

# Integrating Prescribed Physical Activity as a Primary Care Intervention in Routine Practice

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## ABSTRACT

Most Canadian adults do not achieve recommended levels of physical activity (PA). Prevalence of physical inactivity has detrimental impacts on health, chronic disease management and healthcare expenditure. Primary care providers are ideally positioned to provide PA counselling. Prescribed PA is an effective method that increases client adherence, combats the barrier of providers' time limitation and improves perceived quality of care. An approach is outlined which identifies PA as a 'vital sign', addresses eligibility for safe activity engagement, develops an individualized prescription that promotes compliance, and establishes routine follow-up. This approach aims to translate effective PA counselling into routine primary care.

**Keywords:** Physical activity, exercise, prescribed physical activity, physical activity counselling, preventative healthcare, primary care.

## Background

There is common understanding and agreement in health literature that routine physical activity (PA) results in many health benefits. To ensure patients are meeting the minimum recommended target, nurse practitioners (NPs) are encouraged to promote 150 minutes of moderate-to-vigorous PA per week.<sup>1-3</sup> Performing PA at this recommendation results in a profound impact on reducing all-cause mortality and decreasing the risk of noncommunicable and chronic disease (Table 1).<sup>4,5</sup> Several epidemiologic and longitudinal studies have demonstrated that meeting the established PA target significantly reduces the prevalence and severity of cardiovascular disease, hypertension, diabetes mellitus type 2, obesity-related infertility, cancers, dementia, osteoporosis, anxiety, depression, and frailty.<sup>4-6</sup> However, a disparity exists between patients who would benefit from PA counselling and those who effectively receive it. Despite knowledge that routine PA is a pillar of health and a paramount component of healthy behaviour modification, only one third of patients report receiving PA counselling from their primary care provider.<sup>5</sup> On the last recorded consensus of 2020, only 49.2% of Canadian adults met the recommended PA target.<sup>7</sup> The high prevalence of physical inactivity amongst Canadian adults has significant economic effects on the healthcare system. However, as little as a 10% reduction in physical inactivity has the potential to reduce healthcare expenditure by \$150 million dollars annually.<sup>6</sup> With sufficient understanding regarding the impact of sedentary living for both the individual and the healthcare

**Table 1. Health Benefits Associated with Routine Physical Activity**

<b>Improved:</b>	Cognition
	Quality of life
	Sleep
	Weight loss
	Bone health
	Physical function
<b>Reduced:</b>	All-cause mortality
	Cardiovascular disease
	Hypertension
	Diabetes Mellitus Type 2
	Altered blood lipid profile
	Cancers of bladder, breast, colon, endometrium, kidney, lung, and stomach
	Dementia including Alzheimer's disease
	Anxiety and depression
Falls and fall-related injuries	

system, primary care providers should prioritize PA as a 'vital sign' of health and effective PA counselling should be integrated into routine practice.

Nurse practitioners are in an ideal position to facilitate change through health promotion. Over 80% of Canadians visit their primary care provider annually and express a preference to receive health information directly from their

provider,<sup>8</sup> but studies have shown that most primary care providers do not regularly assess or promote PA as part of routine care.<sup>3</sup> Determining how PA counselling is most often conducted is difficult as the task is poorly completed within primary care settings. Several studies and meta-analyses recognize PA prescriptions as an effective method in approaching PA counselling that provokes sustained behavioural change.<sup>1,3,5,8,9</sup>

## Current Barriers to Initiating Physical Activity Counselling

Several barriers to engaging in effective PA counselling exist from both the patient and provider perspective. Patient specific barriers include lack of time, motivation, physical limitation, resources, and guidance.<sup>5</sup> Providers have identified time limitations, lack of resources and lack of knowledge as barriers towards engaging in PA counselling.<sup>5</sup> Of the listed barriers for providers, time limitation is the most significant. This corresponds with the strain placed on providers to address multiple or complex medical concerns, while simultaneously educating on health promotion and lifestyle modifications.<sup>5</sup>

