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Benefits and risks of walking football for healthy ageing: a narrative review

Alfie G Price ,[1] Ruth M James,[1,2] John Hough,[1] Philip J Hennis,[1] Ali Ahmed,[3] Ian Varley [1]

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[1]Nottingham Trent University, Nottingham, UK
[2]University of Leicester Diabetes Research Centre, Leicester, UK
[3]University Hospitals of Derby and Burton NHS Foundation Trust, Derby, UK

Correspondence to
Dr Ian Varley;
ian.varley@ntu.ac.uk

ABSTRACT

The global ageing population necessitates public health strategies to address age-related health decline. While physical activity is widely recognised as beneficial, exercise referral schemes often struggle to sustain participation. Walking football, an adapted version of traditional football designed for middle-aged and older adults, offers a unique alternative by harnessing intrinsic motivators such as enjoyment and social interaction to encourage long-term engagement. This narrative review examines walking football's potential as a public health intervention, focusing on its safety and physical and mental health effects. The results reveal that walking football's slower pace and reduced physical contact make it accessible and safe for individuals with various chronic conditions. However, limited evidence on injury rates and the lack of standardised injury surveillance highlight the need for consistent data collection to evaluate long-term safety. Emerging research indicates modest improvements in cardiovascular health and body composition, though findings are constrained by small, predominantly male samples, limiting generalisability. Qualitative studies highlight positive mental health impacts for individuals with mental health conditions, including enhanced social connections, self-confidence and purpose in life. Nonetheless, quantitative evidence on mental health outcomes remains sparse, emphasising the need for robust studies with validated pre-post intervention measures. Overall, walking football shows promise as a safe strategy to promote physical and mental health among diverse populations. Further research is crucial to better understand its benefits, limitations and safety profile, enabling its effective integration into exercise referral schemes and social prescribing initiatives aimed at increasing physical activity and well-being in middle-aged and older adults.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Walking football appeals to middle-aged and older adults, including those with chronic health conditions, due to its rule modifications that promote accessibility and inclusivity.

WHAT THIS STUDY ADDS

⇒ Emerging evidence indicates that walking football is a safe and effective exercise strategy, promoting physical health in individuals with existing health conditions and supporting mental well-being in those with clinically diagnosed mental health issues. However, further research is needed to confirm these effects.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Walking football's appeal, safety profile and potential health benefits make it a promising candidate for inclusion in public health initiatives targeting healthy ageing, such as exercise referral schemes and social prescribing, provided that existing research gaps are addressed.

INTRODUCTION

Physical activity is widely recognised as an effective means to counteract age-related health challenges.[1–3] However, adherence to physical activity guidelines declines with age,[4] leaving over a quarter of European adults aged 45–69 years and more than 40% of those aged 70+ years insufficiently active by WHO standards.[5] Inactivity not only accelerates physical decline[6] but also places a substantial burden on healthcare systems,[7] with physical inactivity contributing to 0.4%–4.6% of total healthcare costs across multiple countries.[8] These statistics underscore the urgent need for accessible and engaging physical activity solutions for ageing populations. One public health approach to promote physical activity is through exercise referral schemes, where individuals receive referrals from primary care providers, such as general practitioners and allied health professionals, into structured, non-clinical exercise programmes. However, exercise referral schemes have historically faced challenges with long-term adherence both in the UK[9–12] and across Europe.[13–18] In response, the European Physical Activity on Prescription (EUPAP) model has been developed,[19] drawing on Sweden's Physical Activity on Prescription initiative, which has shown success by tailoring activities to individuals' physical capacity and interests.[20]

A key factor in the EUPAP model is ensuring access to a diverse range of suitable activities,[20] as structured exercise programmes tend to lack the enjoyment and social engagement that are vital for sustaining participation among middle-aged and older adults.[21–24] In contrast, team sports inherently provide social interaction, camaraderie and a sense of play, making them a compelling alternative by naturally addressing these adherence challenges.[25 26] Studies consistently show that adults experience greater enjoyment and social connection through sports than traditional exercise classes, with these intrinsic motivators significantly enhancing long-term participation.[27–30] However, sport participation typically declines with age,[31–33] as many middle-aged and older adults express concerns over injury risks, physical limitations and the potential exacerbation of existing health conditions.[34–36]

There is a growing trend towards adapting traditional sports to provide more inclusive options for an older demographic,[37] as seen with small-sided floorball,[38] modified tennis[39] and pickleball.[40] These adaptations aim to maintain the physical and mental health benefits of sport while reducing barriers related to functional capacity and skill level. Walking football (WF) exemplifies this approach and has emerged as a slower-paced, low-impact variant of association football. It can accommodate a wide range of physical abilities, and the option to play in mixed teams broadens its appeal and accessibility.[41] Developed with modifications such as prohibiting running, enforcing minimal contact and restricting the ball from being played above head height,[42] WF is designed to provide a safer form of the sport while preserving many of the aspects that make football participation enjoyable. These adaptations allow for a game centred on skill rather than speed or high levels of physical fitness, making it particularly appealing to those with chronic health conditions.[41] WF has the potential to combine the health-promoting aspects of physical activity with the inherent appeal of a structured, competitive and socially engaging team sport, and therefore could engage an eclectic and underserved audience including middle-aged and older adults who may otherwise be reluctant to participate in physical activity. It also serves as a viable pathway to long-term activity, potentially easing this demographic into regular exercise through community-oriented clubs and leagues that foster a sense of belonging. Additionally, WF presents a relatively inexpensive option as a community-based programme compared with other exercise interventions, making it a sustainable choice for promoting physical activity.[43 44]

