

Editorial

Nature prescriptions for community and planetary health: unrealised potential to improve compliance and outcomes in physiotherapy

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Despite enormous and prolonged investment into preventing and treating cardiovascular diseases, ischaemic heart disease and stroke remain the leading causes of disease, disability and death worldwide.¹ At the same time, according to some reports, the high global burden of musculoskeletal conditions is the second largest cause of years lived with disability,² while also contributing to chronic pain, physical inactivity, obesity and cardiometabolic conditions.³ Physiotherapists, who are at the forefront of tackling these diseases and supporting people with disability, are calling for healthcare delivery to be more preventative, equitable and pro-environmental.⁴ This is due to the need to promote physical activity as a key evidence-based treatment across all of the aforementioned health conditions, despite their varied aetiologies.

When attending for a specific clinical complaint, patients expect physiotherapists to also provide general health and physical activity advice to increase fitness levels.⁵ This typically involves the prescription of an unsupervised exercise program, which (in addition to targeting overall fitness) may also address specific signs and symptoms. The success of these exercise programs is contingent on adherence, which is commonly suboptimal for many reasons. Adherence to treatment is poor when the home exercise programs are perceived as being complex, time consuming and interrupting daily routine.⁶

People are more likely to implement and maintain lifestyle change if the prescribed change aligns with their intrinsic motivations⁷ and can be conducted in settings that empower them to adopt the new behaviour. Nature's green spaces (eg, parks and hills) and blue spaces (eg, lakes, rivers and beaches) offer a largely underutilised, low- (or no) cost opportunity in physiotherapy that can both attend to people's interests and provide attractive settings for physical activity⁸ to aid recovery and resilience in those with musculoskeletal, neurological or cardiovascular health issues. The flocking of individuals to green and blue spaces as a means of coping with the seismic impacts of the COVID-19 pandemic⁹ has highlighted the size of the opportunity that exists.

The benefits of nature are not only for physical activity. John Muir, the Scottish-American naturalist and conservationist, wrote:

in every walk with Nature one receives far more than [s]he seeks.¹⁰

Much research supports this; for instance, cohort studies report that populations with $\geq 30\%$ tree canopy cover within 1.6 km of home, as compared to peers with $< 10\%$, have lower risks of cardiovascular diseases, hypertension, diabetes and dementia onset.^{11,12}

Urban green and blue spaces are often attractive and accessible settings to visit regularly for a wide range of social and physical activities. They provide natural outdoor fora, with cooler, fresher air; this can mitigate the harms of heat and air pollution, which are common in cities. Urban green and blue spaces also promote recreational experiences that relieve stress by helping us to feel 'away'.¹³ They can also help to restore depleted cognitive capacities; nature is appealing enough to attract and hold a person's attention, thereby enabling rest of the neurocognitive mechanism by not using it for effortful directed attention.¹³ In this way, a person may reap some mental and cognitive health benefits simply from having views of trees and other green spaces from their window.

Qualitative research indicates that people like to engage with nature for multiple reasons. Some point to the non-judgemental, ego-free and dependable support that nature provides.¹⁴ Others emphasise parks and other green or blue areas as free-to-enter settings, invested with individual and shared meaning that support (re)connection with community.¹⁵ Exploratory survey-based evidence indicates that these experiences and the biopsychosocial processes they support may ameliorate chronic pain.¹⁶ Cohort studies drawing upon the domains of pathways conceptual model¹³ indicate that having $\geq 30\%$ green space within a 1.6 km walk from home may help to catalyse healthier sleep durations¹⁷ and enable people to connect with their neighbours in ways that reduce chronic loneliness.¹⁸

This work has been considered compelling by some city administrators around the world, with several cities including Barcelona,¹⁹ Seattle,²⁰ Sydney²¹ and Vancouver²² setting $\geq 30\%$ greening targets (ie, the percentage of total land use reserved for green space or particular types of green space, such as tree canopy cover). Such actions are helping to fix the supply side of the equation; it may be less simple to ensure that those with the highest potential to benefit do so, given that it is likely that those in better health and wealth spend more of their discretionary time in nature.

