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Social Prescribing Initiatives Connecting General Practice Patients with Community-based Physical Activity: A Scoping Review with Expert Interviews

Lene Gissel Rasmussen^{1,2}

Rasmus Østergaard Nielsen^{1,2}

Jemma Hawkins³

Per Kallestrup^{1,2}

Julie Midtgaard^{4, 5}

Knud Ryom⁶

1) Research Unit for General Practice, Aarhus, Denmark, 2) Department of Public Health, Aarhus University, Denmark, 3) DECIPHer, School of Social Sciences, Cardiff University, UK, 4) Centre for Applied Research in Mental Health Care, Mental Health Centre Glostrup, Denmark 5) Department of Clinical Medicine, Faculty of Health and Medical Sciences, University of Copenhagen, Copenhagen, Denmark and 6) Department of Public Health, Applied Public Health Research, Aarhus University, Denmark,

Correspondence: Knud Ryom, Department of Public Health, Aarhus University, Bartholins Allé 2, Aarhus C, 8000, Denmark.
E-mail: knudryom@ph.au.dk

Abstract

Aims: WHO states that physical inactivity is one of the leading behavioural risk factors for disability and mortality in Europe. Social prescribing holds promise as a possible solution, by connecting patients from general practice to community-based physical activity. Although research within social prescribing exists, the process of connecting general practice patients towards community-based physical activity is not well investigated. This scoping review aimed to summarize and synthesise knowledge on social prescribing provided by health professionals in general practice towards community-based physical activity.

Methods: A systematic search for literature in PubMed, Embase, Scopus, SportsDiscus and other sources was conducted to identify initiatives connecting general practice to community-based physical activity. Semi-structured interviews were then conducted with subject-specific experts. Finally, preliminary findings from the literature and the interviews were used in a co-creation process with experts to synthesise and finalize the results of a thematic analysis across data sources.

Results: Based on 19 records, five expert interviews and subsequent co-creation, we identified three themes: a) Barriers and facilitators; b) organisational perspectives; and c) value-based considerations.

Conclusion: This review illuminates the complex nature of social prescribing programs that connect general practice patients to community-based physical activity. But it also presents practical and fundamental considerations when applying social prescribing across different settings.

Key words: Health Promotion, Exercise, Health Services Research, Primary Healthcare, Referral and Consultation, Review, Interview, Social prescribing, Community referral, Co-Creation

Word count: 5.942 (excluding abstract, headings, references, figures and tables)

Main text

Introduction

WHO states, that regular physical activity (PA) is fundamental for individuals to enhance physical and mental health, regardless of their age, gender, or ethnicity¹. Consequently, physical inactivity is mentioned as one of the leading behavioural risk factors for disability and mortality in the European Region^{1, 2}. Maintaining an adequate PA level can be impacted by multiple inhibiting societal and environmental determinants, ultimately leading to a sedentary lifestyle^{2, 3}. Thus, physical inactivity requires intervention addressing multiple levels of determinants of PA^{3, 4}. A participatory community-setting approach⁵ has demonstrated potential in addressing physical inactivity by linking physically inactive citizens with stakeholders capable of helping establish a physically active lifestyle^{6, 7}. General Practice (GP) settings may possess a key position in promoting PA for several reasons; it reaches a significant portion of the population across a life course (in Denmark 85% of the Danish population consult their GP over a one-year period⁸); it possesses a unique opportunity to raise patients' awareness of behavioural risk factors; and, health professionals (HPs) in GP can provide follow-up². However, promotion of PA in GP is challenged by limited time in consultations and HPs' inadequate knowledge of local PA referral options⁸⁻¹¹. Sports clubs (SCs) based in the local community could provide such nearby PA referral options. Hence, connecting GP patients with community-based SCs has the potential to support physically inactive citizens in becoming more active.

The concept of *social prescribing*¹², fostering partnerships between the health sector and civil society, could be a useful tool. Social prescribing can take various forms, but in general involves creation of a referral pathway enabling HPs in GP to address wider health determinants by connecting patients with sources of non-medical support¹³⁻¹⁶ to improve health and well-being¹². Social prescribing initiatives typically use a link worker who identifies relevant community services and provides tailored support for patients to join activities. Thus, social prescribing has the potential to foster social relationships facilitating patients' PA adherence and overall health. Much research already exists regarding social prescribing referral methods^{14, 17}, mechanisms^{18, 19} and implementation^{12, 13, 20}. However, the evidence base is challenged by the diversity of social prescribing initiatives^{12, 20} along with the non-consistent use of the term¹⁵. Thus, scientific literature focusing on the process of connecting GP patients with community-based PA is scarce. To address this knowledge gap, this scoping review aim to summarize and synthesize knowledge on social prescribing or similar initiatives provided by HPs in GP towards community-based PA targeting adults (18+) in western countries (Australasia, Western Europe and Northern America), by: (i) conducting a systematic search of databases including scientific and grey literature; (ii) conducting semi-structured interviews with experts to validate and discuss included

literature; and (iii) summarizing findings to facilitate a co-creation process with experts, aiming to refine and finalize results of a thematic analysis across data sources.

Two research questions (RQs) were generated:

- RQ1. Which inter-sectoral initiatives to connect general practice patients to community-based PA targeting adults (aged 18+), have been implemented and evaluated?
- RQ2. What perspectives exist amongst participants and stakeholders regarding facilitators and barriers related to inter-sectoral initiatives connecting general practice patients to community-based PA?

Methods

A scoping review methodology was deemed the most appropriate, as our aim and RQs are broadly defined. Since a broad range of social prescribing initiatives could be of our interest a scoping review seemed a more obvious choice compared to the classical systematic review. Furthermore, the method allows a broad range of evidence to be included²¹, thus enabling inclusion of initiatives not necessarily described in the scientific literature. f. Also, a scoping review methodology can incorporate co-creation with stakeholders^{21,22}, which allowed practical perspectives of experts to supplement and validate the literature. An a priori protocol was drafted based on guidance by Arksey and O'Malley²¹ supplemented by more recent guidance²³. The protocol was made through an iterative process ensuring that deviations from that protocol were defined once the review process was under way²⁴ and agreed in the review group. Our review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping reviews guidance (PRISMA-ScR)²⁵ to provide transparency. This study is a part of the research group MOVE, who has a vision to develop and implement social prescribing in a Danish context. This study also includes Danish grey literature and expert interviews to inform a context-sensitive development of an intervention, alongside the international literature from our literature searches.

Co-creation with experts

We invited subject-specific experts in a co-creation process to validate and discuss included literature. By introducing a co-creation inspired approach in our review, we aim to seek more practice-oriented knowledge and transferability of our results. The JBI guidance by Pollock et al²² was used to seek co-creation with experts at different steps in the review process. Pollock et al. (2022) recommend that if appropriate and feasible, knowledge users should be included from the start of the review throughout the conduct and final dissemination of results²², suggesting a pragmatic approach to co-creation.....

