The roadmap for creating a novel outdoor activity space in a rehabilitation hospital setting: the OASIS program initiative

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The roadmap for creating a novel outdoor activity space in a rehabilitation hospital setting: the OASIS program initiative

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Abstract

Introduction To meet older people's physical and mental health needs the built environment is becoming increasingly important for the health and community aged care systems. The usage of an age-friendly outdoor space as an enhancement to standard treatment for rehabilitation in hospital settings holds promise as part of patients' continuum of care. This descriptive case study described the design and development of an age-friendly outdoor rehabilitation space in a hospital setting in Sydney Australia, the OASIS (Outdoor Activity Space for Improving your Strength) program.

Method This descriptive case study reports the step-by-step process from initial concept to activation of the space. Drawing on internal planning documents, site plans, meeting records, and project materials, it outlines key phases including stakeholder consultation, site selection, design development, equipment installation, staff training, risk management, and pilot testing of a group-based exercise program.

Results The process took approximately four years which included consultation, examination and selection of suitable feature design and equipment selection. Training and upskilling staff and risk management were undertaken prior to pilot testing an exercise program. Preliminary usage testing of the space demonstrated safe usage by older people in a group setting with successful transition from supervised program into independent usage.

Conclusion The OASIS approach offers an innovative adjunctive therapeutic approach to standard treatment for rehabilitation and physical activity participation of older people in out-patient settings. Future work is required to explore its provisional integration as part of the hospital in-patient and out-patient services.

Keywords Rehabilitation, Age-friendly, Outdoor, Exercise, Falls prevention, Older people

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Text box 1. Contributions to the literature

- This study offers a practical model for hospitals to improve rehabilitation by using outdoor spaces, not just indoor facilities.
- It shows how hospital environments can support long-term physical activity for better health outcomes.
- It highlights the importance of designing healthcare spaces that enable both prevention and rehabilitation.

Introduction

With the growing aging population in Australia and globally [1] preventative health approaches will become increasingly important for the health and community aged care system in order to meet older people's physical and mental health needs. In 2018 the World Health Organization's (WHO) Global Network for Age-Friendly Cities and Communities highlighted the need for all cities and communities across the world to create age-friendly environments that provide opportunities for physical, psychosocial, and cultural activities to better support their health [2, 3]. Promoting physical health through appropriate health services is important for independence and for the reduction of development of various chronic conditions, diseases, cognitive decline and disabilities that often occur with ageing [4–7]. The design of environments in various settings (hospital, community, independent living) can lead to greater opportunities to engage in incidental movements and mobility, as well as overall physical activity, which can result in a reduction in poor health outcomes for older people [8, 9]. There is strong research evidence on the benefits of suitable age-friendly approaches with age-friendly outdoor spaces emerging in popularity [10–12].

In recent years the attractiveness of including age-suitable exercise equipment in public recreational spaces has grown. In particular, the installation of the Seniors Exercise Park, incorporating multi-station outdoors exercise equipment purposely designed for older people, has increased in Australia due to the growing reports of the health benefits for older people [11–16]. Existing outdoor exercise equipment in community parks tend to mainly include resistance or cardiovascular fitness stations [17] while the Seniors Exercise Park includes exercise stations that focus on daily functional movements, mobility, balance and strength [18]. Other aspects around the design of a space, its accessibility and safety can also impact on its suitability to be used by older people [19]. Through a 10-year stream of research, we have demonstrated the health, well-being and social and economic benefits associated with the usage of the Seniors Exercise Parks located in community parks [12, 14, 16, 20, 21]. In particular, older people who exercise using the Seniors Exercise Park have demonstrated improvement in physical function (e.g., strength, balance and function), quality of life, enjoyment, reduced falls, and sustained engagement in physical activity [13, 14, 22–25]. We have also demonstrated its safety and feasibility in a residential aged care setting, highlighting the potential positive impact of a suitable well-designed built environment to improve the care provided for people living with dementia in this setting [15].