To address this, contemporary and national programs in Canada (BC Parks Foundation 'PaRx') and the US ('ParkRx') operate to support family doctors who recommend to their patients to spend ≥ 2 hours a week in nature. These 'nature prescriptions' (or 'nature-based social prescriptions') typically involve goal setting and provision of educational materials, and may include a referral to a designated nature space(s) facilitated by an organisation or community volunteer group. Preliminary findings from randomised trials indicate that such programs can increase physical activity and reduce depression, anxiety and blood pressure.²³

Physiotherapists may consider integrating nature prescriptions into standard care and/or as an adjunct therapy. For instance, the New South Wales health department is offering the free 'Get Healthy' service, which uses health coaching to increase participants' physical activity levels. Although this service is not specific to any setting, it could encourage visits to nature settings through its application of motivational interviewing. Nature prescriptions might also be integrated within face-to-face therapies offered by physiotherapists, with emerging work highlighting nature's role as a non-pharmaceutical means of supporting rehabilitation from acute myocardial infarction²⁴ and heart surgery.²⁵

Despite the promising findings and supportive initiatives outlined above, nature remains grossly underutilised as a motivator for behaviour change, particularly in relation to physical activity. A recent scoping review identified only eight studies where healthcare professionals included a 'nature prescription' for supporting self-management of people living with long-term health conditions.²⁶ In studies of interventions involving people with long-term health conditions spending time in parks, gardens, forest/woodlands and wetlands, the authors reported improvements in the participants' psychological, physical and social wellbeing.

Such innovation within physiotherapy should ideally be led by a dedicated new stream of co-designed and practice-based experimental research to define what nature prescriptions are cost-effective, sustainable and acceptable to both consumers and providers addressing specific health conditions. This work might build onto existing interventions that already show some level of benefit for the purposes of improving retention and strengthening health. Other research avenues might focus on testing customised therapies for different conditions aligned with current 'forest bathing' practices common to parts of East Asia (eg, 'shinrin yoku').²⁷

Harnessing nature may help to address some common challenges in physiotherapy. For instance, recent studies indicate that only 19% and 30% of female and male survivors of acute coronary syndrome seek cardiac rehabilitation, respectively.²⁸ Barriers to physical activity for cardiac rehabilitation are multidimensional and range from low motivation to negative prior experiences.²⁹ For many people, integrating nature time into their rehabilitation may resonate with their intrinsic motivations for being connected with the 'more than human world', making physical activity an adjunct benefit of something they enjoy doing without the need for extrinsic incentive to fulfil.

Enabling and empowering people to visit green and blue spaces regularly after coronary artery bypass surgery, for example, has the potential to provide differentially greater benefit to those from lower socioeconomic circumstances.²⁵ Harnessing nature in this way can lay foundations for more health equity and sustained behavioural change that extends beyond the clinical environment to everyday life and routine, which might not otherwise be achieved in tightly controlled indoor settings.

In a recent nationally representative survey of Australian adults aged > 18 years,³⁰ an estimated 81% (95% CI 79 to 83) indicated being likely to accept a 'nature prescription' from a professional if it was recommended in support of their health. Such prescriptions might recommend spending ≥ 2 hours a week in nature as a general rule of

thumb.³¹ However, caution is needed in how such prescriptions are written and delivered, given the evidence that perceived social pressure to visit nature may reduce the level of benefits accrued by increasing anxiety and attenuating intrinsic motivation.³²

A robust, evidence-based system is needed to connect people with nature who currently have little time in it. This needs to be achieved in accessible, affordable, acceptable and effective ways that attend to individual differences in motivations and needs. Physiotherapists can and should play a key role in making contact with nature the fourth pillar of health, alongside physical activity, diet and sleep.

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