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## Review

# Promoting men's health through sports clubs: A systematic rapid realist review

qi Anne Timm<sup>a,\*</sup>, Aurelie van Hoyo<sup>b,c</sup>, Paul Sharp<sup>d,e</sup>, Tue Helms Andersen<sup>f</sup>, Louise Hansen<sup>f</sup>, Jane Nautrup Oestergaard<sup>g</sup>, Peter Krstrup<sup>h,i</sup>, Kenneth Cortsen<sup>j</sup>, Peter Bindlev Iversen<sup>k</sup>, Morten Hulvej Rod<sup>l</sup>, Charlotte Demant Klinker<sup>a</sup>

<sup>a</sup> Department of Prevention, Health Promotion and Community Care, Copenhagen University Hospital—Steno Diabetes Center Copenhagen, Herlev, 2730, Denmark

<sup>b</sup> UMR1319 Interdisciplinarité en Santé Publique, Intervention et Instruments de Mesures Complexes, University of Lorraine, Villers-les-Nancy, 54600, France

<sup>c</sup> Physical Activity for Health research cluster, Health Research Institute, Department of Physical Education and Sport Sciences, University of Limerick, Limerick, V94T9PX, Ireland

<sup>d</sup> School of Nursing and Department of Psychiatry, University of British Columbia, Vancouver, V6T 2B5, Canada

<sup>e</sup> School of Health Sciences, University of New South Wales, Sydney, 2052, Australia

<sup>f</sup> Department of Education, Copenhagen University Hospital—Steno Diabetes Center Copenhagen, Herlev, 2730, Denmark

<sup>g</sup> Steno Diabetes Center Aarhus, Aarhus University Hospital, Aarhus, 8200, Denmark

<sup>h</sup> Sport and Health Sciences Cluster (SHSC), Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, 5230, Denmark

<sup>i</sup> Danish Institute for Advanced Study (DIAS), Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, 5230, Denmark

<sup>j</sup> University College of Northern Denmark, Hjoerring, 9800, Denmark

<sup>k</sup> Steno Diabetes Center Sjælland, Holbaek, 4300, Denmark

<sup>l</sup> National Institute of Public Health, University of Southern Denmark, Copenhagen, 1455, Denmark

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## Abstract

**Background:** Health promotion (HP) interventions delivered through sports clubs have demonstrated promising outcomes among men, but less is known about which aspects of the interventions work, for whom, and under what circumstances. This rapid realist review aims to understand the contexts, mechanisms, and outcomes of HP interventions for men delivered through sports clubs.

**Methods:** A systematic literature search was conducted in February 2023 for studies published after 2013 in MEDLINE, Embase, and SPORT-Discus databases. Included studies: (a) were delivered by or in collaboration with sports clubs, (b) targeted men aged 18+ years, and (c) reported 1 or more HP outcome. A grey literature search was also performed. Studies were included in a realist synthesis based on richness and rigor. Hereafter, context-mechanisms-outcome (CMO) configurations were developed.

**Results:** We identified and screened 3356 studies, finally including 60 studies describing 22 interventions. Most HP interventions were delivered in high income countries, included Caucasian men aged 35–65 years with overweight/obesity, and used professional sports clubs (mostly football) for recruitment and facilities. Quantitative HP outcomes were reported across 19 interventions. Of these 19 interventions, the majority reported on weight ( $n = 18$ ), physical activity ( $n = 12$ ), mental health ( $n = 10$ ), and diet ( $n = 9$ ). We identified 12 CMOs related to how HP interventions affected men's recruitment, engagement, and health behavior maintenance.

**Conclusion:** Our findings show that using sports clubs for HP interventions is effective for engaging men. Recruitment was facilitated by leveraging sports clubs' identity, addressing masculinity-related barriers, improving accessibility, and building trust. Engagement was enhanced through shared identity experiences, safe spaces, inclusive competition, and self-efficacy. However, there's limited evidence on behavior maintenance post-intervention, though involving community stakeholders seemed vital. In general, considerations should be made to avoid perpetuating traditional masculine norms, which may exclude some men and reinforce unhealthy behaviors. These findings can guide intervention development, emphasizing the need to harness men's perspectives in the process.

**Keywords:** Community engagement; Health promotion; Masculinity; Physical activity; Sports clubs

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\* Corresponding author.

E-mail address: [anne.timm@regionh.dk](mailto:anne.timm@regionh.dk) (A. Timm).

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## 1. Introduction

Men's health is a significant concern as mortality and disease occurrence underscores significant gender disparities in cardiometabolic diseases.<sup>1,2</sup> Not only is gender an established risk factor for type 2 diabetes onset<sup>3,4</sup> (globally there are 17.7 million more men than women aged 20–79 diagnosed with diabetes),<sup>5</sup> but heart failure is 60% more prevalent among men, resulting in an 85% higher mortality rate compared to women.<sup>6,7</sup> In Denmark, for example, the prevalence of type 2 diabetes has tripled from 1996 to 2016,<sup>8</sup> with a higher increase among men, leading to significant gender disparities in both diabetes and first-time cardiovascular diseases.<sup>9,10</sup> As a result, men experience a 30% higher mortality rate compared to women,<sup>11</sup> which is consistent with other developed nations.<sup>12</sup> Modifiable health behaviors related to diet, physical inactivity, smoking, alcohol intake, and mental health play a significant role in reducing this gap.<sup>13</sup> Still, men are less prone to attend primary healthcare (e.g., their general practitioner) compared to women.<sup>14,15</sup> Also, recruitment of men to health promotion (HP) interventions remains challenging, especially among those in lower socioeconomic status (SES) groups.<sup>16,17</sup>

Engaging in physical activity (PA), particularly sports, presents a potent strategy for preventing cardiometabolic diseases and promoting health in both men and women.<sup>18,19</sup> Sports environments have been identified as effective in recruiting and retaining men, who are otherwise hard to recruit, across the socioeconomic spectrum to HP interventions.<sup>17,20–23</sup> A meta-analysis of interventions delivered to men through professional sports clubs revealed a mean weight difference of 3.3 kg in favor of the intervention group compared to the control group after 12 weeks.<sup>22</sup> Professional sports clubs are typically elite sporting organizations with paid athletes; however, as part of their social responsibility, many have charitable arms (e.g., community trusts/foundations) that deliver HP interventions within communities.<sup>24</sup> As an example, the landmark *Football Fans in Training* (FFIT) intervention was developed and delivered in collaboration with professional sports teams to engage men in healthy behavior change and weight loss.<sup>25</sup> The success of FFIT has led to its implementation in professional football clubs across Scotland and the UK, with adaptations in the Netherlands, Norway, Portugal, the UK, Canada, Australia, and Germany.<sup>26–29</sup> As such, sports clubs have become a crux of many HP interventions because they provide a community-based setting that aligns with many of the interests and values of men.<sup>20,30,31</sup> A report from the Union of European Football Association estimated that up to 209 million people are watching European football, underscoring the significance of professional football clubs in promoting health and well-being.<sup>32</sup> Furthermore, as interest in men's HP continues to grow, research is needed to identify best practices for promoting men's health through sports clubs.

