Review

The factors that influence referral to, attendance at and successful completion of exercise schemes and longer term participation in physical activity.

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EXECUTIVE SUMMARY

1 INTRODUCTION

1.1 Aim of the review

To determine the factors that influence referral to, attendance at and successful completion of exercise schemes and longer term participation in physical activity.

1.2 Review questions

The overarching research question is:

What barriers and facilitators affect referral to, attendance at and successful completion of exercise referral schemes and longer term participation in physical activity, from the perspectives of those using, and those providing, commissioning and delivering, these services?

In answering the overarching question, the following subsidiary questions are addressed:

1. What factors do potential/actual service users and providers perceive to influence uptake and referral to an exercise referral scheme?
2. What factors do potential/actual service users and providers perceive to influence, attendance at, and successful completion of, the scheme?
3. What factors do potential/actual service users and providers perceive to influence longer-term participation in physical activity following attendance at an exercise referral scheme?

Among the factors considered are:

- The facets of an exercise referral scheme (such as the type, location or cost)
- Factors about the service providers (such as knowledge of physical activity, awareness of awareness of local physical activity opportunities, attitude to physical activity, attitude, empathy)
- 'participant' factors (such as resource, time, current health/other health conditions, age, gender, travel and/or cost)
- Contextual factors that may act as barriers or facilitators to the optimisation of exercise referral schemes such as commissioning set up or ongoing policy frameworks.

1.3 Background

According to the World Health Organisation, "physical inactivity is now identified as the fourth leading risk factor for global mortality. Physical inactivity levels are rising in many countries with major implications for the prevalence of noncommunicable diseases (NCDs) and the general health of the population worldwide".[1]

In 2006 NICE published guidance looking at several methods to increase physical activity, including exercise referral schemes[2] (ERS). The ERS element related to "referral to a tailored physical activity programme".

Recognising the lack of evidence associated with the use of exercise referral schemes to promote physical activity when the guidance was published; NICE made the recommendation that ERS should only be endorsed to promote physical activity if they were part of a formal research study.

In 2011, the four UK Chief Medical Officers (CMOs) published revised guidelines for physical activity which recognised that physical activity can help prevent and manage over 20 conditions and diseases including coronary heart disease, some cancers, diabetes, obesity and musculoskeletal disorders.[3]

The UK CMOs recommend that adults undertake a minimum of 150 minutes of moderate exercise weekly in bouts of 10 minutes or more. Alternatively, 75 minutes of vigorous intensity activity spread across the week or a combination of moderate and vigorous intensity activity. This should be combined at least twice weekly with activities to increase muscle strength and with an overall reduction in extended sedentary behaviour. In line with this emphasis, Change4Life has now expanded to focus on adults, with the Get Going Everyday campaign to encourage adults to increase their physical activity.[4]

Following the publication of a Health Technology Assessment (HTA) review 20115, NICE is proceeding to issue guidance on this topic, supported by an update of the HTA review and an associated commissioned review of context, barriers and facilitators.

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1 World Health Organization (2010) Global Recommendations on Physical Activity for Health. p7.

2 NICE 2006. Four commonly used methods to increase physical activity: NICE public health guidance 2. http://www.nice.org.uk/PH2

3 Start Active, Stay Active: A report on physical activity for health from the four home countries Chief Medical Officers, 2011

4 http://www.nhs.uk/change4life/Pages/get-going-every-day.aspx

5 Pavey TG, Anokye N, Taylor AH et al. (2011) The clinical effectiveness and cost-effectiveness of exercise referral schemes: a systematic review and economic evaluation. Health Technology Assessment 15 (44).

2 METHODS

A systematic review of evidence to address the above review questions was undertaken. A wide range of databases, websites and grey literature[6] sources was searched systematically. Searches were carried out in July 2013 to identify relevant studies in the English language published between 1995 and June 2013. In addition, a range of 'snowballing' methods including, a call for evidence by NICE, contacting authors, reference list checking and citation tracking were utilised to identify additional research.

Study selection was conducted independently in duplicate. Quality assessment was undertaken by one reviewer and checked by a second, with 20% of papers being considered independently in duplicate. A thematic analysis of the evidence was completed, and results are described in a narrative summary of the evidence.

3. RESULTS

Forty six papers providing data from 35 studies were included in the review. Overall, internal validity was moderate. Because of the volume of UK data, the decision was taken in consultation with NICE to restrict inclusion to UK studies unless non-UK studies had data on hard to reach populations.

Thirty four studies were in UK populations and one additional Dutch study was included. Thus overall applicability is extremely high.

Views of different groups

There are several groups of individuals whose views have been identified for the review. These groups have been referred to by a variety of names throughout the included studies. For consistency across the review all groups have been categorised by function into one of the following:

- All referrals are made by a health professional in primary care. Usually these were general practitioners (GPs) or practice nurses (PNs), although they might also be for example, a physiotherapist. All these individuals are designated as 'referrers'.
- Provision of exercise referral schemes was the responsibility of a range of individuals including scheme organisers (SO), exercise professionals, facilitators and counsellors. All these are designated as 'providers'.
- Those attending exercise referral schemes are variously referred to as attendees, clients, patients and participants. All these are designated as 'participants'.

[6] Technical or research reports, doctoral dissertations, conference papers and official publications.

Themes:

A large number of themes were identified and these are listed below in the order in which they appear in the evidence. Some themes were specific to one question, but a number were cross-cutting and related to two or all three questions. The themes are summarised in a series of evidence statements.

Referral

- Referrer engagement
- Referrer priorities
- Programme awareness
- Feedback on participants to referrers
- Legal responsibilities

Participant goals

Motivation

Existing health concerns

Enjoyment of exercise

Personal commitments

External support from family and friends)

Culture and religion

Cost of exercise facilities

Location of activities)

- Ease of access
- Safety

Travel

Setting

- Perceptions of the exercise environment
- Gym atmosphere (noise/TV/music)
- Equipment (knowledge of/confidence in using)
- Quality of physical facilities

Scheduling of activities

Participant preferences for types and variety of activity

Individualised, personalised service

Provider skills

Support and supervision from providers

Peer and group interaction and support

- Peer support
- Group activities versus solitary gym
- Engagement with other participants aiding integration into environment/ maintenance and/or enjoyment of physical activity

Participant outcomes

Professional support after programme

Sustaining physical activity (post programme)

4. EVIDENCE STATEMENTS

1. Referral process

A number of related barriers to referral were discussed in twelve papers from ten studies of referrer[1-5,8,11-12] and provider[1-2,5-7,9-10] views; eleven qualitative papers (one [++][1-2], six [+][3-8], three [–][9-11]) and one [+] cross-sectional survey[12].

Five related sub-themes were identified within this overarching theme:

1a **Lack of engagement by health professional***:* Five studies[1,4-7] described a lack of engagement by referring health professionals. This related to uncertainty around whose responsibility the referral process was (primary care practitioner or potential participants) and complex paperwork.

1b **Low priority for GPs**: Five qualitative studies of referrers[1,3-4,8] and providers[1,9] described referral to ERS as a low priority for GPs.

1c **Lack of awareness**: General lack of referrer awareness and the need for reminders about schemes was identified in seven studies of referrers[1,4-5,8,11-12] and providers[1,5,10].

1d **Lack of feedback from schemes:** In two studies[4-5] a lack of feedback on participants from schemes to referring primary health professionals was identified as a barrier to engagement with the scheme by those health professionals. However, providers in one study[4] did not see communication as important.

1e **Legal responsibility**: Qualitative data from five studies (six papers) of referrer[1-5] and provider[1-2,5,7] views suggested that concerns around legal responsibility and

inappropriate referral are barriers to referral for exercise referral schemes.

[1]Carroll 2002, [2]Wiles 2008, [3]Graham 2005, [4]Graham 2006, [5]Mills 2008, [6]Moore 2011, [7]Murphy 2010, [8]Taket 2006, [9]Cock 2006, [10]Fox 1997, [11]Ward 2007, [12]Goodman 2011

Applicability: Directly applicable as all studies were conducted in the UK

2. Participant goals

Nine studies reported a range of goals participants wanted to achieve through joining an exercise referral scheme that might act as facilitators: eight qualitative (one [++][1], six [+][2-7], one [–][8]) and one [+][9] cross sectional survey.

Overall the major motivating facilitator for participants was health improvement or avoidance of ill health, rather than the (ERS) goal of increased physical activity.

The most common facilitating goal regarded participants' desire for improved health or avoidance of ill health, as reported in seven studies[1-6,8]. For example, participantss were keen to improve existing health problems such as cardiovascular conditions[2,4-6] depression[2], musculoskeletal conditions[2,4,5], diabetes[5] or return to work[7]. A number were also concerned about preventing health problems and healthy ageing[2,5,6,8].

Weight loss aims were reported in four studies[2,3,5,7]. However, in further study of Muslim women, whilst all participants were overweight or obese, none perceived this to be an issue[9].

Despite the nature of the intervention, increased physical activity was not the most common goal. This was reported in four papers and participants tended to focus on having better fitness levels rather than on being more physically active[2,4,5,7]. One study included some participants who felt that they did not need to improve their activity levels[5].

Other pre-programme goals related to social inclusion ('getting out the house' or making friends)[2,3,5] and improving appearance[5].

[1]Wiles 2008, [2]Beers 2006, [3]Crone 2002, [4]Graham 2006, [5]Hardcastle 2002, [6]Murphy 2010, [7]Wormold 2004,[8]Singh 1997, [9]Khanam 2008

Applicability: Directly applicable as all studies were conducted in the UK.

3. Participant motivation

Nineteen papers from seventeen studies discussed the motivation of participants before, during and after participation in an exercise referral scheme. Sixteen qualitative studies (one [++][1], twelve [+][2-13], three [–][14-16]) and three [+]cross-sectional surveys[17-19]. Participant motivations varied and appeared often to be quite personal.

Seven studies[2,4-5,8,9,11,16] discussed the motivating factors which affected participants' decision to join an exercise referral programme and no clear themes emerged other than the facilitator of feeling that they should exercise[5,7,9,11].

Ten studies[2,3,5-6,8,13-15,18-19] discussed the facilitating motivations during the exercise programme. Varied motivations were reported (overcoming hurdles, memory of previous fitness, enjoyment, health benefits noted, peer and provider support, accountability to GP) and no clear themes emerged.

Seven papers[2,5,6-8,12,19] from six studies of participant views found that many participants lacked self-motivation during the programme.

Seven papers[1,4,7,9-10,12,14] from six studies presented views from referrers and providers relating to the motivation of participants during the programme (such as personal autonomy, self-motivation, need for support) and, again, no clear themes emerged.

Two studies[5,19] discussed the motivation of participants to continue with physical activity after the programme noting the facilitating factors of autonomy and competence[19] and self discipline[5].

[1]Carroll 2002, [2]Beers 2006,[3]Crone 2002, [4]Graham 2006,[5]Hardcastle 2002,[6]Martin 1999, [7]Mills 2008, [8]Mills 2012, [9]Moore 2011, [10]Moore 2012, [11]Schmidt 2008, [12]Taket 2006, [13]Wormald 2006,[14]Cock 2006,[15]Joyce 2010, [16]Taylor 1996, [17]Khanam 2008,[18]Morton 2008,[19]Rahman 2011

Applicability: High – eighteen studies conducted in the UK and one in the Netherlands[11]

4. Existing health concerns

Fifteen papers from fourteen studies: thirteen qualitative papers (one [++][1], eleven [+][2-12], one [–][13]) and two [+] cross sectional surveys[14,15] contained views from participants[2-7,9-15], referrers[1,14] and providers[8].

Current health concerns were reported as a barrier (injury, exacerbation of condition) or a facilitator (desire for health improvement).

Concerns at referral stage around perceived negative effects on health from the ERS were

identified by participants in two studies[2,10], whilst in one further study[4] health concerns were identified as both barriers and facilitators by different participants.

Referrers[1,14] and providers[8,9,12] noted health concerns as barriers to referral in ERS in five studies[1,8,9,12,15].

Health concerns were identified as barriers by participants during the intervention from eight studies[2-7,10,11,15]. However three of these studies (four papers)[2,4,6,7] also described these concerns as enablers to continuing participation.

One qualitative study[13] found that non-adherering participants were more likely than adherers to say that an existing complaint limited their participation in physical activity.

[1]Wiles 2008, [2]Beers 2006, [3]Graham 2006, [4]Hardcastle 2002, [5]Martin 1999, [6]Mills 2008, [7]Mills 2012, [8]Moore 2011, [9]Stathi 2004, [10]Taket 2006, [11]Walsh 2012, [12]Wormald 2006, [13]Taylor 1996, [14]Goodman 2011, [15]Morton 2008.

Applicability: Directly applicable as all studies were conducted in the UK

5. Enjoyment of exercise

Five qualitative studies of participant views (four [+][1-4], one [–][5]) provided a mixed picture of whether enjoyment of ERS exercise was a crucial factor for joining and completing ERS programmes.

Some participants clearly enjoyed the activities[1-5] whereas other views indicated that the enjoyment was not of activity itself but the associated benefits of participation such as satisfaction in maintaining willpower to achieve their goals[2,3] or the physical benefits[2-5].

[1]Beers 2006 +, [2]Crone 2002 +, [3]Hardcastle 2002 +, [4]Mills 2008 +, [5]Cock 2006 −)

Applicability: Directly applicable as all studies were conducted in the UK.

6. Personal commitments

Lack of time as a result of personal commitments was identified as a barrier in four qualitative studies (three [+][1-3], one [–][4]). One study[1] reported the views of both participants and non-participants and a second[2] reported the views of women only. Finding time to exercise was reported as an issue in relation to initiation and continuation of a programme.

Four studies[1,2,3,4] identified that participants' commitments to work, family, roles as a carer or social demands made it difficult to find time to exercise.

Commitments to perceived family and domestic roles were also identified as leaving no or little time to exercise[2].

Prioritisation of exercise in relation to personal commitments was discussed in two studies[1, 4] with some participants realising that making time to exercise was as important as making time for other commitments.

[1]Beers 2006, [2]Hardcastle 2002 [3] Taket 2006, [4]Taylor 1996

Applicability: Directly applicable as all studies conducted in the UK.

7. External support from family/friends

The presence or lack of support from family and friends as a factor in motivating participants to take-up and continue physical activity was identified in six studies of participant views: five qualitative (three [+][1-3], two [–][4,5]) and one [+] cross sectional survey[6].

In four studies[1-4] support, particularly from a spouse, was identified as a facilitator; and in two studies[5,6] its lack was identified as a barrier.

Participants found that support from family members, particularly from a spouse encouraged them to participate in physical activity[1, 2, 3, 5].

In two studies[5,6] lack of support was found to discourage uptake and adherence.

[1]Graham 2006, [2]Hardcastle 2002, [3]Martin 1999, [4]Cock 2006, [5]Taylor 1996, [6]Khanam 2008

Applicability: directly applicable as all studies conducted in the UK

8. Religion and culture

Evidence from two qualitative studies (one [++][1], one [+][2]) and one [+][3] cross sectional survey identified several significant barriers to Muslim women engaging with and adhering to exercise referral schemes.

Participants in three studies[1-3] and providers in one study[1] clearly identified the need for women-only sessions to meet the religious needs of Muslim women.

Language problems and an inability to communicate effectively were identified as barriers to uptake and adherence by participants in two studies[1,3] and providers in one study[1]. This was managed in part by family members also attending to translate. The lack of Asian staff who were able communicate with participants was an associated issue identified.

[1]Carroll 2002, [2]Schmidt 2008, [3]Khanam 2008

Applicability: Two studies were conducted in the UK and one[2] in the Netherlands

9. Cost of exercise facilities

The cost of exercise was identified as a barrier in twelve qualitative papers (one [++][1], eight [+][2-9], three [–][10-12]) and one longitudinal paper [+][13] from twelve studies. Cost was an issue raised in relation to becoming active, joining exercise referral schemes, adhering to them and in maintaining post-programme physical activity.

In three studies, participants[1] and providers[6,12] both identified cost as a barrier to joining exercise referral schemes. Also, providers in fourth study[5] identified reduced/no cost as a facilitator to engagement with the schemes. In one additional study[4], inability to pay for gym/leisure centre use was identified by some referrers as a referral reason.

Differing views on whether the costs of attending a scheme were a barrier to completing it were identified in nine studies, eight with participant populations[4,5,8,9,12,13] and one in providers[6]. Six of these studies[2,5,8-10,13] highlighted cost as an issue, the other three[6,11,12] did not. However, of studies stating that cost was not an issue, where scheme costs were reported[6,11] they appeared quite low.

Finally, participants in five studies[2,3,7,8,12] and providers in one study[6] indicated that the increased cost associated with moving from a subsidised scheme to the going rate was a significant barrier to sustaining physical activity post-intervention.

[1]Carroll 2002, [2]Beers 2006, [3]Graham 2006, [4]Hardcastle 2002, [5]Mills 2008, [6]Moore 2011, [7]Moore 2013, [8]Schmidt 2008, [9]Shaw 2012, [10]Cock 2006 [11]Fox 1997, [12]Taylor 1996, [13]Tai 1999

Applicability: high – twelve studies conducted in the UK and one in the Netherlands[8]

10. Location of activities

Location of activities during the ERS and the effect on adherence was a theme across eight qualitative studies (one [++][1], six [+][2-7], one [–][8]) and one [+][9] cross sectional survey.

Participants reported distance to travel as a barrier in six studies[2,4-5,7-9], and local provision as a facilitator in one study[7]. Providers[1] and referrers[1,7] concurred with this theme, reporting distance to travel as a barrier in two studies[1,7] and local provision as a facilitator in two studies[1,7].

The perceived safety of the location for women was reported as a barrier by participants in

three studies[1,3,5] and by referrers in one study[1].

[1]Carroll 2002, [2]Beers 2006, [3]Mills 2008, [4]Moore 2013, [5]Schmidt 2008, [6]Shaw 2012, [7]Taket 2006, [8]Cock 2006, [9]Khanam 2008.

Applicability: High as eight studies were conducted in the UK and one[5] in the Netherlands.

11. Travel

The difficulty of travelling to activities for those relying on public transport was a theme linked to location. Participants reported difficulties with travel, or the need for better transport in six qualitative papers (one [++][1], five [+][2-6]) from five studies and one [+][7] cross sectional survey.

[1]Carroll 2002, [2]Martin 1999, [3]Moore 2013, [4]Murphy 2010, [5]Taket 2006, [6]Wormald 2006, [7]Khanam 2008

Applicability: Directly applicable as all studies were conducted in the UK..

12. Setting

The setting of exercise referral schemes was identified as a theme in nineteen papers from sixteen qualitative studies (fifteen [+][1-15], three [−][16-18]) and one [+][19] cross-sectional survey. The views identified focused on perception of the gym/leisure centre environment.

The theme was identified by participants in seventeen papers[1-7,9-13,15-19] and providers in four papers[6,8,14,16] as a factor in the uptake and continued attendance in ERS schemes.

The theme is was discussed in four sub-themes with individual evidence statements provided for each theme:

a) Perception of the gym environment
b) Gym atmosphere (TV/music)
c) Confidence and knowledge operating gym equipment
d) Quality of physical facilities

[1]Beers 2006, [2]Crone 2002, [3]Graham 2006, [4]Hardcastle 2002, [5]Martin 1999, [6]Mills 2008, [7]Mills 2012, [8]Moore 2011, [9]Moore 2013, [10]Schmidt 2008, [11]Sharma 2012, [12]Shaw 2012 [13]Stathi 2004, [14]Taket 2006, [15]Wormold 2004, [16]Cock 2006, [17]Fox 2007, [18]Taylor 1996, [19]Khanam 2008

Applicability: High – sixteen studies conducted in the UK and one[8] in the Netherlands.

12a Perception of the gym environment

Participants in thirteen qualitative studies described feeling uncomfortable and intimidated in the unfamiliar gym environment before joining and/or during ERS attendance[1-6, 8-10, 12-15]. This appeared to be related to the perceived image of other users being fit, slim, young and beautiful[2,4,5,12,13] together with participant's own low self-esteem and body image[1-4, 8,9,15].

In addition to the exercise environment, participants also highlighted their discomfort with communal changing areas[2,4,13].

Several studies included views on coping with or minimising participant discomfort. In two studies participants anticipated or experienced that over time familiarity with the environment and knowing what they are doing would build their confidence and comfort in the setting[2,4]. Participants described feeling at ease in supportive gym environments where the threatening 'typical sporty image' had been overcome[11,14], gym users were friendly[2] or similar to themselves[2,4,6].

Separate gym times/areas for ERS users were discussed in four studies by participants who felt this was less intimidating[2,8]

Providers' views on separate gym times/areas for ERS users were discussed in two studies[7,13]. Participant requests for exclusive 'ERS-only' times/gyms were considered problematic because of the financial costs involved[13]. Additionally, some providers[7] expressed concerns that participants would not be able to integrate into the mainstream gym environment once they completed the ERS programme

[1]Beers 2006, [2]Crone 2002, [3]Graham 2006, [4]Hardcastle 2002, [5]Martin 1999, [6]Mills 2008, [7]Moore 2011, [8]Schmidt 2008, [9]Sharma 2012, [10]Stathi 2004, [11]Taket 2006, [12]Wormold 2004, [13]Cock 2006, [14]Fox 2007, [15] Taylor 1996

Applicability: High - fourteen studies were conducted in the UK and one[8] in the Netherlands.

12b Gym atmosphere (noise, music and television)

Within the broader setting theme, seven studies of participant views discussed the gym atmosphere during the exercise referral scheme: six qualitative (four [+][1-4], two [–][5,6]) and one cross-sectional survey ([+][7]).

Within the broader setting theme, seven studies discussed the gym atmosphere. Negative opinions relating to the noise, volume or type of music played were discussed in six studies[1,3-7]. Two of these studies also highlighted negative views towards televisions

playing content perceived to be inappropriate[7], not to their personal taste[5], or too loud/quiet[1].

Conversely participants in three studies discussed that whilst music or television was not necessarily liked, they were helpful in distracting participants from their feeling of anxiety in an unfamiliar environment or alleviating boredom[1,2,5].

[1]Crone 2002, [2]Hardcastle 2002, [3]Martin 1999, [4]Mills 2008, [5]Cock 2006, [6]Taylor 1996, [7]Khanam 2008.

Applicability: Directly applicable as all studies were conducted in the UK.

12c Confidence and knowledge to operate gym equipment

Within the broader theme of setting, participant concerns about how to use gym equipment was a common issue in five [+][1-5] studies of participant views and one [−][6] qualitative study of provider views.

Five studies reported worries or lack of knowledge about how to use the equipment as an issue prior to starting ERS programmes[2,4] or during participation[1,5,6].

In one study ERS providers were described as being crucial in helping participants to overcome their difficulties with using machinery[4]; whilst the lack of provider presence was mentioned in a separate study[2].

Providers in one study suggested that participant's comfort with a particular key technology used with fitness machines in their gym varied depending on age[6].

[1]Beers 2006, [2]Crone 2002, [3]Martin 1999, [4]Moore 2013, [5]Stathi 2004, [6]Cock 2006.

Applicability: Directly applicable as all studies were conducted in the UK.

12d Quality of physical facilities

Within the broader theme of setting, the poor quality of the physical facilities was an issue for participants in four qualitative studies (two [+][1,2], two [−][3,4]) and providers in one [−][3] study. One study had mixed views on whether this was a deterrent to attendance[1].

Issues highlighted by participants were not enough gym equipment available leading to delays whilst waiting to get on equipment[2,3], shabbiness, cleanliness or locker availability of changing facilities[3,4] and cold swimming pool temperature[3].

Providers in one study commented on facility limitations and highlighted budget

constraints as a reason[3].

[1]Crone 2002, [2]Shaw 2012 , [3]Cock 2006, [4]Taylor 1996,

Applicability: Directly applicable as all studies were conducted in the UK.

13. Scheduling of activities

Scheduling of activities was identified as an issue in eleven qualitative studies (one [++][1], five [+][2-7], four [–][8-11]) and one [+][12] cross sectional survey. Participants views were reported in ten studies[2-8,10-12] and providers in two studes[1,4].

Participants reported inconvenient timing of sessions as a barrier to attendance in ten studies[2-8,10-12]; mostly in relation to clashes with work hours or childcare commitments. Providers also indicated that evening attendance was a barrier for workers or for people with children in one study[8].

Participants[11] and providers[4] reported that scheduling activities during off-peak gym times allowed attendance at times when the environment was 'less intimidating'. However, this was inconvenient for day-time workers[11].

Within the broader scheduling theme, participants in three studies[6,8,11] described 'rigid' appointment times or lack of flexibility in scheduling as a barrier to attending. Providers in one study[4] also suggested benefits of providing flexibility in the time that participants can attend.

Providers in one study of Muslim women[1] also highlighted the need to consider religious holy days within the scheduling of sessions.

[1]Carroll 2002, [2]Beers 2006, [2]Hardcastle 2002, [4]Mills 2008, [5]Moore 2013, [6]Shaw 2012, [7]Taket 2006. [8]Cock 2006, [9]Joyce 2010, [10]Lord 1995, [11]Taylor 1996, [12]Morton 2008.

Applicability: Directly applicable as all studies were conducted in the UK.

14. Participant preferences for types and variety of activity

Twelve papers reported participants' and providers' views regarding the range of activities offered by ERS schemes and their preference for various exercise types: ten qualitative (nine [+][1-9], one [–][10]) and two cross sectional surveys (one [+][11] and one [–][12]).

A key concern was although some participants did enjoy gym based exercise, opinions differed in the seven studies that identified this theme[1,3,7,9-12]. Participants in five studies reported reluctance to perform gym-based exercise prior to attending[3,12] or dislike of gym

exercise once they had attended the scheme, citing boredom[1,3,10], preference to be outside[1] or a dislike of lifting weights[3]. Conversely, three studies included participants who liked gym-based exercise for its safe environment unaffected by the weather [3,7,9].

Providers in one study also noted participants' dislike of gym sessions[10].

Various preferences for other forms of exercise were discussed including group-based activities such as dance, aerobics or yoga[2,3,8,9,11], swimming[1,2,5,9,11]or outdoor activities such as walking[1,2,11] and cycling [1,2].

There was an indication that participants and providers wanted ERS to offer a range of activities rather than just one type. Four studies indicated that whilst many participants valued the range of existing activities, others wanted more variety[5-7,9].

Programme referrers also valued provision of varying exercise types within a particular ERS programme[8] whereas providers in one study reported mixed attendance at non-leisure centre-based activity options, with good uptake for cycling but a poor response to walking schemes[10].

[1]Beers 2006, [2]Crone 2002, [3]Hardcastle 2002, [4]Mills 2008, [5]Moore 2013, [6]Shaw 2012, [7]Stathi 2004, [8]Taket 2006, [9]Wormald 2004, [10]Cock 2006, [11]Khanam 2008, [12] Beaufort Research 2013.

Applicability: Directly applicable as all studies were conducted in the UK.

15. Individualised, personalised service

Personalised service was identified as a factor influencing adherence to ERS programmes in ten studies (one [++][1], 8 [+][2-9] and 1 [−][10]).

Participants in eight studies described wanting individualised attention and an exercise schedule tailored to their needs, ability or preferences[2,4-10].

Provider reports in six qualitative studies supported this theme[1,3,6-8,10]. They noted the value of attempting to create exercise programmes suited to participants' physical health status[1], matched activity preferences[3,8] and their goals and values[6.] Providers described how personalised individual attention was comforting to participants, easing their anxieties and making them feel valued. I one study, providers reported resource limitations as a barrier to providing an individualised service.[10]

[1]Wiles 2008, [2]Beers 2006, [3]Graham 2006, [4]Hardcastle 2002, [5]Martin 1999, [6]Mills 2008, [7]Moore 2013, [8]Taket 2006, [9]Wormald 2004, [10]Cock 2006.

Applicability: Directly applicable as all studies were conducted in the UK.

16. Provider skills

Whether they had sufficient skills to undertake their roles when working with participants who had/were likely to have health problems was raised by providers in six studies: five qualitative papers (one [++][1], three [+][2-4], one [–][5]) and one [+][6] cross-sectional survey.

In working with general populations, providers in two studies[2,4] felt they had the necessary skill set. However instructors and organisers working with stroke patients[1], participants with depression[3], or osteoarthritis[4] or older people[6] expressed concerns as to whether they were able to advise and support these participants appropriately.

[1]Wiles 2008, [2]Graham 2006, [3]Moore 2011, [4]Walsh 2012, [5]Cock 2006, [6]Goodman 2011

Applicability: Directly applicable as all studies were conducted in the UK.

17. Support and supervision from providers

Good support and supervision from staff was identified as a facilitator and its absence a barrier to adherence in nineteen papers from seventeen studies: eighteen qualitative (one [++][1], fourteen [+][2-15], three [–][16-18]) and one [–][19] cross-sectional survey. Participant views were presented in eighteen papers[1-8,10-19] and provider views in four[1,9,16,18].

Support from ERS providers was highly valued by participants due to concerns of exercising safely[4,5,7,8,10-12,16]. Participants also felt that supervision was needed in order to build their knowledge on how to use equipment, exercise effectively and progress their fitness[3,6,10] and commonly described how ERS providers were needed to build or maintain their motivation to exercise[2,5,10,14,19]). Several studies highlighted the negative opinions participants had regarding their perceived lack of provider support[1,2, 16] and a positive feeling of general comfort when adequate supervision was perceived[12,15].

Providers were aware of their role in alleviating participants' health concerns when exercising[16], providing comfort[9] or motivation[16]. Whilst providers also recognised participant's negative responses to a lack of available support and visibility of ERS providers[1,16,18], they faced barriers in providing adequate support due to limited resources. Furthermore, some providers were concerned of participants becoming too dependent on their support[1].

