJ. (1998). Physical activity and minority women: A qualitative study. *Health Education Behaviour*, **25**(5):640-52

Eyler AA, Matson-Koffman D, Rohm Young D, Wilcox S, Wilbur J, Thompson JL, Sanderson BK, Evenson KR. (2003). Quantitative study of correlates of physical activity in women from diverse racial/ethnic groups: Women's Cardiovascular Health Network Project—introduction and methodology. *American Journal of Preventive Medicine*, **25**(3 Suppl 1):5-14.

Eyler, A.A., Matson-Koffman, D., Young, D.R., Wilcox, S., Wilbur, J., Thompson, J.L., Sanderson, B., Evenson, K.R. (2003). Quantitative study of correlates of physical activity in women from diverse racial/ethnic groups: the Women's Cardiovascular Health Network Project—summary and conclusions. *American Journal of Preventive Medicine*. **25**(3), 93–103 Suppl 1.

Eyler AA, Wilcox S, Matson-Koffman D, Evenson, KR., Sanderson, B., Thompson, J., Wilbur, J., Rohm-Young, D. (2002). Correlates of physical activity among women from diverse racial/ethnic groups. *Journal of Women's Health Medicine*, **11**, 239–53.

Fahrenwald, N., Atwood, J., Noble-Walker, S., Johnson, D., Berg, K., (2004). A randomized pilot test of “Moms on the Move”: a physical activity intervention for WIC mothers. *Annals of Behaviour Medicine* **27**, 82–90.

Faulkner, G. and Sparkes, A.C. (1999). Exercise as Therapy for Schizophrenia: An Ethnographic Study. *Journal of Sport and Exercise Psychology*, **21**, 52-69.

Fern, E.F. (2001). Advanced focus group research. Sage publication inc.

Field, A. (2005). Discovering statistics using SPSS. (2 nd edition.). London: Sage.

Fishbein, M., Ajzen, I., (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. Addison-Wesley Pub. Co.

Flay, B.R. (1986). Efficacy and effectiveness trials (and other phases of research) in the development of health promotion programs. *Preventive Medicine*, **15**: 451–474.

Fleury, J., & Lee, S. (2006). The social ecological model and physical activity in African American women. *American Journal of Community Psychology*, **37**, 129–140.

Flickera, S., Wilsonb, M., Traversc, R., Bereketcd, T., McKaye, C., van der Meulenc, A., Gutaf, A., Cleverlyg, S., and Rourke, SB., (2009). Community-based research in AIDS-service organizations: what helps and what doesn't? *AIDS Care*. **21**(1), 94-102

Foddy, W. (1994). Constructing questions for interviews and questionnaires: Theory and practice in social research. Cambridge, UK: Cambridge University Press.

Fogelholm, M., Kukkonen-Harjula, K., 2000. Does physical activity prevent weight gain—A systematic review. *Obesity Review*, **1**, 95–111.

Ford ES, Ford MA, Will JC, Galuska DA and Ballew C. (2001). Achieving a healthy lifestyle among United States adults: a long way to go. *Ethnicity and Disease*. 11(2):224-31.

Foster, C., Hillsdon, M., and Thorogood, M. (2004). Environmental perceptions and reported walking in English adults. *Journal of Epidemiology and Community Health*, 58(11), 924–928.

Foster, C., Hillsdon, M., Thorogood, M. (2009) This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library*, Issue 1 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

Fountain, J., Patel, K., Buffin, J. (2007). Overcoming Barriers- migration, marginalisation and access to health and social services: Amsterdam.

Fox KR. (2000). Self-esteem, self-perceptions and exercise. *International Journal of Sport Psychology* 31, 228-240.

Frankland, J. and Bloor, M. (1999), Some issues arising in the systematic analysis of focus group material, In: Barbour, R. and Kitzinger, J. (eds) *Developing Focus Group Research: Politics, Theory & Practice*, London: Sage

Franz Zunft, H., Friebel, D., Seppelt, B., Widhalm, K., Remaut de Winter, A., Vaz de Almeida, M.D., Kearney, J.M., Gibney, M., Freedman DS, Knan LK, Serdula MK,

Frey, J.H. and Fontana, A. (1991), The Group Interview in Social Research. *The Social Science Journal*, Volume 28, Number 2, pages 175-187.

Frieden, T.R. (2010). A framework for public health action: the health impact pyramid. *American Journal of Public Health*; 100:590 –5.

Galuska DA and Dietz WH. (2002). Perceived benefits and barriers to physical activity in a nationally representative sample in the European Union. . *Public Health Nutrition*, 2(1a); 153–160.

Game Plan: A strategy for delivering the Governments sport and physical activity objectives, Department of Culture. Media and Sport Unit, 2002. Cabinet Office. London.

Gaskell, G. D., Wright, D. B. and O'Muircheartaigh, C. O. (1995) Context effects in the measurement of attitudes: a comparison of the consistency and framing explanations. *British Journal of Social Psychology*, 34, 383-393.

Geronimus, A. T. (2000). To mitigate 'resist' or undo: Addressing structural influences on the health of urban populations. *American Journal of Public Health*, 90(6), 867–872.

Giles-Corti B, and Donovan RJ. (2002). The relative influence of individual, social and physical environment determinants of physical activity. *Social Science and Medicine*, **54**(12):1793-1812.

Giles-Corti, B., and Donovan, R.J. (2003). Relative Influences of Individual, Social Environmental, and Physical Environmental Correlates of Walking. | *American Journal of Public Health*, **93**(9); 1583-1589.

Glasgow, R.E., Klesges, L.M., Dzewaltowski, D.A., Bull S.S., and Estabrooks, P. (2004). The future of health behaviour change research: What is needed to improve translation of research into health promotion practice? *Annals of Behavioural Medicine* **27** (1); 3-12,

Glasgow, R.E., Vogt, T.M., Boles, S.M. (1999). Evaluating the Public Health Impact of Health Promotion Interventions: The RE-AIM Framework. *American Journal of Public Health* **89**(9):1322-7.

Glasgow, R.E., Strycker, L.A., King, D.K., Toobert, D.J., Rahm, A.K., Jex, M., Nutting, P.A. (2006), Robustness of a computer-assisted diabetes self-management intervention across patient characteristics, healthcare settings, and intervention staff. *The American Journal of Managed Care*; **12**(3):137-45.

Glasgow et al., (1999) http://www.re-aim.org/2003/researchers/defined_res.html accessed 14.10.09

Glasgow RE, Eakin EG, Toobert DJ. (1996). How generalizable are the results of diabetes self-management research? The impact of participation and attrition. *The Diabetes Educator*. **22**(6):573-4, 581-2, 584-5.

Glasgow RE, Fisher EB, Anderson BJ, LaGreca A, Marrero D, Johnson SB, Rubin RR, Cox DJ. (1992). Behavioural science in diabetes: contributions and opportunities. *Diabetes Care*. **22**(5):832-43.

Godin, G. (1994). Theories of reasoned action and planned behavior: Usefulness for exercise promotion. *Medicine and Science in Sport and Exercise*. **26**, 1391 – 1394.

Gordon MM. (1964). Assimilation in American Life. *London: Oxford University Press*.

Gordon-Larson P, Harris KM, Ward DS and Popkin BM. (2003). Acculturation and overweight related behaviours among Hispanic immigrants to the US: the National Longitudinal Study of Adolescent Health. *Social Science and Medicine*. **57**(11):2023-34.

Grandes, G., Sanchez, A., Cortada, J.M., Balague, L., Calderon, C., Arrazola, A., Vergara, I., Millan, E. (2008) Is integration of healthy lifestyle promotion into primary care feasible? Discussion and consensus sessions between clinicians and researchers. Prescribe Vida Saludable group. *BMC Health Services Research*, **14**;8:213

Green, LW, Kreuter MW. (1991). Health promotion planning: an educational and environmental approach. Mountain View, California: Mayfield; 1991.

Green LW and Ottoson JM. (1999). Community and Population Health. *New York: McGraw-Hill*.

Green LW, Johnson JL. (1996). Dissemination and utilization of health promotion and disease prevention knowledge: theory, research and experience. *Canadian Journal of Public Health*; **87** Suppl 2:S11-7.

Greiner, K.A., Li, C., Kawachi, I., Hunt, D.C., and Ahluwalia, J.S. (2004). The relationships of social participation and community ratings to health and health behaviors in areas with high and low population density. *Social Science and Medicine*, **59**, 2303-2312.

Guinn, B., Vincent, V. (2008). Activity determinants among Mexican American women in a border setting. *American Journal of Health*. **39**(3), 148-154.

Gustafson S, Rhodes R. (2006). Parental correlates of physical activity in children and early adolescents. *Sports Medicine*, **36**(1):79-97.

Haffner SM, Morales PA, Hazuda HP, Stern MP. (1993). Level of control of hypertension in Mexican American and non-Hispanic whites. *Hypertension*. **21**(1):83-8.

Handy SL, Boarnet MG, Ewing R, Killingsworth RE. (2002). How the built environment affects physical activity: views from urban planning. *American Journal of Preventive Medicine*; **23**(2 Suppl):64-73.

Harding, S., Rosato, M., and Teyhan A. (2008). Trends for coronary heart disease and stroke mortality among migrants in England and Wales, 1979–2003: slow declines notable for some groups. *Heart*, **94**:463–470

Haughton McNeill, L., Kreuter, MW., Subramaniam, SV., (2006). Social Environment and Physical activity: A review of concepts and evidence. *Social Science and Medicine* **63**, 1011–1022

He, X. Z., and Baker. D.W. (2005). Differences in leisure-time, household, and work-related physical activity by race, ethnicity, and education. *Journal of General Internal Medicine*. **20**(3):259-66.

Health Education Authority and Sports Council (1992) Allied Dunbar National Fitness Survey. Sports Council, London.

Health Survey for England, (HSE) (2008). Physical activity and fitness. Summary of key findings.

Health Survey for England (2008). *Physical Activity and Fitness*; Vol (1). The NHS Information Centre, 2009. Available at: www.ic.nhs.uk/pubs/hse08physicalactivity

Healthy Weight: Healthy Liverpool. (2008). A Summary of the Healthy Weight Strategy for Liverpool 2008-2011. Liverpool Primary Care Trust.

Heaney, C. A., and Israel, B. A. (1997). Social networks and social support. In K. Glanz, F. M. Lewis, & B. K. Rimer, Health behavior and health education (2nd ed.) (pp. 179- 203). San Francisco, CA: Jossey-Bass.

Heesch, K. C., Brown, D. R., and Blanton, C. J. (2000). Perceived barriers to exercise and stage of exercise adoption in older women of different racial/ethnic groups. *Women and Health*, 30(4), 61-76.

Henderson, K.A., Ainsworth, B.E., (2003). A synthesis of perceptions about physical activity among older African American and American Indian women. *American Journal of Public Health*; 93(2):313-7.

Henry J. (1999). Kaiser Family Foundation (KFF), "A Synthesis of the Literature: *Racial and Ethnic Differences in Access to Medical Care*".

Hillman M, Adams J, Whitelegg J (1990). One false move.... a study of children's independent mobility London: Policy Studies Institute.

Hillsdon, M., Cavill, N., Nanchahal, K., Diamond, A. and White, I. (2001). National Level promotion of physical activity: Results from England's ACTIVE for LIFE campaign. *Journal of Epidemiology and Community Health*, 55(10):755-61

Hillsdon M, Foster C, Thorogood M. (2005). Interventions for promoting physical activity. Cochrane Database System Review, CD003180.

Hillsdon, M. and Thorogood, M.(1996). A systematic Review of physical activity promotion strategies. *British Journal of Sports Medicine*, 30(2):84-9

Hillsdon, M., Foster, C., Naidoo, B., Crombie, H. (2004). The effectiveness of public health interventions for increasing physical activity among adults: a review of reviews. London: Health Development Agency

Hooper JM, Veneziano L. (1995). Distinguishing starters from nonstarters in an employee physical activity incentive program. *Health Education Quarterly*. 22(1):49-60

Hosper, K., Nierkens, V., van Valkengoed, I. Stronks, K. (2008). Motivational factors mediating the association between acculturation and participation in sport among young Turkish and Moroccan women in the Netherlands. *Preventive Medicine*, 47(1):95-100.

House, J. (1981). Work, stress and social support. Reading, MA: Addison-Wesley Publishing Company.

House, J.S. Landis, K.R. and Umberson, D. (1988). Social relationships and health. *Science*, 241, 540-545.

