# Factors influencing patient uptake of an exercise referral scheme: a qualitative study

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Abstract

Exercise referral schemes aim to increase physical activity amongst inactive individuals with or at risk of long-term health conditions. Yet many patients referred to these schemes (by health professionals) fail to take up the exercise opportunities on offer. Understanding factors influencing uptake to exercise referral schemes may help improve future attendance. Using the Socio-Ecological Model as a framework, this qualitative study aimed to explore factors influencing uptake to an exercise referral scheme based in the North West of England. Semi-structured interviews were conducted with referred patients (n=38) about their reasons for referral, interactions with referring health professionals, events following referral and ideas to improve future uptake. Data were analysed thematically and mapped onto the constructs of the Socio-Ecological Model. Factors reported to influence uptake included intrapersonal (past PA experiences, motivation, competing priorities), interpersonal (scheme explanations, support) and organisational influences (scheme promotion, communication between service, cost). Whilst several intrapersonal-level factors influenced patient decisions to uptake the exercise referral scheme, modifiable interpersonal and organisational factors were identified as potential targets for intervention. Recommendations are made for improving awareness of exercise referral schemes and for enhancing communication between referring practitioners, patients and referral scheme staff.

## Introduction

Exercise has long been thought of as a method to help treat chronic illness[1]. Sustained physical activity (PA) is beneficial for both physical and mental health conditions[2-5]. UK guidance suggests adults (18-64 years) and older adults (65+ years) should aim to be active daily and participate in at least 150 minutes of moderate (e.g. brisk walking, cycling), or 75 minutes of vigorous (e.g. running) aerobic PA[3] per week to gain health benefits[3]. Alongside this, it is recommended that both adults and older adults should perform strength and resistance-based activities that focus on working all major muscle groups on at least two days a week[3]. Yet research indicates that in England, only 31% of males and 23% of females meet the weekly aerobic and muscle-strengthening guidelines, and these figures appear to decline with age[6].

Exercise referral schemes (ERS) are a method used to help increase PA and offset various medical conditions[7], targeted towards inactive individuals who have or display risk factors towards developing long-term medical conditions[8]. Access to ERSs involves a referral from a health professional (HP) for an initial consultation with an exercise specialist, where an appropriate programme of exercise is prescribed[9]. Exercise behaviour is then monitored by exercise staff[10]. Whilst ERSs have shown some potential to improve PA [2,10], the success of schemes relies on recruiting individuals to attend them[11].

Uptake to ERS is varied, falling between 30 – 98%[12-14]. Studies investigating demographic predictors of ERSs[15,16] have shown that older women, those with better mental health and those living in less deprived areas are more likely to take up ERSs. Individuals are referred to ERSs for numerous health concerns including cardiovascular, musculoskeletal, respiratory and mental health problems [16-19], although evidence exploring the influence of referral condition on uptake is inconclusive[20].

Bronfenbrenner's Socio-Ecological Model[21] (SEM) suggests behaviour is a product of multiple influences, namely intrapersonal, interpersonal, organisational, environmental and policy factors that interact between one another[22] (see figure 1)[23]. Previous research has found a variety of factors

to be influential in patient decisions to take up ERSs[2, 20-22, 24-27]. Whilst no known studies have explicitly drawn on the SEM in their design, influences have been identified at the intrapersonal level (e.g. perceived self-efficacy, attitude, motivation, meeting personal goals, improved health, confidence, knowledge of health and exercise[24-27]), interpersonal level (e.g. referrer enthusiasm for the ERS, non-judgmental encouragement[20,27]), organisational level (e.g. affordability, provision of scheme information, approachability of PA environment[2,26,27]), and environmental level (e.g. proximity of local facilities, availability of local transport[2, 22, 27]) of the SEM. Although minimal research exists identifying policy level factors influencing ERS uptake, factors such as local initiatives and the affordability of sustaining PA sessions/groups[28] have been found to influence PA behaviour in general. However, further research is required to explore between-level interactions, with a view to generating recommendations for multi-level interventions. Furthermore, the majority of studies have focussed on patients who have taken up ERSs, with little consideration of reasons for non-uptake.

This study drew on the SEM to qualitatively explore factors influencing uptake to an ERS located in the North West of England, UK. The geographical region had a varied health profile characterised by high levels of deprivation (20.5% living in the 20% most deprived areas in England) and obesity (27%) and low levels of PA (48.3% achieving 150 minutes of PA weekly)[29]. Life expectancy differed by socio-economic status (SES), with those in more deprived areas expected to live on average 8.6 years less than those in more affluent areas[30]. With the aim of enhancing community health, the ERS was one of several PA initiatives across the borough and offered a range of PA classes (low impact circuits, cycling, health walks). However, despite the ERS aiming to see on average 3,500 referrals yearly, approximately 30% of individuals referred failed to take up the scheme following a HP referral. This study therefore aimed to use the SEM as a framework to explore factors influencing uptake, from the perspective of both patients who did and who did not take up the ERS.