Step 1: identifying relevant studies and data sources

Search strategies for four databases (PubMed, Embase, SportDiscus and Scopus) were developed in consultation with a scientific librarian with public health as area of specialization. The timeframe was limited to studies published since January 2000. This timespan was chosen since concepts of exercise referral schemes (such rehabilitation programs) and social prescribing were predominantly established in the late 90s and the beginning of 21st century²⁶⁻²⁸, respectively. Furthermore, the 21st century is considered the beginning of collaborative relationships between public and third sector organisations²⁹⁻³¹. In the search of relevant grey literature, the databases of Google Scholar and the Royal Danish Library were used. See appendix 2 for search strategy.

Step 2: data selection

We considered scientific and grey literature for inclusion if the records provided details of how to connect GP patients to community-based PA. Studies were included based on criteria defined in Table 1. Based on the protocol a pilot screening of 100 titles was conducted to check and adapt criteria based on consensus among two of three reviewers. Similar cycles in refining criteria and solving discrepancies continued throughout the screening and selection process. Literature was selected using Covidence Software and performed in four steps; i) removing duplicates, ii) screening titles; iii) screening abstracts; and iv) full text reading, before studies were included for data extraction and analysis. Each title was screened independently by LGR and a master's degree student in Sport Science. The screening of titles excluded papers that clearly did not meet the inclusion criteria, such as studies from non-Western countries or papers explicitly stating specific disease groups. In cases of uncertainty of the paper in question, the abstract was screened. Abstracts and full texts were retrieved and assessed by LGR and supplemented by KR to discuss points of doubt. Citation lists of included studies were hand-searched to identify additional articles. As the data selection proceeded some criteria were discussed and modified in the review group. For instance, we excluded studies with an exclusive focus on measuring the outcomes of interventions, such as post-intervention changes in biomarkers. Our intention was to focus on the intervention process and examine *how* the connection between GP and community-based PA was established. In study selection, '*community-based PA*' was understood as group-based PA delivered in the local community by non-professional instructors³². '*Sports clubs*' were understood according to WHO's definition: '*Private, non-profit organization formally independent of the public sector yet potentially supported by public resources, including volunteer members and a democratic structure, with the main objective of providing sport*'³³. And, '*Western country*' was understood as countries within North America, Europe, Australia or New Zealand³⁴. In addition, '*link worker*' was used in this study to describe an employee who supports the referred individual in the transition between GP and engagement in community-based PA. Various terms for this function are

used in the literature including 'intermediate coordinator'. The term '*PA providers*' was used to describe a voluntary provider of PA without being a SC.

Table 1: Criteria for study selection

Criteria	Inclusion	Exclusion
Study period	Published between 01/01/2000-03/01/2023	Published before 2000
Country	Intervention delivered in a Western country	Intervention delivered in a Non-western country
Language	English (international literature). Danish (grey literature in a Danish context)	Non-English or Non-Danish language
Participants	Adults (aged +18) receiving referral due to inactivity; or patients 'at risk' of lifestyle diseases (e.g., metabolic syndrome, hypertension)	Children and adolescents (<18y); Adults or elders living in residential or sheltered accommodation; or any other patients receiving community-referral due to a diagnosed disorder or condition (e.g., cancer, diabetes, obesity, depression)
Intervention	Inter-sectoral initiatives connecting general practice patients to community-based PA in SCs or another voluntary community organisations (VCO)	Intersectoral initiatives not involving GP referral (e.g. referral from rehabilitation, emergency departments, community pharmacies) and linking towards community-based PA in SCs or a VCO (e.g. PA instructed by professionals). PA sessions without face-to-face interactions i.e., home-based training, pedometer- or telehealth interventions.
Study type	All types of methods and studies based on empirical data	Conference abstracts; Guidelines; Statement papers/commentaries; correspondences; reports; conceptual frameworks

Involvement of experts

Existing networks and citation lists were used to identify Danish experts in the field of referral to community-based PA. A purposeful sampling strategy was used to get an in-depth perspective into the field of interest³⁵. We chose to include experts with experience from different settings such as research, municipal preventive care, and national sports federations. Six were contacted and five experts (two women and three men) agreed to participate in an interview followed by a co-creation process in the synthesis of evidence. To maintain anonymity, it is not possible to describe the experts in more detail. LGR conducted semi-structured individual interviews, which lasted 40-50 minutes and were located according to the participant's preference, mostly at their workplaces. Prior to the interview each participant was provided written information regarding the study aim and themes to discuss. The structure of the interview guide followed the chronology typically found in social prescribing interventions^{14, 36}: 1) GP referral; 2) Linking Process; and 3) Engagement in community. The

interview guide was piloted before the first interview to test that questions were easily understood. Open-ended questions³⁷ allowed the participants to present their views and experiences, such as “*What can promote an inter-sectoral collaboration between SCs and GPs? Are there barriers?*”. The experts were informed about the research process and their opportunity to discuss the preliminary results. All five experts agreed to be contacted when the preliminary results were available. In September 2023, a 15-page report describing the preliminary findings was shared with the experts and they were invited to review it, answer questions, and provide response within 2.5 weeks either by email, text-comments or through a follow-up interview. In absence of response, individual experts were informed about the progress despite his/her lack of input. 4 out of 5 returned response within one month. Responses ranged from validation of own citations to more in-depth discussions, adding further nuances to the interpretation. Selected input from the expert interviews and their response were incorporated into the analysis by the first and last author in agreement based on saturation of data in a thematic analysis across all data sources (scientific literature, grey literature, expert interviews and the received feedback)..

Stage 3: charting the data

To extract data from scientific and grey literature a charting table was drafted, pilot-tested and the categories were agreed in the review team²³. Data items were extracted in the following categories: Author; Year; Location; Type of PA Intervention; Target Group; Study Aim; Methods; and Key-findings. Data extraction was conducted by the first authorGR, and uncertainties were solved through discussions with the last author. The data charting, coding and analysis were conducted using NVivo 13 Software.

Stage 4: collating, summarizing, and reporting the results

A thematic analysis^{38, 39} of the literature and transcribed interviews was conducted to synthesize findings across the multiple sources of data. The thematic analysis consisted of six steps³⁹; (a) familiarization with the depth and breadth of data through reading, re-reading and searching for patterns; (b) generating initial codes for each data source; (c) combining different codes to generate data-driven themes in each group of data; (d) reviewing themes across groups of data and refining them into a ‘thematic map; € defining and naming overarching themes; and (f) writing the findings of the thematic analysis. We used a socio-ecological perspective⁴⁰ to provide an overview of barriers and facilitators. Built on the socio-ecological model, this perspective implies the importance of networks of people and structures that surround an individual. It is often within public health used to understand the different determinants which affect the individual, from various levels of influence. If there were no data, levels were not mentioned in the results. All steps in the analysis were conducted

in cooperation between the first and the last author. After receiving feedback from 4 out of 5 experts on preliminary findings, themes were redefined and finalized. The overall use of data is illustrated in Figure 1.

