## A STEP TEST FOR ESTIMATING MAXIMAL OXYGEN CONSUMPTION (VO<sub>2max</sub>) IN MALE SECONDARY SCHOOL STUDENTS

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## ABSTRACT

The objective of this study was to develop a regression equation to predict maximal oxygen consumption ( $VO_{2max}$ ) in apparently healthy male secondary school students using a step test. The 20 meter shuttle run test (MST) and the step test were administered on fifty eight 14 to 20 years old male secondary school untrained volunteers. Data (predictor variables) collected include age, gender, body mass index (BMI) and step test post-exercise heart rate (HRpe) were used to develop a regression equation to predict  $VO_{2max}$ .  $VO_{2max}$  values generated from the 20MST were correlated with those obtained using the regression equation from the step test. A probability level of 0.05 or less was considered statistically significant. Multiple linear regressions generated the following prediction equation:  $VO_{2max}$  (ml.kg<sup>-1</sup>.min<sup>-1</sup>) = 62.887 - $(0.439 \times age) + (0.152 \times BMI) - (0.116 \times HRpe)$  and correlation between the 20MST and step testVO<sub>2max</sub> values were  $r = 0.52(p < 0.05; SEE = 3.67 \text{ ml.kg}^{-1} \text{.min}^{-1})$  which indicates a significant relationship. Also, cross-validation reveal minimal shrinkage of r = 1% (SEE = 3.55 ml.kg<sup>-1</sup> <sup>1</sup>.min<sup>-1</sup>). Based on these findings, it was concluded that the step test developed was a valid and reliable predictor of maximal oxygen consumption in the sample studied. It was recommended that a study with a larger sample size be conducted among healthy untrained male secondary school students to corroborate the results of this study.