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Article

Psychosocial and Functional Benefits of Walking Football in Rural Older Adults

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Abstract: Background: This study investigated the experiences of walking football in rural older adults and the associated functional health and well-being outcomes. **Methods:** This multi-methods study saw 13 older adults (7 males/6 females, 63.2±9.4 years) complete 1-hour of walking football per week for six weeks. Pre- and post-intervention, participants underwent assessments of body mass and height as well as assessments of functional fitness using the Senior Fitness Testing Battery. On completion of the walking football intervention, all participants joined in a semi-structured focus group interview to explore their health and psychosocial of participation. **Results:** Thematic analysis of focus group data identified three themes that captured participant's experiences, including: (1) "Opportunity to jump back in with what we can physically do", (2) Social connection and feeling "part of something bigger", and (3) "It's how our brain is engaged". Small but significant changes were observed in body mass and BMI ($p<0.05$). Furthermore, statistically significant improvements ($p<0.05$), with small-to-large effect sizes, were observed for several functional health outcomes including upper and lower body muscular strength, agility and aerobic endurance. **Conclusions:** Rural older adults experience physical, social, cognitive and psychological health and well-being improvements from participating in a walking football program.

Keywords: healthy ageing; walking football; older adults; physical activity; rural health

1. Introduction

Australia has an aging population [1] that is accentuated in rural areas, due to out-migration of younger individuals to metropolitan areas and an in-migration of older adults [2]. This demographic shift increases the risk of developing chronic, degenerative health conditions [3], which can lead to decreased functional independence and quality of life [4]. Furthermore, older adults residing in rural areas experience higher rates of morbidity, lower quality of life and lower social functioning compared to older adults residing in metropolitan areas of Australia [5]. Consequently, there is a recognisable need to provide sustainable health promotion opportunities for older adults living in rural areas, often achieved through participation in sporting pursuits.

Regular and adequate participation in physical activity promotes healthy aging, realised through improvements in physical and psychological function [6]. Furthermore, physical activity participation, particularly in group/team environments, can promote social connection in older populations [7], reducing the risk of loneliness and social isolation in older adults living in rural Australia. Despite the established evidence base and guidelines for older adults to be physically active, only one-quarter of Australians aged ≥65-years continue to meet recommended physical activity guidelines [8]. Issues and concerns around health, safety, resources, knowledge, and environment are factors that inhibit older adults from being active [9], and strategies to overcome these barriers are necessary.

Adaptive sports, such as walking sports, are emerging as effective solutions to increase engagement in physical activity for older adults [10]. In adaptive sports, the rules are modified to enable walking instead of running and physical contact is usually prevented, thereby lowering the

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impact and risk of injury [11]. Walking football is gaining global recognition, as a safe, enjoyable, sustainable, feasible, and cost-effective approach for recruiting and retaining older populations to a physical activity program [12–14]. Physical, cognitive, and mental health and well-being improvement have all been suggested from participating in walking football [15–17]. In a review of the limited evidence-base, Corepal et al. [18] concluded that walking football provided opportunities for enjoyment; development of a team identity; and moderate-intensity activity with cardiovascular, musculoskeletal, and metabolic benefits. However, this evidence is limited by focusing on male populations residing in metropolitan areas and failing to understand how individuals experience adaptive sports. Consequently, the method of implementing and the impact of adaptive sports, such as walking football, on older males and females residing in rural locations is not understood and needs investigation.

Therefore, the aim of this study was to investigate the experience and perceptions of the benefits of participating in walking football, along with potential improvement in implementation. The secondary aim was to examine the influence of participation on functional health outcomes in rural older adults.

2. Materials and Methods

2.1. Study Design

Multiple methods were used for this study. A single-arm pre-post design was used to investigate the influence of participation on functional health outcomes. A focus group interview was then conducted to explore participants' experiences of the walking football intervention and their perspectives on the personal health and psychosocial benefits of participation. Ethics approval was obtained from the universities human research ethics committee. Participation was voluntary and all participants provided informed consent prior to commencement of the research.

