Journal of Rural Medicine

Field report

Implementation and outcomes of a community-based boccia program for older adults: a field report

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Abstract

Objective: This report aimed to describe the implementation and outcomes of a community-based boccia program for community-dwelling older adults.

Patients and Methods: Nine older adults participated in a 60-minute session once a week consisting of 15 min of stretching and low-intensity resistance exercises, followed by a short rest period, approximately 5 min of throwing practice, and 35 min of boccia gameplay. Measurements were conducted at baseline and after an average of 10 months and included blood pressure, Timed Up and Go (TUG) test, Functional Reach Test (FRT), grip strength in both hands, pain assessed using a visual analog scale (VAS), and physical activity assessed using the International Physical Activity Questionnaire short form (IPAQ-SF). Participant satisfaction was evaluated at the final assessment using the VAS. Statistical analyses were performed using the Wilcoxon signed-rank test, with the level of significance set at $P<0.05$.

Results: Systolic blood pressure decreased significantly ($P=0.007$). The TUG test showed no significant improvement ($P=0.066$). No significant changes were observed in the FRT or grip strength in either hand. The IPAQ scores increased; however, owing to the large inter-individual variability, the change was not statistically significant. Satisfaction and perceived benefit scores were generally high, although exercise adherence at home was relatively low.

Conclusion: Although improvements in physical function were limited, the program was feasible, safe, and associated with high participant satisfaction, suggesting its potential as a sustainable community-based health-promotion intervention.

Key words: boccia, social participation, older adults, physical function, community-based intervention

(J Rural Med 2026; 21(4): 495–498)

Introduction

With the rapidly aging Japanese population, promoting health maintenance among community-dwelling older adults has become increasingly important[1]. Although regular exercise is beneficial for maintaining health, recent studies have emphasized the role of social participation and leisure activities in preventing frailty and functional decline[2–5]. Participation in community activities has been associated with a reduced risk of functional disability[3] and improved psychological well-being[4]. Furthermore, diversity in social participation has been linked to frailty prevention[5]. Therefore, this report aims to describe the implementation and outcomes of a community-based boccia program for older adults.

Boccia is an inclusive sport that can be enjoyed regardless of age or physical ability and incorporates both competitive and social elements. However, few studies have examined physiotherapist-led boccia-based health programs for older adults[6]. Moreover, the role of physiotherapists in structuring and delivering such programs remains insufficiently explored in the literature.

Additionally, older adults often face barriers to continued exercise, such as pain, physical burden, and reduced motivation, highlighting the need for sustainable programs

Received: April 27, 2026
Accepted: June 19, 2026
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that incorporate enjoyment and social engagement.

The program was implemented as part of a facility's community-oriented activities to promote health, social participation, and interaction among community residents, including individuals with and without disabilities. Additionally, the program aims to foster greater familiarity with disabilities and inclusive community engagement through shared recreational participation.

Materials and Methods

Participants

This report describes a community-based boccia program conducted at a municipal disability support facility in Osaka, Japan. The Suita Municipal Disability Support Center I-Hope Suita is a multifunctional municipal facility equipped with community spaces, such as a multipurpose activity room, an indoor pool, and a cooking practice room, designed to promote interaction and engagement among community residents. In addition to providing rehabilitation services for individuals with disabilities, the facility promotes community participation and inclusive community development through rehabilitation-based activities.

In response to the increasing community interest in boccia, a physiotherapist independently initiated and organized this program as a community-oriented activity alongside routine rehabilitation services. The report included data from nine community-dwelling older adults who voluntarily participated in the program. The mean age of the participants was 68.1 ± 6.7 years. No specific inclusion or exclusion criteria were applied.

This study was conducted in accordance with the principles of the Declaration of Helsinki. All participants provided informed consent before participation, and participation in the program was voluntary.

Intervention

Boccia activities have already been conducted continuously at the facility as part of the support services for individuals with disabilities. Building on these activities and in response to increasing community interest in boccia, a physiotherapist involved in boccia officiating and promotion developed a sustainable health boccia initiative within the facility setting.

Boccia is an inclusive recreational activity that can be enjoyed regardless of the age or physical ability. Unlike many local community centers, the facility possessed a permanently installed official-size boccia court in an air-conditioned multipurpose activity room, allowing participants to engage in the activity in an appropriate environment.

The initiative was designed not only to promote physical activity, but also to encourage enjoyable social interactions and long-term exercise habits among community-dwelling older adults. Weekly participation was considered important for supporting regular exercise behavior, while the inclusion of stretching and low-intensity resistance exercises aimed to provide opportunities for fall prevention education and health promotion. The program was intentionally structured to combine enjoyment, social interaction, and accessible physical activity, based on the perceived needs of older adults in the community.

The program was conducted once a week for 60 min over an average period of 10.0 ± 4.1 months. Each session consisted of 15 min of stretching and low-intensity resistance training using elastic bands, followed by a short rest period and approximately 5 min of throwing practice. The remaining 35 min were dedicated to boccia gameplay.

A physiotherapist supervised all sessions and provided simple guidance to improve the throwing accuracy. The instructor also facilitated the games and provided rules, as necessary.

Outcome measures

Blood pressure and pulse rate were measured before and after the program at baseline and final evaluation. Pain was assessed using a visual analog scale (VAS). Psychological distress was assessed by using a Distress and Impact Thermometer.

The grip strength was measured using a hand dynamometer (EH-101; CAMRY, Zhongshan, China). Measurements were performed twice for each hand and the mean values of the two trials were recorded separately for the right and left hands. Balance and mobility were assessed using the Functional Reach Test (FRT) and Timed Up and Go (TUG) test, each performed once.