Despite the notable success of interventions in achieving individual-level outcomes under controlled conditions, interventions delivered through sports clubs still struggle to recruit, engage, and sustain HP outcomes among men.<sup>17,26,33</sup> Gender remains an important socio-cultural predictor of

health, and alignment to masculine norms (e.g., strength, stoicism) may deter men's participation in health-promoting behaviors, which are linked with femininity.<sup>34,35</sup> To address health inequities and respond to international interest, recommendations for designing and implementing HP interventions for men are needed. Rapid realist reviews (RRRs) contribute to implementation by offering evidence-informed insights into contextual factors that affect intervention success and by identifying the underlying mechanisms of action in complex interventions.<sup>36</sup> Such information guides the tailored design and adaptation of interventions to specific contexts, helping researchers, practitioners, and politicians make informed choices and increase the chances of successful implementation. The aim of this RRR is to investigate how and under what circumstances men can be recruited and engaged in HP interventions delivered through sports clubs, as well as how health behaviors may be maintained after interventions end.

## 2. Methods

This RRR was guided by the recommendations for RRR methodology<sup>36</sup> and Cochrane's evidence-informed guidance for rapid reviews.<sup>37</sup> The reporting followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines,<sup>38</sup> as the PRISMA for rapid reviews (PRISMA-RR) is still under development. The RRR protocol is registered in Research Registry (ID: reviewregistry1556).

This RRR included quantitative and qualitative studies as well as grey literature.<sup>36</sup> The method is inspired by traditional realist reviews<sup>38</sup> yet employs an expedited and targeted approach to data collection and analysis.<sup>36</sup> A key feature in conducting an RRR is the continuous engagement of key stakeholders.<sup>36</sup>

Accordingly, a national reference panel and an international expert panel were engaged in the review process (Supplementary Material 1 for an overview of members). Researchers in the expert panel were identified by searching literature and contacting international groups dedicated to men's health and/or researching how to promote health through sports clubs. A similar strategy was employed to identify stakeholders for the national reference panel focusing on the utilization of the review by posing research questions relevant to the Danish context to increase relevance and awareness.<sup>36</sup> The expert panel was engaged to qualify the research process, strengthen the review scope, and identify relevant literature.

### 2.1. Search strategy

A systematic search was conducted on February 24th, 2023 in the databases MEDLINE (Ovid), Embase (Ovid), and SPORTDiscus (EBSCOHost) from 2013 to the current date. The search strategy was developed by an information specialist after involving the reference and expert panel in finding synonyms and index terms for the search string (Supplementary Material 2). Further, the PubMed PubReMiner Version 1.31 (<https://hgserver2.amc.nl/cgi-bin/miner/miner2>).

219 *cgi*) was utilized to identify Medical Subject Heading (MeSH)  
 220 terms and keywords for the search string. The search strategy  
 221 was designed and validated for MEDLINE, initially tested  
 222 with 10 key articles relevant to the study. It was then adapted  
 223 for Embase and SPORTDiscus.

224 In accordance with the RRR methodology, specific limits  
 225 and filters were applied, which differed from those used in a  
 226 comprehensive systematic review. Firstly, a temporal restric-  
 227 tion beginning in 2013 and encompassing the subsequent  
 228 10 years was imposed on all databases. Secondly, studies cate-  
 229 gORIZED under "Female" were excluded, as the focus of this  
 230 study was exclusively on male subjects. While acknowledging  
 231 the risk of missing pertinent studies, the expert panel deemed  
 232 these choices suitable to capture eligible studies. This assertion  
 233 was reinforced by examining pivotal references and impactful  
 234 studies from the expert panel. Additionally, we retrieved the  
 235 references of included articles and reviews potentially  
 236 including eligible studies as well as articles citing both using  
 237 citationchaser.<sup>39</sup>

238 The search strategy for published articles was adapted for  
 239 grey literature, in which 2 additional studies were identified.  
 240 The reference and expert panels recommended websites of  
 241 national sports associations and federations ( $n = 7$ ) and of  
 242 nongovernment men's health organizations ( $n = 11$ ) (Supple-  
 243 mentary Material 3). This work was conducted in January/  
 244 February 2023 by AT and LH and was assessed using the  
 245 same criteria as published articles. The search strategy was  
 246 peer reviewed by a second information specialist (Ole  
 247 Norgaard).

## 2.2. Inclusion and exclusion criteria

251 This RRR considered peer-reviewed studies and grey litera-  
 252 ture describing intervention studies. We used the PICO frame-  
 253 work (Population, Interest, Context) to guide the inclusion  
 254 criteria. Inclusion criteria for the studies were: (a) targeting  
 255 men aged 18+ years with mean age below 65 years, (b)  
 256 reporting HP outcomes defined as "the positive changes in an  
 257 individual's health-related behaviors, knowledge, attitudes, or  
 258 skills resulting from HP efforts, leading to improved well-  
 259 being and reduced risk of disease",<sup>40</sup> (c) reporting HP inter-  
 260 ventions delivered primarily by sports clubs/organizations  
 261 defined as having "in common, the provision of opportunities  
 262 for competition and sports practice, while some can also be  
 263 considered social organizations, promoting social welfare and  
 264 health",<sup>41</sup> and (d) delivering an intervention.

265 Studies were excluded if they: (a) were not exclusively for  
 266 men (i.e., women were also included or targeted), (b) involved  
 267 clinical/hospitalized target groups already in contact with the  
 268 healthcare system, (c) focused solely on sport performance  
 269 enhancement, (d) focused on management processes without  
 270 any mention of health-related aspects, (e) targeted coaches  
 271 or elite athletes, and (f) were letters, comments, or reviews  
 272 (from which we searched references and citing articles for  
 273 inclusion).

