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Outdoor physical activity for older people-the senior exercise park: Current research, challenges and future directions

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BRIEF REPORT

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Outdoor physical activity for older people—the senior exercise park: Current research, challenges and future directions

Abstract

Issue addressed: Exercising outdoors provide beneficial effect on mental and physical health for all ages. However, few older people exercise outdoors other than walking. While outdoor gyms have become increasingly common in Australia, limited outdoor exercise equipment specifically designed for older people is available in public spaces. We have set up and evaluated a unique purpose-built outdoor exercise park for older people in the community setting and demonstrated positive physical and well-being outcomes associated with the provision of this unique exercise mode and social programme.

Methods: This study is a reflective narrative describing this innovative exercise approach and reports challenges associated with establishment of the exercise park, conducting the randomised trial, strategies adopted to address these challenges and recommendations for future implementation of this approach in the community.

Results: Many challenges were encountered, including securing appropriate land to locate the exercise park, control of environmental factors for safety (non-slippery ground and equipment) as well as logistics in running the exercise programme itself. Several adjustments in the equipment were also required to ensure safe use by older people.

Conclusion: The inclusion of outdoor equipment for older people in public spaces or urban parks is important and careful consideration needs to be taken by local/public authorities to provide access, amenities and safety for all as well as activities to suit all ages.

So what? Seniors' exercise parks can be installed in public places and may provide an enjoyable and effective approach to engage older individuals in a more active and healthier lifestyle.

1 | INTRODUCTION

With the increase in the Australian population aged over 65, there is likely to be an increase in the prevalence of health issues that affect older people. Maintaining adequate levels of physical activity is known to reduce the risk of health problems in older adults.^{1–3} Moreover, higher sedentary behaviour and physical inactivity⁴ are

linked to all-cause mortality.⁵ Creating opportunities for older people to engage in physical activity requires commitment from the community and authorities.

A key strategy is to make the environment more age-friendly. This is evident through the establishment of The WHO Global Network for Age-friendly Cities and Communities Network (<http://www.who.int/ageing/age-friendly-world/en/>). One way to facilitate this is to enable people of all ages to actively participate in outdoor community activities through the designing of “active” public/urban spaces that are older-person-friendly. Exercising outdoors is recommended for all ages due to its beneficial effect on mental and physical health.⁶ While outdoor gyms have become increasingly common in Australia, most outdoor exercise equipment currently available in public spaces is mainly designed for children or younger adults. Moreover, existing adults' outdoor exercise equipment mainly mimic gym machines which do not necessarily target all functional deficits associated with ageing and hence may not be suitable for older people in improving their balance and physical function. In this context, the inclusion of a space with purpose-built equipment designed for older people that can be used in a playful way but still targets key physiological elements that deteriorate in older people (eg, balance, functional movement and activities, joint range of motion and mobility) is important.

Previous research conducted in NSW reported positive perceptions and participation of people aged ≥ 50 years in a structured exercise programme using outdoor gym equipment.⁷ However, the social and physical benefits of the outdoor gym for older cohorts have not been examined. A recent study conducted in Melbourne, Australia, was the first outdoor exercise park community intervention trial, using an innovative seniors-only outdoor exercise park (Lappset, Australia Pty Ltd, equipment company provider).⁸ A unique purpose-built exercise park was established to provide a fun but physically challenging environment to support exercise in community settings, and to challenge key aspects of physical health for older people, including balance, mobility and function (https://www.youtube.com/watch?v=IO6jz_w5vcg&feature=youtu.be). The exercise park was designed to actively promote community well-being through the provision of a unique exercise mode and social support programme (eg, morning tea). The randomised controlled trial (RCT) identified

significant improvement in lower limb muscle strength, function and balance following 18 weeks of the exercise park programme for older people.⁹ High adherence (attendance) rates (80%) were evident and were related to participants' enjoyment of exercising outdoors with fun and enjoyable exercises and the associated social interaction.¹⁰

This study is a reflective narrative describing this innovative exercise approach, and reports challenges associated with establishment of the exercise park, conducting the randomised trial, strategies adopted to address these challenges and recommendations for future implementation of this approach in the community.