Motivational interviewing is a common approach that has been encouraged to providers as an effective method to stimulate change and behavioural intervention adherence.<sup>3</sup> This approach tends to require time in practice which is a clear limitation to providers. An alternative and effective method toward PA counselling is providing a PA prescription, which requires only two to four minutes for the intervention to be complete in the primary care setting.<sup>3</sup> This process will be discussed in detail later in this article. Providers need to adapt a mindset that this is 'time well spent'. The number needed to treat (NNT) for PA counselling to convert one sedentary individual to a physically active individual meeting the target recommendation at a one-year follow-up is 12.<sup>3,10</sup> As a comparison, the NNT for effective smoking cessation is 50 to 120.<sup>3</sup> Therefore, PA counselling is at least four-fold more effective and requires less clinical effort than smoking cessation counselling which is more routinely implemented in primary care practice.

Amongst providers, there is a reduced awareness of systematic approaches and resources that aid in the efficient creation of individualized PA prescriptions that promote patient safety. Steps that have been integrated into the approach discussed in this article come from one example of such a resource, titled the *Health Care Providers' Action Guide*, which facilitates prescription development tailored to the individual.<sup>1</sup> Creating an individualized PA prescription is essential towards effective PA counselling and behavioural modification adherence.<sup>8,9</sup> Additionally, an accessible resource is the American College of Sports Medicine (ACSM) *Rx for Health Series*<sup>11</sup> website, which outlines a comprehensive list of PA recommendations for over 30 chronic diseases such as aneurysms, atrial fibrillation, chronic kidney

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disease, osteoarthritis, peripheral arterial disease and many more. These resources are valuable tools to demystify establishing appropriate type and intensity of PA for certain comorbidities for providers who may have hesitation or uncertainty related to PA recommendations. To overcome current barriers to effective PA counselling, providers should utilize systematic approaches to PA prescription development, acknowledge the importance and efficacy of individualized PA counselling, and utilize available resources to overcome knowledge gaps for patient-specific comorbidities.

## Understanding the Goal

As mentioned, the goal is to achieve a weekly minimum of 150 minutes of moderate-to-vigorous PA.<sup>1,3</sup> The total minutes should be dispersed over a minimum of 3 days per week to promote daily PA efforts, ultimately leading to the development of a physically active lifestyle.<sup>2</sup> To provide context and definition, moderate intensity activity is an intensity where individuals are still able to talk, but not sing.<sup>5,10</sup> Vigorous intensity makes it difficult for an individual to speak more than a few words.<sup>5,10</sup> Intensity may also be defined by metabolic equivalent task (MET) units with moderate activity defined as 3.0 to 6.0 METs and vigorous activity defined as greater than 6.0 METs.<sup>5</sup> As a baseline, resting metabolic energy expenditure is equal to 1.0 MET.<sup>5</sup> Examples of exercises for moderate and vigorous intensity categories are listed in Table 2.

The aim should be for a client to engage in sustained recommended activity for at least 12 months to ensure that effective PA counselling was achieved, resulting in adherence to the behavioural modification.<sup>3</sup> As a patient progresses towards a consistent physically active lifestyle, resistance exercises should be introduced at least two times per week to reap further health benefits.<sup>10,12</sup>

Patients may express a hesitancy towards engaging in PA or about meeting 150 minutes per week based on time limitation. In this circumstance, the patient should be educated that PA below the weekly target of 150 minutes still results in remarkable health benefits. As an example, smaller increments of PA, such as 15 minutes of brisk walking per day, led to a 14% reduction in all-cause mortality and averaged an additional 3 years of life expectancy.<sup>5</sup> The mentality that “some is better than none” should be instilled in patients when creating specific, achievable, and realistic goals.<sup>5,10</sup> By tailoring the

**Table 2. Types of Exercise Considered Moderate and Vigorous Intensity Activity<sup>1,2,5,13</sup>**

<b>Moderate Intensity Activity (3.0-6.0 METs)</b>	Brisk walking 3 – 4 mph on level terrain
	Bicycling 5 – 9 mph on level terrain
	Water aerobics
	Walking a round of golf
	Badminton
	Pickleball
	Cricket
	Raking leaves
	Dancing
Continuous swimming	
<b>Vigorous Intensity Activity (&gt;6.0 METs)</b>	Jogging or running
	Brisk walking up a hill
	Bicycling >10 mph or on steep terrain
	High impact step aerobics
	Skating
	Skiing
	Soccer
	Tennis
	Snowshoeing
Hockey	

goal to the individual while addressing their perceived barriers, the likelihood of behavioural modification adherence rises.<sup>9</sup>