2.2. Participants

13 participants, seven males and six females (mean ± SD; age: 63.2 ± 9.4 years; height: 1.7 ± 0.1m; body mass: 84.0 ± 21.1kg; body mass index (BMI): 28.2 ± 7.0 kg/m^2) were recruited in April and May 2024 using convenience-sampling from a walking football group in rural Victoria, as defined using the Modified Monash Model code MM2 (regional centre in, or within 20km road distance, of a town with a population greater than 50,000) [19]. Potential participants were notified about the research via flyers distributed on physical and virtual notice boards. To be considered eligible, participants had to be aged 50-years and over with no evidence of severe movement or coordination disorders; no cognitive impairments impacting their ability to understand written and verbal English, and no contraindications to performing physical exercise.

2.3. Measures

After participants had been deemed eligible to participate in the study, anthropometric data was collected in duplicate. If subsequent values differed by more than 5% a third measure was taken and the median recorded. Height was collected using a portable stadiometer (Holtain, United Kingdom) using the stretch-stature method [20]. Prior to collecting body mass, participants were asked to void their bladder, if necessary, then asked to remove shoes, jewelry, watches, and additional clothing before stepping onto the scales (Seca, Model 770, Germany). BMI was calculated from height and mass using kg/m^2.

Assessments of functional outcomes were performed by adopting procedures described previously for the administration of the Senior Fitness Test Battery [21] comprising a 30-second chair stand test (CST), 30-second arm curl test (ACT), 8-foot timed up and go test (TUG), chair sit and reach test (CSRT), back scratch test (BST), 2-minute step in place test (2MST), and 6-minute walk test (6MWT). For both the 2MST and 6MWT participants undertook one trial and were informed that they

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could slow down or rest, if necessary. Participants undertook two trials of all other assessments with the average score being used for analysis.

The CST comprised the number of full stands that could be completed, from a seated position in 30-seconds with arms folded across the chest. For the ACT, the number of bicep curls that were completed in 30-seconds holding a hand weight of 2 kg for females and 4 kg for males was recorded. The TUG comprised the number of seconds required to get up from a seated position, walk 8 feet as fast as possible, turn and return to the seated position. For the CSRT, participants were instructed to sit on the edge of the chair, one foot flat on the ground, the other fully extended and with both hands-on top of one another and reach as far as they could towards the toes. The distance (cm) from fingertips to toes was recorded, with a positive score recorded if participants could go past the toes, and a negative score recorded if participants could not touch the toes.

For the BST, participants were instructed to stand upright, and place one hand behind the head to reach as far as possible down the middle of the back and place the other hand behind the back and reach upwards towards the other hand attempting to touch or overlap the middle fingers of both hands. The distance (cm) between the tips of the middle fingers were recorded with a positive score recorded if participants could overlap the fingertips, and a negative score recorded if participants could not touch the fingertips. For the 2ST, participants were instructed to stand up straight next to the wall, with a level marked on the wall corresponding to midway between the patella and iliac crest. Over the course of 2-minutes, the participant stepped in-place until the knee reached the marked level on the wall, the number of times the height was successfully reached was recorded. Finally, for the 6MWT, participants were instructed to walk as quickly as possible for 6-minutes up and down a 20-metre walkway marked off in 5-metre segments with the distance walked recorded and used for analysis.

2.4. Intervention

All assessments and games took place in a community sports facility comprising an indoor hard-court sports hall. Participants undertook baseline assessments of functional capacity using the Senior Fitness Test Battery [20] and height and body mass, from which body mass index (BMI, kg/m^2) was determined. One week later, all participants commenced a 6-week walking football program. Throughout the 6-weeks, participants attended a single training session each week. Sessions typically began at the same time of day (6:30pm) and were 60-minutes in duration. Each session comprised a 10-minute standardised dynamic warm up facilitated by a qualified exercise scientist, followed by a series of 3 x 12-minute small-sided games, after which a 10-minute dynamic and static cool-down was performed. All games took place on a surface marked by cones measuring 15 x 8 metres and were refereed by a qualified volunteer walking football referee from Football Victoria. During all games no physical contact between players was permitted, running was not allowed, and participants always had to have one foot on the ground. Furthermore, the ball could not be kicked above head height, with re-starts taking place via a pass into the playing area. One week after the last walking football game, all participants underwent post-test data collection where participants completed the same tests as baseline.

2.5. Focus Group Interview

On conclusion of the walking football intervention, a single focus group was conducted. A semi-structured interview structure was used to explore participants' experiences of the walking football intervention and their perspectives on the personal health and psychosocial benefits of participation. A small number of participants ensured there was opportunity for interaction between the participants and points of agreement, conflict, and uncertainty could be revealed [22].