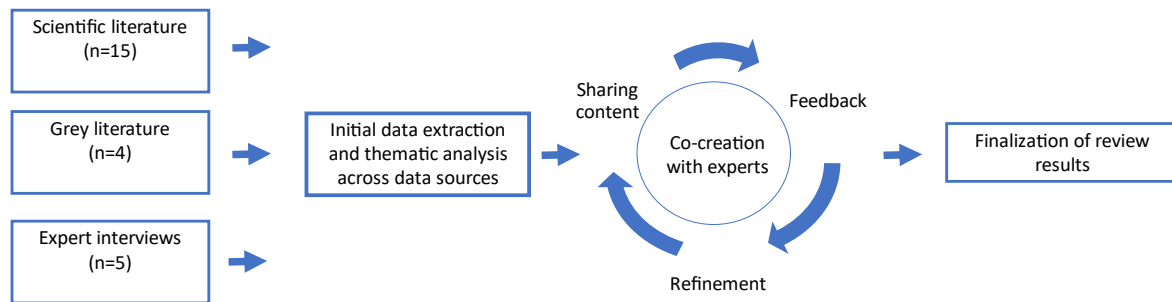


Figure 1: Overview and analysis of data

Ethics

In accordance with Danish law, authority approval of non-invasive medical research is not required⁴¹. All experts were informed about the study aim and provided full consent before participating in the interviews.

Results

9095 scientific articles were identified through searching in four databases. 8575 were excluded based on titles screening; 411 were excluded based on abstract. Full texts were retrieved for 110 records, of which 15 were deemed eligible for inclusion. Additionally, 43 grey literature records were identified through searching in other sources; 33 were excluded based on titles and abstracts. Ten records were retrieved in full text and 4 were deemed eligible for inclusion. Overall, 19 records were included in the study. The inclusion/exclusion process is depicted in Figure 2.

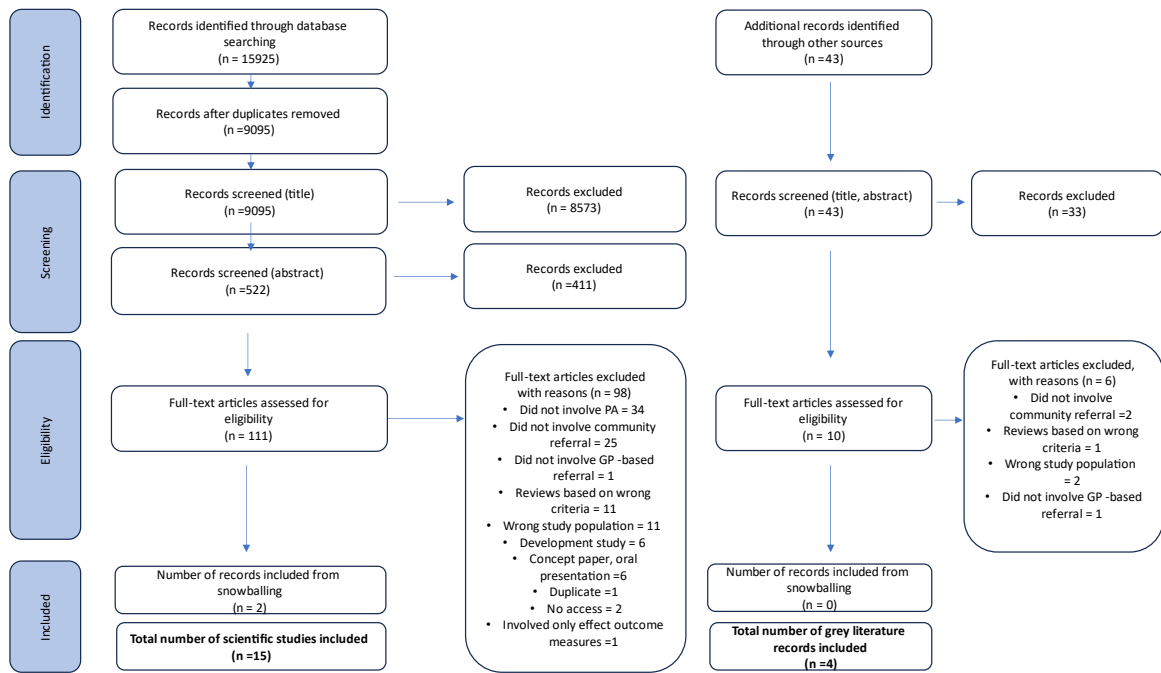


Figure 2. Flowchart of the literature search conducted

The included studies were published between 2004 and 2022. The study designs included qualitative studies such as interviews, focus groups (n=8 | 42%); surveys (n=6 | 32%); mixed methods (n=3 | 16%); register-based (n=1 | 5%); and review (n=1 | 5%). Forty-two percent (n=8) of the included studies were conducted in the UK, making this the largest geographical contribution (Table 2).

Based on thematic analysis of the included literature and interviews, three overarching themes were identified: a) Barriers and facilitators; b) organisational perspectives; and c) value-based considerations.

Table 2: Study characteristics

Scientific literature							
	Authors, Year	Location	PA intervention	Target group	Aim	Methods	Key findings
	Wormald, H. et al. (2004) ⁴²	North Yorkshire, UK	Exercise referral scheme (ERS)	Sedentary individuals	<i>'to explore patients' perceptions of general practitioner (GP) exercise referral (ER) schemes with a view to providing a better service for future patients'</i> ⁴² .	Qualitative focus group: Thirty adult males (n=10) and females (n=20) participated. All had attended at least one exercise in the ER scheme.	Participants enjoyed the ERS, which seemed to improve levels of PA and mental health. Recruitment was hindered by low awareness among HPs. The supervision, support, structure, and social interactions offered by the ERS seemed to motivate participants' PA adherence.
	Morton, K. et al. (2008) ⁴³	UK	Exercise referral scheme (ERS)	Patients with specific health conditions such as obesity, hypertension and mild anxiety/depression	<i>'to examine the extent to which self-determined motivation (SDM) is fostered through an ERS, as well as the extent to which patient motives are related to their exercise adherence'</i> ⁴³	Survey: 30 patients enrolled in an ERS	Over the initial 6 weeks of ERS, SDM rose among participants. Adherents reported higher SDM than non-adherents in week 1 and 6. SDM also increased among withdrawers. Follow-up revealed that dropout resulted from time constraints or health issues not necessarily lack of motivation.
	Markland, D. et al. (2010) ⁴⁴	UK	Exercise referral scheme (ERS)	Individuals who are considered to benefit from increased PA	<i>'to examine the relations between perceptions of need support provided by exercise facility practitioners and clients' behavioural regulations for exercise among individuals in an ERS and to determine whether these relations are mediated differentially by satisfaction of the needs in self-determination theory (SDT) competence, autonomy and relatedness'</i> ⁴⁴	Survey: 136 adult women who had taken part in a ten-week ERS during the previous year	HPs involved in ERS can by advantage promote all three SDT needs, especially autonomy. The ERS target group is often unfamiliar with exercise communities, why offering direct interpersonal support is advised.
	Tava'E, N. et al. (2012) ⁴⁵	Auckland, New Zealand	The Green Prescription programme (GRx)	Physically inactive adults, adults with low socioeconomic status, and Maori and Pacific people.	<i>'The aim of this paper is to investigate experiences of the GRx programme from Pacific women's perspectives in Auckland, New Zealand'</i> ⁴⁵	Qualitative individual semi-structured interviews with twenty Pacific women who had participated in a GRx programme and afterwards been independently active	Participants reported positive experiences with the GRx and improved health outcomes e.g. weight loss and increased fitness levels. Social support from HPs, instructors, family, friends, and fellow Pacific women, along with health improvements motivated PA adherence.
	Leemrijse, C. et al. (2015) ⁴⁶	the Netherlands	Not mentioned	Patients in general practice who are insufficiently active and have, or are at risk for inactivity related health problems.	<i>'to get insight into GPs perceptions and current practices regarding referral of patients to community exercise facilities outside the healthcare setting. Furthermore, existing collaboration with exercise providers was investigated and motivators and barriers for referral'</i> ⁴⁶	Survey: 340 Dutch general practitioners completed the questionnaire	Partnerships between Dutch GPs and exercise providers are rare, but GPs in partnerships refer more patients to PA. GPs stress that partnerships should not impose additional time commitments. An intermediary coordinator, knowledgeable about local exercise providers, can ease communication between GPs and exercise providers.

