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4

5 **The implementation of behaviour change practices in Physical Activity Referral**  
6 **Schemes: A narrative review**

7

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22 **Abstract**

23 **Background:** Physical activity referral schemes have been used extensively as one pathway to  
24 support behaviour change in people with long term conditions. Best practice guidance, across  
25 countries, recommend that schemes use behaviour change practices. The effectiveness of these  
26 schemes is inconsistent, yet, little is known about the implementation of specific approaches,  
27 or what influences practitioner's delivery. This article provides a narrative review of evidence  
28 exploring the implementation of behaviour change practices in physical activity referral  
29 schemes.

30 **Methods:** An electronic search of three databases (PubMed, Scopus, Google Scholar) was  
31 undertaken. A menu of iterative techniques were also applied from the CLUSTER approach to  
32 increase coverage.

33 **Results:** A total of 45 eligible articles were included covering diverse research designs.  
34 Enduring issues with the literature pertain to the insufficient emphasis on implementation, a  
35 conflation of behaviour change practice, and an inconsistency of scheme components. Against  
36 this backdrop diverse factors within practitioner, attendee, partnership, work environment, and  
37 organisational domains influence the implementation of behaviour change practices.

38 **Conclusion:** The translation of behaviour change practices to applied physical activity settings  
39 must tend to the multilevel factors which have the potential to influence the quality of  
40 behaviour change implementation.

41 **Keywords:** behaviour change, implementation, fidelity, exercise referral, physical activity,  
42 health

43 **Word count:** 4,998

44

## 45 **Introduction**

46 Physical activity (PA) has consistently been shown to improve health and wellbeing (Myers  
47 et al. 2015; Rhodes et al. 2017; Wood, Barton, and Smyth 2022). Physical Activity Referral  
48 Schemes (PARS) originated in the United Kingdom in the 1990's and typically involve a  
49 physician referral of inactive individuals who are at risk of, or have, a chronic health  
50 condition to an exercise specialist, for a time limited programme in leisure settings, to support  
51 long term activity levels. Those who are eligible normally present with cardiometabolic, low  
52 level mental health, musculoskeletal, or respiratory disorders (Dugdill, Graham, and McNair  
53 2005).

54 There was a rapid expansion of PARS across Scandinavia and Central Europe after their  
55 inception (Arsenijevic and Groot 2017), and later augmented versions received widespread  
56 attention in Canada and the United States of America (Thompson et al. 2020). Despite the  
57 popularity of PARS, evidence continues to demonstrate equivocal improvements to PA and  
58 modifiable risk factors (Taylor et al. 2020; Rowley et al. 2018; Prior et al. 2019; Pavey et al.  
59 2011). Across countries, best practice guidance recognises the need for exercise practitioners  
60 to utilise behaviour change practices to maximise PA improvements (Lobelo, Stoutenberg,  
61 and Hutber 2014; Raustorp and Sundberg 2014; National Institute for Health and Care  
62 Excellence [NICE] 2014). Behaviour change practices are viewed as a suite of techniques  
63 including goal setting, self-monitoring, education, reviews, feedback, action planning, relapse  
64 prevention plans, and facilitating social support, which should be tailored based on individual  
65 needs (NICE, 2014). In addition, practice should adopt a psychological theory of behaviour  
66 change and use a communication style to maximise motivation (Department of Health  
67 [DOH], 2001).

68

69 Despite this commitment to behaviour change practice, there is a paucity of research  
70 examining the delivery of behaviour change practices, and programmes are underreported  
71 (Shore et al. 2019; Oliver et al. 2016; Stevens et al. 2022). Without understanding the quality  
72 of practice, a rejection of a programme's effectiveness may be made when 'the programme  
73 itself is inadequate in terms of design or delivery' (Green 2000). Therefore, researching the  
74 ingredients to support the uptake of behaviour practices in exercise professionals is  
75 paramount (Stevens et al. 2022).

