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D-28 Free Communication/Poster - Fitness Testing: MAY 28, 2009 1:00 PM - 6:00 PM

ROOM: Hall 4F

Elliptical Trainer Brands And The Development Of A Metabolic Prediction Equation: 2188: Board #76 May 28 2:00 PM - 3:30 PM

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(No relationships reported)

PURPOSE: The primary purpose of this study was to determine the effect of elliptical trainer brand on gas exchange data as well as to develop separate brand-specific equations.

METHODS: Twenty-three healthy volunteers (22.3 ± 4.6 yrs, 172 ± 8.2 cm, 67.5 ± 9.3 kg) completed two testing sessions on two different brands of elliptical trainers, the Precor EFX 576i® and the TRUE TS1®, exercising equivalent watt output readings on each elliptical trainer was determined by resistance and cadence. Each subject exercised on each machine for six, 5-min. stages for a total exercise time of 30 minutes per session. Oxygen consumption (VO_2), heart rate, rating of perceived exertion (RPE), and caloric cost of the exercise were measured during each session. Two (machine) x three (workload) repeated measures ANOVA was used to analyze differences between machines. Stepwise multiple nonlinear regression analysis was used to develop metabolic equations for submaximal elliptical trainer exercise on both the Precor and the TRUE.

RESULTS: Significant differences were found between elliptical trainer brands for all exercise variables analyzed ($p < 0.001$), with the TRUE eliciting higher values than the Precor for equivalent watt output readings. Oxygen consumption values at the same watt output reading were 6.85 ± 4.4 ml/kg/min higher on the TRUE for watt levels between 107 and 131 watts. Two separate metabolic equations were developed for submaximal elliptical trainer exercise on the TRUE ($R^2 = 0.95$, $SEE = 2.6$), and the Precor ($R^2 = 0.92$, $SEE = 2.4$).

CONCLUSIONS: Differences exist in physiological responses to submaximal elliptical trainer exercise at equivalent watt output readings. These differences may require the acceptance of a metabolic prediction equation that is specific to a particular brand of elliptical trainer.