## Methods

### *Approach*

Semi-structured interviews were used to generate data. This approach gave patients the opportunity to describe, in their own words, their experiences of referral to the ERS[31] and have been used in past research exploring patient experiences[32,33].

### *Setting*

Patients were recruited from an ERS located in the North West of England which offered a 12-week programme of PA to individuals who had, or were at risk of developing, a long-term health condition. Exercise classes were offered in a number of leisure centres (which included classes run in sports halls by ERS staff, as well as gym-based PA) and community venues (i.e. scout huts) across the locality. The cost of classes was subsidised so that patients paid between £2.00 - £4.00, dependent on the venue. Following a referral from a HP, individuals were asked to book a consultation with an exercise specialist from the ERS to discuss an appropriate programme of exercise. Exercise specialists were individuals holding a professional qualification in ER, providing them with appropriate PA and health knowledge to work with 'at risk' populations. Uptake was defined as booking and attending a consultation with an exercise specialist. Individuals who did not book and attend this consultation are referred to throughout as DNAs (did not attends).

### *Sampling and recruitment*

#### *Eligibility*

Individuals over the age of 18 years referred to the ERS between October and November 2015 were eligible for participation in the study.

#### *Recruitment*

Recruitment occurred between January and February 2016. The time lapse between referral and recruitment allowed time for patients to become either an 'uptaker' or 'DNA'. We aimed to

purposely recruit 40 patients (20 uptakers and 20 DNAs), as this sample was deemed large enough to assure a range of perceptions were captured, but small enough to avoid repetition[34]. Patients were recruited by invitation letter, which included a reply slip and free post envelope. Patients were given a month to respond to the study invite. Patients who did respond were called by [first author] to arrange an interview. All patients who took part in the interview received a £10 shopping voucher to thank them for their time.

*Final sample*

Figure 2 details the full sampling procedure. Thirty-eight patients were interviewed. This comprised 13 males and 25 females with a mean age of 58 years (range 28–76 years). Age data is based on 36 patients, as 2 patients did not disclose this information. Based on available information prior to interview, it was understood that 20 'uptakers' and 18 'DNAs' had been recruited. However, during the interviews it emerged that 13 DNA patients had since joined the ERS and 2 'uptaker' patients had not yet attended their ERS consultation (although they had booked). The latter group are referred to as "limbo" for the purposes of this article, as it was not yet known whether they would become an 'uptaker' or a 'DNA'. Therefore, the actual status of patients in the final sample was 31 'uptakers', 5 'DNAs' and 2 'limbos'. Table 1 details full demographic information of the sample.

***Ethical approval***

NHS ethical approval for this study was granted in December 2015 (Reference number: 15/EM/0530).

***Interviews***

Interviews lasted between 30 and 60 minutes and were conducted by [first author] or [second author] in private rooms of two local leisure facilities (February to March 2016). To enhance standardisation between [first author] and [second author], fifteen interviews were conducted together. Written consent and demographic information was obtained before the interview began.

Interviews were conducted using a semi-structured interview guide, informed by the SEM and developed though discussions with the research team. Questions explored patients' reasons for referral, perceptions of HP interactions, events following referral and ideas to improve future uptake to the ERS. Prompts and probes were developed and related to interview topics and used to elicit responses from patients when appropriate to gather a deeper understanding (for full interview guide please see supplementary resource 1). To test for usability and to enhance credibility, three pilot interviews were conducted by [first author] and [second author] with ERS patients not eligible for participation. Patient feedback was obtained following the pilot interviews, and the interview guide was refined with the research team as appropriate. After each interview, patient accounts were summarised by the researcher to ensure a transparent understanding between patient and researcher[35]. This process also allowed the patient an opportunity to clarify their account and add anything as necessary.

***Transcription and analysis***

Interviews were transcribed verbatim and all identifiable information removed. Data were then imported into Nvivo 10[36] and a thematic analysis[37] was carried out by [first author] to identify factors influencing uptake to the ERS. This involved developing a thematic structure, achieved by reading and re-reading transcripts. Factors were then arranged into themes and sub-themes and grouped into the SEM. Codes were applied based on the interpretation of the data and on the conversation between researcher and patient during the interviews. Throughout the analysis process, codes and themes were added, discarded and refined through regular discussion with the research team. Although every effort was made to be open about the emerging data, it was acknowledged that themes did not develop in the absence of preconceived ideas influenced by the researcher's knowledge and experiences of the subject area[38]. To be open to new findings [first author], [second author] and [final author] independently analysed three transcripts and came together to discuss these.

Results

The results presented are views from the 38 patients interviewed. Table 2 illustrates the themes and sub-themes identified during the analysis with illustrative quotes for each theme/sub-theme. The themes identified are organised by levels of the SEM and represent factors reported to influence patients' decisions to attend (or not attend) the ERS. No themes were identified on either the environmental or policy levels of the SEM, thus these levels are not represented in the results. In total, eight themes were identified. Three on the intrapersonal level (past PA experiences, motivation, competing priorities), two on the interpersonal level (scheme explanations, support) and three on the organisational level (scheme promotion, communication between services, cost).