Leenars, K. et al. (2016) ⁴⁷	the Netherlands	The Care Sport Connectors (CSC)	Adult primary care patients	<i>'to assess perceptions of primary care, welfare, and sport professionals towards the CSC role and the connection between the primary care and the PA sector'</i> ⁴⁷	Qualitative focus groups: Nine focus groups were held with primary care, sport, and welfare professionals within the network of 10 CSCs.	Primary care, welfare, and sport professionals ascribe three roles to the Community Sports Coordinator (CSC): <ol style="list-style-type: none"> 1. Broker role: Stimulating partnerships between GPs and exercise providers. 2. Referral and encouragement: Guiding patients to exercise providers. 3. Facilitator: Providing updated insights of suitable PA options. The professionals viewed the CSC's roles promising. However, the following barriers were noted, including HPs' lack of time, funds, and knowledge as well as lack of appropriate PA options and competent instructors.
Leenars, K. et al. (2017) ⁴⁸	the Netherlands	The Care Sport Connectors (CSC)	Adult primary care patients	<i>'to try to explore which structural embedding is the most promising for CSCs' work'</i> ⁴⁸	A multiple case study using survey and individual interviews with 13 CSCs employed to connect primary care and the PA sector for adults in the Netherlands.	The study identified three types of structural embeddings of the CSC role: Type A CSCs focused on their own activities, like fitness tests, to reach residents and guide to local PA options. Type B and C (integral approach) CSCs established the connection by implementing different kinds of activities aimed at different sub-target groups, organised referral schemes and network meetings. Type B and C CSCs worked more closely with primary care and exercise providers, why the integral approach appears more promising for effective patient referral.
Leenars, K. et al. (2018) ¹¹	the Netherlands	The Care Sport Connectors (CSC)	Adult primary care patients	<i>'to explore CSCs' role in connecting the primary care sector and the PA sector'</i> ¹¹	A multiple case study using individual interviews with 15 CSCs employed to connect primary care and the PA sector for adults in the Netherlands.	The CSCs perceived themselves to fulfil three roles: <ol style="list-style-type: none"> 1. Broker: Stimulating network and connection between primary care and exercise providers 2. Referral: Directing patients towards suitable PA options 3. Activity organiser: Collaborating with exercise providers and supporting instructors. Roles varied due to structural embedding. Barriers of connecting primary care and exercise providers included HPs lack of time and knowledge as well as suitable PA options and competent voluntary instructors.
Andersen, P. et al. (2019) ⁴⁹	County of Kronberg, a small rural county in the southern	Physical activity on prescription (PAP)	Patients who might benefit from increased PA	<i>'to explore influences on PAP recipients' engagement in physical activity from a long-term perspective'</i> ⁴⁹	Qualitative Individual semi-structured interviews with 13 PAP recipients in routine care having received a PAP 1.5–2.5 years earlier.	Ten factors were found to influence PA adherence in the 1.5–2.5 years after receiving PAP (COM-B): - Capability: 1) Tailored PAP to the individual's physical capacity; 2) considering past PA experiences

		part of Sweden					<ul style="list-style-type: none"> - Opportunity: 3) Receiving a prescription, 4) professional counselling and follow-up; 5) prescriber-counsellor collaboration; 6) access to suitable PA options; 7) a balanced life situation; 8) Social support - Motivation: 9) Desire for health improvements; 10) finding encouraging activities <p>PA adherence after PAP should be understood in the broader context of participants' life and not simply as a task for the individual.</p>
	Buckley, B. et al. (2020) ⁹	Liverpool, UK	Exercise referral scheme (ERS)	At-risk patients from diverse socio-economic backgrounds in general practice	<i>'to investigate GP perspectives on PA counselling and referral and interpret these within the context of the socio-ecological model (SEM)'</i> ⁹	Mixed-methods design study: 56 GPs completed a survey and 7 GPs took part in an in-depth interview	<p>Influences on PA counselling and referral in primary care were identified at different SEM levels:</p> <ul style="list-style-type: none"> - Policy: provision of education, making PA a strategic priority in primary care - Organisational: systems for patient feedback, e-referral - Interpersonal: Involving other HPs in primary care, patient-related factors - Intrapersonal: GPs' knowledge of ESR, GPs' own level of PA <p>Multi-level strategies are suggested to support the use of ERS.</p>
	Carstairs, S. et al. (2020) ¹⁰	Scotland, UK	jogscotland	Primary care patients	<i>'to identify methods, and explore barriers and facilitators, of connecting primary care patients with PA opportunities from the perspectives of both health professionals (HPs) and patients, using the example of jogscotland'</i> ¹⁰	Qualitative individual semi-structured interviews with respectively fifteen HPs with a patient-facing role within NHS general practice (both GPs and practice nurses); and Fifteen patient participants being active at least 3 days per week.	<p>Findings revealed three methods for connecting patients to jogscotland:</p> <ul style="list-style-type: none"> - Informal passive signposting: Displaying PA options in waiting areas. - Informal active signposting: Providing leaflets during consultations. - Formal referral: HPs referring patients to an intermediary coordinator to discuss preferences and PA options. <p>No single method is best due to individual preferences and resources.</p> <p>HPs' barriers in referring patients:</p> <ul style="list-style-type: none"> - Patient-HP interaction. - Beliefs about low patient engagement and motivation - Lack of time to address PA. - Societal responsibility – not solely GPs' - Unawareness of appropriate PA options <p>Participants' facilitators:</p> <ul style="list-style-type: none"> - HP's approach in addressing PA without imposing guilt or shame. - Providing tangible PA options