A systematic review published in 2020 identified that WF holds significant promise for supporting healthy ageing.[45] However, its findings were constrained by a scarcity of empirical research at the time, with limited studies directly examining the health outcomes of WF. Instead, much of the focus was on descriptive information, including the role and development of global governing bodies for WF. Since then, several initiatives have emerged to further support the development and implementation of WF, such as the UEFA WF toolkit published in 2024,[46] the European Football For Development Network WF project up to 2024[47] and the Age UK WF Programme from 2021 to 2023.[48] The current narrative review seeks to build on the foundational knowledge established in this systematic review by extending understanding in several key areas. First, it explores the safety profile of WF to determine its suitability for widespread adoption within public health frameworks. This is timely, given that community sport initiatives have recently been advocated by the IOC and WHO as essential components of global public health strategies to combat rising physical inactivity levels.[49] Second, it aims to synthesise and critically assess the latest evidence regarding the physical and mental health impacts of WF. Finally, 5 years after the previous systematic review, this narrative review evaluates progress within the current evidence base, identifying any advancements as well as ongoing limitations. In doing so, it offers specific recommendations for future research to explore whether WF can be considered a viable, large-scale strategy in public health initiatives, including exercise referral schemes and social prescribing, to improve health outcomes for middle-aged and older adults and reduce strain on healthcare services.

MATERIALS AND METHODS

A narrative review was selected to flexibly synthesise the emerging and diverse literature on WF, given the limited number of studies and their variation in design, methodology and focus. This approach enables a broader exploration to integrate findings and provide a holistic understanding of WF's safety and health impacts.

A literature search was conducted in September and October 2024 across seven online databases: Academic Search Complete, Europe PubMed Central, Medline with Full Text, ProQuest Central, PsycInfo, Scopus and SPORTDiscus with Full Text. Searches were performed using the exact phrases 'walking football' and 'walking soccer' across all fields, as these are the terms used in the literature to describe this specific format of football. This approach aligns with the previous systematic review on WF[45] and was informed by a preliminary search, which indicated that broader terms such as 'small-sided games' were not specific to WF research. Only peer-reviewed materials published in English were considered, with no restrictions on study design or publication year. The search population was restricted to adults aged ≥18 years.

The lead author was responsible for screening search results and extracting eligible studies. An initial search returned 622 results, from which 282 duplicates were removed, leaving 340 unique articles (figure 1). Each of these articles underwent title and abstract screening to determine if WF was a primary focus. Of these, 289 articles were excluded, resulting in 51 articles eligible for full-text review. An additional article was excluded for involving participants <18 years old, leaving a final pool of 50 articles for further examination.

To align with the narrative review's aims, these 50 articles were assessed based on inclusion criteria for three categories: safety profile, physical health effects and mental health effects of WF. For the safety profile,

