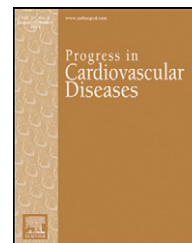


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Strategies for Promoting Physical Activity in Clinical Practice

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ABSTRACT

The time has come for healthcare systems to take an active role in the promotion of physical activity (PA). The connection between PA and health has been clearly established and exercise should be viewed as a cost effective medication that is universally prescribed as a first line treatment for virtually every chronic disease. While there are potential risks associated with exercise, these can be minimized with a proper approach and are far outweighed by the benefits. Key to promoting PA in the clinical setting is the use of a PA Vital Sign in which every patient's exercise habits are assessed and recorded in their medical record. Those not meeting the recommended 150 min per week of moderate intensity PA should be encouraged to increase their PA levels with a proper exercise prescription. We can improve compliance by assessing our patient's barriers to being more active and employing new and evolving technology like accelerometers and smart phones applications, along with various websites and programs that have proven efficacy.

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Years of observation and research have proven the harmful health effects of a sedentary lifestyle. At the same time, it is clear that exercise is a powerful medicine for the primary and secondary prevention of virtually every chronic disease, for largely mitigating the harmful effects of obesity and for reducing premature mortality. It has been shown that there is a linear relationship between ones physical activity (PA) habits and health status. Individuals who maintain an active and fit way of life are generally healthier and live longer. In contrast, those who are sedentary and unfit tend to suffer prematurely from chronic disease and die at a younger age.

Regardless of whether you study men or women, different ethnic groups, or different age ranges (from pediatric to

middle age to geriatric patients), those who are active and fit live longer and healthier lives. For this reason, all healthcare systems and practitioners should take an active role in promoting PA in the clinical setting.

Based on the strength of existing evidence, it is clear that regular PA should be the first line medicine used for both the treatment and prevention of chronic disease. In fact, one is hard pressed to find any disease today that is not helped in some fashion by engaging in regular PA. For this reason, the issue of promoting PA in the clinical setting is not just a primary care issue, but rather should extend to all specialties and branches of the healthcare system (HCS). Certainly any practitioner involved in the treatment and prevention of

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Abbreviations and Acronyms

ACSM = American College of Sports Medicine
AMA = American Medical Association
AMI = acute myocardial infarction
BMI = body mass index
CHD = coronary heart disease
CRF = cardiorespiratory fitness
CV = cardiovascular
CVD = cardiovascular disease
CVMRI = cardiovascular magnetic resonance imaging
EBW! = Every Body Walk
EHR = electronic health record
EIM = exercise is medicine
EVS = exercise vital sign
HCS = healthcare system
LWM CPM = Lifestyle and Weight Management Care Process Model
METs = metabolic equivalents
NCD = non-communicable disease
PA = physical activity
PAVS = Physical Activity Vital Sign
PCP = primary care provider
SCD = sudden cardiac death
T2D = type 2 diabetes
U.S = United States
WHO = World Health Organization
WWAD = Walk with a Doc

cardiovascular diseases (CVDs) should be fully committed to getting their patients more active. The purpose of this article is to review current strategies for promoting PA in the clinical setting and within HCS.

The health benefits of PA

The connection between PA and health
Seminal observations from Jeremiah Morris in 1954 on PA and coronary heart disease (CHD) laid the groundwork for recognizing PA as a major determinant of health.^{1,2}

It is now readily apparent that the adoption of PA consistent with consensus guidelines provides benefit across a wide range of health outcomes. There is also overwhelming evidence to suggest that engaging in PA well below the current guidelines also provides substantive health benefit.^{3–5} Increasing PA is associated with an improvement in cardiorespiratory fitness (CRF), where CRF is a well-established objective measure of

associated with adoption of PA in most adults,^{12–14} regardless of age and gender,^{15,16} the challenge in developed societies is to sustain PA over the long-term. Incorporating PA into routine daily life in today's technologically advanced society remains one of the most important challenges to population health. Accordingly, a focus of primary prevention should be on methods for incorporating PA into everyday life for the purposes of reducing NCD risk and improving overall health and wellbeing.

Inactivity as a public health problem

According to the United Nations High Level Meeting on NCDs, diseases that place the greatest burden on global health are CHD, breast and colon cancer and T2D, all of which are related to physical inactivity.^{1,17} In a recent analysis by Lee et al., approximately 6%–10% of NCDs worldwide are caused by physical inactivity.¹ The authors also reported that physical inactivity leads to 9% of total premature mortality. However, the most startling discovery from this group was that physical inactivity is as detrimental a risk factor as smoking and obesity. This carries considerable weight in Canada and the United States (U.S.), where inactivity is more prevalent than all other modifiable risk factors.^{4,11} In 1995, the American College of Sports Medicine (ACSM) and the Centers for Disease Control and Prevention stated that adults are encouraged to get 30 min of moderate intensity PA every day in order to optimize health benefits. Recently, the ACSM has adjusted these recommendations, recognizing that 30 min of moderate-intensity aerobic PA is interchangeable with 20 min of vigorous intensity aerobic PA. They further stated that one's daily exercise can be affectively accumulated in 10 min or longer or shorter accumulating bouts.³ These new guidelines facilitate the incorporation of PA into daily life by acknowledging the health benefit achieved from accumulated brief bouts of daily exercise. In other words, individuals should be informed that 30 min of moderate-intensity PA on most days of the week is a target, and not a threshold required for achieving health benefits when increasing PA. Indeed, all forms of PA, be it structured (e.g., exercise performed in a special facility) or unstructured (e.g., activities of daily living) are associated with meaningful health benefits. As the challenges of incorporating prescribed, structured PA are very real for many adults, integrating PA into one's daily routine may likely be the most effective method of reducing physical inactivity and improving overall quality of life and health.

Cost vs. benefits compared to drugs

Inactivity has a substantive and growing impact on healthcare costs worldwide. In 2000, a meta-analysis by Katzmarzyk et al. calculated that the total attributable cost of physical inactivity represents just over 25% of the cost of treating CVD, T2D, and colon and breast cancer in Canada.¹⁸ Similarly, Wang et al., reported that in the U.S., inactivity contributed to 22.5% of CVD-related medical expenses.¹⁹ These diseases cost approximately \$2.1 billion in Canada and \$24.3 billion in the U.S.,^{11,18} while estimates from Switzerland have shown similar statistics, where direct healthcare costs due to physical inactivity were estimated at 1.58 billion Swiss Francs (\$1.65 billion U.S.).¹¹ Furthermore, these calculations did not include the indirect costs of physical inactivity, which include lost

one's health as it relates to disease risk.⁶ Increases in PA and improvements in CRF are clearly associated with reduced risk of developing CVD, type-2 diabetes (T2D) and all-cause mortality.^{7,8} This reduced risk is observed across all weight categories, from normal-weight to overweight and obese individuals.⁹ Based on this evidence, the World Health Organization (WHO) recently recognized physical inactivity as the fourth leading risk factor of global morbidity and premature mortality.^{5,10}

Fortunately, the economic burden associated with treating non-communicable diseases (NCDs) that occur as a result of inactivity can be substantially reduced by incorporating PA into daily life.¹¹ However, though numerous trials confirm that cognitive behavioral strategies employed in clinical settings are

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