A researcher with experience in interviewing conducted the focus group in a private meeting room to ensure participant confidentiality. The focus group was audio recorded and transcribed verbatim to ensure an accurate account of the conversation was available for data analysis. Questions included in the semi-structured interview guide included: (1) Can you tell me about your decision to

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participate in walking football? (2) Is this a new activity for you, or have you previously been involved in team sports? (3) How would you describe your experience of participating in walking football? What were the positive aspects? What were the negative aspects? (4) Do you have any stories about your participation in this activity? (5) Does participating in walking football change how you see and feel about yourself? (6) Would you recommend this activity to others? If so, what groups of people might benefit and why?

2.6. Statistical Analysis

Focus group interview data were analysed using thematic analysis as described by Braun and Clarke [23]. Data analysis was performed in six steps: (1) reading and re-reading the focus group content, considering content and interaction between the participants, (2) initial coding through use of line-by-line analysis, (3) identification of emerging themes, (4) review of emerging themes in relation to the entire data set, (5) identification of overarching themes, and (6) writing of each theme for publication.

Quantitative health data are presented as mean and 95% confidence intervals (95% CI). Data analysis was completed using the software package SPSS (SPSS® Statistics, version 29, SPSS Inc., Chicago, IL). To evaluate the statistical significance of the walking football intervention, where assumption of normality and homogeneity of variance were met, paired samples t-tests were used. Where these assumptions were not met, non-parametric Wilcoxon Signed Ranks Tests were used. Furthermore, percentage (%) change and Cohens d were calculated to express the magnitude of change with values of <0.2, 0.2-0.59, 0.6-1.19, 1.2-1.99 and ≥2.0 defined as trivial, small, moderate, large or very large respectively [24]. Statistical significance was set at $p \leq 0.05$ prior to analysis.

3. Results

The 13 recruited participants completed all training sessions throughout the 6-week walking football intervention, corresponding to a 100% attendance.

3.1. Focus Group Interview

Three themes that captured the participants' experiences were identified: (1) "Opportunity to jump back in with what we can physically do", (2) Social connection and feeling "part of something bigger", and (3) "It's how our brain is engaged". These themes are described below. Pseudonyms are used to protect the anonymity of individual participants.

3.1.1. "Opportunity to Jump Back in with What We Can Physically Do"

Seven of the participants (Robert, William, David, Stephen, Sarah, Margaret and Kathleen) reflected on their increased confidence in their physical abilities following participation in walking football. Specifically, participants identified benefits with strength, balance, flexibility, and endurance. Kathleen described, "it's amazing how much I've noticed my physical fitness has improved. And also, a sense of confidence, of just moving around in a sports situation, that normally I would be terrified." Similarly, David described, "It's been a real wake-up call for me. The flexibility and balance aspects that I had lost, but were still able to be recovered, I wouldn't have realised that." Increased confidence in physical abilities enabled participation in other activities outside of walking football, such as other sporting groups, supermarket shopping, and travel. Factors that supported the opportunity to "jump back in with what we can physically do" included indoor play with good lighting, flat floor surfaces and temperature control, as well as use of a trained exercise scientist to facilitate stretching/warm-up activities. Participants appreciated evening sessions and adaptations to the game rules to ensure their safety. Flexibility in attendance allowed for continued participation in the event of illness or injury. Participants were, however, concerned about inconsistency in rules when competing against other teams and two participants described being afraid of some of the male players from other teams who were "more physical and aggressive".

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3.1.2. Social Connection and Feeling "Part of Something Bigger"

Nine of the participants described how participation in walking football had led to friendships and a sense of social connectedness. As Kevin described:

> "We've always focussed on the fun and the fitness and the inclusiveness. So, that's really shone through, whereas I know there were other clubs that they're really serious about it and that's okay. But I think having that be an objective of what the purpose is, is really important".

Lisa further described, "we've got some really lovely friends in there, and it's really lovely to associate with them every week. We just look forward to coming each week, just for the fitness and meeting people and all." One participant had not played team sports before, describing the excitement of team comradery and interactions during competitions. Three of the participants described the feeling of team comradery as being "part of something bigger". One couple (Margaret and Robert) planned to travel internationally to connect with other walking football groups. Hannah and Grace described feeling more connected to their children and grandchildren as they now had a shared interest in football, and Sarah and Jack described a new interest in watching national football games online.