[1]Wiles 2008, [2]Beers 2006, [3]Crone 2002, [4]Graham 2006, [5]Hardcastle 2002, [6]Martin 1998, [7]Mills 2008, [8]Mills 2012, [9]Moore 2011, [10]Moore 2013, [11]Schmidt 2008, [12]Shaw 2012, [13]Stathi 2004, [14]Wormald 2004, [15]Wormald 2006, [16]Cock 2006, [17]Taylor 1996, [18]Ward 2007 –, [19]Cummings 2010.

Applicability: High – seventeen studies conducted in the UK and one in the Netherlands[10].

18. Peer and group interaction and support

The importance of peer and group interaction and support was a frequent theme. It was identified in twenty four papers from twenty one studies: twenty two qualitative papers (one [++][1], sixteen [+][2-17], five [–][18-22]) and two cross sectional surveys [+][23-24]. The theme was highlighted by both participants[1-8,10-24] and providers[1,7,9,11,16,18].

Three main sub-themes were identified within this overarching theme:

18a **The value of peer support**, through having a companion or buddy to do the activity with during the scheme was identified by participants in nine studies[2,3,5,13,16,18,21,22]. The value of peer support in maintaining activity after the programme was noted in one study[6].
The importance of peer support during the programme was also a key theme for providers in seven papers from five studies[1,8-11,16,18].

18b **The benefits of group activities**, in the company of like-minded companions rather than solitary exercise, was a theme identified by participants in six studies[1,2,6,8,14,17].

18c **Engagement with others** aiding integration and enjoyment was identified in 17 papers from 15 studies[2-5,7-9,11-14,17,18,20,21,23,24] of participant and provider views. The benefits of on-going social engagement after the programme were identified by providers in one study[9].

[1]Wiles 2008, [2]Beers 2006, [3]Crone 2002, [4]Graham 2006, [5]Hardcastle 2002, [6]Martin 1999, [7]Mills 2008 , [8]Mills 2012, [9]Moore 2011, [10]Moore 2013, [11]Murphy 2010, [12]Schmidt 2008, [13]Sharma 2012, [14]Shaw 2012,[15]Stathi 2004,[16]Taket 2006, [17]Wormald 2004, [18]Cock 2006, [19]Fox 1997, [20]Joyce 2010, [21]Lord 1995, [22] Singh 1997, [23]Cummings 2010, [24]Khanam 2008

Applicability: High - twenty studies were conducted in the UK and one[12] in the Netherlands.

19. Outcomes of ERS

Twenty two studies described a range of facilitating outcomes that participants reported as a result of an exercise referral scheme: 20 qualitative studies (13 [+][1-13], seven [–][14-20]) and two cross sectional surveys (one [+][21], one [–][22]) .

Studies explored participant views during[7-8,10,13-14,16,18-20], after[1,6,9,11-12,22] or both during & after[2-3,5,17] the intervention. In one study the timing of participant interviews was unclear[4] and in another, providers were expressed participants' views about scheme outcomes in general[15].

The most common outcomes concerned participants' health, of which the major facilitating

outcome was mental health, reported in 15 studies[1,3-5,7-13,15-16,19-20,22]. General physical fitness[1,3-5,7-14,19-20] and general health benefits[1,3-5,10-13,16-18,20-21] were reported in 14 and 13 studies respectively, weight loss or improved tone in 9 studies[1,4-5,7-8,11,13,20,22] and increased physical activity in 8 studies[2,5,10-14,19,22].

Other key outcomes were an increase in personal autonomy (9 studies) [1,3,5,7-10,12-13] and the social engagement benefits of the ERS (8 studies) [3,5,10,12-13,19-20,22].

Less commonly reported outcomes were increased knowledge[5-7,11-13] and effects on looks and appearance[5,7,10,13,15,20] although each theme appeared in six studies.

Providers noted the facilitator themes of improved knowledge, looks and appearance, and physical fitness in one qualitative study[7].

Outcomes as barriers to ERS were noted in five qualitative studies (four [+][1,8,10,12], one [–][17]). These were negative effects on general health and mental health[1], exacerbation of specific health problems[17], disappointment over failure to lose weight[8] and the fact that not all participants could benefit from increased social engagement[10,12].

[1]Beers 2006, [2]Clarke 1996 , [3]Crone 2002, [4]Graham 2006, [5]Hardcastle 2002, [6]Martin 1999, [7] Mills 2008,[8]Moore 2013,[9]Sharma 2012, [10]Stathi 2004, [11]Taket 2006, [12]Wormald 2004, [13] Wormald 2006, [14]Cock 2006, [15]Fox 1997, [16]Joyce 2010, [17]Lord 1995, [18]Singh 1997, [19]Taylor 1996, [20]Ward 2007, [21]Cummings 2010, [22]Day 2001

Applicability: Directly applicable as all studies were conducted in the UK.

20. Professional support after programme

The desire for professional support beyond the end of the programme was a key concern for participants in nine qualitative studies (seven [+][1-7], two [–][8-9]), for providers in one [+] qualitative study (two papers[4,10]) and for referrers in one [+] qualitative study[2].

In five studies[1-5,8-9] the lack of ongoing professional support was expressed by participants in terms of a barrier to continuing exercise. In two studies[6-7] the possibility of continuing professional support beyond the programme was expressed as a facilitator.

Providers also referred to lack of ongoing support as a barrier[10] and the possibility of its continuation post-programme as a faciiitator[4], while referrers spoke about ongoing professional support as a facilitator[2].

[1]Beers 2006, [2]Graham 2006, [3]Moore 2013, [4]Murphy 2010, [5]Schmidt 2008, [6]Taket 2006, [7]Wormald 2004, [8]Cock 2006, [9]Joyce 2010, [10]Moore 2011.

Applicability: Directly applicable as all studies were conducted in the UK

21. Planned routines after ERS

Establishing regular exercise routines after the programme and exercise becoming a 'habit' was identified as a facilitator by participants in three [+][1-3] qualitative studies.

Two related barriers were identified in four qualitative studies (three [+], one [–]); the risks of falling out of the habit of exercise[1,4] and loss of social support when scheduled exercise sessions with similar individuals finished on completing the programme[2,4-5].

Providers also identified the loss of social support as a barrier to ongoing exercise in one [+] qualitative study[6].

[1]Hardcastle 2002, [2]Murphy 2010, [3]Wormald 2006, [4]Graham 2006, [5]Cock 2006, [6]Moore 2011

Applicability: Directly applicable as all studies were conducted in the UK.

5 DISCUSSION

The companion effectiveness review to this study (Campbell 2013)[7] updated an earlier Health Technology Assessment review (Pavey 2011) and looked at the findings of eight randomised controlled trials, of which six were conducted in the UK. Only randomised controlled trials (RCTs) were considered for this HTA update and a number of controlled (non-randomised) and other intervention studies were excluded.

One RCT (Kirk 2004) linked to a study in this review (Taket 2006) was not included in Campbell 2013 as the population in the RCT was referred from a secondary care clinic. However, in the subsequent qualitative study (Taket 2006), referrals were from general practice.

In line with findings from this review, Campbell (2013) concluded there were benefits for patients referred to ERS with coronary heart disease and for those referred with mental health issues. Other findings that chime with the views findings in this study are that women were more likely to take up ERS than men (four studies), increased age predicts uptake (six studies), patients with mental health problems more likely to take up (*/*), most deprived SES less likely to take up ERS (three studies) and low SES predicts drop out (two studies). Two studies found no association between ethnicity and uptake and one study found no link with adherence.

Campbell (2013) carried out a narrative qualitative summary of the views on barriers and facilitators mentioned by the authors of the included RCTs in discussion sections and included the sibling studies identified for Murphy 2012 (Moore 2011, Moore 2012, Moore 2013); introducing some overlap with this review.

The emerging themes, of specific relevance to the RCT setting, were summarised in a logic model and some of the findings relating to the characteristics of the intervention tie in with the findings from this review, for example the facilitators of neighbourhood based, tailored strategies, professional support and social support.

Strengths and limitations of this review:

This review was built on a comprehensive search strategy to find views-based studies of participants, referrers and providers of exercise referral schemes. The literature search included a thorough attempt to identify relevant published and unpublished studies. A

[7] Campbell F, Holmes M, Everson-Hock E, Davis S, Buckley Woods H, Anokye N, Tappenden P & Kaltenthaler E. A systematic review and economic evaluation of exercise referral schemes in primary care: A short report. *Health Technology Assessment* 2013.

large number of studies of UK-based research were identified (thirty four of the thirty five included studies) and the review has direct applicability to UK settings.

Although the quality of studies overall was judged as moderate, a number of qualitative studies graded + were generally well conducted research within PhD theses. Because of the nature of the qualification, analyses could not have been carried out by two independent researchers and as such received a moderate grading. Other studies with low grades were process evaluations and not designed with formal qualitative or survey methodologies. Nevertheless they provided data that were of value in corroborating the data from the formal studies.

The available evidence was limited for some populations: ethnic minority populations, people with disabilities and lower SES groups. From the additional studies in non-UK populations, only one (Schmidt 2008) added any additional data relevant and applicable to these populations.

ABBREVIATIONS

CS	Correlation study
DH	Department of Health
EoP	Exercise on Prescription
ERS	Exercise Referral Scheme
F	Female
GP	General Practitioner
IPA	Interpretative Phenomenological Analysis
LWMP	Lifestyle weight management programme
M	Male
MRC	Medical Research Council
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NIHR	National Institute for Health Research
PARIHS	Promoting Action on Research Implementation in Health Services
PCT	Primary Care Trust
PA	Physical activity
PE	Process evaluation
RCT	Randomised controlled trial
Q/Qual	Qualitative study
SD	Standard deviation
SES	Socio-economic status
CSS	Cross sectional study

1. INTRODUCTION

1.1 Aim of the review

To determine the factors that influence referral to, attendance at and successful completion of exercise schemes and longer term participation in physical activity.

1.2 Review questions

The overarching research question is:

What barriers and facilitators affect referral to, attendance at and successful completion of exercise referral schemes and longer term participation in physical activity, from the perspectives of those using, and those providing, commissioning and delivering, these services?

To answer this we will address the following subsidiary questions:

1. What factors do potential/actual service users and providers perceive to influence uptake and referral to an exercise referral scheme?
2. What factors do potential/actual service users and providers perceive to influence, attendance at, and successful completion of, the scheme?
3. What factors do potential/actual service users and providers perceive to influence longer-term participation in physical activity following attendance at an exercise referral scheme?

The questions will consider (but will not be limited to) the following potential factors:

- The facets of an exercise referral scheme (such as the type, location or cost)
- Factors about the service providers (such as knowledge of physical activity, awareness of awareness of local physical activity opportunities, attitude to physical activity, attitude, empathy)
- 'participant' factors (such as resource, time, current health/other health conditions, age, gender, travel and/or cost)
- Contextual factors that may act as barriers or facilitators to the optimisation of exercise referral schemes such as commissioning set up or ongoing policy frameworks.

1.3 Background

Exercise referral schemes consist of:

- An assessment involving a primary care or allied health professional to determine that someone is 'inactive', that is, they are not meeting the current UK physical activity guidelines (see section 3 above).
- A referral by a primary care or allied health professional to a physical activity specialist or service.
- An assessment involving a physical activity specialist or service to determine what programme of physical activity to recommend.
- Participation in a physical activity programme.[8]

According to the World Health Organisation, "physical inactivity is now identified as the fourth leading risk factor for global mortality. Physical inactivity levels are rising in many countries with major implications for the prevalence of noncommunicable diseases (NCDs) and the general health of the population worldwide".[9]

In 2006 NICE published guidance looking at several methods to increase physical activity, including exercise referral schemes[10] (ERS). The ERS element related to "referral to a tailored physical activity programme".

Among the key recommendations for brief advice were:

- Advising adults who were not currently physically active that they should undertake at least 30 minutes of moderate activity five days a week (eg walking, cycling, gardening or a range of sports and exercise).
- These adults should be given information on what was locally available and a health professional should identify what activity they would prefer and agree appropriate goals.

Recognising the lack of evidence associated with the use of exercise referral schemes to promote physical activity when the guidance was published; NICE made the recommendation that ERS should only be endorsed to promote physical activity if they were part of a formal research study.

[8] National Institute for Health and Care Excellence 2013. Public Health Guidance Scope: Physical activity: exercise referral schemes to promote physical activity (partial update of PH2).

[9] World Health Organization (2010) Global Recommendations on Physical Activity for Health. p7.

[10] NICE 2006. Four commonly used methods to increase physical activity: NICE public health guidance 2. http://www.nice.org.uk/PH2

In 2011, the four UK Chief Medical Officers (CMOs) published revised guidelines for physical activity which recognised that physical activity can help prevent and manage over 20 conditions and diseases including coronary heart disease, some cancers, diabetes, obesity and musculoskeletal disorders.[11]

The UK CMOs recommend that adults undertake a minimum of 150 minutes of moderate exercise weekly in bouts of 10 minutes or more. Alternatively, comparable benefits can be achieved through 75 minutes of vigorous intensity activity spread across the week or a combination of moderate and vigorous intensity activity. This should be combined at least twice weekly with activities to increase muscle strength and with an overall reduction in extended sedentary behaviour. In line with this emphasis, Change4Life has now expanded to focus on adults, with the Get Going Everyday campaign to encourage adults to increase their physical activity.[12]

According to Public Health England a lack of physical activity could cause as many as 36,815 premature deaths in England each year. A new tool examining the Health Impact of Physical Inactivity (HIPI) indicates that, across England, only 21% of people aged 40-79 achieve the CMOs recommended minimum weekly exercise target and major health gains could be made if this percentage was increased.[13]

Following the publication of a Health Technology Assessment (HTA) review 2011[14], NICE is proceeding to issue guidance on this topic, supported by an update of the 2011 HTA review and an associated commissioned review of context, barriers and facilitators.

[11] Start Active, Stay Active: A report on physical activity for health from the four home countries Chief Medical Officers, 2011

[12] http://www.nhs.uk/change4life/Pages/get-going-every-day.aspx

[13] Public Health England 2013. Health Impact of Physical Inactivity http://www.noo.org.uk/news.php?nid=2266

[14] Pavey TG, Anokye N, Taylor AH et al. (2011) The clinical effectiveness and cost-effectiveness of exercise referral schemes: a systematic review and economic evaluation. Health Technology Assessment 15 (44).

2. METHODS

2.1 Literature search

A systematic review of the evidence was undertaken to address the review questions.

A wide range of databases, websites and grey literature[15] sources were searched, to identify relevant studies in the English language published between January 1995 and June 2013.

2.1.1 Electronic sources (databases and websites)

The following sources were searched to identify relevant research papers/studies in the English language published between January 1995 and June 2013.

Databases

ASSIA (Applied Social Science Index and Abstracts) Proquest
British Nursing Index Proquest
CINAHL (Cumulative Index of Nursing and Allied Health Literature) EBSCO
Conference Proceedings Thomson Reuter Web of Knowledge
Embase Ovid
EPPI Centre databases – Bibliomap and DOPHer http://eppi.ioe.ac.uk/
Health Management Information Consortium (HMIC) Ovid
MEDLINE and MEDLINE in Process Ovid
UK Clinical Research Network Portfolio Database
http://public.ukcrn.org.uk/search/
PsycINFO Ovid
Sociological Abstracts Proquest
Social Science Citation Index Thomson Reuter Web of Knowledge
OpenGrey http://www.opengrey.eu/
SportDiscus EBSCO

Websites

British Heart Foundation http://www.bhf.org.uk/
Electronic Theses Online Service (EThOS) http://ethos.bl.uk
Health Evidence Canada http://www.healthevidence.org/
Clinical trials.gov and ISRCTN clinical trials registers
MetaRegister of Controlled Trials

[15] Technical or research reports, doctoral dissertations, conference papers and official publications.

NICE Evidence Search https://www.evidence.nhs.uk/
Public Health England
https://www.gov.uk/government/organisations/public-health-england
Public Health Wales http://www.wales.nhs.uk/sitesplus/888/home
Scottish Public Health network http://www.scotphn.net/
Scottish Government http://home.scotland.gov.uk/home
Welsh Government http://wales.gov.uk/
EU Platform on Diet, Physical Activity and Health;
http://ec.europa.eu/health/nutrition_physical_activity/platform/index_en.htm
World Health Organisation http://www.who.int/en/

2.1.2 Additional searches

In addition, 'snowballing' methods were used to identify additional research including grey literature:

- Reference list checking and citation tracking of included papers in Web of Knowledge and Scopus databases.
- Searching the electronic table of contents of key journals contributing papers
- Contacting experts in the field via relevant mail lists
- Considering papers identified via a call for evidence.
- Contact authors of studies identified for this review and those included in the HTA review and update to identify 'sibling' studies (qualitative, cross-sectional studies and process evaluations associated with intervention research).

Results of all searches were combined in a Reference Manager 12 database.

2.2 Inclusion and exclusion criteria

Study Design	Qualitative and observational studies reporting the views, perceptions and beliefs of those using and delivering exercise referral schemes. These included surveys, interviews, reports of focus groups, and process/outcome evaluations. Systematic reviews were also identified and 'unpicked' for relevant studies meeting the inclusion criteria.

Inclusion	**Population** *Potential/actual service users:* Adults aged 19 years or older who are 'inactive' (ie they are not currently meeting the UK physical activity guidelines). Eligible service users included those who met recommendations for exercise referral but who may not go on to participate in relevant services. Notes: 1. Where the population age range was below 19 years, studies were included if it was clear from the reported age range - mean (standard deviation) - that most participants were aged 19 or older. 2. If individuals were referred to exercise schemes for health reasons other than rehabilitation, they were assumed to be inactive. *Families and friends:* Family and friends of eligible service users described above. *Providers:* All service providers involved in the recruitment of service users and delivery/commissioning of exercise referral schemes targeted toward the 'eligible service user' population described above. **Intervention** Exercise referral schemes which include: • An assessment by a primary care or allied health professional to determine that someone is inactive. • A referral by a primary care or allied health professional to a physical activity specialist or service. • A formal assessment by the physical activity specialist or service to determine what programme of physical activity to recommend. • A physical activity programme.
Exclusion	**Population** Potential/actual service users aged 18 or under. **Interventions** Brief physical activity advice on its own. Walking and cycling schemes that are not part of an exercise referral scheme.

	Rehabilitation programmes used to aid recovery from specific conditions (for example, cardiac or pulmonary rehabilitation programmes).

2.3 Study selection

Titles and abstracts were screened independently by two reviewers using the inclusion/exclusion criteria. Any disagreement was resolved by discussion with a third reviewer and, if in doubt, included. Full paper screening was undertaken independently by two reviewers, with recourse to a third to resolve any disagreements.

2.4 Quality assessment

Quality assessment was conducted using the checklist for qualitative studies in Appendix H of the NICE manual – Methods for the development of NICE public health guidance (NICE 2012). Given the inherent risk of bias, it was agreed with NICE that, where thematic analysis was undertaken by a single researcher only (eg within a PhD thesis), the study would not be graded higher than a single +.

Quantitative cross-sectional studies were assessed using a modified version of the Correlation Studies checklist from Appendix G of the NICE manual (NICE 2012). The modified checklist contains an additional question relating to piloting of survey items and highlights questions that are only applicable to either correlation studies or cross-sectional surveys. An example is presented in Appendix G.

Studies were assessed by one reviewer and checked by a second, and disagreements resolved by discussion. Appendices B and C provides a summary of the validity ratings for each element of the included studies.

2.5 Data extraction – study characteristics and methodology

Data were extracted as specified in Appendix K of the NICE Manual (NICE 2012) and are presented in the Evidence Table (Appendix A) with study characteristics, internal and external validity scores (where applicable) and a brief summary of the key themes identified in the papers with illustrative quotes where applicable.

To identify key themes across studies, an index ladder of codes was developed *a priori*, in accordance with Richie and Spencer (2010) so that key findings could be extracted and organised at the same time. The index ladder of codes was developed after reading a sample of eligible papers and in discussion with the team. Once agreed, findings were extracted and coded by one reviewer and checked by

another, using the software Atlas.ti. The codes and quotations were then read and re-read, and categories further refined and organised.

2.6 Theme extraction and synthesis

The synthesis of the views regarding barriers and facilitators to the delivery of exercise referral schemes was guided by the NICE manual (Section 5.4) and Dixon Woods (2004).

A broad synthesis of the included evidence was performed. Views and opinions gathered from cross-sectional questionnaires and mixed methods studies were analysed thematically and integrated with the key findings from qualitative studies.

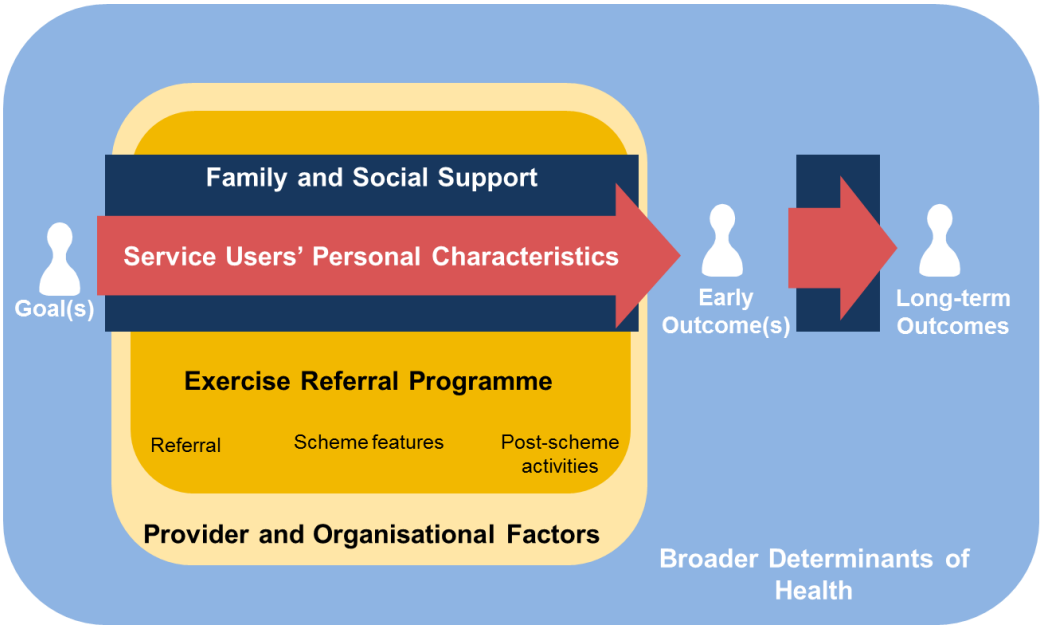
Findings are summarised in concise narrative summaries and evidence statements, supported by the Evidence Table (Appendix A). The statements indicate the message given by the evidence and the applicability of the results to the UK.

2.7 Communication of findings tools

In addition to a narrative summary/thematic synthesis; results have been summarised using two communication tools:

Logic model

Central to the framing of the review was the development of a logic/conceptual model. The model (below) served as a map that guided the development and organisation of theme codes.



The model considered the role played by downstream factors in engagement with exercise referral schemes, for example, individual characteristics of the service user. It provided a potential mechanism for exploring the influence of the 'programme logic'. In particular, the way in which referral, ERS features and post-scheme activities serve as barriers to and facilitators of successful engagement with exercise referral schemes and sustained physical activity afterwards. The review also sought to capture the influence of broader determinants of health such as age, environment, ethnicity, gender and social background

The extensive range of barriers and facilitators identified during the review were such that they are presented in tabular fashion [see p111]

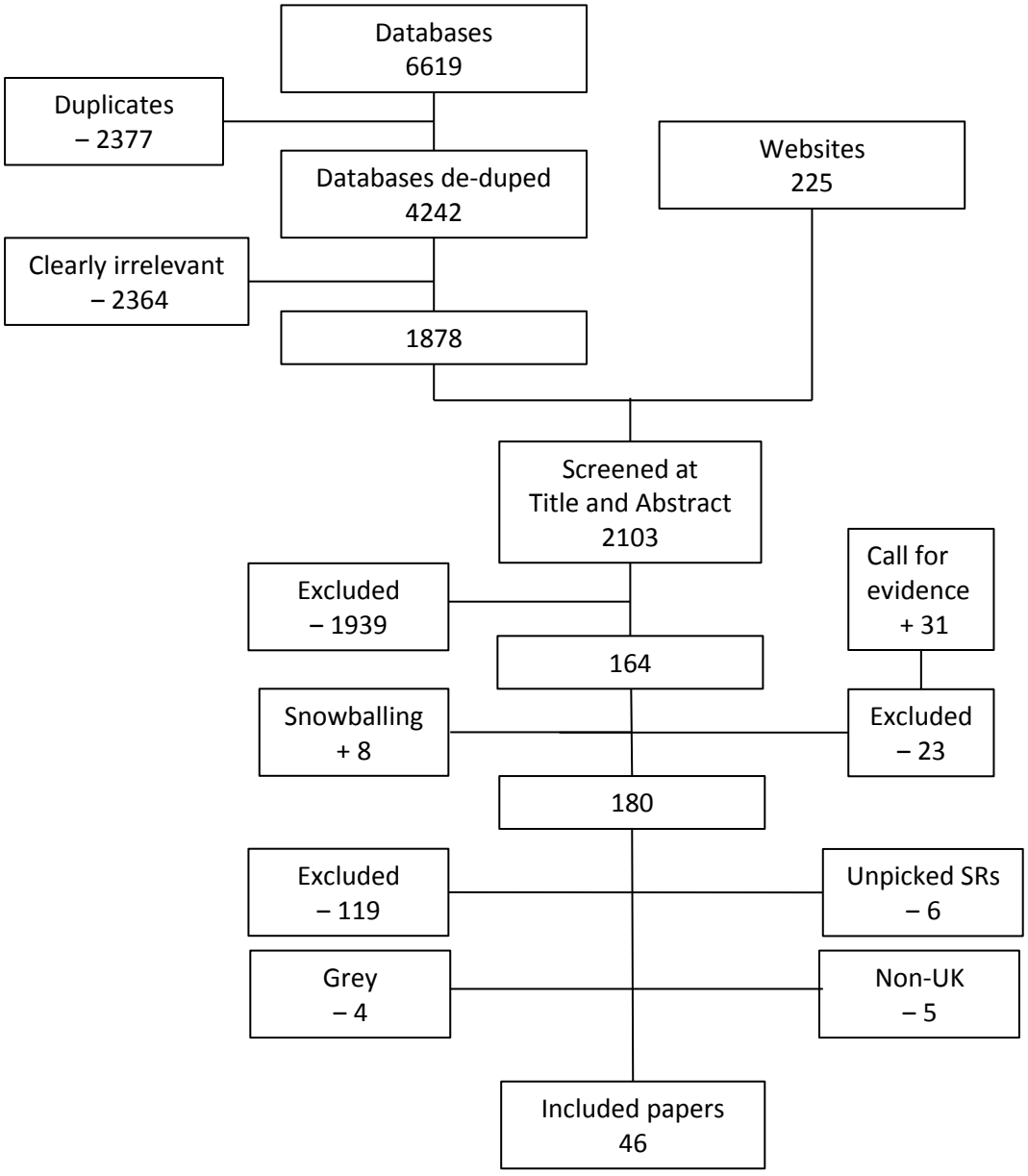
PARIHS Framework

The review team also mapped the identified barriers and facilitators against a conceptual model of implementation (Promoting Action on Research Implementation in Health Services (PARIHS) framework[16] to better understand the critical factors for successful implementation of exercise referral schemes. [See p116]

[16] Kitson AL, Rycroft-Malone J, Harvey G, McCormack B, Seers K and Titchen A. (2008) Evaluating the successful implementation of the PARiHS framework: theoretical and practical challenges. Implementation Science 3:1 DOI 10.1186/1748-5908-3-1

3. Results

3.1 Search Results



The search strategy identified 6844 citations from database and website searching of which 4741 were excluded as duplicates or clearly irrelevant. 2103 citations were reviewed in title and abstract and 180 in full text. Full details are provided in the flow diagram above.

Because of the size of the evidence base from UK studies, the decision was taken in consultation with NICE to limit inclusion to these studies unless there were key data

for hard to reach populations. In total 46 papers describing 35 studies (including one non-UK study) were included in the review.

3.2 Quality and applicability of studies

Of the thirty five studies identified, 24 were qualitative; providing rich data for the thematic analysis. In general, the internal validity of these studies was moderate with two studies deemed to have high internal validity (++), 14 to be of moderate quality (+) and eight of low quality (−).

All studies were assessed using the most appropriate NICE critical appraisal forms but some of those with lower quality ratings were mixed methods (process) evaluations and not designed with formal qualitative or survey methodologies.

Nine cross-sectional studies and one longitudinal study were also included, which were judged to have mostly moderate interval validity, with seven studies graded [+] and two [−]. The one longitudinal study was of good quality [++]. These study designs provided a more limited insight into participants', providers' and referrers' views than did the qualitative studies.

One study had varied methodologies for different groups of correspondents. Myron 2009 used a cross sectional survey for referrers' views [−] and a qualitative approach for participants and providers [−].

The concept of exercise referral schemes as a way of decreasing sedentary behaviour originated in the United Kingdom and this is reflected in the available evidence. Thirty four studies report on UK schemes. The non-UK study, a qualitative paper (Schmidt 2008), was conducted in the Netherlands. Thus overall applicability of the evidence is very high.

3.3 Settings of exercise referral schemes

The majority of schemes operated out of local authority leisure centres and offered a variety of activities including: gym, exercise classes, swimming and walking. However, views expressed by participants focused primarily on gym-based and exercise class activities.