274 All studies identified from the search strategy were in  
 275 languages understood by the review team (Danish, English,

276 French, German, Norwegian, and Swedish). We excluded pilot  
 277 studies if full trial studies of the same intervention were  
 278 available.  
 279

## 2.3. Study selection and extraction

280 All identified records were collated and uploaded in The  
 281 Evidence for Policy and Practice Information and Co-ordi-  
 282 nating Centre (EPPI-Centre) Reviewer<sup>42</sup> and duplicates were  
 283 removed. Two authors (AT and LH) screened titles and  
 284 abstracts against the eligibility criteria, along with the full text  
 285 of selected citations; disagreements were resolved through  
 286 discussion and, if necessary, by a third author of this review.  
 287

288 Data from all included studies were extracted using a  
 289 template developed in collaboration with the expert panel  
 290 (Supplementary Material 4).  
 291

## 2.4. Appraisal of richness and rigor

292 AT and at least 1 other co-author used the Realist Synthesis  
 293 Appraisal Form (Supplementary Material 5) developed by  
 294 frontier realist researchers to assess richness and rigor.<sup>43</sup> In  
 295 line with realist review methodology, AT and LH assessed the  
 296 sample size, data collection techniques, analysis, and research  
 297 claims to assess richness and rigor.<sup>44</sup> The evaluation of  
 298 richness was based on the extent to which the study offered  
 299 comprehensive contextual and theoretical insights to support  
 300 the formulation of context-mechanisms-outcomes (CMOs).  
 301 Based on richness and rigor, the studies were ranked as  
 302 "high", "moderate", "low", or "excluded". To achieve a high  
 303 score, an article should offer ample information regarding how  
 304 the intervention was expected to improve participants' health,  
 305 thoroughly documenting the process, and elucidating the  
 306 contextual factors that had an impact on recruitment, engage-  
 307 ment, or health behavior maintenance.  
 308

## 2.5. Realist synthesis and CMO building

309 A realist synthesis was conducted to identify CMO configu-  
 310 rations. The CMOs were operationalized using Greenhalgh  
 311 and Mazano's definition of context<sup>45</sup> and Dalkin et al.'s  
 312 conceptualization of mechanisms.<sup>46</sup> Accordingly, context (C)  
 313 was not defined in isolation but identified through how it influ-  
 314 enced or interacted with the mechanisms to produce outcomes  
 315 (O) (e.g., the role of familiarity and fan identity men may feel  
 316 towards the sports club context).<sup>45</sup> Mechanisms were mapped  
 317 by distinguishing between (a) intervention mechanism (the  
 318 intervention introduced in a context) (I) and (b) human  
 319 reasoning mechanism, meaning how the individual or group  
 320 responds to the intervention (M).  
 321

322 The literature was analyzed to identify the context and  
 323 mechanisms required to achieve a desired outcome. Data  
 324 extraction, involving the collection of verbatim text excerpts,  
 325 was initially carried out by AT and subsequently reviewed and  
 326 discussed by LH until consensus was reached. The focus was  
 327 on full-text studies that provided evidence or insights relevant  
 328 to constructing complete or partial CMO configurations. If  
 329 studies reported HP outcomes from included interventions but  
 330  
 331  
 332



did not inform CMO building, they were excluded from the realist synthesis. Studies ranked as “low” were used to support CMOs identified from studies ranked as “high” and “moderate”. For example, across several process evaluation studies ranked as “high” or “moderate”, we identified that the familiarity of the sports club brand (C) emerged as a pivotal factor in drawing men to the HP intervention (O). This was because it resonated with their identity as fans of the club (M).

After data was extracted and CMOs were developed, outcomes were conceptualized as: recruitment (what affected men’s likelihood to be recruited to the HP intervention), engagement (what affected men’s likelihood to continue participating in the HP intervention), and health behavior maintenance (what affected men’s likelihood to maintain health behaviors adopted during participation in the HP intervention). We exclusively evaluated CMOs pertaining to maintenance derived from studies with at least a 6-month follow-up. Afterwards, we sought out relevant behavioral theories that enhanced our understanding of CMOs at the individual level.

We hypothesized that many men are attracted to sports and to a specific sports club/team and therefore are more easily recruited and engaged in HP interventions. The primary aim of this RRR is to investigate which mechanisms are used by sports clubs to recruit and engage men in HP interventions. The secondary aim is to investigate how these intervention mechanisms influence men’s health behavior after the end of the intervention. We employed Courtenay’s masculinity and health theory<sup>47</sup> and Connell’s masculinities framework<sup>48</sup> to explore CMOs linked to this hypothesis. Connell’s masculinities framework proposes that masculinity is multifaceted and shaped by societal norms,<sup>48</sup> while Courtenay’s theory delves deeper into how traditional masculine ideals, such as stoicism and self-reliance, influence men’s health behaviors and use of healthcare, suggesting that adherence to these norms may exacerbate gender disparities in health outcomes.<sup>47</sup>

### 3. Results

We identified 2928 records (208 duplicates) through database searches. From reference and citation searches, we identified 710 records (79 duplicates); 2 studies were identified from the grey literature search, and 5 articles were identified by the expert panel. In total, we screened 3356 studies; of which 60 studies were included, reporting on 22 interventions (see full selection process in Fig. 1). Of these 60, 36 studies describing 18 interventions were rated as “high”, “medium”, or “low” based on the Realist Appraisal Form and, thus, were included in the realist synthesis (Supplementary Material 4).<sup>26,49–82</sup>

Most interventions were conducted in high income countries, most often the UK ( $n = 7$ ; 32%), but 2 took place in Denmark. The interventions included between 7 and 2214 participants (mean = 474; median = 105), involved sports clubs (mostly football clubs) for recruitment, used sports club coaches for intervention delivery, and targeted overweight men aged 35–65 years. Nineteen interventions reported the following quantitative (objective or subjective) health

outcomes:<sup>25,27,50–52,83–96</sup> weight ( $n = 18$ ); PA ( $n = 12$ ); physiological and clinical outcomes ( $n = 10$ ); mental/psychological health ( $n = 10$ ); diet ( $n = 9$ ); alcohol ( $n = 7$ ); quality of life ( $n = 6$ ); and, less often, sleep ( $n = 3$ ); sedentary behavior ( $n = 3$ ); and smoking ( $n = 2$ ) (Supplementary Material 4 for a full overview). Of these 19 studies reporting quantitative HP outcomes, 16 (84%) reported positive significant HP outcomes.

In total, 12 CMOs were identified relating to the 3 outcomes of interest: recruitment, engagement, and health behavior maintenance (Table 1).