76 Nonetheless, the translation of evidence to practice is non-linear, unpredictable, and  
77 contingent on practitioner competencies and 'situational judgment' (Greenhalgh 2018).  
78 Specifically, the complexities of PARS delivery have been highlighted including issues with  
79 conceptualisation, integration with the medical agendas, and the contested nature of schemes  
80 (Henderson et al. 2018). The challenges to PARS resonate with wider literature pertaining to  
81 community based PA interventions which are typically pragmatic, heterogeneous, lacking a  
82 clear theoretical underpinning, and have poor evaluation processes (Henderson et al. 2018;  
83 Oliver et al. 2016; Ashdown-Franks et al. 2022; Hawkes et al. 2022). Furthermore, across  
84 disciplines, the interest in behaviour change practices has soared but, like PARS, the  
85 emphasis on implementation is underdeveloped impeding robust learning about the  
86 application of behavioural science in applied settings (Luszczynska 2020).

87 Despite a strong commitment to implementing behaviour change practices in PARS, the  
88 benefits have been underwhelming, creating a chasm between intention and outcome. The  
89 potential of implementation research in exercise settings to advance the field has been noted  
90 (Czosnek et al. 2020). Implementation science is a member of a consortium of fields  
91 examining the spread and uptake of research findings (Toms et al. 2019). Although  
92 implementation science provides an apparatus to understand the knowledge to practice gap, at  
93 the time of writing this review the authors could not locate an evidence synthesis exploring

94 the implementation of behaviour change practices in PARS. The objective of the current  
95 review was therefore to provide an interpretive critique of literature examining the  
96 implementation of behaviour change practices PARS, to advance knowledge to explain this  
97 chasm.

## 98 **Methods**

99 A narrative review was undertaken, but the approach was also informed by pragmatic  
100 suggestions for reviewing evidence for complex interventions (Booth et al. 2013) [Figure 1.  
101 near here].

### 102 *Literature Search Strategy*

103 Two electronic databases, Pubmed and Scopus, were systematically searched to initially  
104 identify citations (Falagas et al. 2008) (April 2021). Search terms were orientated around three  
105 areas namely implementation, behaviour change practice, and PARS [Table 1 near here].

106 Due to the specific interest in the implementation of behaviour change practices, the search  
107 was undertaken using only the title field. Nevertheless, to mitigate any omissions, two  
108 supplementary approaches were undertaken. Firstly, an electronic search was repeated across  
109 three databases (PubMed, Scopus, Google Scholar) (October 2021) using only the PARS terms.  
110 Secondly, berrypicking, pursuing related projects, and following automated citation  
111 suggestions on publisher websites were used from the CLUSTER approach to increase the  
112 scope of the citation retrieval (Booth et al. 2013). The CLUSTER approach is deemed  
113 complementary to topic based searches especially when examining context dependent  
114 phenomena and implementation (Figure 1). The approach involves utilising a ‘pearl’ citation  
115 and then mining other relevant citations/authors/projects in an evolving manner through  
116 interrelated work.

### 117 *Eligibility Criteria*

118 There were no limits on study design, yet, to balance the levels of comprehensiveness with  
119 relevance, several filters were adopted [Table 2 near here]. Citations were only included if they  
120 were in English, peer reviewed, and had a label related to PARS. Manuscripts were included  
121 from 2001 onwards, as the English quality standards were published in 2001 and explicitly  
122 outlined the need for behaviour change practices (DOH, 2001). Grey literature was not used as  
123 the goal was to appraise the academic coverage of behaviour change implementation in  
124 exercise settings explicitly. Schemes that were undertaken outside of community settings, with  
125 special populations and specialist staff, were omitted as they represent settings not typical of  
126 PARS.

### 127 *Study Selection*

128 The initial database search yielded 1,461 citations, yet only three of 23 relevant citations  
129 explicitly examined implementation either lived experience of implementation attempts or  
130 assessing fidelity to delivery style or behaviour change technique frameworks. A subsequent  
131 search using only the PARS labels yielded 10,800 citations, increasing the scope of the search.  
132 This subsequent search, and CLUSTER techniques, provided 22 additional citations and 316  
133 duplicates were omitted. When titles were retrieved but did not have all elements of the search  
134 terms, they were read to appraise their relevance. The trimming process created a total of 45  
135 manuscripts for review [Figure 2. near here].

### 136 *Analysis and Synthesis*

137 Descriptive information for each paper was extracted and stored in a Microsoft Excel matrix.  
138 All screened manuscripts were also uploaded to NVivo 12 for detailed analysis and analytical  
139 memoing (Toronto and Remington 2020). A constant comparison approach was adopted,  
140 which involved contrasting each emerging theme to consider refinements, consolidation, or  
141 new insights (Whittemore & Knafl, 2005).