## Intrapersonal level

### *Past PA experiences*

Some patients mentioned having engaged in PA, in some cases similar PA, in the past and enjoyed it, which had given them the confidence to engage with PA in their current referral:

*"I used to go swimming and used to do water aerobics so I've always liked doing it* [swimming] *specifically in the t'water because I've always found I can do that"* (P1, female, uptaker).

### *Motivation*

#### *Health factors*

All patients had been referred to the ERS for having or being at risk of developing, a long-term health condition. As such, many patients reported engaging with the ERS to improve their physical, and for some mental, health:

*"I wanted to do it* [ERS] *because I'm overweight and I needed to lose weight and give* [my] *heart a bit more exercise"* (P14, male, uptaker).

*For others*

Other motivations for ERS uptake were due to the influence of other people. For some patients caring for family influenced uptake. Joining the ERS for some patients meant becoming healthier which would make caring for family members easier. However, being healthier was also perceived to protect family members from distressing situations:

*"*[PA] *makes me better look after* [brother] *and the potential for being there for* [brother]*…I'm always very conscious that I want to be as healthy as I can because I don't want* [brother] *to be in a situation of finding me* [deceased]" (P9, female, uptaker).

However, for others, joining the scheme meant they could focus on themselves, having recognized they had devalued themselves through putting others first in the past:

*"I think sometimes you become too focused on looking after other people and you become the bottom of the pile* [but that has changed now] *I need to do this for myself"* (P7, female, uptaker).

Additionally, some felt obliged to join the ERS because they did not want to let their referring HP down:

*"*[HP would] *help me regardless…I felt like if I hadn't had phoned them* [ERS] *I'd have been letting* [HP] *down"* (P27, female, uptaker).

However, all patients who reported the influence of others on their decision to take up the ERS also reported additional factors contributing to their overall decision to participate in the scheme (e.g. to improve health, to exercise with peers/friends).

***Competing priorities***

Several patients described how external commitments (e.g. work, medical appointments, caring responsibilities) took priority over taking up the ERS, and simply knowing "what is good for you" is not enough:

*"…I really did want to do it* [ERS] *but it was once I got back into work…and I've me mum as well you know it's all just family and work"* (P23, female, DNA).

"*…you don't get to my age and not know being overweight's not good for you...so anything you can do that might knock it* [being overweight] *down a bit is obviously a good thing, I'm not daft, it's just prioritising"* (P26, male, DNA).

## Interpersonal level

### *Scheme explanations*

Some patients spoke positively of ERS information provided by their HP, noting that without this interaction they would not have known about the ERS:

"[HP] *informed me of it* [ERS]*…she told me what it was and what I could do…and I was very pleased to find there was something because I wanted to do it… I didn't know about it before'* (P19, female, uptaker).

However, receiving unclear information about the scheme from referring HPs was reported to impact on uptake. Some patients expressed that not being told what to expect on the ERS resulted in feelings of apprehension. Whilst others reported being uninformed of their referral, which led to non-uptake:

*"I don't think* [HP] *told me about the scheme…that's why I was surprised when I got a letter* [referral to ERS]*…I thought oh I wonder who's referred me to this"* (P11, female, DNA).

### *Support*

*Health professionals*

Formal support from HPs and discussing the ERS with patients appeared to encourage uptake, whereas a lack of support was perceived to be a barrier. Patients felt their referral to the ERS was positive when their referring HPs discussed it with them, showed care and attention towards their needs, believed in their ability to engage in PA and listened to what they wanted to do:

*"…we went through* [my] *health problems and why I wanted to do it…I think I was feeling overweight and tired and HP was so caring about it she listened to what I was saying and how I was feeling… she did encourage in that sense…. I've piled on weight with not being active and she said if you keep doing the exercise it will help…so I thought I'll give that a go"* (P24, female, uptaker).

For other patients, their HP's enthusiasm for the ERS and belief in potential benefits encouraged them to uptake:

*"*[HP's] *like…this'll do you brilliant…it'll get you out, it'll help you with your depression, it'll help you with your anxiety, it's a really good scheme…I'm lucky really because* [HP] *supported me …it were brilliant…I then phoned them* [scheme] *up"* (P8, uptaker).

*Peers, friends and family*

Patients appreciated speaking with past service users and noted how this helped them know if the scheme was for them. Support from friends was valued, either as having a friend to exercise with or for passing on information.

Patients valued support from family members, which they described as showing care and interest in their health and wellbeing and offering physical support to enable them to get to classes:

"… [due to my condition], *they've taken my* [driving] *license off me…so* [husband's] *very good because he brings me and then he sits in the car…. without him I wouldn't have been able to come* [to ERS]" (P4, female, uptaker).

