



Promoting physical activity through the prescription of smartphone apps in primary care: Likely to produce health gains and cost-savings

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Over 40% of NZ adults are insufficiently physically active. In this blog we summarise [our recently published modelling work](#) that suggests that the prescription of smartphone apps for physical activity promotion in primary care could benefit health and save millions in health sector costs for NZ. Nevertheless, this type of intervention should ideally occur in

conjunction with societal-wide shifts that support more walking and cycling, as these are likely to generate much larger health gains and cost-savings.

Introduction

Inadequate physical activity is a risk factor for coronary heart disease (CHD), diabetes, stroke, and some of cancers [1, 2]. The World Health Organization (WHO) recommends that adults aged 18-64 years should complete at least 150 minutes of moderate-intensity aerobic physical activity, or at least 75 minutes of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic physical activity each week [3]. In NZ, over 40% of adults are estimated to be insufficiently physically active [4]. This contributes to CHD, stroke, and diabetes being among the leading causes of health loss in NZ [5]. Furthermore, these noncommunicable diseases contribute to marked health inequalities, with Māori, Pasifika, and low-income New Zealanders at higher risk for such conditions [5, 6].

In recent years, the use of mobile health (mHealth) tools for increasing physical activity has risen [7, 8], and the widespread use of mobile phones makes mHealth interventions scalable to a broad population [9, 10]. While there are a number of different mHealth tools and services available, smartphone applications (apps) may be a particularly popular approach to increasing physical activity. Smartphone apps are generally considered easy to use and could enhance physical activity interventions through technological features (eg, accelerometers) [9]. Apps have also been shown to be effective at increasing physical activity levels [10, 11], although quality and effectiveness varies between the many available apps [12, 13]. Additionally, physical activity apps tend to be inexpensive or free of charge [10]. For example, the Ministry of Health-supported online [Health Navigator app library](#) contains a number of different mHealth apps, including links to free and low-cost physical activity apps [14].

The prescription of physical activity apps during a primary care visit is a feasible intervention in NZ, as some general practitioners (GPs) already “prescribe” exercise as part of a green prescription programme [15]. Such a programme could theoretically include smartphone app prescription. Clinicians and GPs already frequently recommend apps and other online resources during consultations [16], and the Royal NZ College of General Practitioners supports the adoption of such technology [17].

What does the new NZ modelling show?

Our recent modelling work indicated that the total health impact of the prescription of smartphone apps for physical activity promotion in primary care for those aged 40-79 years was modest, with 430 quality-adjusted life years (QALYs) gained over the remaining lifespan of the population, albeit up to 1750 QALYs if the increase in physical activity was maintained for five years. The modelled improvements in health came with net cost-savings of NZ \$2.2 million. The intervention would also provide larger per capita health gains for Māori than for non-Māori if delivered equitably. Therefore, this intervention could assist in reducing health inequalities in NZ if well-implemented.

The prescription of smartphone apps for physical activity promotion in primary care was likely to provide larger health gains and cost-savings for the health system than either a mass-media campaign for physical activity apps [18], a mass-media campaign for weight loss apps [19, 20], or weight loss counseling by nurses in primary care [21] in NZ. However, the intervention was likely to be less effective than a mass media campaign to promote a

smoking cessation app in NZ [22]. It should also be noted that the health gains of these individual-level interventions are substantially lower than upstream societal-wide interventions (eg, tobacco control endgame interventions [23], infrastructure that supports switching driving trips to walking and cycling [24]). Therefore, implementing the prescription of smartphone apps for physical activity promotion in primary care alongside other such interventions may help to maximize health gains.



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Potential implications for research and NZ health agencies

These modelling results emphasise the potential health and economic benefits of increasing physical activity. However, questions remain about the best way to implement such an intervention. For example, in this study we assumed that intervention uptake and adherence would be the same across population groups (ie, men and women, Māori and non-Māori), but it is unclear whether currently available apps adequately cater to the needs of diverse population groups. There are also indications that a programme to prescribe smartphone apps for physical activity promotion in primary care would be best administered by practice nurses rather than GPs, as the results indicated that there would be larger cost-savings associated with a scenario in which these nurses were the dominant deliverers of consultation, and the literature suggests that GPs are often particularly time-limited [25]. However, it is unclear whether this may impact the effectiveness of the programme. This finding may also have implications for the administration of the ongoing green prescription programme in NZ.

With the widespread use of smartphones, mHealth interventions such as this have large potential for scalability to a broad population [9, 10]. As part of a range of interventions to

address insufficient physical activity, governments should consider investing in the promotion of physical activity smartphone apps, along with additional research to improve app effectiveness and uptake. Nevertheless, such moves should ideally complement the potentially more important infrastructure changes that make walking and cycling easier options in everyday life.

In summary, recent modelling showed that the prescription of smartphone apps for physical activity promotion in primary care in NZ yielded modest health gains and was cost-saving to the health care system. Furthermore, the scope for this type of mHealth intervention is expanding with increases in smartphone ownership and the availability of easy-to-use and effective apps. This intervention should be considered by policy-makers in NZ, ideally as part of an overall national strategy to support increased walking and cycling.

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