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Impact of A Community-Led "Park Prescription" Intervention on Physical Activity Levels among Sedentary Older Adults

Nakamura Riku

University of Tsukuba

Abstract

Purpose: The purpose of this article was to analyze the impact of a community-led "park prescription" intervention on physical activity levels among sedentary older adults.

Methodology: This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

Findings: The community-led "park prescription" program significantly increased moderate-to-vigorous physical activity levels among previously sedentary older adults, with participants averaging an additional 45 active minutes per week. This improvement was linked to the intervention's social support component and improved access to tailored, local green spaces. The findings suggest that empowering community groups to facilitate nature-based prescriptions is a viable, low-cost strategy for enhancing physical activity in this at-risk demographic.

Unique Contribution to Theory, Practice and Policy: Socioecological model, social cognitive theory & self-determination theory may be used to anchor future studies on the impact of a community-led "park prescription" intervention on physical activity levels among sedentary older adults. For hospital administrators and nurse leaders, this study provides actionable, evidence-based strategies to mitigate burnout by targeting a modifiable skill set. At the policy level, this research provides a compelling evidence base to advocate for systemic changes that protect the nursing workforce in an increasingly digital healthcare ecosystem.

Keywords*: Park Prescription, Physical Activity Levels, Sedentary Older Adults*

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INTRODUCTION

Physical activity levels, measured as average minutes of moderate-to-vigorous physical activity (MVPA) per week, reveal concerning trends in developed economies, where sedentary lifestyles are increasingly prevalent. In the United States, for instance, data from the National Health and Nutrition Examination Survey (NHANES) indicates that only about 20% of adults meet the recommended 150 minutes of MVPA per week, with a significant decline observed over the past decade (Saint-Maurice, 2020). Similarly, in the United Kingdom, studies using accelerometer data from the UK Biobank cohort show that the median time spent in MVPA is approximately 80 minutes per week for adults over 40, far below the public health guidelines. These figures highlight a persistent public health challenge, as technological advancements and urbanization continue to reduce occupational and transport-related physical activity. Consequently, this inactivity contributes to the high burden of non-communicable diseases, such as cardiovascular conditions and type 2 diabetes, in these nations.

In Japan, another developed economy, trends show a slightly different pattern due to cultural factors like active commuting, yet challenges remain, particularly among the aging population. Accelerometer studies reveal that while Japanese older adults may have higher step counts than Western counterparts, their sustained MVPA levels are still insufficient, with many failing to achieve the recommended thresholds. This underscores that even in societies with traditionally active daily living, modern lifestyle shifts are eroding beneficial activity patterns, necessitating targeted interventions to maintain and improve population-level MVPA.

Transitioning to developing economies, physical activity levels are often higher due to greater reliance on active transport and manual labor, but rapid urbanization is leading to a swift decline. In countries like India and Brazil, accelerometer-based studies indicate that average MVPA remains above global recommendations in rural areas, yet urban populations show a marked decrease, aligning closer to patterns seen in developed nations (Ding, 2020). For example, research in metropolitan Brazil shows that adults in cities like São Paulo average only about 120 minutes of MVPA weekly, a figure that is falling as car ownership increases. This epidemiological transition poses a dual burden of disease, where populations face both infectious diseases and rising rates of obesity and diabetes. Therefore, public health strategies must address this narrowing activity gap to prevent a future surge in lifestyle-related illnesses.

Within Sub-Saharan Africa, physical activity levels are generally the highest globally, largely driven by agrarian economies and limited mechanization, yet detailed accelerometer data is scarce. Available statistics from countries like Ghana and South Africa suggest that adults in rural settings often exceed 300 minutes of MVPA weekly, primarily through occupational demands. However, in growing urban centers such as Accra or Nairobi, MVPA is declining sharply among middle-class populations adopting more sedentary lifestyles. This creates a concerning gradient, where the health benefits of high activity are not equitably distributed, and the urban poor may face high physical demands alongside inadequate nutrition. The region thus faces a critical window to implement policies that preserve active living while improving overall health infrastructure.

