

DISTRIBUTION OF SOMATOTYPES BETWEEN CATEGORIES OF VO₂ MAX AMONG A SELECTED GROUP OF INDIVIDUALS

S.D. Rupasinghe, K.M.H.E. Samarakoon, S.M.H.K.D.S. Samarakoon, R.M.U.K. Rathnayake, N.K. Samarakoon, P.R.M.R. Samarasinghe, Y. Hameed, K.A.C. Rathnayake, S.R.S. Samarasinghe, R.L.I.N. Rathnayake, M.M.J. Samaranayake and J.K. Dissanayake*.

*Faculty of Medicine, University of Peradeniya, Sri Lanka
jayamkd@yahoo.com

Cardiorespiratory fitness or the aerobic capacity of the body is an important component of physical fitness which is measured by the maximal oxygen consumption (VO₂ max). This depends on the delivery of oxygen to muscles and the muscle uptake. As such the body composition plays an important role as the structural component of it. Somatotype quantifies the present shape and composition of the human body which is superior to the commonly used methods such as body mass index. Therefore, the present study was conducted to describe the distribution of somatotypes between categories of VO₂ max among a group of Sinhalese medical students of University of Peradeniya, Sri Lanka.

Somatotypes of a group of healthy Sinhalese medical students from Faculty of Medicine, University of Peradeniya, were determined using the Heath–Cater method. The stretch stature, body mass, four skinfolds, two bone breadths and two limb girths were measured to quantify the expression of somatotype components as a rating using “Somatotype” software. VO₂ Max was estimated using the YMCA step test. Post exercise heart beats (HBC) for 1 minute (bpm) was used in the calculations given below to estimate the VO₂ max. VO₂max (Women) = 0.2021 HBC (bpm) + 64.209, VO₂max (Male) = 0.3143HBC (bpm) + 84.841. VO₂ max values were categorized as Low, fair, average, good, high, athletic and Olympic levels. ‘Minitab 16’ was used for analysis of anthropometric characteristics.

Descriptive statistics of all anthropometric data, mean somatotypes, HBC and estimated VO₂ max, of 138 medical students (70 males and 68 females) aged between 20-22 years demonstrated a significant sexual dimorphism. Endomorphy, Mesomorphy and Ectomorphy ratings of different categories of VO₂ max were as follows for males and females, respectively. Fair-**4.1-4.1-2.8, 5.1-2.9-2.6**, average-**3.8-4.4-2.5, 4.8-2.5-3.2**, Good- **2.9-3.7-3.4, 4.5- 2.3- 3.2** and high- **2.5-3.3-3.7**. In each group the Somatotype Attitudinal Distance (SAD) for males and females were 1.6, 2.2, and 2.2 somatopoints (SAD≥1=significant difference between two somatotypes). Majority of males (64.3%) and females (82.4%) were found to be in the average category of VO₂ max (VO₂ max=44-51 ml/kg/min for males and 35-43 ml/kg/min for females).

In the present study endomorphy component was dominating in the lower cardiorespiratory fitness groups while ectomorphy reflected a higher cardiorespiratory fitness. A lower cardiorespiratory fitness in this group of students who tend to achieve a high academic performance reflects a sedentary lifestyle which is a risk factor for non-communicable diseases such as diabetes and coronary heart disease. As such this study stresses the importance of improving the physical activity among similar groups.