3.1.3.". It's How Our Brain Is Engaged"

Five participants (William, David, Kevin, Robert, and Grace) described cognitive and psychological benefits from participating in walking football. For example, William described,

> "I think the mental side of it, too. Like trying to be in some ways, tactical about, trying to figure out where you're going to go, where the ball's going to go, keeping your mind ticking over and thinking about, where am I going to go, who can I pass to, where can I position myself? So, yes, really thinking about that side of it too, apart from the physical side, I think that mental stimulation and activity is a big part of it".

Similarly, David described, "Strategising about the game keeps my mind active and engaged." Participants also described positive affective states when playing walking football. David described feelings of "excitement" when engaging in competitions with other teams. Robert described "dreaming" about competing internationally. Grace and Kevin described experiencing "enjoyment" and "fun" when socialising with other players. The competitive nature of the game contributed to participant's enjoyment and engagement in walking football, with William describing his determination to continue playing. Increased physical abilities further contributed to feelings of self-efficacy and self-confidence.

3.2. Anthropometry and Functional Outcomes

Anthropometrical and functional outcomes are presented in Table 1. Statistically significant increases ($p<0.05$), with small effects, were observed in body mass and BMI. Furthermore, functional outcomes significantly improved ($p<0.05$) as indicated by small-to-large magnitude increases of 13.2% walking distance in the 6MWT, and 10.1%, 10.9% and 13.4% increases in repetitions for the CST, ACT and 2MST respectively. There was also a 14% reduction in time to complete the TUG. No significant differences, with trivial effects, were observed for both the CSRT and BST.

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Table 1. Mean (95% CI) for anthropometrical and functional outcomes before and after a 6-week walking football intervention.

	Pre	Post	% Change	Cohens d	P Value
Mass (kg)	83.9 (69.7-90.2)	85.4 (71.4-92.1)	1.7	0.07	0.011*
BMI (kg/m²)	28.2 (23.5-30.3)	28.8 (24.1-30.8)	1.8	0.08	0.005*
CST (reps)	13.9 (12.7-15.4)	15.2 (14.3-16.3)	10.1	0.49	0.015*
ACT (reps)	19.0 (16.1-22.5)	21.4 (18.6-24.4)	10.9	0.49	0.007*
TUG (secs)	5.7 (5.1-6.1)	4.9 (4.4-5.2)	14.0	-0.9	0.001*
CSRT (cm)	Right: 1.8 (-1.56-8.9)	Right: 2.1 (-1.4-7.6)	16.7	0.02	0.929
	Left: 1.8 (-1.1-8.9)	Left: 3.1 (-1.3-8.8)	72.2	0.12	0.607
BST (cm)	Right: -16.4 (-21.5--8.2)	Right: -14.1 (-18.7 --5.3)	13.4	0.19	0.176
	Left: -19.6 (-24.1--8.37)	Left: -18.4 (-24.9--10.4)	6.5	0.08	0.564
2MST (reps)	196.2 (181.1-216.2)	217.7 (198.9-238.8)	10.9	0.72	0.021*
6MWT (m)	538.3 (510.6-566.1)	609.3 (571.8-646.8)	13.2	1.6	0.002**

*statistically significant difference at $p<0.05$ as determined by paired samples t-test. **statistically significant difference at $p<0.05$ as determined by Wilcoxon signed ranks test.

4. Discussion

Participants perceived improved strength, balance, flexibility, and endurance, increased self-efficacy, and increased participation in other life activities. These outcomes contribute to enhanced well-being and quality of life, reflected through identified opportunities for friendship, social connection, cognitive stimulation, and positive emotional/psychological experiences. Flexibility and timing of sessions was identified as important to promote participation. The participants' perception of improved physical capacity was reflected by increased walking capacity, agility and strength following the 6-week walking football program.