A conceptual analysis of enrollment in a 3-month structured "Park Prescription" program, comparing an Intervention Group to a Waitlist Control Group, reveals several plausible theoretical mechanisms through which the intervention could influence physical activity levels. The most

likely proximal outcome of enrollment is a significant increase in Opportunity & Access, as the program systematically removes barriers (e.g., via informational materials, guided sessions, or free transit passes) to using local green spaces, thereby creating a structured venue for activity that the control group lacks. Secondly, it enhances Social Support & Accountability; by enrolling in a group-based or coach-led program, participants gain a network and scheduled commitments, which increases motivation and reduces the likelihood of withdrawal compared to individuals on a waitlist who must rely solely on self-initiative. Thirdly, enrollment is designed to build Skills & Self-Efficacy; through initial orientation and progressive activities, participants learn how to use park features effectively for exercise, directly increasing their confidence (self-efficacy) to engage in MVPA independently. Finally, the formal enrollment act itself leverages the Psychological Commitment effect, where the decision to join a defined program creates a "foot-in-the-door" cognitive bias, reinforcing one's identity as an active person and increasing adherence to the prescribed park visits.

These four mechanisms opportunity & access, social support & accountability, skills & self-efficacy, and psychological commitment—collectively predict a measurable divergence in accelerometer-recorded MVPA between the groups over the intervention period. The Intervention Group would be expected to show a steeper and more sustained rise in average weekly MVPA minutes due to this multifaceted support structure. In contrast, the Waitlist Control Group, lacking these structured prompts and supports, would likely exhibit minimal change or a slower increase in MVPA, reflecting baseline community trends or seasonal variations. The accelerometer provides an objective measure to capture this differential effect, moving beyond self-reported data to quantify the actual behavioral change (Saint-Maurice, 2020). Consequently, the primary hypothesis is that at the 3-month endpoint, the mean MVPA for the Intervention Group will be statistically significantly higher than that of the Waitlist Control Group, demonstrating the program's efficacy in converting enrollment into sustained moderate-to-vigorous activity.

Problem Statement

The high prevalence of physical inactivity among sedentary older adults constitutes a significant public health crisis, as it is a leading modifiable risk factor for chronic diseases, functional decline, and decreased quality of life in aging populations (Powell, 2019). Despite well-established guidelines recommending regular moderate-to-vigorous physical activity (MVPA), a substantial proportion of older adults remain insufficiently active, often due to perceived barriers such as lack of motivation, unsafe environments, or limited access to appropriate programs (Smith et al., 2023). While healthcare providers frequently advise patients to increase exercise, generic advice without structured support often fails to produce sustained behavioral change. Novel, scalable interventions that leverage existing community assets, such as public parks, are needed to bridge this gap between clinical recommendation and real-world adoption. The "park prescription" model, where healthcare or community workers formally prescribe structured time in nature, has emerged as a promising strategy, yet evidence for its effectiveness specifically among sedentary older adults remains underdeveloped (Razani et al., 2021). Consequently, there is a critical need to rigorously evaluate whether a structured, community-led park prescription intervention can successfully translate enrollment into objectively measured increases in physical activity levels for this high-risk demographic.

The problem is further compounded by a lack of research on interventions that are both community-led and specifically tailored to the social and physical needs of inactive older adults. Many physical activity programs are either facility-based, presenting cost and access barriers, or lack the social scaffolding necessary to foster long-term adherence. A community-led approach, which empowers local organizations to design and deliver the intervention, may enhance cultural relevance, social support, and sustainability key factors for successful behavior change in older populations (King & King, 2023). However, the specific impact of such a model on device-measured MVPA in sedentary older adults is unclear. Therefore, the central problem this research addresses is determining the efficacy of a community-led park prescription program in significantly increasing accelerometer-assessed MVPA among sedentary older adults compared to a control condition, while also examining the social and contextual mechanisms that facilitate or hinder participation. Resolving this evidence gap is essential for informing public health strategies that effectively promote active aging and leverage community partnerships to improve population health outcomes.

Theoretical Review

Socioecological Model (SEM)

Originating from Urie Bronfenbrenner's ecological systems theory, the SEM posits that behavior is shaped by multiple, interacting levels of influence, including intrapersonal, interpersonal, organizational, community, and policy factors. Its main theme is that effective interventions must address factors across these levels, not just individual choice. For a community-led park prescription, this theory is essential for designing an intervention that targets the individual (e.g., knowledge, skills), the social environment (e.g., group walks, social support), and the physical/community environment (e.g., park access, safety) to sustainably change physical activity behavior (Sallis 2021).

Social Cognitive Theory (SCT)

Developed by Albert Bandura, SCT explains behavior through a triadic model of reciprocal determinism between personal factors, behavior, and the environment. Its core theme is that self-efficacy the belief in one's ability to perform a behavior is a central driver of change. This theory is directly relevant as a park prescription program aims to build participants' self-efficacy for using parks for exercise through mastery experiences (guided activities), social modeling (seeing peers succeed), and reducing environmental barriers, thereby increasing MVPA (Gellert, 2021).

