The Relationship Between RPE and Blood Lactate Concentrations During a VO\textsubscript{2} Max Test On a Cycle Ergometer

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Abstract

The purposes of this study was to determine the relationship between RPE and blood lactate concentrations during a maximal test on a cycle ergometer.

Methods

Subjects

For this study, 9 subjects participated in a cycle ergometer maximal test. 7 males and 2 females voluntarily participated in the study. Each subject was tested to maximal demands on a cycle ergometer along with a metabolic cart in order to measure VO\textsubscript{2} Max values were all recorded and used for this study.

Stage 8: HR 176 ± 0.93, VO\textsubscript{2} 26, while females were 22 and 25. For males, the age, height, and weight was recorded on the data sheet and then inputted into the PARVO TrueOne metabolic cart during the exercise. Resting values of heart rate and blood lactate were recorded prior to the exercise test. The subject maintained a cadence of at least 60 RPM. Each staged consisted of three minutes. After the subjects had completed their one minute warm up, the cycle ergometer protocol increased resistance by 25W for females and 50W for males during each three minutes until max was reached. RPE, HR, Bla, and VO\textsubscript{2} Max values were taken during the last minute of each workload. The Lactate Plus Meter was inserted into the lactate sample. They were given a gauze to stem the bleeding and a band aid as necessary. All equipment used was disposed of in the proper biohazard waste containers. This measurement was repeated at rest, the last minute of each stage, at maximal exertion, and the end of recovery. The cycle ergometer was sent into recovery mode for a 5 minute cool down once the subject could no longer continue or maintain 60 rpm.

Statistical Analysis

On Microsoft Excel, all of the subject’s values were computed at each stage. Correlations between all subjects at each stage were then compared.

Results

Using Microsoft Excel, the correlation was calculated at each stage using RPE and blood lactate results between all subjects. After doing so, the correlation between the variables was determined. As workload increased, the relationship between RPE and blood lactate also increased.

Conclusions

The results of this study suggest that there is a relationship between RPE and blood lactate. As RPE increases with each stage, the relationship between RPE and blood lactate increases and was the highest at the last two workloads of the cycle ergometer test.