Conversely, a lack of support from family members was shown to discourage uptake:

*"…well it didn't put me off* [having broken thumb and ankle]*, the wife said you're not going anymore…there's only one boss in our house"* (P26, male, DNA).

## Organisational level

### *Scheme promotion*

Prior to their referral, some patients reported being unaware of the ERS until informed of it by their referring HP and believed in part this was due to a lack of promotion in the community explaining what the ERS was and what it offered. The information available (posters, leaflets) led some to disassociate themselves from the scheme, believing the ERS did not apply to them:

*"I'd seen various leaflets about it* [ERS]*…they* [leaflets] *always said you need to be referred by your doctor…so I think that kind of put me off…I wondered whether it was exclusively for people that were ill"* (P16, female, uptaker).

### *Communication between services*

Some patients commented on the transition between their referring environments and joining the ERS. Some felt that attending the ERS felt like a natural transition from secondary care services (e.g. physiotherapy sessions). Patients reported feeling relieved the ERS was available as it provided a push in the 'right direction', as well as a facility to be able to continue with PA and their recovery:

*"I was really gutted at the fact I'd finished* [physiotherapy] *I wanted to carry on doing something I could do…it were brilliant when* [HP] *mentioned* [ERS], *it was like a lifeline really that something else were in the pipeline that would help things"* (P15, female, uptaker).

Conversely, some patients reported feeling that referring environments and ERS providers worked in isolation, which in some cases affected the PA prescribed by exercise specialists. Suggestions to improve communication between services included having an ERS staff member in referral environments (e.g. GP surgeries) to discuss the ERS with potential service users, and for exercise

specialists to have access to patient medical records so they could prescribe PA based on clients' health:

*"…maybe it could be a thing for the future that* the *doctor with my consent send them* [exercise specialists] *all the relevant information about me illness and what's happened so they can say oh well he doesn't want to be doing this or he doesn't want to be doing that"* (P29, male, uptaker).

***Cost***

The affordability of the ERS appeared to influence uptake, especially as it was cheaper than joining other exercise facilities:

*"…with being unemployed joining the gym was out of it because it's like thirty pound a month well I can't afford thirty pound a month…so I went to the doctor's and they said we'll refer you to* [ERS]*"* (P3, male, uptaker).

However, the reasonable price for some acted as an incentive to stay on the scheme beyond the 12-week programme recalling that PA was otherwise unaffordable:

*"I just want to continue doing it* [ERS] *as long as the scheme's going because me water aerobics that's £2.50…and with keep fit* [that's] *only a pound…so for £3.50 I've got two different exercise which is brilliant for me…*[PA] *is unaffordable otherwise"* (P1, female, uptaker).

## Discussion

***Summary***

This study used the SEM as a framework for understanding factors influencing uptake to an ERS. Eight themes were identified at multiple levels of the SEM, three at the intrapersonal level (Past PA experiences, motivation, competing priorities) two at the interpersonal level (scheme explanation, support), and three on the organisational level (scheme promotion, communication between services, cost).

***Comparison with existing literature***

*Intrapersonal level*

Intrapersonal factors are characteristics of individuals that influence behaviour change. Many patients were motivated to join the ERS due to feelings of not wanting to let others down (e.g. HPs, family member). Evidence from literature on Self-Determination Theory (SDT)[39] shows that such feelings of obligation to engage with a behaviour (i.e. controlled motivation) can impact negatively on psychosocial wellbeing and likelihood of adherence. If, however, individuals exhibit a mixture of motives, including those that are self-directed (i.e. wanting to take the scheme up for themselves) the negative impact of controlling motives may be lessened[40]. Past research suggests that adhering to obligations to initially engage in PA are typical amongst populations who are transitioning from an inactive to active lifestyle[41]. Considering the process of uptake (i.e. booking and attending an initial consultation with an exercise professional) could be deemed a relatively simple short-term process, the feelings of pressure experienced by patients in this study may have served a functional purpose (i.e. instigating an initial step to behaviour change[42]). As no individual reported experiencing purely controlling motives, conclusions cannot be drawn as to whether this would have resulted in uptake and consequent effects on health.

Many participants spoke of how improving their health was a key motivator to uptake the ERS. Such accounts provide examples of "identified regulation" (motivation associated with achievement of an internal positive outcome[39]) and supports systematic review conclusions that identified regulation is the most strongly associated type of motivation with exercise uptake[43]. For other patients, however, knowledge of their own health risks was not enough to encourage uptake. Many DNA patients acknowledged the perceived benefits of the ERS but were unable to prioritise it above their work or family commitments. Such examples provide an insight into PA engagement[44]. Therefore, understanding patients' situations and providing options to help patients work around other commitments may help encourage uptake.