142 Data reduction involved organising data, from open coding, into subcategories to unpick  
143 critical insights (Cronin and George 2020). Lower order themes were generated when  
144 information was deemed relevant to the review question. Each new inductive label was cross-  
145 checked with previous subcategories to see if it could reside within existing nodes. Data  
146 segments were given a new label if it conflicted previous lower order themes or provided new  
147 insight. Once coding was completed, subcategories were checked for overlap and lower order  
148 themes were grouped under higher level themes. Data display was an ongoing process and  
149 handwritten mind maps allowed the processing of reoccurring areas of interest (Whittemore &  
150 Knafl, 2005). Due to the nature of the field, the themes were not restricted to the barriers and  
151 facilitators of implementation but also included critiques and juxtapositions between research  
152 traditions.

## 153 **Results**

154 A descriptive overview of the included manuscripts can be found as a supplementary file. The  
155 results are presented as a critical interpretive overview of the field showcasing the current  
156 limitations that exist, followed by a narrative summary of the factors which influence the  
157 implementation of behaviour change practices by PARS practitioners [Figure 3. near here].

### 158 *The Current Limitations Noted in the Literature*

#### 159 *Implementation Processes Not Considered*

160 Research outlined that the predictors of behaviour change practices are largely unknown (Silva  
161 et al. 2017; Shore et al. 2022; Stacey et al. 2010; Sánchez-Oliva et al. 2021; Raposo et al. 2020).  
162 Furthermore, despite some manuscripts having implementation in their title, many prioritised  
163 health outcomes without considering how variations in implementation may influence  
164 success/failure (Andersen et al., 2019; Balducci et al., 2019; Blom et al., 2020; Galbraith et al.,  
165 2021; Gallegos-Carrillo et al., 2017; James et al., 2017b; Mazzoni et al., 2020; O'Brien et al.,



166 2021; Sjöling et al., 2011; Sørensen et al., 2008; Spence et al., 2022; Williamson et al., 2015;  
167 Yang et al., 2015).

168 Authors outlined the need for more process evaluations and highlighted a lack of  
169 implementation exploration. A small body of evidence did outline that the monitoring of  
170 implementation is currently not aligned to best practice, stunting knowledge on how behaviour  
171 change practices can be implemented (Beck et al. 2016; Czosnek et al. 2021; Dineen, Bean, et  
172 al. 2021; Lambert et al. 2017; Moore et al. 2013; O’Shea et al. 2016; Purdy et al. 2022; Quested  
173 et al. 2017; Smith et al. 2021). Although many manuscripts failed to consider the design and  
174 delivery of the intervention, others had a strong theoretical base (Williamson et al. 2015).  
175 Nevertheless, the exploration of how logic models, theoretical underpinning, or training was  
176 translated to practice was lacking, and there was limited research appraising the acceptability  
177 of scheme components to practitioners (Quested et al. 2017; Czosnek et al. 2021).

178 A general concern was the subjective measurement of implementation. When implementation  
179 was considered, practice was approximated through self-report surveys (Silva et al. 2017;  
180 Sánchez-Oliva et al. 2021; Dineen, Bean, and Jung 2022; Raposo et al. 2020), notes from  
181 practitioners (Mazzoni et al. 2020), or checklists (Dineen, Banser, et al. 2021; Dineen, Bean,  
182 et al. 2021). This is prudent given that objective data about delivery demonstrated poor  
183 convergence with self-reported data (Lambert et al. 2017).

#### 184 *The Current Mechanistic View of Behaviour Change Practices*

185 Behaviour change practice was largely conflated to a menu of techniques misrepresenting  
186 optimal care (Silva et al. 2017; Rowley et al. 2021; Shore et al. 2022). One study did critique  
187 the conflation of behaviour change practice (Gagnon et al. 2018), however, despite their initial  
188 critique, their own checklist may underrepresent the relational aspects of practice.

189 Elsewhere authors conceptualised practice as solely educational (Gallegos-Carrillo et al., 2017;  
190 O'Brien et al., 2021; Williamson et al., 2015), demonstrating a one dimensional view of  
191 practice. One study mentioned supervision without detailing practices (Williamson et al. 2015),  
192 whilst another study referred to the use of motivational interviewing without defining what  
193 practitioners were envisaged to deliver (Hoekstra, van Offenbeek, et al. 2017). Lastly, in a  
194 intervention development study, practice was reduced to the provision of 'behavioural support'  
195 and a list of techniques (Reale et al. 2021).