The usage of an age-friendly outdoor space with the inclusion of the Seniors Exercise Park within a hospital system holds promise to be utilised for patients as part of their continuum of care. While traditionally, the main approach to using outdoor spaces in rehabilitation hospitals has been related to mobility gardens for gait training on different terrains or surfaces, the usage of a specialised outdoor exercise equipment offers a different approach to training balance, strength and function that are usually undertaken indoors in a gymnasium. It has potential to be utilised as an adjunctive therapeutic approach to standard/conventional treatment for rehabilitation in both in-patient and out-patient settings and can offer the added benefits of exercising and being in the outdoors [26–28].

This has led to the conceptualisation of an age-friendly outdoor space within a hospital setting as a novel approach to both enhancing the current standard hospital rehabilitation services as well as a vehicle for promoting healthy exercise habits in the community. To the authors' knowledge, this is the first initiative of its kind in a hospital setting in Australia. This paper aims to describe the planning, design, and implementation of the age-friendly outdoor rehabilitation space, the OASIS (Outdoor Activity Space for Improving your Strength) program.

This report adopts a descriptive case study design [29] to outline the planning, development, and initial implementation of the OASIS program. It details the setting and site design, stakeholder consultation from initial conceptualisation to construction, equipment selection, staff training, and pilot implementation of the group-based exercise program. Reflections on the process, key learnings, and future service plans are also included. Information was compiled from internal planning documents, stakeholder consultation records, meeting notes, equipment design plans, and audits of program usage and patient participation during the initial pilot phase.

Setting and site design

Uniting War Memorial Hospital Waverley

The Uniting War Memorial Hospital Waverley is an affiliated health organisation owned and operated by Uniting, and is a public hospital within South Eastern Sydney Local Health District (https://www.uniting.org/services/aged-care-services/types-of-care/uniting-war-memorial-hospital). The primary role is to provide rehabilitation and assessment services for people aged over 60 years,

or for those under 60 years with Geriatric syndromes (defined as clinical conditions in older persons that do not fit into discrete disease categories, for example: falls, frailty, dizziness). The rehabilitation and assessment services include inpatient rehabilitation, day rehabilitation program and comprehensive outpatient and community allied health, nursing and medical services.

Consent to participate and ethics approval

This report is a descriptive case study report [29] which details the process undertaken to establish and develop the OASIS outdoor rehabilitation space and its operation within the hospital setting. We report basic information related to auditing program usage by patients attending the hospital and utilizing the outdoor space as part of their continuum of care. Since we did not collect personal or sensitive information, and the primary purpose was to monitor and improve service quality, ethical review or approval was not deemed necessary (aligned with the Australian National Health and Medical Research Council's guidelines).

Conceptualization and consultation

The initial conceptualization process was informed by several activities: review of the hospital's previous Clinical Strategic Plan 2018 ('you are never too old to live life'), in which the establishment of an outdoor gym was set as a planned initiative, an informal literature search, and review of the outdoor hospital area (e.g., what's working well and lessons to learn from other hospitals) including site visits to five hospitals to explore how outdoor spaces were being utilized (June-December 2018). This was followed by a consultation forum (December 2018) with a broad range of key stakeholders including: Aged Care Specialist from the local community centre, the Local Health District Population Health Project Officer; Executive and Allied Health staff representing all services across the Uniting War Memorial Hospital campus (e.g., Day Centre, Seniors Gym, Inpatient and Outpatient Rehabilitation Services); and consumer and carer representatives. The forum included a co-design workshop aimed to (1) share ideas and experiences, (2) understand current evidence and utilisation of outdoor exercise/retraining areas, (3) recognise opportunities for collaboration and partnerships and commit to building the space, and (4) to shape and conceptualize the vision of the outdoor activity area and its potential usage in order to inform the design phase. The stakeholder consultation forum helped define the core vision and practical direction for the OASIS space. Key themes included: *target users* (e.g., rehabilitation inpatients and outpatients, older community members, and carers), *intended use* (e.g., support for rehabilitation goals such as walking, balance, and falls prevention, as well as general physical activity), *design features* (e.g., a flexible circuit layout, multiple exercise options, safety), and *sustainability* (multi-use space, promotes ongoing participation, and encourages social connection). Overall, the consultation process yielded a positive response, with strong stakeholder endorsement and broad support for its potential to enhance rehabilitation and healthy ageing outcomes.