*Interpersonal level*

Interactions with the immediate environment are considered an important factor within the SEM. Previous evidence has found that supportive behaviours from others including emphasis on self-reliance, encouragement without making demands, showing empathy and open and motivational communication have been associated with better health outcomes[42, 45-49]. Whereas behaviours perceived as absent, controlling, overprotective and demanding have been described as unsupportive [42, 46, 48, 49] and have been shown to impact on patients' abilities to make lifestyle changes (e.g. PA)[42]. Patients who reported that their HP and/or family showed interest in them, were compassionate and listened to how they were feeling in regard to PA, felt positive about taking up the ERS. Whereas overprotective behaviours (e.g. wife did not want patient to attend ERS because he was already injured) were shown to negatively impact on patient uptake. These findings again support the premise of SDT, that suggests the satisfaction of autonomy (perceived choice and control), competence (perceived ability to overcome optimal challenges) and relatedness (perceived connectedness with others) can lead to more autonomous engagement (which is in turn associated with long-term exercise participation[43]). Considering that people are more likely to adopt behaviours from those they trust and feel connected to[50] it is unsurprising that those who reported feeling connected to others (e.g. HP, family members) went on to take up the ERS. The positive communication strategies patients spoke of in our study (e.g. listening to the patient's perspective, offering specific encouragement) were well aligned with those advocated for fostering autonomous motivation in exercise settings[46,51]. Such communication strategies share similarities with motivational interviewing[52], which has been shown to be effective when implemented as part of an ERS[53]. Therefore upskilling referring HPs and family members in MI techniques (e.g. asking open questions, displaying empathy, reflective listening) may be worthwhile, for promoting future uptake.

*Organisational level*

Although the organisational level operates outside of individuals immediate environment, decisions made at this level can impact upon them. Consistent with previous literature [11, 54], cost was cited as a factor influencing uptake. Whilst the reasonable cost of the ERS was reported as a facilitator, this reliance on the short-term cost-saving option (which led some patients to seek re-referrals) might also be considered a barrier to long-term PA behaviour change. Additionally, this raises consideration as to whether ERSs should offer low-cost exercise options following completion of an ERS programme (e.g. walking, jogging).

Some patients reported a lack of awareness of the ERS, and partly attributed this to a disconnection between the referring environments and the ERS. Similar disconnection have been highlighted elsewhere, with recent research identifying conflicting interpretations of ERSs amongst exercise professional, HPs and managers[55]. The importance of communication has been highlighted with the suggestion that ERS staff play a key role in building and providing support networks to encourage PA[33,56]. Such research highlights the importance of multi-disciplinary teams working together to promote a shared ERS vision and a smooth connection between services. Co-production of ERSs between commissioners, managers, practitioners and service users[57] might be one mechanism through which this might be achieved.

*Overall synthesis of findings with wider PA & SEM literature*

The findings of this study have similarities with other PA research which have utilised a SEM framework. Within the SEM similar findings have been reported on both the intrapersonal (past PA experience[58] health benefits[28]) interpersonal (social support from family and peers[58, 60]) levels. Cost has been identified an influencing factor in SEM research[28] but has been considered an environmental factor, which highlights variance in researcher interpretation of the SEM. It is unknown why none of the patients interviewed mentioned environmental or policy level influences on their decision to take up the ERS. Previous research using the SEM have found environmental factors such as proximity and accessibility to PA facilities as barriers to PA behaviour[60-62]. Mansfield

and colleagues study[62] was conducted with a low SES populations[60], and despite the ERS of interest in this study was located within an area characterised by high levels of deprivation, it is worthwhile noting that the area is also urbanised with an established public transport system, with ERS classes run in multiple facilities across the locality. Therefore, it is worth acknowledging how the environment (i.e. availability of public transport) may help support PA engagement amongst a low SES group, but also highlights the importance of interactions between levels (i.e. organisational decisions to run multiple classes in facilities across locality) in order to help serve all members of the community. Although there is a potential for policy to positively impact PA behaviour[28], this was not observed by patients in this study. It is possible that this could be attributed to patients being unaware that ERSs are part of a wider health initiative to help prevent and manage health conditions[9], and therefore were not thinking about their individual experiences of the ERS within this broader context. However, a further explanation which is worthwhile considering for why neither environmental nor policy factors were mentioned by patients is that our interview questions focused largely on the referral process and our sample compromised mostly uptakers, for whom environmental barriers such as accessibility may not have been a barrier for.

***Strengths and limitations***

This study was the first known application of the SEM to understand factors influencing uptake to an ERS, which allowed for a deeper and more conceptual understanding of the research findings than a non-theoretical approach[63]. A further strength of this research lies in the inclusion of both uptakers and DNAs. Although understanding why people do not attend ERSs is important, much can be learnt by understanding what influences engagement from those that do, as focusing on factors that inform success allows for the generation of more meaningful interventions[64].