#### 3.1. Contexts and mechanisms for recruitment

##### 3.1.1. CMO 1a: familiarity and fan identity in the sports club context

Across interventions, men often perceived sports clubs as a non-threatening HP setting because it appealed to their identity either as fans of the club and/or spectators and, thus, provided a familiar venue. In *FFIT*, the professional football club environment contributed feelings of excitement and belonging towards the stadium.<sup>56</sup> *Premier League Health* had high percentages of recruited men who were fans of the host club.<sup>92</sup> However, the importance of fan identity varied across countries, with higher significance in the UK and Portugal compared to the Netherlands and Norway, as shown in *European Football Fans in Training (EuroFIT)*.<sup>55</sup> *Rugby Fans in Training (RUFIT)* sought to improve generalizability by engaging indigenous populations (Māori) through rugby franchises, resulting in a representation of 15%–20% Māori participants. This suggests that a targeted communication strategy using sports can also attract specific population groups.<sup>90</sup>

##### 3.1.2. CMO 1b: sports clubs breaking barriers: redefining masculinity in health promotion

Men’s skepticism towards HP interventions were in some instances related to the perception that interventions focused on health were characteristically female. When communication about the HP intervention focused on sports terminology and used sports as part of the intervention content, this seemed to reduce men’s skepticism towards HP, as they perceived it as more relatable. For example, some men were pessimistic about the HP intervention being called *Football Fitness*, because they associated fitness with femininity and, thus, felt that they needed to justify their participation to others.<sup>62</sup> Further, the Canadian intervention *HAT TRICK* integrated sports language and imagery into health education, which increased the acceptability of health-related information for men.<sup>53</sup> In *Walking Football*, the opportunity to engage in football attracted men who had not participated in organized sports for years.<sup>52</sup> *Man v Fat* capitalized on football’s popularity in Australia, increasing social acceptability for weight loss through sports.<sup>54</sup>

##### 3.1.3. CMO 1c+1d: increasing access and trust

Men’s participation in HP interventions was influenced by accessibility factors such as cost, distance, perceived expectations, and flexibility of participation, particularly for

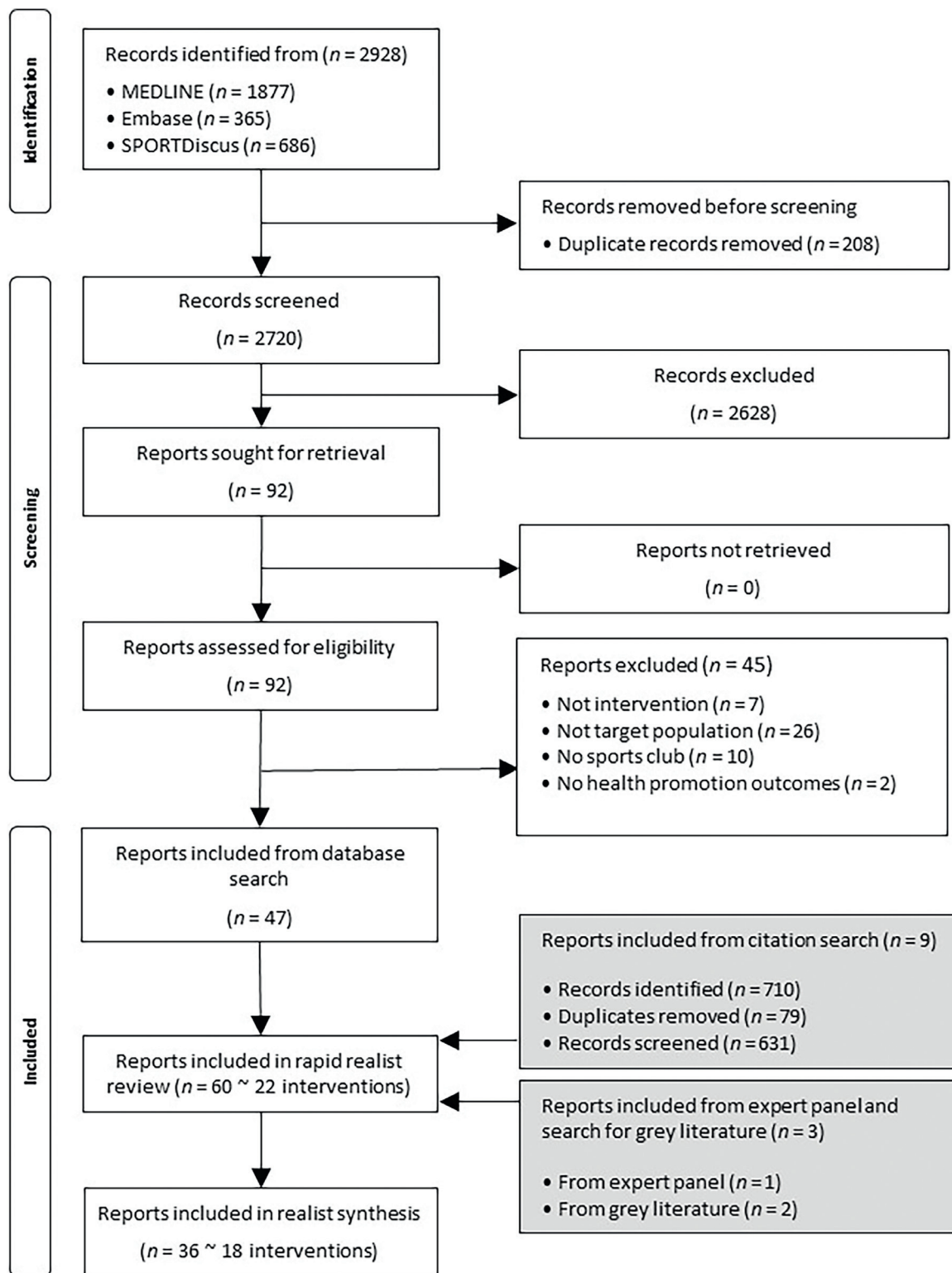


Fig. 1. Flow diagram of study selection.

marginalized men.<sup>59,68,70,97</sup> The *Premiere League Health* intervention, conducted over 3 years in English football clubs, found that these men were satisfied by the 3-year-long intervention periods because it offered flexibility and the option to drop out temporarily. This increased the men's

sense of trust and control over their lives.<sup>97</sup> Additionally, men were more willing to participate when approached through trusted sources in familiar settings, such as word-of-mouth recommendations from friends, partners/wives, or community members.<sup>70,97</sup>

Table 1  
Context-mechanism-outcome configurations for recruitment, engagement, and health behavior maintenance identified across 18 interventions informed by 36 studies.