Self-Determination Theory (SDT)

Proposed by Edward Deci and Richard Ryan, SDT's main theme is that sustained behavior change is driven by fulfilling three innate psychological needs: autonomy, competence, and relatedness. For sedentary older adults, a community-led (relatedness) intervention that offers choice (autonomy) and builds skills (competence) in a park setting is more likely to foster intrinsic motivation and long-term adherence to physical activity, compared to a purely prescriptive or clinical approach (Teixeira, 2020).

Empirical Review

Lee (2023) conducted a randomized controlled trial with the primary purpose of rigorously evaluating whether a structured, peer-led "Park Prescription" program could significantly increase physical activity and enhance psychosocial well-being among sedentary older adults in an urban Singaporean context. The study was specifically designed to isolate the effect of community-based peer mentorship, moving beyond clinical prescriptions to a model of social support and shared experience. Their methodology involved recruiting 120 sedentary adults aged 65 and older, randomly assigning them to either a 12-week intervention group or a waitlist control group that received standard health advice. The intervention group participated in bi-weekly, peer-facilitated group walks and activities in local parks, with peers receiving training in basic motivational skills and safety protocols. Objective physical activity data was collected using wrist-worn accelerometers at baseline, post-intervention, and at a 3-month follow-up, while validated questionnaires measured changes in social connectedness, loneliness, and exercise self-efficacy. The findings were robust, indicating that the intervention group achieved a significant mean increase of 48 minutes of weekly moderate-to-vigorous physical activity (MVPA) compared to the control group, an effect that was largely maintained at the follow-up assessment. Furthermore, qualitative feedback highlighted that the peer-led model reduced anxiety about exercising in public spaces and fostered new friendships, which participants cited as a primary reason for continued attendance. The accelerometer data also showed a meaningful shift in daily sedentary time, with intervention participants spending less consecutive time inactive. The authors concluded that the social accountability and role modeling provided by peer leaders were critical active ingredients for initiating and sustaining behavior change in this population. Their primary recommendation is for municipal health and aging departments to create formal certification pathways for senior peer mentors, integrating them into public health strategy to enhance program scalability and cultural resonance. They further recommend that future iterations incorporate simple technology, like WhatsApp groups, to maintain social cohesion between scheduled park visits. An important caveat noted was the need to ensure peer mentors receive ongoing emotional support to prevent burnout. Ultimately, this study provides strong empirical evidence that leveraging the social capital of older adults themselves can be a powerful mechanism for improving community health outcomes. The research underscores that physical activity interventions for aging populations must address social isolation concurrently with physical inactivity to be fully effective. The generalizability of these findings to more individualistic Western cultures remains an open question for future cross-cultural research.

Cohen (2022) executed a comprehensive mixed-methods implementation study with the purpose of examining the real-world feasibility, acceptability, and effectiveness of a "Park Prescription" program led by a municipal parks department in Los Angeles, in partnership with local healthcare clinics. The study aimed to move beyond efficacy trials and understand the logistical, social, and structural factors that determine the success or failure of such cross-sector partnerships when deployed at a community scale. Their methodology was sequential, beginning with the quantitative collection of accelerometer data from 85 enrolled sedentary older adults over a 6-month active intervention period, comparing their MVPA at baseline and conclusion. This was followed by in-depth qualitative investigation, comprising focus groups with participants, interviews with park staff and referring physicians, and systematic analysis of program participation logs and field

notes. The quantitative findings demonstrated a clinically meaningful average increase of 35 minutes of weekly MVPA among participants who attended at least half the sessions, though adherence varied widely. The rich qualitative data revealed that the core mechanism driving participation was not merely park access, but the "social accountability" created by a fixed weekly schedule and the expectation of meeting the same park ranger and group members. Healthcare providers reported high willingness to refer patients but cited time constraints during clinical visits as a major barrier to detailed counseling. A key implementation finding was that the credibility and enthusiasm of the specific park ranger leading the program was a more significant predictor of group cohesion than the park's physical attributes. The study also identified unforeseen challenges, including participants' fear of uneven footpaths and a lack of shaded seating areas, which disproportionately affected those with mobility concerns. Based on these insights, the authors' central recommendation is for cities to establish formal, funded memoranda of understanding between public health agencies and park and recreation departments, outlining shared metrics, referral pathways, and staff responsibilities. They specifically recommend embedding a health liaison within the parks department to facilitate communication with clinics and adapt programs based on participant feedback. Furthermore, they advocate for small capital investments to improve park infrastructure for older adults, such as adding benches and restrooms along walking loops. The study concludes that the sustainability of park prescription models depends less on proving their health impact and more on solving interdisciplinary bureaucratic and funding challenges. This research is critical for translating a compelling public health concept into a durable, institutionalized practice within local government.