Initial vision and concept of OASIS

The shared vision that emerged from this conceptualisation and co-design process was to create a space that: (1) promotes physical activity for rehabilitation and healthy ageing, (2) was a safe and secure space, (3) could be fun, exciting and unique and (3) was developed, well utilized and sustainable. This was then guided by the view that the space needed to target key physiological domains of importance to ageing well such as balance, lower limb strength and functional activities, that are supported through research with empirical evidence about safety, feasibility and effectiveness around the use of a dedicated outdoor exercise park for older people.

Site design and exercise equipment choice

The Seniors Exercise Park outdoor equipment includes multiple exercise stations such as static/dynamic balance stations, undulating surfaces, function and movement (upper and lower limb) stations, such as shoulder range of movement, stairs and steps (Fig. 1). There are various model designs available with the inclusion of different stations combinations as well as the option for a bespoke design to suit the needs of the targeted users. The choice of exercise stations combinations was based on previous experience of our research team around exercise prescription and usage of the equipment by older people in the community through previous projects [13, 15, 16, 30]. In addition, extensive consultation was undertaken with the hospital staff from all services across the campus, the hospital Consumer Advisory Group and key community stakeholders. Feedback was gathered through on-site open sessions to help determine appropriate equipment selection and identify additional amenity requirements (e.g., water access, signage). The equipment needed to satisfy both being suitable for safe usage by people with a wide variety of abilities as well as provide enough challenge so that people could make gains from participating (e.g., to support physical improvement through progressive exercise options). Further consultation took place with the equipment company (Lark Industries, Australia and Lappset Group Ltd) to explore variation of equipment stations layout and refinement of design. The size of the site space selected for the Seniors Exercise Park equipment is 8.9 m x 11.6 m. See Fig. 1.

The principles that guided the design of the overall space was based on the NSW reference guide– 'Everyone

Fig. 1 Side view of the OASIS outdoor area

Can Play – A guideline to create inclusive playspaces' [31] and the therapeutic landscape design concept [32]. The latter highlights the importance of outdoor natural settings to support the physical, mental, and social well-being of older persons through engagement with physical activity [32]. Within the context of the OASIS program this includes: diversity of exercise stations, static and dynamic balance stations, daily functional movements, combination of stations that enable smooth transition from one station to another, sufficient space around the equipment for people to move freely, easy access to the exercise area, and colour palette to suit the surroundings and reduce sensory overload. Safety aspects included: handrail support throughout the equipment, non-slippery rubber (softfall) ground surfaces, non-slip yellow tape on all equipment platforms, various seating options (low- and high-level seating), adjustment of stepping platform height (approx 250 mm) from the finished ground, suitable heights of horizontal bars, doubling the width of the balance beam and the inclusion of on-site instructional signage and water fountain. Signage was designed to be clear, succinct and easily visible with icons and contrast for people with visual impairments and enabling for people with dementia (Alzheimer's WA https://www.enablingenvironments.com.au/signage.html). In addition, in order to create a space that was inviting, aesthetically pleasing and stimulatory, the chosen equipment colour was green (for sense of calming and soothing) [33, 34] with the integration of herbs and native plants with different senses and textures and small interactive sculptures throughout the space. A number of factors have been important in guiding location of previously community park installations of Seniors Exercise Parks, that also informed considerations in site selection for this exercise equipment in the hospital grounds such as ease of access (parking, paths), proximity to toilet facilities, seating, water fountain, and shade [11, 18, 35]. In addition to these factors, other design aspects considered in selecting the site within the Uniting War Memorial Hospital grounds included close proximity to the indoor rehabilitation and outpatient services, bathrooms, direct access for parking, adjacent to a garden area with tree

Fig. 2 Top view of the OASIS outdoor area

shading, and next to a café for refreshments and group socializing (Fig. 2).

Funding, timeline and site logistics

Engagement with the local capital works team, tender and construction estimations took place between February 2019 and June 2019. Further consultation with an urban planning and a development advisory firm for planning and review of local government requirements took place between November and December 2019, with approval of works granted in February 2021. Community donations and fundraising to support site development and construction were sought between 2019 and 2022 with about 200 people donating. The tender process was issued for the OASIS program in March 2022, with development approval and site construction commencement in June 2022. Site development was completed in December 2022 and the formal OASIS launch took place on Thursday 23rd March 2023.