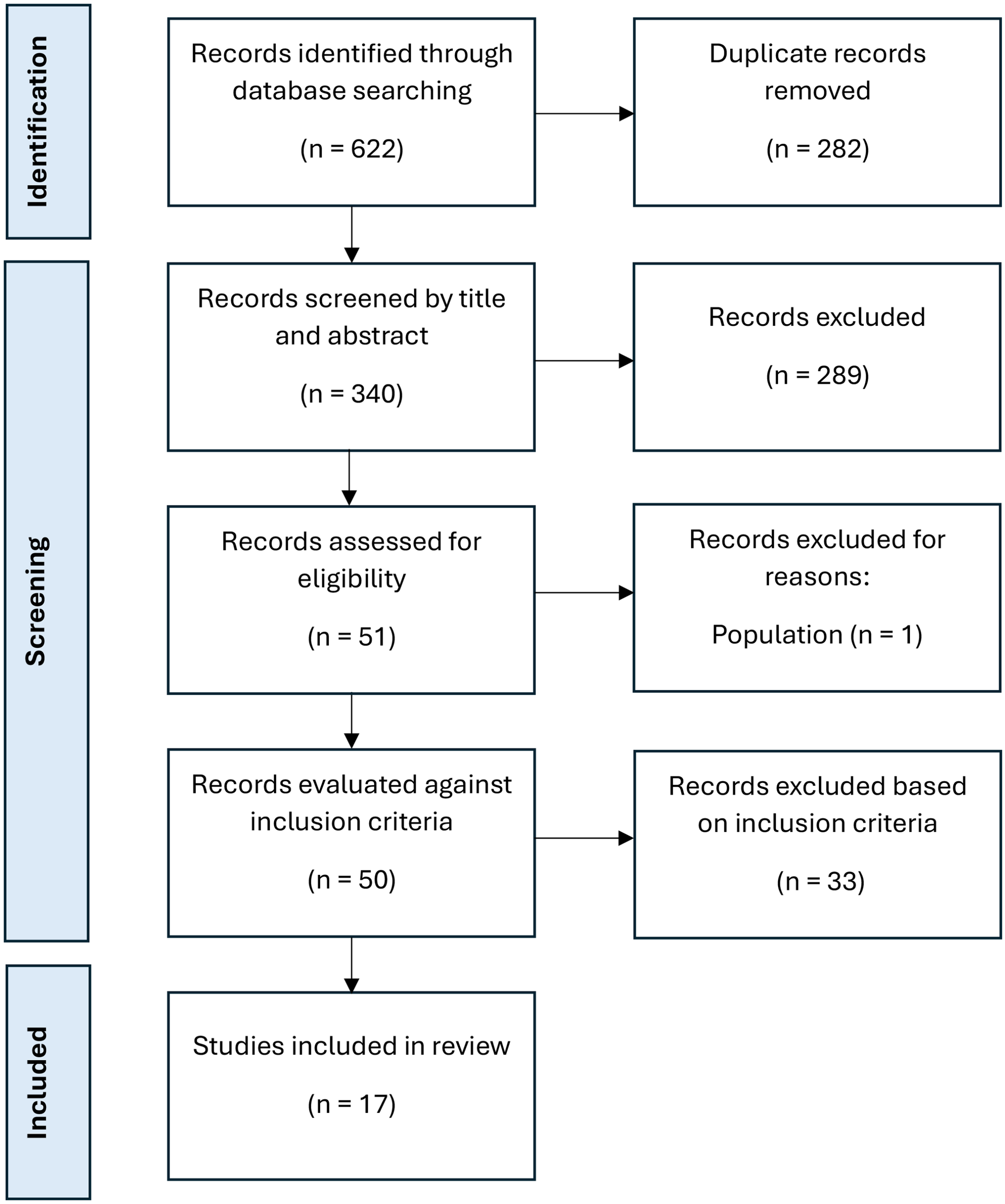

Figure 1 Flow diagram of included studies.

inclusion criteria were restricted to studies reporting physiological safety markers or injury data during a WF intervention, as well as studies involving clinical populations to assess the risk of adverse events associated with WF participation. For physical health effects, inclusion was restricted to studies involving a structured WF intervention that assessed physiological measures before and after the intervention period. For mental health effects, studies were included if they examined the impact of WF on participants with existing mental health conditions, as well as studies that provided objective preintervention and postintervention mental health assessments for participants, regardless of mental health status.

Following this screening process, 17 articles met the inclusion criteria for the review: 10 studies addressed safety, six studies examined physical health effects (with two overlapping across categories) and four studies assessed mental health effects (with one overlapping). The remaining 33 studies were excluded for the following reasons: 21 did not meet the predefined inclusion criteria, the majority of which were qualitative explorations of the lived experiences of WF participation. Additionally, five were commentaries, two were cost analyses of WF interventions, two examined WF during Ramadan fasting, one was a codesign study setting up a WF intervention, one was a study protocol and one was a systematic review.

Patient and public involvement

Patients and the public were not involved in this study as it is a narrative review of the existing literature.

FINDINGS AND DISCUSSION

Safety and injuries

The characteristics of the 10 included studies on safety and injury outcomes are presented in table 1.[50–59] While the prevalence of adverse cardiovascular events in WF has yet to be considered, the likelihood of such events during exercise is related to their intensity and must be balanced against the long-term protective effects of regular physical activity. In participants aged 55 years and older with at least 1 year of WF experience, the average heart rate across 11 sessions was 124 beats per minute, corresponding to an average of 76% of predicted maximum heart rate.[56] The relative intensity, based on peak oxygen consumption at comparable heart rates in a similar age group undergoing interval walking,[60] suggests that WF may be classified as intermittently vigorous for this demographic.[56] There is evidence that vigorous-intensity exercise may provide greater cardioprotective benefits than moderate-intensity exercise,[61 62] both of which have been shown to carry a low risk of cardiovascular events in patients with coronary heart disease.[63]

Digital biomarkers were used in one study to evaluate physiological safety parameters including cardiac function, lactate, glycaemia and oxygen saturation before, during and after WF matches, revealing that WF is a safe activity for sedentary adults with higher body mass.[57] A separate study of men with type 2 diabetes mellitus (T2DM) involved a 12-week WF programme and the most frequent adverse events included musculoskeletal injuries (n=8) and minor falls (n=25), with 31% of these incidents temporarily interfering with exercise but causing no long-term harm.[52] This meant that there were 9.3 musculoskeletal injuries and 28.9 falls per 1000 person-sessions. The exposure data were recorded based on the number of games played, rather than the total game-hours, which complicates comparisons with standard reference data from other sports. Also, the study's conservative definition of 'falls' included incidents like hand or knee contact with the ground, indicating minimal severity. No major events like metabolic or haemodynamic issues, chest pain or injuries requiring medical intervention were reported. Therefore, the authors concluded that WF is a safe exercise strategy for individuals with T2DM. A key strength of this study was its recruitment from primary healthcare units, an ideal setting for examining WF's safety for new participants with existing health issues.