Vert, Nieuwenhuijsen, & Gascon (2021) performed a quasi-experimental study in Barcelona with the express purpose of evaluating the impact of a "Green Walk" prescription model that was co-designed with input from the target population of sedentary older adults prior to implementation. The study was grounded in the principle that interventions are more effective and equitable when the end-users are involved in their creation, ensuring the activities align with their preferences, capabilities, and local context. Their innovative methodology involved a collaborative design phase with a community advisory board of older adults, which led to the creation of tailored walking routes, themed walks (e.g., historical, botanical), and a flexible "choose-your-own" attendance system. They then recruited 95 participants, assigning a neighborhood cluster to the intervention and a demographically similar cluster to a control condition, tracking them over 5 months. Researchers utilized a sophisticated combination of GPS-enabled accelerometers to objectively measure MVPA and verify location, systematic observation using the SOPARC tool to document park use patterns, and post-intervention surveys. The findings were particularly striking, showing an average increase of 55 minutes of weekly MVPA in the intervention group, a greater effect size than many clinic-based exercise referrals. The GPS data confirmed that this increase was directly attributable to time spent in the prescribed green spaces, not just general activity. The co-design element was credited with high adherence, as participants felt a sense of ownership and pride in the "their" walking routes. Notably, the study also captured spillover benefits, including increased incidental social interaction in the park outside of formal walk times. A secondary finding was that the intervention reduced exposure to air pollution and noise stress for participants by displacing time previously spent on busy urban streets. The authors strongly recommend that public health researchers and practitioners adopt participatory methods as a non-

negotiable first step in developing community-based physical activity interventions, especially for older adults. They recommend allocating sufficient project timelines and budgets for this co-design phase, viewing it as an investment in effectiveness rather than an administrative hurdle. A specific recommendation is to create senior advisory panels for municipal park planning to ensure new developments and renovations meet the needs of an aging population. The study concludes that empowering older adults as partners in intervention design not only improves outcomes but also aligns with principles of social justice and healthy aging in place. This work provides a replicable model for how to operationalize community-led research in a way that yields both rigorous scientific data and immediate community benefit.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low-cost advantage as compared to field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

FINDINGS

The results were analyzed into various research gap categories that is conceptual, contextual and methodological gaps

Conceptual Gaps

A primary conceptual gap lies in the incomplete understanding of the long-term causal mechanisms through which these community-led models create sustained change. While Lee et al. (2023) identified peer-based "social accountability" and Cohen (2022) highlighted structural "social accountability" from schedules, the relative contribution and interaction of psychological (e.g., self-efficacy from co-design in Vert (2021), social (peer/group dynamics), and environmental (park infrastructure) factors remain underexplored in an integrated theoretical model. Furthermore, there is a gap in defining and measuring program "dose" beyond simple attendance; research is needed on how the frequency, intensity, and quality of social interactions within the program (mentor quality, group cohesion) differentially impact MVPA outcomes. Lastly, a significant gap exists in understanding the scalability and sustainability models for these interventions, particularly the cost-effectiveness, required training protocols for leaders, and the policies needed to transition from successful pilot studies to institutionalized public health practice, as hinted at by the bureaucratic challenges noted by Cohen (2022).

Contextual Gaps

Contextually, a major gap is the limited application and evidence within rural or low-resource urban settings. All three studies were conducted in well-resourced, major global cities (Singapore, Los Angeles, Barcelona) with established park systems and institutional partners. The effectiveness and feasibility of park prescription models in contexts with limited green space, poor park infrastructure, fewer institutional partners, or different climatic challenges are unknown. Additionally, there is a gap concerning interventions tailored for older adults with specific mobility limitations or multi-morbidities. The studies focused on generally sedentary but otherwise community-dwelling older adults; the adaptation of park prescriptions for those using assistive

devices, or with conditions like osteoarthritis or COPD, requires specific investigation to ensure inclusivity and safety, as the fear of uneven paths noted by Cohen (2022) suggests a significant barrier for this sub-population.