One of the limitations in this study lies within the sample. A majority of the sample were of retirement age and of White British descent, therefore, the generalisability of results to other

populations (i.e. individuals of working age, different ethics groups) must be considered. Other limitations result from the reliance of retrospective accounts. Patients were interviewed 3-4 months after their referral which may have affected the accuracy of patient responses. This time lapse was necessary however to prevent the research itself influencing the uptake process. Additionally, few DNAs were recruited, the implication of this could be that the sample represents a more compliant group, therefore more research may be required to understand the process of referral from a broader DNA sample. It is noteworthy that 13 of the DNA participants ultimately became 'uptakers' between the time that patients were recruited to the study and data collection. For this particular ERS patients had four weeks from being referred by their HP before they were classified as a DNA. It is possible therefore patients were classified as a DNA before they had sufficient time to decide whether to uptake. ERSs may wish to consider the length of time they offer patients to take up their place on these schemes as it may take some patients longer to reach a decision.

***Conclusion and recommendations***

This study demonstrated that uptake to an ERS was influenced by interacting factors on multiple levels of the SEM. Patients who took up the scheme described intrapersonal, interpersonal and organisation influences with evidence of some interaction between levels. For example, accurate information from HPs (interpersonal) about the ERS structure (organisation) influenced participant motivation (intrapersonal) to attend. Conversely, where barriers were present on one or more level (e.g. competing priorities), participants seemed less likely to uptake. Whilst our data does not allow conclusions to be drawn about the relative importance of each SEM level, it appears that the presence of facilitators on multiple levels increases the likelihood of ERS uptake.

As services (HP referral and the ERS) were perceived as disjointed, patients' suggestions for having a multi-disciplinary team in referral environments have considerable merit. Having ERS staff present in referring environments (e.g. GP surgeries) may help increase uptake by providing someone potential service users could talk with following a referral. This may also be beneficial given current

restrictions on GP time. Interpersonal relationships were also important to help motivate individuals to attend the ERS. Communication techniques perceived to encourage patient motivation appeared to be closely aligned to those of MI and have the potential to help build stronger practitioner/family/patient relationships, and result in better patient outcomes and satisfaction[65]. Although interpersonal relationships were perceived to encourage uptake, due to multiple other factors discussed, it is unclear whether support on its own was enough to influence uptake, therefore future research could explore the extent to which HP and family support directly influences uptake.