Hovell M, Sallis J, Hofstetter R, Barrington E, Hackley M, et al. 1991. Identification of correlates of physical activity among Latino adults. *Journal of Community Health* 16(1):23–36

Hovell MF, Hofstetter CR, Sallis JF, Rauh MJD, Barrington E. Correlates of change in walking for exercise: an exploratory analysis. *Research Quarterly for Exercise and Sport*. 1992; 63:425–434.

Hubert HB, Snider J, and Winkelby MA. (2005). Health status, health behaviours, and acculturation factors associated with overweight and obesity in Latinos from a community and agricultural camp survey. *Preventive Medicine*. 40(6):642-51.

Humbert, L., Chad, K., Bruner, M., Spink, K., Muhajarine, N., Anderson, K., et al. (2008). Using naturalistic ecological approach to examine the factors influencing youth physical activity across grades 7 to 12. *Health Education and Behavior*, 35(2), 158-173.

Humpel N, Owen N, Leslie E. (2002). Environmental factors associated with adults' participation in physical activity: a review. *American Journal of Preventive Medicine* 2002, 22:188-99.

Humpel N, Owen N, Leslie E. (2002). Environmental factors associated with adults' participation in physical activity: a review. *American Journal of Preventive Medicine*; 22(3):188-99.

Hunt KJ, Williams R, and Resendez RG. (2002). All-cause cardiovascular mortality among diabetic participants in the San Antonio Heart Study: evidence against the "Hispanic paradox." *Diabetes Care*. 25(9):1557-63.

Huston SL, Evenson KR, Bors P, Gizlice Z. (2003). Neighbourhood environment, access to places for activity, and leisure-time physical activity in a diverse North Carolina population. *American Journal of Health Promotion*. 18:58–69.

Huston, SL., Evenson, KR., Bors, P., Gizlice, Z.,(2003). Neighborhood Environment, Access to Places for Activity, and Leisure-time Physical Activity in a Diverse North Carolina Population. *American Journal of Health Promotion* 18[1]:58–69.

Increasing BME (BRM) participation in Sport and Physical Activity by Black and Minority Ethnic Communities (2005) .Ploszajski Lynch Consulting Ltd.

Ingram, M., Ruiz, M., Mayorga, M.T., Rosales. C. (2009). The Animadora Project: Identifying Factors Related to the Promotion of Physical Activity Among Mexican Americans With Diabetes. *American Journal of Health Promotion*; 23(6):396-402.

Institute of Medicine. (2001). Crossing the quality chasm: A new health system for the 21st century. *Washington, DC: National Academies Press*.

It's Time. Future Forecasts for women's participation in sport and exercise. (2007) Sport England.

Iversen MDE, Fossel AH, Katz JN. (2003). Enhancing function in older adults with chronic low back pain: a pilot study of endurance training. *Archives of Physical Medicine and Rehabilitation*, **84**, 1324-1331.

Jahan, S. (2008). Poverty and infant mortality in the Eastern Mediterranean region: a meta-analysis. *Journal of Epidemiology of Community Health*. **62**:745-7

Jago R, Fox KR, Page AS, Brockman R, Thompson JL.(2010). Parent and child physical activity and sedentary time: Do active parents foster active children? *BMC Public Health*, **10**:194.

Jago R, Thompson JL, Page AS, Brockman R, Cartwright K, Fox KR. (2009). Licence to be active: parental concerns and 10-11-year-old children's ability to be independently physically active. *Journal of Public Health*. **31**(4):472-7

Jenny Kitzinger, (1995). Qualitative Research: Introducing focus groups. Education and debate. *British Medical Journal*; **311**:299-302

Johnson, R.B., Onquegbuzie, A.J. (2004). Mixed methods research: a paradigm whose time has come. *Educational Researcher*; **33** (7), 14–26.

Juarbe, T.C., Lipson, J.G., Turok, X. (2002). Physical activity beliefs, behaviours, and cardiovascular fitness of Mexican immigrant women. *Journul of Transcultural Nursing*, **14**, 108-116.

Jurkowski JM, Kurlanska C, Ramos BM.(2010). Latino Women's Spiritual Beliefs Related to Health. *American Journal of Health Promotion*, **25**(1):19-25.

Kahn, E., & Heath G. (2001). Increasing physical activity: A report on recommendations of the Task Force on Community Preventive Services. *Morbidity and Mortality. Weekly Report*, **50**(18), 1–16.

Kahn EB, Ramsey LT, Brownson RC, Heath GW, Howze EH, Powell KE, Stone EJ, Rajab MW, Corso P, and the Task Force on Community Preventive Services (2002). The effectiveness of interventions to increase physical activity. *American Journal Preventive Medicine*, **22**(4S), 73-107.

Karlsen, S. and Nazroo, J.Y. (2002). Relation Between Racial Discrimination, Social Class, and Health Among Ethnic Minority Groups, Vol 92, No. 4, *American Journal of Public Health* 624-631

Kawachi, I., & Berkman, L. F. (2000). Social cohesion, social capital, and health. In L. F. Berkman, & I. Kawachi (Eds.), *Social epidemiology*. New York: OUP.

Kawachi, I., Kennedy, B.P., Lochner, K., and Prothrow-Stith, D. (1997). Social capital, income inequality, and mortality. *American Journal of Public Health*, **8**(9) 1491-1498

Keleher, H. and Murphy, B. (2004) Understanding health: An introduction. In: *Understanding Health: A Determinants Approach* (Eds H. Keleher and B. Murphy),

pp. 3–8. Oxford University Press, New York.

Kelley, K., Abraham, C. (2004). 'RCT of a theory-based intervention promoting healthy eating and physical activity amongst out-patients older than 65 years'. *Social Science and Medicine*, **59**; 787–97.

Khan, R., and Antonucci, T. (1980). Convoys over the life course: Attachment, roles and social support. In P. Bates, & O. Brim (Eds.), *Life span development and behaviour* (pp. 253-286). New York: Academic Press.

Kahn E.B, Ramsey L.T, Brownson R.C, Heath G.W., Howze E.H., Powell K.E., Stone, E.J., Rajab, M.W. and Corso, P. (2002), The effectiveness of interventions to increase physical activity. A systematic review. *American Journal of Preventive Medicine*. **22**(4 Suppl):73–107.

Kevin C. Harris, M.D, Lisa K. Kuramoto, MSc, Michael Schulzer, MD PhD and Jennifer E. Retallack, M.D. (2009), Effect of school-based physical activity interventions on body mass index in children: a meta-analysis. *Canadian Medical Association Journal*. **180** (7).

Killien, M., Bigby, J.A., Champion, V., Fernandez-Repollet, E., Jackson, R.D., Kagawa-Singer, M., Kidd, K., Naughton, M.J., Prout, M. (2000). Involving minority and underrepresented women in clinical trials: the National Centres of Excellence in Women's Health. *Journal of Women's Health and Gender Based Medicine*; **9**:1061–70.

Kimm et al. (2002) compared the factors affecting physical activity among the white female population and the African American adolescents. Physical fitness and wellness; by Jerrold S. Greenberg, George B. Dintiman. - 2004 - *Health and Fitness* - 509 pages.

King, G. (1997). The “race” concept in smoking: A review of the research on African Americans. *Social Science and Medicine*; **45**(7), 1075–1087.

King AC, Stokols D, Talen E, Brassington GS, and Killingsworth R. (2002). Theoretical approaches to the promotion of physical activity: forging a transdisciplinary paradigm. *American Journal of Preventive Medicine*. **23**(2 Suppl):15–25.

King AC, Jeffery RW, Fridinger F, Dusenbury L, Provence S, Hedlund SA, Spangler K. (1995). Environmental and policy approaches to cardiovascular disease prevention through physical activity: issues and opportunities. *Health Education Quarterly*; **22**(4):499-511.

King AC, Blair SN, Bild DE, Dishman RK, Dubbert PM, Marcus BH, Oldridge NB, Paffenbarger RS Jr, Powell KE, Yeager KK. (1992). Determinants of physical activity and interventions in adults. *Medicine and Science in Sports and Exercise*. **24**(6 Suppl):S221-36.

King A, Castro C, Wilcox S, Eyler A, Sallis J, Brownson RC. (2000). Personal and environmental factors associated with physical inactivity among different racial/ethnic groups of U.S. middle- and older-aged women. *Health Psychology*; 19(4):354-64.

Kirby, AM., Lévesque, L., Wabano, V., and Robertson-Wilson, J., (2007). Perceived community environment and physical activity involvement in a northern-rural Aboriginal community. *International Journal of Behavioural Nutrition and Physical Activity*; 4:63

Kitzinger J (1995) Qualitative research: introducing focus groups. *British Medical Journal* 311, 299–302.

Kitzinger, J., & Farquhar, C. (1999). The analytical potential of “sensitive moments” in focus group discussions. In R. Barbour and J. Kitzinger (Eds.), *Developing focus group research: Politics, theory and practice* (pp. 156–172). London: Sage.

Kohl III HW. (2001). Physical activity and cardiovascular disease: evidence for a dose response. *Medicine and Science in Sports and Exercise*, 33, S472-S483; discussion S493-S494.

Kremers, S.P.J. and Brug, J. (2004) Precaution adoption stages of adolescent fruit intake and physical activity. Paper presented at the Third Conference of the *International Society for Behavioural Nutrition and Physical Activity*, Washington, 10–13 June.

Kriska, A. (2003). Can a physically active lifestyle prevent type 2 diabetes? *Exercise and Sport Sciences Reviews*. 31(3):132-7.

Krueger RA (1994) *Focus Groups: A Practical Guide for Applied Research*. Thousand Oaks, CA: Sage Publications.

Krueger RA & Casey MA (2000) *Focus Groups: A Practical Guide for Applied Research*, 3rd ed. Thousand Oaks, CA: Sage Publications.

Kumanyika, S.K. (2003). Cultural appropriateness: working our way toward a practicable framework. *Health Education Behaviour*; 30:147–50.

Kunitz, S. J. (2004). Social capital and health. *British Medical Bulletin*, 69, 61–73.

Kvale, S. and Brinkmann, S. (2009). *Interviews. Learning the craft of qualitative research interviewing*. SAGE Publications, Inc

Kvale, S. (1996). *Interviews: An Introduction to Qualitative Research Interviewing*. London. Sage.

LaFromboise T, Coleman HLK, Gerton J. (1993). Psychological impact of biculturalism: evidence and theory. *Psychology Bulletin*. 114:395–412.

Laitakari, J., Vuori, I., and Oja, P. (1996). Is long-term maintenance of health-related physical activity possible? An analysis of concepts and evidence. *Health Education Research*, 11, 463–477.

Lancaster G. & L. Massingham (1993) Marketing Management McGraw-Hill pp.292
Landrine H. and Klonoff E. (1996). African American Acculturation. *Thousand Oaks, CA: Sage Publications*.

Lanz PM, House JS, Lepkowski JM, and Williams DR. (1998). Socio-economic factors, health behaviours, and mortality. Results from a nationally representative prospective study of U.S. adults. *Journal of American Medical Association*. 279(21):1703-8.

Lara M, Gamboa C, Kahramanian MI, Morales LS, Bautista DE. (2005). Acculturation and Latino Health in the United States: a review of the literature and its sociopolitical context. *Annual Review of Public Health*. 26:367-97.

Larkey, L.K., Ogden, S.L., Tenorio, S., Ewell, T. (2008). Latino recruitment to cancer prevention/screening trials in the Southwest: setting a research agenda. *Applied Nursing Research*; 21:30–9.

Larson NI, Story M, Perry CL, Neumark-Sztainer D, Hannan PJ. (2007). Are Diet and Physical Activity Patterns Related to Cigarette Smoking in Adolescents? Findings From Project EAT. *Preventive chronic disease*, 4(3):A51.

Leea, S.D., Arozullahb, A.M., Choc, Y.I. (2004). Health literacy, social support, and health: a research agenda. *Social Science and Medicine* 58, 1309–1321

Lee IM, Skerrett PJ. (2001) Physical activity and all-cause mortality: What is the dose–response relation? [discussion S493-4]. *Medicine and Science in Sports and Exercise*. 33:S459-71.

Li, F., Fisher, J., Brownson, R. C., and Bosworth, M. (2005). Multilevel modelling of built environment characteristics related to neighbourhood walking activity in older adults. *Journal of Epidemiology and Community Health*, 59(7), 558–564.

Liberatos P, Link BG, and Kelsey JL. (1988). The measurement of social class in epidemiology. *Epidemiologic Reviews*. 10, 87-121.