Details of setting and activities included in the various schemes are provided in the Summary Table on page 19.

SUMMARY TABLE

Where authors state that the study is *directly* linked to an intervention trial, this is noted in the first column

First Author Year(s) Design and Quality	**Study Aim**	**Intervention**	**Population Target:**	**Views of…**
Beaufort Research 2013 CSS –	To better understand public opinion on certain national health improvement programmes, in order to feed into Public Health Wales' Strategy. [Including the Welsh National Exercise Referral Scheme].	**Programme content:** Welsh National Exercise Referral Scheme **Setting and activity:** Local authority leisure centres; class- and gym-based sessions **Intervention duration:** 16 weeks **Timing of study interviews:** September 2012 [not liked to specific ERS] **Location:** Wales	UK; community[17]; 1000 respondents (n=312 aware of the ERS); Age ≥18	Participants
Beers 2006 Qualitative +	To gain a deeper understanding of the physical activity behaviour of those who participated in the ERS and those who did not and to explore factors that influenced this behaviour.	**Programme content:** Free access to exercise advisor and leisure facilities **Setting and activity:** Leisure centre facilities; activities ranged from supervised walks and chair exercise classes to swimming, aqua aerobics and fitness suite activity **Intervention duration:** 12 weeks **Timing of study interviews:** 12 months post intervention **Location:** The Wirral	UK; community; 181 participants (34%) ; mean age (all participants in scheme) 50.4 years; range 16-79	Participants
Carroll 2002 Qualitative ++ **[Linked to uncontrolled pilot intervention]**	To gather information specifically relating to Exercise on Prescription schemes and their actual and potential contribution to the promotion of physical activity in South Asian Muslim women.	**Programme content:** Various - Five different health authority ERS **Setting and activity:** Local authority leisure centres; activities included gym, swimming and aerobics **Intervention duration:** Varied **Timing of study interviews:** Various timings during intervention **Location:** Midlands and North of England (Birmingham, Leicestershire, Bradford, Blackburn and West Pennines)	UK; community; South Asian Muslim women; 35 participants; 10 GP referrers; 13 providers	Participants, Referrers + Providers
Clarke 1996 CSS +	To examine the application of key constructs (stages of change, self-	**Programme content:** GP referred ERS with personalised	UK; community; *Cross sectional sample* 391; mean	Participants

[17] Community setting (eg leisure centre, community hall)

First Author Year(s) Design and Quality	Study Aim	Intervention	Population Target:	Views of…
	efficacy, decisional balance) of the Transtheoretical Model to exercise behaviour in UK community samples.	counselling and tailored exercise prescription **Setting and activity:** Local authority leisure centres; activities included gym and walking **Intervention duration:** 12 weeks **Timing of study interviews: During scheme** (cross sectional study)**; At entry and six months** (longitudinal study) **Location:** Birmingham	age 45.1 years, SD 14.0, 69.5% F. *Longitudinal sample* 109; mean age 47.5, SD 14.8, 69% F 40% social class IV/V	
Cock 2006 Qualitative –	To investigate the factors affecting retention rates in ERSs.	**Programme content:** Five diverse GP referral schemes **Setting and activity:** Local authority leisure centres; activities included gym-, water- and hall-based exercises **Intervention duration:** Varied, 10-13 weeks **Timing of study interviews:** Various (during intervention) **Location:** Scheme 1 and 2 in South of England and Schemes 3, 4 and 5 in the North of England	*Client questionnaire* 1024 [33% resp] *Providers* 10 interviews, 5 focus groups (attendance unstated, 3-7 per group)	Participants + Providers
Crone 2002 Qualitative +	Investigate the relationship between physical activity and mental health from the perspective of the participants who experience it within exercise referral schemes.	**Programme content:** Three diverse ERS 1. leisure centre, 2. private health club, 3. leisure centre + hikes **Setting and activity:** Three schemes –one private leisure facility, two local authority leisure centres; activities include gym, exercise classes, swimming and one included monthly hikes **Intervention duration:** Unclear – circa 12 weeks **Timing of study interviews:** 1.Pre/post; 2. early/late intervention; 3. Unspecified **Location:** North and South West England	UK; community; 18; mean age 55.5 years; M 5, F 13	Participants
Crone 2005	(see Crone 2002			Participants
Cummings 2010 CSS +	Investigate and determine the exercise adherence patterns in post programme clients. Evaluate clients' perceptions with regard to programme training conditions, namely, supervision, scheduled sessions and attendance as	**Programme content:** ERS [no description] **Setting and activity:** Locations not stated; walking, gym, swim, cycle and class-based exercises **Intervention duration**: Not stated **Timing of study interviews:** >12 months post intervention	UK; community; 210; mean age 54.8 ± 15.7; M 104, F 106	Participants

First Author Year(s) Design and Quality	Study Aim	Intervention	Population Target:	Views of…
	part of a group.	**Location:** Armagh, Northern Ireland		
Day 2001 CSS –	Evaluate the Scottish Borders General Practitioners Exercise Referral Scheme (GPERS) after 5 years of its initiation.	**Programme content:** Exercise specialist consultation plus two month follow up appointment (emphasis on daily routine exercise) **Setting and activity:** A combination of local authority leisure centres, private exercise facility, community-based leisure facility; specific activities not reported **Intervention duration:** Not stated but est. 8 weeks **Timing of study interviews:** 3-5 years post intervention **Location:** Scottish Borders	UK; community;324	Participants
Fox 2007 Qualitative –	To provide some insight into critical factors associated with the successful initiation and operation of schemes.	**Programme content:** 11 varied leisure centre based ERS **Setting and activity:** (i) Local authority leisure centre (two thirds); classes combined aerobic exercise, light resistance training, calisthenics and sometimes swimming. (ii) GP practice managed; patients directed to attend exercise classes in the local community or start their own physical activity programme (usually walking) **Intervention duration**: 10-12 weeks **Timing of study interviews:** N/A (providers) **Location:** England	UK; community; 11 case studies	Providers
Gauvin 2007	(see Tacket 2006)			Participants + Providers
Goodman 2011 CSS +	What is the current level of nurse led involvement in activity promotion for older people in primary care? What are the knowledge and attitudes of primary care nurses about health benefits of activity promotion for older	**Programme content:** N/A Nurses' attitudes towards ERS referral **Setting and activity:** Locations not stated; walking, swimming and home-based activities as well as specialist exercise groups **Intervention duration:** N/A **Timing of study interviews:** N/A	UK; primary care[18]; Urban; 521 (response rate 40.5%);	Referrers

[18] Primary care setting (eg NHS clinic)

First Author Year(s) Design and Quality	Study Aim	Intervention	Population Target:	Views of…
	people?	**Location:** N/A		
Graham 2005	(see Graham 2006)			Participants + Providers
Graham 2006 Qualitative +	Investigating the exercise referral process from the health professional's perspective, examining perceived barriers to referral, priority given to an ERS in day-to-day consultations, perceived importance of their role in the process and referring practices	**Programme content:** N/A GPs' and Practice Nurses' attitudes towards ERS referral **Setting and activity:** Local authority leisure centres, community-based, private gyms and some health care settings; specific activities not reported **Intervention duration:** N/A; Typical schemes in area: 10-14 weeks **Timing of study interviews:** N/A **Location:** North West England	UK; primary care; urban; *survey* 71; *interviews* 12 (6 M, 6 F)	Referrers
Hardcastle 2001	(See Hardcastle 2002)			
Hardcastle 2002 Qualitative +	To extend understanding of how women change perceptions of their self and identity in response to ER programme	**Programme content: Leisure Centre based ERS; two sessions per week** **Setting and activity:** Local authority leisure centre; gym- and class-based activities **Intervention duration**: 10 weeks **Timing of study interviews: Start, mid (5 weeks), end (10 weeks)** **Location:** Hailsham, East Sussex	UK; community; 8; 43-77 yrs; all female	Participants
Hardcastle 2005	(see Hardcastle 2002)			
Joyce 2010 Qualitative –	To explore patients' experiences of Condition Management Programmes (CMPs) in terms of health, well-being & employability.	**Programme content:** Gym membership on prescription for patients with obesity related conditions **Setting and activity:** Gym membership on prescription **Intervention duration:** 12 weeks **Timing of study interviews:** During intervention **Location:** County Durham	UK; community; 25; Re GP exercise referral 5; 3F 2M; 4/5 were 50 years +	Participants

First Author Year(s) Design and Quality	Study Aim	Intervention	Population Target:	Views of…
Khanam 2008 CSS +	Investigate the attitudes and beliefs held by UK Bangladeshi women on health and exercise and explore possible ways of increasing levels of physical activity in this group.	**Programme content:** GP referred ERS; 3 gym sessions per week **Setting and activity:** Local authority leisure centre; gym-based sessions **Intervention duration:** Not stated **Timing of study interviews:** During intervention **Location:** Tower Hamlets, East London	UK; community; Urban; 30-60;25; mean age 47.3 (SD 9.1); all female; Bangladeshi; Muslim; all overweight	Participants
Lord 1995 Qualitative –	Investigation of 2 important questions that arose from Exercise on Prescription Scheme study: Do people turn up? Are people healthier having been prescribed exercise?	**Programme content**: GP referred ERS; 3 exercise sessions per week **Setting and activity:** Local leisure centres; activities varied (aqua-aerobics, badminton, bowls, cycling, dancing, keep fit, LAY, Swimming, table tennis, tennis, orienteering, walking, weights, yoga, trampolining) **Intervention duration:** 10 weeks intensive, plus follow up to 6 months **Timing of study interviews:** Questionnaires for participants at start, 10 weeks, 6 months; Focus groups (completers/non completers) at 10 weeks. **Location:** Stockport	UK; 252; community; Urban;251; <30 – > 55 years; 198-F/53-M/1-Unknown; socially deprived area. 27 participants in focus group; interviews with 7 providers, 6 referrers.	Participants, Referrers + Providers
Markland 2010 CSS +	Examine the relations between perceptions of need support provided by exercise facility practitioners and clients' behavioural regulations for exercise among individuals in an exercise referral scheme. Determine whether these relations are mediated differentially by satisfaction of the needs for competence, autonomy and relatedness.	**Programme content:** No detail other than ERS **Setting and activity:** Local authority leisure centres; specific activities not reported **Intervention duration:** 10 weeks **Timing of study interviews:** ≤ 12 months post intervention **Location:** UK – location not stated	UK; community; 136; mean age 54.5; (SD 12.9); range 23-80; all female.	Participants
Martin 1999 Qualitative +	Examine the characteristics of men and women who embarked upon a 10-week general practitioner (GP) referral exercise prescription programme and to	**Programme content:** GP referred leisure/gym based ERS **Setting and activity:** Local leisure centre/gym; specific activities not reported	UK; community; 77; mean age 53yrs; 39F 28M	Participants

First Author Year(s) Design and Quality	Study Aim	Intervention	Population Target:	Views of…
	compare those who completed a 10-week programme of exercise (Finishers; 20 sessions attended) with those who failed to complete (Non-finishers; <20 sessions attended).	**Intervention duration:** 10 weeks **Timing of study interviews:** Post intervention **Location:** Margate, Kent		
Mills 2008 Qualitative +	To explore and reveal the constituents of ''success,'' through comparison, contradiction, and integration of qualitative and quantitative research findings.	**Programme content:** Primary care referred leisure centre ERS **Setting and activity:** Local authority leisure centres; individual- and class-based exercise programmes including gym-based sessions and swimming **Intervention duration:** 26 weeks **Timing of study interviews:** During intervention **Location:** Inner London borough	UK; community; Participant focus group (17; 13 W, 4M; mean age 54.7 (SD 12.4); range 31-68); Interviews with referrers (7; 1M 6F; 2 doctors, 6 nurses) + providers (4)	Participants, Referrers + Providers
Mills 2012	(See Mills 2008			Participants + Providers
Moore 2011	(See Murphy 2010)			Providers
Moore 2012	(See Murphy 2010)			Referrers
Moore 2013	(See Murphy 2010)			Participants
Morton 2008 CSS + [with qualitative components]	Is self-determined motivation fostered through an ERS? Are patients motives related to their exercise adherence?	**Programme content:** Leisure centre ERS; Two sessions per week **Setting and activity:** Local authority leisure centres; class- and individual-based activities including aqua aerobics, tai-chi, 'exercise to music', Pilates or gym sessions **Intervention duration:** Not stated. Est 10-12 weeks **Timing of study interviews:** Six weeks **Location:** UK - location not stated	UK; community; 30; mean age 51.9yrs; F22 M8	Participants
Murphy 2010 Qualitative + **[Linked to RCT** Murphy 2012**]**	To evaluate the Welsh National Exercise Referral Scheme (NERS). To explore exercise professionals' experiences of engaging diverse clinical populations and emergence of local practices to support uptake and adherence (Moore 2011)	**Programme content: Leisure Centre based ERS with discounted sessions** **Setting and activity:** Local authority leisure centres, community centres and one countryside service; included class- and gym-based sessions, swimming and outdoor activities **Intervention duration:** 16 weeks **Timing of study interviews:**	UK; community; 32 participants in 6 centres (Moore 2013); 38 exercise professionals in 12 centres; 28 F, 4 M. Mean age 59.8 (SD 12.5) years, range 24-82 (Moore 2011) 27 fitness instructors who	Participants + Providers

First Author Year(s) Design and Quality	Study Aim	Intervention	Population Target:	Views of…
	To explore providers' views on delivering MI within an exercise referral scheme and consistency of consultations with MI before and after a 2-day workshop. (Moore 2012) To explore how NERS facilitates adherence to physical activity and the emergence of social patterning in response (Moore 2013)	**Participants – During intervention** Providers - N/A **Location:** Wales	attended training programmes in delivery of motivational interviewing (Moore 2012)	
Myron 2009 Qualitative – [participants/providers] CSS – [Referrers]		**Programme content:** Varied ERS **Setting and activity:** Local authority leisure centre and community based settings; included gym-, class- and outdoor-based activities **Intervention duration:** Not stated **Timing of study interviews:** Participants - During intervention interviews [?]; post-intervention evaluation forms Referrers/Providers – N/A **Location:** UK – location not stated	UK; community; Focus groups/interviews with participants and providers at two centres. (no demographics). Small no. evaluation forms (one site). Mean age 42, range 20-72; 71% F. 200 GP respondents to doctors.net survey (from 2000 requests)	Participants, Referrers + Providers
Rahman 2011 CSS +	Do changes in psychological need satisfaction and motivational regulation during and 6 months following ER, predict changes in behavioural and psychological outcomes?	**Programme content:** GP referred free of charge, leisure centre ERS; Two classes per week **Setting and activity:** Local authority leisure centres; activities included one gym- and one circuit-based session/week **Intervention duration:** 12 weeks (then 6 months reduced cost facilities + advice) **Timing of study interviews:** Entry, exit and 6 months post-intervention **Location:** UK	UK; community; 653; 18-83yrs; F = 68.6%. M = 31.4%, 293 recruited (261 completed intervention) Mean age 54.5 (SD 13); rnage 18-82; 74% F	Participants
Schmidt 2008 Qualitative + **NON-UK**	Explore the socio-demographic and psychosocial characteristics of female participants in ERS located in deprived	**Programme content:** Specialist advice and low cost access to facilities **Setting and activity:** Location not stated; exercise groups:	Netherlands; community; urban; 523; Low SES and ethnic minority women	Participants

First Author Year(s) Design and Quality	Study Aim	Intervention	Population Target:	Views of…
	neighbourhoods; Determine which elements of the intervention make it appealing to participate.	swimming, gymnastics, cardio-fitness or dancing. **Intervention duration:** 20 weeks (advice at 0 and 10 weeks) **Timing of study interviews:** During intervention **Location:** Amsterdam	aged 24-55; 38 interviewed.	
Sharma 2012 Qualitative +	Explore stroke survivors' experiences of undertaking exercise in the context of an exercise referral scheme for people with chronic stroke.	**Programme content:** Leisure centre based ERS for adults with neurological problems; two sessions per week **Setting and activity:** Local authority leisure centre; supervised gym-based sessions **Intervention duration:** 12 weeks **Timing of study interviews:** Post intervention (≤ 2 years) **Location:** South London	UK; community; stroke survivors; 9; 37–61yrs; F4 M5	Participants
Shaw 2012 Qualitative +	Determine which elements of the ER programme work for coronary heart disease patients in terms of encouraging participation and adherence and which elements require adjustment.	**Programme content:** Pre-exercise screening, health coaching (3 sessions) and community based exercise **Setting and activity:** Local authority public gym, a private gym or sports club; specific activities not reported **Intervention duration:** 12 months **Timing of study interviews:** Post intervention – at least 12 **months post-referral** **Location:** Paisley	UK; community; patients with stable coronary heart disease;174; mean 69.9yrs; F 43 M41; 84 interviewed	Participants
Singh 1997 Qualitative –	How do the patients receive the exercise referral scheme and in what ways do they feel their health has been enhanced?	**Programme content:** GP referred leisure centre based supervised ERS **Setting and activity:** Local authority leisure centres; supervised exercise classes **Intervention duration:** Not reported. 20 exercise sessions free plus 20 sessions at half price **Timing of study interviews: During intervention** **Location:** Lewisham, South East London	UK; community; urban; 13; age range 30-61; F11 M2	Participants
Stathi 2004 Qualitative +	How physical activity (PA) is situated in notions of successful ageing of people participating in ERS and to highlight	**Programme content:** Leisure centre based supervised ERS **Setting and activity:** Local authority leisure centres; gym-based	UK; community; 13; older people; age range 63-79; F5 M8	Participants

First Author Year(s) Design and Quality	Study Aim	Intervention	Population Target:	Views of…
	points for achieving client-based targets through ERS.	and class-based activities **Intervention duration:** Not reported **Timing of study interviews:** During intervention **Location:** South West England		
Tai 1999 Longitudinal ++	Is the cost of exercise programmes in leisure centres a barrier to uptake in a British population?	**Programme content:** Tailored exercise programme of 20 sessions **Setting and activity:** Local authority leisure centres; specific activities not reported **Intervention duration:** 10 weeks **Timing of study interviews:** Baseline data linked to 10 week **programme adherence** **Location:** Inner London	UK; community; urban; 152; age range 16-75; F108 M44	Participants
Taket 2006 Qualitative + **[Linked to RCT** Kirk 2004**]**	Evaluation of the ability of Diabetes on Referral Option to Healthy Exercise for Adults (DOROTHEA) scheme to achieve high retention levels.	**Programme content:** Pilot intervention – three exercise consultations at 0,2,12 months plus phone calls/exercise sessions **Setting and activity:** Locations not stated; walking and gardening promoted as well as community-based options (exercise classes and walking groups) **Intervention duration:** 12 months **Timing of study interviews: Participants** - Post intervention Referrers – N/A **Location:** Inner London	UK; community; urban; Type II diabetics; 225; ≤44 - ≥65; F 22 M15. Interviews with 14 non-participants, 17 non completers, 20 completers and 32 health professionals.	Participants + Referrers
Taylor 1996 Qualitative – **[within RCT]**	Evaluation of the fully operational 'Oasis Scheme' with a randomised controlled study.	**Programme content:** Leisure centre based ERS with 20 sessions at half cost **Setting and activity:** Local authority leisure centre cardiovascular suite; activities included rowing, cycling, step machine and treadmill sessions. **Intervention duration:** 10 weeks. **Timing of study interviews:** Mid exercise assessment (8 weeks post referral and circa mid 10 week programme) **Location:** Hailsham, East Sussex	UK; community; patients with CHD risk factors; 142; age range 40-70 years	Participants

First Author Year(s) Design and Quality	Study Aim	Intervention	Population Target:	Views of…
Taylor 1998	(See Taylor 1996)			Participants
Walsh 2012 Qualitative –		**Programme content:** Local authority subsidised exercise programme **Setting and activity:** Location not stated; community-based, instructor-led exercise sessions. **Intervention duration:** 12 weeks **Timing of study interviews:** Not stated **Location:** UK – location not stated	UK; community; chronic joint pain/OA; 2101, ≥age 45 Interviews with 14 participants; 88 instructors	Participants + Providers
Ward 2007 Qualitative –	To evaluate the Heartlinks programmes, centres, staff training and other issues including barriers and facilitators to success. [Seven objectives] *Data extracted only for ERS*	**Programme content:** Various programmes including exercise referral classes, Tai Chi, SlimSwim; All part of Welsh Heartlinks programme. Motivational interviews at 0,1,3,6, 12 months **Setting and activity:** 'Home-based' exercise programme ('stretch bands', hand weights, ankle weights). Local authority leisure facilities (exercise classes, including an Aquafit and Tai Chi). Community 'health walks' programme (local led walking sessions) and Slimswim programme held at local leisure facilities. **Intervention duration:** 12 months **Timing of study interviews:** Various **Location:** Merthyr Tydfil	UK; community; urban; 317;24-88yrs; F212 M105; Interviews with 17 completer participants in ERS, 3 referrers (2 nurses, 1 GP).	Participants + Referrers
Wiles 2007	(See Wiles 2008)			Participants + Providers
Wiles 2008 Qualitative ++	Explore the views of physiotherapists, stroke patients and fitness instructors about the appropriateness and acceptability of Exercise on Prescription schemes for stroke patients post-discharge from physiotherapy.	**Programme content:** Fitness instructor led, leisure centre-based ERS (three schemes) **Setting and activity:** Local authority leisure centres; gym-based programmes **Intervention duration:** Not stated **Timing of study interviews:** Post intervention **Location:** South of England	UK; community; stroke survivors; participants 9; age range 18-78 years; 1F 8M; physiotherapists (15); fitness instructors (6)	Participants, Referrers + Providers
Wormold 2004 Qualitative +	To explore patients' perceptions of GP ERS with a view to providing a better	**Programme content:** Four leisure centre based ERS **Setting and activity:** Local authority leisure centres; gym-based	UK; community; 30 (6 focus groups); Age range 25-84;	Participants

First Author Year(s) Design and Quality	Study Aim	Intervention	Population Target:	Views of…
	service for future patients.	programmes **Intervention duration:** 10 weeks **Timing of study interviews:** Post intervention **Location:** North Yorkshire (Harrogate, Ripon, Northallerton and Stokesley)	20F 10M	
Wormold 2006 Qualitative +	To explore participants perceptions of the operation and effectiveness of the *Active Lifestyles* service.	**Programme content:** Six Active Lifestyle consultation, one per month, complementing ERS **Setting and activity:** Local community centres - walking groups, green gyms and classes or gym schemes **Intervention duration:** Six months; ERS: 10-12 weeks **Timing of study interviews:** During intervention **Location:** Kingston-upon-Hull	UK; community; urban deprived; 16; Mean age 53; range 15-73; 11F 5M (5 focus groups)	Participants

References for RCTs associated with qualitative research (noted in table):

Kirk AF, Mutrie N, MacIntyre PD, Fisher MB (2004) 'Promoting and maintaining physical activity in people with type 2 diabetes' American Journal of Preventive Medicine 27 (4): 289-296. [*Taket 2006*]

Murphy, S.M., Edwards, R.T., Williams, N., Raisanen, L., Moore, G., Linck, P. et al. An evaluation of the effectiveness and cost effectiveness of the National Exercise Referral Scheme in Wales, UK: a randomised controlled trial of a public health policy initiative. Journal of Epidemiology & Community Health 2012; 66(8):745-753. {*Moore 2011, Moore 2012, Moore 2013, Murphy 2010*]

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4. THE EVIDENCE

Views of different groups

There are several groups of individuals whose views have been identified for the review. These groups have been referred to by a variety of names throughout the included studies. For consistency across the review all groups have been categorised by function into one of the following:

- All referrals are made by a health professional in primary care. Usually these were general practitioners (GPs) or practice nurses (PNs), although they might also be for example, a physiotherapist. All these individuals are designated as 'referrers'.
- Provision of exercise referral schemes was the responsibility of a range of individuals including scheme organisers (SO), exercise professionals, facilitators and counsellors. All these are designated as 'providers'.
- Those attending exercise referral schemes are variously referred to as attendees, clients, patients and participants. All these are designated as 'participants'.

Themes:

A large number of themes were identified and these are listed below in the order in which they appear in the evidence. Some themes were specific to one question, but a number were cross-cutting and related to two or all three questions. The themes are summarised in a series of evidence statements each supported by a discussion of the evidence presented with as much richness of voice as possible.

Referral

- Referrer engagement
- Referrer priorities
- Programme awareness
- Feedback on participants to referrers
- Legal responsibilities

Participant goals

Motivation

Existing health concerns

Personal commitments

External support from family and friends

Culture and religion

Cost of exercise facilities

Location of activities)

- Ease of access
- Safety

Travel

Setting

- Perceptions of the exercise environment
- Gym atmosphere (noise/TV/music)
- Equipment (knowledge of/confidence in using)
- Quality of physical facilities

Enjoyment of exercise

Scheduling of activities

Participant preferences for types and variety of activity

Individualised, personalised service

Provider skills

Support and supervision from providers

Peer and group interaction and support

- Peer support
- Group activities versus solitary gym
- Engagement with other participants aiding integration into environment/ maintenance and/or enjoyment of physical activity

Participant outcomes

Professional support after programme

Sustaining physical activity (post programme)

1. Referral process

A number of related barriers to referral were discussed in twelve papers from ten studies of referrer[1-5,8,11-12] and provider[1-2,5-7,9-10] views; eleven qualitative papers (one [++][1-2], six [+][3-8], three [–][9-11]) and one [+] cross-sectional survey[12].

Five related sub-themes were identified within this overarching theme:

1a **Lack of engagement by health professional***:* Five studies[1,4-7] described a lack of engagement by referring health professionals. This related to uncertainty around whose responsibility the referral process was (primary care practitioner or potential participants) and complex paperwork.

1b **Low priority for GPs**: Five qualitative studies of referrers[1,3-4,8] and providers[1,9] described referral to ERS as a low priority for GPs.

1c **Lack of awareness**: General lack of referrer awareness and the need for reminders about schemes was identified in seven studies of referrers[1,4-5,8,11-12] and providers[1,5,10].

1d **Lack of feedback from schemes:** In two studies[4-5] a lack of feedback on participants from schemes to referring primary health professionals was identified as a barrier to engagement with the scheme by those health professionals. However, providers in one study[4] did not see communication as important.

1e **Legal responsibility**: Qualitative data from five studies (six papers) of referrer[1-5] and provider[1-2,5,7] views suggested that concerns around legal responsibility and inappropriate referral are barriers to referral for exercise referral schemes.

[1]Carroll 2002, [2]Wiles 2008, [3]Graham 2005, [4]Graham 2006, [5]Mills 2008, [6]Moore 2011, [7]Murphy 2010, [8]Taket 2006, [9]Cock 2006, [10]Fox 1997, [11]Ward 2007, [12]Goodman 2011

Applicability: Directly applicable as all studies were conducted in the UK

The referral process was discussed in twelve papers from ten studies: ten qualitative papers (Carroll 2002 ++, Wiles 2008 ++, Graham 2005 +, Graham 2006 +, Mills 2008 +, Moore 2011 +, Murphy 2010 +, Taket 2006 +, Cock 2006 –, Fox 1997 –, Ward 2007 –) and one cross-sectional survey (Goodman 2011 +).

Eight papers from seven studies discussed referrer views (Carroll 2002 ++, Wiles 2008 ++ Graham 2005 +, Graham 2006 +, Mills 2008 +, Taket 2006 +, Ward 2007 –, Goodman 2011 +) and seven

papers from six studies were of provider views (Carroll 2002 ++, Wiles 2008 ++, Mills 2008 +, Moore 2011 +, Murphy 2010 +, Cock 2006 –, Fox 1997 –).

A number of related issues were identified:

Lack of referrer engagement

A lack of engagement with the referral process by health professionals was identified as a barrier to the success of exercise referral programmes in five qualitative papers from four studies (Carroll 2002 ++, Graham 2005 +. Mills 2008 +, Moore 2011 +, Murphy 2010 +).