Participants in this program perceived that walking football contributed to social connectedness and "feeling part of something bigger", which aligns with previous findings on the experiences influencing walking football initiation, maintenance and sustainability in older adults [11,14]. These findings are important given rural older adults are at increased risk of experiencing loneliness and social isolation than their urban counterparts [25]. Various factors can contribute to loneliness and social isolation in older rural populations, including health and mobility issues, lack of adequate infrastructure and rural cultural power dynamics [26]. In the present study, participants described the importance of an accessible indoor playing environment, flexibility in attendance, and an inclusive playing culture for enabling their participation, which has been described by Romein et al. [27] as necessary for the delivery of an adaptive sport program. While an indoor environment was possible in this setting, it is not always available in rural areas, which makes flexibility and inclusiveness even more important when setting up adaptive sports programs. Participants attributed the accessible and inclusive group setup to feelings of social connectedness and other psychological benefits, including positive affective experiences such as enjoyment and fun. The importance of group characteristics and culture has been identified in shaping psychological well-being and resilience in rural adults [28]. It is therefore recommended that rural adaptive walking sports programs incorporate similar inclusive and accessible design considerations to promote optimal health, well-being, and social connection among older adults.

Considering that cognitive decline is associated with a range of functional impairments in older adults, the finding that participation in walking football had perceived cognitive and psychological benefits highlights the role that adaptive walking sports have in promoting health and functional independence in older adults. Furthermore, the relationship between values and perceptions of health and physical activity has previously been identified as an important driver of interest in and commitment to walking football groups in older adults [13,17]. Participants in the present research highlighted the importance of cognitive stimulation and challenge in maintaining their executive functioning skills. Positive affective states, including excitement, fun, and enjoyment experienced

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during play may contribute to older adult's intrinsic motivation and general mental health and well-being, and this should be investigated in future research.

Despite the low sample size and short intervention duration, the improved functional health outcomes observed in this study are in alignment with previous findings from Duncan et al. [29], after a 12-week traditional recreational football program. However, many older adults are unable to participate in traditional sports due to exercise-limiting comorbidities such as cardiovascular and musculoskeletal disorders, as well as fears about physical safety [30], which highlights the role of adaptive sports. Previous walking football programs [15,18] including those implemented for people with cancer [16], have also demonstrated functional benefits, but these have been higher dose programs conducted in metropolitan settings. Rural-residing older adults are often limited by distance and access to such programs, and therefore it is important to determine that such benefits can be attained with only six hours of organized adaptive sport. The social connection and confidence that the adaptive sport program develops might support increased physical activity participation outside of supervised settings, leading to further health and functional improvements.

Limitations

This study utilised multiple methods to identify psychosocial and physical benefits of participating in a rural walking football program; however, future research is required to ascertain the extent of such findings to an appropriate control group. Furthermore, the sample size within the present study is small and as such underpowered to determine effect beyond doubt, particularly without a control group. However, the addition of qualitative findings that support the quantitative outcomes partially overcomes this limitation. Finally, whilst participants were asked to maintain their typical physical activity behaviors throughout the duration of the study, this was not monitored or controlled. Consequently, it is possible that changes in physical activity outside of the intervention contributed towards the changes in functional health outcomes observed in this study, however this should be considered a positive outcome if it were true.

5. Conclusions

This study provides evidence that 6-weeks of walking football provides sufficient stimulus to promote positive experiences, including increased confidence in physical abilities, social connectedness and support, and perceived cognitive and psychological benefits in a rural population of older adults. Quantifiable small to large improvements were observed in assessments of upper and lower body muscular strength, agility and aerobic endurance. These findings highlight the potential efficacy of walking football as a public health intervention to safely increase physical activity and promote social connections in older adults from rural Australia.

Author Contributions: SC and KM were responsible for project conceptualisation, methodological development, formal data analysis and interpretation, data collection and project delivery, writing – original draft, writing – review and editing, project supervision and administration, and funding acquisition. PL and JM contributed towards data collection and project delivery, writing – review and editing, and project administration. KP contributed to formal data analysis and interpretation, writing – review and editing. BG assisted with project conceptualisation, methodological development, formal data analysis and interpretation, writing – review and editing.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Ethics Committee of La Trobe University (ref: HEC24132, approved on 11/4/2024) for studies involving humans.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. The consent form for participation was distributed to all participants (prior to the start of the research project) and signed prior to the study's commencement.

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Conflicts of Interest: The authors declare no conflicts of interest. Furthermore, the funders had no role in the design of the study; in the collection, analysis, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

Abbreviations

The following abbreviations are used in this manuscript:

ACT	Arm Curl Test
BMI	Body Mass Index
BST	Back Scratch Test
CSRT	Chair Sit and Reach Test
CST	30-sec Chair Stand Test
TUG	8-foot Times Up and Go Test
2MST	2-minute Step in Place Test
6MWT	6-minute Walk Test

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