Lindstrom M. (2003). Social capital and the miniaturization of community among daily and intermittent smokers: a population-based study. *Preventive Medicine*, 36(2):177— 84.

Liverpool Active City 2005:2010. (2005) Action Plan. Liverpool City Council.

Liverpool Census 2001. Liverpool City Council.

http://www.liverpool.gov.uk/The_City/Census_2001/index.asp. Accessed on September 2010.

Liverpool Lifestyles Survey (2007) Liverpool City Council.

Liverpool City Council (2006). www.liverpool.gov.uk. Last accessed on April 2010.

Liverpool city Council (2007). www.liverpool.gov.uk. Last accessed on March 2010.

Liverpool: Active City; 2005-2010 Action Plans.

<http://www.liverpool.gov.uk/Images/tcm21-31091.pdf> Last accessed on April 2008.

Liverpool Lifestyles Survey (2007) Liverpool City Council.

Liu, J., Probst JC., Harun, N., Bennett KJ., Myriam E. Torres, E. (2009). Acculturation, physical activity, and obesity among Hispanic adolescents. *Ethnicity and Health*, **14** (5):509 – 525

Lochner KA, Kawachi I, Brennan RT, Buka SL. (2003). Social capital and neighborhood mortality rates in Chicago. *Social Science and Medicine*, **56**(8):1797—805.

Lopez, I.A., Bryant, C.A. McDermott, R.J. (2008). Influences on physical activity participation among Latinas: an ecological perspective. *American Journal of Health Behavior*, **32**(6):627-39.

Loughlan C, Mutrie N (1995). 'Conducting an exercise consultation: Guidelines for health professionals'. *Journal of the Institute of Health Education*, **33**(3); 78–82.

Lubans DR, Foster C, Biddle SJ. (2008). A review of mediators of behavior in interventions to promote physical activity among children and adolescents. *Preventive Medicine*, **47**(5):463-70.

Lutsey, P. L., Diez Roux, A. V., Jacobs, D. R., Jr., Burke, G. L., Harman, J., Shea, S., et al. (2008). Associations of acculturation and socioeconomic status with subclinical cardiovascular disease in the multi-ethnic study of atherosclerosis. *American Journal of Public Health*, **98**, 1963- 1970.

Lytle-Trenkner LA, Achterberg CL. (1991). Use of focus groups in evaluating nutrition education materials. *Journal of American Diet Association*, 1577–1581

Macintyre, S., and Ellaway, A. (2003). Neighborhoods and health. In I. Kawachi, & L. Berkman (Eds.), *Neighborhoods and health*. New York: Oxford University Press.

Maibach, E., and Parrott, R. (1995). *Designing health messages: Approaches from communication theory and public health practice*. Sage Publications .Thousand Oaks, Calif.

Making healthy public policy; developing the science by learning the art: an ecological framework for policy studies.(1987). *Health Promotion International*, **2** (3): 263-274.

Malmusi D, Borrell C, and Benach J. (2010). Migration-related health inequalities: showing the complex interactions between gender, social class and place of origin. *Social Science and Medicine*. **71**(9):1610-9.

Marcus BH, Simkin LR. (1994). The Transtheoretical Model: Applications to exercise behaviour. *Medicine and Science for Sports and Exercise*, **26**:1400–4.

Matson-Koffman DM, Brownstein JN, Neiner JA, Greaney ML (2005). A site-specific literature review of policy and environmental interventions that promote physical activity and nutrition for cardiovascular health: what works? *American Journal of Health Promotion* **19**: 167-193.

Macera C, Croft J, Brown D, Ferguson J. (1995). Predictors of adopting LTPA among a biracial community cohort. *American Journal of Epidemiology*;142:629.

Manios Y, Panagiotakos DB, Pitsavos C, Polychronopoulos E, Stefanadis C. (2005). Implication of socio-economic status on the prevalence of overweight and obesity in Greek adults: the ATTICA study. *Health Policy*, **74**(2):224-32.

Marin, G., Sabogal, F., Marin, B., Otero-Sabogal, R., and Perez-Stable, E. (1987). Development of a short acculturation scale for Hispanics. *Hispanic Journal of Behavioural Science*, **9**, 183–205.

Marshall, C. and Rossman, G.B. (1995). *Designing Qualitative Research*. London:Sage.

Marshall, S.J. and Biddle, S. (2001). The transtheoretical model of behavior change: a meta-analysis of applications to physical activity and exercise. *Annals of behavioral medicine : a publication of the Society of Behavioural Medicine*,**23**(4):229-46.

Martin, S.L., Heath, G.W., (2006). A Six-Step Model for Evaluation of Community-based Physical Activity Programs. *Preventive chronic disease*,**3**(1):A24.

McAuley, E. and Blissmer, B. (2000). Self efficacy determinants and consequences of physical activity. *Exercise and sport sciences Review*; **28**, 85-8.

McCormack G, Giles-Corti B, Lange A, Smith T, Martin K, Pikora TJ, (2004). An update of recent evidence of the relationship between objective and self-report measures of the physical environment and physical activity behaviours. *Journal of Science and Medicine in Sport*, **7**(1 Suppl):81-92.

McCormack G, Giles-Corti B, Lange A, Smith T, Martin K, Pikora TJ. (2004). An update of recent evidence of the relationship between objective and self-report measures of the physical environment and physical activity behaviours. *Journal of Science and Medicine in Sport*, **7**(1Suppl):81-92.

McDonald, N.C., Deakin, E., Aalborg, A.E. (2010). Influence of the social environment on children's school travel. *Preventive Medicine*. **50** Suppl 1:S65-8.

McGraw, S. A., Seller, D., Stone, E., Resnicow, K. A., Kuester, S., Fridinger, F. (2000). Measuring implementation of school programs and policies to promote healthy eating and physical activity among youth. *Preventive Medicine*, **31**: S86–S97

McLeroy KR, Bibeau D, Steckler A and Glanz K. (1988). An ecological perspective on health promotion programs. *Health Education Quarterly*. **15**(4):351–377.

McNeill LH, Kreuter MW, Subramanian SV. (2006). Social environment and physical activity: a review of concepts and evidence. *Social Science and Medicine*, **63**(4):1011-22.

McTiernan, A., Ulrich, C., Slate, S., and Potter, J. (1998). Physical activity and cancer etiology: associations and mechanisms. *Cancer Causes Control*. **9**, 487-509

Merseyside Strategy for Sport & Physical Activity 2006-2010. Merseyside Sports Partnership. Core Team. Liverpool John Moores University.

Merseytravel's Environmental Sustainability Strategy 2006 – 2011
<http://www.merseytravel.gov.uk/pdf/EnvironmentalStrategy.pdf>

Meyer, BB. & Wenger, M, S. (1998). Athletes and adventure education. An empirical investigation. *International Journal of Sport Psychology*. **29**: 243-266.

Mirowsky J, Ross C. (2003). Social causes of psychological distress. Aldine de Gruyter, Hawthorne, NY.

Mokdad AH, Ford ES, Bowman BA, Dietz WH, Vinicor F, Bales VS, Marks JS. (2003). Prevalence of obesity, diabetes, and obesity-related health risk factors, *Journal of American Medical Association*. **289**(1):76-9.

Move (2004). North West on the Move. The North West Plan for Sport and Physical Activity 2004- 2008. Sport England 2004.

Mummery, W.K, Lauderb, W., Schofieldc, G., Caperchionea, C., (2008). Associations between physical inactivity and a measure of social capital in a sample of Queensland adults. *Journal of Science and Medicine in Sport*, **11**, 308—315

Mummery, W.K., Schofield, G., Caperchione, C. (2004) Physical activity dose-response effects on mental health status in older adults. *Australian and New Zealand Journal of Public Health*, **28**(2):180-4.

Mummery, W.K and Brown, W.J. (2009) Whole of community physical activity interventions: easier said than done, *Br. J. Sports Med*. **43**;39-43;

Mummery W.K., Schofield, G., Hinchliffe, A., Joyner, K. and Brown, W. (2006) *Journal of Science and Medicine in Sports*, Dissemination of a community-based physical activity project: the case of 10,000 steps, **9**(5):424-30

Mungia E. (1975). Assimilation, Colonialism and the Mexican American People. *Austin, TX: University of Texas Printing Division*.

Murphy, B., Cockburn, J., and Murphy, M. (1992). Focus groups in Health Research. *Health Promotion Journal of Australia*, **2**,37-40.

Must A, Spadano J, Coakley EH, Field AE, Colditz G, Dietz WH. (1999). The disease burden associated with overweight and obesity, *Journal of American Medical Association*. **282**(16):1523-9.

Myers, M. D. (1997). "Qualitative Research in Information Systems." *MISQ Quarterly* **21**(2): 241-242

Naidoo, J. and Wills, J. (2000) *Health Promotion: Foundations for Practice*. Harcourt Publishers, Edinburgh.

Nakamora RM. (1999). Health in America: A Multicultural Perspective. *Boston, MA: Allyn and Bacon*.

National statistics (2008). Office for national statistics. Simplification plan 2008.

Naylor PJ, Macdonald HM, Reed KE, and McKay HA. (2006). Action Schools! BC: a socio-ecological approach to modifying chronic disease risk factors in elementary school children. *Preventive Chronic Disease*. **3**(2):A60.

Nazroo J.Y. (2003) The structuring of ethnic inequalities in health: economic position, racial discrimination and racism, *American Journal of Public Health*, **93**(2): 277-284.

Nelson, M.C., Gordon-Larsen, P. (2006). Physical activity and sedentary behavior patterns are associated with selected adolescent health risk behaviors. *Pediatrics*. **117**(4):1281-90.

Neumark-Szainer D. (2005). Preventing the broad spectrum of weight-related problems: working with parents to help teens achieve a healthy weight and positive body image. *Journal of Nutrition Education and Behaviour*, **37** Suppl (2):S133-40

NICE public health intervention guidance – Four commonly used methods to increase physical activity. (2005).

http://www.nice.org.uk/nicemedia/pdf/PH002_physical_activity.pdf accessed 7 March 2010.

NICE public health intervention guidance.

<http://www.nice.org.uk/search/guidancesearchresults.jsp?keywords=intervention+effectiveness&newSearch=true&searchType=Guidance>

Nielsen-Bohlman, L., Panzer, A., Kindig, D.A. (2004). Health literacy: a prescription to end confusion. Washington, DC: editors. Institute of medicine. National . Academy Press.

Noar, SM., Chabot, M., Zimmerman, RS. (2008). Applying health behaviour theory to multiple behaviour change: Considerations and approaches. *Preventive Medicine*. **46**: 275-280.

Norman, GJ., Nutter, SK., Ryan, S., Sallis, JF., Calfas, KJ., and Patrick, K., (2006). Community Design and Access to Recreational Facilities as Correlates of Adolescent

Physical Activity and Body-Mass Index. *Journal of Physical Activity and Health*, 3(Suppl 1), S118-S128. Human Kinetics, Inc.

Nutbeam, D. (1998) Health promotion glossary. *Health Promotion International*, 13(4): 349–364.

Nutbeam, D. (1996). Health outcomes and health promotion: defining success in health promotion. *Health promotion journal of Australia*; 6, 58-60.

Obesity (Silver Spring). 2007 Sep;15(9):2171-80.

Oei, T. P. S. and Burrow, T. (2000). Alcohol expectancy and drinking refusal self-efficacy: A test of specificity theory. *Addictive Behaviors*; 25, 499–507.

Ogden CL, Carroll MD, Curtin LR, McDowell MA, Tabak CJ, et al. (2006). Prevalence of overweight and obesity in the United States, 1999–2004. *Journal of American Medical Association*. 295(13):1549-55.

Oguma, Y., Sesso, H.D., Paffenbarger, R.S., Jr., and Lee, I.M. (2002). Physical activity and all cause mortality in women: a review of the evidence. *British Journal of Sports Medicine*. 36(3):162-72.

Oka RK, King AC, Young DR. (1995). Sources of social support as predictors of exercise adherence in women and men ages 50 to 65 years. *Women's Health*; 1(2):161-75.

Oldroyd, J., Banerjee, M., Heald, A., Cruickshank, A., (2005). Diabetes and ethnic minorities. *Postgraduate Medical Journal*, 81:486–490

Olson, J. M., & Zanna, M. P. (1993). Attitudes and attitude change. *Annual Review of Psychology*, 44, 117-154.

Owen, N., Healy, G.N., Matthews, C.E., Dunstan, D.W. (2010). Too much sitting: the population health science of sedentary behavior. *Exercise and Sport Science Review*; 38(3):105-13.