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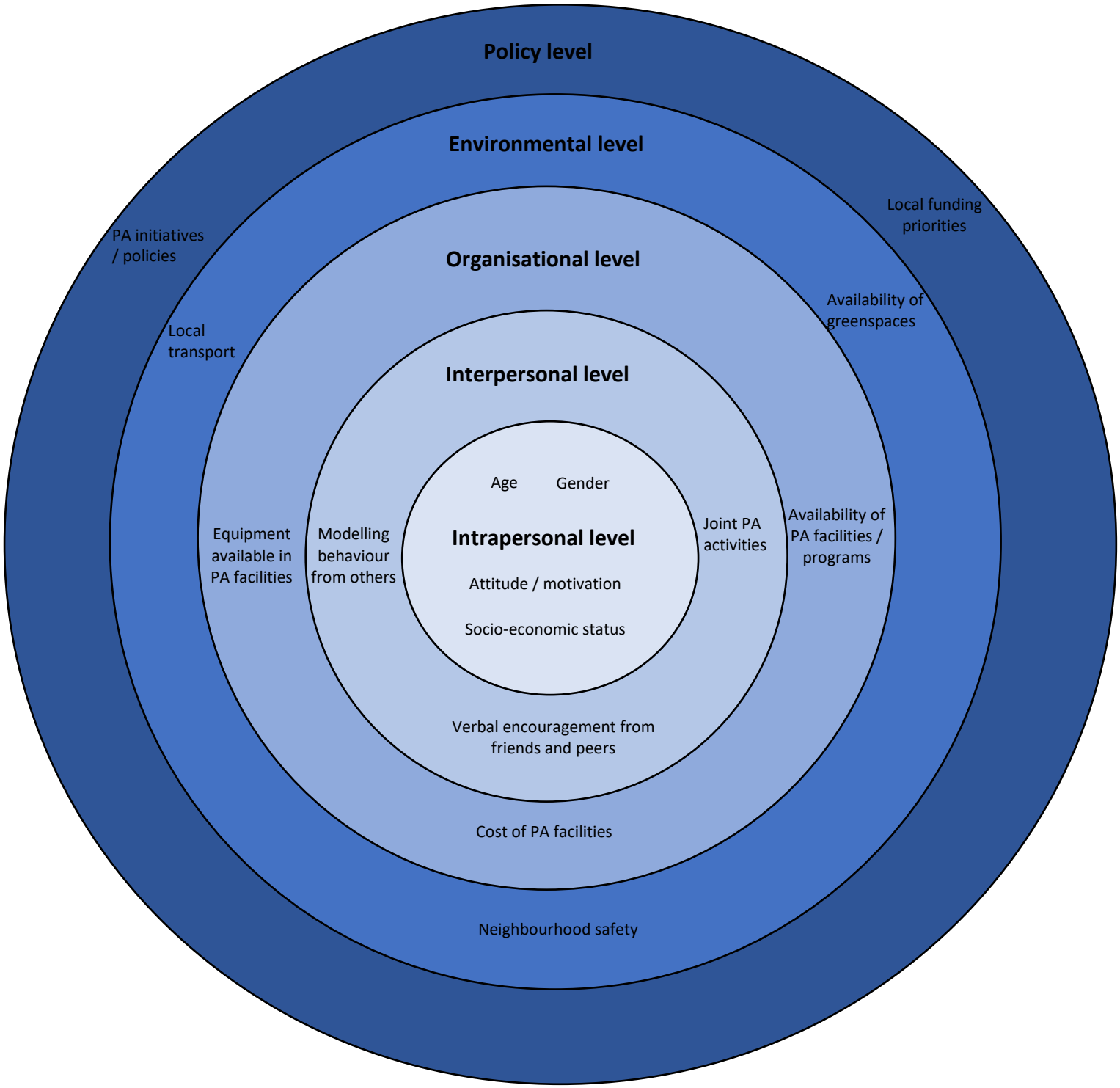
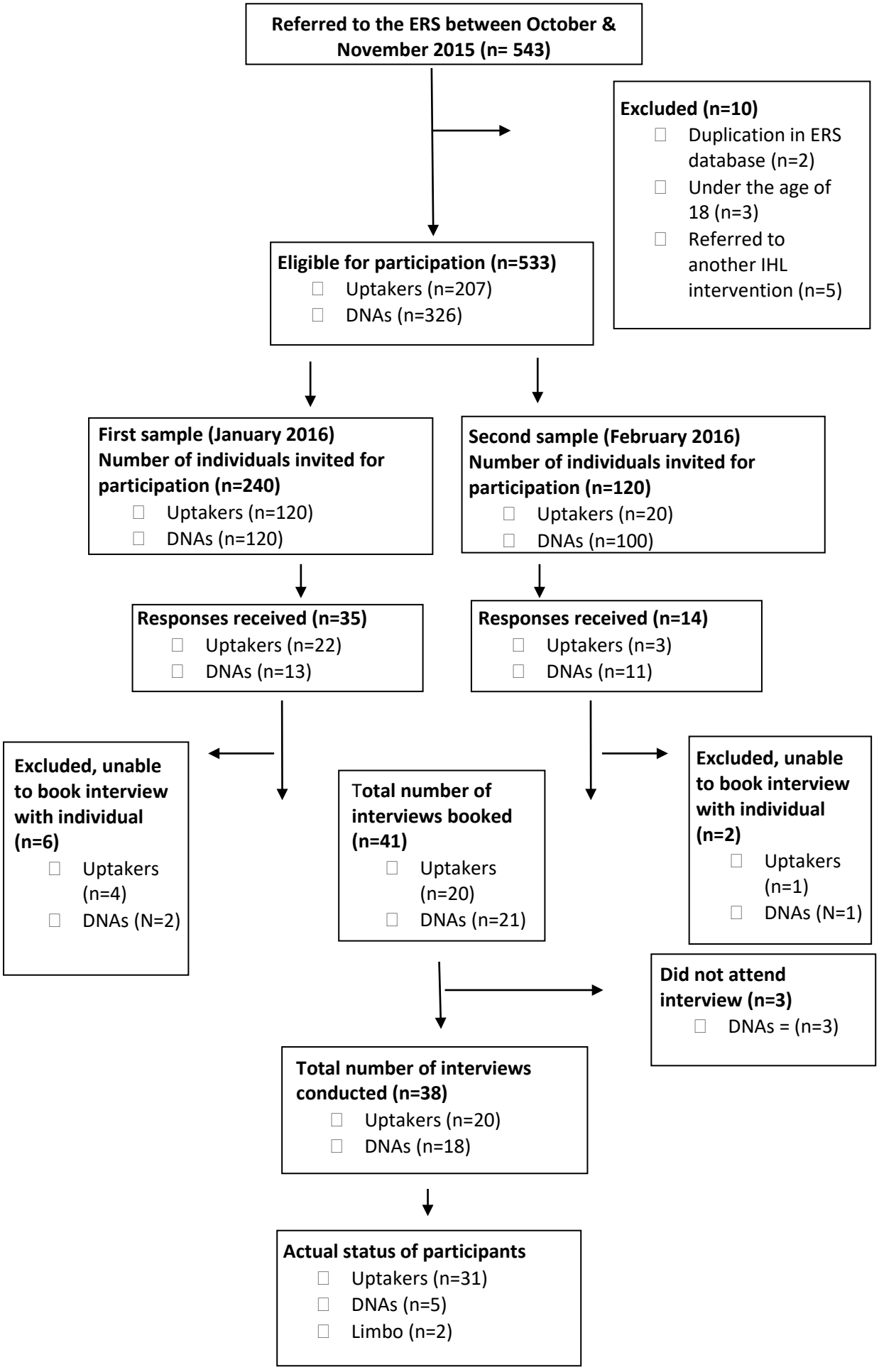



**Figure 1. Visual representation of the Socio-Ecological Model, including example correlates of physical activity for each level, adapted from Sallis, Owen & Fisher, 2008[23].** The model suggests behaviour is determined by an ongoing interaction between components at different levels of the model.