Carroll 2002 [++] in a study of programmes for South Asian Muslim women reported one scheme coordinator as saying:

> *'They got four or five people but it really didn't get off the ground. We had a problem, I would say, with many GPs in that area – the West End of Leicester where there is a high Asian population – they were not referring'.* [Carroll 2002]

Murphy 2010 [+] in an evaluation of the Welsh National Exercise Referral Scheme (NERS) noted that:

> *There was large variation in levels of referrals from health professionals and these were influenced by their own perceptions of scheme effectiveness and professional roles.* [Murphy 2010]

A number of reasons for lack of engagement are suggested in the included studies: 'complex forms or protocol to follow' were identified by Mills 2008 [+] as a barrier. Whilst in Moore 2011 [+] exercise professionals highlighted lower engagement in poorer areas:

> *'It's probably one of the hardest valleys to get the GPs to sort of buy into the scheme ... It's an ex-mining valley sort of thing, and it's very negative, it's like 50% unemployment. So they are kind of 'poor me' sort of thing, and they won't do anything to sort of progress themselves, if it doesn't involve say a pub or a restaurant, they're not interested.'*

There were divergent views over whose responsibility the referral process was. Graham 2005 [+] quoted the views of several GPs who did not think it was their role to refer. Rather it was a patient responsibility:

> '*I don't actually agree with the referral process, I think it should be the patients' responsibility . . . they are consenting adults as far as exercise is concerned, where that falls down is when I have to sign, but I don't sign the consent form for an operation it is the patients responsibility to take that risk (Male GP #4]*
>
> *It is usually people who ask about it (exercise), it is usually not something I remember to specifically say (Male GP #1)*

As noted above, in two papers referrers (Carroll 2002 ++) and providers (Moore 2011 +) considered that patients needed to be sufficiently motivated to request a referral:

> *The practice manager at another surgery said that that she couldn't remember if anyone had asked about the scheme. She did not seem to know much about the scheme specifically and commented that, as far as she knew, patients had to take the initiative and ask to join the scheme: 'They bring the form in and the doctor signs it. They find out about it themselves. If anyone comes and asks us about it, then we tell them where to get the forms. There are notices about exercise. I don't know if they are about the referral scheme but if they want information and want to know more about it, they can go to the receptionist and ask.'* [Carroll 2002]

> *Whilst all patients entering NERS had done so following referral from a health professional, approximately half of professionals identified a distinction between patients who sought the programme, and those advised to take part by their health professional. In all such cases, health professional advice was seen as a weaker determinant of adherence than the patient's self-determined decision to seek help.* [Moore 2011]

Referral as a low priority for GPs

Five papers from four papers mentioned referral to ERS as being a low priority during GP consultations: (Carroll 2002 ++, Graham 2006 +, Graham 2005 +, Taket 2006 +, Cock 2006 –)

> *Ms A pointed out that: 'It could be their perception that people won't go. Maybe it's not high priority and they have other issues, which are more important. They know about the scheme [and] they want to be involved but they don't actually do anything ... We need GPs to promote healthy living.'* [Carroll 2002}

> '*It's not that we don't do it because we are against it, it's just that there is so much else compacted into our seven and a half or 10 minute consultation that we neglect that one because it slips our mind, it's not top of the agenda' (Female GP #3).* [Graham 2005]

> *'We are not getting the basics right, we are not meeting our targets for diabetes. We need to get the bread and butter sorted such as monitoring, before we can think about these types of programmes.' (GP)* [Taket 2006]

> *'I feel we need more support a bit higher up the chain, from PCT ... the PCT pulled the funding and there's very little investment in physical activity. So I suppose that's why GPs don't feel it's a priority for them to refer'. (S05)* [Cock 2006]

Lack of awareness of schemes

The general lack of knowledge by referrers and the need for awareness raising and/or reminders about the schemes was identified in seven studies : six qualitative studies (Carroll ++, Graham 2006 +, Mills 2008 +, Taket 2006 +, Fox 1997 –, Ward 2007 –) and one cross sectional survey (Goodman 2011 +).

The prominent 'peak' in Summer2004 coincided with a presentation to practice nurses in early April that year [Ward 2007]

…lack of information on what is available for older patients and referral problems….15% [of practice nurses surveyed] thought that they lacked knowledge of the processes and aims of the exercise referral scheme. [Goodman 2011]

Rather than refer participants on a regular basis, as a matter of routine, it appears that health professionals refer many people for a short period, and then may not refer anyone for a while…'I go through phases, I mean I forget, I might refer a flow of people and then forget to do it really' (MGP1 - 54) [Graham 2006)

This general lack of awareness also applied to high referring professionals in one study:

Nearly all the [high referring] HPs said their knowledge of how the programme operated was limited. They said this was because it had been 2 years since they had first heard about the programme or it was because they had heard about it from a colleague. So most felt the information they could remember about all the different aspects was incomplete and found the regular updates helpful. [Taket 2006]

Lack of feedback on progress

Lack of feedback on participant progress was identified as a barrier to referral by primary care health professionals in two studies (Graham 2006 +, Mills 2008 +). Graham 2006 [+] noted that "Knowledge as to patient progression and patient benefits was an important aspect of the process for some health professionals."

'I think I probably don't use the exercise referral scheme as much as I would do, probably about not getting any feedback (from the exercise referral scheme) and referring into a vacuum' (Female GP #2). [Graham 2006]

Similar views were expressed by referrers in a second study for whom the "information may influence the input and effort they are prepared to invest" (Mills 2008 +).

Dr. Patel: 'So it would be useful to actually have that to see how many of our patients are actually attending as sometimes you might actually refer, but you never know if they actually went there or not'. (41) [Mills 2008]

They were also concerned that they referred appropriately

Dr. Harrison: 'increasing feedback would be a help, because it's irritating to find we have referred people inappropriately'

However exercise referral officers interviewed by Graham 2006 [+] felt that communication "could be kept to a minimum":

'The health professionals refer their patients onto us and any correspondence that needs to

be made I will, you know at the end of the programme I will correspond, if I have got any queries throughout the programme I try and get in touch with that Doctor themselves' (ER04,97-101)

Legal responsibility and risk of litigation

Six qualitative papers from five studies identified legal responsibility and risk of litigation as a barrier to referral/acceptance into schemes. This view was expressed by referrers (Graham 2005 +, Graham 2006 +), providers (Murphy 2010 +) and those exploring the views of both referrers and providers (Carroll 2002 ++, Wiles 2008 ++, Mills 2008 +).

Leicester's 'Active for Life' EoP referrals officer suggested one reason for this. She pointed to the problem of possible litigation against GPs as an increasing deterrent for GP involvement in the scheme [Carroll 2002]

'I couldn't physically say, if somebody dropped dead now, what I would do, would I have to go to court? Have I got legal recourse?, Is it my responsibility?, is it the GP's responsibility?, there's nothing set out in the protocol to say.' [Graham 2006]

Health professionals were aware of the risks of physical activity as well as the benefits and were consequently cautious of referring patients who exhibited symptoms of coronary heart disease, e.g. hypertension, or those who had previously suffered a coronary event. [Graham 2005]

Dr. Harrison: 'So but what you want them to do is lose weight and get their blood pressure down, it's rather difficult to do when you are in this catch twenty two, where they are not eligible because of the high blood pressure, but that's exactly why we want them to go.' [Mills 2008]

*Some also commented that centre staff often objected to accepting patients into mainstream services **after** the programme, as some conditions were still perceived as posing too high a risk.* [Murphy 2010]

2. Participant goals

Nine studies reported a range of goals participants wanted to achieve through joining an exercise referral scheme that might act as facilitators: eight qualitative (one [++][1], six [+][2-7], one [–][8]) and one [+][9] cross sectional survey.

Overall the major motivating facilitator for participants was health improvement or avoidance of ill health, rather than the (ERS) goal of increased physical activity.

The most common facilitating goal regarded participants' desire for improved health or avoidance of ill health, as reported in seven studies[1-6,8]. For example, participantss were keen to improve existing health problems such as cardiovascular conditions[2,4-6]

depression[2], musculoskeletal conditions[2,4,5], diabetes[5] or return to work[7]. A number were also concerned about preventing health problems and healthy ageing[2,5,6,8].

Weight loss aims were reported in four studies[2,3,5,7]. However, in further study of Muslim women, whilst all participants were overweight or obese, none perceived this to be an issue[9].

Despite the nature of the intervention, increased physical activity was not the most common goal. This was reported in four papers and participants tended to focus on having better fitness levels rather than on being more physically active[2,4,5,7]. One study included some participants who felt that they did not need to improve their activity levels[5].

Other pre-programme goals related to social inclusion ('getting out the house' or making friends)[2,3,5] and improving appearance[5].

[1]Wiles 2008, [2]Beers 2006, [3]Crone 2002, [4]Graham 2006, [5]Hardcastle 2002, [6]Murphy 2010, [7]Wormold 2004,[8]Singh 1997, [9]Khanam 2008

Applicability: Directly applicable as all studies were conducted in the UK.

Nine studies reported a range of goals participants wanted to achieve through joining an exercise referral scheme: eight qualitative studies (Wiles 2008 ++, Beers 2006 +, Crone 2002 + Graham 2006 +, Hardcastle 2002 +, Murphy 2010 +, Wormold 2004 +, Singh 1997−) and one cross-sectional survey (Khanam 2008 +).

The most common goal was to improve health. This was reported in seven studies (Wiles 2008 ++, Beers 2006 +, Crone 2002 +, Graham 2006 +, Hardcastle 2002 +, Murphy 2010 +, Singh 1997−). Participants were keen to improve existing health problems such as cardiovascular conditions (Beers 2006 +, Graham 2006 +, Hardcastle 2002 +, Murphy 2010+), depression (Beers 2006 +), musculoskeletal conditions (Beers 2006 +, Graham 2006 +, Hardcastle 2002 +), diabetes (Hardcastle 2002 +) or return to work (Murphy 2010 +). A number of participants were also concerned about preventing health problems and healthy ageing (Beers 2006 +, Hardcastle 2002 +, Murphy 2010 +, Singh 1997 −).

> *'I don't want to be sitting in a wheelchair do I in another ten years. I just want to be active and keep going'.* [Graham 2006]
>
> *For younger patients however, primary motivations centred around maintaining occupational functioning or returning to work, with many having attended due to injuries or illness which prevented, or threatened to prevent them from working.* [Murphy 2010]

Weight loss was reported to be a goal in four studies (Beers 2006 +, Crone 2002 +, Hardcastle 2002 +, Wormold 2004 +):

> *'Whereas the older participants tended to report health improvements as the main motive, the younger participants were more likely to mention fitness and weight management. For example, Suzie's main motives to exercise were: 'To lose weight really and to feel better about myself' (Suzie, aged 28).'* [Hardcastle 2002]

One further paper of Muslim women observed that whilst all participants were overweight, none of them perceived themselves as needing to lose weight (Khanam 2008 +):

> *'It is very important to note that even though all women in our sample were either overweight or obese, a great number of women did not perceive themselves as overweight.'*

It is particularly interesting to note that despite increased physical activity being the main aim of exercise referral schemes, it was not the most common goal. This was reported in four papers and tended to focus on improving fitness levels rather than on being more physically active (Beers 2006 +, Graham 2006 +, Hardcastle 2002 +, Murphy 2010 +). For example:

> *'Last year we were at Lake ... for our holidays, I would have given anything to walk up some of the mountain trails but you couldn't so you could go up by chair lift and it was too much even to walk down but if I was fitter I would be able to walk down and that's what it's all about ' (Paul, 1; 6 1).* [Graham 2006]

Hardcastle 2002 [+] included participants who felt they didn't need to improve their physical activity levels.

> *Claire felt that she was healthy and that she would only really be motivated to exercise when she was older or had a health problem like osteoporosis* [Hardcastle 2002]

Other goals related to social inclusion such as getting out the house or making new friends (Beers 2006 +, Crone 2002 +, Hardcastle 2002 +) and improving appearance (Hardcastle 2002 +)

> *'I think it was just talking generally to people in the swimming pool. I think that there was a woman I spoke to one day who had recently lost her husband and she was saying how she needed to get out and her brother said come swimming, lets join a gym and so forth....So it's really why I thought I think I'll join a gym after speaking to that lady. She seemed to be quite happy with it and said they're a nice crowd and friendly.'(Anne, aged 68, at week one of the programme).* [Hardcastle 2002]
>
> *I have got the depression, which has, is getting worse. I've had to retire because of it. Err, and I thought that getting fitter, getting healthier again, getting fitter again, would help at least a little bit. (P30/M/55/do).* [Beers 2006]

3. Participant motivation

Nineteen papers from seventeen studies discussed the motivation of participants before, during and after participation in an exercise referral scheme. Sixteen qualitative studies (one [++][1], twelve [+][2-13], three [–][14-16]) and three [+]cross-sectional surveys[17-19]. Participant motivations varied and appeared often to be quite personal.

Seven studies[2,4-5,8,9,11,16] discussed the motivating factors which affected participants' decision to join an exercise referral programme and no clear themes emerged other than the facilitator of feeling that they should exercise[5,7,9,11].

Ten studies[2,3,5-6,8,13-15,18-19] discussed the facilitating motivations during the exercise programme. Varied motivations were reported (overcoming hurdles, memory of previous fitness, enjoyment, health benefits noted, peer and provider support, accountability to GP) and no clear themes emerged.

Seven papers[2,5,6-8,12,19] from six studies of participant views found that many participants lacked self-motivation during the programme.

Seven papers[1,4,7,9-10,12,14] from six studies presented views from referrers and providers relating to the motivation of participants during the programme (such as personal autonomy, self-motivation, need for support) and, again, no clear themes emerged.

Two studies[5,19] discussed the motivation of participants to continue with physical activity after the programme noting the facilitating factors of autonomy and competence[19] and self discipline[5].

[1]Carroll 2002, [2]Beers 2006,[3]Crone 2002, [4]Graham 2006,[5]Hardcastle 2002,[6]Martin 1999, [7]Mills 2008, [8]Mills 2012, [9]Moore 2011, [10]Moore 2012, [11]Schmidt 2008, [12]Taket 2006, [13]Wormald 2006,[14]Cock 2006,[15]Joyce 2010, [16]Taylor 1996, [17]Khanam 2008,[18]Morton 2008,[19]Rahman 2011

Applicability: High – eighteen studies conducted in the UK and one in the Netherlands[11]

Motivation of participants before during and after referral to an ERS is identified as a theme in nineteen papers (eighteen studies). Sixteen qualitative papers from fifteen studies (Carroll 2002 ++, Beers 2006 +, Crone 2002 +, Graham 2006 +, Hardcastle 2002 +, Martin 1999 +, Mills 2008 +, Mills 2012 +, Moore 2013 +, Schmidt 2008 +, Taket 2006 +, Wormald 2006 + Cock 2006 –, Joyce 2010 –, Taylor 1996 –) and three cross-sectional surveys (Khanam 2008 +, Morton 2008 +, Rahman 2011 +).

Four studies (Carroll 2002 ++, Hardcastle 2002 +, Schmidt 2008 +, Khanam 2008 +) considered views of women only; three of them from the perspective of ethnic minority women (Carroll 2002

++, Schmidt 2008 +, Khanam 2008 +).

Seven papers (Beers 2006 +, Graham 2006 +, Hardcastle 2002 +, Mills 2008 +, Moore 2011 +, Schmidt 2008 +, Taylor 1996 –) discussed the motivation of participants and the factors that affected their decision to participate in an exercise referral scheme.

There was conflicting opinion as to whether participants felt positive about being referred; some participants felt under pressure to exercise:

> *Well he sort of wanted it more than I did (slight laugh) really…well I wasn't especially bothered honestly (laughs). (P1/F/50/ns)* [Beers 2006]

Whereas others felt it was the motivation they needed to start exercising:

> *I thought if I had the discipline of having to go somewhere at a certain time each week, do you understand what I'm getting at? (P12/F/50/ns)* [Beers 2006]

For others the fact that their health was shown to be at risk was a motivating factor:

> *'I think if I'd had all these tests and they'd come back and say there isn't a problem I would still be smoking and carrying on as before' (Maureen, aged 52, at week one of the programme).* [Hardcastle 2002]

However Hardcastle 2002 [+] noted that participants had a general lack of motivation to improve their health through exercise; with many disliking the types of activities available at the gym. Most stated they would not have joined the gym if they hadn't been referred by their GP.

Many participants were self-motivated to seek a referral or initiate participation in a programme, this was highlighted in four papers (Hardcastle 2002 +, Mills 2008 +, Moore 2011 +, Schmidt 2008 +). Motivation came both from participants recognising that they needed to exercise and as a result of recommendation by friends:

> *Female aged 56, Centre 4, 8 weeks: 'I was looking for something to do exercise-wise, I do swimming, but I thought this was great to do a bit more exercise and keep yourself more fitter you know. So I got in contact with the leisure centre, and then through the leisure centre through my doctor….he didn't really know much about it at first, because I think it was just starting up…but anyway he got the form and signed it…'* [Moore 2011]
>
> *'A friend of mine was referred. I thought I'd do the same' (Paula, aged 56, at week ten of programme). 'A friend recommended I go to the Doctor who put me onto the scheme' (Joyce, aged 80,)*. [Hardcastle 2002]

However, as Graham 2006 [+] noted, some participants, whilst realising they realised they needed to of exercise, found their lack of motivation prevented them from actually changing their behaviour:

> *'I knew it but I didn't have the strength or the energy to do anything about it' (Barbara, 1; 59) 'I don't have the will to do it really... I have got this, I can't be bothered attitude' (Alan, 1; 4?)*

As noted in Taylor 1996 [–], some participants were deterred from starting a programme because of the long waiting list times and non-adherers to the programme were generally more negative about being referred than those who completed it.

Beers 2006 [+] noted that the varied beliefs of some non-participants contributed to their lack of motivation for participating in a programme.

> *No sooner you stop …your back …so it's pointless anyway (P2/F/27/do)*
>
> *I've just felt tired all the time, errm and I don't think there's anything medically stuff that's wrong with me. (P5/F/29/do)*

Ten papers (Beers 2006 +, Crone 2002 +, Hardcastle 2002 +, Martin 1999 +, Mills 2012 +, Wormald 2006 +, Cock 2006 –, Joyce 2010 –, Morton 2008 +, Rahman 2011 +) discussed the motivation of participants and the facilitating factors that determined whether they adhered to an exercise programme.

For some participants, the initiation of an exercise programme and getting 'over the hurdle' of the first few weeks was a seen as an important motivating factor:

> *'I suppose I just needed someone to push me. It's just that first step.. .I'm hoping 10 weeks will be enough to get me enjoying it again . . . to get yourself into the swing of things and give me the incentive to carry on' (Lynda, aged 43, at week 2 of the programme)* [Hardcastle 2002]

Morton 2008 [+] identified that self-determined motivation tended to increase during the first six weeks of the scheme. For other participants (Harcastle 2002 +) the memory of previous fitness level was a source of motivation:

> *'I'm sort of feeling how I used to be' (Margaret, aged 57, at week ten of the programme).* [Hardcastle 2002]

More general enjoyment of a programme was a key motivator to attending as noted by Rahman 2011 [+] and Beers 2006 [+] with having helpful staff being a contributing factor to this enjoyment:

> *'I found the advisers very helpful and enthusiastic and enjoyed the 12 weeks very much' (M/53/237).* [Beers 2006]

Programme adherence appeared to be related to whether the benefits of exercise were valued or could be observed. Rahman 2011 + reported increased levels of physical activity when the benefits were valued. However Beers 2006 [+] noted that some participants became despondent when the desired benefits were not or could not be achieved through exercise:

'I gave up cigarettes for 8 months and went to the gym 2 to 3 times a week for 6 months and my weight went up. With all the hard work I put into this I was discouraged and just called it a day, went back to the cigarettes and I have lost one stone.' (F/68/393).

'I kept up exercise until my GP said high cholesterol was genetic – now I take tablets to reduce it.' (F/51/965).

The importance of being able to observe the benefits of exercise via exercise related measurements e.g. blood pressure and weight was also mentioned by participants as being a motivator (Wormald 2006 +, Cock 2006 –)

'When you first go and do your induction ... they measure your fat content and, to be honest, that frightened me ... so that was a kind of a spur. They don't measure your fitness levels improving ... that would help.' (Participant 0503) [Cock 2006]

Other elements of a programme were also noted to act as motivators:

'They (diaries) really help me because it's like I've done that today and it did sort of remind me that well I need another walk to do ... I do 20 minutes' walk 5 times a week so I used to think, right I've done 4 I'm alright, I'll go out tonight. I just stick them on my fridge.' (Female, 24 years). [Wormald 2006]

And for some participants finding an exercise regime that they are 'comfortable with' enabled them to continue being physical active, for example:

'I find this is my level now I can come to aqua twice a week I find I am comfortable with this' (FG4, 260). [Mills 2012]

Likewise Martin 1999 [+] found that 'finishers' were more likely to adapt it to something more suitable.

Crone 2002 [+] and Joyce 2010[–] noted that the presence of other users helped with keeping participants motivated to continue with a programme while participants in another study (Hardcastle 2002 +) commented on the motivation provided by programme instructors:

'At least coming here you've got somebody pushing you all the time which is a good thing really especially in my case'. (Annette, 58, at week 5 of the programme). [Hardcastle 2002]

And how developing stamina through advancing through exercise 'levels' was exhilarating:

'I went from level one to uphill or something and that was quite exciting. The cycling machine got faster, that was quite good.' (Participant 0103) [Cock 2006]

Another motivating factor that helped some participants continue with a programme was the accountability they felt to their GPs:

'Well the doctor told me to start it so I feel I've got to finish it' (Claire, aged 40, at week ten of programme). [Hardcastle 2002]

However the motivating factors discussed above were not enough for some participants and it was noted in seven papers from six studies (Beers 2006 +. Hardcastle 2002 +, Martin 1999 +, Mills 2008 +, Mills 2012 +, Taket 2006 +, Rahman 2011 +) that many participants lacked intrinsic motivation, for example:

> *'There's no real barrier except for me . . . well if I'm feeling fed up and down and decided I feel like not going then I won't go' (Lynda, aged 43, at week two of the programme)* [Hardcastle 2002]
>
> *'I only live across the road and it's not that physical distance, it was the mental, getting out of the door, getting across there, it was losing the confidence in myself' (FG2, 162)* [Mills 2012]

Two studies (Rahman 2011 +, Hardcastle 2002 +) discussed the motivation of participants to continue with physical activity once a programme had ended. Rahman 2011 [+] noted that having autonomy and competence led participants to not only complete the programme but continue with physical activity after the programme had ended. Hardcastle 2002 + reported how one participant had found a strategy to be self-disciplined:

> *'I think I got over it because I could feel that it was doing me good' (Stephanie, aged 60, at two months post exit from the programme). 'Now I've bought a ticket for 10 sessions upfront so then I've got to come haven't I. . . I thought am I going to talk myself out of it then I saw the offer of 10 sessions for the price of 8 so I thought I'll do that' (Stephanie, aged 60, two months after exit of the programme).*

Seven papers (Carroll 2002 ++, Cock 2006 –, Graham 2006 +, Mills 2006 +, Moore 2011 +, Moore 2012 +, Taket 2006 +) from six studies presented views from referrers and providers relating to the motivation of participants. Seven papers (Carroll 2002 ++, Graham 2006 +, Mills 2008 +, Moore 2011 +, Moore 2012 +, Taket 2006 +, Cock 2006 –) reported on qualitative studies. Carroll 2002 [++] reported on the views of providers and referrers on the promotion of physical activity to South Asian Muslim women.

Several sub-themes emerged some of which were reiterated from the studies of participants' views.

Providers in four papers (Carroll 2002 ++, Mills 2008 +, Moore 2011 +, Cock 2006 –) reported that being self-motivated was a key factor to starting or continuing with a programme:

> *Yvonne: 'A lot of the time I would say most of the time it's their mental state, if they are absolutely ready and willing to get it done'; (81).* [Mills 2008]
>
> *'For the self-reliant and motivated client, we're a very good service I think. But, for the one's that don't have that motivation; we've certainly a long way to go.' (EP2)* [Cock 2006]

Two studies reported referrer views (Graham 2006 +, Moore 2012) regarding patient motivation. Graham 2006 [+] noted that referrers considered the motivational 'mindset' of the patient before referring and Moore 2012 [+] reported mixed views on the need for motivational interviewing:

> *D 'We came back from that (MI) training thinking yes we could approach the consultations a lot better…people have been referred by their doctor with 3 or 4 health conditions who haven't attended exercise for 15 years ...to manage those conditions and get them motivated is a big skill'*
>
> *…a minority rejected MI, seeing current practice as effective, or MI as unnecessary because patients were ready to change'.*

Two papers (Carroll 2002 ++ and Moore 2011 +) reported on provider views of low motivation in particular groups. Moore 2011 [+] reported that providers recognised that there was low motivation among participants in poorer areas whereas Carroll 2002 [++] quoted a referral co-ordinator:

> *'Many Muslim women who get on to the scheme don't stick to it.'*

It is notable that this view was at variance with views expressed by the women themselves. [See culture].

Two studies (Taket 2006 +, Cock 2006 –), one reporting referrer and one provider views, identified the need for support to help motivate participants who had never exercised before.

> *'Those who went and stuck with it found it helpful, it motivated them and gave them encouragement. An individual consultation that was tailored to their needs. They all seemed to know Claire and talk about her, she gave them guidelines and tailor made support ... people were definitely more focused on their illness.' (Practice Nurse).* [Taket 2006]
>
> *'I find that the [former] cardiac rehab participants are a lot better when it comes to that, because they've come from the hospital where they've done their phase three, they've already got into the routine of exercise, they understand what they're meant to be doing, they understand what level they're working at. '(EP4)* [Cock 2006]

The level of motivation of participants was noted to be related to the degree of confidence in undertaking physical activity as reported by Mills 2008 [+]:

> *'Nurse Miller: 'To know yes, they can actually do it because a lot of them believe they can't do it' (19)'*

Finally Moore 2012 reported mixed views from providers in relation to providing motivational interviewing within a consultation.

4. Existing health concerns

Fifteen papers from fourteen studies: thirteen qualitative papers (one [++][1], eleven [+][2-12], one [–][13]) and two [+] cross sectional surveys[14,15] contained views from participants[2-7,9-15], referrers[1,14] and providers[8].

Current health concerns were reported as a barrier (injury, exacerbation of condition) or a facilitator (desire for health improvement).

Concerns at referral stage around perceived negative effects on health from the ERS were identified by participants in two studies[2,10], whilst in one further study[4] health concerns were identified as both barriers and facilitators by different participants.

Referrers[1,14] and providers[8,9,12] noted health concerns as barriers to referral in ERS in five studies[1,8,9,12,15].

Health concerns were identified as barriers by participants during the intervention from eight studies[2-7,10,11,15]. However three of these studies (four papers)[2,4,6,7] also described these concerns as enablers to continuing participation.

One qualitative study[13] found that non-adherering participants were more likely than adherers to say that an existing complaint limited their participation in physical activity.

[1]Wiles 2008, [2]Beers 2006, [3]Graham 2006, [4]Hardcastle 2002, [5]Martin 1999, [6]Mills 2008, [7]Mills 2012, [8]Moore 2011, [9]Stathi 2004, [10]Taket 2006, [11]Walsh 2012, [12]Wormald 2006, [13]Taylor 1996, [14]Goodman 2011, [15]Morton 2008.

Applicability: Directly applicable as all studies were conducted in the UK

Concerns about existing health were an issue for a number of participants in relation to scheme uptake and adherence; but these concerns could act as barriers or facilitators. Views were identified in fourteen qualitative papers from thirteen studies (Wiles 2009 ++, Beers 2006 +, Graham 2006 +, Hardcastle 2002 +, Martin 1999 +, Mills 2008 +, Mills 2012 +, Stathi 2004 +, Taket 2006 +, Walsh 2012 +, Wormald 2006 +, Taylor 1996 −) and two cross sectional surveys (Goodman 2010 +, Morton 2008 +).

These concerns were highlighted as pre-programme barriers in two qualitative studies (Beers 2006 +, Taket 2006 +), facilitators in two qualitative studies (Stathi 2004 +, Wormald 2006 +) and from both viewpoints in one qualitative study (Hardcastle 2002 +).

> *'Me knee tends to give in sometimes, you know, and the apparatus would give me trouble.'* [Beers 2006]

The onset of osteoporosis was a powerful trigger to exercise and help keep the bone density at bay. [Hardcastle 2002].

Referrers (Wiles 2008 ++, Goodman 2011 +) and providers (Moore 2011 +) noted concerns about the existing health status of participants in two qualitative studies (Wiles 2008 ++, Moore 2011 +) and one cross sectional survey (Goodman 2011 +).

Patients were often described as lacking the knowledge of how to exercise safely given their medical conditions, with education crucial in allowing them to become independent exercisers without aggravating existing illnesses or injuries [Moore 2011]

Physiotherapists noted that they would refer only patients who were relatively able and that they would invariably attend the first session to provide input into the exercise programme developed by fitness instructors. [Wiles 2008]

'….individual patients' physical condition' [Concerns expressed around physical condition by primary care nurse] [Goodman 2011]

They were also notable barriers to participation during the programme, as identified by eight qualitative studies, comprising nine papers (Beers 2006 +, Graham 2006 +, Hardcastle 2002 +, Martin 1999 +, Mills 2008 +, Mills 2012 +, Taket 2006 +, Walsh 2012 +) and one cross sectional survey (Morton 2008 +).

'The angina started and it frightened me and I was afraid to do much exercise in case something happened to me' (Pauline, aged 67) [Hardcastle 2002]

Health problems were a major factor in why those who had been referred did not attend, 8 non completers and 3 non-participants cited this as the main reason for non-attendance. [Taket 2006]

However in four papers from three studies (Beers 2006 +, Hardcastle 2002 +, Mills 2008 +, Mills 2012 +) participants also expressed the view that concerns about their health was a reason for their continued involvement in the scheme.

'…so I think well if I can just keep the blood going, the circulation going. You can do but what you can' (Yvonne, aged 65, at week five of the programme) [Hardcastle 2002]

Taylor 1996 [−] noted that non-adherers were more likely than adherers to say that an existing complaint limited their participation in physical activity.

5. Enjoyment of exercise

Five qualitative studies of participant views (four [+][1-4], one [−][5]) provided a mixed picture of whether enjoyment of ERS exercise was a crucial factor for joining and completing ERS programmes.

Some participants clearly enjoyed the activities[1-5] whereas other views indicated that

the enjoyment was not of activity itself but the associated benefits of participation such as satisfaction in maintaining willpower to achieve their goals[2,3] or the physical benefits[2-5].

[1]Beers 2006 +, [2]Crone 2002 +, [3]Hardcastle 2002 +, [4]Mills 2008 +, [5]Cock 2006 −)

Applicability: Directly applicable as all studies were conducted in the UK.

Five qualitative studies (Beers 2006 +, Crone 2002 +, Hardcastle 2002 +, Mills 2008 +, Cock 2006 −) provided a mixed picture of whether enjoyment of ERS exercise was a crucial factor for uptake and completion of ERS programmes.

Non-participants in one study (Beers 2006 +) stated enjoyment was crucial for uptake.