							- Meet and greet with peers and social support
Fleming, J; Bryce, C. et al. (2020) ⁵⁰	West Midlands, UK	The Parkrun Practice Initiative	Primary care patients who would benefit from increasing PA	<i>'To investigate engagement with and delivery of the parkrun practice initiative in general practice.'</i> ⁵⁰	Mixed methods study design: 306 parkrun practices completed the online survey; eleven interviews and a focus group. The interviewees and focus group participants comprised GPs (n = 6), a GP trainee (n = 1), practice nurses (n = 3), a healthcare assistant (n = 1), and practice managers (n = 5).	Key motivators for becoming a parkrun practice: - Improve patients' health by referring to community opportunities. - Improve links with the local community. - Boost practice image - Improve staff health . Challenges involved: - Time scarcity in consultation and for colleague discussions. - Lack of motivation A key factor in succeed implementation is early staff engagement	
Joelsson, M. et al. (2020) ⁵¹	Gothenburg, Sweden.	Physical activity on prescription (PAP)	Adult primary care patients with at least one component of the metabolic syndrome, and insufficiently physically active according to the public health recommendation	<i>'To explore how physically inactive patients, with metabolic risk factors, experienced long term treatment with physical activity on prescription'</i> ⁵¹	Qualitative individual semi-structured interviews with twenty physically inactive patients, with one or more metabolic syndrome components	Three key themes emerged: 1. Tailoring PAP to the individual promotes PA. Written prescriptions and motivating interviews with HPs seemed promising. 2. The participants' opportunity to plan and make their own choices in scheduling PA was perceived important. HPs' knowledge of PA options was vital. 3. Professional follow-up promoted motivation. Support from family and other participants was important.	
Wade, M. et al. (2012) ⁵²	Essex, UK	Let's Get Moving [LGM]	Primary care patient aged 18–74 years, and with a body mass index (BMI) between 28 and 35 kg/m ²	<i>'to explore the predictors of dropout within a community-based PA programme that utilizes motivational interviewing (MI) techniques'</i> ⁵²	Survey: 619 participants who attended the first year of a community-based PA programme LGM	277 (44.7%) participants dropped out at 12 weeks. The findings reveal three variables that significantly impacted the likelihood of dropout at 12 weeks: - Those over 61 years are less likely to dropout. - Those with high PA levels at baseline are less likely to dropout. - Those with musculoskeletal disorders and endocrine system disorders have an increased likelihood of dropout.	
Fleming, J.; Wellington, C. et al. (2020) ⁵³	West Midlands, UK	The Parkrun Practice Initiative	Primary care patients	<i>'to investigate the interaction between parkrun events and practices in order to understand why and how parkrun events' promote such linkage, and their experiences of doing so'</i> ⁵³	Survey: 322 parkrun event teams completed the survey.	Event teams linked with practices were positive. Challenges in linking and maintaining collaboration with general practices centred on: - Initiation of contact and knowing who to contact. - Lack of time among volunteers - Clarifying responsibility in the two-way collaboration. The following initiatives are recommended:	

							<ul style="list-style-type: none"> - Ensure clear routes of communication e.g. via an intermediate coordinator. - Ensure mutual understanding and alignment of expectations. - Consider how activities to be most easily implemented in both contexts
Grey literature							
	Authors Year	Location	PA intervention	Target group	Aim	Methods	Key findings
	Balle, U. et al. (2005) ⁵⁴	Aarhus, Denmark	“Exercise by Invitation” (EI)	<p>i) Physically inactive individuals without a specific diagnosis of illness but who are considered to be at risk of developing a lifestyle-related disease.</p> <p>ii) Individuals with a well-diagnosed lifestyle-related disease where impairment can be prevented through exercise.</p>	<p>ii) To investigate whether there can be synergy between the public healthcare system and voluntary SCs.</p> <p>ii) To provide a preventive intervention towards citizens who can benefit from an increased level of PA level. Either because they are considered at risk of developing a lifestyle disease or in terms of avoiding further impairment. Specifically, it was desired to investigate whether an invitation from healthcare professionals to engage in exercise can make citizens more physically active in local SCs.</p> <p>The evaluation aimed to investigate:</p> <p>i) How many patients are invited to participate in EI?</p> <p>ii) Do the invited patients follow through with the encouragement?</p> <p>iii) Do the encouraged patients continue to participate in PA?</p>	<p>Register-based: Number of invitations from healthcare professionals</p> <p>78 general practices; 2 medical wards; and 1 interest group participated as the group of HPs</p> <p>Register-based when participants enter the SCs. Follow questions by telephone.</p> <p>31 SCs offering 95 different exercise programs participated</p>	<p>Evaluation outcomes</p> <ul style="list-style-type: none"> - 308 patients were invited to participate in EI by their GP; Fifteen of the invited patients reached out to a SC; seven began exercising in a SC; and six individuals remained active. <p>Barriers among HPs:</p> <ul style="list-style-type: none"> - Insufficient understanding of the project - The intervention is one of many options. - Lack of time and resources - The project might be short lived. - GPs not economically compensated. <p>Barriers among the target group:</p> <ul style="list-style-type: none"> - Lack of motivation to make first contact with SCs - Lack of confidence in fitting into a sport clubs’ culture. <p>Barriers in the SCs:</p> <ul style="list-style-type: none"> - Lack of motivating exercise options - The contact persons in each club have not been prepared to receive the target group.
	Bredahl, T. et al. (2008) ⁵⁵	Frederiksberg, Denmark	“Exercise by counselling (EC)”	<p>Citizens who are at risk of developing lifestyle-related disorders due to low physical activity levels (less than 30 minutes per day).</p> <p>236 individuals participated in EC</p>	<p>i) Describing the participants based on sociodemographic variables.</p> <p>ii) Analysing whether EC have an effect on the participants' self-rated health, self-rated physical fitness, physical activity levels, attitude towards exercise, and readiness to change.</p>	<p>Survey among EC participants at the start of the intervention (T0=36), after 4 months (T4=27), after 10 months (T10=17) and after 16 months (T16=5)</p>	<p>i) Description of participants</p> <ul style="list-style-type: none"> - 30 % men; 70 % women; average age: 61 y. - Poor health at the onset of EC characterized by low level of self-rated health and PA and a higher BMI compared to the general Danish population. - The average income is lower compared to the population, where the intervention takes place (Frederiksberg)

					iii) Describing the participants' satisfaction with being part of EC		ii) The effect of EC <ul style="list-style-type: none"> - The intervention appears to influence participants' readiness to change towards a more physically active direction. However, no significant difference in level of PA was observed. - The participants did not experience any improvement in self-rated health. The low number of participants may explain this. iii) <ul style="list-style-type: none"> - Participants are satisfied with the EC intervention
	Andreassen, P. et al. (2007) ⁵⁶	South Denmark Region, Denmark	"Physical Exercise as Medicine" (EM)	Citizens who are at risk of developing lifestyle-related diseases due to low levels of physical activity, as well as individuals with a diagnosed lifestyle-related disease. 93 individuals participated in EM	The aim of the evaluation was to investigate the significance of organizations and communities offering exercise opportunities as well as the exercise facilitation in achieving and sustaining increased PA among participants in the MSM program.	Mixed methods study: <ul style="list-style-type: none"> - Six individual interviews with EM participants - Twelve individual interview with EM participants - Eight individual semi-structured interviews with chairmen or instructors in SCs - Field work during exercise counselling and exercise classes - Survey among EM participants at the start of the intervention), after 4 months, 10 months and 16 months - E-survey among 63 SCs 	Participants reported: <ul style="list-style-type: none"> - Satisfaction with the exercise counselling. - Engagement in many forms of exercise mostly outdoor or in at the gym. - Prioritize activities that were enjoyable, contributes to weight loss, and is led by a skilled instructor. - Illness and injuries as the most mentioned reasons for drop out. - Lack of familiarity with SCs. SCs reported: <ul style="list-style-type: none"> - Less focus on organizing PA for individuals who are unused to exercise, compared to commercial gyms. - The offered activities depend on volunteers' interest and time.
	Bredahl, T. et al. (2010) ⁵⁷	Denmark	Exercise on Prescription (EoP)	Physically inactive adults (over 18 years old) who either had been diagnosed with lifestyle-related diseases or were in the risk group for developing these diseases.	To follow up on the results that regions and municipalities have gathered through evaluations since the first Danish EoP project in 2002. Additionally, the report aims to suggest a definition of EoP, how the programs can be organized, which stakeholders can be involved in different EoP programs.	Review: 95 references including national and international quantitative, qualitative and mixed-method studies on EoP schemes or similar	<ul style="list-style-type: none"> - The EoP participants were diverse in needs, motivations, and experiences regarding PA. - The referral of participants towards exercise on their own was not effective. - Psychological factors such as readiness for change, did not seem to be crucial to maintain PA levels - The participant's relationships with HPs, family, friends and fellow participants seem to influence PA adherence - Those who completed EoP had initially better health than those who dropped out during EoP