Context (C)–Mechanism (M)–Outcome (O) Configurations and (I) (Intervention)	Interventions
<b>Contexts and mechanisms for recruitment</b>	
• CMO 1a: When men perceived the sports clubs to be a familiar and comfortable setting in terms of the club stadium and its surroundings (C) it appealed to their identity as fans of the club (M), which increased their motivation for taking part in the intervention (O).	A, B, C, E, I, M, N, O
• CMO 1b: When communication about health promotion interventions occurred through sports clubs' communication channels (e.g., websites) and focused on sports language and content (C), men's skepticism towards health promotion interventions due to the association of health with femininity was diminished (M), which positively impacted their recruitment (O).	E, F, I, J, K, L
• CMO 1c: For hard-to-reach men (e.g., those without a home or living in deprived areas) (C), costs, distance, perceived expectations, and flexibility of the intervention (I) impacted their perceptions of accessibility (M), which negatively affected their likelihood to participate in the intervention (O).	G, J, L, N
• CMO 1d: When hard-to-reach men felt distrustful towards the social and healthcare system (C) and the intervention was communicated through perceived trustful sources such as word-of-mouth recommendations from friends, partners/wives, or community members in familiar settings (I), it increased their sense of trust towards the health promotion intervention (M) and increased recruitment (O).	G, J, L, N
<b>Contexts and mechanisms for engagement</b>	
• CMO 2a: By implementing specific inclusion criteria that engage men with similar characteristics, such as age or weight (C), a sense of identification was created based on shared parameters, particularly physical capabilities, by removing the idea that men need to be strong, powerful, and fit (M), which fostered a safe and non-judgmental environment (I) and led to increased engagement (O).	A, B, D, E, F, I, J, K, L, O, R
• CMO 2b: When traditional masculine values of stoicism and independence were present (C), men were challenged with speaking openly about mental health because they considered it to be a female value (M), which contributed to their reluctance to seek help and formal psychological support (O).	D, I, J, K, L
• CMO 2c: When men felt cared for by other men in the group (C), engaging in competitive activities motivated them by providing opportunities for social connection, camaraderie, and a sense of belonging (M), leading to increased engagement (O).	A, B, D, L, O, J, Q
• CMO 2d: When a competitive atmosphere was introduced in groups (I), focusing on scores, goals, and aggressive performance (C) triggered a pressure to succeed in terms of sports-based performance or weight loss and diminished the fun and inclusive aspects of the sport, leading to decreased enjoyment (M), which created a negative impact on men's engagement and increased drop out (O).	D, E, F, L, O
• CMO 2e: When incorporating self-monitoring devices such as pedometers, weigh-ins, and food diaries (I), if these devices were accountable by providing objective measures and individualized feedback (C), the reliability and objective nature of these measures motivated men by offering tangible evidence of progress and achievements (M), which increased their engagement (O).	A, B, D, E, H, I, J, L, M, Q
• CMO 2f: Positive interactions and attentiveness from well-versed coaches, coupled with tailored activities (C), enhanced men's engagement (O) through building connection, trust, and creating a sense of value and belonging within the group (M).	A, E, H, L, M, O
<b>Contexts and mechanisms for health behavior maintenance</b>	
• CMO 3a: When community events and partnerships were leveraged through the intervention (I), it enhanced intervention implementation by providing opportunities for interaction, discussions about progress, and supportive connections in the community (C), which led to a sense of belongingness within the community (M) and positively affected health behavior maintenance (O).	E, H, K, L, N
• CMO 3b: If men had gained positive health promotion outcomes from participating in the intervention (e.g., increased self-efficacy, improved well-being, and/or healthy behaviors) (C), it enabled them to induce ripple effects in their immediate network (e.g., among friends and family members) (M), which increased the chance of health behavior maintenance (O).	E, F, H, M, N
• CMO 3c: For men with family commitments and obligations who needed to prioritize health behaviors on account of commitments in other settings (C), they experienced a lack of flexibility to engage in health behaviors (M), resulting in a preference for convenient food options and sedentary behaviors and reducing the likelihood of health behavior maintenance (O).	G, K, P

Notes: A: Aussie-Fit; B: EuroFIT; C: FFIT Germany; D: Fit Fans; E: Football Fans in Training (FFIT); F: Football Fitness; G: Football in the Community (FitC); H: Hockey Fit; I: HAT TRICK; J: Man v Fat; K: Men for Change; L: Premier League Health; M: Rugby Fans in Training (RUFIT); N: Sons of the West; O: Tackling the Pounds; P: The Alpha Intervention; Q: ViSiT; R: Walking Football.

### 3.2. Contexts and mechanisms for engagement

#### 3.2.1. CMO 2a+b: fostering brotherhood: the power of shared identity and caring

Group sessions were a common feature in all interventions, which influenced men's engagement (i.e., their continuous participation in the intervention). Many men had experienced feelings of inadequacy while performing health behaviors prior to joining, such as feeling too unfit or lacking motivation for activities like playing football or going to the gym.<sup>44</sup> Intervention inclusion criteria based on personal characteristics, such as being overweight or in specific age ranges, contributed to men identifying with fellow participants and/or fostering a safe and non-judgmental group environment.<sup>21,52–55,64,76,77,98</sup> In the Swedish intervention *ViSiT*, which was embedded in football and ice hockey clubs, overweight men felt more comfortable participating in PA sessions as they perceived themselves to be equally capable, unlike in other settings where they compared themselves unfavorably.<sup>88</sup> However, concerns about potential ridicule due to excess body weight in *The Alpha Intervention*, a football-based intervention in the UK, suggested that overweight as an inclusion criterion may only attract men who are not concerned about being made fun of by others about their bodies.<sup>58</sup> The appeal of engaging with similar men varied by country in *EuroFIT*, with differing percentages of men being attracted due to participants being "like them"; these differences were attributed to diverse fandom cultures.<sup>55</sup>

The sense of relatedness and caring for each other within groups also influenced men's engagement. A non-judgmental group environment where men felt acknowledged and accepted positively impacted their mental health and confidence to continue participating.<sup>50,54,59,76,79,97,98</sup> Specifically, in *Fit Fans* and *Premier League Health*, a non-judgmental environment enabled conversations about social issues and increased men's confidence to attend sessions, especially among those who were harder to reach (i.e., men who face an increased number of social and structural barriers for participating in HP interventions).<sup>50,97</sup> In *Men for Change*, the presence of peers with the same race, ethnicity, and gender facilitated a group dynamic where sensitive discussions about sexual health became acceptable.<sup>79</sup> Interventions like *Man v Fat* and *HAT TRICK* fostered an environment where men felt camaraderie, comfort, and perceived similarities, leading to open sharing of weight loss, body-image, and mental health issues.<sup>54,76</sup> In *Tackling the Pounds*, social group interactions were the strongest motivator for intervention engagement, which made the sport meaningful, whereas in *Football Fitness*, the appeal of football was just as important as the social dimension.<sup>62,68</sup> However, in some interventions, the presence of gender-related barriers and traditional masculine values, such as stoicism and independence, meant that it was still a challenge for men to speak openly about their mental health and to seek help for their behaviors.<sup>62,79</sup>

#### 3.2.2. CMO 2c+2d: balancing competition and camaraderie

Most interventions incorporated a competitive element, such as sports or weight loss competitions within the group, which had varying effects on men's engagement. In

interventions like *EuroFIT*, *ViSiT*, and *Aussie-FIT*, the competitive aspect was motivating as men aimed to outperform other clubs or teams while maintaining supportive interactions within the group.<sup>55,77,98</sup> Internal competition between men in *ViSiT*, *Hockey Fit*, and *Man v Fat* also fueled motivation as they strived to surpass their peers.<sup>54,69,77</sup>