> *When they were asked how they felt about physical activity, many of the non-participants spoke about enjoyment (n=10). A number of them believed that in order to initiate and maintain physical activity, it has to be enjoyable (n=4). Examples of this are shown in the interviews from two women. One said: 'I was feeling as though I was being pushed into something that I wasn't going to enjoy (P22/F/60/ns).' And the other one said: 'After working all day, sometimes you don't want to go out and do exercises, but, so I need to find something that I'm going to enjoy and keep at (P2/F/27/do)'*

Among those participating in exercise referral schemes, some clearly enjoyed the activities (Beers 2006 +, Crone 2002 +, Hardcastle 2002 +, Mills 2008 +, Cock 2006 −),

> *When asked how they felt about physical activity and why they thought they had completed the 12 week programme, three quarters of the participants mentioned enjoyment (n=12). One woman mentioned enjoyment as something that is not a chore and said: 'Exercising for me is a real buzz…is not something I've ever felt as being a chore to do. It's something I get a lot of enjoyment out of. It's good fun.' (P28/F/50/c)* [Beers 2006]

However, other views indicated that the enjoyment was not in the activity itself but in the associated benefits of exercise such as satisfaction in willpower to achieving their goals or physical benefits (Crone 2002 +, Hardcastle 2002 +, Mills 2008 +, Cock 2006 −).

> *Several other participants chose to highlight the physical benefits gained from exercise as being more important than enjoyment: 'I can't say with absolute truthfulness that I enjoy it all, but the better part of me tells me that if I was sent there, I was sent there for a purpose and I want to see my grandchildren grow up, so I will continue. The improvement is 31%, though I can't feel it'. (Participant 0205)* [Cock 2006]
>
> *Joan talks of a stage in which the exercise has become part of her routine and lifestyle even though she is not enjoying the exercise programme: " I've got to the stage where it's a way of life for me...can't say that I'm enjoying it but I do have a feeling of satisfaction that I'm*

beginning to achieve what I set out to.' (Joan, aged 77, at week 7 of the programme) [Hardcastle 2002]

Interestingly patients may prefer how it makes them feel after a bout of exercise, rather than experiencing the 'joy of the thing' at the time of participation; 'Geoff: I don't enjoy going to the gym, but the day after I feel a difference. [Mills 2008+]

6. Personal commitments

Lack of time as a result of personal commitments was identified as a barrier in four qualitative studies (three [+][1-3], one [–][4]). One study[1] reported the views of both participants and non-participants and a second[2] reported the views of women only. Finding time to exercise was reported as an issue in relation to initiation and continuation of a programme.

Four studies[1,2,3,4] identified that participants' commitments to work, family, roles as a carer or social demands made it difficult to find time to exercise.

Commitments to perceived family and domestic roles were also identified as leaving no or little time to exercise[2].

Prioritisation of exercise in relation to personal commitments was discussed in two studies[1, 4] with some participants realising that making time to exercise was as important as making time for other commitments.

[1]Beers 2006, [2]Hardcastle 2002 [3] Taket 2006, [4]Taylor 1996

Applicability: Directly applicable as all studies conducted in the UK.

Lack of time was the underlying theme identified in four qualitative studies discussing participants' views on the impact of personal commitments on their ability to join and complete an exercise programme or to sustain physical activity afterwards (Beers 2008 +, Hardcastle 2002 +, Taket +, Taylor 1996 –). One study reported the views of women only (Hardcastle 2002 +) and another reported those of both participants and non-participants in a programme (Beers 2008 +).

Participants' reported that it was difficult to find time to join (Beers 2008 +) and continue (Beers 2008 +, Hardcastle 2002 +, Taket +, Taylor 1996 –) an exercise programme.

Participants in four studies (Beers 2008 + Hardcastle 2002 +, Taket +, Taylor 1996 –) identified commitments to work, family, carer roles or social demands made it difficult to find time to exercise:

'My husband has been ill so I have not been able to maintain my exercise' (F/69/668). [Beers 2006]

'I care for family who are disabled and have difficulty exercising due to this' (F/40/496). [Beers 2006]

'I haven't really had time because up until now I used to work full time...I didn't have time for exercise at all' (Joanne, aged 52, at week four of the programme). [Hardcastle 2002]

'As a young mum with three children, I didn't have time for myself to get involved in anything particularly' (Paula, aged 56, at week ten of the programme). [Hardcastle 2002]

'I have two young children and one is about to start nursery' (Female, White <45). [Taket 2006]

Hardcastle 2002 (+) identified that perceived family and domestic roles were barriers to continuing with a programme:

'…the biggest problem is fitting it around everything else that goes on…my main responsibility is as a married lady to run the home and look after my husband' (Joan, aged 77 at week two of the programme)

'Conflicting wants and needs and I found that with the exercise …. I think that I should really go home and make an effort in terms of my relationship with my partner because we haven't had a decent discussion in the past week. And I haven't made him tea for the last fortnight and he's gonna get pretty ticked off and like I haven't seen mum in the last week and things like that' (Hillary, aged 34)

The prioritization of physical activity in relation to personal commitments was discussed in two studies (Beers 2006 +, Hardcastle 2002 +). One participant in Hardcastle 2002 (+) reported that six months into the programme was able to feel 'less guilty' about taking time to exercise:

'It all gets done eventually. Everything gets done …. I know about the feeling guilty about spending time on yourself but I've come to the conclusion that it's something you have to do. We don't have to be at everybody's beck and call. I mean I have been that for years and years, and they've gone off and done their own thing so why shouldn't 1…. I suppose it's just something you've got to do, it's re-defining yourself and working out who you are' (Belinda, aged 50, four months after exiting the programme)

Beers 2008 (+) reported on the 'importance' that both participants and non-participants gave to physical activity in relation to their personal commitments:

'Work took up more of me time again. Immediately there was this conflict there. And although I was allowing myself, I was making time on a Monday; it was a lot of pressure to get straight from work to shoot to the gym. It was pressure and I wanted it to be a relaxing

experience…. I've got to rush straight from work and then I've got to rush straight to school.' (P33/F/37/s)

…a male single parent non-participant who worked part time explained: 'It was a bit of a rush trying to get everything sorted with me daughter and everything before I went out.' (P19/M/44/do)

7. External support from family/friends

The presence or lack of support from family and friends as a factor in motivating participants to take-up and continue physical activity was identified in six studies of participant views: five qualitative (three [+][1-3], two [–][4,5]) and one [+] cross sectional survey[6].

In four studies[1-4] support, particularly from a spouse, was identified as a facilitator; and in two studies[5,6] its lack was identified as a barrier.

Participants found that support from family members, particularly from a spouse encouraged them to participate in physical activity[1, 2, 3, 5].

In two studies[5,6] lack of support was found to discourage uptake and adherence.

[1]Graham 2006, [2]Hardcastle 2002, [3]Martin 1999, [4]Cock 2006, [5]Taylor 1996, [6]Khanam 2008

Applicability: directly applicable as all studies conducted in the UK

The presence or lack of support from family and friends was an important factor in motivating participants to take-up and continue physical activity.

Four studies (Graham 2006 +, Hardcastle 2002 +, Martin 1999 +, Cock 2006 –) reported that participants found that the support from family members, particularly from a spouse, was encouraging. Hardcastle 2002 [+] and Martin 1999 [+] specifically noted that the need for support was greater in those who dropped out of the scheme.

'My husband was [supportive], he's a member of the gym. My brother-in-law he's now gone on the programme because he's got very bad asthma and he's just joined recently. My sister has joined and my niece has joined. We all go now, to the gym.' (Participant 0303) [Cock 2006]

'My main support basically is the fact that Dot has started to come, like if Dot hadn't have been coming I would have done it a couple of times and then I would have been more inclined to say we have got this to do or that to do but because we come as a team, because we virtually do everything together as a team we go out drinking, whatever it may be like go for our meals together' (Paul, 2; 76) [Graham 2006]

'I think probably, maybe I want to get back to a bit of fitness so I can join him to encourage him to keep going as well' (Christine, 1; 12)

'…went with mother and felt OK. When I was on my own or the gym was busy felt embarrassed' (female (NF) age 31; 1 risk factor-over weight; `why referred'-weight loss and depression). [Martin 1999]

In one study (Hardcastle 2002 +) it was also suggested that the referral of couples onto exercise programmes would help with motivation:

'I think husbands and wives could be referred together even if only for moral support. It is very lonely because you're not in there really because you want to be there which is the difference...it is lonely if you're doing the scheme on your own' (Lynda, aged 43, one year on from exiting the programme).

Taylor 1996 [−] reported that the lack of support from a spouse/partner was identified as discouraging participation in programmes and this was specifically identified as a barrier by Khanam 2008 [+]. The study's population of Bangladeshi women reported that the men in the family did not like their women to go out alone or at night.

However, this did not appear to be a universal barrier; particularly for those who were motivated to join a scheme as noted in two studies (Hardcastle 2002 +, Cock 2006 −).

'We're retired and being in each other pockets too much isn't always a good idea. I did say to him to join me but he's not interested...so I thought I'll do it by myself' (Anne, aged 68, at week one of the programme) [Hardcastle 2002]

'My husband thinks it's a bit of a joke' (Carole, aged 61). [Hardcastle 2002]

My wife had her doubts because when I first came out of hospital I was told I just had to rest and they didn't want me exercising so she didn't want me exercising. So she was a bit worried about it, but since I've been coming I find it beneficial. (Participant 0403) [Cock 2006]

8. Religion and culture

Evidence from two qualitative studies (one [++][1], one [+][2]) and one [+][3] cross sectional survey identified several significant barriers to Muslim women engaging with and adhering to exercise referral schemes.

Participants in three studies[1-3] and providers in one study[1] clearly identified the need for women-only sessions to meet the religious needs of Muslim women.

Language problems and an inability to communicate effectively were identified as barriers to uptake and adherence by participants in two studies[1,3] and providers in one study[1]. This was managed in part by family members also attending to translate. The lack of Asian staff

who were able communicate with participants was an associated issue identified.

[1]Carroll 2002, [2]Schmidt 2008, [3]Khanam 2008

Applicability: Two studies were conducted in the UK and one[2] in the Netherlands

Barriers and facilitators associated with issues specific to minority ethnic populations were identified in two qualitative studies (Carroll 2002 ++, Schmidt 2008 +) and one cross sectional survey (Khanam 2008 +). All three studies provided an insight into the particular problems faced by Muslim women: those of South Asian origin living in the Midland and North of England (Carroll 2002 ++), Turkish, Morrocan and Surinamese women in deprived neighbourhoods of The Hague, Netherlands (Schmidt 2008 +) and Bangladeshi women in East London (Khanam 2008 +).

In a series of case studies examining perspectives of participants, referrers, community workers and exercise providers Carroll 2002 (++) identified a range of issues around religion and culture. Most prominent among them was the need for women-only exercise environments:

> *"South Asian Muslim respondents emphasised the importance religion places on the separation of the genders in certain environments. The lack of awareness of male–female dynamics within Islam and the basic requirement of segregated space was often referenced as a barrier to exercise."* [Carroll 2002]

All three studies identified the lack of appropriate women-only space as a barrier to engagement and adherence with schemes.

> *'Our men and us, we just don't want a mixed environment.'* [Carroll 2002]
>
> *"All South Asian Muslim respondents highlighted the problem of the limited number of women-only sessions…'I only come on a Sunday because I know that it's women only. The rest of the week I don't bother because I am not really comfortable with men around the place. I don't really use my prescription properly, you know.'"* [Carroll 2002]
>
> *"Special provisions for South Asian Muslim women were highlighted as women-only sessions when using the gym and for swimming and the sauna…The health and fitness adviser was also aware of possible religious barriers, specifically the need for Muslim women to exercise in a men-free environment, thus respecting male–female dynamics within Islam. In addition, it was important not to hold women only sessions on Fridays (Jumma), the Muslim holy day*." [Carroll 2002]
>
> *"Muslim women in particular mentioned feeling embarrassed in mixed-sex groups due to their cultural and religious backgrounds. Some of them even refused to participate in fitness lessons when the instructor was male or when there were male participants."* [Schmidt 2008]
>
> *"Due to the very hot climate in Bangladesh, it was a pleasant, daily activity to go for a swim; in Bangladesh it was part of their lifestyle, women did not have to travel far or worry about suitable clothing or the presences of males. One of the women stated: 'Facilities are*

provided, but there are very few sessions per week only for women. In Bangladesh it was possible to go swimming any time of the day, as it was close by and the males were aware of us being in the river.'" [Khanham 2008]

Inability to communicate was identified as a barrier to engagement and adherence by providers and participants in one study (Carroll 2002 ++) and by participants in a second (Khanham 2008):

'Communication is a big problem. How do you tell people about the benefits of exercise and show them how to get the best results if you can't speak to them. I think this is one of the biggest problems' (Ms S, a community worker and exercise instructor in Oldham) [Carroll 2002]

'I turned back at the door because I knew I wouldn't be able to understand what the lady at the desk would say.' [Carroll 2002]

Mrs F discussed how she found the language barrier problematic at the outset and how she has tried to overcome this problem. 'I came here really excited but I was also worried that there would be no other Muslim women here, although I do know of women in our community who do this. Anyway, when I came I just thought there would be someone I could speak to here. I can speak a little English but I don't always understand it. So I just watched what everyone else was doing and did it like that. They did explain but I didn't really understand. I just moved my legs the way everyone else did. Then I asked this youngish Asian girl and she explained things.'[Carroll 2002]

…subjects expressed their concerns regarding their inability to speak or understand English.[Khanam 2008]

One solution was to involve children and young people who could speak English:

Another woman on the 'Fitness for Life' scheme explained: 'I don't have any communication problems because my niece comes with me.' On the Thursday session at the Audley Sports Centre, there were many non-exercising young South Asian Muslim women standing about outside the gym facility. These women were relatives or friends of the exercising South Asian Muslim women who were acting as translators or child-minders. [Carroll 2002]

An associated barrier mentioned by providers and participants was the lack of availability of staff able to communicate with participants who could not speak English:

Language was seen as a barrier to exercise by… providers, although the importance they placed on this varied. Ms S from the Birmingham… scheme pointed out that language was an important structural constraint on South Asian Muslim women. 'We [Leisure Provision] have problems finding people who can speak community languages and who can take an aerobics class because they have the qualifications. There are no official translators. People tend to bring their own families' [Carroll 2002]

Asian staff would also mean that there would be fewer language problems: 'It's about communication as well. You need language to make women feel at home.' (Exercise Facilitator) [Carroll 2002]

One of the common structural barriers mentioned in all the schemes was the availability of

South Asian female instructors. [Carroll 2002]

A number of women suggested that Sylheti-speaking gym assistants would make their gym experience less of a struggle. [Khanam 2008]

There were mixed views as to whether Muslim religious observance was a barrier to attendance. Participants in one study did not see Islam as restricting exercise:

'I don't think that religion prohibits Muslim women from exercising. Health is about well-being and we should all be interested in our health. The only religious factor for me would be that I wouldn't do certain exercises in a mixed class, especially swimming.' [Carroll 2002]

'Our Muslim culture doesn't stop us exercising. We have always exercised. We perform Namaz five times a day and that's the best exercise; and everyone knows that you have to walk to places to stay well.' This lady from Blackburn was adamant that the idea of men preventing women from exercise was, as she called it, ridiculous: 'This is nonsense. If a man sees that his wife is getting some good from getting out and about, he won't prevent her from doing it.' [Carroll 2002]

However, in the other two studies (Khanam 2008 +, Schmidt 2008 +), culture and/or religion were seen as a barrier:

Another plausible factor derived from the interview, explaining partly the unwillingness to take part in physical activity, is the general lack of motivation to increase levels of physical activity from their family. The men do not usually agree to their women going out alone or during the evening. [Khanam 2008]

Additionally, Moroccan and Turkish women mentioned being anxious about potential gossip within their social community. Furthermore, Muslim participants would rather stay at home in the evening to fulfil their religious commitments. 'We keep an eye on each other, we Moroccans...you know I'm always scared, if we are going at 21.00 o'clock and someone sees me he/she is going to wonder...I don't want others to talk about me...' (Moroccan woman, age unknown, respondent no. 34) [Schmidt 2008]

9. Cost of exercise facilities

The cost of exercise was identified as a barrier in twelve qualitative papers (one [++][1], eight [+][2-9], three [–][10-12]) and one longitudinal paper [+][13] from twelve studies. Cost was an issue raised in relation to becoming active, joining exercise referral schemes, adhering to them and in maintaining post-programme physical activity.

In three studies, participants[1] and providers[6,12] both identified cost as a barrier to joining exercise referral schemes. Also, providers in fourth study[5] identified reduced/no cost as a facilitator to engagement with the schemes. In one additional study[4], inability

to pay for gym/leisure centre use was identified by some referrers as a referral reason.

Differing views on whether the costs of attending a scheme were a barrier to completing it were identified in nine studies, eight with participant populations[4,5,8,9,12,13] and one in providers[6]. Six of these studies[2,5,8-10,13] highlighted cost as an issue, the other three[6,11,12] did not. However, of studies stating that cost was not an issue, where scheme costs were reported[6,11] they appeared quite low.

Finally, participants in five studies[2,3,7,8,12] and providers in one study[6] indicated that the increased cost associated with moving from a subsidised scheme to the going rate was a significant barrier to sustaining physical activity post-intervention.

[1]Carroll 2002, [2]Beers 2006, [3]Graham 2006, [4]Hardcastle 2002, [5]Mills 2008, [6]Moore 2011, [7]Moore 2013, [8]Schmidt 2008, [9]Shaw 2012, [10]Cock 2006 [11]Fox 1997, [12]Taylor 1996, [13]Tai 1999

Applicability: high – twelve studies conducted in the UK and one in the Netherlands[8]

The cost associated with physical activity programmes was a theme identified in twelve qualitative papers (Carroll 2002 ++, Beers 2008 +, Hardcastle 2002 +, Graham 2006 +, Mills 2008 +, Moore 2011 +, Moore 2013 +, Schmidt 2008 +, Shaw 2012 +, , Cock 2006 Q –, Fox 1997 –, Taylor 1996 −), and one longitudinal paper (Tai 1999 ++) from twelve studies. The theme was raised by participants, referrers and providers across the participant journey: from referral, through participation in exercise referral schemes to sustaining physical activity post-scheme.

Costs associated with joining an exercise referral programme were a particular issue for those on low incomes as identified in three studies (Carroll 2002 ++, Graham 2006 +, Cock 2006 –).

Graham 2006 (+) noted that a number of participants in the North West of England had not felt they could undertake an independent exercise programme as they couldn't afford to join a gym or leisure centre.

> *'I couldn't afford to come to a gym, so although it was a nice idea I just couldn't kind of do it' (Julie, 1; 23)*

In some instances this resulted in inability to pay becoming a referral reason as stated by a several GPs and practice nurses:

> *'Usually if they have not got the money to join another club'* (FGP #1 -33)
>
> *'A lot of them do say well yes I would like to but these gyms are too expensive and that is when out comes the leaflet on excel'* (PN#2 - 23)
>
> '…if they couldn't afford to join a gym' (FGP #3 - 39)

'…usually if they have not got the money to join another club, that is usually the top one that I send people' (FGP # 1- 33)

Even where schemes were subsidised, cost remained a barrier for participants in one study. Carroll 2002 [++] in a series of qualitative explorations of the views of ethnic minority women in the Midlands and North of England, describes their view that the cost of the programme was "a waste of limited resources" among those living on low incomes:

'I know that they don't ask us to pay for much but even that is too much for me. I have really young children and I have to look after them. Now that they are getting older, their needs are becoming more and more, so paying for exercise just doesn't feel good. Sometimes I think I might as well run around in the garden; at least it would be a lot cheaper.' [Mrs F on the Blackburn 'Fitness for Life' scheme]

The cost of schemes was considered carefully by providers. Cock 2006 (–) quotes one scheme organiser in the North of England:

'It's [the cost of referral] always a consideration. We are in an area of deprivation...we are aware we have to make this scheme affordably attractive and balance that off by not providing it free. Because, at the end of the day, it's a long-term lifestyle change that we're looking at and reality tells you that nothing in life is free, so, there's a balance between having a subsidised cost to it, that when you sit down with participants and tell them it's £1.55, the normal price is £3.45, you're looking at less than 50% ...and looking to sell it to them that way... it becomes much more affordable and realistic to them'. (S03)

Referrers in one study (Mills 2008 +) identified reduced cost as a facilitator of joining exercise referral schemes, as it gave participants the opportunity to use facilities that would have been unaffordable to the majority of them.

Nurse Moore: '... we are quite a deprived area and to know that they are getting the full works of the gym for only eleven pound something is um or pay and play is um, is very good for them as it gives them the open access that they haven't had before' (17)

Beers 2008 (+) also indicates the effect of having won a leisure centre free pass on an unmotivated participant.

"I got an award for six months...so that's how I got on it, it was nothing, I didn't want to do the exercises really, but I just thought I might as well do something." (P25/F/72/s)

However, even where scheme costs are low enough to be affordable, this may not be clear to potential participants. Moore 2011 (+) reports concerns of scheme organisers in Wales that this acted as a barrier to joining programmes.

For those who join an exercise referral scheme, there was mixed evidence as to whether cost continues to be a concern. It was raised as an issue in qualitative data from six studies (Hardcastle

2002 +, Mills 2008 +, Schmidt 2008 +, Shaw 2012 +, Tai 1999 +, Taylor 1996 -) but specifically stated not to be a problem in three other studies (Moore 2011 +, Cock 2006 –, Fox 1997 –).

> *'That's the only thing, it's not cheap. I can afford it but I wonder if a lot can afford it...I don't think it would harm to have it cheaper for senior citizens.' (Yvonne, aged 65, at week ten of the programme)* [Hardcastle 2002]
>
> *The patients mention financial issues as a difficulty to maintaining attendance; Geoff: 'I started off at eleven fifty, it then went up to fifteen eighty odd and I think it goes up to around eighteen I'm told and then to be honest after that I might have to give it up as I can't afford it' (FG3,115).* [Mills 2008]
>
> *…a higher proportion of people dropped out of the programme (55.3%) if they stated this ['lack of money'] as a barrier to exercise compared with those who did not (44.7%).* [Tai 1999]

Participants in two studies (Cock 2006 –, Fox 1997 –) and providers in one study (Moore 2011 +) indicated that cost was not an issue. However, it appears in at least two of these studies (Moore 2011 +, Cock 2006 –) that the costs were relatively low.

> *None of the participants expressed dissatisfaction relating to the cost of the actual referral, (schemes charges ranged from zero to £2.50 per session at the time the questionnaire was mailed...* [Cock 2006]
>
> *In all of these schemes, patients made a contribution to the cost of classes they attended, and this did not appear to be prohibitive for the patient, even in deprived areas.* [Fox 1997]
>
> *(37)' It's not the most, in terms financially affluent area. So obviously they struggle if anything, they seem to be able to cope with the pound cost for their sessions here.'* [Moore 2011]

Finally, participants in five studies (Beers 2006 +, Hardcastle 2002 +, Moore 2013 +, Schmidt 2008 +, Cock 2006 –) and providers in one study [Moore 2011 +] identified cost as a significant barrier to continuing physical activity after the scheme ended and with it the availability of subsidised facilities.

> *For example, one said that: 'I really enjoyed using the gym but due to expenses could not afford to take up membership. Since stopping at the gym I have gone back to old bad habits' (M/52/778).' and another said that: 'I find it impossible to pay for gym and diet is costly. This should be on the NHS' (M/60/300).* [Beers 2006]
>
> *"Although the ERS was affordable for many participants, they considered the costs of regular sport facilities to be too high and as a barrier to continuing to exercise after the ERS. For half of them, it was actually a reason to stop exercising."* [Schmidt 2008]
>
> *'I don't mind it when I'm coming and paying a couple of quid, but when I've got to pay a standing order at £20 per month...if you're only on a £75 a week incapacity, it takes some*

finding. It's another bill you know, but I hope to be able to carry on doing it, because I enjoy it.' (Participant 0403) [Cock 2006]

"(37) …the progression afterwards is obviously quite awkward for them. Because once the pound stops if they're not willing to have the £15 for their gym membership, there's very little else to go to that's free." [Moore 2011]

10. Location of activities

Location of activities during the ERS and the effect on adherence was a theme across eight qualitative studies (one [++][1], six [+][2-7], one [–][8]) and one [+][9] cross sectional survey.

Participants reported distance to travel as a barrier in six studies[2,4-5,7-9], and local provision as a facilitator in one study[7]. Providers[1] and referrers[1,7] concurred with this theme, reporting distance to travel as a barrier in two studies[1,7] and local provision as a facilitator in two studies[1,7].

The perceived safety of the location for women was reported as a barrier by participants in three studies[1,3,5] and by referrers in one study[1].

[1]Carroll 2002, [2]Beers 2006, [3]Mills 2008, [4]Moore 2013, [5]Schmidt 2008, [6]Shaw 2012, [7]Taket 2006, [8]Cock 2006, [9]Khanam 2008.

Applicability: High as eight studies were conducted in the UK and one[5] in the Netherlands.

The impact of scheme location on uptake and adherence was identified in eight qualitative studies (Carroll 2002 ++, Beers 2006 +, Mills 2008 +, Moore 2013 +, Schmidt 2008 +, Shaw 2012 +, Taket 2006 +, Cock 2006 –) and one cross sectional survey (Khanam 2008 +).

Distance to travel to activities was reported as a barrier by participants in six studies (Beers 2006 +, Moore 2013 +, Schmidt 2008 +, Taket 2006 +, Cock 2006 –, Khanam 2008 +) and by providers and referrers in two studies (Carroll 2002 ++, Taket 2006 +).

……in LHB areas where the scheme was offered in a limited number of centres, or where large distances between centres were cited, many stated that accessing the programme involved substantial travelling time, contingent upon access to a car. [Moore 2013]

'It's all very well having these things up and running, but how do women who don't drive get to a gym' [Carroll 2002]

The complementary facilitator of local provision was identified by participants (Taket 2006 +),

referrers (Taket 2006 +) and providers (Carroll 2002 ++).

> *'Don't work and it was easy to get to. Could just walk there and I went 3 times a week. I feel healthier.'* [Taket 2006]

Another major theme was the perceived safety of the location which was reported as a barrier by female participants in three studies (Carroll 2002 ++, Mills 2008 +, Schmidt 2008 +) and by referrers in one study when talking about women (Carroll 2002 ++).

> *'I know it isn't really that far but it is, if you know what I mean, because it gets dark now and, when you hear about all these things that are happening to women, I don't even want to go across the road these days. It's not worth it.'* [Carroll 2002]

> *'I don't like walking round the back of there, that's why I stopped going.'* [Cock 2006]

11. Travel

The difficulty of travelling to activities for those relying on public transport was a theme linked to location. Participants reported difficulties with travel, or the need for better transport in six qualitative papers (one [++][1], five [+][2-6]) from five studies and one [+][7] cross sectional survey.

[1]Carroll 2002, [2]Martin 1999, [3]Moore 2013, [4]Murphy 2010, [5]Taket 2006, [6]Wormald 2006, [7]Khanam 2008

Applicability: Directly applicable as all studies were conducted in the UK.

A key barrier to adherence for participants relying on public transport was the difficulty of travel, sometimes articulated as a requirement for better transport arrangements. This theme was identified across population groups in six studies (six qualitative papers: Carroll 2002 ++, Martin 1999 +, Moore 2013 +, Murphy 2010 +, Taket 2006 +, Wormald 2004 +) and one cross sectional survey (Khanam 2008 +).

> *Due to the fact that many participants relied on public transport some had found it difficult to access the service* [Wormald 2006]

'There was no transport for me to go there …good if it had been more local' [Taket 2006]

12. Setting

The setting of exercise referral schemes was identified as a theme in nineteen papers from sixteen qualitative studies (fifteen [+][1-15], three [–][16-18]) and one [+][19] cross-

sectional survey. The views identified focused on perception of the gym/leisure centre environment.

The theme was identified by participants in seventeen papers[1-7,9-13,15-19] and providers in four papers[6,8,14,16] as a factor in the uptake and continued attendance in ERS schemes.

The theme is was discussed in four sub-themes with individual evidence statements provided for each theme:

e) Perception of the gym environment
f) Gym atmosphere (TV/music)
g) Confidence and knowledge operating gym equipment
h) Quality of physical facilities

[1]Beers 2006, [2]Crone 2002, [3]Graham 2006, [4]Hardcastle 2002, [5]Martin 1999, [6]Mills 2008, [7]Mills 2012, [8]Moore 2011, [9]Moore 2013, [10]Schmidt 2008, [11]Sharma 2012, [12]Shaw 2012 [13]Stathi 2004, [14]Taket 2006, [15]Wormold 2004, [16]Cock 2006, [17]Fox 2007, [18]Taylor 1996, [19]Khanam 2008

Applicability: High – sixteen studies conducted in the UK and one[8] in the Netherlands.

A theme reported in almost half the included studies ((Beers 2006 +, Crone 2002 +, Graham 2006 +, Hardcastle 2002 +, Martin 1999 +, Mills 2008 +, Mills, 2012 +, Moore 2011 +, Moore 2013 +, Schmidt 2008 +, Sharma 2012 +, Shaw 2012 +, Stathi 2004 +, Taket 2006 +, Wormold 2004 +, Cock 2006 −, Fox 2007 −, Taylor 1996 −) and one cross-sectional survey (Khanam 2008 +) was that of ERS setting. Although most schemes operated in local authority leisure centres where a variety of activities were available, the main focus of views was the gym setting.

