A Guide to Exercise Prescription

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KEYWORDS

- Physical activity • Physical inactivity • Cardiorespiratory fitness
- Metabolic equivalents

KEY POINTS

- Exercise is a foundational component of good health. The American College of Sports Medicine and "Exercise is Medicine" recommend treating exercise as a vital sign, and assessing and prescribing physical activity at every medical visit.
- Meeting the recommended physical activity goals results in a significant reduction in all-cause mortality.
- Physicians can improve health by prescribing exercise.

Strength-of-Recommendation Taxonomy: Key recommendations for practice

Clinical Recommendation	Evidence Rating[Refs.]
Getting 150 min of moderate-intensity exercise reduces all-cause mortality	B[1,2,3]
Physicians can improve health by prescribing exercise	C[4,5,6,7,8,9]
Prescribe exercise with FITT (Frequency, Intensity, Type, and Time) to improve compliance	C[3,10]
Recommend a plan that the patient is at least 70% confident he can accomplish to improve adherence	C[11,12]

THE PROBLEM OF LOW CARDIORESPIRATORY FITNESS, SEDENTARY TIME, AND PHYSICAL INACTIVITY

Exercise counseling by primary care physicians has been shown to increase participation in physical activity by patients.[4,5,11,13,14] Furthermore, when surveyed, patients state that they would like their physician to prescribe exercise, and report that they would be more interested in exercise if advised by their physician.[4]

The author has nothing to disclose.
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Physical inactivity, low cardiorespiratory fitness (CRF), and prolonged sedentary time are growing public health problems. In one study, the attributable mortality risk of low cardiorespiratory fitness was greater than the risks incurred from smoking, diabetes, and obesity combined.[1] To highlight the epidemic of inactivity, exercise advocate and sports medicine physician, Karim Khan, coined the term "Smokadiabesity".

According to the World Health Organization, physical inactivity constitutes the fourth leading cause of death globally.[15] When measured directly rather than by surveys, physical inactivity is the leading cause of death in the United States.[15] Low CRF also infers significant mortality risk. Although mortality risk factors such as diabetes and obesity track together, Blair[1] has shown that people can be fit and fat. **Fig. 1** illustrates that it is the least fit people in the population who have the highest risk of mortality.[1]

More than half of adults and 80% of adolescents do not meet the Centers for Disease Control and Prevention (CDC) and American College of Sports Medicine Physical Activity Guidelines.[2] Most adolescents and adults in the United States also spend over 8 hours of sedentary time daily.[2] Sedentary time alone is an independent risk factor for mortality, regardless of the level of fitness or physical activity.[16]

SHORT-TERM AND LONG-TERM BENEFITS OF EXERCISE

The benefits of exercise have been well documented by many research studies.[1,4,5,15,16,17] The US Federal Physical Activity Guidelines,[2] American College of Sports Medicine (ACSM),[3] American Heart Association (AHA),[18] and American Diabetes Association (ADA) all recommend 150 minutes per week of moderate-intensity exercise to achieve health benefits. Exercising more than 150 minutes per week will continue to reduce health risks, but the benefits are not as great (**Fig. 2**).

When counseling patients about exercise, it may be helpful to promote the immediate benefits of exercise as well as long-term benefits. Immediate benefits of physical activity are improved cognitive ability, reduced anxiety, and positive sense of well-being.[19] Exercise in school improves concentration and academic outcomes.[20] In one study, improved SAT scores were observed to correlate strongly with time spent doing physical activity.[15]

Long-term benefits of exercise are numerous. Exercise lowers stroke risk by 27%,[6] reduces the incidence of diabetes by approximately 50%,[21] can lower the incidence of

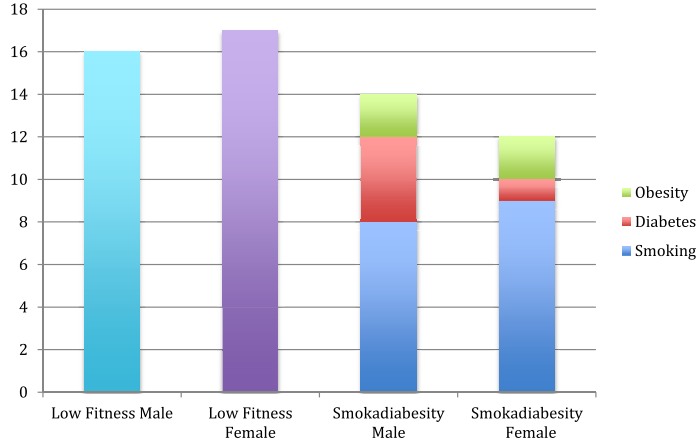

Fig. 1. Attributable risk of all-cause mortality. (*Data from* Blair SN. Physical inactivity: the biggest public health problem of the 21st century. Br J Sports Med 2009;43(1):1–2.)