196 The distinction between the scheme elements was not clear and many authors did not  
197 disaggregate between the exercise component and behavioural support. Where implementation  
198 was assessed, it referred to the implementation of the exercise intervention and not specific  
199 behaviour change practices, diluting the emphasis on behaviour change practices (Grimmett et  
200 al. 2021; Wurz et al. 2021; Purdy et al. 2022).

201 There was a small body of work that recognised the complexity of behaviour change practice,  
202 which contrasted with the dominant paradigm. Quested and colleagues (2017) highlighted that  
203 practice requires adaptation and collaboration with individuals and, as such, there is no exact  
204 formula for optimal behaviour change practice. Czosnek and her co-authors (2021) also  
205 explained that tailoring practice is fundamental for behaviour change practice. Therefore, the  
206 core components of practice, or minimal expectations of delivery, must be established, which  
207 is currently not addressed in the literature.

### 208 *The Biomedical Dominance*

209 A contributing factor to the conflation of behaviour change practice may be the dominance of  
210 the biomedical model. Gray (2019) argued that the current viewpoint of exercise may lead to a  
211 diminished value of professional wisdom, the experiential art of supporting people, and the  
212 phenomenological aspects of health.

213 The biomedical model was noted throughout the reviewed manuscripts and research gave  
214 primacy to dispensing exercise and measuring safety, adherence, and clinical outcomes. The  
215 current culture privileges changing clinical outcomes over supporting the implementation of  
216 behaviour change practices (Buckley et al., 2018; Rowley et al., 2021). As Gray (2019) notes,  
217 this creates expectations about practice and can shape practitioner's identity. There was an  
218 enduring priority to use the consultation to collect medical data which impinged on other  
219 consultation elements ( Moore, Moore, and Murphy 2011). The biomedical model was further  
220 illustrated in the work by Gustavsson and colleagues where many stakeholders viewed the  
221 scheme as a written exercise programme alone despite the Swedish model being underscored  
222 by person centred care and having five components.

### 223 *Diversity of Scheme Components*

224 There was no consistency for *any* PARS elements creating issues with the operation of  
225 schemes. Much of the reviewed literature deviated from the core tenets of PARS and lacked  
226 consistency in relation to staffing, inclusion criteria, and intervention content (O'Brien et al.  
227 2021). Scheme content fluctuated from PA counselling, exercise alone, or a combination of  
228 both. Attendees included those with, and without, long term conditions and schemes were led  
229 by an array of professionals including exercise physiologists, exercise scientists, fitness staff,  
230 physical therapists, sports therapists, kinesiologists, and physiotherapists.

231 The duration of programmes had no clear pattern and ranged from three weeks (Dineen, Bean,  
232 and Jung 2022) to three years (Balducci et al. 2019). Some schemes were underpinned by social  
233 cognitive theories (Carr et al., 2021; Duda et al., 2014; Galbraith et al., 2021; Gallegos-Carrillo  
234 et al., 2017; James et al., 2017b; Rogers et al., 2015; Smith et al., 2021; Yang et al., 2015),  
235 some were guided by motivational interviewing (Blom et al. 2020; Carr et al. 2021; Dineen,  
236 Banser, et al. 2021; Galbraith, Rose, and Rose 2021; Hoekstra, van Offenbeek, et al. 2017;

237 Moore et al. 2013; O'Halloran et al. 2014; Wurz et al. 2021; Sjöling et al. 2011) and others had  
238 no outline of their behavioural content. Some settings utilised outdoor PA (Blom et al. 2020),  
239 sport (Dineen, Bean, and Jung 2022), group work (Rogers et al. 2015; James et al. 2017b;  
240 Sørensen et al. 2008; Smith et al. 2021), and online options (Williamson et al. 2015).

241 Many manuscripts had settings not reflective of real life PARS which may complicate the  
242 evidence. For example, in the work of Sørensen and colleagues (2008), participants had to be  
243 willing to pay for care, be motivated to change, and staff nominated themselves for training.  
244 Likewise in Gagnon et al. (2018) only the highest ranked university students were used as  
245 practitioners. Lastly, in the work of Hoekstra and colleagues (2017), the inclusion criterion  
246 stipulated that organisations had to be willing to implement and continue the programme, invest  
247 in the programme, and comply with the research procedures for the entirety of the project. The  
248 diversity in how PARS are defined creates an array of contextual factors making  
249 implementation research difficult as the literature is largely incomparable.