This was discussed in relation to uptake and adherence by participants in seventeen papers from sixteen studies (Beers 2006 +, Crone 2002 +, Graham 2006 +, Hardcastle 2002 +, Martin 1999 +, Mills 2008 +, Mills, 2012 +, Moore 2013 +, Schmidt 2008 +, Sharma 2012 +, Shaw 2012 +, Stathi 2004 +, Wormold 2004 +, Cock 2006 −, Fox 2007 −, Taylor 1996 −, Khanam 2008 +) and providers in four studies (Mills 2008 +, Moore 2011 +, Taket 2006 +, Cock 2006 –).

The theme consisted of four main sub-themes:

- Perception of the gym environment
- Gym atmosphere (TV/music)
- Confidence and knowledge operating gym equipment
- Quality of physical facilities

12a Perception of the gym environment

Participants in thirteen qualitative studies described feeling uncomfortable and intimidated in the unfamiliar gym environment before joining and/or during ERS attendance[1-6, 8-10, 12-15]. This appeared to be related to the perceived image of other users being fit, slim, young and beautiful[2,4,5,12,13] together with participant's own low self-esteem and body image[1-4, 8,9,15].

In addition to the exercise environment, participants also highlighted their discomfort with communal changing areas[2,4,13].

Several studies included views on coping with or minimising participant discomfort. In two studies participants anticipated or experienced that over time familiarity with the environment and knowing what they are doing would build their confidence and comfort in the setting[2,4]. Participants described feeling at ease in supportive gym environments where the threatening 'typical sporty image' had been overcome[11,14], gym users were friendly[2] or similar to themselves[2,4,6].

Separate gym times/areas for ERS users were discussed in four studies by participants who felt this was less intimidating[2,8]

Providers' views on separate gym times/areas for ERS users were discussed in two studies[7,13]. Participant requests for exclusive 'ERS-only' times/gyms were considered problematic because of the financial costs involved[13]. Additionally, some providers[7] expressed concerns that participants would not be able to integrate into the mainstream gym environment once they completed the ERS programme

[1]Beers 2006, [2]Crone 2002, [3]Graham 2006, [4]Hardcastle 2002, [5]Martin 1999, [6]Mills 2008, [7]Moore 2011, [8]Schmidt 2008, [9]Sharma 2012, [10]Stathi 2004, [11]Taket 2006, [12]Wormold 2004, [13]Cock 2006, [14]Fox 2007, [15] Taylor 1996

Applicability: High - fourteen studies were conducted in the UK and one[8] in the Netherlands.

Perception of the Gym Environment

Participants in twelve studies described feelings of being uncomfortable and intimidated in the unfamiliar gym environment before joining and/or during ERS attendance (Beers 2006 +, Crone 2002 +, Graham 2006 +, Hardcastle 2002 +, Martin 1999 +, Mills 2008 +, Schmidt 2008 +, Sharma 2012 +, Stathi 2004 +, Wormold 2004 +, Cock 2006 −, Taylor 1996 −).

> *'I felt very uncomfortable every time I entered the gym to the extent I felt like a freak (F/38/460).'* (Beers 2006)

This appeared to be related to the perceived image of other gym users and issues surrounding Participants own low self-esteem. For example participants in five studies felt out of place by their perceptions of other users being 'fit', 'skinny', and 'young' (Crone 2002 +, Hardcastle 2002 +, Martin 1999+, Wormald 2004 +, Cock 2006 −,):

> *Alison 'I thought it was probably going to be all, you know, young and beautiful who were all frightfully good at everything' (2fg1 122-3). Claire 'I didn't know what to expect you know, but I have felt a bit like you that it might be all beautiful young things in their leotards and what not'* [Crone 2002]

> *Participants also reported feeling intimidated by the technological complexity of some of the gym equipment, and found that the marketing image presented by the gyms and leisure centres was also off-putting as it seemed to be aimed at the young and fit: 'I mean, the advertising image is always young people isn't it? And a young outlook, and you think, oh, I'm not gonna go and be shown up by them'. (Dorothy, age category 55-64)* [Wormald 2004]

An issue that could be closely linked to perceptions of other gym users is participants' own self-esteem and body image, reported in nine studies (Beers 2006 +, Crone 2002 +, Graham 2006 +, Hardcastle 2002 +, Schmidt 2008 +, Stathi 2004 +, Sharma 2012 +, Cock 2006 −, Taylor 1996 −). For example:

> *'My own sense of . . . my self-esteem was very low anyway, the fact that I couldn't physically do things I used to take for granted, and I don't particularly like that kind of macho culture anyway. I wouldn't want to expose myself to it. I'd have been worried about people poking fun.' (Tony)* [Sharma 2012]

> *'My physical shape stopped me doing something like going in the swimming baths and stuff like that; because I'm not confident about the way I look.'* [Beers 2006]

> *Some participants felt the gym environment was an alien one and perceived numerous factors relating to other exercisers contributing to this belief: 'I felt we weren't dressed appropriately, because all the youngsters coming in had hardly any clothes on, or they had these singlet things and we were in our ordinary clothes almost, we didn't look like gym people.'* [Cock 2006]

In addition to the exercise environment, participants also highlighted their discomfort with communal changing areas (Crone 2002 +, Hardcastle 2002 +, Cock 2006 −).

> *'They had all women changing rooms so everyone changes in front of each other which is alright if you're young and beautiful but not if you're a bit older' (Stephanie, aged 60)* [Hardcastle 2002]

Several studies included views on coping with or minimising participant discomfort. In two studies participants anticipated or experienced that over time familiarity with the environment and knowing what they are doing would build their confidence and comfort in the setting (Crone 2002

+, Martin 1999 +):

> *Anne: 'I don't mind going in there if it's full of people who know what they are doing and are totally focused as long as I know what I'm doing... I think...unless I know what I'm supposed to be doing, you know, to get on the treadmill or whatever, you know, unless you really know, and you are conscious of people watching you and it's just sort of becoming more familiar'* [Crone 2002]
>
> *…Feeling at ease with others, and in the environment itself, facilitated [assimilation] and provided the self-confidence required to respond to, and overcome, challenges…. Cath: 'When I got onto the cycle and I thought well it had all these buttons and I mean Lucinda had been doing it and I just didn't know where to start and this, I mean he (other user) must have been my age or even a bit older, but I mean he was on the next bike and I said gosh I don't know where to start, so he started trying to set my clock for me... I mean I think it was lovely because I didn't know him before.' (1fg2 306-11)* [Crone 2002]

Participants described feeling at ease in the supportive gym environments provided by the scheme where the sometimes threatening 'typical sporty image' had been overcome (Taket 2006 +, Fox 2007 −). Positive experiences were described where gym users were friendly (Mills 2008 +) or similar to themselves (Crone 2002 +, Hardcastle 2002 +, Mills 2012 +):

> *Rachel: ''There are all shapes and sizes here, basically you don't feel uncomfortable'* [Mills 2012]

Providers' views on separate gym times/areas for ERS users were discussed in two studies (Cock 2006 –, Moore 2011 +). Participant requests for exclusive 'ERS-only' times/gyms were considered problematic because of the financial costs involved (Cock 2006 −). Additionally, whilst some exercise professionals in Moore 2011 [+] felt that offering and advertising ERS exclusive services was attractive to participants, others had concerns that participants would not be able to integrate into the mainstream gym environment once they completed the ERS programme. For example:

> *One professional for example commented that during initial telephone contact, advertising the availability of patient-only classes in which fitter mainstream users would not be present had led to good responses.* [Moore 2011]
>
> *'The negative side is they don't want to go into the main gym, so it's kind of, they're wrapped in cotton wool because they've got their own which is great for the first sixteen weeks, but then we do have to try and push them on slightly, to integrate them in the main gym'* [Moore 2011].

12b Gym atmosphere (noise, music and television)

Within the broader setting theme, seven studies of participant views discussed the gym atmosphere during the exercise referral scheme: six qualitative (four [+][1-4], two

[−][5,6]) and one cross-sectional survey ([+][7]).

Within the broader setting theme, seven studies discussed the gym atmosphere. Negative opinions relating to the noise, volume or type of music played were discussed in six studies[1,3-7]. Two of these studies also highlighted negative views towards televisions playing content perceived to be inappropriate[7], not to their personal taste[5], or too loud/quiet[1].

Conversely participants in three studies discussed that whilst music or television was not necessarily liked, they were helpful in distracting participants from their feeling of anxiety in an unfamiliar environment or alleviating boredom[1,2,5].

[1]Crone 2002, [2]Hardcastle 2002, [3]Martin 1999, [4]Mills 2008, [5]Cock 2006, [6]Taylor 1996, [7]Khanam 2008.

Applicability: Directly applicable as all studies were conducted in the UK.

Gym atmosphere – noise, music and television

Within the broader setting theme, seven studies of participant views discussed the gym atmosphere during an ERS: six qualitative (Crone 2002 +, Hardcastle 2002 +, Martin 1999 +, Mills 2008 +, Cock 2006 −, Taylor 1996 −) and one cross-sectional study (Khanam 2008 +).

Negative opinions relating the noise, volume or type of music played were discussed in six studies (Crone 2002 +, Martin 1999 +, Mills 2008 +, Cock 2006 −, Taylor 1996 −, Khanam 2008 +).

> *'But it [the music] is very noisy at [Site 403], sometimes you go in and you'd like to get out because it is really noisy' (Participant 040). 'Oh that drives you crazy. It's not so much that it's loud music, it's that raucous cheap music' (Participant 0204).* [Cock 2006]
>
> *'Felt anxious to begin with, very frightening with the music, girls in leotards and big men'* [Mills 2008]

Two of these studies also highlighted negative views towards televisions playing content perceived to be inappropriate (Khanam 2008 +), not to their personal taste (Cock 2006 −) or too loud/quiet (Crone 2002 +). For example:

> *The personal taste relating to the programmes shown affected clients' enjoyment of the session: 'The worst thing of all, they had children's television on... Every week, it would be, `can we have Countdown on, it would be much less boring' and this was a performance because every week someone had the key, someone had the remote control for the television… the only highlight of the session was watching this television.' (Participant 0103)* [Cock 2006]

Views were also expressed in three studies (Crone 2002 +, Hardcastle 2002 +, Cock 2006 −) that whilst music or television was not necessarily liked, they were helpful in distracting participants

from their feeling of anxiety in an unfamiliar environment or alleviating boredom.

> *'I know that the insistent beat does make you carry on…although I dislike it…it does help me I must admit'* [Crone 2002]
>
> *Debbie's coping strategy to get over the hurdle of feeling self-conscious was to block out other people and concentrate on her task: 'I shut off, I shut myself off and concentrated on what I was doing. I watched the screens on the television and took my mind off everybody else'* [Hardcastle 2002]
>
> *'I actually quite like it. I like going to the gym and listening to the music and not have any children telling me what to listen to all the time' (Participant 0202). 'Well if it alleviates boredom I find, but it needs to be the right type of music' (Participant 0403).'* [Cock 2006]

12c Confidence and knowledge to operate gym equipment

Within the broader theme of setting, participant concerns about how to use gym equipment was a common issue in five [+][1-5] studies of participant views and one [−][6] qualitative study of provider views.

Five studies reported worries or lack of knowledge about how to use the equipment as an issue prior to starting ERS programmes[2,4] or during participation[1,5,6].

In one study ERS providers were described as being crucial in helping participants to overcome their difficulties with using machinery[4]; whilst the lack of provider presence was mentioned in a separate study[2].

Providers in one study suggested that participant's comfort with a particular key technology used with fitness machines in their gym varied depending on age[6].

[1]Beers 2006, [2]Crone 2002, [3]Martin 1999, [4]Moore 2013, [5]Stathi 2004, [6]Cock 2006.

Applicability: Directly applicable as all studies were conducted in the UK.

Confidence and knowledge to operate gym equipment

Within the broader theme of setting, participant concerns about how to use gym equipment was a common issue. Five qualitative studies reported worries or lack of knowledge about how to use the equipment as an issue prior to starting ERS programmes (Martin 1999 +, Stathi 2004 +) or during participation (Beers 2006 +, Crone 2002 +, Cock 2006 −).

For example:

> *For many respondents, participation in the ERS was a totally new experience. Prior to this, most were unfamiliar with the structure of a fitness centre and how to use the complex*

equipment. Overcoming their own barriers (embarrassment, fear of injury, young profile of leisure centres) was critical in the first weeks of the programme. [Stathi 2004]

'The technology totally overwhelmed me' (Participant 0201). 'I ruined one machine; I'm just not inclined that way' (Participant 0205). [Cock 2006]

As indicated in the quotes below, one further study described how ERS providers were crucial in helping particpants to overcome their difficulties with using machinery (Moore 2013 +), whilst participants in Crone 2002 + commented on the lack of provider presence:

Patients in early programme stages highlighted the value of professional support in guiding them through use of machinery, building confidence in using unfamiliar equipment safely. [Moore 2013]

'Well there are so many buttons' (Cath 1fg2 287). Complexity related to the level of computerization, the number of machines respondents needed to remember how to operate and information about how to execute an exercise: 'Lucinda [fitness instructor] wasn't there, and I couldn't work out what to do with things, I really found it hard I've been half a dozen times but, I just, you know, thought how the hell does this work, you know, especially with that stepper thing and things like that.' (Barbara 1fg2 284–287). [Crone 2002]

Participants and providers in one study (Cock 2006 −) described mixed responses to the technology of the gym equipment. A key system that adapted machinery to individual's work-out specifications were received favourably by some participants and viewed negatively by others. Some providers suggested that participant's comfort with the technology varied depending on age:

'I think young people do [like the key system], because they've grown up with technology' (Participant 0201). 'I don't wish to generalise here, but it does tend to be the older people that are not familiar with that type of technology' (S02).

12d Quality of physical facilities

Within the broader theme of setting, the poor quality of the physical facilities was an issue for participants in four qualitative studies (two [+][1,2], two [−][3,4]) and providers in one [−][3] study. One study had mixed views on whether this was a deterrent to attendance[1].

Issues highlighted by participants were not enough gym equipment available leading to delays whilst waiting to get on equipment[2,3], shabbiness, cleanliness or locker availability of changing facilities[3,4] and cold swimming pool temperature[3].

Providers in one study commented on facility limitations and highlighted budget

constraints as a reason[3].

[1]Crone 2002, [2]Shaw 2012 , [3]Cock 2006, [4]Taylor 1996,

Applicability: Directly applicable as all studies were conducted in the UK.

Quality of physical facilities

The poor quality of the physical facilities was highlighted by some participants in four studies (Crone 2002 +, Shaw 2012 +, Cock 2006 –Taylor −) and providers in one study [Cock 2006 -]. One study suggested this was not a deterrent to attendance (Crone 2002 +).

> *General opinions regarding the physical environment was that it was run-down, 'and it's shabby and you go to the loo and all the paint's falling off' (Alison 2fg2 204), in need of improved decor, 'they could do with a complete renovation' (Claire 2fg2 520), and cramped; (Donna 2fg2 321) 'I think the place is so small.' However, participants had differing opinions on the influence of these on the atmosphere. For Donna, although she acknowledged that the decor was run-down, it was not a significant factor for her; 'too small and it's shabby but having said that the atmosphere is so fantastic I think a lot of people put up with it' (2fg2 323-4). Claire however, was neither impressed nor motivated by her impressions of it; 'well I haven't joined because I think the place needs to be, you know, much more up market for the money you pay' (2fg2 328)*. [Crone 2002]

Issues highlighted by participants were not enough gym equipment available leading to delays whilst waiting to get on equipment (Shaw 2012 +, Cock 2006 −), shabbiness, cleanliness or locker availability of changing facilities (Cock 2006 −, Taylor 1996 −) and cold swimming pool temperature Cock 2006 −). For example:

> *With respect to the unsupervised, signposted exercise programme, some commented that the timing of classes were not suitable for those who work, 'everything available was during the day. I work. It's like, you can only go if you're retired or can't work. If you work, what are you supposed to do?' (P14) and complained about frequent changes in class locations and times, over-crowded classes and a lack of equipment, 'the class I went to there was nothing, no machines. Maybe if there were better facilities. The facilities were better in the hospital. Everything was just there' (P27).* [Shaw 2012]
>
> *'The water in [Site 403] baths is flipping freezing ... we are so cold - come out after absolutely shivering.' (Participant 0402)* [Cock 2006 −]

Providers in one study were aware of facility limitations; highlighting budget constraints as a reason:

> *'We are very aware that the facilities have a lot to be desired ... We do not have the budget resources within this department to upkeep the number and the age of the buildings that we offer ... We've got budget constraints, we've got to put prices up within leisure, but the*

state of the facilities does not warrant paying top whack for a gym session or a swim and from a partner agency going in to deliver exercise referral within those buildings, you become acutely aware of those things, even down to decor.' (S03). [Cock 2006 −]

13. Scheduling of activities

Scheduling of activities was identified as an issue in eleven qualitative studies (one [++][1], five [+][2-7], four [–][8-11]) and one [+][12] cross sectional survey. Participants views were reported in ten studies[2-8,10-12] and providers in two studes[1,4].

Participants reported inconvenient timing of sessions as a barrier to attendance in ten studies[2-8,10-12]; mostly in relation to clashes with work hours or childcare commitments. Providers also indicated that evening attendance was a barrier for workers or for people with children in one study[8].

Participants[11] and providers[4] reported that scheduling activities during off-peak gym times allowed attendance at times when the environment was 'less intimidating'. However, this was inconvenient for day-time workers[11].

Within the broader scheduling theme, participants in three studies[6,8,11] described 'rigid' appointment times or lack of flexibility in scheduling as a barrier to attending. Providers in one study[4] also suggested benefits of providing flexibility in the time that participants can attend.

Providers in one study of Muslim women[1] also highlighted the need to consider religious holy days within the scheduling of sessions.

[1]Carroll 2002, [2]Beers 2006, [2]Hardcastle 2002, [4]Mills 2008, [5]Moore 2013, [6]Shaw 2012, [7]Taket 2006. [8]Cock 2006, [9]Joyce 2010, [10]Lord 1995, [11]Taylor 1996, [12]Morton 2008.

Applicability: Directly applicable as all studies were conducted in the UK.

Scheduling of activities was identified as an issue in twelve studies comprising eleven qualitative studies (Carroll 2002 ++, Hardcastle 2002 +, Beers 2006 +, Mills 2008 + , Moore 2013 +, Shaw 2012 +, Taket 2006 +, Cock 2006 –, Joyce 2010 –, Lord 1995 –, Taylor 1996 –) and one cross-sectional survey (Morton 2008 +).

ERS participants reported inconvenient timing of sessions as a barrier to attendance in ten studies (Carroll 2002 ++, Beers 2006 +, Hardcastle 2002 +, Mills 2008 +, Moore 2013 +, Morton 2008 +, Shaw 2012 +, Taket 2006 +, Cock 2006 –, Joyce 2010 –, Lord 1995 –, Taylor 1996 –); mostly in relation to clashing with work hours or childcare commitments.

Workers described being unable to attend programme sessions in the daytime, week days or 'off-peak' gym hours (Hardcastle 2002 +, Beers 2006 +, Morton 2008 +, Shaw 2012 +, Taket 2006 +, Cock 2006 –, Taylor 1996 –). This can be seen in the following quotations, which highlight issues relating difficulties in attending to day-time classes, fitting in a number of appointments within a certain time and wishes for evening or weekend timings:

> *'I work 9 - 4 & did not get any support since the classes were all during the day. The GP did not tell me this when I agreed to join the programme' (F/38/460).* [Beers 2006]
>
> *"It is important to note that although Debbie dropped out of the programme, she remains interested in going on it. Debbie goes on to explain what happened after her first session: 'I only went I think once and I couldn't find another session to fit in around my work because you have to complete the ten sessions in a certain period of time. I think I got a bit disheartened really. I know that other people want to do it as well but I didn't find it very flexible'" (Debbie, aged 45)* [Hardcastle 2002]
>
> *'...I need to be able to fit it around my work ... they need to provide times at the weekends or in the evening.' (Female, Black, 45-50)* [Taket 2006]

Timing was also an important factor for people with children in two studies (Morton 2008 +, Cock 2006 –), although participants did not state which times were least or most feasible.

> *'If there's something wrong with your key programme, they've got to re-programme it on the computer and it took me something like a month before I could see somebody, because I couldn't fit in the times that they were there. It's not geared for people with children, the whole [Scheme 2] thing, really, there's no crèches, there's nothing, it's not sort of meant for younger ones, but there are a lot currently going'. (Participant 0202)* [Cock 2006]

ERS providers also raised the issue of attendance in the evening being a barrier for workers or people with children in one study (Cock 2006 –):

> *'Say for instance it is a single mum with kids at home and she is not going to be able to go in the evenings, or she needs to go somewhere where there is going to be a cheap crèche or free crèche and things like that and let her have her time as well as not having to worry about her children and making sure that they are safe as-well.'*
>
> *'We do get some people that are full time workers; time-wise we don't have many sessions that are on in the evening. (EP4) Something that we know about, we're looking at the moment actually ... trying to expand it to for those people in. We only do one circuit ... in the evening.' (S04)*

In one study some participants described class times as 'convenient', but those who did so were outnumbered by others describing unsuitable timings as a barrier (Moore 2013 +):

> *"Class times, whilst cited by some as flexible and convenient, in other centres were cited as too inflexible to allow working patients to access two classes per week."*

Inconvenient scheduling was also counterpointed with off-peak gym times being less intimidating (Cock 2006 –); not fitting in when participants friends also attended the gym in the evenings (Hardcastle 2002 +); or class times being frequently changed (Shaw 2012 +).

> *"…the majority of participants cited attendance outside of peak hours reduced the level of intimidation; however, this again confirms the difficulties for exercise referral clients in full time employment"* [Cock 2006]
>
> *"Sally's friends went in the evening, which was incompatible with the programme that operates between 11 am and 5pm, Monday to Friday."* [Hardcastle 2002]
>
> *"With respect to the unsupervised, signposted exercise programme, some commented that the timing of classes were not suitable for those who work. 'Everything available was during the day. I work. It's like, you can only go if you're retired or can't work. If you work, what are you supposed to do?' (P14) and complained about frequent changes in class locations and times, over-crowded classes and a lack of equipment"* [Shaw 2012]

Within the broader scheduling theme, ERS participants in three studies described 'rigid' appointment times or lack of flexibility in scheduling as a barrier to attending (Taket 2006 +, Cock 2006 –, Joyce 2010 –). For example:

> *'I did find that the timings were very rigid ... I know, that they've got to have these times, but ...the times were very rigid, which doesn't always help, if you're working. I work four days a week and it didn't always fit in for a lunch hour or whatever, so it was quite difficult, so often I had to come back in the evening which wasn't particularly convenient... One in particular, if I arrived five or ten minutes late ...she would still make me finish at 1: 30…if I arrived at quarter to one or whatever, she was very particular, and said `no, you should have been here' which I felt was a bit inflexible, because it wasn't busy.' (Participant 0102)* [Cock 2006]

Providers in one study (Mills 2008 +) also suggested that providing flexibility in the time that participants can attend would improve longevity of participant's regimes.

> *Flexibility is another property mentioned by the facilitators. This refers to the flexibility in the running of the scheme, it is mentioned in terms of the time at which patients can attend or the different options available for exercise; Dave: 'If you have provided opportunities for other forms be it walks or be it classes or whatever I think it just adds to longevity of their regime (48)'.*

Providers in one study of Muslim women also highlighted the need to consider religious holy days within the scheduling of sessions (Carroll 2002 ++).

> *The health and fitness adviser was also aware of possible religious barriers, specifically the need for Muslim women to exercise in a men-free environment, thus respecting male–female dynamics within Islam. In addition, it was important not to hold women only sessions on Fridays (Jumma), the Muslim holy day.*

14. Participant preferences for types and variety of activity

Twelve papers reported participants' and providers' views regarding the range of activities offered by ERS schemes and their preference for various exercise types: ten qualitative (nine [+][1-9], one [–][10]) and two cross sectional surveys (one [+][11] and one [–][12]).

A key concern was although some participants did enjoy gym based exercise, opinions differed in the seven studies that identified this theme[1,3,7,9-12]. Participants in five studies reported reluctance to perform gym-based exercise prior to attending[3,12] or dislike of gym exercise once they had attended the scheme, citing boredom[1,3,10], preference to be outside[1] or a dislike of lifting weights[3]. Conversely, three studies included participants who liked gym-based exercise for its safe environment unaffected by the weather [3,7,9].

Providers in one study also noted participants' dislike of gym sessions[10].

Various preferences for other forms of exercise were discussed including group-based activities such as dance, aerobics or yoga[2,3,8,9,11], swimming[1,2,5,9,11]or outdoor activities such as walking[1,2,11] and cycling [1,2].

There was an indication that participants and providers wanted ERS to offer a range of activities rather than just one type. Four studies indicated that whilst many participants valued the range of existing activities, others wanted more variety[5-7,9].

Programme referrers also valued provision of varying exercise types within a particular ERS programme[8] whereas providers in one study reported mixed attendance at non-leisure centre-based activity options, with good uptake for cycling but a poor response to walking schemes[10].

[1]Beers 2006, [2]Crone 2002, [3]Hardcastle 2002, [4]Mills 2008, [5]Moore 2013, [6]Shaw 2012, [7]Stathi 2004, [8]Taket 2006, [9]Wormald 2004, [10]Cock 2006, [11]Khanam 2008, [12] Beaufort Research 2013.

Applicability: Directly applicable as all studies were conducted in the UK.

Twelve papers reported views regarding the range of activities offered by ERS schemes and their preference for various exercise types: eleven qualitative (Beers 2006 +, Crone 2002 +, Hardcastle 2002 +, Mills 2008 +, Moore 2013 +, Shaw 2012 +, Stathi 2004 +, Taket 2006 +, Wormald 2004 +, Cock 2006 –) and two one cross sectional surveys (Khanam 2008 +, Beaufort Research 2013 –).

Two studies identified referrer (Taket 2006 +) and provider (Cock 2006 –) views and eleven studies (Beers 2006 +, Crone 2002 +, Hardcastle 2002 +, Mills 2008 +, Moore 2013 +, Shaw 2012 +, Stathi 2004 +, Taket 2006 +, Wormald 2004 +, Cock 2006 −, Beaufort Research 2013 −) reported participant views before and during programmes.

Although some participants did enjoy gym based exercise, opinions differed within the seven studies discussing it (Beers 2006 +, Hardcastle 2002 +, Khanam 2008 +, Stathi 2004 +, Wormald 2004 +, Cock 2006 −, Khanam 2008 +, Beaufort Research 2013 −). Participants in two studies reported reluctance to perform gym-based exercise prior to attending (Hardcastle 2002 +, Beaufort Research 2013 −):

> *This is indicated in Claire's comment when she reveals her expectations of the exercise in the gym: 'I thought it would be all weight lifting which I didn't really fancy'* [Hardcastle 2002]
>
> *The impression that it would involve visiting a gym was also not considered very inviting.* [Beaufort Research 2013 −]

Three further studies described participant's dislike of gym exercise once they had attended the scheme, often citing boredom, preference to be outside or a dislike of lifting weights (Beers 2006 +, Cock 2006 −, Khanam 2008 +). For example:

> *'I use a cycle at home and prefer walking in the open air to a gym' (male aged 61).* [Beers 2006]
>
> *'The gym based exercises are pushed, but I found these were not for me. None of the instructors were present at the aqua sessions' (female aged 39).* [Beers 2006]
>
> *A number of participants referred to exercise sessions as being `boring', often citing the monotony of the programme, or the machines as the root cause.* [Cock 2006]

Providers in one study (Cock 2006 −) were also aware of participants' dislike of gym sessions:

> *Staff were aware of the difficulties in having primarily gym-based sessions available: 'Maybe one thing is the variety of sessions we provide. If they don't like the ones that we provide such as the circuits or the gym sessions, we don't have much scope from there and they may not adhere to it. They simply don't like coming to the gym environment or come onto a class environment either, so maybe to expand the activities would help educate the wider group of people to adhere to it.'*

Conversely three papers included participants that liked gym-based exercise for its safe environment unaffected by the weather (Hardcastle 2002 +, Stathi 2004 +, Wormald 2004 +).

Various preferences for other forms of exercise were discussed including group-based activities such as dance, aerobics or yoga (Crone 2002 +, Hardcastle 2002 +, Taket 2006 +, Wormold 2004 +, Khanam 2008 +); swimming (Beers 1996 +, Crone 2002 +, Murphy 2010 +, Wormold 2004 +, Khanam 2008 +) or outdoor activities namely walking (Beers 1996 +, Crone 2002 +, Khanam 2008

+) and cycling (Beers 1996 +, Crone 2002 +).