Theme 1: Barriers and facilitators

Having a variety of methods to connect GP patients to community-based PA according to patients' resources and needs is suggested¹⁰. However, this is best understood through different phases comprising three actions: 1) PA referral in GP, 2) Receiving support from a link worker; and 3) Engagement in community-based PA. Accordingly, we present this theme in Phase 1-3, facilitators and barriers are elaborated at different socio-ecological levels.

Phase 1: Physical activity referral in GP

Carstairs et al. (2020) described that general practitioners prefer to wait for the right opening in their interaction with patients, preferably if the patients mention the subject of PA themselves. Also, a PA referral may seem inappropriate if the patient is struggling with other health issues. Thus, general practitioners consider the timing¹⁰ and appropriateness⁹ of suggesting a PA referral in relation to the patients' overall health. General practitioners' beliefs about patients' acceptance, ability and resources to handle a PA referral seem to influence whether a PA referral is suggested¹⁰.

Facilitators

At the individual level, the motivation and prioritization of PA among general practitioners seems to influence the usage of PA referrals. General practitioners' knowledge of PA options, such as inclusivity, variety and accessible price, seem to facilitate referral^{46, 47, 58}. Also, seeing PA referral as a tool to promote equity in health appears to promote its usage⁵⁹. General practitioners who themselves are physically active seem to promote PA more often⁵⁴. For the individual patient, receiving a referral with concrete information of PA options, rather than an open recommendation, seems more effective in engaging the patient^{46, 54}. In the Swedish PAP intervention, patients preferred a written referral rather than an oral recommendation⁴⁹. Buckley et al. (2020) found general practitioners preferred an e-referral system rather than paper-based approaches⁹.

At the interpersonal level, general practitioners who communicate the connection between the benefits of PA in connection with patients' health, seem to improve patients' acceptance of a PA referral¹⁰.

At the organizational level within GP, having a strategic prioritization of PA by delivering knowledge and education can facilitate PA referrals⁹. Having cross sectoral partnerships with PA providers also seem to facilitate the usage^{46, 47, 54, 56}. Setting up feedback systems is also suggested⁹, as general practitioners who receive feedback about patients' progress seem to use PA referrals more frequently⁴⁶. Another facilitator is to involve other HPs in GP, such as practice nurses, who can manage tasks in PA referrals^{9, 11, 46}. In addition, collaboration with- and visibility of link workers within practices may also remind HPs of the referral option^{11, 42, 54}.

Barriers

At the individual level, lack of personal motivation, interest, and prioritization of PA^{11, 53, 59} by the general practitioner are suggested as barriers for general practitioners' use of PA referrals. Thus, the PA referral risks being dependent on general practitioners who are passionate about PA^{42, 54}. Another common barrier is that general practitioners can be skeptical of PA providers; What competencies does the PA instructor possess? Is it an affordable offer^{10, 11, 46, 47}? And is it a permanent offer? (Expert 5). Thus, uncertainties and lack of knowledge about the referral process and PA options seem to be a common barrier^{9, 10, 46, 47}. Finally, lack of time during consultations^{9-11, 46, 54, 58, 59} is one of the most reported barriers among GPs to use PA referrals.

At the interpersonal level, not having enough time to discuss the referral tool with colleagues⁵⁸ is mentioned in one study.

At the organisational level, GP not being economically compensated for making referrals may also be a barrier⁵⁴.

Phase 2: Patient receiving support from a link worker

If patients are expected to contact PA providers themselves after referral, this seems to be a barrier for continued engagement^{10, 54}. Hence, an employed link worker to connect patients with community-based PA providers is often suggested across the literature^{9-11, 47-49, 51, 54, 55}.

Facilitators

At an individual level, the link worker should possess up-to-date knowledge of relevant PA options (e.g. time, location, price and participants)⁵⁶. Offering this knowledge seems to be appreciated by patients^{10, 47, 49, 56} and by HPs in GP^{9, 10}. Having access to a link worker with current knowledge of local PA options also enable patients to make their own choices⁵¹, promoting autonomy which is essential to motivation⁶⁰. Expert 2 emphasized the importance of cherishing patient's self-determination and ownership in the referral process:

"If people feel like they are being told that they are wrong as they are, they will naturally react with resistance. The beauty of social prescribing is that we can suggest new possibilities and behaviors without giving the individual the impression that they are living their life wrongly." (Expert Interview 2)

At inter-personal level, offering a tailored referral was another central task of link workers^{11, 47, 49, 51, 56}. The experts also highlighted the need for an individualized referral process according to citizens' needs and external circumstances:

"Here, we are dealing with individuals who may never have been part of a SC community or perhaps it has been a very long time ago. (...) They simply need to be taken by the

hand and guided. But that structure for taking people by the hand and connecting them can be done in different ways." (Expert Interview 1)

Offering social support and flexible follow-up in the referral process is also highlighted⁵¹, since physically inactive citizens often experience concerns when initiating PA in an unfamiliar setting^{11, 46, 49}. Likewise, support and follow-up from a link worker can be crucial for participants' belief in their ability to be physically active on their own⁵⁵. Receiving support from family and friends during the initiation and adherence of PA was also emphasized⁵¹.

The link worker's ability to collaborate with HPs in GP and PA providers was highlighted as an important organizational asset to fulfil the referral function¹¹. In GP, important tasks often involved raising awareness of the referral tool, while among PA providers actions involved fundraising, advising how to adapt activities to certain target groups^{10, 11, 42} or identify volunteers to initiate PA offers with low intensity and skills required (Expert 5).

Barriers

At inter-personal level, the link worker role risks being a barrier for patients' sense of self-responsibility for continued PA participation⁵⁶. In addition, patients may experience a sense of guilt if they do not comply with expectations of receiving a PA referral⁵⁶. Carstairs et al. (2020) described the risk of patients feeling 'parented' when receiving a PA referral. Still, being encouraged towards PA options is an important motivational factor and lack of follow up from HPs in general practice can be a barrier for sustained PA⁴⁹. Hence, HPs in general practice and link workers need to find a delicate balance of supporting and directing patients in the referral process¹⁰.

At organizational level, limited access for link workers to collaborate with HPs in GP can be a barrier for receiving referrals^{11, 59}.