In contrast, some interventions observed negative consequences of a competitive atmosphere, as it undermined group dynamics and men's sense of acceptance and connection.<sup>56,62,68,97</sup> For instance, in *Football Fitness*, where older men were the primary participants, the emphasis on inclusive participation was crucial for intervention sustainability because the inclusive setting of the sport outweighed their desire to compete.<sup>62,68</sup> The competitive atmosphere often emerged when certain men focused on scores, goals, and aggressive performance, which detracted from the fun and inclusivity of the sport and led to higher dropout rates.<sup>99</sup> Interestingly, in *Man v Fat*, men competed in leagues where both winning matches on the field and losing weight off the field contributed to the team's score.<sup>54</sup> While excelling in football or weight loss appealed to men, they also experienced pressure to lose weight due to their sense of accountability to their team, which negatively affected their engagement. For example, some men admitted to skipping sessions if they had gained weight.<sup>54</sup> To counteract an exclusionary competitive environment, interventions like *Football Fitness*, *Premier League Health*, and *Tackling the Pounds* demonstrated the importance of adopting a balanced approach to competition for success. While competition added to the enjoyment of playing sports in several cases, it also compromised inclusiveness and appeal for some.<sup>62,68,97</sup>

#### 3.2.3. CMO 2e: self-monitoring: the motivation of tracking progress

Self-monitoring, including pedometers, weigh-ins, and food diaries, was commonly used across interventions. Men in *FFIT*, *HAT TRICK*, *Hockey FIT*, and *Aussie-FIT* were motivated by the reliability and objective measures provided by pedometers, enabling them to set self-negotiated goals, compete with themselves and others, and increase their fitness levels.<sup>61,69,76,98</sup> Furthermore, post-intervention questionnaires in *EuroFIT* indicated high engagement with pedometers, despite technical challenges.<sup>55</sup>

*Aussie-FIT* utilized Fitbits for group competition and resulted in an increase in step counts after 3 months, suggesting that the men's motivation was externally driven.<sup>98</sup> Accordingly, though few interventions reported on behavioral maintenance, in *FFIT*, men's motivation to comply with their individual goals through self-monitoring attenuated after intervention completion.<sup>61</sup> Despite the role of self-monitoring devices, social bonding emerged as a more influential factor for men's motivation to increase PA across interventions.<sup>54,56,61</sup>

#### 3.2.4. CMO 2f: role of coaches: building trust, tailoring interventions, and facilitating meaningful interaction

Positive interactions with the group coach were also emphasized as a key factor for meaningful engagement. Men in



*FFIT*, *RUFIT*, and *Aussie-FIT* reported motivating interactions with well-versed coaches who showed attentiveness to their personal lives, leading to increased engagement.<sup>61,64,98</sup> Coaches in *EuroFIT* initiated informal chats before sessions to build relationships and make the men feel valued.<sup>55</sup> Also, coaches played a crucial role in tailoring intervention activities to meet the men's needs. In *Tackling the Pounds*, some men found sports sessions to be ill-tailored (i.e., too physically challenging), which decreased their perception of the intervention being relevant to them.<sup>68</sup> *The Alpha Intervention* addressed this by managing expectations and gradually increasing the intensity of football matches, which helped men maintain their engagement.<sup>58</sup> Being listened to by the coach fostered trust and facilitated engagement in *Premier League Health* and *Men for Change*.<sup>79,97</sup> In both interventions, coaches collaborated with community partners to better connect with hard-to-reach men, and in *Men for Change* this created a trusted environment within the group, promoting discussions about sensitive topics such as sexual health.<sup>79</sup>

### 3.3. Contexts and mechanisms for health behavior maintenance

#### 3.3.1. CMO 3a: fostering sustainable HP: the power of community engagement and cultural considerations

The few studies that investigated factors influencing health behavior maintenance highlighted the significance of engaging with the local community and addressing cultural norms to ensure meaningful implementation and lasting impact.<sup>70,80,91,97,100</sup> Using qualitative investigations of participants' perspectives, *Football Fitness* showed how implementation processes in the local football club may affect men's motivation to continue playing sports after interventions end. Though the absence of macho behavior in *Football Fitness* allowed participants to feel valued and included within the club, men tended to compare themselves to the established teams, feeling like outsiders due to existing masculine and skill-based hierarchies.<sup>62</sup> This sense of not fully belonging to the club subsequently decreased their motivation to maintain their football training. Still, the men attended weekly practices, again highlighting the importance of acceptance and community among the *Football Fitness* players. Moreover, in *Men for Change*, cultural considerations were vital for upholding sexual health topics across football leagues as part of promoting preventive behaviors with respect to sexually transmitted infections. However, when looking into health behavior maintenance, expectations and masculinity norms in the community still created discomfort for men in Latino communities, preventing open discussion about sex and condom use.<sup>79</sup>

Leveraging community events and partnerships seemed to foster health behavior maintenance after participation in a HP intervention. *FFIT* demonstrated the role of community support in maintaining health behaviors by using music, exercises, and local peer support; activities such as walking, cycling, running, or going to the gym also played a critical role in maintaining weight loss.<sup>99</sup> *Sons of the West* and *Hockey*

*FIT* showcased the broader impact of the interventions when individual participants, for example, engaged in their local communities through volunteer work or shared information about the intervention to inspire others to join.<sup>70,91</sup> Similarly, 19 out of 28 participants (68%) in *Hockey FIT* indicated that the intervention had influenced their community positively, highlighting improved family bonding and awareness of the *Hockey Fit* intervention as well as improved dietary and PA habits in the community.<sup>91</sup> This outward focus and community engagement created positive ripple effects, promoting individual sustained behavior change through societal engagement.<sup>57,70</sup> The researchers also found that participants who completed a mentor intervention designed for new participants as an extension of the original *Sons of the West* intervention exhibited higher levels of community connectedness, leadership attributes, and self-efficacy in comparison to participants who had participated in the initial intervention.<sup>57</sup> Also, *RUFIT* established a strong partnership with the rugby community to enhance intervention implementation.<sup>64</sup> With varying success, *Man v Fat*, *EuroFIT*, *HAT TRICK*, and *FFIT* used platforms such as Facebook or WhatsApp to encourage participants to connect and organize group meetups outside of the parameters of the intervention as a means to empower participants, increase accountability, and promote behavior maintenance.<sup>54,55,76,99</sup>