## 250 ***Factors Influencing the Implementation of Behaviour Change Practices***

### 251 *Attendee Characteristics*

252 Attendees often arrived at leisure settings anxious and feeling out of place due to the intimidating  
253 environment. It was postulated that behaviour change practice is more difficult under these  
254 circumstances (Quested et al. 2017), as practice must focus on reassurance instead of behaviour  
255 change (Shore et al. 2022). Working with hesitant attendees altered the practitioner's beliefs  
256 about their ability to support change (Reale et al. 2021). The attendee's unease, and the  
257 subsequent lack of optimism about the likelihood of behaviour change from practitioners, was  
258 magnified when attendees received no prior communication from medical staff about the  
259 scheme, and where consultations were short (Shore et al. 2022; Reale et al. 2021). Practitioners  
260 valued booster training to develop skills to deal with less motivated individuals (Carr et al.,

261 2021). The level of attendee motivation also augmented the degree of work motivation,  
262 frustration, and desire to work in PARS. Retention of attendees was greater in high  
263 socioeconomic, English speaking, and well educated groups, potentially verifying this  
264 relationship (Purdy et al. 2022; Duda et al. 2014).

#### 265 *Practitioner Characteristics*

266 In settings where practitioners perceived behaviour change practices as compatible with the  
267 organisational agenda, implementation was more likely. Applying behaviour change  
268 approaches, and seeing their impact, also had a reinforcing effect on their attitudes ( Moore,  
269 Moore, and Murphy 2012; Dineen, Bean, and Jung 2022). Conversely, where staff perceived  
270 they already implement behaviour change practices, or viewed the consultation as solely about  
271 information gathering, adoption was hindered (Buckley et al., 2018; Moore et al., 2012).

272 The training norms prioritise a medical lens which may lead to deep rooted ideas about  
273 professional duties (Gray 2019; Raposo et al. 2020). In addition, it was shown that as self-  
274 efficacy increased, the value of behavioural approaches also increased, highlighting a feedback  
275 loop between value, engagement, practice, and subsequent self-efficacy (Dineen, Bean, and  
276 Jung 2022; Reale et al. 2021). Tendency to react to organisational pressure, may also explain  
277 the variation in the implementation of behaviour change practices (Raposo et al. 2020). This  
278 was demonstrated where organisational pressure decreased the perceived importance of  
279 behaviour change practice (Duda et al. 2014). Conversely, it was shown that personal  
280 commitment to support attendees superseded the organisational pressure to secure gym  
281 memberships (Shore et al. 2022). Several authors outlined that positive, committed, and  
282 enthusiastic practitioners were associated with envisaged, and actual, implementation (Dineen,  
283 Bean, and Jung 2022; Shore et al. 2022; Hoekstra, Hettinga, et al. 2017)

284 One manuscript also discussed how a positive and committed practitioner can spread  
285 innovations to colleagues by altering practice norms. In addition, one manuscript demonstrated  
286 that women, and those with greater than eight years' experience, were more likely to implement  
287 behaviour change practices (Raposo et al. 2020). Having an accreditation may also improve  
288 the medical professional's trust in PARS and the clarity of duties for each profession (Reale et  
289 al. 2021).

### 290 *Work Environment*

291 Where practitioners perceived the work environment to be 'needs supportive', emotional  
292 exhaustion was decreased, feelings of personal accomplishment were increased, and  
293 implementation was more likely (Sánchez-Oliva et al. 2021; Silva et al. 2017). Opportunities  
294 to contribute to the organisational agenda, continuing professional development, and feeling  
295 heard were common ways 'needs satisfaction' was achieved (Silva et al. 2017).

296 It is also noted that behaviour change practice is emotionally taxing and fatigue may influence  
297 the quality of practice (Dineen, Bean, and Jung 2022). This was corroborated elsewhere, where  
298 a high workload, overrunning consultations, and working beyond capacity increased stress  
299 (Dineen, Bean, and Jung 2022). In combination with the taxing nature of the role, it was noted  
300 that where the organisation was controlling, and practitioners felt powerless, emotional  
301 exhaustion was magnified and autonomous motivation decreased (Silva et al. 2017; Raposo et  
302 al. 2020). The level of job pressure was also linked to needs frustration and poor  
303 implementation (Sánchez-Oliva et al. 2021). Lastly, practitioners who worked greater than 20  
304 hours a week were less likely to employ behaviour change practices (Sánchez-Oliva et al.  
305 2021).

