

Aerobic Fitness and Muscle Function are Influenced by Sedentary Behavior

Fitness is affected by age, genetics and physical activity. Typical aging is associated with a decline in muscle function as well as aerobic fitness leading to losses in stability and slow walking, but some of these changes can be attributed to decreased physical activity. In fact, multicomponent exercise programs that include strengthening, balance and/or flexibility have been shown to significantly affect the physical functioning of older adults. Even when physical activity levels are taken into account, sedentary time may influence health. Total sedentary (sitting around) time has been associated with poorer physical fitness but frequent breaks during sedentary time reduced the impact somewhat.

One study demonstrated that sedentary time was significantly related to functional fitness in older adults where more sedentary time was associated with poorer fitness (1). Another study demonstrated that more breaks in sedentary time were associated with better physical function (2). Both of these studies used functional performance tests to measure fitness. It is possible that, similar to cardiorespiratory fitness, breaking up sedentary time with light-intensity weight-bearing activities provides a stimulus for adaptations in the working muscle. The two studies mentioned above (1,2) examined participants who were elderly and had reduced fitness levels.

As loss of fitness and muscle function is a gradual process that proceeds decade by decade beginning in the 30's or the 60's a programs to prevent muscle function loss and loss of aerobic fitness are likely to be of significant health benefit.

1.Santos DA, Silva AM, Baptista F, et al. Sedentary behavior and physical activity are independently related to functional fitness in older adults. *Experimental Gerontology* 2012; 47(12): 908-12.

2.Davis MG, Fox KR, Stathi A, et al. Objectively measured sedentary time and its association with physical function in older adults. *Journal of Aging and Physical Activity* 2014; 22(4): 474-81.