Staff training

Rehabilitation staff (physiotherapists (including those with extensive experience in providing Aged Care rehabilitation) and allied health assistants) have undergone training workshop sessions by the National Aging Research Institution staff (led by PL) that included a theoretical component around exercise prescription and design, risk management, and a practical session on the equipment. Staff across the hospital campus (campus services/clinicians) planning to use the space also attended a 30 min mandatory local orientation (led by JH) that included safety and risk management incorporating hospital emergency procedures, preparation of the area, weather impact on usage and alternative options, manual handling and safe work practices as well as staff supervision ratio requirements.

Utilization of OASIS - initial pilot program

Initial testing of the outdoor equipment and OASIS program with selected patients commenced in late 2023 with the aim to build initial interest and logistics of running exercise groups, exercise program optimization and future local hospital service delivery going forwards. The program was modelled on evidence-based programs developed by the National Aging Research Institution (NARI, https://www.nari.net.au/enjoy), and informed by evidence relating to frailty, strength training, falls prevention and balance retraining, exercise engagement as well as adapted to meet the needs of the local Uniting War Memorial Hospital community [22, 36–38]. The program was promoted internally within the hospital services. Patients were referred from a variety of sources including General Practitioners or from other services at Uniting War Memorial Hospital out-patient services and day rehabilitation. Inclusion criteria were: people with deconditioning post hospitalisation or surgery, not physically active (not meeting Australian guidelines of 150 min/week, moderate activity), history of falls and/

or fear of falling, independently mobile outdoors (with or without a walking aid). Exclusion criteria were people who: needed standby assistance/assistance with mobility, with cardio-respiratory conditions deemed not suitable for moderate-high intensity training, have had acute joint injuries and post-surgery, have significant cognitive decline so that they cannot follow 2-step instructions, or were unable to stand and exercise for 15 min at a time. The structure of the OASIS outpatient program included 6 weeks of supervised group exercise, coaching and education, twice per week for 60 min with six patients and three staff supervising (two physiotherapists and one allied health assistant). Participants then transitioned into 6 weeks of semi-supervised group exercise, twice per week for 60-minute sessions (with one clinician present - an allied health assistant). The supervisor-to-patient ratio during the initial supervised phase was deliberately conservative, aligning with standard indoor rehabilitation practices while taking extra precautions for the novel outdoor setting.

Exercise program pilot logistical outcomes and learnings

The first cohort included six participants (five females, one male, with age range 74–90 years) with a variety of conditions including chronic pain; deconditioning following long hospitalisation; falls and balance impairments; and Parkinson's Disease. Five participants completed the supervised and semi- supervised programs with one participant withdrawal in the semi-supervised program due to personal stress (unrelated to the program). The pilot program was run over the holiday period with interruptions during that period (December 2023 to February 2024); hence four additional sessions were offered for each program (supervised/semi-supervised, a total of 32 sessions for the two programs combined). Attendance of 87.5% and 79.6% was reported for the supervised and semi-supervised programs respectively. No falls occurred or adverse events were reported. Exercises were progressed appropriately as skill level and capacity for exercise increased. Supervision was required in the initial six weeks (12 sessions), especially in the first 6 sessions to enable participants to be competent in performing the exercises with good technique while also being comfortable in adjusting the exercise to suit their individual physical abilities. This was all reinforced with participants in the semi-supervised sessions. Following successful completion of this, participants further progressed to independent group exercise with allocated times and periodic check-ins by clinicians. Supervision of one physiotherapist and one allied health assistant seemed sufficient in the supervised program. One staff was also deemed as sufficient in the semi-supervised program.

Weather had an impact on planning where four sessions during the supervised program (25%) were replaced with indoor sessions (three due to wet weather and one due to hot weather). During the semi-supervised program, further training of staff was required to enable the availability of staff to run indoor replacement sessions (seven sessions) and to be able to step in at times of absence of the regular trainers.