### 306 *Organisational Factors*

307 The providers of PARS must invest, and provide sustainable investment, to increase  
308 penetration of behaviour change practices (Purdy et al. 2022; Hoekstra, Hettinga, et al. 2017;  
309 Smith et al. 2021). Where the organisation undertook inclusive planning it increased awareness,  
310 importance, needs satisfaction of staff, and produced an intervention which met the needs of  
311 the attendees and employees (Dineen, Bean, and Jung 2022; Buckley et al. 2018). When the  
312 core elements of the programme were made explicit, it also supported practitioners to adapt  
313 non-essential aspects whilst retaining essential elements (Purdy et al. 2022).

314 Organisations can support implementation by creating accessible policies and practice  
315 guidelines. There also needs to be ongoing communication and support on how to convert  
316 guidelines into practice (Gustavsson et al. 2018; Reale et al. 2021). Increased options for  
317 attendees must be offered in scheme polices, as gym settings, and limited choice for attendees,  
318 decreased adherence and made implementation more difficult (Carr et al., 2021; Shore et al.,  
319 2022).

320 The role of training to support implementation was widespread and ongoing training provided  
321 direction, enhanced skill development, knowledge, altered attitudes, and decreased drift/decay.  
322 The typical training provision of two days was seen as inadequate to support implementation  
323 (Moore, Moore, and Murphy 2012).

324 The current understanding of the training provided to PARS practitioners is underexplored  
325 (Quested et al. 2017; Shore et al. 2022; Wurz et al. 2021). Furthermore, current exercise  
326 qualifications do not equip practitioners to undertake behaviour change practices (Reale et al.  
327 2021; Gustavsson et al. 2018). It was shown that exercise practitioners do not integrate  
328 knowledge through a medical lens thus there is a need for organisations to provide expert  
329 guidance, self-reflection, refreshers, peer support, and rehearsal of skills to overcome the  
330 industry drawbacks (Stacey et al. 2010; Gray 2019; Reale et al. 2021).

331 Local leadership supported implementation by providing expert advice, peer support,  
332 championing, allocating resources, responding to local issues, monitoring, and issuing  
333 feedback. Leaders need to be credible, respected, have influence on senior management, and  
334 have the capacity to undertake planning (Dineen, Bean, and Jung 2022). The quality of  
335 relationships, feelings of support and personal capability, spread of workforce champions,  
336 practice expectations, and communication of updates about practice are under the direct control  
337 of the leader (Dineen, Bean, and Jung 2022; Gustavsson et al. 2018; Raposo et al. 2020;  
338 Hoekstra, Hettinga, et al. 2017).

339 Implementation was higher in organisations that had an explicit vision and strategy to support  
340 implementation. It was suggested that local commitment contextualises innovation and allows  
341 local procedures to align with the vision. An alignment to a vision facilitates intensification of  
342 practice, whereas the use of controlling practices by the organisation creates a precedent, and  
343 practitioners treat attendees in the same way (Raposo et al. 2020).

#### 344 *Partnerships*

345 The partnership between the exercise and medical professions was a consistent theme  
346 purported to support implementation. Communication and collaboration were important to  
347 provide local ownership of the scheme, shared advocacy, recognition, and acceptance (Purdy  
348 et al. 2022; Caperchione et al. 2021; Hoekstra, van Offenbeek, et al. 2017). A committed and  
349 enthusiastic physician is important to champion behaviour change practices. It was also  
350 highlighted that physician support, and their utilisation of behaviour change practices, provided  
351 credibility and ensured attendees were more receptive to behaviour change practices  
352 (Caperchione et al., 2021; Carr et al., 2021). Yet there is a disjoint, and physicians do not often  
353 advocate or maximise the teachable moment (Gustavsson et al. 2018; Caperchione et al. 2021).  
354 This was also seen where practitioners had to 'sell exercise' as attendees came without any



355 information about the scheme, hampering implementation (Shore et al. 2022). Physicians did  
356 not feel behaviour change was within their duty and the distinction between roles in PARS is  
357 lacking (Caperchione et al. 2021; Gustavsson et al. 2018).