Owen, N., Leslie, E., Salmon, J., and Fotheringham, M. J.(2000). Environmental Determinants of Physical Activity and Sedentary Behaviour. *Exercise and Sport Sciences Reviews*, 28 (4):153-8.

Paasche-Orlow MK, Wolf MS.(2010). Promoting health literacy research to reduce health disparities. *Journal of Health Community*; 15 (2):34-41.

Paavola M, Vartiainen E, Haukkala A. (2004). Smoking, alcohol use, and physical activity: a 13-year longitudinal study ranging from adolescence into adulthood. *Journal of Adolescence's Health*, 35(3):238-44.

Padilla AM. Bicultural development: a theoretical and empirical examination. In: Malgady RG, Rodriguez O, 1994. Theoretical and Conceptual Issues in Hispanic Mental Health. Malabar, Fla:Krieger; 19–51.

Padilla, A.M., Perez, W. (2003). Acculturation, Social Identity, and Social Cognition: A New Perspective. *Hispanic Journal of Behavioral Sciences*, **25** (1): 35-55

Pan, S.Y., Cameron, C., DesMeules, M., Morrison, H., Craig, C.L., Jiang, XH., (2009). Individual, social, environmental, and physical environmental correlates with physical activity among Canadians: a cross-sectional study. *BMC Public Health*, **9**:21

Park RE. Human migration and the marginal man. (1928). *American Journal of Sociology*; **33**:881–893.

Parker J, Benson M. (2004). Parent-adolescent relations and adolescent functioning: Self-esteem, substance abuse and delinquency. *Adolescence*, **39** (155):519-530.

Parkin, D.M. and Khlat, M. (1996). Studies of cancer in migrants: Rationale and methodology. *European Journal of Cancer*. **32** (5),761-771.

Paskett, E.D., Katz, M.L., Degraffinreid, C.R., Tatum, C.M. (2003). Participation in cancer trials: recruitment of underserved populations. *Clinical Advances in Hematology and Oncology*; **1**:607–13.

Patton, M.Q., 2002. Qualitative Research and Evaluation Methods. Sage. Publications, Thousand Oaks, CA.

Patton, M.Q.(1990). Qualitative evaluation and research methods. P: 169-186. SAGE Publications. Newbury Park London New Delhi.

Pearce N, Davey Smith G. (2003). Is social capital the key to inequalities in health? *American Journal of Public Health*, **93**(1):122—9.

Pearce, J., Witten, K., Hiscock R., and Blakely, T. (2007). Are socially disadvantaged neighbourhoods deprived of health-related community resources? *International Journal of Epidemiology*. **36**(2):348-55.

Pedersen, B.K., Saltin, B. (2006). Evidence for prescribing exercise as therapy in chronic disease, *Scandinavian Journal of Medicine and Science in Sports*, **16** (Suppl. 1): 3–63

Peterson, J.J., Lowe, J.B., Peterson, N.A., Nothwehr, F.K., Janz, K.F., Lobas, J.G. (2008). Paths to Leisure Physical Activity Among Adults With Intellectual Disabilities: Self-Efficacy and Social Support. *American Journal of Health promotion*; **23**(1):35-42.

Pérez-Escamilla R, Putnik P. (2007). The role of acculturation in nutrition, lifestyle, and incidence of type 2 diabetes among Latinos. *Journal of Nutrition*. **137**(4):860–70.

Pierson, J. (2002). Tackling social exclusion. London: Routledge

Pole, C. J. and R. Lampard (2002). Practical Social Investigation - Qualitative and Quantitative Methods in Social Research. Harlow, Essex, Pearson Education Limited.

Poortinga, W. (2006a). Social capital: An individual or collective resource for health? *Social Science and Medicine*, **62**(2), 292–302.

Popkin BM, Duffey K, Gordon-Larsen. (2005). PEnvironmental influences on food choice, physical activity and energy balance. *Physiology and Behaviour*. **15**;86(5):603-13

Population Estimate for UK, England and Wales, Scotland and Northern Ireland. *National Statistics Office*. 2008.

Porcellato, L., Dugdill, L., and Springett, J. (2002). Using focus groups to explore children's perceptions of smoking: reflections on practice. *Health Education*, **102**, 310-320.

Pratt, C.A., Lemon, S.C., Fernandez, I.D., Goetzel, R., Beresford, S.A., French, S.A., Stevens, V.J., Vogt, T.M., Webber, L.S. (2007). Design characteristics of worksite environmental interventions for obesity prevention. *Obesity (Silver Spring)*, **15**(9):2171-80.

President's Council on Physical Fitness and Sports (2005). Physical Activity in Minority Populations: Overcoming a Public Health Challenge, *Research Digest series* 6, no 2.

Prochaska, J. O., & Velicer, W. F. (1997). The transtheoretical model of health behaviour change. *American Journal of Health Promotion*, **12**, 38-48.

Proper, K.I., Cerin, E., Brown, W.J., and Owen, N. (2007). Sitting time and socio-economic differences in overweight and obesity. *International Journal of Obesity (London)* **31**(1):169-76.

Rabiee, F., (2004). Focus-group interview and data analysis. *Proceedings of the Nutrition Society*, **63**; 655–660

Rachlin, H. (1989). Judgment, decision, and choice: A cognitive/behavioral synthesis. New York: W. J. Freeman and Company.

Rachlin, H. (1989). Judgment, decision, and choice: A cognitive/behavioral synthesis. New York: W. J. Freeman and Company.

Raudsepp L. (2006). The relationship between socio-economic status, parental support and adolescent physical activity. *Acta Paediatrica*, **95**(1):93-8.

Reid, R.D., Mullen, K.A., Slovinec D'Angelo, M.E., Aitken, D.A., Papadakis, S., Haley, P.M., McLaughlin, C.A., Pipe, A.L. (2010). Smoking cessation for hospitalized smokers: An evaluation of the "Ottawa Model". *Nicotine and Tobacco Research*, **12**(1):11-8.

Report of the Surgeon General. (1996). Atlanta, GA: US Department of Health and Human Services, Centres for Disease Control and Prevention, *National Centre for Chronic Disease Prevention and Health Promotion*.

Review of Best Practice in Interventions to Promote Physical Activity in Developing Countries. (2005). Background Document prepared for the WHO Workshop on Physical Activity and Public Health :24–27 Beijing, People's Republic of China

Richards, EL., Riner, ME. And Sands, LP. (2008). A Social Ecological Approach of Community Efforts to Promote Physical Activity and Weight Management. *Journal of Community Health Nursing*. **25**(4):179-92.

Ritchie, J. and Lewis, J. (2003). Qualitative research practice, A guide for social science students and researchers. SAGE Publications, Ltd

Rhodesa, R.E., Blanchardb, C.M., Kai H. Bellowsa, K.H. (2008). Exploring cues to sedentary behaviour as processes of physical activity action control. *Psychology of Sport and Exercise*; **9**, 211–224.

Rhodes, R. E., and Blanchard, C. M. (2006). Do sedentary motives correlate with physical activity? Adding behavioural choice principles to the theory of planned behaviour. *Journal of Sport and Exercise Psychology*, **28**, S153.

Ronda, G., Van Assema, P., Brug, J. (2001). Stages of change, psychological factors and awareness of physical activity levels in the Netherlands. *Health Promotion International*, **16** (4): 305-314.

Ross C. Brownson, RC., Baker, EA., Housemann, RA., Brennan, LK., and. Bacak, SJ., (2001). Environmental and Policy Determinants of Physical Activity in the United States. *American Journal of Public Health*. **91**:1995–2003

Rowley, K.G. Daniel, M., Skinner, K. Skinner, M., White G.A., O'Dea K., (2000). Effectiveness of a community-directed 'healthy lifestyle' program in a remote Australian Aboriginal community Australian and New Zeland Journal of Public Health; (24)**2** 136-44)

Russell, H., Jones, G., Pemberton, A., and Karecha, J. (2009). (Kensington Regeneration, 2009). Kensington Regeneration 2000-2009 Evaluation. *European Institute for Urban Affairs*, Liverpool John Moores University.

Rutt, CD, and Coleman, KJ. (2005). Examining the relationships among built environment, physical activity, and body mass index in El Paso, TX. *Preventive Medicine*. **40**(6):831-41.

Ryan AS. (2000). Insulin resistance with aging: effects of diet and exercise. *Sports Medicine* **30**, 327-346.

Sabha A, Achterberg C. (1997). Review of self-efficacy and focus of control for nutrition- and health-related behavior. *Journal of American Diet Association*. **97**: 1122–32.

Saelens BE, Sallis JF, Frank LD. (2003). Environmental correlates of walking and cycling: findings from the transportation, urban design, and planning literatures. *Annals of Behaviour Medicine*; **25**(2):80-91

Sallis JF. (2000). Age-related decline in physical activity: a synthesis of human and animal studies. *Medicine and Science in Sports Exercise*. **32**(9):1598-600.

Sallis, J.F., Alcaraz, J.E., McKenzie, T.L., Hovell, M.F., Kolody, B., and Nader, P.R. (1992). Parental behaviour in relation to physical activity and fitness in 9-year-old children. *American Journal of Diseases of Children*, **146**, 1383-1388.

Sallis, J.F., Bauman, A., and Pratt, M. (1998). Environmental and policy interventions to promote physical activity. *American Journal of Preventive Medicine*, **15**, 379-397.

Sallis, J.F. and Owen, N. (1999). *Physical activity and Behavioral Medicine*. Sage Publication, Inc.

Sallis J, and Owen N. (1997). Ecological models. In: Glanz K, Lewis FM, Rimer BK, eds. *Health behaviour and health education. Theory, research, and practice*. 2nd ed. San Francisco CA: Jossey-Bass, 403-24.

Sallis J, Prochaska J, Taylor W. (2000). A review of correlates of physical activity of children and adolescents. *Medicine and Science in Sports and Exercise*, **32**(5):963-75.

Sallis, J.F., Johnson, M.F., Calfas, K.J., Caparosa, S., and Nichols, J.F. (1997). Assessing perceived physical environmental variables that may influence physical activity. *Research Quarterly for Exercise and Sport* **68**(4):345-51.

Sallis, J.F., Prochaska, J.J., Taylor, W.C., 2001. A review of correlates of physical activity of children and adolescents. *Medicine and Science in Sports and Exercise*. **32**(5):963-75.

Sallis JF, Prochaska JJ, Taylor WC. (2000). A review of correlates of physical activity of children and adolescents. *Medicine and Science in Sports and Exercise*; **32**(5):963-75.

Salmon, J., Owen, N., Crawford, D., Bauman, A., and Sallis, J. F. (2003). Physical activity and sedentary behavior: A population-based study of barriers, enjoyment, and preference. *Health Psychology*; **22**, 178-188.

Sampson, R. J., Raudenbush, S. W., & Earls, F. (1997). Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science*, **277**(5328), 918-924.

Sanderson, B.K., Foushee, H.R., Bittner, V., Cornell, C.E., Stalker, V., Shelton, S., Pulley, L. (2003). Personal, social, and physical environmental correlates of physical activity in rural African-American women in Alabama. *American Journal of Preventive Medicine*; **25**(3 Suppl 1):30-7.

Sargrestano, L., Paikoff, R., Holmbeck, G., Fendrich, M. (2003). A Longitudinal Examination of Familial Risk Factors for Depression Among Inner-City African American Adolescents. *Journal of Family Psychology*, **17**(1):108-20.

Seefeldt, V., Malina, R.M., Clark, M.A. (2002). Factors affecting levels of physical activity in adults. *Sports Medicine*, **32**(3): 143-168

Serrano, V.A., Woodruff, S.I., 2003. Smoking-related attitudes and their sociodemographic correlates among Mexican-origin adult smokers. *Journal of Community Health*, **28** (3), 209–220.

Scheerder, J., Vanreusel, B., Taks, M., and Renson, R. (2005). Social stratification patterns in adolescents' active sports participation behaviour: A time trend analysis 1969-1999. *European Physical Education Review*, **11**(5), 5-27.

Schöppe, S., Bauman, A., Bull, F. (2004). International Review of National Physical Activity Policy. A literature review. *NSW Centre for Physical Activity and Health*

Selected cultural factors associated with physical activity among Latino women (2010). Jurkowski, J.M., Mosquera, M., and Ramos, B. *Women's Health Issues* **20** 219–226

Sevick, M.A., Dunn, A.L., Morrow, M.S., Marcus, B.H., Chen, G.J., Blair, S.N. (2000) Cost-Effectiveness of Lifestyle and Structured Exercise Interventions in Sedentary Adults Results of Project ACTIVE. *American Journal of Preventive Medicine*; **19**(1):1–8.