Furthermore, prostate cancer patients under hormonal therapy completed a 16-week WF programme and there was one serious injury, a hamstring tear that healed before the programme concluded.[54] Other events included three incidences of minor fatigue and four reports of joint pain, all briefly interrupting training but none resulting in any lasting harm. Among 24 falls, only three required a temporary halt in the session. These findings support WF as a safe activity even for some clinically vulnerable populations. Additional studies confirm WF's safety in varied contexts and populations. For instance, in a group of men living with dementia, six monthly sessions of WF were completed without incidents.[58] Similarly, hypertensive men aged 60–70 years completed a 12-week WF programme with no adverse events,[59] and WF has been demonstrated to be safe for individuals with chronic breathlessness following pulmonary rehabilitation.[53] A 12-week WF programme was successfully completed in people aged over 50 years with exercise-limiting comorbidities,[51] while video analysis in participants with cardiovascular risk factors revealed low incidences of injury-inciting movements such as lunges (median: 0.5) and goal kicks (median: 4), further supporting WF's profile as a safe sport.[55]

Finally, a Swedish study retrospectively assessed injury rates by asking participants from three clubs whether they had experienced an injury while playing WF, with responses limited to a 'yes' or 'no'.[50] Participants, with an average WF career of approximately 3 years and attending six sessions per month, reported that 66% (n=35) had experienced at least one WF-related injury, while 34% (n=18) reported none. The study is limited by the lack of an injury definition, no details on injury types and its reliance on participants' recall, which introduces potential biases and inaccuracies.

Future directions

WF programmes have been successfully implemented across age groups and in individuals with various health conditions with no reported adverse events, highlighting their feasibility and potential as an exercise referral scheme within public health strategies. However, a lack of standardised protocols across studies examining injury rates presents a challenge to interpretation. This includes differing definitions of injuries and the absence of exposure data to contextualise injury rates in relation to playing hours. Large-scale injury surveillance is thus needed to establish the incidence and burden of injuries in WF. A structured approach to injury surveillance can be implemented using existing frameworks such as the injury and illness surveillance monitoring system outlined by Sprouse *et al*.[64] This tiered framework allows for injury data collection across recreational and competitive settings, adapting to available resources. To determine an 'acceptable' injury risk, WF injury incidence per 1000 hours of playing time must be benchmarked against other sports and recreational activities. Comparisons with traditional association football, recreational running and lower-impact activities such as walking would provide useful context. If WF demonstrates a lower injury incidence, this would strengthen its case as a safe and viable exercise referral option.

Indeed, robust evidence demonstrating a low relative risk of participation will be essential for medical practitioners to confidently refer patients to WF programmes. Such research would also equip middle-aged and older

Table 1 Characteristics of the included studies on safety and injuries

Study	Population	Country	N	Age (years)	BMI (kg/m^2)	Study design	Outcome extracted	Frequency of sessions
Arnold *et al*[51]	Men aged 50+ years with a range of comorbidities	England	10; M=10, F=0	66±7	29±3	Repeated measures, pre-post intervention design	Description of injuries and adverse events	Once a week for 12 weeks, 120 min sessions
Barbosa *et al*[52]	Middle-aged and older men with type 2 diabetes	Portugal	31; M=31, F=0	64±5	28.8±3.3	Quasiexperimental study	Injuries and adverse events across the programme	Three times a week for 12 weeks, 60 min sessions
Harper *et al*[56]	Men with at least 1 year of walking football experience	England	17; M=17, F=0	66±6	NR	Repeated measures observational study	Mean heart rate and percentage of maximum heart rate across 11 sessions	Heart rate values measured over 11 sessions each~60 min in duration
MacRae *et al*[58]	People living with dementia and their family carers	Scotland	14; M=14, F=0	>70	NR	Qualitative study, semistructured interviews	Description of injuries and adverse events	Six monthly sessions lasting 60 min each
Andersson *et al*[50]	People who regularly play walking football	Sweden	63; M=44, F=19	71±5; range 63–85	26.6±3.9	Retrospective analysis with a written questionnaire and descriptive assessment	Experience of injuries over walking football career	Not applicable
Capela *et al*[54]	Men with prostate cancer under androgen deprivation therapy	Portugal	31; M=31, F=0	72±6	28.3±4.1	Prospective two-arm randomised clinical trial	Injuries and adverse events across the programme	Three times a week for 16 weeks, 90 min sessions
Bradford *et al*[53]	People with chronic breathlessness	England	6; M=5, F=1	71	NR	Mixed-methods single-group	Description of injuries and adverse events	Once a week for 6 weeks, 120 min sessions
Egger *et al*[55]	People with cardiovascular risk factors and diseases	Germany	18; M=13, F=5	69±10	NR	Cross-sectional	Characterised movements during walking football assessed by video analysis	A single walking football match of 2×10 min halves
Hidouri *et al*[57]	Higher-weight men over 30 years old and sedentary for more than 6 months	Tunisia	19; M=19, F=0	45±7	33.2±4.8	Experimental study	Physiological safety markers before, during and after walking football matches	Two 60 min sessions over 2 days, separated by 7 days in between
Haq *et al*[59]	Hypertensive men	India	60; M=60, F=0	Range 60–70	NR	Experimental study	Description of injuries and adverse events	Three times a week for 12 weeks, 60 min sessions

Mean ± SD.
BMI, body mass index; F, female; M, male; NR, not reported.

adults with existing injuries or health conditions with the information necessary to make informed decisions about participation. Additionally, future studies should evaluate the safety of WF for 'healthy' individuals who may engage in faster-paced, more demanding styles of play. Understanding the risks associated with higher-intensity gameplay will contribute to a thorough assessment of injury patterns and WF's safety across player profiles.