Phase 3: Engagement in community-based PA

The literature describes a variation in how engagement in PA was planned ranging from referral to 'open-to-all' activities⁵³ to more individualised approaches specifying frequency, duration, and intensity of PA participation⁵¹.

Facilitators

At an individual level, achieving positive health outcomes from PA such as increased fitness levels is a motivational factor in target groups^{45, 49, 51}. In addition, enjoyment of PA, rather than feelings of obligation and external pressure, seem to motivate continuation of PA. These positive experiences were found in activities that included socialization⁴⁹. Enjoying PA also promotes regular engagement, resulting in positive health outcome in a positive upward spiral⁴⁵. On the other hand, Expert 2's

experiences underline that in some vulnerable patient groups a priori motivation to participate in PA cannot be a requirement to receive a PA referral, since this motivation often arises later when experiencing the activity: *“Motivation arises in the activity (through experience) and cannot be assumed or expected to be present beforehand”*. Hence, some patients must be supported in choosing the PA referral option. (Expert interview 2).

At inter-personal level, receiving a warm welcome in the SC setting (e.g. guided tour) can be important for referred patients⁵⁶. Having a contact person in the SC also facilitated patients' referral^{54, 56}. Carstairs et al. (2020) stress the impact of having supportive co-participants for patients' motivation¹⁰, while peer-mentors seem to foster social relatedness and patients' perceptions of their competencies⁴³. PA instructors' support and supervision also seem to be crucial for patients' motivation and PA adherence^{42, 56}. Andersen et al.'s (2019) results indicated that participants place significant emphasis on being introduced to exercises by instructors⁴⁹. Similar, Leenars et al. (2018) stress the importance of instructors being 'demand-driven' and considering participants' skills and qualifications to participate¹¹.

At organizational level in SCs, having a contact person when collaborating with GPs facilitated referrals as well as receiving information about how many patients to expect^{46, 53}.

Barriers

At individual level, lack of time^{44, 49, 51, 56}, work^{44, 45, 51, 56} and family commitments^{43, 45, 56} among patients were barriers to initiate and adhere to a PA referral. Also, limiting disability or disease^{43, 51, 52}, prolonged transportation time^{45, 56}, and the prize paid to participate in the preferred PA options^{51, 56} were mentioned as common barriers for patients to engage in PA. Furthermore, some patients may not believe that the range of activities offered in SCs are suitable for them⁵⁴.

At inter-personal level, not feeling comfortable in a group can be a barrier for patients' further participation and adherence⁴⁹. Markland et al. (2010) described that the social environment in a PA setting is often unknown for physically inactive target groups, why offering direct personal contact upon entry is recommend⁴⁴. Furthermore, if participants experience lack of assistance and supervision from instructors, they seem more prone to drop out⁴².

At organizational level, lack of time among volunteers to engage in other tasks than delivering PA sessions, such as collaborating with GP, can be a barrier in a referral scheme^{11, 53}. Likewise, lack of competencies among instructors to include referred participants was also mentioned as a barrier¹¹.

Theme 2: Organisational perspectives

Methods for organizing and initiating inter-sectoral collaborations between general practices and SCs were also identified and are elaborated in the following section.

Network meetings from the beginning

Several sources emphasized the need for setting up meetings between stakeholders in GP and community-based PA providers⁹ to: establish mutual understanding; align expectations⁵³; and reach agreement on common goals and action plans^{11,47}. Leemrijse et al. (2015) found that whilst HPs in are open to increased collaboration with local PA providers, there were concerns around time commitments that multiple meetings might bring⁴⁶. Yet, Leenars et al. (2016) highlighted, that time is an important factor for stakeholders to get to know each other in inter-sectoral collaborations⁴⁷. Expert 1 highlighted that by meeting early in the process, every stakeholder has a chance to influence the initiative.

Local adaptations in referral models

Fleming et al. (2020) described how Parkrun initiatives implement a referral scheme according to their own context⁵⁸. Similar, Leenars et al. (2017) described that the "Care Sport Connectors" initiative was implemented differently according to local resources and needs⁴⁸. Expert 3 underlined the practical function of local adaptations:

"If you put stakeholders in the same room and go through the referral process, then there are plenty of opportunities (...) but you have to do it locally. Also, because you need to develop concrete actions" (Expert Interview 3)

Still, Expert 3 emphasized the need for structural interventions, such as increased funding, which can make the prioritization of PA referrals easier for both GPs and SCs.

Theme 3: Value-based considerations

Considerations when connecting GP patients with SCs were mostly identified through the experts' interviews. Inputs from these discussions will be elaborated below with reference to the included literature.

Potential target groups for a PA referral towards community-based PA

In Expert 3's opinion most citizens will be able to find a suitable PA offer in a SC. Still, a SC is not necessarily the right fit for everyone: *'There is a large group, who are not suitable for referring into the community SC setting, but rather a referral from physical inactivity to physical activity.'* Expert 2 supported the need of establishing PA programs, which accommodate individuals with specific challenges related to a particular disease:

"People often have preconceptions that the last thing they want, is to be with others who have the same disease as themselves. Based on the idea that it would put them in a bad mood. Or the focus would be solely on the disease. However, they quickly realize that this is exactly what they are exempt from: thinking of themselves and others as different, because this is implicit within. There is a safety in knowing that those you exercise with truly understand your challenges. This creates a freedom to be yourself - an experience which cannot be guaranteed in a regular SC." (Expert interview 2)

Expert 2 suggested that some patient groups risk feeling socially excluded in a traditional SC setting, because of their individual characteristics. Hence, participating in open-to-all sessions, can be a barrier. In the Swedish PAP-intervention, some participants preferred group activities exclusively for referred participants⁴⁹, while Wormald et al. (2004) described how referred participants found the presence of other non-referred participants as intimidating⁴². In general, other participants can contribute to self-consciousness, which can hinder participation and enjoyment in PA sessions^{56, 59}. To better serve these needs, referral options could be broadened towards adapted PA options with flexible participation in diverse settings⁵⁴ such as SCs, patient associations, commercial fitness centers etc. Additionally, considering referrals to other community-based activities, not limited to PA, was suggested by the experts, as being a part of a community is considered the most significant aspect of social prescribing. Still, if patients are motivated to exercise in a SC setting, referral towards existing PA options can be preferable for several reasons. Expert 3 expressed that sticking to what the volunteers are used to, maybe with a few adjustments, increases the likelihood for sustainable PA options. Expert 4 argued that exclusive referral classes are not preferable, because this may hinder social integration in the local community: "*It's not just about getting people to move. It's also about getting them socially integrated*" (Expert Interview 4). Thus, referral towards existing PA options in SCs, which are open to all citizens, can be the preferred choice *if* patients are able to see themselves in that setting.

Responsibility of SCs

From the perspective of SCs, it can be a demanding task to provide PA for physically inactive groups, who may require additional support. Especially if PA sessions are carried out by volunteers, who may not possess the skills to do so. Expert 5 described the importance of not imposing a special responsibility on volunteers, if participants have special needs:

"The SC should not carry that responsibility on its own. That's my opinion. But, if a SC take special initiatives and responsibilities because it's their strength, that's just great" (Expert Interview 5).