Silk, K.J., Horodyski, M.A., Rienzo, M., Mercer, L., Olson, B., Aldrich, R. (2010). Strategies to increase health literacy in the infant feeding series (TIFS): a six-lesson curriculum for low-income mothers. *Health Promotion Practice*. **11**(2):226-34.

Shea S, Stein AD, Basch CE, et al. Independent associations of educational attainment and ethnicity with behavioral risk factors for cardiovascular disease. *American Journal of Epidemiology* 1991; **134**:567– 82.

Sherwood, NE and Jeffery, RW. (2000). The behavioral determinants of exercise: Implications for Physical Activity Interventions. *Annual Review of Nutrition*, **20**, 21-44.

Shilts MK, Horowitz M, Townsend MS. (2004). Goal setting as a strategy for dietary and physical activity behavior change: a review of the literature. *American Journal of Health Promotion*, **19**(2):81–93.

Shuval, K., Weissbluth, E., Brezis, M., Araida, A., Faridi, Z., Ali, A., Katz, DL., (2008). The Role of Culture, Environment, and Religion in the Promotion of Physical activity Among Arab Israelis. *Preventive Chronic Disease*; **5**(3).

Silverman, D., (2000). Doing qualitative research: a practical handbook. Sage

Silverman, D., (2001). Interpreting Qualitative Data: methods for analysing talk, text and interaction. London: sage.

Silverman, D. (2005) *Doing Qualitative Research: A Practical Handbook* London: Sage.

Silverman, D., and Marvasti, A., (2008). *Doing Qualitative Research: A Comprehensive Guide*. sage Publication Inc.

Smedley, B.D. (2000). *Promoting health, Intervention strategies from social and behavioral research*. National Academic Press. 2101. Constitution Avenue, N.W. Washington, BC 20418.

Slattery, M. L., Edwards, S. C., Herrick, J., Murtaugh, M., Baumgartner, K., Guiliano, A.(2006). Physical activity patterns and obesity in Hispanic and non-Hispanic white women. *Medicine and Science in Sports and Exercise*, **38**(1), 33–41.

Smith PK, Cowie H, Blades M. (2003). *Understanding children's development*. Fourth edition. Oxford: Blackwell.

Speck, B., and Harrell, J. (2003). Maintaining regular physical activity in women: Evidence to date. *The Journal of Cardiovascular Nursing*, **18**(4):282-91

Spencer, L., Adams, T. B.,Malone, S., Roy, L., & Yost, E. (2006). Applying the transtheoretical model to exercise: A systematic and comprehensive review of the literature. *Health Promotion Practice*, **7**, 428_443.

Springer A, Kelder S, Hoelscher D. (2006). Social support, physical activity and sedentary behaviour among 6th grade girls: a cross-sectional study. *International Journal of Behavioural Nutrition and Physical Activity*, **6**:3:8.

Stahl, T., Rutten, A., Nutbeam, D., Bauman, A., Kannas, L., Abel, T., Lüschen, G., Rodriquez, DJ., Vinck, J., van der Zee, J. (2001). The importance of the social environment for physically active lifestyle—results from an international study. *Social Science and Medicine*, **52**(1), 1–10.

Stamatakis E, Hirani V, Rennie K. (2009). Moderate-to-vigorous physical activity and sedentary behaviours in relation to body mass index-defined and waist circumference-defined obesity. *British Journal of Nutrition*; **101**:765-773.

Statistics on obesity, physical activity and diet: England, January 2008. *The Information Centre (NHS)* Last accessed 14 April 2008.

Statistics on obesity, physical activity and diet: England, 2010. The Health and Social Care Information Centre. Lifestyles.

Statistics http://www.ic.nhs.uk/webfiles/publications/opad10/Statistics_on_Obesity_Physical_Activity_and_Diet_England_2010.pdf

Stern MP, Gonzalez C, Mitchell BD, Villalpando E, Haffner SM, Hazuda HP. (1992). Genetic and environmental determinants of type II diabetes in Mexico City and San Antonio. *Diabetes*. **41**(4):484-92.

Sternfeld, B., Cauley, J., Harlow, S., Liu, G., and Lee M., (2000). Assessment of Physical Activity with a Single Global Question in a Large, Multiethnic Sample of Midlife Women *American Journal of Epidemiology* Vol. 152, No. 7

Sternfeld B, Ainsworth B, Quesenberry C. (1999). Physical activity patterns in a diverse population of women. *Preventive Medicine*; **28**(3):313-23.

Stewart, A.L., Verboncoeur, C.J., McLellan, B.Y., Gillis, D.E., Rush, S., Mills, K.M. (2001). Physical activity outcomes of CHAMPS II: a physical activity promotion program for older adults. *Journals of Gerontology Series A-Biological Sciences and Medical Sciences* **56** (8):M465–70

Stokols D. (1992). Establishing and maintaining healthy environments. Toward a social ecology of health promotion. *The American Psychologist*. **47**(1):6-22.

Stokols D. (1996). Bridging the theoretical and applied facets of environmental psychology. *The American Psychologist*; **51**(11):1188–1189.

Stokols D. (1996). Translating social ecological theory into guidelines for community health promotion. *American Journal of Health Promotion*. **10**(4):282-98.

Strain LA, Grabusic CC, Searle MS, and Dunn NJ. (2002). Continuing and ceasing leisure activities in later life: a longitudinal study. *Gerontologist*. **42**(2):217-23.

Strauss R, Rodzilsky D, Burack G, Colin M. (2001). Psychosocial correlates of physical activity in healthy children. *Archive of Paediatric and Adolescence Medicine*, **155**(8):897-902.

Stringhini, S., Sabia, S., Shipley, M., Brunner, E., Nabi, H., Kivimaki, M., Singh-Manoux, A. (2010). Association of socio-economic position with health behaviours and mortality. *Journal of American Medicine Association*, **303**(12):1159–66.

Stroebe, M.S. and Stroebe, W. (1995). *Social Psychology And Health*. Buckingham, Open University.

Sudore, R.L., Mehta, K.M., Simonsick, E.M., Harris, T.B., Newman, A.B., Satterfield, S., Rosano, C., Rooks, R.N., Rubin, S.M., Ayonayon, H.N., Yaffe, K. (2006). Limited literacy in older people and disparities in health and healthcare access. *Journal of American Geriatric Society*; **54**(5):770-6.

Suminiski RR, Poston WS, Petosa RL, Stevens E, Katzenmoyer LM, (2005). Features of the neighbourhood environment and walking by US adults. *American Journal of Preventive Medicine*, **28**:149-55.

Sundquist J and Winkelby MA. (1999). Cardiovascular risk factors in Mexican American adults: a transcultural analysis of NHANES III, 1988-1994. *American Journal of Public Health*. **89**(5):723-30.

Tashakkori, A., & Teddlie, C. (2003). The past and future of mixed methods research: From data triangulation to mixed model designs. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 671-701). Thousand Oaks, CA: Sage.

Tavares LS, Plotnikoff RC, Loucaides C. (2009). Social-cognitive theories for predicting physical activity behaviours of employed women with and without young children. *Psychology, Health and Medicine*, 14(2):129-142.

Taylor, AH. (2000). Physical activity, anxiety, and stress: A review. In: Biddle SJH, Fox KR, Boutcher SH, editors. *Physical activity and psychological well-being*. London: Routledge, 10-45.

Taylor, W.C., Baranowski, T., and Young, D.R. (1998). Physical activity interventions in low-income, ethnic minority, and populations with disability. *American Journal of Preventive Medicine*. 15(4):334-43.

Telama R, Yang X. (2000). Decline of physical activity from youth to young adulthood in Finland. *Medicine and Science in Sports and Exercise*.32(9):1617-22.

Titze, S., Martin B.W., Seiler, R., Stronegger, W., Marti B. (2001). Effects of a lifestyle physical activity intervention on stages of change and energy expenditure in sedentary employees. *Psychology of Sport and Exercise*; 2; 103–116

The Commissioning Framework for Health and Well being (2007). Department of Health.

The Health of Minority Ethnic Groups Volume Joint health survey unit 2004. Volume 1. *Health Survey for England*. Department of Health.

The Marmot Report. (2010). Fair society, healthy lives. The Marmot Review, executive summary. Strategic review of health inequalities in England, post- 2010.

This article is part of the reader: 'Overcoming Barriers – migration, Pole, C and Lampard, R., (2002). Practical social investigation. Qualitative and quantitative methods in social research. Pearson Education Limited.

Thomas, J. and Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BioMed Central Medical Research Methodology*;10;8:45.

Thompson JL, Jago R, Brockman R, Cartwright K, Page AS, Fox KR. (2009). Physically active families - de-bunking the myth? A qualitative study of family participation in physical activity. *Child Care Health Development*, 36(2):265-274.

Troped PJ, Saunders RP. (1998). Gender differences in social influence on physical activity at different stages of exercise adoption. *American Journal of Health Promotion* 13(2):112–15

Trost S, Sallis J, Pate R, Freedson P, Taylor W, Dowda M. (2003). Evaluating a model of parental influence on youth physical activity. *American Journal of Preventive Medicine* 2003, 25(4):277-282.

Trost S, Sallis J, Pate R, Freedson P, Taylor W, Dowda M. (2003). Evaluating a model of parental influence on youth physical activity. *American Journal of Preventive Medicine*, 25(4):277-82.

Trost S, Pate R, Ward D, Saunders R, Riner W. (1999). Correlates of objectively measured physical activity in preadolescent youth. *American Journal of Preventive Medicine*, 17(2):120-6.

US Department of Health and Human Services. (2000). *Healthy People 2010*. 2nd edition. With understanding and Improving Health and Objectives for Improving Health. 2nd vol. Washington, DC: US Government Printing Office.

U.S. Department of Health and Human Services. (1996). Physical activity and health: A report of the Surgeon General. Atlanta: United States Department Health and Human Services, Center for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion.

U.S. Department of Health and Human Services (2000). *Healthy People 2010: understanding and improving health*. 2nd ed. Washington (DC): U.S. Government Printing Office.

US Department of Health and Human Services, (2004). Effectiveness of Behavioural Interventions to Modify Physical Activity Behaviours in General Populations and Cancer Patients and Survivors.

U.S. Department of Health and Human Services. Physical Activity and Health: A Report to the Surgeon General. Atlanta, GA: National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention; 1996.

U.S. Department of Health and Human Services. *Healthy People 2010*. Washington, DC: Public Health Service; 2000.

US Department of Health and Human Services. *Healthy people 2010* (conference edition in 2 volumes) Washington, DC: US Department of Health and Human Services, 2000.

US Department of Health and Human Services. *Physical Activity Evaluation Handbook*. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention; 2002.

Uretsky, M. C., and Mathiesen, S. G. (2007). The Effects of years lived in the United States on the general health status of California's foreign-born populations. *Journal of Immigrant and Minority Health*, (9), 125- 136.

Van Den Burg, M.H., Schoones, J.W. and Vliet Vlieland, T.P. (2007). Internet-based physical activity interventions: a systematic review of the literature. *Journal of Medical Internet Research* 30;9(3):e26.

Varo, J.J., Martinez-Gonzalez, M.A., De Irala-Estevez, J., Kearney, J., Gibney, M., and Martinez, J.A. (2003). Distribution and determinants of sedentary lifestyles in the European Union. *International Journal of Epidemiology*. **32**, 138-146.

Veenstra G. (2000). Social capital, SES and health: an individual level analysis. *Social Science and Medicine*; **50**(5):619—29.

Vega WA and Scribney WM. (2003). Co-occurring alcohol, drug and other psychiatric disorders among Mexican-origin people in the United States. *American Journal of Public Health*. **93**(7):1057-64.

Verbrugge LM, Gruber-Baldini AL and Fozard JL. (1996). Age differences and age changes in activities: Baltimore Longitudinal Study on Aging. *The Journals of Gerontology*. **51**(1):S30-41.

Voorhees CC, Rohm Young D. (2003). Personal, social, and physical environmental correlates of physical activity levels in urban Latinas. *American Journal of Preventive Medicine*; **25**(suppl 1):61– 8.

Vuori IM. (2001). Dose-response of physical activity and low back pain, osteoarthritis, and osteoporosis. *Medicine and Science in Sports and Exercise*, **33**: S551-S586.

