Fitness Index on Physical Fitness, Obesity and Dietary Intake of Youths in Singapore

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Abstract

The purpose of this study was to compare health-related fitness variables between boys and girls in Singapore. 762 and 694 13-year old Singaporean boys and girls (respectively) participated in this study. Anthropometrical measurements were taken and participants performed the Progressive Aerobic Cardiovascular Endurance Run, sit-and-reach, handgrip strength, and sit-up tests. Questionnaires regarding their lifestyle and dietary habits were also completed. Results found that boys were significantly stronger than girls, whereas girls were significantly more flexible. In general, obesity rates in Singapore are kept at a low percentage, although youths should participate in higher amounts of physical activity and exercise. It is recommended that youths consume more nutrients and reduce their intake of night snacks, desserts, and fried food in their daily diet. If this health trend continues lifelong, there may be a low risk of cardiovascular disease.

Key words: Singapore youths, physical activity, nutrition, obesity, fitness

I. Introduction

Physical fitness can be broken down into general fitness, which refers to one’s general health and well-being, and specific fitness, which refers to an individual’s ability to perform a certain task in sports (Parmar, 2015). Physical fitness comprises of an extensive range of categories that include cardiovascular fitness, body composition, muscular strength and endurance, and flexibility (Pollock et al., 1998). In this study, physical fitness encompassed health-related fitness variables such as cardiovascular fitness (CF), lumbar and lower limb flexibility (LLLF), muscular strength (MS) and body fat percentage (BF%).

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CF is often associated with lower risks of cardiovascular diseases, lower blood pressure and lower cholesterol. According to American College of Sports Medicine (ACSM), CF is defined as the ability to perform large muscle, dynamic moderate-to-high intensity exercise for prolonged periods (ACSM, 2009). Good CF should be maintained for a healthy lifestyle and to reduce the risk of cardiovascular diseases in later years. It is recommended that individuals participate in at least 150 minutes of moderate-intensity exercise per week, which can be met through 30 to 60 minutes of moderate-intensity exercise (five days a week) or 20 to 60 minutes of vigorous-intensity exercise (three times a week) (ACSM, 2009).

Flexibility is defined as the ability to smoothly move a joint through its complete range of motion (ACSM, 2009). Individuals should have sufficient range of motion to optimize movement for physical activity and daily activities. Lack of flexibility in the lower back and posterior thigh regions may be associated with an increased risk of developing chronic lower back pain (ACSM, 2000). Therefore, it is important for children to have good LLLF as it increases their range of motion during physical activities and may also reduce the risk of getting sports injuries especially those associated with ligaments, muscles and tendons (Balasekaran, Hui, Thor, Govindaswamy, & Ng, 2016).

MS is an important physical fitness aspect and health fitness component. Physical fitness includes the musculoskeletal function of the lower trunk (e.g. abdominal strength) (AAHPERD, 1984), which can be measured by the sit-up test (SUT). The bent-knee SUT has been adapted from the Health-Related Physical Fitness Test (HRPFT) on the basis of clinical evidence and/or research done (Safrit, 1986). A decrease in MS may cause significant functional limitations. MS can be measured via a handgrip strength (HS) test, which is a popular assessment evaluated by occupational therapists and others in a range of clinical settings, particularly hand therapy and occupational rehabilitation (Fess, 1986, 1995a; Herbin, 1987). It also seems to have a protective effect against cardiovascular diseases and highlights the importance of having moderate levels in muscular strength (Ruiz et al., 2008). When children mature and grow, their muscle mass and muscle fiber size change, leading to an increase in MS. This indicates that MS is related to age and gender (Chen, Nelson, Zhao, Cui, & Johnston, 2013). However, MS has shown to decrease with age in healthy people. A study done by Samson et al. (2000) showed that men had gradual declines in handgrip strength over the adult age range. After the age of 55 years, the age-related decline is partly associated with differences in height and body weight.

Body composition refers to the relative percentage of fat (body fat percentage) and fat-free tissue in the body (ACSM, 2000). Measuring BF% is important as BF% has an impact on health related fitness variables such as CF, LLLF, and MS. BF% can be measured using a variety of methods such as hydrostatic weighing, bioelectrical impedance analysis (BIA) and Dual-energy x-ray absorptiometry (DXA). However, these methods are costly and