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Comparison of rating of perceived exertion between different types of long interval high intensity exercise bout in male handball players

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Abstract

The aim of this study was to compare Rating of Perceived Exertion (RPE) to five bout of high intensity interval exercise within and between pyramid interval training (PIT) and basic interval training (BIT) in university male handball players. Twelve (12) male handball players were selected at random as subjects, who volunteered to participate in this study. The two way repeated measure ANOVA reveals that there is no significant difference interaction effect between group and bouts showed no significance $F = 2.133$, $p = 0.083$, $\eta_p^2 = 0.088$ (moderate effect) but within group it showed significance. It is concluded that acute responses of PIT and BIT show no significant on RPE of handball players. The acute physiology confirms that difficulty for coaches to plan and control the exercise intensity for groups rather than individuals.

Keywords: Maximum heart rate, Yo-Yo intermittent recovery test, polar heart rate monitor

Introduction

Monitoring athletes training load during a training session is possible using a valid and reliable scientific tool of practical nature is imperative. Using scientific tool for load monitoring would help the athletes to perceive optimum adaptation to exercise and also prevent the risk of overtraining. Exercise is any real action that upgrades or keeps up physical wellness and by and large wellbeing. Exercise performed by an athlete or players for honing athletic skills and performance. Exercise performed with specific intensity has to be monitored and quantified through several methods. Foster *et al.* (2001) ^[1] proposed a method based on Rating of Perceived Exertion (RPE).

The RPE Scale is a widespread method for determining exercise intensity levels. It is commonly used in some research studies for assessing acute exercise effect, but may also be used in training programs to describe the intensity of training sessions. The scale of perceived exertion is how hard you feel your body is working, and so is a subjective measure. Therefore, the aim of this study was to compare RPE to five bout of high intensity interval exercise within and between pyramid interval training (PIT) and basic interval training (BIT) in university male handball players.

Methods

Subjects and variables

Twelve (12) male handball players were selected at random as subjects, who volunteered to participate in this study. These players were selected from the Department of Physical Education and Sports Sciences, Annamalai University, Chidambaram, Tamilnadu during the academic year 2017 – 2018. The selected subjects gave their willingness to participate in this study. The dependent variable selected in the present study was RPE measured using Borg Category-Ratio-10 scale (1982). The independent variable selected in the present study was Pyramid interval training (PIT) and basic interval training (BIT). Handball players HRmax was calculated using Yo-Yo intermittent recovery level II from this percentage of HRmax was calculated.

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Design of the study

Acute physiological responses of PIT and BIT were assessed. PIT was tested followed by one week of active rest BIT was tested. Details of PIT and BIT (Figure 1) are presented. Both

PIT and BIT had 5 bouts of exercise with work rest ratio of 1:1 (duration of work is 3 minutes and active recovery between bouts is of 3 minutes duration). The PIT had pyramid shape of work load and BIT had normal work load.