**Figure 2: Sampling procedure**



| Table I: Patient characteristics organised by ERS status at time of interview | | | | |
|---|---|---|---|---|
| | **Uptaker (n=31)** | **Limbo (n=2)** | **DNA (n=5)** | **Total** |
| **Gender** | | | | |
| Male | 11 | 1 | 1 | 13 |
| Female | 20 | 1 | 4 | 25 |
| **Referral condition** | | | | |
| Cancer | 1 | | | 1 |
| Cardio metabolic | 7 | | | 7 |
| Muscoskeletal | 5 | | 2 | 7 |
| Neurological | 4 | | 1 | 5 |
| Respiratory | 1 | | | 1 |
| Multiple conditions | 13 | 2 | 2 | 17 |
| **Disability status** | | | | |
| Disabled | 7 | | 1 | 8 |
| Non-disabled | 24 | 2 | 4 | 30 |
| **Employment status** | | | | |
| **Paid work** | | | | |
| Full time employee | 3 | | 2 | 5 |
| Part time employee | 4 | 2 | | 6 |
| Self-employed/freelance | 1 | | 1 | 2 |
| **Unpaid work** | | | | |
| Carer | 2 | | | 2 |
| Long term sick | 3 | | 1 | 4 |
| Retired | 17 | | | 17 |
| Unemployed | 1 | | 1 | 2 |
| **Ethnicity** | | | | |
| White British | 26 | 1 | 3 | 30 |
| White other | 4 | | 1 | 5 |
| Asian British | | | 1 | 1 |
| Asian Pakistani | | 1 | | 1 |
| Did not disclose | 1 | | | 1 |

**Table 2 Factors influencing uptake organized into levels of the SEM**

| SEM level | Themes and subthemes | Demonstrating quote |
|---|---|---|
| **Intrapersonal** | **Past PA experiences** | *"I've done it* [PA] *in the past but when I was younger you know I was in my teens and twenties…I wasn't weight building, I wasn't trying to be Mr Universe but I did do some circuit training and some jogging…so yeah it* [previous relationship with PA] *certainly helped a lot"* (P14, male, uptaker). |
| | **Motivation**<br>- Health factors | *"I wanted to get out a bit more…because I was staying in and putting loads of weight on…I'm normally 9 stone me I'm 12 stone now near enough*…[I just wanted to] *lose a bit of weight"* (P33, male, uptaker). |
| | - For others | "*My wife had a bleed into her brain…she's still very ill…so one of the motivating features for coming on this* [ERS] *was well getting my back seen to you know…but…because I can't afford to be ill now...because of carting my wife around in wheelchairs and things"* (P31, male, uptaker). |
| | **Competing priorities** | *"It* [non-attendance to ERS] *was purely down to the lack of time because the inductions were during the day when I was working…and to take time off as a teacher it's frowned upon…so it just wasn't feasible"* (P37, female, DNA). |
| **Interpersonal** | **Scheme explanations** | *"*[HP] *said I could either go bike riding, swimming you can go walking…she said there's an exercise class…or have a referral for 12 weeks of Slimming World…so she said you know read through the leaflets and decide what to do…I'm glad she* [HP referred to service] *because I thought well that probably might be something that I was looking for"* (P16, female, uptaker). |
| | **Support**<br>- Health professionals | *"…. she* [HP] s*aid what I could do…she described the benefits of Active Living and did say "I really think it'd do you good" …there was not pressure, it was up to yourself what you wanted to do and like they would guide you obviously…so yeh, when I got home I just rang up and got an appointment…it were brilliant, got sorted in no time"* (P1, female, uptaker). |
| | - Peers, friends and family | *"…I caught one of the fellas coming out who was doing the exercises and he was saying it's belting here…he said they're all old folk so I'd fit in…so I thought that'll do for me"* (P26, male, DNA, referring to a previous referral). |
| **Organisational** | **Scheme promotion** | *"I think if someone had bought it* [ERS] *up even sooner I would yes you know I'll give it a go…but I hadn't seen anything advertised* [about ERS so I wouldn't] *have known where to go or what to do about it"* (P4, female, uptaker). |
| | **Communication about services** | *"There doesn't seem to be anything that links any of these* [health services] *together, they all seem to be standalone, the idea it's keeping you healthy but they are all in their own little box"* (P29, male, uptaker). |

| | |
|---|---|
| **Cost** | *"I would say yes* [the ERS] *is reasonably priced for the activities that you get to do"* (P21, female, uptaker). |

**Key explaining abbreviations in above quotations**

DNA – Did not attend

ERS – Exercise referral scheme

HP – Health professional

PA – Physical activity