### 358 *Learning Climate*

359 Typical investment in evaluation and quality improvement is poor in PARS (Buckley et al.,  
360 2018; Lambert et al., 2017; Spence et al., 2022). Nevertheless, the importance of ongoing  
361 learning was highlighted as fundamental for implementation. Firstly, for exercise practitioners  
362 developing a co-learning climate was more appealing and acceptable than issuing academic  
363 information (Stacey et al. 2010). Secondly, iterative planning with stakeholders increased  
364 engagement, critical thinking, problem solving, ownership, and created acceptable programme  
365 structures (Buckley et al., 2018; Dineen et al., 2022; Hoekstra, van Offenbeek, et al., 2017;  
366 Reale et al., 2021; Smith et al., 2021; Wurz et al., 2021). Thirdly, behaviour change is not a  
367 formulaic practice and meetings provided the opportunity to enhance context specific learning  
368 and practitioner motivation. Ongoing meetings also supported the sharing of challenges,  
369 lessons learnt, and cemented a community of practice (Grimmett et al. 2021).

370 Explicit monitoring supported implementation by accumulating evidence engendering greater  
371 confidence in PARS (Purdy et al. 2022; Gustavsson et al. 2018) and reinforced practitioner  
372 behaviour. The periodic evaluation of practice, and access to learning materials, were deemed  
373 beneficial for implementation (Beck et al. 2016; Dineen, Bean, and Jung 2022; Gagnon et al.  
374 2018; Shore et al. 2022; Wurz et al. 2021; Hoekstra, Hettinga, et al. 2017). Formative  
375 evaluation and feedback improved memory and stimulated reflection, postulated to enhance  
376 implementation. The presence of programme manuals/booklets were also seen to enhance  
377 delivery, break down attendee barriers, contextualise care, and guide behaviour change  
378 practice. A commitment to self-reflection and access to expert guidance was paramount and

379 envisaged to increase self-efficacy and skill development (Gustavsson et al. 2018; Smith et al.  
380 2021; Moore et al. 2013).

## 381 **Discussion**

382 Although behavioural science is acknowledged as fundamental to PARS, the complexity of  
383 behaviour change practice is still evolving (Borek et al. 2019; Hagger et al. 2020; McEwan et  
384 al. 2019), and research focusing on implementation is lacking (Luszczynska 2020). Specifically  
385 in PARS, there is a paucity of research exploring the implementation of practices and literature  
386 continues to privilege testing the efficacy of PARS, from an exercise standpoint, and its role in  
387 risk factor management, largely ignoring the role of behavioural science.

388 The dominant biomedical paradigm, highlighted in the current review, is incongruent with the  
389 implementation of behaviour change practices and has implications for training, evaluation,  
390 funding, and attendee satisfaction. There seems to be an artificial view on what behaviour  
391 change practice entails, and many conceptualise practice as a list of pre-set techniques,  
392 hampering practitioner's ability to support behaviour change in naturalistic settings. The  
393 current review suggests that greater attention must be placed on quality improvement through  
394 a congruent lens. Authors have highlighted how a biomedical lens hinders the implementation  
395 of behaviour change practices as it dampens attendee autonomy and creates a power differential  
396 (Moore et al. 2017). Nonetheless, if there was a greater adherence to a biomedical model, it  
397 could operate in clinical settings, with specialist staff, to decrease immediate risk of mortality,  
398 as in the case of cancer prehabilitation (Jones et al. 2021; Moore et al. 2021). Alternatively,  
399 schemes should shed the 'prescription' model and conceptualise PARS as predominately about  
400 long term PA changes. At present PARS retains a biomedical format, but practice does not/is  
401 unable to operate within a clinical exercise remit which creates issues. Due to this tension  
402 physicians are dissuaded to trust schemes as they lack applied health professional regulation,

403 are not integrated in medical pathways, and are assessed on outcomes which they are not  
404 designed to address (Shore et al. 2021). The implementation of PA policy requires a proactive  
405 definition of practice and engagement with implementation science (Lobczowska et al. 2022;  
406 Toomey et al. 2020).