Wannamethee, S.G. and Shaper, A.G. (2002). Physical activity and cardiovascular disease. *Seminars in Vascular Medicine* **2**(3):257-66.

Webb, J.R. (1992) Understanding & Designing Marketing Research Academic Press pp.76

Weinreich, N.K. (1996). Integrating Quantitative and Qualitative Methods in Social Marketing Research. *Health Education Quarterly*, **19**:1-8.

Weitzman E, Kawachi I. (2000). Giving means receiving: the protective effect of social capital on binge drinking on college campuses. *American Journal of Public Health*, **90**(12):1936—9.

West SK, Klein R, and Rodriguez J. (2001). Diabetes and diabetic retinopathy in a Mexican American population: Proyecto VER. *Diabetes Care*. **24**(7):1204-9.

Whelton, P.K., He, J., Appel, L.J., Cutler, J.A., Havas, S., Kotchen, T.A., Roccella, E.J., Stout, R., Vallbona, C., Winston, M.C., and Karimbakas, J. (2002). Primary prevention of hypertension: clinical and public health advisory from The National High Blood Pressure Education Program. *Journal of American Medical Association* **288**(15):1882-8.

Wicker, A.W.,(1979). Ecological psychology: Some recent and prospective developments. *American Psychologist*, **34**(9); 755-765

Wiest J and Lyle RM. (1997). Physical activity and exercise: a first step to health promotion and disease prevention in women of all ages. *Women's Health Issues*. **7**(1):10-6.

Wilbur, J., Chandler, P.J., Dancy, B., and Lee, H. (2003a). Correlates of physical activity in urban Midwestern African-American women. *American Journal of Preventive Medicine*. **25**(3 Suppl 1):45-52.

Wilbur, J., Chandler, P.J., Dancy, B., and Lee, H. (2003b). Correlates of physical activity in urban Midwestern Latinas. *American Journal of Preventive Medicine*. **25**(3 Suppl 1):69-76.

Wilbur J, Miller A, Montgomery A, Chandler P. (1998). Physical activity patterns of midlife women. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*; **27**:383.

Wilcox, S., Castro, C., King, A., Housemann, R. and Brownson, R. (2000). Determinants of leisure time physical activity in rural compared with urban older and ethnically diverse women in the United States. *Journal of Epidemiology and Community Health*, **54**, 667–672.

Wilcox, S., Richter, D., Henderson, K. A., Greaney, M., and Ainsworth, B. (2002). Perceptions of physical activity and personal barriers and enablers in African-American women. *Ethnicity and Disease*, **12**, 353-362.

Will JC, Farris RP, Sanders CG, Stockmyer CK, Finkelstein EA. (2004). Health promotion interventions for disadvantaged women: overview of the WISEWOMAN projects. *Journal of Women's Health (Larchmt)*. **13**: 484–502.

Williams, J., Wake, M., Hesketh, K., Maher, E., Waters, E., (2005). .Health-Related Quality of Life of Overweight and Obese Children. *Journal of the American Medical Association*, **293**(1):70-76

Wilson DB, Smith BN, Speizer IS, Bean MK, Mitchell KS, Uguy LS, Fries EA. (2005). Differences in food intake and exercise by smoking status in adolescents. *Preventive Medicine*; **40**(6):872-9.

Winkleby MA, Jatulis SE, Frank E, Fortmann F. (1992). Socio-economic status and health: how education, income, and occupation contribute to risk factors for cardiovascular disease. *American Journal of Public Health*, **82** (6):816-20.

Winters, M., Patel, K., (2003). Community Engagement, Report 1: the Process. The Department of Health's Black and Minority Ethnic, Drug Misuse Needs Assessment Project. University Of Central Lancashire, Centre for Ethnicity & Health. ISBN 1 901922 42 1. *Published by the Centre for Ethnicity and Health and supported by the Department of Health.*

World Health Organisation (WHO), (2003). Health and Development Through Physical Activity and Sport. Noncommunicable Diseases and Mental Health Noncommunicable Disease Prevention and Health Promotion.

World Health Organisation (WHO), (1986) Ottawa Charter for Health Promotion. World Health Organisation, Geneva. Available at <http://www.opha.on.ca/resources/charter.pdf> (accessed 20.09.2010)

World Health Organisation (WHO), (2005). Regional Framework for Health Promotion- 2002-2005. Regional Office for the Western Pacific.

World Health Organisation (WHO), (2007). Concepts and principles for tackling social inequities in health: Levelling up Part 1. http://www.enothe.eu/cop/docs/concepts_and_principles.pdf

World Health Organisation, (WHO) (2011). Global Strategy on Diet, Physical Activity and Health Physical Inactivity: A Global Public Health Problem

World Health Organisation (WHO), (1998). European Working Group on Health Promotion Evaluation. *Health Promotion Evaluation: Recommendations to Policymakers*. Copenhagen: World Health Organization.

World Health Organisation (WHO) (2004). Global Strategy on Diet, Physical Activity and Health. *World Health Organisation*.
http://www.who.int/dietphysicalactivity/strategy/eb11344/strategy_english_web

Yancey, A.K., Jordan, A., Bradford, J., Voas, J., Eller, T.J, Buzzard, M., Welch, M., McCarthy, W.J. (2003) Engaging high-risk populations in community-level fitness promotion: ROCK! Richmond. *Health Promotion Practice*: 4: 180–188.

Yancey, A.K., Kumanyika, S.K., Ponce, N.A., McCarthy W.J., Fielding, J.E., Leslie, J.P., Akbar, J. (2004). Population-based interventions engaging communities of colour in healthy eating and active living: a review. *Preventive Chronic Diseases*; A09.

Young D, Miller K, Wilder L, Yanek L, Becker D. (1998). Physical activity patterns of urban African Americans. *Journal of Community Health*; 23:99.

Young, DR., and Voorhees, CC. (2003). Personal, Social, and Environmental Correlates of Physical Activity in Urban African-American Women. *American Journal of Preventive Medicine*. 25(3Si) 0749-3797/03/00163-6

Zaman, J., Brunner, E., (2008). Social inequalities and cardiovascular disease in South Asians. *Heart*, Vol 94 No 4

Zaman, MJS. and Mangtani, P. (2007) Changing disease patterns in South Asians in the UK. *Journal of the Royal Society of Medicine*, 100 (6), 254 - 255. .

Zunft, HF., Friebe1, D., Seppelt, B., Widhalm, K., Remaut de Winter, A., Vaz de Almeida, MD., John M Kearney, JM., and Gibney, M. (1999). Perceived benefits and barriers to physical activity in a nationally representative sample in the European Union. *Public Health Nutrition*: 2(1a), 153–160 153.

Appendices

Appendix 1

Questionnaire Kensington Women Get Lively!

Thank you for agreeing to participate in this study.

This project aims to explore ways to increase participation of local women in Kensington in sport and/or physical activity.

Please feel free to miss out any questions that you would prefer not to answer.

First Name **Surname**

Postcode

Age range (please tick as appropriate)

Under 18 years ☐ 18-25 years ☐ 25-35 years ☐

36-45 years ☐ 46-60 years ☐ over 60 years ☐

1. Do you have children? (please circle the answer) **Yes/No**

If yes, what ages are your children?

2. Ethnic Background (please tick as appropriate)

WHITE		MIXED		ASIAN or ASIAN BRITISH	
British		White and Black Caribbean		Indian	
Irish		White and Black African		Pakistani	
Other European		White and Asian		Bangladeshi	
Other White		Other Mixed background		Other Asian background	

BLACK or BLACK BRITISH		OTHER	
Caribbean		Chinese or British Chinese (Please specify)	
African		Arabic or British Arabic (Please specify)	
Other Black background (Please specify)		Other ethnic group (Please specify)	

Were you born in Liverpool?

Yes/ No

3. What languages do you speak?

.....

4. Do you consider yourself to have a disability? Yes/No

5. Would you describe yourself as: (Please circle all that apply)
Employed (full-time) Employed (part-time) Self-employed
Unemployed Retired Volunteering
Carer Student

Other (Please specify).....

6. How long have you lived at your current address?
Less than 6 months? ☐ 6 months – 2 years ☐ 2-5 years ☐
5-10 years ☐ 10-15 years ☐ 15-20 years ☐
More than 20 years ☐

7. Do you participate in any physical activities? (e.g. walking, cycling, keep fit classes, dancing, swimming, gardening) Yes/No

(If No, please go to Question 14.)

If yes:-

8. What physical activities do you do?
.....
.....

9. How often do you participate in any physical activities?
.....

10. Do you participate with (please circle all that apply):
a) friends b) family c) colleagues d) alone

11. Are there any reasons why you do not participate more often? If yes, please specify.
.....
.....

12. If you travel to do physical activity, how long is your journey?
.....

13. What form of transport do you use to travel to physical activity?
.....

Please go to Question 15

14. If you do not participate in any physical activities what are your reasons?

.....

.....

.....

15. What would encourage you to participate/ increase your participation in physical activity?

.....

.....

.....

16. Are there any physical activities that you would like to see offered in the area?

.....

.....

.....

17. What do you feel about walking in the area?

.....

.....

.....

18. How physically active do you think that people are in your area?
(Please circle your answer)

Very active Fairly active Not very active

19. Do you know of any local places where you could participate in physical activities?

Yes/No

If yes, please list as many of these as possible:

.....

.....

.....

20. What do you think of the public facilities in your area? (E.g. parks, leisure centres).....

.....

.....

**21. Are you involved in any community groups or activities?
Yes/No**

If yes, please specify.

.....

.....

22. Do you have any suggestions about what might encourage women in the area to make more use of sport and leisure activities?

.....

.....

.....

23. Is there anything else you wish to say about physical activity?

.....

.....

.....

Thank you very much for your time.

And finally...would you be willing to be contacted again for the purposes of this research or for any follow-up that may be appropriate?

Yes/No

If yes, please give your details below:

Address:.....

.....

Telephone:.....

Mobile:.....

E-mail address:.....

Appendix 2

LIVERPOOL JOHN MOORES UNIVERSITY
PARTICIPANT'S CONSENT FORM



Kensington Women Get Lively 26.10.07

Researcher: Ms Masoumeh Minou
Email: m.minou@ljmu.ac.uk

Queries contact Masoumeh on: 0151-2314436

As part of the Kensington Women Get Lively project, we will be conducting a survey questionnaire to obtain more information about your physical activity levels, your opinions and perceptions of physical activity and your neighbourhood, and encouraging or discouraging factors in participation in physical activity.

There are no right or wrong answers and we as researchers are simply interested in knowing what you think about physical activity and its provision in your area and how best to increase physical activity participation.

The survey will take about 30-45 minutes to complete depending on your answers. If English is not your first language the questions will be translated for you by a member of your local community and your responses will be translated into English. Your direct quotes will be used in reports and/or publications anonymously.

Your identity and personal details will remain confidential and a code system will be in place for the use of direct quotes as it is shown in the following example:

"I really enjoy physical activity and I think it's an opportunity to meet new friends" (P2FS)
As clear in the example the identity of the person who stated this quote is anonymised and it will not be revealed.

Please tick the box if you would like to take part in the survey. You do have the right to withdraw at any time without giving any reason.

I am willing to take part in the survey and I give consent for the use of direct quotes anonymously.

☐

Participants' Signature

Researchers' Signature

Appendix 3

Figures A,B,C,D are the pen profiles which have been used to present each focus group's questions and responses. Where there has been some discussion/interaction between the participants the box is shaded in grey colour.

