The Relationship between Body Mass Index and Energy Expenditure of Normal Subjects during Walking

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Abstract:

The purpose of the study was to identify the relationship between body mass index and energy expenditure of normal subjects with different body weight and height. Fifty two volunteers participated in the study. They were divided into two groups. Group (A) consisted of 26 subjects with body height ranging from 165-174 cm with a mean value of 169.5 cm (±3.3) and a mean weight of 69.8 kg (±11.1). Group (B) consisted of 26 subjects with a body height ranging from 175-185 cm with a mean value of 179.5 cm (±3.4) and mean weight of 80.5 kg (±12.4). Each subject walked on a treadmill at two speeds 3.5 km/h and 5 km/h for three minutes with resting period of twenty minutes between the two tests. Before each test there was 3 minute warm up at 1.5 km/h, and after each test there was 3 minute recovery at 1.5 km/h. The oxygen consumption and energy expenditure at the two speeds are measured by using ZAN 100 flow handy Π medical device with a PC-connected to open spirometry system. Results revealed that there was no significant difference in energy expenditure and oxygen consumption between the two groups at either 3.5 or 5 km/h. There was also no significant difference in the body mass index between group (A) and (B). However, there were significant differences in weight and height between group (A) and (B), with group (B) heavier and taller than group (A). So, energy expenditure is related to the body mass index rather than body height or weight. This study suggested that during measurement of energy expenditure one must take in consideration the body mass index not the body weight or height.