Future planning and services

It is important to note that piloting the program involved reprioritisation of existing resources to enable the program with no additional clinical resources. Following the success of the first cohort, additional groups were introduced and completed their programs successfully. Additional staff were trained in using the equipment to increase capacity within the hospital staff. Future plans include broadening the inclusion of people who are less able (physically or cognitively) and increase the group participants number from six to eight participants. Broadening the usage of the park by the wider local community is also now considered with the aim for people to attend independently for ongoing sustainability.

Discussion

The health benefits of the outdoors and the natural environment are well recognised [26–28]. The psychological restorative value of greenspace and nature as a stress and mental fatigue reduction approach [39, 40] can potentially enhance physical rehabilitation programs. The innovative concept of providing age-friendly outdoor environment and specialized exercise equipment targeting balance and functional needs of older people as a recreational space for restorative or therapeutic purposes within a hospital setting can further promote older people's health and wellbeing. The OASIS program, the first of its kind to the authors knowledge in a hospital setting, represents a new way of considering exercise, rehabilitation, and wellbeing for healthy ageing.

Initial testing of the space and OASIS program demonstrated safe usage of participants (no falls or adverse events) in a group setting, with successful transition from supervised, semi-supervised and into independent usage. This structure enabled participants to gain confidence in exercising as well as in their knowledge and experience to individually progress their own program. Similar transitional structures were also reported in people with mild balance dysfunction living in the community [25] and those living with dementia [15]. Other logistical aspects such as reduced staff supervision (e.g., reduced to two staff during the supervised program), weather elements impact (replacement with indoor sessions in wet/hot weather), and the change of session time to adjust for seasonal weather impact were also practical learning to improve future programming and safe usage. The lack of a protective cover of the space (e.g., sail shade) posed

a potential limitation of usage during extreme weather (e.g., if wet or too hot) due to safety considerations. Retrofitting the space with a sail-shade cover or equivalent might be required to enable all-year round usage, as has been implemented in a number of Seniors Exercise Parks in community park spaces [11, 12]. Additional staff training was also required to increase capacity within the hospital staff to enable staff to step in as needed and to offer indoor sessions as alternatives.

Several challenges were encountered throughout the development process. Navigating local council requirements proved time-intensive and incurred unforeseen costs, highlighting the importance of early engagement with local government and regulatory bodies. Staff uptake varied, but the structured nature of the OASIS project helped address scheduling, training needs, and integration into clinical workflows, including triaging and medical record management. Budget overruns also required additional fundraising efforts. Despite these challenges, the collaborative planning and stakeholder engagement were instrumental in shaping a practical, sustainable, and well-supported rehabilitation space.

While this paper provides a comprehensive description of the design and development of the OASIS program, it is important to acknowledge that a formal evaluation of its implementation and outcomes has not yet been conducted. This case study does not include perspectives from patients, their families, or health care providers, which are important for a complete understanding of user experience, acceptability, and feasibility. Despite these limitations, the initiative serves as a foundational model for integrating age-friendly outdoor spaces into hospital rehabilitation settings. Future plans include a structured review of outpatient services to identify gaps and opportunities for integration of the OASIS program. This includes defining service pathways, referral criteria, and tailoring the exercise components to different clinical populations. Further research is also required to assess implementation processes, service-level outcomes, cost-effectiveness, and patient-centred outcomes, supporting the program's long-term sustainability and potential scalability.

Conclusion

The OASIS is an age-friendly outdoor space that offers an adjunctive therapeutic approach to standard treatment for rehabilitation and physical activity participation of older people in hospital settings. Early indications of the unique integration as part of the hospital in-patient and out-patient services are promising. Further research is needed to formally evaluate patient outcomes and determine the potential health and functional benefits of implementing this type of program within hospital-based rehabilitation services.

Abbreviations

WHO World Health Organization
OASIS Outdoor Activity Space for Improving your Strength

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Author contributions

PL and JH have been involved in conceptualization of the project, consultation, site design and planning. JH has led the OASIS program pilot testing. PL, KH have provided advice to the OASIS program design. PL, JH, KH have contributed to writing the paper. All authors read and approved the final manuscript.

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Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

Not applicable; this study did not require ethics approval as it did not involve the collection of personal data or human subjects.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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