Physical health effects

Blood pressure

The characteristics of all included studies on the physical health effects of WF, including those that considered blood pressure as an outcome variable,[51 59 65–67] are presented in table 2. Blood pressure was measured using automated monitors in two studies[51 59] and a semiautomated upper-arm cuff in one study.[67] Two studies did not specify the equipment used,[65 66] and none of the studies detailed their measurement protocols. There was no observable trend in the results based on the type of equipment used. Evidence suggests that a single 60-minute weekly session over 8–12 weeks has no meaningful effect on blood pressure in populations that do not exclusively consist of individuals with hypertension (table 3).[65–67] One study found a 4% increase in systolic blood pressure, although this is likely attributed to participants with hypertension reporting poor adherence to their antihypertensive medication during the intervention period.[51] Conversely, in an exclusively hypertensive participant sample, a protocol involving three weekly sessions showed significant reductions in systolic and diastolic blood pressure by 4.7% each.[59] However, the study was conducted in Kashmir, a region with unique geopolitical and altitude characteristics that may limit the generalisability of its results to other populations. Also, the authors do not specify whether the use of antihypertensive medication was accounted for. Future research should aim to replicate the beneficial effects reported by Haq *et al* in broader populations, with a particular focus on controlling for antihypertensive medication use to isolate the impact of WF.

One study measured mean arterial pressure (MAP) and found a statistically significant group × time effect, with MAP decreasing in the intervention group and increasing in the control group.[67] However, baseline MAP differences between the groups suggest this result may reflect initial disparities rather than a true intervention effect. The lack of significant within-group changes further underscores the need for studies with more balanced groups to clarify the impact of WF on MAP. Additionally, the current literature highlights the potential value of examining whether increasing session frequency could yield cardiovascular benefits in non-hypertensive adults.

Body composition

A total of five studies examined changes in body composition before and after a WF intervention (table 4).[51 65–68] No significant changes were observed in body mass or body mass index (BMI) with 60-minute weekly sessions.[65–67] The modest frequency and duration of these interventions do not meet the recommended physical activity levels for health[69] and therefore may have limited their potential to substantially affect anthropometric measures within such short times (8–12 weeks). Interpretation of these findings is hindered by methodological issues: one study lacked statistical analysis,[66] while another was based on preliminary data presented in a peer-reviewed conference abstract.[65]

In contrast, mildly overweight adults aged 60+ years experienced reductions in body mass and BMI following 6 weeks of 90-minute sessions.[68] Intriguingly, these participants were described as highly active before beginning the intervention. This observation raises questions about whether WF may provide benefits even for those already meeting or exceeding recommended activity levels. More research is clearly needed to validate these effects across a broad range of initial activity levels. Furthermore, this study featured WF games ranging from 2-a-side to 6-a-side, introducing variability in match intensity. Smaller team sizes might elevate physical demands, though this remains speculative as the study did not monitor game intensity nor report attendance rates. These omissions highlight gaps in the study's methodology, leaving critical aspects of participant engagement insufficiently explored.

The findings by Boithias *et al* contrast with those of a longer-duration intervention involving 120-minute sessions over a 12-week period, which observed no significant changes in body mass or BMI among participants with multiple comorbidities.[51] However, Arnold *et al* reported significant reductions in fat mass (3 kg) and body fat percentage (2.8%) alongside trends towards decreases in body mass (p=0.08) and BMI (p=0.06), as well as an increase in lean mass (p=0.06), potentially indicating muscle gain. The lack of a significant change in body mass may be due to muscle gain offsetting fat loss. It is notable that Arnold *et al*'s findings on body fat percentage contrast with another study reporting a 14% increase[67]; however, this increase was not statistically significant (p=0.51), likely due to high variability in individual responses. While Arnold *et al*'s small sample size (n=10) and lack of a control group necessitate cautious interpretation, these findings highlight the importance of considering a broad range of anthropometric outcomes.

Methodological inconsistencies complicate the interpretation of body composition changes. One study assessed body composition using the air displacement method,[51] while another used a commercially available body composition monitor scale.[67] The remaining three studies did not specify the measurement equipment used.[65 66 68] Additionally, as studies included both normal-weight and overweight/obese adults, the physiological responses to WF may have varied considerably. Future research should consider stratifying participants by BMI and using consistent gold-standard measurement tools to