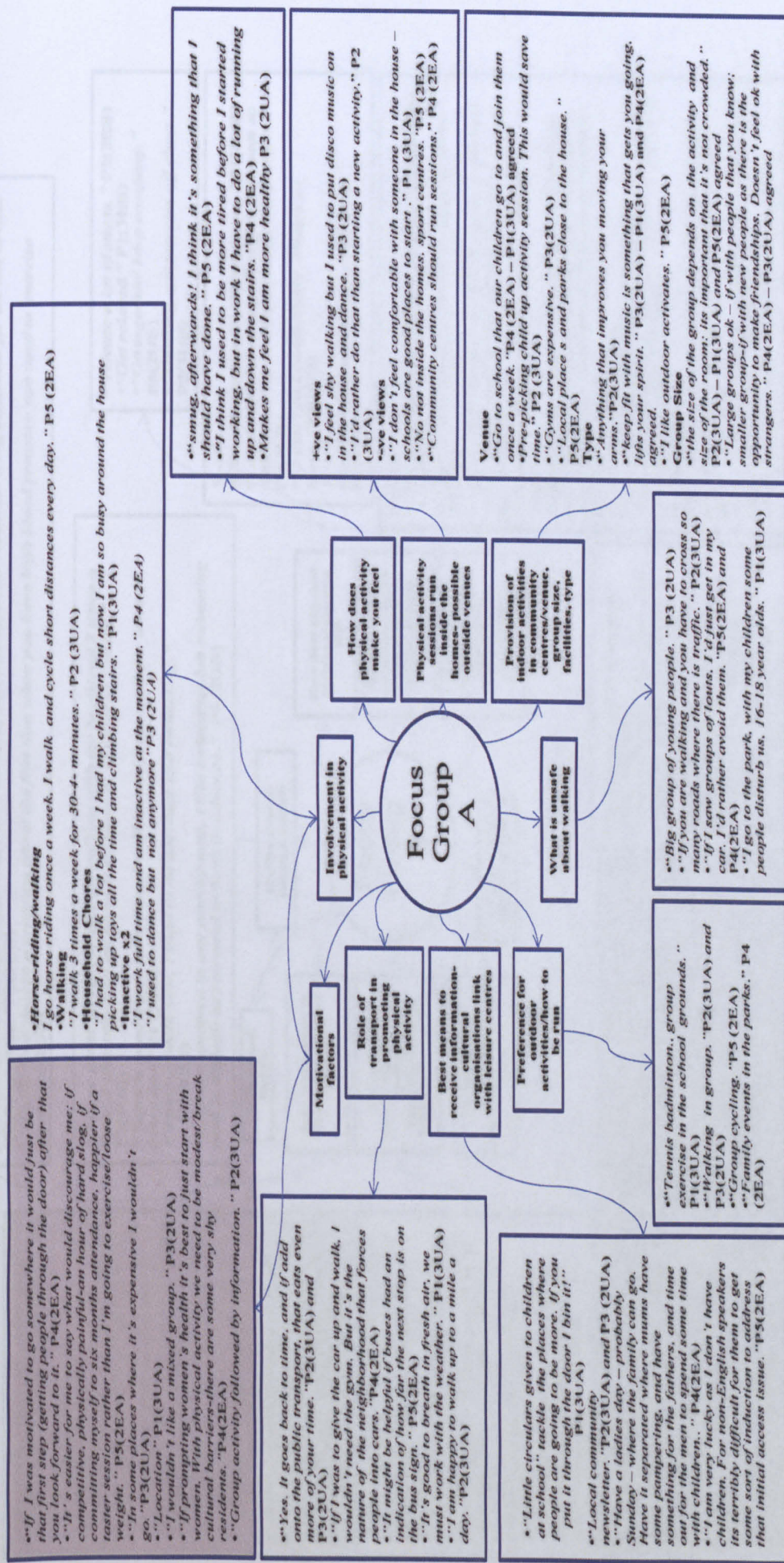


Figure 3.12 Focus group A: International Women's Day (Kensington Junior school, Kensington) (Mean Age: 43)

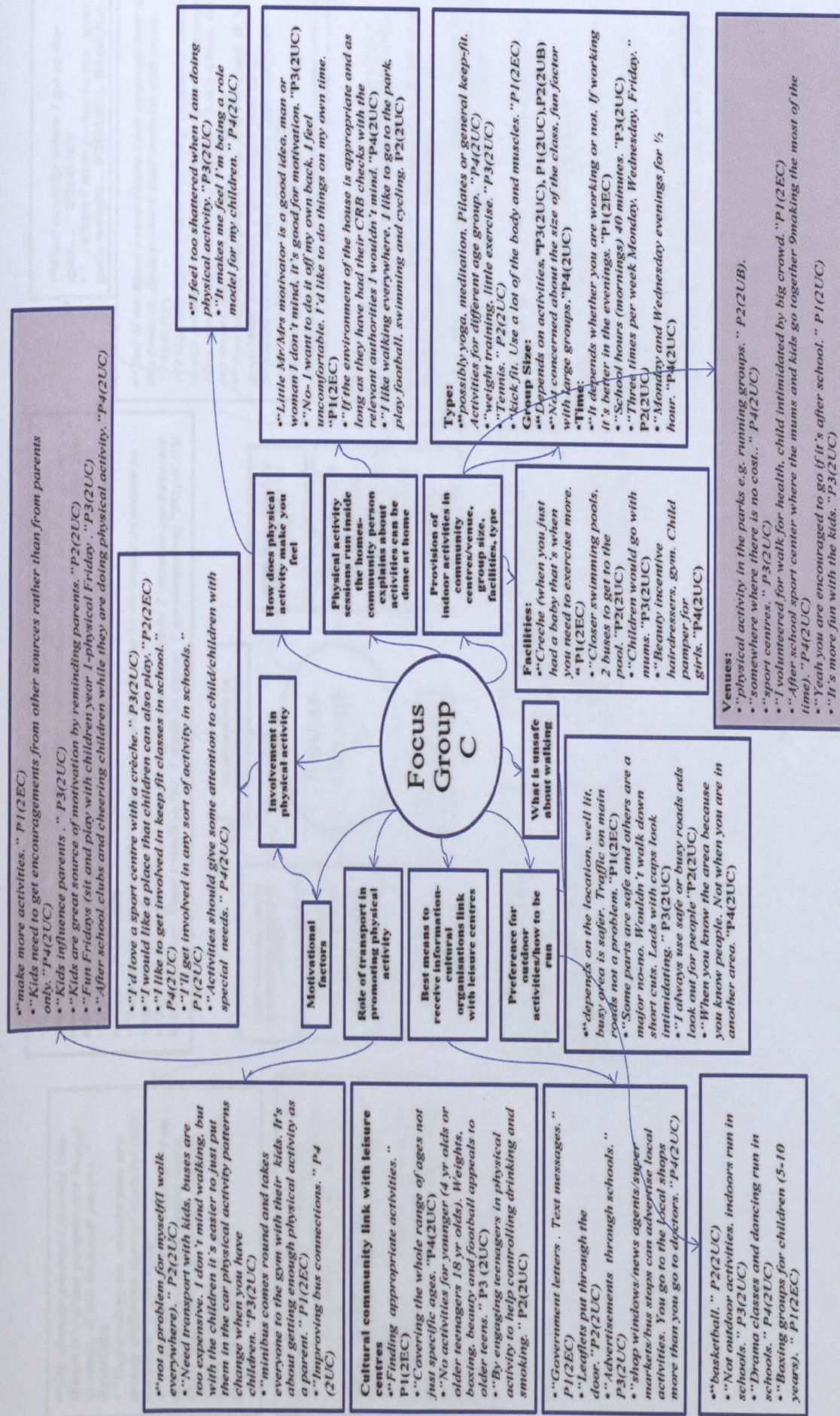


Figure 3.14 Focus group C. Kensington Junior School (Mean Age:34)

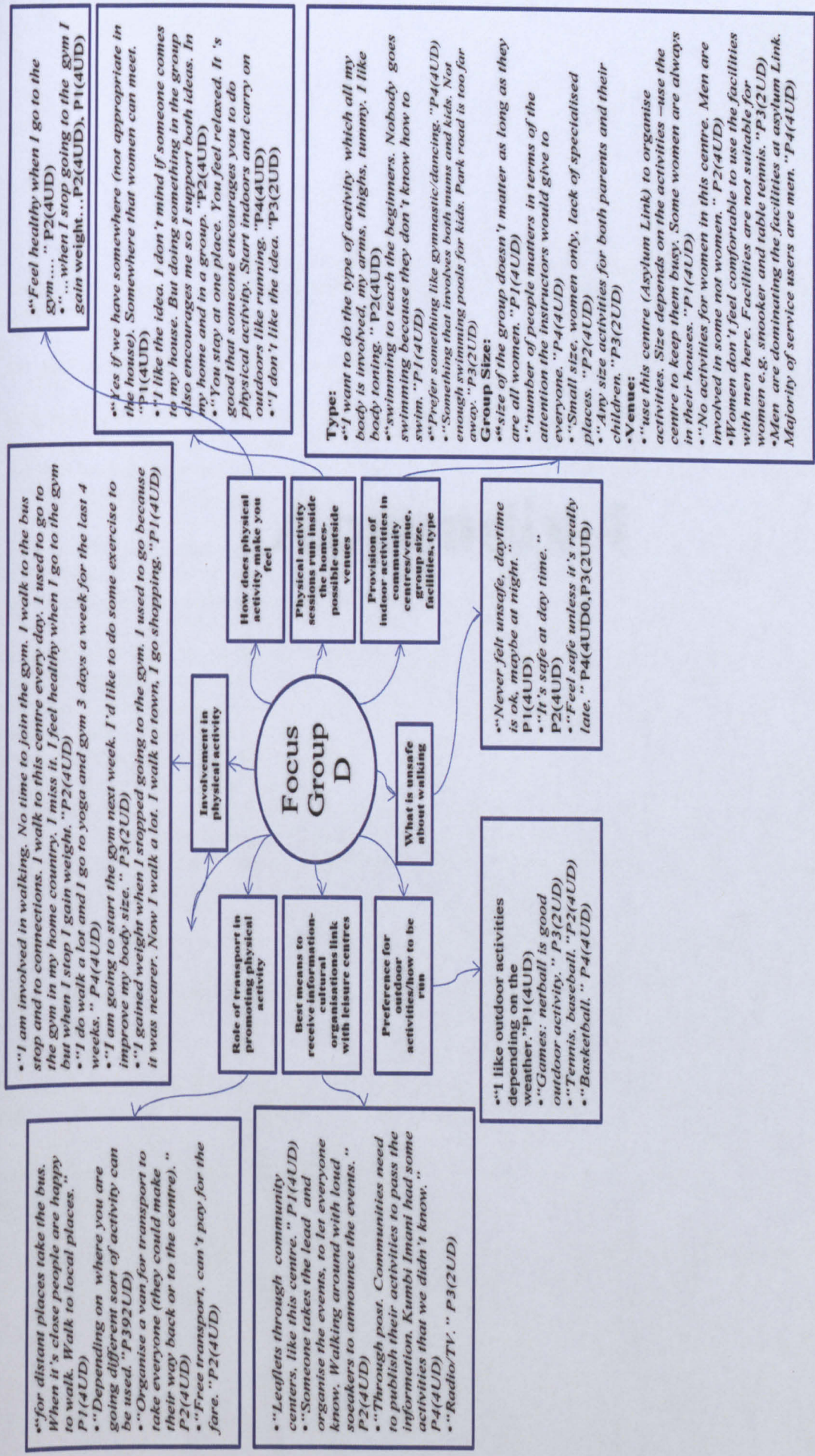


Figure 3.15 Focus group D. Asylum Link (Mean Age: 48)

Appendix 4

LIVERPOOL JOHN MOORES UNIVERSITY
PARTICIPANT'S CONSENT FORM



Dear parent

Determinants of physical activity among the BRM families

Thank you for agreeing to take part in this research, which is all about your attitude to physical activity.

I am getting together a few other families like yourself who live in the same area as you do.

The aim is to discuss how you feel about doing exercise, whether it's brisk walking, jogging, swimming, playing a sport, or any physical activity, and to discuss about the possible barriers which hold you back from being more active. Also to see how active your children are and what encourages or discourages them to be physically active.

It is well established that lack of physical activity can lead to increased risk of ill health. This study aims to consult people from Muslim community about how they see physical activity and what might help them to become more physically active.

By agreeing to take part in the research you will be required to take part in 1 individual interview which should last about 45 minutes to 1 hour depending upon your answers. I am going to ask you and your family some questions about your opinions on physical activity. There are no right or wrong answers. I am simply interested in your views. Please try to answer as best as you can. In addition, 1-2 of your children aged 7-16 will be interviewed. They will be asked questions about physical activity similar to the questions you will be asked which will last about 30-45 minutes. All of the information you share will be kept confidential and will help us to learn about the BRM families' physical activity habits. You will not be identified by name in any report of the research. Our conversation will be tape-recorded. This tape is only used to help me with my note taking and will be destroyed at the completion of the research.

You and your children have the right to withdraw from the research at any stage that you wish.

Thank you again for participating in this research.

Please tick the box if you would like to take part in the study. You do have the right to withdraw at any time without giving any reason.

I am willing to take part in the study and I give consent for the use of direct quotes anonymously.

☐

Participants' Signature

Researchers' Signature

Appendix 5

Interview schedule

Phase 1

Definition of physical activity/Physical exercise

Introducing the phase to the participants and explain that they will be answering some open ended questions regarding physical activity/Taking the diaries back to see the number of the steps and the type of physical activity

Type of physical activity or exercise they are involved in. What counts as physical activity in their views.

