

Walking Cadence to Attain a Minimum of Moderate Aerobic Intensity in People at Risk of Cardiovascular Diseases

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Abstract : Walking cadence (steps/min) is an effective way to prescribe exercise so an individual can reach a moderate intensity, which is recommended to optimize health benefits. To our knowledge, there is no study on the required walking cadence to reach a moderate intensity for people that present chronic conditions or risk factors for chronic conditions such as Cardiovascular Diseases (CVD). The objectives of this study were: 1- to identify the walking cadence needed for people at risk of CVD to reach moderate intensity, and 2- to develop and test an equation using clinical variables to help professionals working with individuals at risk of CVD to estimate the walking cadence needed to reach moderate intensity. Ninety-one people presenting a minimum of two risk factors for CVD completed a medically supervised graded exercise test to assess maximum oxygen consumption at the first visit. The last visit consisted of recording walking cadence using a foot pod Garmin FR-60 and a Polar heart rate monitor, aiming to get participants to reach 40% of their maximal oxygen consumption using a portable metabolic cart on an indoor flat surface. The equation to predict the walking cadence needed to reach moderate intensity in this sample was developed as follows: The sample was randomly split in half and the equation was developed with one half of the participants, and validated using the other half. Body mass index, height, stride length, leg height, body weight, fitness level (VO₂max), and self-selected cadence (over 200 meters) were measured using objective measures. Mean walking cadence to reach moderate intensity for people age 64.3 ± 10.3 years old at risk of CVD was 115.8 ± 10.3 steps per minute. Body mass index, height, body weight, fitness level, and self-selected cadence were associated with walking cadence at moderate intensity when evaluated in bivariate analyses (r ranging from 0.22 to 0.52; all P values ≤ 0.05). Using linear regression analysis including all clinical variables associated in the bivariate analyses, body weight was the significant predictor of walking cadence for reaching a moderate intensity ($\beta=0.24$; $P=.018$) explaining 13% of walking cadence to reach moderate intensity. The regression model created was $Y = 134.4 - 0.24 X$ body weight (kg). Our findings suggest that people presenting two or more risk factors for CVD are reaching moderate intensity while walking at a cadence above the one officially recommended (116 steps per minute vs. 100 steps per minute) for healthy adults.

Keywords : cardiovascular disease, moderate intensity, older adults, walking cadence

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