Geographical Gaps

Geographically, the evidence is heavily skewed toward high-income, Western or East Asian urban centers. This creates a critical gap in knowledge from low- and middle-income countries (LMICs), where urbanization patterns, family structures, cultural norms around aging and activity, and public health priorities differ substantially. Research is needed in regions like Southeast Asia, Africa, and South America to test the model's transferability. Furthermore, even within high-income countries, there is a lack of cross-cultural comparative studies. As Lee (2023) question the generalizability of their collectivist-cultural findings to individualistic Western societies, direct comparative research across diverse cultural contexts (e.g., comparing models in Japan, Sweden, and the United States) is needed to identify core principles versus context-dependent adaptations for maximizing participant engagement and health equity.

CONCLUSION AND RECOMMENDATIONS

Conclusions

In conclusion, the emerging body of research on community-led "Park Prescription" interventions demonstrates a consistently positive impact on increasing moderate-to-vigorous physical activity (MVPA) levels among sedentary older adults. Studies conducted in diverse urban settings, from Singapore to Los Angeles and Barcelona, provide robust evidence that these programs can generate clinically meaningful increases in weekly MVPA ranging from 25 to over 55 minutes through structured, socially supported engagement with local green spaces. The success of these interventions is attributed not merely to providing access to parks but to their core design principles: leveraging social mechanisms like peer mentorship, structured accountability, and participatory co-design to overcome motivational barriers and foster a sense of belonging and capability.

The evidence underscores that the most effective models move beyond a simple clinical referral to create a sustainable ecosystem of support, integrating the expertise of park agencies, healthcare providers, and the older adults themselves. Key active ingredients include the social cohesion built through regular group activities, the credibility of community-based leaders, and the tailoring of activities to local context and participant preferences. However, for this promising model to achieve broad public health impact, future efforts must address critical gaps in scalability, long-term maintenance, and inclusivity particularly for rural populations and those with significant mobility challenges. Ultimately, community-led park prescriptions represent a powerful, scalable strategy for promoting healthy aging, simultaneously addressing the twin epidemics of physical inactivity and social isolation by transforming public parks into vital engines of community health and well-being.

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Recommendations

Theory

The evidence on community-led park prescriptions makes a significant contribution to health behavior theory by challenging purely individualistic models and demanding more integrated, socio-ecological frameworks. It demonstrates that the key mechanisms for changing physical activity in older adults are not primarily intrapsychic but are embedded in social processes and environmental modifications. This validates and extends theories like the Socioecological Model by providing empirical evidence that intervening simultaneously at the interpersonal (peer support) and community (park access, group norms) levels yields superior outcomes. Furthermore, it enriches Social Cognitive Theory by highlighting that collective efficacy the shared belief in the group's capability and observational learning from peers may be as critical as personal self-efficacy. Future theoretical work must therefore develop and test hybrid models that explicitly link the participatory, "community-led" aspect of interventions (addressing autonomy and relatedness from Self-Determination Theory) to these intermediate social and environmental constructs, and finally to objective behavioral outcomes like accelerometer-measured MVPA.

Practice

For frontline practitioners, including clinicians, health coaches, and park programmers, this research provides a blueprint for moving beyond generic exercise advice to a structured, socially embedded intervention model. The core practice recommendation is to adopt a mandatory co-design phase, actively partnering with older adults to tailor walking routes, schedules, and social activities to local context and preferences, thereby ensuring relevance and enhancing commitment. Practitioners should implement a hybrid delivery model that marries essential in-person, group-based social support with simple digital tools (e.g., WhatsApp groups) for reminders and cohesion between sessions. Crucially, to ensure quality and sustainability, practice leaders must develop standardized yet adaptable training and support protocols for peer mentors or community facilitators, equipping them with skills in motivation, safety, and group facilitation while providing ongoing supervision to prevent burnout. This transforms the role of the professional from a direct service provider to a trainer and facilitator of community capacity.

Policy

The research provides a compelling evidence base for policymakers to enact systemic changes that institutionalize park prescriptions as a public health strategy. A primary policy recommendation is to establish and fund formal cross-sector partnerships, via inter-agency agreements, between Public Health, Parks & Recreation, and Aging Services departments, defining shared goals, data-sharing protocols, and embedded staff roles to ensure coordinated action. Concurrently, policymakers and healthcare payers must explore and pilot reimbursement pathways, such as creating billing codes for "social prescribing" or including community-based physical activity outcomes in value-based care contracts, to provide a sustainable funding stream for community organizations delivering these programs. Finally, this evidence directly informs urban planning and capital investment policy, arguing for the mandatory integration of senior-inclusive design standards such as accessible pathways, ample shaded seating, and lighting into municipal park

master plans and renovation budgets, ensuring the built environment actively supports prescribed activity.

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