Attitudes

Can you explain what does the term physical activity mean?

Prompt if necessary: e.g. Does walking count?

Gardening?

Housework?

Dance?

The kind of paid work you do? What exercise or physical activity you do nowadays, if any?
(Give examples as necessary).

When exercise or physical activity mentioned, probe:

-What activity(s)?

-How often?

-Part of daily routine? Scheduled into the day/week?

-Done alone? With someone else?-Who?

-Set any targets, however informal?

-How much physical exercise you do to keep fit/healthy?

How frequently? How often is enough?

How long for each session?

(Is there a threshold level of activity you need to reach? Or is it worth doing just a little?)

-How intensely you do it?

How hard, fast or slow?- how vigorously?

Probe: - Does it matter if you get breathless?

-or if you can feel your heartbeat?

Have your attitudes about physical activity changed since you have come to the UK?

Do you consider yourself to be physically active enough?

Knowledge and Awareness of the benefits of Physical activity

How is physical activity important?

-In what way? (Why should we be physically active? What's the point?)

Prompt (but not initially)

Is it important: -for health? Fitness?

-heart?

-any other health aspects?

- for weight control?
- for mental health?
- for general wellbeing?
- other reasons?

How does physical activity compare to other things you might do for your health?

Probe: Is it more or less important than: -not smoking?

-healthy eating/diet? What aspects of this? (e.g. saturated fat, sugar. etc...)

Have your knowledge and awareness of the benefits of physical activity changed since you have come to the UK?

Sources of All these Beliefs

What or who is important in shaping your beliefs about physical activity?...

How important are families? Friends?

Members of own community?

Religious leaders?

Role models? (including from own community)

What about other influences (in shaping your beliefs)?

Media advertising?

Medical establishment-doctors?

Other health/fitness professionals?

Have your beliefs about physical activity changed since you have come to the UK?

Determinants

What motivates you to be physically active?

What are the encouraging social factors for you to be physically active if any?

Family/friends/community/GP recommendation/media/nature of your work/work environment

Is there any religious and/or cultural motive for you to be more physically active?

Are there any environmental factors which motivate you to do physical activities?

Pleasant walking paths

Pleasant neighbourhood

Nearby parks/fields

Gyms/sport centres/clubs

Workplace

Do you feel less motivated or more motivated to be physically active since you have come to the UK?

Parental role modelling

What do you think your role is with regard to your child/children's physical activity behaviour?

What role do you play as a parent with regard to parental role modelling?

Are you worried that your child/children is/are or might be overweight?

Do you feel that your children are physically active enough?

Evidence/example

What kind of activities are they involved in?

What motivates your child/children to be physically active?

Do you feel that you are responsible for your child's weight and physical fitness?

- A great deal of responsibility
- Have partial responsibility

How supportive are you for your child's active life style?

Evidence/ example

How do you think your attitudes and beliefs encourage or discourage your child/children's physical activity?

Evidence/example

How do you try to motivate /encourage your child/children to become more physically active?

In your opinion what is the main reason (element) which could get in your child/children's way for doing physical activity?

What prevents your child/children to be physically active?

- environmental factors
- social factors
- Interpersonal factors
- cultural/religious factors
- socioeconomic factors

Do you think you are a good role model for physical activity?

Do you feel any changes in being a role model since you have come to the UK?

Phase 2

Environmental factors influencing physical activity behaviour and promoting physical activity behaviour among Muslims

Introducing the phase and the theme of the questions they will be asked

How is the environment perceived by Muslim families, social and physical environmental factors which might be encouraging or discouraging for being physically active, barriers, facilities, resources, neighbourhood, government policies and the influence of culture and religion.

What do you think about your neighbourhood in terms of

- Access (sidewalks, public recreation facilities)
- Characteristics (pleasant, well maintained side walks, unattended dogs, the condition of your public recreation facilities, street lighting at night)

How would you describe the barriers for you to physical activity?

- **Social barriers** (Peer pressure, friends not being physically active)
- Environmental barriers (Poor weather condition, neighbourhood safety, accessibility to parks, gyms, etc.)
- **Interpersonal barriers** (lack of time, lack of family support (childcare family commitments), beliefs and attitude towards physical activity)
- **Biological barriers** (being too heavy to exercise, ill or disabled)
- **Psychological barriers** (Too shy, lack of self efficacy)
- **Cultural barriers** (feelings of not belonging to the society, experiencing racism, religion requirements such as long scarves, long dresses and HIJAB in general, religious festivals and occasions such as Ramadan, language barriers)
- **Socioeconomic barriers** (high fees for clubs and gym membership, coaching sessions and trainings, expensive sport equipments)

How would you describe the barriers for your children or your family to physical activity?

Same probes as above.

Community resources

Are you aware of the kind of facilities and resources available for you in your area?

Swimming pools, public recreation centres, parks, playgrounds, schools (Mosques with physical activity facilities/physical activity programmes.

Are you aware of the kind of facilities and resources available for your children in your area?

Swimming pools, public recreation centres, parks, playgrounds, schools (Mosques with physical activity facilities/physical activity programmes

-How do you usually get informed?

Lack of information about activities and facilities (due to language barriers)

How have you adapted to life in Liverpool since you arrived in?

Phase 3

End of interview

Clarification, explanation and responses.

Asking the participant if they would like to add anything to their answers. If they would like to raise any concerns about the interview and the manner in which the interview was conducted. If they have any comments with regards to the type of questions they were asked and the style of the interviewer

Appendix 6

Interview questions

Children

1. What do you normally do at playtimes in school?
Probs – play (football, other games that make you run, jump or skip)
Stand around
Chat to friends
2. Do you think that you are physically active? (why) (how)
3. What is physical activity?
4. Do you like PE lessons?
5. Is it good to be physically active?
6. Why doing physical activity good?
7. What kind of activities count as physical activity?
8. What do you normally do after school? – anything which would count as physical activity?
9. How many hours per day do you usually watch TV/play video/computer games?
10. What do you normally do at the weekends?
11. What kind of facilities opportunities do you have at home for doing physical activities?
Probs: Stationary exercise equipment (treadmill, cycle, etc.)
Step or slide Aerobic
Bike, ice skates, dog, roller blades, roller-skates, trampoline, workout videos or audio tapes.
12. Is there something that prevents you from exercising?
Probs: self conscious about your appearance
Lack of knowledge on how to do physical activities
Lack of interest in PA
Lack of a convenient place to do PA
Lack of self discipline (will Power)
Being too heavy/overweight
Lack of time/too much homework
PA is boring
Lack of energy
No friends who likes PA
Being bullied or teased during exercise or sports
Not enjoying PA
Don't like to sweat
The weather is too bad
Lack of skills
13. What gets in your way of being physically active?
At home/in school/in your neighbourhood

14. What do your mum and dad think of PA?
15. How encouraging/supportive are they for you to be physically active?
16. Are they worried about your weight/being or becoming overweight?
17. How do they encourage/support you to be more physically active?
e.g. provide outdoor/indoor access- participate with you – plan family activities- register you for PA programs
- 18- Do your parents join you in physical activities?
Probs: take you out for a walk
Go jogging/ go to the park/ play a game with you
- 19- Are there any barrier for you to be physically active?
 - Social barriers: peer pressure, friends not being physically active
 - Environmental barriers: poor weather condition, neighbourhood safety, accessibility to parks, gyms, etc.
 - Interpersonal barriers: lack of time, lack of family support, family's attitude towards PA.
 - Cultural/religious barriers (not allowed to mix with opposite sex) or certain groups, dress code, male instructors.
 - Feelings of not belonging to the society- experiencing racism, religion requirements such as long scarves, long dress, Hijab in general.
 - Religious festivals and occasions such as Ramadan, language barriers.
 - Socio economic barriers (high fees for clubs and gym membership, coaching sessions and training, expensive sport equipments)

Appendix 7

Liverpool Active City...



Liverpool Active City Evaluation Form: Work-Out Project Pre Questionnaire

Name of Activity/ Project	
Individual's FULL name eg. John Smith	
Individual's FULL post code eg. L15 5PH	
Individual's Full Date of Birth e.g. 12.06.1978	
Gender	
Employment Status	
Ethnicity	
Disability	
Date started the project	
Name of the fitness activator	
Contact number	

1. Were you active before the project? Yes No.....
2. If active how often were you active? Please only tick one answer
 - 1) once a month....
 - 2) once a week.....
 - 3) three times a week....
 - 4) five times a week....
3. How hard would you say your activity was? Please only tick one answer
 - 1) Very light...
 - 2) Light...
 - 3) Medium...
 - 4) Hard...
 - 5) Maximum...

Please return completed forms to the Liverpool Active City Research and Evaluation Team

Thanks for making Liverpool an Active City!

Appendix 8

Liverpool Active City...



Liverpool Active City Evaluation Form: Work-Out Project Post Questionnaire

Name of Activity/ Project	
Individual's FULL name eg. John Smith	
Individual's FULL post code eg. L15 5PH	
Individual's Full Date of Birth e.g. 12.06.1978	
Gender	
Employment Status	
Ethnicity	
Disability	
Date started the project	
Name of the fitness activator	
Contact number	

- What type of activity did you choose from the Work-Out project? E.g. one-to-one session, free gym, yoga etc.
- Did you take any training course on the project? E.g. first aid, health and safety
 Yes.....
 No.....
- How would you rate the service you received from the Work-Out Project?
 - Outstanding
 - Good
 - Adequate
 - Poor
- Have you maintained your activity after the project? (are you still physically active)?
 Yes No.....
- If you are still active how often are you active? Please only tick one answer
 - once a month....
 - once a week.....
 - three times a week....
 - five times a week....

Liverpool Active City...



6. How hard would you say your activity is? Please only tick one answer

- 1) Very light...
- 2) Light...
- 3) Medium...
- 4) Hard...
- 5) Maximum...

7. Do you have any further comments?

Appendix 9

Please return completed forms to the Liverpool Active City Research and Evaluation Team

Thanks for making Liverpool an Active City!

Appendix 9

Work-Out Project- Staff Interview protocol

Interview questions

Implementation

1. What was your involvement?
2. How was it organised?
3. How much was the bid?
4. What was the management role/involvement?
5. How many times a week / how many sessions per week?
6. Which life styles? Places? Venues?
7. How was the survey carried out?
8. How many people refused to participate?
9. Limitations to methodology/barriers?
10. How was the project delivered?

Implementation/Adoption

11. Who were the fitness activators?
12. Were they made aware of the aims and objectives of the project?
13. Did they follow the strategies and principles of the project?
14. How did the fitness activators assessed participants' PA and fitness level?

Maintenance/Implementation

15. How was the project maintained?
16. What policies did you have in place to ensure the maintenance of the project?

Reach

17. Who were the targeted population?
18. What were the exclusion criteria?
19. How did you reach them/marketing strategy?

Effectiveness

20. Why was this project successful?
21. What are the evidence to show the project has been effective?

Appendix 10

Work –Out Project – participants interview protocol

- How did you find out about the project?
- How this project (attending the project) changed your attitude?
- Has it improved access to leisure and sport centres?
- Has it improved your awareness about the health benefits of physical activity?
- Has it improved your general well being? Do you feel better?
- Has it changed your life style at all?
- Feeling better about yourself and your body and feeling healthier, has that changed your life style?
- Was the venue (to go and exercise) close to you?
- Has your confidence developed?
- Has your self esteem improved? How you feel about your body?
- Did you learn any skills, in terms of physical activity, exercising etc.
- Did you need family support to be able to attend the sessions?
- How did the project tried to remove the barriers for Moslem ladies like yourself?
- Were you active before the project?
- Did you enjoy the sessions?
- How did you see the role of the activators?
- Were they trying to motivate you, to build your confidence?
- Did you tell your friends and family?
- What aspect of the project you think needed improving?
- Did you have the free activity sessions for twelve weeks?
 - Yes
 - And you used all the sessions?

- What other environmental factors influence activity? Like weather/season/safety?
- Now that the centre is shut, if you were to go for a walk in your neighbourhood how would you feel about that?
- Have you maintained your activity?
- So how active are you now?
- So you have lost the consistency of your activity?
- Do you think you still need the activators?
- Would you go and exercise on your own if there was a gym?
- Do you mind if you need to exercise in a group?
- Describe the project in few sentences?
- Would you go to a similar project if it was available?
- Do you think free gym pass encouraged you?
- Any further comments