2 | PARTICIPANTS AND METHODOLOGY

The full description of the approach and outcomes (methods, design, randomisation process, exercises and assessments) associated with evaluation of the senior exercise park are described elsewhere^{8–10} (Ethics Approval HRE13-215). This study was conducted between 2013 and 2015. Forty-eight participants were aged between 60 and 88 years (mean age 71.6 ± 6.26 years; 34 females), had one or more falls in the previous 12 months and/or were concerned about having a fall. Participants were generally active and independent in the community with no more than a

single point stick used for regular outdoors walking. With these inclusion criteria, those with mild falls risk, but who remain relatively active, were targeted.

2.1 | Location and equipment installation

The minimum overall space required for the Lappset seniors' exercise park was 12×9 m (Figure 1). Discussion with several councils in Victoria was held initially to explore a suitable public space. However, they were not able to provide a suitable location. Subsequent discussion with Villa Maria Catholic Homes community organisation was successful, and the exercise park was installed at St Bernadette's Community Respite House in Sunshine North, Victoria, Australia. Limitations of the final selected location were the relative seclusion of the site and the lack of direct public transport access. The following infrastructure items were required for installation and safety: soft-fall flooring (prevention of injury around equipment), shading (non-waterproof cover) and other expected associated infrastructure development (electricity, landscaping and paving pathway). The cost associated with installation and infrastructure ranged between \$AUD 60 000 and 70 000, excluding cost of the equipment. The exercise park equipment was provided by Lappset Australia Pty Ltd as in-kind for the study.



FIGURE 1 A schematic view of the exercise stations

2.1.1 | Equipment and station modification

During the design of the exercise programme (prior to trial commencement), the investigators trialled and practised the exercises to assess the suitability of each exercise station. This was then followed by discussion by the research team and recommendations made for station modifications. Further observations were made during the trial by the exercise instructors with feedback provided by participants. The following modifications to the equipment were made:

1. Removal of bars (Figures 2, 3 and 4)—to allow smooth transition from one exercise station to another
2. Lowering of foot stretching boards (Figure 5)—the boards were used as an exercise station for foot tapping exercises
3. Additional colour tapes (Figure 6)—each colour tape represented a different exercise difficulty to accommodate older people with physical limitations and different physical abilities.

4. Additional customised small steps (Figure 7)—steps were used to increase/decrease difficulty on selected stations

2.1.2 | Weather and safety

As the study was carried out across several seasons (summer through winter), non-slip tapes were added to several exercise stations (see Figure 8). A temperature restriction (classes were conducted in early-mid morning prior to peak temperature) was also applied during hot days. Moreover, in extreme temperature ($\geq 35^{\circ}$) or wet days, classes were cancelled. Over the 21.5 months of this study, only 9.1% of classes (24 of 264 scheduled sessions) were cancelled due to rain.

2.1.3 | Recruitment

The location of the exercise park in a suburb with limited direct public transport access made recruitment difficult. The exercise park was



FIGURE 2 A balance stool station. The metal bar used for hand support for the balance stool was flipped



FIGURE 3 Wood bars. The wood bar was removed to allow smooth movement from one station to another



FIGURE 4 A chin-up bar. The chin-up bar was elevated (~1.8m) so that clients can walk beneath it with diminished risk of hitting their head

installed in a property owned by the community organisation in a secluded area that was not highly visible.

2.1.4 | Exercise programme

The participants worked in pairs under the supervision of accredited exercise physiologists (AEP) (one AEP per 3-4 participants). Due to the nature of the trial and ethical constraints, supervision was required for all sessions.