> *In a discussion with Belinda on different types of exercise she also highlighted her preference for dance and keep-fit. Previously, she had said that exercise in most instances is boring with the exception of keep-fit: 'That's a very social thing though. You're interacting with other people because we were doing choreography dance. I really loved that because there was an end product. We ended up doing a dance routine' (Belinda, aged 50)* [Hardcastle 2002]
>
> *…women identified swimming as the type of physical activity of preference, if they had to exercise, followed by slow walking. The women enjoyed slow walking rather than brisk walking for cultural reasons. Apparently it is not acceptable for Muslim women to be walking fast, outside in public.* [Khanam 2008]
>
> *Four HPs felt the activities should be socially based and 2 specifically suggested dancing as something that might encourage their patients to attend. 'I can only see them being motivated or getting involved if it's a social thing, maybe dancing or line dancing, they like dancing. You know something they will enjoy.' (Practice Nurse) 'It would have to be local and tied into what was happening locally, I know they like ball room dancing, I know a couple have started going and that's happening locally.' (Practice Nurse).* [Taket 2006]

There was an indication that participants and providers wanted ERS to offer a range of activities rather than just one type. Four studies indicated that whilst many participants valued the range of existing activities, others wanted more variety (Moore 2013 +, Shaw 2012 +, Stathi 2004 +, Wormald 2004 +). For example:

> *On the whole, patients were pleased with the range of available activities provided by the scheme. The majority of participants did agree, however, that they would have preferred a wider choice of activities (for example, swimming, low impact aerobics, and yoga), more group activities, and more opportunities for social interaction.* [Wormold 2004]
>
> *Whilst many patients appeared happy with the range of activities offered, in LHB areas with more restricted programmes, some expressed a desire for greater diversity of exercise types. [Female aged 59, centre 3, 13 weeks] 'It would be lovely to have a swimming session – it would be bliss to come out of there and go swimming, but it's schools all day, isn't it?'* [Moore 2013]
>
> *'I went to the gym and had a go on this bike, and I think 'well I cycled 8 miles around Godney and I get back and I just feel tired, sweaty and good'. So I put 20 minutes on the bike and its just terrible because I know I've got to finish the 20 minutes not because someone else told me to do that because I've told myself to do that, and its a humble feeling so I don't enjoy that'. (1i3 79).* [Crone 2002]
>
> *Some participants stressed not enjoying the structured exercise offered in the referral schemes. Although they continue to be motivated by the associated health benefits they would prefer activities that were more interesting and meaningful to them. They wanted opportunities for both structured (facility based) and lifestyle (free living, home based) PA. 'This is a sort of medical activity and I am happy to do that. But I am not very ambitious with that. It is a mean to an end. I am trying to improve this and in the process, to improve*

other things. It is the sort of activity that you feel nice when it ends…'(Chris, 65) 'I have been on heart tablets for eight years and my doctor said that the side effect of them is the wasting muscles. That is why he sent me here – to do something about that. I would not do this sort of exercise for pleasure! It is boring, monotonous. I would rather play golf where I can enjoy myself. I think that if do not see any improvements until the end of these 20 sessions I will certainly stop (Michael, 63)' [Stathi 2004]

Referrers in Taket 2006 + also valued provision of varying exercise types within a particular ERS programme, stating:

'I liked the way it encouraged people away from associating exercise with a treadmill or a gym.' (Practice Nurse)

Whereas providers in Cock 2006 – revealed mixed attendance to varying exercise types:

S05, having established a number of non-leisure centre-based exercise options outlined the difficulties with such programmes: 'Cycling, we called it Health on Wheels and that was very popular, well ... 12 people started and there were 7 who finished and ended up with a meal, and some of those do want to train up as cycling leaders, so there's going to be another cycling programme starting in September ... so we consider that quite successful, that we have such a good adherence. Walking has been quite difficult. We set up two weekly health walks in the area, so they were really accessible, we had the walk leader turn up come rain or shine, advertised it heavily in the local papers ... only a handful of people turned up.'

15. Individualised, personalised service

Personalised service was identified as a factor influencing adherence to ERS programmes in ten studies (one [++][1], 8 [+][2-9] and 1 [–][10]).

Participants in eight studies described wanting individualised attention and an exercise schedule tailored to their needs, ability or preferences[2,4-10].

Provider reports in six qualitative studies supported this theme[1,3,6-8,10]. They noted the value of attempting to create exercise programmes suited to participants' physical health status[1], matched activity preferences[3,8] and their goals and values[6.] Providers described how personalised individual attention was comforting to participants, easing their anxieties and making them feel valued. I one study, providers reported resource limitations as a barrier to providing an individualised service.[10]

[1]Wiles 2008, [2]Beers 2006, [3]Graham 2006, [4]Hardcastle 2002, [5]Martin 1999, [6]Mills 2008, [7]Moore 2013, [8]Taket 2006, [9]Wormald 2004, [10]Cock 2006.

Applicability: Directly applicable as all studies were conducted in the UK.

Personalised service was identified as a factor influencing adherence to ERS programmes in ten studies (Wiles 2008 ++, Beers 2006 +, Graham 2006 +, Hardcastle 2002 +, Martin 1999 +, Mills 2008 +, Moore 2013 +, Taket 2006 +, Wormald 2004 +, Cock 2006 –).

Participants in eight qualitative studies (Beers 2006 +, Hardcastle 2002 +, Martin 1999 +, Mills 2008 +, Moore 2013 +, Taket 2006 +, Wormald 2004 +, Cock 2006 –) wanted individualised attention and their exercise schedule tailored to their needs, ability or preferences. For example:

> *Yvonne also desired support in terms of receiving individualised attention: 'I don't like particularly just being a number I like the fact that someone was paying attention to me' (Yvonne, aged 65, at week five of the programme).* [Hardcastle 2002]
>
> *The importance of treating each person as an individual and taking time to explore exercise history and preferences is critical. Emma's dropout appears to be partly caused by the practitioners' ignorance of her physical capabilities and exercise preferences. As Emma explains: 'They've got me walking on a machine when 1 can go and do a day downhill skiing . . . then you're told at your age you shouldn't be doing more than this and I thought oh dear what am 1 doing here. I got on the treadmill and she said well only walking and no don't go any faster than that. Your heart beats this and I thought my heart is not gonna give out. She looked at my age and that was it. I was walking. I could have done it all day' (Emma, aged 40).* [Hardcastle 2002]
>
> *'They were interested in dovetailing it to me personally...feel healthier as a result.' (Male, White, 51-65)* [Taket 2006]
>
> *Most felt that the gym was a suitable setting and the individualised approach and custom-made exercise programmes meant that they could exercise safely and effectively* [Wormald 2004]

Provider reports in six qualitative studies supported this theme (Wiles 2008 ++, Graham 2006 +, Mills 2008 +, Moore 2011 +, Taket 2006 +, Cock 2006 –). They noted the value of attempting to create exercise programmes that were suited to participants' physical health status (Wiles 2008 ++), matched activity preferences (Graham 2006 +, Taket 2006 +), and aligned with their goals and values (Mills 2008 +):

> *Physiotherapists noted that they would refer only patients who were relatively able and that they would invariably attend the first session to provide input into the exercise programme developed by fitness instructors. The types of problems they experienced are illustrated by this excerpt from one of the focus groups: PT3: 'Sometimes their knowledge is not completely understanding of stroke and so therefore things like fatigue may not be taken into account...It's just having the understanding to keep things initially at the minimum and to build up slowly.'* [Wiles 2008]
>
> *Exercise referral officers felt that if participants did not enjoy an exercise programme then they would be less likely to continue both in the short and long term: "If they don't enjoy it then the likelihood is that they are not going to complete the scheme" (ER01,131-137) In an*

attempt to provide an individualised and enjoyable programme and, in addition provide some responsibility for participants, exercise referral officers asked participants what exercise they would prefer/enjoy: "All the officers do ask them what type of activities they prefer, individual, group sessions, social settings whether they're actually ready to do any formalised team based exercise, so we try and get as much information off the patient as possible" (Scheme Manager, 149-152) [Graham 2006]

The adoption of a counselling style that was both client-centred and empathetic in this scheme, was beneficial. Facilitators allowed patients to talk about their own reasons for change and their perceptions, goals and values were allowed to emerge; the facilitator guided this self-direction. The facilitator attempted to make the goals more specific and manageable for the course of the scheme. [Mills 2008]

Providers described how personalised individual attention was comforting to participants, easing their anxieties and making them feel valued. For example:

"The facilitator impact encapsulates the personalised individual attention provided by the facilitators. The facilitators themselves perceive this in terms of the relationship, the concern and compassion they can offer; Zoe: '... a lot of them like to feel cared about don't they, like someone is actually taking an interest for them' (45)" [Mills 2008]

In one study (Cock 2006 −) reported resource limitations as a barrier to providing an individualised service:

'Once a person's come in for a consultation, it's the continued contact and support during the 10 week programme and we have been aware that from our perception point of view, we see somebody at week 01, then we hope that they respond to the re-evaluation appointment letter at week 10. But we have very little resources and time built in to our current process for any further contact in the middle and we feel that that has had a detrimental affect on the adherence rates within the course. (S03)' [Cock 2006]

16. Provider skills

Whether they had sufficient skills to undertake their roles when working with participants who had/were likely to have health problems was raised by providers in six studies: five qualitative papers (one [++][1], three [+][2-4], one [–][5]) and one [+][6] cross-sectional survey.

In working with general populations, providers in two studies[2,4] felt they had the necessary skill set. However instructors and organisers working with stroke patients[1], participants with depression[3], or osteoarthritis[4] or older people[6] expressed concerns as to whether they were able to advise and support these participants appropriately.

[1]Wiles 2008, [2]Graham 2006, [3]Moore 2011, [4]Walsh 2012, [5]Cock 2006, [6]Goodman 2011

Applicability: Directly applicable as all studies were conducted in the UK.

Discussion of whether programme providers had sufficient skills to undertake their roles were raised by providers in six studies: five qualitative papers (Wiles 2008 ++, Graham 2006 +, Moore 2011 +, Walsh 2012 +, Cock 2006 –) and one cross-sectional survey (Goodman 2011 +).

In working with general populations, the providers in two studies (Graham 2006 +, Cock 2006 –) felt they had the necessary skill set to work safely and effectively with participants.

> *This is a management, it's not treatment ... it's definitely a non-medical model that we're going down. (S03)* [Cock 2006]
>
> *The clients that come to me, I expect the hospital to have explained who they're coming to next and where they're going. Either from that or from the GP they should trust that they're being referred to somebody who knows what they're talking about. (S04)* [Cock 2006]

However, providers working with those with health problems such as stroke (Wiles 2008 ++), depression (Moore 2011 +), osteoarthritis (Walsh 2012 +) or with older participants (Goodman 2011 +) expressed concerns as to whether they were able to advise and support these participants appropriately.

> *…one physiotherapist had set up a training day which had been well-received. However, a number of barriers to fitness instructors participating in training were identified…* [Wiles 2008]
>
> *(14) If they are depressed and you have the days you don't feel like coming, you are not going to come. You know again, the mood thing, their barriers as well are harder to break down. So a little bit more training in that area would be useful.* [Moore 2011]
>
> *Feedback from instructors (n = 88) demonstrated a reduced specialist knowledge regarding the management of rheumatological conditions, and a recognition that they required further specialist training to manage OA effectively.* [Walsh 2012]
>
> *Over half did not believe they had appropriate training to provide advice on physical activity to older people.* [Goodman 2011]

17. Support and supervision from providers

Good support and supervision from staff was identified as a facilitator and its absence a barrier to adherence in nineteen papers from seventeen studies: eighteen qualitative (one [++][1], fourteen [+][2-15], three [–][16-18]) and one [–][19] cross-sectional survey. Participant views were presented in eighteen papers[1-8,10-19] and provider views in

four[1,9,16,18].

Support from ERS providers was highly valued by participants due to concerns of exercising safely[4,5,7,8,10-12,16]. Participants also felt that supervision was needed in order to build their knowledge on how to use equipment, exercise effectively and progress their fitness[3,6,10] and commonly described how ERS providers were needed to build or maintain their motivation to exercise[2,5,10,14,19]). Several studies highlighted the negative opinions participants had regarding their perceived lack of provider support[1,2, 16] and a positive feeling of general comfort when adequate supervision was perceived[12,15].

Providers were aware of their role in alleviating participants' health concerns when exercising[16], providing comfort[9] or motivation[16]. Whilst providers also recognised participant's negative responses to a lack of available support and visibility of ERS providers[1,16,18], they faced barriers in providing adequate support due to limited resources. Furthermore, some providers were concerned of participants becoming too dependent on their support[1].

[1]Wiles 2008, [2]Beers 2006, [3]Crone 2002, [4]Graham 2006, [5]Hardcastle 2002, [6]Martin 1998, [7]Mills 2008, [8]Mills 2012, [9]Moore 2011, [10]Moore 2013, [11]Schmidt 2008, [12]Shaw 2012, [13]Stathi 2004, [14]Wormald 2004, [15]Wormald 2006, [16]Cock 2006, [17]Taylor 1996, [18]Ward 2007 –, [19]Cummings 2010.

Applicability: High – seventeen studies conducted in the UK and one in the Netherlands[10].

Good support and supervision from staff was identified as a facilitator and its absence a barrier to adherence in 15 qualitative studies, in 16 papers (Wiles 2008 +, Beers 2006 +, Crone 2002 +, Graham 2006 +, Hardcastle 2002 +, Martin 1998 +, Mills 2008 +, Mills 2012 +, Moore 2011 +, Moore 2013 +, Schmidt 2008 +, Shaw 2012 +, Stathi 2004 +, Wormald 2004 +, Wormald 2006 +, Cock 2006 –, Taylor 1996 –, Ward 2007 –) and one cross sectional survey (Cummings 2010 +).

Support from ERS providers was highly valued by participants due to concerns of exercising safely (Graham 2006 +, Hardcastle 2002+, Mills 2012+, Mills 2008 +, Moore 2013 +, Schmidt 2008 +, Shaw 2012 +, Cock 2006 −), This is demonstrated in the participant views expressed below:

> *Beverly had been on the referral scheme in the past and reflected on her first experiences. One of her reasons for dropping out centred on her perceived lack of supervision and personal attention by the exercise practitioners. She recalls: 'I feel that if you were exercising and suddenly something happens, were they around? I didn't notice anyone (P) You were worried about harming yourself? (R) Yes that's what it boiled down to' (Beverly, aged 64).*[Hardcastle 2002]

"It would seem that scheme ''safety'' facilitated attendance among older patients because they value a safe and secure environment in order to have the confidence to take part in exercise behavior; John: ''To be honest, once you have been lying there with your heart in your hands, you don't know what you should be doing actually. These guys (the exercise providers) are saying, very clearly 'it's fine, it's safe and I will do it with you''(FG1, 43) [Mills 2012]

Supervision by a professional instructor was often given as a reason to participate. Some participants considered supervision to be of major importance in light of their health complaints. Some participants even think of the ERS as a medical project because of the GP's involvement and because they were referred on account of their poor health. In general, participants stressed the stimulus provided by the presence of the fitness instructor, who can give advice when necessary....'other fitness centres don't have this – they don't have time for people who come there exercise. Although they do explain a little that you have to do this 10 times and so forth, they don't have time to talk to you about it. But people with chronic pain need this. This is what I think anyway – I can't speak for others, of course, but I find it helpful'. (Surinamese woman, age unknown, respondent no.16) [Schmidt 2008]

Participants also felt that supervision was needed in order to build their knowledge on how to use equipment, exercise effectively and progress their fitness (Crone 2002 +, Martin 1999 +, Moore 2013 +). For example:

However, a lack of this support, highlighting its importance to participants, was referred to in respect to progression and physiological benefits; Donna: 'no body, at any time, has said,... you have been doing this now for five weeks may be you should increase the weight or increase the length of time ...' (progression, 2fg2 32-4) [Crone 2002]

…others highlighted the value of motivational support which enabled them to push themselves harder than they would have by themselves. [Female aged 69, centre 3, 8 weeks] Well – when I first came, as I said, I wasn't walking very far – we were supposed to be walking around the hall, which wasn't walking very fast or very far, so [exercise professional] grabbed hold of my arm and said 'come on, come for a walk with me' and he was walking around the hall with me – that's the sort of support you get…..They always check to see that you're all right, that you are not going to overdo it and cause yourself an injury or whatever, they are always checking on that.' [Moore 2013]

Participants commonly described how ERS providers were needed to build or maintain their motivation to exercise (Beers 2006 +, Moore 2013 + Hardcastle 2002 +, Wormald 2004 +, Cummings 2010 +); with Wormald 2004 [+] reporting if participants felt they were not receiving support and supervision they were more likely to drop out.

He wanted the adviser to control his exercise and make sure he did it. This is shown when he says: 'They didn't seem to be any checking to see if, whether you were doing all the ones you were supposed to. There was nobody checking up, there was nobody sort of watching you or what you did. So I could have been in there ten minutes and walked back out again and they wouldn't have noticed.' (P19/M/44/do) [Beers 2006]

'It would be so easy to not bother when on your own' [Cummings 2010]

Several studies highlighted the negative opinions participants had regarding their perceived lack of provider support (Wiles 2008 ++, Beers 2006 +, Taylor 2006 –), as described by participants embarking on ERS following post-stroke rehabilitation:

> *…most exercisers characterized EoP as comprising a fairly low level of monitoring and supervision and noted that getting attention or information from fitness instructors was sometimes difficult. Typical comments about this were: 'You don't see much in the way of checking up because they are busy doing other things . . . but they are very nice and helpful – if you can find one. They've always got someone with them. You always have to queue at the desk to find someone.'(Exerciser interviewee 6) 'You are on your own, do what you want. They just show you how to use the machines. The way they supervise here is purely monitoring blood pressure and heart rate.'(Exerciser interviewee 2).* [Wiles 2008]

Conversely a positive general feeling of comfort was portrayed when adequate supervision was perceived (Hardcastle 2002 +, Stathi 2004 +, Cock 2006 −):

> *Exercise Professionals becoming familiar with clients' personal situational and limiting factors led to a level of comfort and security within participants: They know exactly what my body can do and what it can't. (Participant 0505)* [Cock 2006]

Providers were aware of their role in alleviating participants' health concerns when exercising (Cock 2006 −), providing comfort (Moore 2011 +) or motivation (Cock 2006 −):

> *'…think it's a [lack of staff visibility] a big de-motivator, especially if they're not sure of what they're doing, if their heart rate's going up and they're a bit like there's nobody there'* [Cock 2006]
>
> *'They're very often afraid of the gym so we try and take away those barriers by being beside them in the gym for the first couple of weeks. We explain that we're going to be there and it's going to be a regular familiar face. They're quite reassured to know that whoever else is with us, are in the same position as they are.'* [Moore 2011]
>
> *EP4 attributes the requirement of clients not having suffered from a life-threatening cardiac episode to receive additional staff support as being linked to previous exercise experience: 'They maybe need more motivation, if they've never exercised in their life, and it's something new to them and they might need that motivation of somebody being there all the time pushing them on ... I find that the cardiac rehab clients are a lot better when it comes to that, because they've come from the hospital where they've done their phase three, they've already got into the routine of exercise, they understand what they're meant to be doing, they understand what level they're working at.'(EP4)* [Cock 2006]

Whilst providers also recognised participant's negative responses to a lack of available support and visibility of ERS providers (Wiles 2008 ++, Cock 2006 −, Ward 2007 −,) they faced barriers in providing adequate support due to limited resources. Furthermore, some providers were concerned of participants becoming too dependent on their support (Wiles 2008 ++)

…some fitness instructors noted that it was not appropriate to have a one-to-one model for working within EoP. They viewed EoP as being about becoming an independent gym user and enabling people to take control of their exercise regime: 'I mean they're much more in control, you know, my impression is that if you go to a physio you're expected to be, you're expected to be rescued from this problem whereas if you're coming to the gym you're here to sort yourself out and really maximise your recovery, it's a very big difference in psychological attitude.' (Fitness Instructor interviewee 6) [Wiles 2008]

18. Peer and group interaction and support

The importance of peer and group interaction and support was a frequent theme. It was identified in twenty four papers from twenty one studies: twenty two qualitative papers (one [++][1], sixteen [+][2-17], five [–][18-22]) and two cross sectional surveys [+][23-24]. The theme was highlighted by both participants[1-8,10-24] and providers[1,7,9,11,16,18].

Three main sub-themes were identified within this overarching theme:

18a **The value of peer support**, through having a companion or buddy to do the activity with during the scheme was identified by participants in nine studies[2,3,5,13,16,18,21,22]. The value of peer support in maintaining activity after the programme was noted in one study[6].
The importance of peer support during the programme was also a key theme for providers in seven papers from five studies[1,8-11,16,18].

18b **The benefits of group activities**, in the company of like-minded companions rather than solitary exercise, was a theme identified by participants in six studies[1,2,6,8,14,17].

18c **Engagement with others** aiding integration and enjoyment was identified in 17 papers from 15 studies[2-5,7-9,11-14,17,18,20,21,23,24] of participant and provider views. The benefits of on-going social engagement after the programme were identified by providers in one study[9].

[1]Wiles 2008, [2]Beers 2006, [3]Crone 2002, [4]Graham 2006, [5]Hardcastle 2002, [6]Martin 1999, [7]Mills 2008 , [8]Mills 2012, [9]Moore 2011, [10]Moore 2013, [11]Murphy 2010, [12]Schmidt 2008, [13]Sharma 2012, [14]Shaw 2012,[15]Stathi 2004,[16]Taket 2006, [17]Wormald 2004, [18]Cock 2006, [19]Fox 1997, [20]Joyce 2010, [21]Lord 1995, [22] Singh 1997, [23]Cummings 2010, [24]Khanam 2008

Applicability: High - twenty studies were conducted in the UK and one[12] in the Netherlands.

The importance of peer and group interaction and support during the programme was a frequent theme. It was highlighted by participants in twenty four papers from twenty one studies: twenty two qualitative papers (Wiles 2008 ++, Beers 2006 +, Crone 2002 +, Graham 2006 +, Hardcastle

2002 +, Martin 1999 +, Mills 2008 +, Mills 2012 +, Moore 2013 +, Murphy 2010 +, Schmidt 2008 +, Sharma 2012 +, Shaw 2012 +, Singh 1997 –, Stathi 2004 +, Taket 2006 +, Wormald 2004 +, Cock 2006 –, Fox 1997 –, Joyce 2010 –, Lord 1995 –) and two cross-sectional surveys (Cummings 2010 +, Khanam 2008 +).

It was also a key theme for providers during the scheme in six qualitative papers from five studies (Wiles 2008 ++, Mills 2008 +, Moore 2011 +, Murphy 2010 +, Taket 2006 +, Cock 2006 –).

In addition, the benefits of peer support after the scheme were noted by participants in one study (Martin 1999 +) and providers in another (Moore 2011 +).

Within this overarching theme there were three related sub-themes: (i) Peer support (a buddy to work with); (ii) Group activities versus solitary gym (being with like-minded companions); and (iii) Engagement with others (enjoyment and fun). Each sub-theme is detailed below for with illustrative quotes from, or about, participants.

Peer support

This theme concerned the presence of someone to do activity with (eg a buddy) and leading to reduced dependence on staff support. This was identified in nine qualitative studies (Wiles 2008 ++, Beers 2006 +, Crone 2002 +, Hardcastle 2002 +, Sharma 2012 +, Taket 2006 +, Cock 2006 –, Lord 1995 –, Singh 1997 –)

> *93% of subjects agreed that attendance as part of a peer group was an important and beneficial element of the programme. Some 74% strongly agreed with the statement.* [Cummings 2010]
>
> *'If I'm on my own I have to make myself. I mean I still do my time but if I'm with Yaz then it goes much quicker. .. so it is nicer coming with someone'* (Fiona, aged 50, at week ten of the programme). [Hardcastle 2002]

One qualitative study of participant views (Martin 1999 +) referred to the benefits of continuing peer support after the scheme:

> *After initial assessments, centres could provide group sessions so that those requiring more help and support could come to the gym and exercise with other people* [Martin 1999]

Group activities versus solitary gym

Participants reported the importance of having others present while doing the activity ('gym is a lonely place') as a social facilitator in six qualitative studies (Wiles 2008 ++, Beers 2006 +, Martin 1999 +, Mills 2008 +, Shaw 2012 +, Wormold 2004 +).

> *Half of the participants said that they gained enjoyment from being with the other people whilst on the programme* [Beers 2006]
>
> *'gym is a lonely place'* [Mills 2008]

Some said they found it encouraging that the group was made up of friendly participants with similar health conditions, and this is also mentioned as a stimulus for continuing to exercise: 'If she can do it, maybe I can too' [Schmidt 2008]

Engagement with other participants aiding integration into environment/ maintenance and/or enjoyment of physical activity

This facilitator was reported both in gym and class environments and was a theme in 17 papers from 15 studies (Beers 2006 +, Crone 2002 +, Graham 2006 +, Hardcastle 2002 +, Mills 2008 +, Mills 2012 +, Moore 2013 +, Murphy 2010 +, Schmidt 2008 +, Sharma 2012 +, Shaw 2012 +, Wormold 2004 +, Cock 2006 – , Joyce 2010 –, Lord 1995 –, Cummings 2010 +, Khanam 2008 +).

Particular focus was placed by participants on the concept of integration into the exercise environment and cited social interaction with other clients as being a critical part of this process [Cock 2006]

'It is nice because you have got a mixture of people you have got some people who are older than me and some who are younger than me, but we have that bit of a repartee between us, you know and we get on the bike and we say "we are off to high town now, come on all on your gears' So we make a laugh of it you see"' [Graham 2006]

'Well it's a different age group isn't it.Don't feel so out of place' [Hardcastle 2002]

One qualitative study of provider views (Moore 2011 +) referred to the benefits of ongoing social interaction after completion of the scheme:

Some talked of organising regular social events where current patients could meet one another, or others who had been through the scheme, or of strategies such as exiting patients from the scheme in clusters, and filtering patients into maintenance classes together [Moore 2011]

Providers also stressed the importance of peer support and group activities, covering all three of the subthemes identified by participants:

All professionals commented on a role for patients in supporting one another's adherence. Some spoke of the empathy patients offered to one another, having been referred for similar reasons and suffering similar limitations. [Moore 2011]

'…it certainly made a difference, helped them lose their anxieties about exercise, helped their confidence. It also gave them somewhere to go. They could then form a group with other people like them to feel more comfortable. They could listen to and support each other.' (GP) [Taket 2006]

'Culturally the gym is quite isolating and most people just go and do their own thing and go away again with very little said.' (Physiotherapy focus group 1) [Wiles 2008]

Fitness instructors however noted the sociable nature of EoP sessions; their experience

seemed to be that there was considerable interaction and social banter in EoP sessions: 'It's very sociable in the EoP sessions; there's a lot of people like to talk and joke about, the older boys like to chit-chat to the older ladies. Everyone's really friendly and approachable, not just the staff, all the people we get in, 90% or them are really up for a laugh, it's good.' (Fitness Instructor interviewee 5) [Wiles 2008]

19. Outcomes of ERS

Twenty two studies described a range of facilitating outcomes that participants reported as a result of an exercise referral scheme: 20 qualitative studies (13 [+][1-13], seven [–][14-20]) and two cross sectional surveys (one [+][21], one [–][22]) .

Studies explored participant views during[7-8,10,13-14,16,18-20], after[1,6,9,11-12,22] or both during & after[2-3,5,17] the intervention. In one study the timing of participant interviews was unclear[4] and in another, providers were expressed participants' views about scheme outcomes in general[15].

The most common outcomes concerned participants' health, of which the major facilitating outcome was mental health, reported in 15 studies[1,3-5,7-13,15-16,19-20,22]. General physical fitness[1,3-5,7-14,19-20] and general health benefits[1,3-5,10-13,16-18,20-21] were reported in 14 and 13 studies respectively, weight loss or improved tone in 9 studies[1,4-5,7-8,11,13,20,22] and increased physical activity in 8 studies[2,5,10-14,19,22].

Other key outcomes were an increase in personal autonomy (9 studies) [1,3,5,7-10,12-13] and the social engagement benefits of the ERS (8 studies) [3,5,10,12-13,19-20,22].

Less commonly reported outcomes were increased knowledge[5-7,11-13] and effects on looks and appearance[5,7,10,13,15,20] although each theme appeared in six studies.

Providers noted the facilitator themes of improved knowledge, looks and appearance, and physical fitness in one qualitative study[7].

Outcomes as barriers to ERS were noted in five qualitative studies (four [+][1,8,10,12], one [–][17]). These were negative effects on general health and mental health[1], exacerbation of specific health problems[17], disappointment over failure to lose weight[8] and the fact that not all participants could benefit from increased social engagement[10,12].

[1]Beers 2006, [2]Clarke 1996 , [3]Crone 2002, [4]Graham 2006, [5]Hardcastle 2002, [6]Martin 1999, [7] Mills 2008,[8]Moore 2013,[9]Sharma 2012, [10]Stathi 2004, [11]Taket 2006, [12]Wormald 2004, [13] Wormald 2006, [14]Cock 2006, [15]Fox 1997, [16]Joyce 2010, [17]Lord 1995, [18]Singh 1997, [19]Taylor 1996, [20]Ward 2007, [21]Cummings 2010, [22]Day 2001

Applicability: Directly applicable as all studies were conducted in the UK.

Twenty two studies described participants views of outcome benefits from attendance at ERS; 20 qualitative studies (Beers 2006 +, Clarke 1996 +, Crone 2002 +, Graham 2006 +, Hardcastle 2002 +, Martin 1999 +, Mills 2008 +, Moore 2013 +, Sharma 2012 +, Stathi 2004 +, Taket 2006 +, Wormald 2004 +, Wormald 2006 +, Cock 2006 –, Fox 1997 –, Joyce 2010 –, Lord 1995 –, Singh 1997 –, Taylor 1996 –, Ward 2007 –) and two cross sectional surveys (Cummings 2010 +, Day 2001–).