Table 2 Characteristics of the included studies on physical health effects

Study	Population	Country	N	Age (years)	BMI (kg/m²)	Prior physical activity	Frequency × duration; session length	Format	Attendance to sessions	Intensity	Outcomes extracted
Arnold *et al*[51]	Men aged 50+years with a range of comorbidities	England	10; M=10, F=0	66±7	29±3	No other exercise within the previous 6 months	1×12 weeks; 120 min	Multiple short 5-a-side games (15–20 min)	NR	NR	Blood pressure and body composition
Reddy *et al*[67]	Adults aged between 50 years and 65 years	England	20; M=17, F=3	EG=61, CG=58	EG=27.9±3.2, CG=27.6±4.5	NR	1×12 weeks; 60 min	Warm-up, 45–50 mins play. Small-sided game, normally 5-a-side	All played ≥7 of 12 games (mean 9.4, mode 11)	76% of age or match-predicted maximum heart rate. RPE 13.3; range 9–17 on a 0–20 scale	Blood pressure, body composition and fasting blood glucose and cholesterol
McEwan *et al*[66]	Overweight, sedentary men aged 50+ years with a range of comorbidities	Scotland	25; M=25, F=0	58±6	EG=33.4±6.3, CG=32.1±6.2	MVPA: EG=50 min/day, CG=47 min/day. 17% inactive (<150 min MVPA/week), 83% active (≥150 min MVPA/week)	1×8 weeks; 60 min	NR	90%; range 75–100%	NR	Blood pressure and body composition
McBain and Broom[65]	Older adults	England	23; M=22, F=1	68±8	NR	NR	1×12 weeks; 60 min	Warm-up and small-scale competitive games	68±26%; range 0–92%	RPE 6.3±1; range 2–8	Blood pressure, body composition and fasting blood cholesterol
Boithias *et al*[68]	Healthy adults aged 60+ years	France	15; M=12, F=3	68±5	25.5±3.0	Three participants were previously involved in competitive sports and 12 participants in recreational sports	2×6 weeks; 90 min	Warm-up (10–15 min), football drills or games (15–20 min), then small-sided games from 2- to 6-a-side (30–35 min)	NR	NR	Body composition
Haq *et al*[59]	Hypertensive men	India	60; M=60, F=0	Range 60–70	NR	No other exercise within the previous 6 months	3×12 weeks; 60 min	Warm-up (10 min), two 20 min games of 5-a-side with a 5 min break in between (45 min), cool-down (5 min)	NR	NR	Blood pressure, resting heart rate and basal metabolic rate

Mean ± standard deviation.
BMI, body mass index; CG, control group; EG, experimental group; F, female; M, male; MVPA, moderate to vigorous intensity physical activity; NR, not reported; RPE, rating of perceived exertion.

Table 3 Outcomes of the included studies on blood pressure

			SBP (mm Hg)			DBP (mm Hg)			Mean arterial pressure		
Study	Group	N	Before (mean ±SD)	After (mean ± SD)	After – before (Δ%)	Before (mean ± SD)	After (mean ± SD)	After – before (Δ%)	Before (mean ± SD)	After (mean ± SD)	After – before (Δ%)
Arnold *et al*[51]	EG	10	149±14	155±10	**4.0***	83±11	85±8	2.4	–	–	–
	CG	–	–	–	–	–	–	–	–	–	–
Reddy *et al*[67]	EG	11	140±14	131±17	−6.5	88±9	86±8	−1.5	104±9	100±9	**−3.7**†
	CG	9	120±17	125±13	4.1	76±11	81±9	7.2	90±12	95±9	5.9
McEwan *et al*[66]‡	EG	9	158±20	147±17	−7.0	89±13	84±11	−5.6	–	–	–
	CG	8	160±14	151±11	−5.6	93±6	88±6	−5.4	–	–	–
McBain and Broom[65]	EG	17	NR	NR	p>0.05	NR	NR	p>0.05	–	–	–
	CG	6	NR	NR	p>0.05	NR	NR	p>0.05	–	–	–
Haq *et al*[59]	EG	30	147±6	140±7	**−4.7*****§†	100±7	95±6	**−4.7*****†	–	–	–
	CG	30	148±8	147±9	−1.0	98±7	98±5	−0.3	–	–	–

Values are rounded to whole numbers for ease of interpretation, but percentage changes are calculated using the original unrounded data for accuracy.
*statistically significant from baseline $p < 0.05$, ** $p < 0.01$, ***$p < 0.001$
†statistically significant group × time effect $p < 0.05$. Abbreviations
‡Descriptive assessment only
§statistically significant from control group post-intervention $p < 0.05$
Δ%, percentage change; CG, control group; DBP, diastolic blood pressure; EG, experimental group; NR, not reported; SBP, systolic blood pressure.

Table 4 Outcomes of the included studies on body composition

Study	Group	N	Body mass (kg) Before (mean ± SD)	Body mass (kg) After (mean ± SD)	Body mass (kg) After – before (Δ%)	BMI (kg/m²) Before (mean ± SD)	BMI (kg/m²) After (mean ± SD)	BMI (kg/m²) After – before (Δ%)	Body fat (%) Before (mean ± SD)	Body fat (%) After (mean ± SD)	Body fat (%) After – before (Δ%)	Fat mass (kg) Before (mean ± SD)	Fat mass (kg) After (mean ± SD)	Fat mass (kg) After – before (Δ%)
Arnold *et al*[51]	EG	10	89.2±9.1	87.4±8.6	−2.0	29.0±3.0	28.0±4.0	−3.4	30.3±8.2	27.5±8.5	**−9.2***	27.4±9.0	24.4±8.9	**−10.9***
	CG	–	–	–	–	–	–	–	–	–	–	–	–	–
Reddy *et al*[67]	EG	11	83.8±12.9	83.3±13.2	−0.6	27.9±3.2	27.8±3.4	−0.4	27.1±7.3	30.9±19.6	14.0	–	–	–
	CG	9	78.9±16.7	79.1±16.0	0.2	27.6±4.5	27.7±4.3	0.3	31.1±5.7	31.3±7.5	0.6	–	–	–
McEwan *et al*[66]†	EG	9	100.6±14.0	101.1±14.6	0.5	33.4±6.3	33.7±6.5	0.9	–	–	–	–	–	–
	CG	8	98.0±17.4	97.3±16.9	−0.7	32.1±6.2	32.0±6.3	−0.3	–	–	–	–	–	–
McBain and Broom[65]	EG	17	NR	NR	$p>0.05$	–	–	–	–	–	–	–	–	–
	CG	6	NR	NR	$p>0.05$	–	–	–	–	–	–	–	–	–
Boithias *et al*[68]	EG	15	76.3±12.8	75.2±13.1	**−1.5***	25.5±3.0	25.1±3.1	**−1.6***	–	–	–	–	–	–
	CG	–	–	–	–	–	–	–	–	–	–	–	–	–