407 The current synthesis provides useful information about prudent reported factors that may  
408 influence the implementation of behaviour change practices in PARS. The review was however  
409 unable to comment on details that were not reported, or how the various features noted exert  
410 their influence, which is common in implementation science (Sarkies et al. 2022). The  
411 measurement of behaviour change practices through surveys, in this narrative review, are a  
412 reflection on what practitioners envisage they do, instead of capturing their responses in  
413 naturalistic settings. This must be treated with caution as practitioners subjective ideas about  
414 their practice may not accurately represent what is delivered (Lambert et al. 2017).

415 A separate issue is the diverse settings noted and the lack of recognition that these settings may  
416 augment implementation. Many of the manuscripts involved physiotherapists, integration in  
417 medical environments, and intense research trials which are not typical of PARS. Authors in  
418 implementation science corroborate the concerns articulated above, as extensive research  
419 planning, funding, and academic support may augment the implementation climate  
420 (Braithwaite et al. 2018). In addition, across implementation research there is a lack of  
421 information about the influence of contextual factors in applied settings which is stunting  
422 knowledge about how and why implementation is achieved in a variety of settings (Dryden-  
423 Palmer, Parshuram, and Berta 2020).

424 The current review collated a menu of factors that influence the implementation of behaviour  
425 change practice in PARS. This review is timely given the interesting attention on  
426 implementation science in exercise settings (Czosnek et al. 2020), the recognition that exercise

427 specialists are largely under researched (Stevens et al. 2022), and the continued appetite for  
428 exercise specialists to be integrated with medical professionals (Speake et al. 2016; Maiorana  
429 et al. 2018).

430 The current synthesis drew connections across domains which influence the implementation of  
431 behaviour change practices in exercise settings, however, no researchers explored the  
432 explanatory mechanisms that influence implementation. Moreover, at the time of writing this  
433 review, it has not been possible to uncover how context interacts with implementation attempts  
434 of behaviour change practice in PARS.

### 435 **Conclusion**

436 The review aimed to provide a critical interpretive account of the field and examine the factors  
437 that influence the implementation of behaviour change practices in PARS. Greater utilisation  
438 of implementation science is needed to overcome the challenges that endure in behaviour  
439 change research. Moreover, there is a need for future research to employ methods that address  
440 the implementation processes and move beyond examining the reach, dose, fidelity, and  
441 changes to attendee outcomes, which cannot explain how implementation occurs. The  
442 recognition of behaviour change practices has exceeded research on how evidence can be  
443 translated to applied settings. Future work should invest in describing and planning the  
444 expectations of practice and employ well known behaviour change techniques taxonomies to  
445 guide practice. There is a need to cultivate a learning climate that values quality improvement  
446 through grater surveillance, reporting practice, and encouraging peer reviews focusing on both  
447 the intervention content and the quality of delivery. Lastly, researchers should adopt designs  
448 which can accumulate an understanding on how contextual factors directly influence the  
449 decision making of practitioners to implement or abandon behaviour change practices.

450

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845 Figure 1: The stages adopted during the integrative review.

846 Alt text: The figure shows five regular shapes with a dotted line weaving its way through  
847 each shape to represent the different stages of the narrative review. The image highlights the  
848 steps undertaken to focus on a purpose, which then informed the search and retrieval of  
849 manuscripts, and culminated in data evaluation and presentation.

850 Figure 2: PRISMA flowchart outlining the study selection process based on relevance and  
851 ability to answer the research question.

852 Alt text: The figure shows a range of boxes which signify how the retrieved manuscripts were  
853 trimmed for inclusion in the narrative synthesis. The left side of the figure has three stacked  
854 rectangles with the text written sideways representing the stages of the trimming process.  
855 There are five adjacent rectangle boxes providing information on the number of records  
856 screened, which decreases from top to bottom. Three further rectangle boxes are positioned to  
857 the right of these boxes and outline the number of records that were removed due to  
858 duplication or a lack of relevance.

859 Figure 3: A visual representation of the narrative synthesis element of the review.

860 Alt text: The figure represents a summary of factors that influence the implementation of  
861 behaviour change practices in Physical Activity Referral Schemes. The centre of the image  
862 has a circle indicating successful implementation. There are six smaller circles arranged  
863 around the centre circle and they have colour coded segments to illuminate the role they play  
864 individually. The six circles have labels of practitioner, partnership, work environment,  
865 attendee, learning climate, and organisational factors. Each coloured segment also has  
866 subcategories that outline unique elements within each area of influence.