

Repeated Maximal Exercise Measures are Very Reliable Among Healthy College-aged Individuals

KJERSTIN WOODRUM, NICOLE ARGUETA, JOCELYN GRAFFIUS, DAVID PEARCE, ALLISON ROWLEY, TYLER LE BARON, & JULIE E. TAYLOR

Kinesiology Laboratory; Department of Kinesiology and Outdoor Recreation; Southern Utah University; Cedar City, UT

Category: Undergraduate

Advisor / Mentor: Taylor, Julie E. (taylorj@suu.edu)

ABSTRACT

The most common way to assess cardiovascular fitness is with a maximal graded exercise test (GXT) to determine the maximal rate of oxygen consumption ($\text{VO}_2 \text{ max}$). Maximal exercise efforts during GXT testing have been shown to be quite repeatable among active and sedentary adults, as well as cardiac patients and the elderly. With young, healthy participants, familiarization and motivation could result in improved performance measures with repeated testing. The reliability of maximal exercise measures among healthy college-aged individuals during repeated Bruce Protocol GXT assessments are yet unclear. **PURPOSE:** To determine how repeatable the $\text{VO}_2 \text{ max}$ and other maximal exercise indices were with repeated GXT measures among healthy, college-aged adults. **METHODS:** Thirty-six apparently healthy participants (20 men, 16 women) aged 21.47 ± 0.5 years completed three GXT testing sessions following the Bruce Protocol. The maximal values for VO_2 , blood lactate, VE, HR and Borg Rating of Perceived Exertion (RPE) as well as time to exhaustion were recorded at the end of each session. **RESULTS:** Statistical analysis of the data was conducted using a one-way ANOVA by order of visit and a Tukey post-hoc analysis. With all participants combined, there were no differences in measured variables with one exception. Maximal RPE was higher in Visit 3 compared to Baseline ($p=0.02$). When men and the women were analyzed separately, there were no differences in RPE values among the men. Women reported a higher Max RPE in both Visit 2 and Visit 3 compared to Baseline. Despite the higher RPE values no other maximal measures were significantly different across testing sessions. **CONCLUSION:** This research confirms that repeated maximal GXT measures are very reliable among healthy college-aged individuals. The exception being a small but significant difference in self-reported maximal RPE values among women compared to baseline measures. Future studies could address potential reasons for the significant difference in women's self-reported RPE values.