Physical activity was assessed using the International Physical Activity Questionnaire short form (IPAQ-SF)[7] based on self-reported activity over the previous seven days.

At the final evaluation, subjective outcomes, including satisfaction and perceived benefits, were assessed using VAS.

Adverse events were defined as falls, injuries, or health deterioration that occurred during the intervention period.

Statistical analysis

Data were analyzed using SPSS (version 22.0; IBM, Tokyo, Japan). The Wilcoxon signed-rank test was used to compare the pre- and post-intervention data. Statistical significance was set at $P<0.05$. This study was approved by the Ethics Review Committee of Kochi Professional University of Rehabilitation (approval no. KPUR2026E0002) and was conducted in accordance with the Declaration of Helsinki. All participants provided written informed consent before participation.

Table 1 Changes in physical function and physical activity (n=9)

Variable	Baseline	Follow-up	*P*-value
Systolic blood pressure (mmHg)	142.00 ± 18.13	132.33 ± 19.96	0.007
Diastolic blood pressure (mmHg)	82.22 ± 9.48	81.89 ± 10.24	0.859
Timed Up and Go (s)	6.05 ± 1.00	5.84 ± 0.81	0.066
Functional Reach Test (cm)	28.62 ± 5.62	28.38 ± 5.93	0.859
Grip strength (right, kg)	27.54 ± 6.63	26.32 ± 5.99	0.110
Grip strength (left, kg)	25.97 ± 6.36	25.25 ± 5.64	0.260
IPAQ total (METs-min/week)	3,192.56 ± 3744.29	4,203.83 ± 7888.86	0.953

Mean ± standard deviation. IPAQ: International Physical Activity Questionnaire; METs: metabolic equivalents.

Results

Table 1 shows the changes in physical function and activity. Systolic blood pressure significantly decreased from 142.00 ± 18.13 mmHg at baseline to 132.33 ± 19.96 mmHg at the final evaluation (P=0.007). No significant change was observed in the diastolic blood pressure (P=0.859). Pain scores assessed using the visual analog scale (VAS) showed no significant change between baseline and final evaluation, although individual variability was observed.

TUG improved from 6.05 ± 1.00 seconds to 5.84 ± 0.81 seconds; however, this change did not reach statistical significance (P=0.066). No significant changes were observed in the FRT or grip strength in either hand. IPAQ scores increased, but the large variability resulted in no significant differences.

No adverse events such as falls, injuries, or health deterioration were observed during the intervention period.

Table 2 shows the participant-reported outcomes of the final evaluation. Satisfaction and perceived benefit scores were generally high, although exercise adherence at home was relatively low.

Table 2 Participant-reported outcomes at follow-up (n=9)

Outcome	Value
Perceived fall prevention	8.50 ± 1.85
Exercise adherence at home	4.88 ± 2.38
Mental and physical refreshment	9.25 ± 0.96
Perceived skill improvement	9.00 ± 1.00
Overall satisfaction	9.13 ± 1.25

VAS, 0–10. Mean ± standard deviation.

Discussion

This report suggests that a weekly boccia-based program led by a physiotherapist may contribute to a reduction in systolic blood pressure, although improvements in physical function are limited. The program included boccia gameplay and low-intensity resistance exercises using elastic bands.

This reduction in systolic blood pressure suggests that low-intensity physical activity combined with social participation may positively influence cardiovascular health, which is consistent with previous findings[8]. Contrastingly, the lack of significant improvements in physical function measures such as TUG, FRT, and grip strength may be explained by the relatively low frequency of the intervention and the high baseline functional levels of the participants, indicating a possible ceiling effect[9].

Importantly, the participants generally reported high levels of satisfaction, although exercise adherence at home was relatively low. This finding suggests that the program was enjoyable and sustainable even for individuals with pain or physical limitations. Boccia is an adaptable activity with relatively low physical demands that allow for flexible adjustment of intensity, which may lower both physical and psychological barriers to participation. Additionally, some participants reported subjective improvements in their daily physical condition. Although objective improvements were limited, these perceptions may reflect the combined effects of light physical activity, stretching exercises, social interactions, and psychological refreshment through regular participation in enjoyable community activities. High levels of satisfaction may be partly explained by increased self-efficacy and social interaction[10]. These findings indicate that the primary value of such programs may lie not only in improving physical function but also in maintaining function, which has been recognized as an important goal in older adults[11], and in promoting long-term engagement in health-related activities through enjoyable and socially interactive environments.

This study has several limitations. First, the sample size was small, which may limit the generalizability of our findings. Second, the absence of a control group made it difficult to determine causal relationships between the intervention and the observed outcomes. Third, this study was conducted at a single community facility, which may have limited the applicability of the results to other settings. Future studies

with larger sample sizes and controlled designs are required to confirm these findings.

Conclusion

A community-based boccia program led by a physiotherapist appears to be feasible, safe, and well-accepted among community-dwelling older adults. Although its impact on physical function may be limited, it may serve as a sustainable and enjoyable approach for community-based health promotion and social participation among older adults.

Conflict of interest: The authors declare no conflicts of interest.

Funding: This study received no external funding.

Ethics approval and consent to participate: This report was approved by the Ethics Review Committee of Kochi Professional University of Rehabilitation (Approval No. KPUR2026E0002). Written informed consent was obtained from all participants.

Consent for publication: All authors consent to the publication of this manuscript in the Journal of Rural Medicine.

Data availability statement: The datasets generated and/or analyzed in the current study are available from the corresponding author upon reasonable request.

Author contributions: T.M. conceived the study and collected data. T.M. and Y.A. analyzed the data. T.M. drafted the manuscript. Y.A. and Y.T. critically revised the manuscript. All authors approved the final version.

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