## An Approach

### Determine Current Physical Activity Engagement – Physical Activity as a ‘Vital Sign’

Prioritizing PA assessments as a ‘vital sign’ of health will facilitate effective counselling. The approach begins by understanding the patient’s current PA engagement. This value is achieved with two questions: 1) On average, how many days per week do you engage in moderate or greater activity such as a brisk walk? 2) On those days, how many minutes do you engage in activity at this level?<sup>1,3</sup> Providers then simply multiply Answer 1 by Answer 2 to obtain the total minutes of moderate-to-vigorous PA per week.

### Determining Readiness for Change

Understanding the patient’s readiness for change and resolving ambivalence towards change is a core aspect of motivational interviewing and PA prescription development. It is recommended that motivational interviewing be used in conjunction with PA prescription development to facilitate individualized and sustained behavioural modification.<sup>8</sup> Providers must assess a patient’s willingness to change and then proceed based

on this with a personalized PA prescription. A commonly referenced way to determine the present stage of change a client is in is by using The Transtheoretical Model of Health Behavior Change:<sup>14</sup> precontemplation, contemplation, preparation, action, and maintenance.

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If the patient is in the preparation stage, expressing an openness to change in the near future, it is appropriate for the provider to progress towards PA prescription development.<sup>1</sup> Alternatively, if the patient expresses disinterest or lack of motivation the provider should inquire towards identifying barriers, facilitate strategies to overcoming them, and revisit the topic of PA during future visits.<sup>1,8</sup> Regardless of the patient’s current stage of change, health benefits that may be realized related to PA as they pertain to the current health status or comorbidities of the individual should be shared routinely during primary care visits with the goal of advancing the client further in motivation to change in future.<sup>1</sup>

### Determine Eligibility to Safely Engage in Physical Activity

Cardiovascular, metabolic, and renal disease have the potential to cause risk to individuals who are initiating or progressing PA intensity.<sup>1</sup> Healthy adults with no past medical history or comorbidities can safely begin routine PA at a moderate intensity with progression to vigorous intensity gradually. However, those with known or suspected cardiovascular, metabolic, or renal disease are encouraged to have medical clearance prior to pursuing routine PA of any intensity.<sup>1</sup> Medical clearance should involve standard measurements of height and weight for BMI, vital signs, a personal history of symptoms experienced during exertional efforts, and medical tests pertinent to prevention screening and cardiopulmonary function.<sup>15</sup> If there are concerns related to cardiopulmonary function or symptoms such as those listed in Table 3, an exercise stress test is recommended.<sup>15,16</sup>

This step should not deter providers from using PA prescriptions for those with comorbidities. Adverse events related to PA engagement are rare and create unnecessary barriers for patients who will benefit from light-to-moderate PA introduction.<sup>1,13</sup> Those who would benefit from decreasing their blood pressure, improving serum lipid profiles, glycemic control, and decreasing insulin resistance should pursue PA as a first-line therapeutic approach.<sup>13,17</sup> It is concluded by

**Table 3. Criteria Warranting an Exercise Stress Test Prior to PA Initiation<sup>16</sup>**

<b>Concerning Symptom Complaints Warranting Exercise Stress Test Prior to PA Initiation</b>	Angina pectoris or feature of cardiac ischemia without chest discomfort either at rest or with exertional effort
	Dyspnea at rest or on exertion
	Paroxysmal nocturnal dyspnea and/or orthopnea
	Syncope or presyncope sensations
	Arrhythmia or palpitations
	Cardiac murmur