Values are rounded to one decimal place for ease of interpretation, but percentage changes are calculated using the original unrounded data for accuracy.
Legend: –not measured;
*statistically significant from baseline $p < 0.05$
†Descriptive assessment only
Δ%, percentage change; CG, control group; EG, experimental group; NR, not reported.

better understand WF's potential for managing obesity and maintaining a healthy weight.

Other measured health outcomes

No changes in fasting blood glucose were reported,[67] but significant reductions in fasting cholesterol levels were observed across studies.[65 67] However, comparable improvements in control groups suggest confounding factors may have influenced these outcomes. One study with three WF sessions per week also documented reductions in resting heart rate (4.4%; p<0.001) and increases in basal metabolic rate (1.5%; p<0.001),[59] indicating potential broader health benefits with sufficient frequency and duration that require substantiation.

A small number of studies assessed additional health-related and fitness-related outcomes. One study reported no significant change in peak oxygen consumption following 12 weeks of WF, though time to exhaustion improved.[51] Similarly, hand grip strength showed no significant changes postintervention.[51] Additionally, two studies found no significant improvements in the 6-minute walking test following 6–12 weeks of WF.[65 68] While these findings provide some insight into the broader physiological responses to WF, further research is needed to determine its effects on different aspects of health and fitness.

Future directions

Together, these findings highlight the variability in WF's impact on physical health across different intervention designs. They underscore the need for more studies to explore how factors such as baseline activity levels, session frequency and duration, team size, pitch size, the presence of a goalkeeper, playing indoors versus outdoors, the use of substitutes and adherence influence outcomes. This includes exploring extended intervention periods to help clarify whether lower-volume WF programmes can deliver meaningful health benefits. Additionally, cross-sectional studies comparing the physical health of regular WF participants to non-participants could offer preliminary insights into long-term benefits, serving as a basis for future longitudinal trials to assess sustained health outcomes associated with regular WF participation.

The current research on WF is constrained by several methodological limitations. Most studies focus predominantly on male participants, limiting the generalisability of findings across genders. Small sample sizes and insufficient statistical power are common issues, with only one study likely achieving adequate power.[59] To fully explore the potential of WF, future studies should involve larger sample sizes and prioritise the inclusion of underrepresented groups, such as women, members of black and minority ethnic communities and middle-aged individuals. Further research would also benefit from exploring a broader range of health outcome measures. For example, the frequent changes in direction inherent to WF involve higher mechanical loading compared with low-impact activities like cycling,[56 70] which could offer specific benefits for bone metabolism and skeletal health.

Inconsistent adherence reporting is a common issue across studies, complicating the interpretation of WF's health effects. Standardised and thorough monitoring of adherence should thus be prioritised to enable accurate assessments of its effects. Similarly, baseline physical activity levels and BMI are not consistently reported, despite their influence on intervention outcomes.[71 72] There is also a lack of information on how participants' other physical activities, as well as their nutritional intake, are monitored or controlled, making it difficult to attribute health improvements exclusively to WF participation. Future studies should control for or record additional physical activities and dietary factors to assess WF's effectiveness across both active and inactive populations.

In summary, while WF demonstrates potential for physical health benefits, the current literature remains limited. Participation in WF has surged, with a 72% increase in adult involvement across England between 2020 and 2023,[73] yet only two additional peer-reviewed studies on its physical health effects have been published since a 2020 systematic review.[45] This disparity underscores a substantial research gap that needs addressing if WF is to be considered an effective physical health-promoting activity for middle-aged and older adults.

Mental health effects

Two studies explored the perceived mental health effects of WF among adults with mental health conditions participating in an existing WF programme (table 5).[74 75] Participants reported positive impacts on their mental well-being, attributed to the various psychosocial benefits associated with attending and playing. This included the opportunity to socialise and connect with friends, the sense of fun and enjoyment, the structure and purpose it added to their week, the chance to disengage from negative thoughts and an increase in self-confidence. These qualitative findings demonstrate WF's potential as a supportive activity for mental health. Future research should build on these insights by comparing mental health outcomes in regular WF players with non-players and by examining changes in objectively measured mental health before and after WF interventions.