Themes are listed below in descending order of frequency, with illustrative quotes:

Mental health

Mental health benefits were identified by participants in 15 studies; 14 qualitative studies (Beers 2006 +, Crone 2002 +, Graham 2006 +, Hardcastle 2002 +, Mills 2008 +, Moore 2013 +, Sharma 2012 +, Stathi 2004 +, Wormald 2004 +, Wormald 2006 +, Fox 1997 –, Joyce 2010 –, Taylor 1996 –, Ward 2007 –) and one cross sectional survey (Day 2001 –)

> *… 'I feel totally at one, totally alive and totally happy' [Mary, 1i3 73] Respondents understood mental health as self acceptance within the scheme. Self-acceptance focused on respondents' acceptance of themselves, their health and social status, and life situation and provided respondents with self-assurance or confidence* [Crone 2002]
>
> *How has exercise made you feel?*
>
> • *Feel more relaxed and having inner glow* [Ward 2007]

However, mental health benefits were not universal:

> *'General health wise yes I think I did improve. But my mental attitude probably went quicker down the toilet because I felt negative because I hadn't achieved what I wanted to achieve and because of that you tend to block a lot out and think oh, failed on that count.'* [Beers 2006]

General physical fitness

A general increase in physical fitness was a theme in 14 qualitative studies: Beers 2006 +, Crone 2002 +, Graham 2006 +, Hardcastle 2002 +, Mills 2008 +, Moore 2013 +, Sharma 2012 +, Stathi 2004 +, Taket 2006 +, Wormald 2004 +, Wormald 2006 +, Cock 2006 –, Taylor 1996 –, Ward 2007 –

> *'I am not the one who is always lagging at the back now'* [Graham 2006]
>
> *Participants identified improvements following ERS participation, predominantly in fitness, strength and movement* [Sharma 2012]

Providers in one qualitative study (Mills 2008 +) also noted benefits.

Yvonne: 'One lady started at 7km an hour for 3 minutes that was her gym sessions, all she could do, and now she come in six days a week and does 2 classes' [Mills 2008]

General health benefits

General effects on health were identified in 14 studies; 13 qualitative studies (Beers 2006 +, Crone 2002 +, Graham 2006 +, Hardcastle 2002 +, Stathi 2004 +, Taket 2006 +, Wormald 2004 +, Wormald 2006 +, Joyce 2010 –, Lord 1995 –, Singh 1997 –, Ward 2007 –, Taylor 1996 –) and one cross sectional survey (Cummings 2010 +).

'I know quite a lot of people that's used this. They work and find they've had a bad back and they've come and they've gone back to work.' [Joyce 2010]

Again this benefit was not universal (Lord 1995 −).

'Whenever I went I suffered with my back problem for three days or so after. The exercise bike made my arthritis problem in my knees get worse and I had to stop.' [Lord 1995]

Taylor 1996 – reported that low adherers to the programme appeared to feel more physical benefits compared to high adherers.

Weight loss/improved tone

Nine studies reported weight loss-related outcomes; eight studies with qualitative data (Beers 2006 +, Graham 2006 +, Hardcastle 2002 +, Mills 2008 +, Moore 2013, Taket 2006 +, Wormald 2006 +, Ward 2007 –) and one cross-sectional survey [Day 2001 +].

'…found it very good, lost weight and I feel better.' (Female, Black, 51-65). [Taket 2006]

Failure to lose weight could be a barrier however (Moore 2013 +).

An area of disappointment among several patients was however a lack of weight loss. [Female aged 70, centre 3, 10 weeks] 'And so it's not been all that successful as far as I'm concerned because my weight each week is going up and up'. [Moore 2013]

Increased physical activity

Increased physical exercise was noted by participants in eight studies; seven qualitative studies (Clarke 1996 +, Hardcastle 2002 +, Stathi 2004 +, Wormald 2004 +, Wormald 2006 +, Cock 2006 –, Taylor 1996 –) and one cross sectional survey (Day 2001 +).

'...For those two years I have not being doing anything but sitting still and each much...Today I walked from my house, I walked to town and all the way back and I do something every day...' [Stathi 2004]

Personal autonomy

Improvements in personal autonomy were noted in nine qualitative studies (Beers 2006 +, Crone 2002 +, Hardcastle 2002 +, Mills 2008 +, Moore 2013 +, Sharma 2012 +, Stathi 2004 +, Wormald 2004 +, Wormald 2006 +).

> *For Lynda, a sense of empowerment seems to be associated with a new feeling of independence and of being in control of something and achieving personal goals...'When I come out of here I do feel better .. .it proves to me that I can do something on my own which I hadn't done before ... I'm out doing something for me an not anybody else. It just makes me feel good at the end of the day'* (Lynda, aged 43, one year on from exiting the programme) [Hardcastle 2002]
>
> *When recalling ERS participation, interviewees expressed the importance of their own personal qualities to successful recovery and increasing independence, attributing improvements to internal factors such as motivation, willpower and self-determination* [Sharma 2012]

Social engagement benefits

The positive benefits of social engagement were reported in eight studies, seven qualitative (Crone 2002 +, Hardcastle 2002 +, Stathi 2004 +, Wormold 2004 +, Wormold 2006 +, Taylor 1996 –, Ward 2007 –) and one cross sectional survey (Day 2001 –).

Two key elements emerged: enhanced social life and becoming less socially isolated.

Participants in five studies (Crone 2002 +, Hardcastle 2002 +, Taylor 1996 –, Ward 2007 –, Day 2001 –) said that their involvement in ERS had enhanced their social life:

> *'I've met up with a lot of people I used to know and you know I haven't seen for year which is nice actually.... a sort of new circle of friends really' (2il 150 and 152)* [Crone 2002]

Taylor 1996 – identified that it was high adherers to the programme rather than low adherers that reported more social benefits to programme participation.

However, this didn't work for everyone since some participants could not either access or benefit from the social activities (Hardcastle 2002 [+], Stathi 2004 [+]:

> *Some people found that the programme was a good way to meet other people and expand their social network: …….However, many stressed that they did not have this opportunity. As Marjorie (74) stressed, 'You are literally in the class, but then everybody is gone. They are all busy'. 'It seemed all the emphasis was on outside activities they were arranging and we didn't want that. We wanted to concentrate on the exercise and that's all we heard about going to lunch here, going to Wales in June. We can't participate in anything like that because of my sister. We're full-time carers'* [Hardcastle 2002]

In two studies (Hardcastle 2002 +, Wormald 2006 +) participants reported feeling less socially isolated:

Some noted how the service 'filled a gap' in their lives, and that attending classes 'breaks up the day' and gives something to look forward to. [Wormald 2006]

Again, this was not universal as one participant reports in Wormald 2004 [+]:

One participant had been referred for depression, and was assured by his GP that initiating the programme would provide an opportunity for social contact. This opportunity did not materialise because the participant found it difficult to interact with others in the gym environment.

Increased knowledge

Participants noted the benefits of increased knowledge in six qualitative studies (Hardcastle 2002 +, Martin 1999 +, Mills 2008 +, Taket 2006 +, Wormald 2004 +, Wormald 2006 +).

Respondents in both groups reported that the programme had given them information about exercise that made them feel more confident about exercising [Martin 1999]

Participation had also improved their knowledge of physical activity issues and had provided them with skills and confidence in exercising. [Wormald 2004]

Improved looks/appearance

Weight loss and changes in body shape resulting in improved body image and appearance were noted as a positive outcome in six qualitative studies (Hardcastle 2002 +, Mills 2008 +, Stathi 2004 +, Wormald 2006 +, Fox 1997 –, Ward 2007 –).

Carole is aware of how others respond to her appearance. Carole recognises that her weight loss and associated enhanced appearance plays a key part in gaining social approval: 'It affects other people, how they look at you, how they talk to you' (Carole, aged 61) [Hardcastle 2002]

Benefits were also noted by providers (Mills 2008 +):

The facilitators acknowledge that often regardless of referral reason the improvements in appearance are often seen as a positive outcome; Yvonne: 'Most of them want to feel fitter and look better as a general rule regardless of why they are sent to us, yes that's how a lot of people view gym as they see it as them coming to the land of beautiful people' [Mills 2008]

20. Professional support after programme

The desire for professional support beyond the end of the programme was a key concern for participants in nine qualitative studies (seven [+][1-7], two [–][8-9]), for providers in one [+] qualitative study (two papers[4,10]) and for referrers in one [+] qualitative

study[2].

In five studies[1-5,8-9] the lack of ongoing professional support was expressed by participants in terms of a barrier to continuing exercise. In two studies[6-7] the possibility of continuing professional support beyond the programme was expressed as a facilitator.

Providers also referred to lack of ongoing support as a barrier[10] and the possibility of its continuation post-programme as a faciiitator[4], while referrers spoke about ongoing professional support as a facilitator[2].

[1]Beers 2006, [2]Graham 2006, [3]Moore 2013, [4]Murphy 2010, [5]Schmidt 2008, [6]Taket 2006, [7]Wormald 2004, [8]Cock 2006, [9]Joyce 2010, [10]Moore 2011.

Applicability: Directly applicable as all studies were conducted in the UK

The need for professional support to continue beyond the end of the programme was expressed in nine qualitative studies (Beers 2006 +, Graham 2006, Mills 2008 +, Moore 2013 +, Murphy 2010 +, Taket 2006 +, Wormald 2004 +, Cock 2006 –, Joyce 2010 –)

In five studies (Beers 2006 +, Graham 2006, Mills 2008 +, Moore 2013 +, Murphy 2010 +, Cock 2006 –, Joyce 2010 –) participants saw the lack of post-scheme support as a barrier to continuing exercise.

> *....most participants who dropped out of exercise post-completion of referral cited the removal of this Exercise Professional as the primary motivating factor* [Cock 2006]
>
> *'....you've got a cut off time. And I find that probably a little bit unfair'* [Joyce 2010]

Concerns were expressed by participants interviewed at various stages during the programme (Moore 2013 +, Murphy 2010 +).

> *Amongst patients in the early stages of the programme, some expressed concerns regarding whether they would be able to maintain increases without ongoing support from the professional, in terms of continued guidance on how to exercise safely or continued motivational support* [Moore 2013]

In one instance participants specifically referred to the loss of self-efficacy (Mills 2008 +); in another, to the risks of unsupervised exercise (Beers 2006 +)

> *'So you don't really know whether you are doing good or bad sometimes. I could be doing some of those machines now which could be doing more harm'* [Beers 2006]

In two studies (Taket 2006 +, Wormald 2004 +) the possibility of ongoing support was expressed as a facilitator.

'would be lovely if it could continue .. it does help people.' [Taket 2006]

Referrers spoke about the need to provide ongoing support for mental health patients in one study (Murphy 2010 +).

> *Professionals identified a need amongst mental health patients for extra support to maintain motivation and foster social interaction* [Murphy 2010]

In two studies providers reported on the withdrawal of professional support as a barrier to continuing physical activity (Moore 2011 +) and its maintenance as a facilitator (Graham 2006 +).

> *'It's just a shame that we have to let them go at 16 weeks.'* [Moore 2011]
>
> *'The main reason I'm there is for them to be keeping active and carrying on with their exercise after the fourteen weeks'* [Graham 2006]

21. Planned routines after ERS

Establishing regular exercise routines after the programme and exercise becoming a 'habit' was identified as a facilitator by participants in three [+][1-3] qualitative studies.

Two related barriers were identified in four qualitative studies (three [+], one [–]); the risks of falling out of the habit of exercise[1,4] and loss of social support when scheduled exercise sessions with similar individuals finished on completing the programme[2,4-5].

Providers also identified the loss of social support as a barrier to ongoing exercise in one [+] qualitative study[6].

[1]Hardcastle 2002, [2]Murphy 2010, [3]Wormald 2006, [4]Graham 2006, [5]Cock 2006, [6]Moore 2011

Applicability: Directly applicable as all studies were conducted in the UK.

Three qualitative studies identified the establishment of exercise routines after programme completion as a facilitator for sustained change (Hardcastle 2002 +, Murphy 2010 +, Wormald 2006 +); in one case referring to the establishment of an 'exercise identity' (Hardcastle 2002 +) and, in another, the establishment of a clear action plan for maintenance (Murphy 2010 +).

> *'I've started walking to the shops, where I took the car in the past.'* [Wormald 2006]
>
> *For Joan, by the time she had exited from the programme, her new identity as an exerciser was firmly in place and seemed to take priority over perceived domestic obligations.* [Hardcastle 2002]

Two related barriers to maintenance of activity were concerns about the risk of losing the habit of exercise (Hardcastle 2002 +, Graham 2006 +) and the loss of social support for new routines (Graham 2006 +, Murphy 2010 +, Cock 2006 –).

> *…'there's nothing stopping me...it's just getting myself sorted out and going again'*. [Hardcastle 2002]
>
> *...others expressed concerns that they might struggle to maintain motivation without a commitment to exercise in a set time and place and the loss of social support*. [Murphy 2010]

In one qualitative study (Moore 2011 +) providers identified the loss of social networks as a barrier to ongoing exercise and noted that explicit efforts to foster social networks that lasted beyond the programme were key to sustained change.

> *…some remarked that loss of social aspects of patient classes were key reasons why some struggled to adhere to exercise in the long term* [Moore 2011]

5. Summary Tables

5.1 Hierarchy of Barriers and Facilitators

The themes identified within this review have been summarised in the table below. Themes are listed in hierarchical order based on the number of studies in which each was identified, and in relation to the stage of the programme which interviewees were describing; at referral (before), during and after the ERS. Some themes cut across two or all three of these time periods.

The number of studies in which the theme was identified, the group(s) whose views were represented are provided in brackets afterwards. The themes are related to their evidence statements (eg ES 1). Some themes have associated sub-themes which are indicated (eg by ES 1a, ES 1b etc). Only themes identified in two or more studies were included.

Hierarchy of Barriers and Facilitators: Summary Table (Themes identified in two or more studies)

Abbreviations ES: Evidence Statement(s); Part: Participants; Prov: Providers; Ref: Referrers; Stud: Studies .

Before	**During**	**After**
Barriers	*Barriers*	*Barriers*
Intimidating gym [13 Stud: Part; ES 12a]		
	Inconvenient timing of sessions [10 Stud: Part & Prov; ES 13]	
Operating gym equipment [6 Stud: Part & Prov; ES 12c]		
	Distance to travel [8 Stud: Ref, Part & Prov; ES 10]	
	Music/TV disliked [6 Stud: Part; ES 12b]	
	Cost [9 Stud: Part & Prov; ES 9] Trend towards cost as a barrier	
Lack of awareness of schemes [7 Stud; Ref & Prov; ES 1c]		
		Lack of ongoing professional support [6 Stud: Part & Prov; ES 20]
		Cost [6 Stud: Part & Prov; ES 9]
	Difficulties with travel [public transport] [6 Stud: Part; ES 11]	

Lack of engagement by health professional [5 Stud: Ref; ES 1a]		
Low priority for GPs [5 Stud: Ref & Prov; ES 1b]		
Legal responsibility/appropriateness [5 Stud: Ref & Prov; ES 1e]		
	Perceived lack of provider support [5 Stud: Part & Prov; ES 17]	
		Loss of social support (from peers) after [5 Stud: Part & Prov; ES 21]
Lack of time (family/carer/work commitments) [4 Stud: Part; ES 6]		
	Poor quality facilities [4 Stud: Part & Prov; ES 12d]	
	Perceived safety of location [women] [3 Stud: Ref & Part; ES 10]	
Cost [3 Stud: Ref & Prov; ES 9]		
Language problems (Muslim women) [2 Stud: Part & Prov; ES 8]		
Lack of feedback from schemes [2 Stud: Ref; ES 1d]		
Lack of support from family/friends [2 Stud: Part; ES 7]		

Before	During	After
Facilitators	*Facilitators*	*Facilitators*
	Provider supervision [17 Stud: Part & Prov; ES 17]	
	Perceived improvements in health [Part; ES 19] Mental health [15 Stud]; Physical fitness [14 Stud]; General health [13 Stud]; Improved weight/tone [9 Stud]; More physically active [8 Stud]	
	Social engagement [15 Stud: Part & Prov; ES 18c]	
	Peer support [13 Stud: Part & Prov; ES 18a]	
	Variety of activities offered [12 Stud: Part & Prov; ES 14]	
	Individual/personalised provision [10 Stud: Part & Prov; ES 15]	
	Perceived improvements in autonomy/social [Part; ES 19] Personal autonomy [9 Stud]; Social engagement [8 Stud]	
Desire for good health/avoidance of poor health [7 Stud: Part: ES 2]		
	Group activities (versus solitary gym) [6 Stud: Part; ES 18b]	
Enjoyment of exercise [5 Stud: Part; ES 5]		
Support from family/friends [4 Stud: Part; ES 7]		

Improved weight/tone as goal [4 Stud: Part; ES 2]		
Improved fitness/activity as goal [4 Stud: Part; ES 2]		
Separate sessions for ERS participants [4 Stud: Part (& Prov with reservations); ES 12a]		
		Ongoing professional support [4 Stud: Ref, Part & Prov; ES 20]
	(Muslim) Women only sessions [3 Stud: Part & Prov; ES 8]	
Social inclusion as goal [3 Stud: Part; ES 2]		
	Music as distraction [3 Stud: Part; 12b]	
		'Habit' of exercise [3 Stud: Part; ES 21]
	Local provision [2 Stud: Ref, Part & Prov; ES 10]	

Uncertain direction of effect	*Uncertain direction of effect*	*Uncertain direction of effect*
Motivation in general [17 Stud: Ref, Part & Prov; ES 3]		
Existing health concerns [8 Stud: Ref, Part & Prov; ES 4]	**Existing health concerns** [8 Stud: Part; ES 4]	
	Provider confidence in their skills [6 Stud: Prov; ES 16]	

5.2 PARiHS Framework

There is a wider evidence base on the critical success factors to successful implementation of interventions in practice. These critical success factors have been incorporated in conceptual implementation frameworks such as the Promoting Action on Research Implementation in Health Services PARiHS Framework[19].

Within the PARiHS framework, successful implementation is associated with the quality and value of the intervention, the qualities of the context in which the intervention is being introduced, and the way the intervention is facilitated and supported to achieve successful outcomes. The barriers and facilitators are mapped against these core concepts on a high to low continuum.

The value of such a framework can be to summarise a range of factors that should be considered, in both the intervention design and the context in which it is delivered, to maximise the chance of the success of any individual intervention.

The findings of this study have been placed within the framework to provide a guide to which factors inhibit and enhance successful implementation. Please see the table overleaf.

The themes identified in the table are related to their evidence statements (eg ES1) and the main theme is identified in bold (eg **Resource limitations).** Some themes have associated sub-themes which are indicated (eg by ES 1a, ES 1b etc). The group(s) whose views were identified is/are provided in brackets afterwards: 'Part' for participant; 'Ref' for referrer and 'Prov' for Provider. Where themes are shared views these have been capitalised (eg REFERRAL to ERS AS A LOW PRIORITY FOR GPs [Ref & Prov]).

[19] Kitson, A., Harvey, G., & McCormack, B. (1998). Enabling the implementation of evidence based practice: a conceptual framework. Quality in Health Care, 7, 149-158.

PARiHS Framework: Critical success factors for translation and implementation of Exercise Referral Schemes

Concepts/ domains	LOW implementation (Barriers)	HIGH implementation (Facilitators)
CONTEXT **Health service/ provider context.** Service, quality assurance, evaluation, beliefs and values of the service/ professionals, culture and leadership.	**Barriers to the referral process:** Lack of engagement in ERS schemes by referring population [Ref; ES 1a] REFERRAL to ERS AS A LOW PRIORITY FOR GPs [Ref & Prov; ES 1b] CONCERNS ABOUT LEGAL RESPONSIBILITY AND INAPPROPRIATE REFERRALS [Ref & Prov; ES 1e] Lack of feedback on participants from providers to referrers [Ref; ES 1d] **Resource limitations** Described as a barrier to providing participants with individualised service; and with providing adequate levels of support [Prov; ES 12d,15,17] **Lack of provider skills** identified by instructors and organisers working with stroke patients or participants with depression, osteoarthritis or older people had concerns as to whether they were able to advise and support these participants appropriately [Prov; ES 16]	**Provider's adequate skills** described in relation to working with general populations. [Prov; ES 16]
Home/ work/ social context of programme users	**Lack of time** as a result of personal commitments to work, family, role as a carer or social demands [Part; ES 6] **LOSS OF SOCIAL SUPPORT** AFTER THE INTERVENTION [Part & Prov; ES 21] **Lack of external support** from family members, particularly a spouse [Part; ES 7] **CONCERNS ABOUT WORSENING EXISTING HEALTH PROBLEMS** WAS A BARRIER TO REFERRAL OR ADHERENCE FOR SOME PARTICIPANTS [Part, Ref & Prov; ES 4]	**Desire for improved health, reducing existing health problems or avoidance of ill health** were the most common goals when joining ERS. In particular cardiovascular conditions, depression, musculoskeletal conditions, diabetes or return to work and healthy ageing [Part; ES 2] **Social inclusion goals** relating to 'getting out the house' or 'making friends' [Part; ES 2] **Fitness and weight loss goals** were frequently described; more common than increasing physical activity [Part; ES 2] **External support from family members** particularly a spouse [Part; ES

	Not accommodating cultural/religious requirements : eg, language problem and the inability to communicate effectively with provider staff [Part; ES 8]	7] **CULTURALLY/RELIGIOUS SENSITIVITY** SUCH AS WOMEN-ONLY ACTIVITIES AND CONSIDERATION TO RELIGIOUS HOLY DAYS [Part & Prov; ES 8] **Maintaining routine:** making exercise a habit viewed as important to ongoing physical activity beyond the ERS scheme [Part; ES 21]
EVIDENCE [of effectiveness] **Perceived effectiveness of the intervention**	**Perceived poor/negative outcomes of ERS** [Part; ES 19] Noted by some including general and mental health, exacerbation of specific health problems, disappointment over failure to lose weight and not benefitting from increased social engagement.	**Perceived improvements** [Part; ES 19] Physical health improvements were the most commonly described improvements [Part]. Others included: Weight-loss and physical activity [Part] Mental wellbeing and personal autonomy [Part] Social engagement; both during and after the programme [Part]
FACILITATION and SUPPORT Types of referral, patient choices, holistic enabling support, guidance, and purposeful knowledge exchange to support implementation/ concordance, family and other support.	**Venue Location Problems:** LONG DISTANCE TO TRAVEL [Ref, Part, Prov; ES 10] Difficulties with public transport [Part; ES 10] AND PERCEPTIONS OF VENUE LOCATIONS NOT BEING SAFE FOR WOMEN [Part & Prov; ES 10] **Perceived lack of sufficient support and supervision from providers** described by some [Part; ES 17] **Dependency on providers** Concerns re participants becoming too dependent on support [Prov; ES 17] **HIGH COST** OF EXERCISE FACILITIES, PARTICULARLY AFTER A SUBSIDISED ERS SCHEME [Part, Ref & Prov; ES 9] **INCONVENIENT SCHEDULING** EG, ACTIVITY TIMINGS CLASHING WITH WORK HOURS OR CHILDCARE [Part & Prov; ES 13] **LACK OF ONGOING PROFESSIONAL SUPPORT AFTER THE ERS**	**SUPPORT AND SUPERVISION FROM PROVIDERS** TO HELP EXERCISE SAFELY AND EFFICIENTLY, PROVIDE EQUIPMENT KNOWLEDGE AND MOTIVATION [Part & Prov; ES 17] **PEER SUPPORT** HIGHLY VALUED, SPECIFICALLY IN RELATION TO: HAVING A COMPANION / BUDDY TO DO THE ACTIVITY WITH DURING THE SCHEME [Part & Prov; ES 18a] ENGAGEMENT WITH OTHERS AIDING INTEGRATION AND ENJOYMENT [Part & Prov; ES 18c] **INDIVIDUALISED AND PERSONALISED SERVICE** INCLUDING AN EXERCISE PROGRAMME TAILORED TO USER NEEDS, ABILITY, HEALTH STATUS, PREFERENCES, OR GOALS AND VALUES [Part & Prov; ES 15] **OFF-PEAK SCHEDULING.** THE GYM ENVIRONMENT WAS PERCEIVED TO BE LESS INTIMIDATING DURING OFF-PEAK HOURS. HOWEVER, THIS WAS INCONVENIENT FOR DAY-TIME WORKERS [Part & Prov; ES 13] **CONTINUING PROFESSIONAL SUPPORT AFTER THE ERS PROGRAMME**

	PROGRAMME WAS NEGATIVELY DESCRIBED [Part & Prov; ES 20]	WAS DESIRED AND DESCRIBED AS A FACILITATOR [Part, Ref & Prov; ES 20]
Value placed on intervention eg knowledge, attitudes and beliefs from various stakeholder perspectives.	**Poor perceptions of the intervention atmosphere and environment** Feeling uncomfortable in an 'intimidating gym environment' [Part; ES 12a] Dislike of music/tvs in gyms [Part; ES 12b] DIFFICULTIES OPERATING GYM EQUIPMENT [Part & Prov; ES 12c] POOR QUALITY FACILITIES [Part & Prov; ES 12d] **DISLIKE OF GYM –BASED EXERCISE** DUE TO BOREDOM [Part & Prov; ES 14] PREFERENCE TO BE OUTSIDE [Part & Prov; ES 14]	**Liking for gym-based activities** For some because of its safe environment and weather independence [Part; ES 14] **DESIRE FOR RANGE OF DIFFERENT TYPES OF PHYSICAL ACTIVITIES** INCLUDING DANCE, AEROBICS, YOGA, SWIMMING, OR OUTDOOR ACTIVITIES SUCH AS WALKING AND CYCLING [Part, Ref & Prov; ES 14] **GROUP ACTIVITIES** VALUED, WITH PARTICIPANTS LIKING BEING IN THE COMPANY OF LIKE-MINDED COMPANIONS RATHER THAN SOLITARY EXERCISE [Part & Prov; ES 18b]

6. Discussion

Overall a rich and detailed picture of views relating to UK exercise referral schemes has emerged from the thirty five research studies included in this review; thirty four of which are UK based.

There were a variety of issues identified in developing the review. First, in most studies populations were recruited on the basis of health condition or risk factors for a range of conditions, rather than for inactivity or sedentary behaviour. In these instances, as participants were referred to exercise schemes, the inactivity was deemed to be implicit.

Second, it was not immediately clear in all instances where schemes were located, although on further examination, it appears that the majority took place in local authority leisure centres and almost all included a gym component. This may be why comments related to setting and activities focus so heavily on participant views about gym-based exercise.

Third, exercise referral schemes are often been described as 'exercise on prescription'. Unfortunately this term is also given to the provision of advice/counselling to exercise often in a written format, rather than to a formal referral mechanism. Disentangling exercise referral from exercise advice/counselling alone was often difficult.

Companion effectiveness review

The companion effectiveness review to this study (Campbell 2013)[20] updated an earlier Health Technology Assessment review (Pavey 2011) and looked at the findings of eight randomised controlled trials, of which six were conducted in the UK. Only randomised controlled trials (RCTs) were considered for this HTA update and a number of controlled (non-randomised) and other intervention studies were excluded.

One RCT (Kirk 2004) linked to a study in this review (Taket 2006) was not included in Campbell 2013 as the population in the RCT was referred from a secondary care clinic. However, in the subsequent qualitative study (Taket 2006), referrals were from general practice.

In line with findings from this review, Campbell (2013) concluded there were benefits for patients referred to ERS with coronary heart disease and for those referred with mental health issues. Other findings that chime with the views findings in this study are that

[20] Campbell F, Holmes M, Everson-Hock E, Davis S, Buckley Woods H, Anokye N, Tappenden P & Kaltenthaler E. A systematic review and economic evaluation of exercise referral schemes in primary care: A short report. *Health Technology Assessment* 2013.

women were more likely to take up ERS than men (four studies), increased age predicts uptake (six studies), patients with mental health problems more likely to take up (*/*), most deprived SES less likely to take up ERS (three studies) and low SES predicts drop out (two studies). Two studies found no association between ethnicity and uptake and one study found no link with adherence.

Campbell (2013) carried out a narrative qualitative summary of the views on barriers and facilitators mentioned by the authors of the included RCTs in discussion sections and included the sibling studies identified for Murphy 2012 (Moore 2011, Moore 2012, Moore 2013); introducing some overlap with this review.

The emerging themes, of specific relevance to the RCT setting, were summarised in a logic model and some of the findings relating to the characteristics of the intervention tie in with the findings from this review, for example the facilitators of neighbourhood based, tailored strategies, professional support and social support.

Strengths and limitations of this review:

This review was built on a comprehensive search strategy to find views-based studies of participants, referrers and providers of exercise referral schemes. The literature search included a thorough attempt to identify relevant published and unpublished studies. A large number of studies of UK-based research were identified (thirty four of the thirty five included studies) and the review has direct applicability to UK settings.

Although the quality of studies overall was judged as moderate, a number of qualitative studies graded + were generally well conducted research within PhD theses. Because of the nature of the qualification, analyses could not have been carried out by two independent researchers and as such received a moderate grading. Other studies with low grades were process evaluations and not designed with formal qualitative or survey methodologies. Nevertheless they provided data that were of value in corroborating the data from the formal studies.

The available evidence was limited for some populations: ethnic minority populations, people with disabilities and lower SES groups. From the additional studies in non-UK populations, only one (Schmidt 2008) added any additional data relevant and applicable to these populations.

7. Included papers

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16. Hardcastle, S. 2002. *Perceptions and Experiences of Physical Activity among Women in an Exercise Referral Programme.* PhD University of Brighton.
17. Hardcastle, S. & Taylor, A.H. 2005. Finding an exercise identity in an older body: "It's redefining yourself and working out who you are". *Psychology of Sport and Exercise*, 6, (2) 173-188 [NOTE: All data in Hardcastle 2002 so not extracted]
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20. Lord, J.C. & Green, F. 1995. Exercise on prescription: does it work? *Health Education Journal*, 54, (4) 453-464

21. Markland, D. & Tobin, V.J. 2010. Need support and behavioural regulations for exercise among exercise referral scheme clients: The mediating role of psychological need satisfaction. *Psychology of Sport and Exercise*, 11, (2) 91-99
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