Establishing the Learned Effect of Repeated Wingate Anaerobic Tests

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ABSTRACT

Purpose:
The purpose of this study was to establish the number of WaNT trials needed to identify a learned effect during repeated anaerobic ergometer testing.

Methods:
This study tracked the changes in Peak Power (PP) and Mean Power (MP) in the WaNT, over 5 separate trials with a minimum of 72 hours between each trial. Resistance for trials was calculated at 7.5% of each respective subjects’ weight.

Subjects:
Sixteen apparently healthy college-aged males (n=11) and females (n=5) participated in five trials of 30-second cycle ergometer sprints.

Results:
Paired samples t-test using 2 tails revealed PP increased on all trials (2-5) for both genders when compared to trial 1 (+35W, +41W, +41W, +23W) (p=0.03, p=0.07, p=0.07, p=0.33). Mean values for males and females are as follows: (874±151, 931±180, 943±134, 942±162, 922±153) (433.0±57.72, 442.52±52.54, 439.67±54.39, 447.72±61.33, 472.45±44.04) respectively. Peak wattage for males and females was seen at trial 3 and 1 respectively.

The percent change in PP over all of the trials for both genders (2-5) are as follows [4.9%, 5.3%, 5.2%, 2.9%], when compared to trial 1. MP also increased on all trials for both genders (2-5) when compared to trial 1 (+26W, +36W, +33W, +35W) (p=0.01, p=0.01, p=0.00, p=0.01, respectively). Mean values for males and females are as follows (644±95, 675±95, 692±81, 683±86, 675±95), (594.29±78.27, 594.33±68.47, 574.14±59.33, 576.05±76.68, 559.92±69.93) respectively, demonstrating mean peak wattage for males and females at trial 3 and 5 respectively.

SUMMARY & CONCLUSIONS

• The purpose of the present study was to establish an optimal number of WaNT trials that would elicit a learned effect during anaerobic ergometer testing

• The data presented indicated the largest percent change in PP (7.3%), when trial 1 was compared to trial 3. PP was highest on trial 3.

• The data presented indicated the largest percent change in MP (7.1%), when trial 1 was compared to trial 3. MP was highest in trial 3.

• Present research suggests that to account for any changes attributable to neuromuscular power output, 3 trials are needed during WaNT.

• Further research (i.e. larger sample, gender differences) is necessary in order to support these findings.

REFERENCES