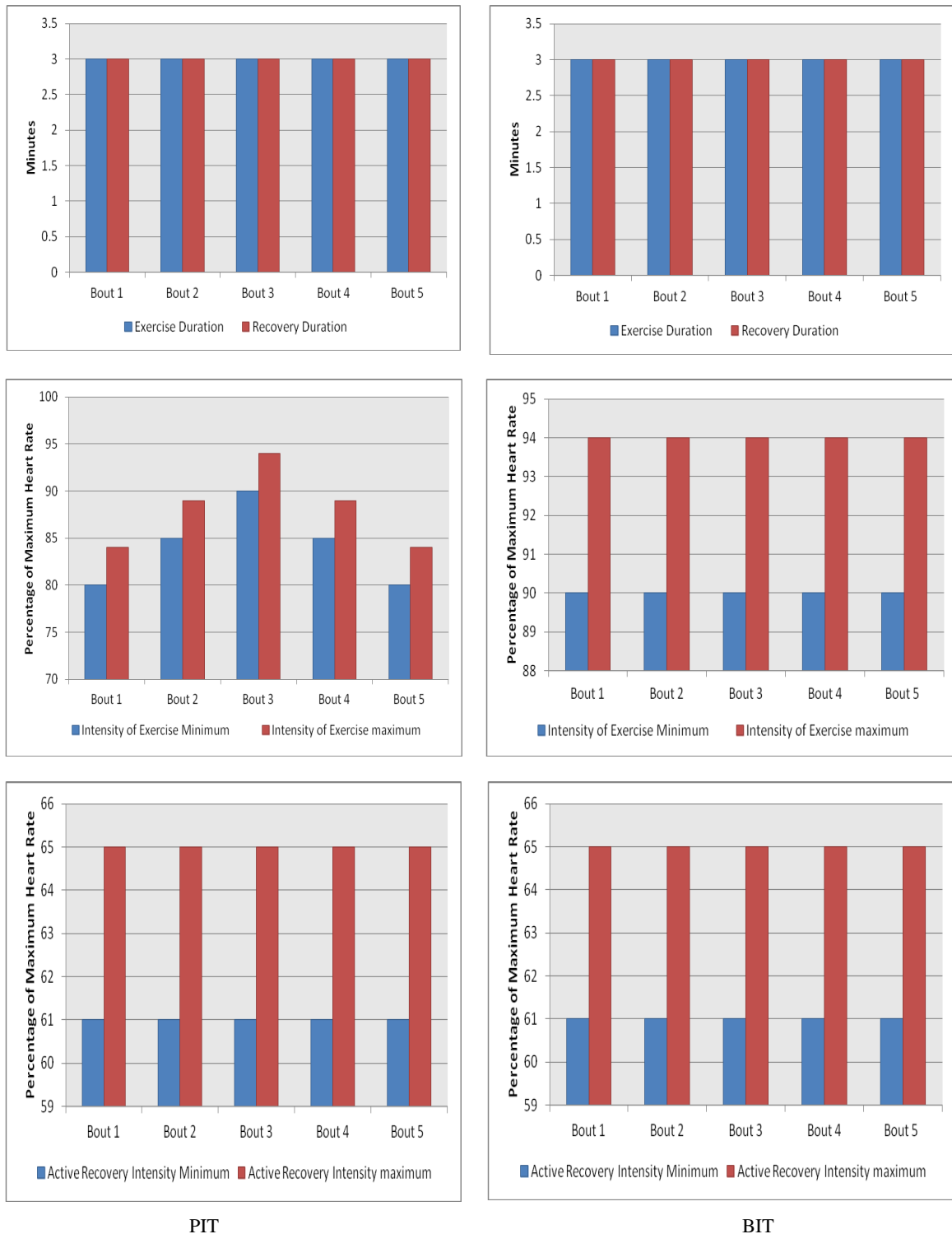


Fig 1: Description of exercise and training for PIT and BIT

Statistical technique

The acute effect of PIT and BIT on RPE was statistically analysed to examine the changes within and between the two procedures. A two-way repeated measure ANOVA with both factor repeated was applied to examine the difference between two procedures and testing conditions. When the interaction was significant simple effect was applied and Bonferroni Post hoc test was applied to examine the paired mean difference between different testing conditions. To elicit differences

between the means more meaningful it was expressed with reference to the effect size (ES, Cohen's *d*).

Results

The two way repeated measure ANOVA reveals that there is no significant difference between groups (PITG and BITG) in RPE ($F = 4.272, p = 0.051, \eta_p^2 = 0.163$ - large effect). It is also noted that within PITG and BITG also displayed

significant changes in RPE ($F = 7.989$, $p = 0.000$, $\eta_p^2 = 0.266$ - large effect). The interaction between group and bouts showed no significance, $F = 2.133$, $p = 0.083$, $\eta_p^2 = 0.088$ - moderate effect. Since the interaction is not significant simple effect was not applied. RPE recorded in between bouts of PIT and BIT was presented in Figure 2.

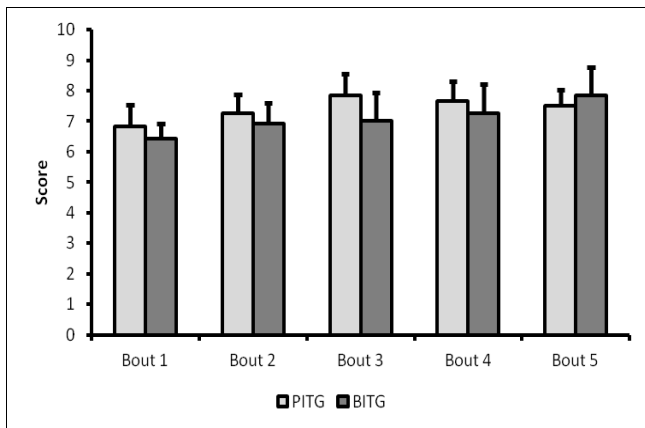


Fig 2: RPE recorded within PITG and BITG

Discussion

The RPE assessed for PIT and BIT in between bouts showed no significant interaction effect. However, within PIT and BIT in between bouts RPE showed significance. Therefore, assessing RPE between bouts might provide a useful tool to better control the exercise regime through monitoring all type of training sessions (Haddad *et al.*, 2011a) [2]. Present study result is in line with the findings of earlier, studies prove that aerobic exercise / training (Foster *et al.*, 2001; Haddad *et al.*, 2011a) [1, 2] and intermittent exercise / training (Foster *et al.*, 2001; Haddad *et al.*, 2011a) [1, 2] displayed significance in perceptual response. Before administering any training its acute physiology has to be assessed along with the perceptual response which will broaden the understanding of individual responses to physical stimulus. There exist a weak agreement between planned and perceived training dose of a coach and athlete/player was also observed during an entire season of team sports such Soccer (Brink *et al.*, 2014) [4] and volleyball (de Andrade *et al.*, 2014) [4]. Therefore, in the present study rating of perceived exertion (RPE) is a recognized marker of intensity and of homeostatic disturbance during exercise.

Conclusion

It is concluded that acute responses of PIT and BIT show no significant on RPE of handball players. The acute physiology confirms that difficulty for coaches to plan and control the exercise intensity for groups rather than individuals. Our recommendation is that throughout the scheduled training, coaches should keep in mind the specificity and individual characteristics that might affect the internal load of each individual sports persons and to use heart rate monitors to assist new RPE user to match their perceptions with the intensity of their training (Stagno *et al.*, 2007) [5].

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