#### 3.3.2. CMO 3b: the impact of positive change on the immediate social network

Some interventions documented positive ripple effects in men's close networks following intervention engagement.<sup>52,62,70,79,99</sup> In *Premier League Health*, men's increased self-efficacy not only benefitted their own well-being but also fostered the development of new social relationships and stronger bonds with their families.<sup>97</sup> This boost in self-efficacy empowered the men to distance themselves from health-damaging environments, such as drinking and drug cultures, motivating them towards healthy behavior change. A similar pattern was observed in *ViSiT*, where participants stated that healthy lifestyle choices and weight loss had both a direct effect on the men and an indirect influence on their family and colleagues.<sup>77</sup> For example, family members often adopted the participants' healthier eating habits, and colleagues were inspired to make similar changes to their own diets. In *Hockey FIT*, family support played a crucial role in the success of health behavior maintenance, with participants reporting that support from their families, particularly in modifying dietary choices and alcohol consumption, was crucial.<sup>69</sup> Finally, in *Sons of the West*, men developed an outwardly focused mindset, showing increased attention to family members and embracing an enhanced sense of reciprocity.<sup>57,70</sup> Moreover, they actively shared information about the intervention with their families, friends, colleagues, clubs, and community groups, serving as sources of inspiration for others to join.

#### 3.3.3. CMO 3c: family vs. exercise conflict

Some interventions documented barriers related to recruitment and engagement in HP interventions and maintaining

health behaviors.<sup>55,56,68,77</sup> In *The Alpha Intervention* and *FFIT*, common barriers were related to participants' family commitments and occupation.<sup>56,68</sup> Men often perceived a conflict between exercise and family responsibilities, leading to a decrease in PA and poor food choices. The transition into a family-centered lifestyle further impacted their ability to engage in healthy eating and PA. For example, in *The Alpha Intervention*, responsibilities associated with work and fatherhood reduced their flexibility and impacted their preference for convenient food options.<sup>58</sup> In *Walking Football*, the intervention seemed more attractive to men who had retired because they were more inclined to seek social interaction, which motivated their participation and regular engagement with peers.<sup>52</sup>

#### 4. Discussion

HP interventions delivered in sports clubs have demonstrated improvements to a range of health outcomes, including weight, PA, diet, and mental health. This RRR investigated how and under what circumstances HP interventions delivered through sports clubs can promote men's health by examining recruitment, engagement, and health behavior maintenance. While HP was broadly conceptualized in this study, interventions primarily focused on outcomes related to weight loss and PA.

We showed that utilizing professional sports clubs to communicate, recruit participants, and implement HP interventions was a feasible strategy due to fan identification and reduction of skepticism towards HP, as well as accessible and trusted branding. Given men's ill representation in healthcare and community settings,<sup>16</sup> such HP interventions are important for addressing the gender gap in diabetes and cardiovascular diseases.<sup>9,10</sup> Whereas health has historically been viewed as feminine,<sup>47</sup> the interaction between sports and the construction of masculine identities is well-established.<sup>101</sup> According to Courtenay, men's health behaviors are influenced by their interpretation of the dominant—and hegemonic—masculine ideals.<sup>47</sup> Correspondingly, some men's skepticism towards HP can be alleviated by leveraging and redirecting traditional masculine ideals: for example, by using sports clubs (traditionally male domain) to promote health (traditional female domain).<sup>47</sup> This aligns with our findings. Our findings also indicate that using sports to engage men in HP may invoke a competitive environment (which aligns with how men stereotypically enact their gender<sup>20</sup>), thereby promoting playful aspects of the game (e.g., teamwork) in some cases and exclusivity (e.g., competition based on rivalry, dominance) in others. Such findings have also been established in investigations of a floor hockey intervention, which facilitated masculine bonding through the physical interactions in hockey within a community focused on improving health.<sup>102</sup> To expand on this, Spandler and McKeown provided a critical interpretation of the role of sports for HP, especially football, arguing that dominant gender relationships and hegemonic masculinities may be both reinforced and reconfigured through sport.<sup>20</sup> In our study, we observed that interventions involving

sports should strive for a balanced approach to competition. Hence, utilizing the branding and events of sports clubs to engage men in HP may also risk limiting inclusivity by only attracting men inclined to depart from traditional masculine norms.<sup>62,68</sup> Our research also indicates that traditional masculine norms are contextual and relational and that they may become less rigid in supportive group settings (i.e., less dominated by stoicism and independence), thereby impacting men's openness towards mental health and help seeking. Therefore, coaching education aimed at facilitating safe and supportive environments may be particularly helpful in mitigating the influence of dominant masculine behaviors. Our research reveals contrasting findings regarding how mechanisms such as competition, identification, and enjoyment in sports can reinforce both positive and negative masculinity norms. This highlights the necessity for context-sensitive HP interventions that address "*the intricate interplay between men's personal experiences and the structural and systemic aspects of gendered power relations*".<sup>103</sup> Accordingly, it is inadequate to view men's health behaviors as merely a way of performing masculinity.

Our study also suggests that a research gap exists in terms of assessing and understanding factors related to health behavior maintenance. The few included studies that examined these links<sup>26,70,74,91,100</sup> underscored the need for involving community stakeholders and locally implementing HP interventions to ensure health behavior maintenance (e.g., working together with local sports clubs or volunteer organizations).<sup>104</sup> However, this seems challenging since community sports clubs experience barriers when it comes to funding and maintaining initiatives to facilitate the kind of HP interventions that can support behavior maintenance in the long term.<sup>104</sup> Further, Frydendal et al. identified how even when a sports intervention is effectively implemented in community sports clubs, the organizational adoption does not automatically generate cultural change.<sup>62</sup> For example, in the *Football Fitness* intervention, the traditional masculine values of the clubs were challenged because, among other factors, the teams did not participate in tournaments, which deviates from the masculine norm of competition.<sup>62</sup> As suggested by Cooper et al., multiple barriers to the implementation of PA interventions exacerbate and affect each other.<sup>105</sup> To ensure intervention sustainability, holistic approaches like health promoting sports clubs (HPSC) may be needed to evoke an HP community setting where sports clubs take on assignments beyond promoting the health of their members.<sup>106</sup> Such a holistic approach has been depicted in a logic model showing how the whole club system and its members contribute to the interventions.<sup>107</sup> Examples of successful HPSC implementation can be found in Ireland, through the Gaelic Athletics Association Healthy Club project,<sup>108,109</sup> or through the Good Sport Intervention in Australia,<sup>110</sup> where organizational change is driving intervention implementation. The absence of holistic approaches documented across these HP interventions, coupled with an emphasis on short-term implementation structures as opposed to a continuous process, hinders long-term sustainability.<sup>106,111</sup> The HPSC presents a holistic, multi-level approach by

encompassing 7 layers (from individual to government authorities) acting on social, economic, organizational, and environmental health determinants for HP through sports clubs.<sup>111,112</sup> For example, policy implementation strategies in sport organizations have shown promising results for alcohol and dietary changes at the individual and organizational level after 1.0–2.5 years.<sup>113</sup>