the ACSM<sup>1</sup> that pre-exercise screening protocols have not been shown to reduce the risk of cardiac events during exercise and instead create barriers for patients where benefits would outweigh risk. PA decreases the risk of cardiovascular disease by 21% and further decreased the risk of cardiovascular mortality by 36%.<sup>17</sup> To illustrate its effect, one meta-analysis compared PA to other lifestyle modifications including weight loss, dietary modifications, smoking cessation, and alcohol moderation. It was concluded that aerobic PA demonstrated greater impact on blood pressure reduction than weight loss, Mediterranean diet, smoking cessation, and alcohol moderation interventions.<sup>17</sup> In addition, aerobic PA showed greater effect on improvements of serum cholesterol and triglyceride levels than dietary modifications and alcohol moderation.<sup>17</sup> Primary care providers should recognize clear indications of cardiopulmonary concern related to engaging in PA; however, in these circumstances a supervised PA alternative such as cardiac rehabilitation programs should be offered to individualize the approach instead of omitting PA engagement.<sup>1</sup>

### The Physical Activity Prescription

A typical PA prescription is created using the FITT model: frequency, intensity, time, and type.<sup>2</sup> Frequency is the number of days per week, intensity is the level of PA, time is the number of minutes per session, and type is the activity of choice.<sup>2</sup> As a guideline, the ideal frequency is at least three days per week for a minimum of 30 minutes per session at a moderate or greater intensity, with an activity that promotes individual choice and preference.<sup>2</sup> A consistent physically active lifestyle is attainable for all individuals regardless of socioeconomic status and individualized recommendations that overcome perceived financial barriers towards engaging in routine PA should be encouraged, such as outdoor walking or bicycling.

A PA prescription template is available from the ACSM Exercise is Medicine<sup>12</sup> website that is structured using the FITT model, including examples of each intensity, as well as a recommended step goal of 7,000-9,000 steps per day. Alternatively, RxFiles Academic Detailing<sup>18</sup> has a PA prescription tool titled "Exercise Prescription Pad" available for free on their website by accessing the

clinical tools page. This prescription contains the FITT model, goals of therapy, reductions in sedentary activities, comorbidity specific parameters (ie. checking blood sugar before and after exercise), a follow up timeframe, and cautionary symptoms. Both are conveniently structured as 'select all that apply' options for providers to tailor the prescription to the individual efficiently.

Below is an example of an introduction to PA prescription tailored towards a sedentary patient with no medical concerns (Table 4).

**Table 4. Example of PA Prescription Using FITT Model<sup>2,12,18</sup>**

<b>Example PA Prescription for Healthy Sedentary Beginner Adult</b>	
<b>Frequency</b>	3+ days per week
<b>Intensity</b>	Moderate
<b>Time</b>	20-30 minutes per session
<b>Type</b>	Brisk walking at 3 – 4 mph

### Follow-up

A guideline for PA prescription follow-up is at 3-, 6-, and 12-month intervals to meet the recommended follow-up range of one to four times annually.<sup>9</sup> Follow-up appointments strengthen PA prescription efficacy by providing an opportunity to reassess patient barriers, set continued goals, progress PA towards the target recommendation, and address medical concerns impeding progression.<sup>3</sup> Clinically effective follow-up visits can be accomplished in person or over the phone.<sup>9</sup> Follow-up appointments also allow the provider to ensure a tailored approach to the PA prescription that acknowledges individual preference, choice, and experience.<sup>9</sup> Motivational interviewing techniques should be used throughout patient interactions to increase adherence to behavioural modifications and maintain an individualized approach towards goal setting.<sup>8</sup>

### Conclusion

It is crucial for providers to understand and value PA as a 'vital sign' of health. Improving the number of physically active Canadian adults will drastically decrease healthcare expenditure, improve overall quality of life, and positively impact chronic disease and health outcomes. An effective approach towards PA counselling is achieved with using motivational interviewing along with tailored, individualized PA prescriptions and intentional follow-up to facilitate purposeful behavioural modification that has sustained outcomes. Following this systematic approach allows providers to prescribe PA safely and efficiently in the primary care setting while overcoming perceived barriers related to time limitations, lack of resources

and lack of knowledge. Enforcing the message that “some is better than none” is a great start for all patients who express hesitancy towards PA engagement. Given the vast health benefits, increased awareness and priority need to be placed on effective PA counselling using PA prescription in the primary care setting as an attempt to improve the overall health and quality of life of Canadian adults.

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