Expert 2 emphasized that a treatment responsibility should not be imposed on volunteers. Still, if SCs wish to contribute to preventive healthcare, they should align their activities with the needs and wishes of target groups. Expert 3 argued that certain demands of aligning activities can be placed on voluntary SCs, *if* resources follow such as increased financial support, or improved access to facilities, emphasizing that demands and resources should align.

Discussion

This study aimed to summarize and synthesize knowledge on social prescribing or similar initiatives provided by HPs in GP towards community-based PA targeting adults (18+) in western countries, by: (i) conducting a systematic search of databases including scientific and grey literature; (ii) conducting

semi-structured interviews with experts; and (iii) summarizing findings to facilitate a co-creation process with experts, aiming to refine and finalize results of a thematic analysis across data sources. We included 19 documents and five expert interviews which were subject to thematic analysis and a co-creation process to gain a comprehensive understanding of the data. Three overarching themes were identified; a) barriers and facilitators; b) organisational perspectives; and c) value-based considerations. These themes illuminate the complex nature of initiatives connecting GP patients to community-based PA, ranging from practical implications of barriers and facilitators to more fundamental considerations when establishing connection between a professionalized healthcare system and voluntary-based PA providers. The process of referring patients towards PA providers can take several forms. Carstairs et al. (2020) found three different methods for connecting patients to the “JogScotland”-initiative requiring different amounts of workload for patients or HPs in GP¹⁰. For example, if patients must actively self-refer towards PA providers it requires a certain capacity, while the workload is relatively low for HPs in GP. This review suggests that a connection process where patients are expected to self-refer can act as a barrier for their further PA engagement^{10, 49, 54}. Thus, a link worker offering a tailored referral process is suggested in several studies^{9-11, 47-49, 51, 54, 55}.

Regarding motivation to undertake PA, social prescribing interventions may influence patients' sense of autonomy. Markland et al. (2010) found that HPs involved in exercise referral schemes can promote all three psychological needs of self-determination theory⁶⁰ (autonomy, competence and relatedness), especially ensuring the need for autonomy⁴⁴. Hence, the support patients receive during PA referrals should encourage PA participation for patients' own reasons and aligned with their individual goals and values. Once again, a link worker with updated knowledge of local PA options could enable patients to make their own choices⁵¹ and hereby promote autonomy. Still, since suggesting PA improvement may also provide patients a legitimacy and external motivation to enhance their level of PA¹⁰, Carstairs et al. (2020) highlighted that HPs need to strike a balance between being mentoring and being prescriptive when referring patients to PA options¹⁰.

In this review, two studies^{53, 56} included perspectives from SCs, while studies exploring patients' experience^{42-45, 49, 51, 52, 55, 56} or perspectives of HPs in general practice^{9, 10, 46, 47, 58} were more prevalent. Studies indicate that there can be several barriers related to SCs, such as a lack of competencies among voluntary instructors¹¹ and lack of interest in the extra effort to include physically inactive target groups⁵⁹. In the worst-case scenario, this could create a barrier to equity in healthcare. As individuals with more resources gain better access to services, socioeconomically disadvantaged groups may be excluded due to higher demands and the preferences of others. To address these barriers further exploration of perspectives of SC stakeholders is warranted in future research.

The findings are in line with those of a systematic review by Kolovou et al. (2013) exploring barriers and facilitators to cross-sector partnerships in promoting PA. Similar to our findings, agreement of shared goals, expectations and roles early on in the collaboration process is suggested to be essential for building trust in cross sectoral collaborations promoting PA⁶¹. However, challenges for stakeholders to find common ground and align internal activities towards the shared goal, may delay the observation of any impact⁶¹, which could call for adopting a systems thinking approach⁶² to go beyond patient-level outcomes and address broader impacts in the system as a whole.

Limitations

The development of the review protocol was an iterative process, in particular, the criteria for in- and exclusion were refined during the selection of studies. As the selection of studies progressed, it became clear that we had to limit the inclusion of studies to focus narrowly on connecting GP patients towards community-based PA in a SC /VCO setting. Therefore, we did not include other initiatives which included referral towards mixed activities, e.g., both PA and singing classes, though this rationale is consistent with our focus on PA, it can be seen as a flaw as other social prescribing activities than PA, are sometimes used in the literature. Furthermore, we excluded studies that may have incorporated community-based PA exclusively assigned to specific disease groups such as patients with diabetes. These restrictions may have limited the inclusion of relevant studies, however we wanted to focus solely on the case for connecting GP patients towards community-based PA for the majority population to make the study as broad as possible to increase relevance and bridge theory – practice gap. The exclusion of papers before the year of 2000 may also have restricted the inclusion of relevant studies, such as reviews with no limitation in year of inclusion. The number of experts interviewed can also be seen as a limitation of the study, whilst the purposive sampling strategy was designed to recruit a diverse sample, experts from other settings may have presented other perspectives. For example, an informant at policy-level, which was not present in our sample. The Danish context in which the experts are recruited, also limits the usability of the results in a global scale⁴. However, the engagement of experts was chosen to value practice-based knowledge and to increase the research relevance by involving experts both as sources of evidence (interviews) and in the discussion of findings (co-creation process)²².

Whether the involvement of experts can be seen as co-creation can be debated. We used the guidance by the Pollock et al. (2022)²² adapted to different stages of our review. To avoid tokenistic engagement, the following key-principles are suggested²²: ongoing bi-directional partnerships, where consumers are valued throughout; co-learning and co-benefit for all parties; power and responsibility equally shared with clear roles; and trust, transparency, and honesty²². Regarding the partnerships, we received response from 4 out of 5 experts. Ideally, we should have waited for all responses. Sharing

the findings in a more accessible way rather than a 15-page report is worth considering. Regarding co-learning and co-benefit, the experts received input from the literature review in the preliminary findings report. Regarding power and responsibility equally shared, the experts were offered to take part in the author group which allowed further ownership in the dissemination of results. Hence, their involvement influenced the finalized findings. Still, some perspectives were excluded by the review team to stay within the scope of the RQs. Finally, regarding trust, transparency, and honesty, the research process was shared with the experts. The co-creation process could have been more fully embedded into the entire review process, involving experts from the very beginning of the review to input into the protocol development and to involve them right through until the end. In sum, some adaptations have been made, which have limited the degree of co-creation. Still, engaging experts has facilitated a practice-oriented perspective in our review. Furthermore, their participation has been particularly useful in identifying both descriptive factors of influence, as well as more value-based considerations. These considerations included discussions of target groups and voluntarism, for which there may not be a clear-cut answer. This supports the usage of multiple sources of evidence when investigating diverse concepts such as social prescribing.

Conclusion

Our findings highlight the complex nature of initiatives that connect GP patients to community-based PA. The identified themes cover the practical implications of context-specific barriers and facilitators at different socio-ecological levels, as well as more value-based considerations when connecting a professionalized healthcare system and voluntary providers of PA. Overall, these influencing factors support the use of a link worker to accommodate barriers experienced in GP and in SCs. This highlights the overarching requirement of prioritizing resources if social prescribing is desired among HPs in GP, volunteers in SCs and the potential target groups. Further research is recommended to explore perspectives in SCs, for instance the SCs perspective on the useability of social prescribing P in their context and their experience with social prescribing.

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