FIGURE 5 A stretching board station in the exercise park. The stretching boards (used for foot alternate tapping exercises) were lowered to the ground to allow tapping with the foot

3 | DISCUSSION

Outdoor exercise has been shown to improve mood and self-esteem in older people¹¹ where natural environments may have direct and positive impacts on well-being.¹² Moreover, the use of outdoor gyms was reported as a potential equitable approach to engaging older adults in a variety of physical activity types.¹³ Consequently, exercising outdoors may increase enjoyment and provide social connectedness and support as reported with the use of the seniors' exercise park¹⁰ and thus can lead to positive behaviour changes and sustained physical activity participation. Recommendations for future implementation are provided below.



FIGURE 6 Additional of colour tapes for several exercise stations. Coloured tape was added to the hand bars and on the floor (for foot/hand positioning)



FIGURE 7 A customised wooden block . A small step (customised wooden block: L 70cm × W 40cm × H 10cm) was added to selected stations based on clients' function. The steps were used to increase/decrease difficulty – for standing on the step during push up, sit to stand, when stepping down from the ramp to the net, and for step up and down on platform to ground. Minimum of three customised steps were needed

3.1 | Future implementation and recommendations

The main difficulties identified were related to finding suitable and sufficient land to install the senior exercise park equipment, and the secluded

location of the final site, with limited public access which hindered recruitment and potential wider access. All other aspects (eg, weather, exercise station modifications) were able to be addressed by the team.

Wide implementation of the outdoor seniors' exercise park in Australia will require overcoming these challenges. In addition, work is required to address general obstacles of translating and disseminating research findings into practice (eg, insufficient local expertise to roll out community exercise programmes, and inadequate infrastructure to integrate evidence-based programmes into community practice).¹⁴

To allow wider usage of the seniors' exercise park, local councils/authorities should consider older peoples' needs when designing their parks and urban/rural spaces. As councils often seek landscape services, discussion with relevant experts in the fields (allied health professionals/researchers specialised in ageing and gerontology) is also recommended. Other important elements to consider when designing outdoor space for older people are as follows: accessibility (public transport access and parking), well-lit and maintained walkways, green and natural surroundings, resting seats, water fountain and amenities (eg, toilets). Given that climate conditions can play a major role in safety (ie, wet/hot weather), a cover/shade (preferably waterproof cover) might be needed for protection over the exercise equipment and participant's health and safety. Land in a location well serviced by public transport (prime real estate) can be difficult to find mainly due to competing demands on local councils to provide public services to all residents. There may be advantages of locating a seniors' exercise park near existing children's parks (ie, using existing park areas). This may encourage intergenerational activity, as many older adults already take their grandchildren to the park for the children to play.

3.1.1 | Public use of the exercise park

To allow independent, free of charge, broader public use of the exercise park, signage in each station with simple instructions and safety



FIGURE 8 Non-slip tape placed in selected exercise stations. The non-slip tape (gripping tape) was placed on stations as follows: ramp, balance beam, stairs, bridge, balance stool, platform

precautions would be important additions. Employment of colour coding signage to represent exercise difficulty and progression might also be useful. The addition of a user guide might further support sustained participation.⁷

3.1.2 | Local community and health organisation involvement

Group exercise can also be a good socialisation opportunity, with exercise sessions led by an allied health professional and administered via local community health organisations. Instructional exercise classes were identified previously as an important enabler by women to use outdoor gym equipment.¹³ This will introduce correct use of the equipment and exercise procedures, particularly for older people with comorbidities, as well as to provide an alternative for frail older people or those who prefer to be supervised.

4 | CONCLUSION

Establishing this new approach to exercise for older people has raised a number of challenges. However, the outcomes of this project provided empirical evidence for the safety, feasibility and effectiveness for the use of this novel exercise park in the community. Seniors' exercise parks can be installed outdoors or indoors in public places, such as community centres and parks, and may be offered free of charge to the public. Hence, this initiative could potentially be a cost-effective way to engage older individuals in a more active and healthier lifestyle. Careful consideration needs to be taken by local/public authorities to provide access and safety for all as well as activities to suit all ages. This will not only elicit health benefits, but may also provide social opportunities and interaction as well as connectivity to nature.

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CONFLICT OF INTEREST









The authors declare that there are no conflicts of interest in connection with this article.

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