

Fitness assessment using step tests: should anthropometrics be taken into consideration?

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Step tests are commonly used to estimate cardiorespiratory fitness as non-expensive and easy to administered evaluations. Although a positive effect of lower limbs length on step test performance could be hypothesized (Sekeljic et al., 2013), there is a need of substantiate the relationship between anthropometric aspects and step height. Therefore, the aim of this study was to evaluate the effects of anthropometric measurements on step test performances. After signing an informed consent, anthropometric data (body weight, height, sitting height) were measured in 13 (Female=9; Male=5) college students (age: 25.7 ± 3.2 years). Lower limbs length was calculated as the difference between standing and sitting height. Heart rate (HR) values were recorded 5-minute after 3 tests performed with 30cm- (HR30), 40cm- (HR40), and 50cm- (HR50) step heights, randomly organized with a 2-day interval in between. ANOVA verified differences ($p<0.05$) in HR, whereas a correlation analysis was applied to anthropometric and HR values. No difference emerged for step height (HR30: 70.4 ± 12.0 beat min^{-1} ; HR40: 73.7 ± 16.6 beat min^{-1} ; HR50: 82.0 ± 17.8 beat min^{-1}). Significant ($p<0.05$) correlations were found only between standing height (168.1 ± 9.4 cm) and HR50 ($r=-0.69$) and between lower limbs length (81.6 ± 6.6 cm) and HR30 ($r=-0.63$). These findings suggest considering anthropometric measures of the individual when administering step test with 50cm- and 30cm-steps.

References

[1] Sekeljic et al. (2013) Influence of anthropometric dimensions on the prediction of VO₂ max by step test. J. Plus Ed 11:90-96.

Keywords

Cardiorespiratory fitness, sitting height, field evaluations.