One study that incorporated objective measurement used the Warwick-Edinburgh Mental Well-Being Scale to assess mental well-being before and after an 8-week WF intervention.[66] Results indicated a slight improvement in well-being scores, from a preintervention average of 46.2±7.5 to a postintervention score of 46.9±8.4, though only a descriptive assessment was provided. Furthermore, a significant reduction in Geriatric Depression Scale scores was observed following an 8-week intervention.[76] Baseline scores indicated no depressive symptoms overall, yet the experimental group's scores shifted from a pretest average of 4.7±2.0 to post-test scores of 0±0. This complete reduction to zero depressive symptoms across

Table 5 Characteristics of the included studies on mental health effects

Study	Population	Country	N	Age in years (mean ± SD)	Data	Setting	Study design	Outcome extracted	Frequency of sessions
Lamont *et al*[74]	National health service mental health service users (n=18) and staff (n=7)	Scotland	25; M=20, F=5	37±11; range 21–64	Qualitative	Community centre, inpatient psychiatric setting and local community sports centre	Semi-structured focus groups with thematic analysis	The perceived benefits of engagement in an existing walking football programme for mental healthcare delivery and personal recovery	Weekly
McEwan *et al*[66]	Overweight, sedentary males aged 50+ years with a range of comorbidities	Scotland	25; M=25, F=0	58±6	Quantitative	Community trust wing of a Scottish premiership football club	Pre-post test experimental study	Mental well-being assessed by the Warwick-Edinburgh Mental Well-being Scale	Once a week for 8 weeks, 60-minute sessions
Taylor and Pringle[75]	Men identified by mental health services as having a mental health condition	England	7; M=7, F=0	Range 25–44	Qualitative	Community leisure centre	Semi-structured interviews with thematic analysis	The perceived benefits of engagement in an existing walking football programme on social and mental health	Weekly 60-minute sessions
Erdoğan Yüce and Saygin[76]	Men aged 60+ years	Turkey	34; M=34, F=0	69±6; range 60–83	Quantitative	Cultural centre, astroturf field	Pre-post test experimental study	Depression assessed by the Geriatric Depression Scale short form	Two times a week for 8 weeks, 55-minute sessions

F, female; M, male.

participants raises questions regarding the sensitivity of the scale or the reporting method, as such a uniform result is uncommon and may suggest an issue with response bias. This finding highlights the need for additional measures to assess the full range of mental health outcomes and confirm the reliability of reported changes in depressive symptoms over time.

Future directions

A systematic review has explored the experiences of WF participation across all players, highlighting perceptions of improved well-being.[45] However, these findings did not specifically address individuals with mental health conditions or include objective measures of changes in mental health. This narrative review emphasises that research in this area remains limited. Future studies should address these gaps given the current challenges surrounding mental health in middle-aged and older adults, with nearly one in five people aged 50+ years from western countries estimated to have depression when assessed using self-rating questionnaires.[77] A range of age-related risk factors for mental health conditions should be explored, including loneliness and social isolation, to determine whether WF can serve as an intervention to support the overall well-being of older populations.

CONCLUSION

WF demonstrates significant potential as a health-promoting activity for middle-aged and older adults, including those with pre-existing medical conditions. It provides an accessible and inclusive alternative to traditional exercise programmes with its low entry barriers and broad appeal. Research has shown WF to be a safe exercise strategy for individuals with chronic conditions due to its slower pace and minimal-contact rules, though longitudinal studies are needed to better understand long-term injury risks, including in 'healthy' individuals who may play a more dynamic version of the sport. Initial evidence highlights potential physical health benefits, such as modest improvements in blood pressure and body composition, with session frequency and duration playing a crucial role. Qualitative evidence further highlights the numerous mental health benefits of WF including enhanced well-being through fostering social connections, promoting enjoyment and a sense of purpose. However, objective studies using validated mental health measures are needed to substantiate these claims and move beyond anecdotal evidence.

Future research must go beyond small-scale studies to overcome key barriers to WF's wider adoption within public health frameworks. For healthcare professionals, particularly those in primary care, confidence in prescribing or recommending WF requires clear safety data and robust evidence of health benefits. This includes comprehensive information on injury rates, types, severity and mitigation strategies to assess risk and ensure safe participation. Large-scale, multicountry injury surveillance using standardised frameworks for grassroots sports[64] is essential to better track WF injuries in a recreational setting. Additionally, randomised controlled trials are needed to establish WF's effects on physical and mental health, including cardiovascular fitness, body composition and psychological well-being. Future research should also focus on defined patient selection criteria and comparing WF to other forms of exercise in terms of safety, injury risk and health benefits, thereby helping clinicians determine who would benefit most from WF and whether any contraindications exist. This requires expanding research to include diverse populations across age and gender to provide a clearer understanding of WF's broader impact. Standardised injury definitions, robust adherence tracking, baseline activity assessments and larger sample sizes will enhance study quality. Ultimately, WF has the potential to support healthy ageing as a low-risk, inclusive public health intervention. Addressing current research gaps through well-designed studies will help clarify its benefits and limitations, paving the way for its potential widespread adoption within public health strategies.

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ORCID iDs
Alfie G Price http://orcid.org/0009-0003-4457-8744
Ian Varley http://orcid.org/0000-0002-3607-8921

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