Though men from diverse socio-economic backgrounds were represented in the HP interventions, there was an overrepresentation of middle-aged and Caucasian men, with few minority populations. Such groups (i.e., the “hard-to-reach”) are important for HP due to their elevated risk for cardiometabolic diseases.<sup>81</sup> Men display masculine behaviors differently depending on various factors, such as ethnicity, SES, geography, and community.<sup>34</sup> Thus, the use of various “safe space” arenas to attract and engage men in HP (e.g., barber shops, workplaces, parks, or pubs) has been recommended.<sup>35</sup> In fact, the latter venue (i.e., pubs) was used in the community-based HP intervention *Men on the Move*. Here, the intervention successfully recruited a diverse group of men by communicating through established and trusted brands (similar to that of professional sports clubs).<sup>114</sup> Similar observations have been made across community-based men’s health interventions, highlighting the need for interventions to be delivered in safe, familiar spaces to avoid hierarchical health care interactions and/or institutionalized care environments<sup>35</sup> (e.g., drug and prison rehabilitation services, unemployment agencies).<sup>82</sup> Intervention accessibility also seemed to be important for recruitment of hard-to-reach men, which is consistent with the existing literature.<sup>115</sup> Despite the potential to use digital technology like smart phones (mHealth) in HP interventions to account for flexibility while removing economic and travel barriers, no mHealth interventions were identified. In summary, using sports club settings may be a feasible strategy to recruit some but not all men to HP interventions. Involving men in the intervention development process may ensure adapted content, improve understanding of how to attract diverse groups of men (e.g., whether digital components would be appropriate), and provide insight into how HP interventions can be sustained in everyday contexts after funding ceases.<sup>17</sup> Thus, we recommend including target participants in co-creation activities. For example, conducting workshops where men are consulted on aspects from intervention design to implementation may foster real ownership and sustainability while better addressing diverse health needs and preferences.

Sports clubs have increasingly served as important vectors for advancing social and environmental endeavors that exert a positive influence on local communities, particularly among socially disadvantaged groups.<sup>116</sup> Such initiatives have seamlessly integrated into the clubs’ overarching Corporate Social Responsibility (CSR) strategies.<sup>117</sup> Significant resources, visibility, and influence enables professional sports clubs to drive initiatives aimed at enhancing community engagement, such as community-based events, youth development programs, charity partnerships, and collaborative projects with local organizations and schools. Our study underscores the significance of the obstacles faced by men when it comes to adhering

to health behaviors and accentuates the substantial role that professional sports clubs can play in the promotion of men’s health. Remarkably, while professional sports clubs aspire to foster HP within their communities, a pronounced paradox emerges in their commitment, as many clubs simultaneously maintain affiliations with betting companies and alcohol suppliers.<sup>117</sup> This contradiction underscores the importance of harmonizing innovation capacity, financial autonomy, knowledge, and human resources, even for organizations of varying sizes, in their pursuit of CSR objectives, as advocated for by Zeimers et al.<sup>118</sup> Collaborative endeavors involving professional sports clubs assume a paramount role in mitigating the commercial determinants of health, by which we mean the “strategies and approaches employed by the private sector to promote products and choices that are deleterious to health”.<sup>119</sup> This potential for HP points to the need for an amplified synergy between public health researchers, practitioners, policymakers, and private entities, including professional football clubs, to holistically address the multifaceted challenges associated with promoting men’s health.

Strengths and limitations of this RRR must be considered when interpreting the findings. This study employed exhaustive methods, including double screening, comprehensive reference checks of included studies and reviews, and involvement of a highly qualified expert and reference panel to ensure the quality and relevance of this RRR. However, our search strategy was limited to the past 10 years and predominantly included websites from federations, and non-governmental organizations, and sports organizations. This restricted search strategy may have resulted in the exclusion of relevant literature from non-peer-reviewed sources, such as dedicated trade publications. Studies of non-experimental designs strengthened CMO configurations by providing insight into real-world contexts and mechanisms, which enhanced the overall robustness and applicability of the findings. Yet, the included studies lacked thorough reporting of contexts and intervention theory, which may have reduced the complexity of the identified CMOs. As such, the hypothesized CMOs should be understood as preliminary and theoretical. We acknowledge that various configurations of the proposed CMOs likely exist and encourage future research to examine these pathways and relationships related to recruitment, engagement, and behavior maintenance in men’s HP interventions.

## 5. Conclusion

Our findings revealed that utilizing professional sports clubs as a setting for HP interventions targeting men was feasible with respect to HP effects, recruitment, and engagement. Mechanisms of recruitment involved a focus on using the identity of sports clubs, overcoming barriers related to masculinity, improving accessibility, and fostering trust. The mechanisms of engagement included experiences of shared identity, the development of safe spaces, inclusive competition in sports, and improved self-efficacy. Limited evidence existed for health behavior maintenance following HP interventions, though involvement of community stakeholders seemed to be



essential. The presented CMOs can support future interventions in developing content, which should also be supported by involvement from target-group representatives. Future interventions are encouraged to (a) employ holistic approaches like the HPSC, (b) target diverse sub-groups of men, and (c) provide long-term follow-up to investigate how health behaviors may be sustained.

### Authors' contributions

AT and LH screened, extracted, and analyzed data, and AT drafted the first manuscript; PBI, JNO, MHR, and CDK conceived of the study, supported analysis, participated in its design and coordination, and helped to draft the manuscript; AvH, PS, and PK conceived the study, contributed to its design as members of the expert panel, extracted data, and supported manuscript writing; THA developed and conducted the search strategy and contributed to the study design; LH screened, extracted, and analyzed data; KHC was part of the reference group and supported utilization of the study aim, identification of grey literature, and data extraction. All authors have read and approved the final version of the manuscript, and agree with the order of presentation of the authors.

### Competing interests

AT, CDK, PBI, JNO, THA, and LH are employed at Steno Diabetes Center (SDC) Copenhagen, SDC Aarhus, and SDC Sjælland, respectively; these are public hospitals and research institutions under the Capital Region and Central Region of Denmark, which are partly funded by unrestricted grants from the Novo Nordisk Foundation. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results. AvH, PS, PK, KHC, and MHR declare no conflicts of interest. All the support had no involvement in the study design and writing of the manuscript or the decision to submit it for publication.

During the preparation of this work, AT used ChatGPT (OpenAI, San Francisco, CA, USA) to improve readability and language. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

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### Supplementary materials

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