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Effect of active and passive recovery after Wingate Test in athletes

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ABSTRACT

The aim of this study was to evaluate effect of active and passive recovery after Wingate Test in Tehran's Judo athletes. For this reason, 15 Judo athletes participated in this study and were divided randomly in two groups: active recovery (AR) and passive recovery (PR). Each group did two 30second-wingate anaerobic power testes with 15 minute recovery interval. The recovery period of AR group consist of pedaling on cycle ergometer with 60-70 HR-max whereas PR did not do any activity. Maximum anaerobic power at rest, 3 minute after the first test, before and after second test were measured. Based on the study findings, maximum and mean anaerobic power in AR group were higher than PR in the second Wingate test ($p<0.01$). Our results show that active recovery causes better maximum anaerobic power in judo athletes.

Keywords: Active and passive recovery, anaerobic power, Judo athletes.

INTRODUCTION

Competitive judo can be described as a combative, high- intensity sport in which the athlete attempts to throw the opponent onto his/her back or to control him/her during groundwork combat. Both attempts depend on specific techniques and tactical skills with the support of good physical fitness [1]. To be successful in international competitions, judo athletes must achieve an excellent level of physical fitness and physical condition during training [2]. The results indicated that the minimal recovery time reported in judo competitions (15 min) is long enough for sufficient recovery of WT performance and in a specific high-intensity test (SJFT) [3]. In short duration, high intensity exercise has been well documented [4, 5]. Furthermore, it has been suggested that low intensity work lasting 20-40 minutes is appropriate to prevent decreased power output on repeated bouts of short duration, high intensity exercise [6]. High intensity exercise results in increased levels of both intramuscular and circulating levels of lactate [7, 8]. The results of a study suggest that an active recovery of 3 minutes between High intensity, short duration exercise bouts significantly increase peak power and average power compared to a passive recovery, irrespective of changes in blood lactate levels [9].Inadequate recovery from short-term, high-intensity bouts of exercise can be a limiting factor to optimal sporting performance [10]. Previous research investigating recovery from intense exercise using various intervention protocols (e.g., active recovery, massage, cold and contrast water therapy, compression suits etc.) have generally found positive results when compared to passive recovery [11,12]. Studies was demonstrated that when two Wingate tests are performed almost successively but with a short recovery between the two, passive recovery is more appropriate than active recovery to restore the performance level [13]. Despite no differences in the majority of performance measures, active recovery resulted in a significantly lower final peak power, a greater peak power decrement, a higher muscle lactate concentration, and a strong trend towards lower phosphocreatine, suggesting a potential suboptimal effect of active recovery during repeated-sprint exercise [14]. data is demonstrated that active recovery at a work rate corresponding to 28 % of VO(2)max increases total

work achieved during repeated WAnT when compared with passive recovery in sedentary subjects and moderately trained hockey players [15]. Results suggest that active recovery (60% of the 100-m pace) could be beneficial between training sets, and may compromise swimming performance between repetitions when recovery durations are short (< 2 min) [16]. The ability to maintain power output during intermittent anaerobic exercises can discriminate properly judo players of different levels. Lactate removal was improved with AR when compared to PR but AR did not improve performance in a subsequent intermittent anaerobic exercise [17]. The aim of this study was to evaluate effect of active and passive recovery after Wingate Test in Tehran's Judo athletes.

MATERIALS AND METHODS

Thirty players Judo, women, non-smoking and lack any patient participated in the study. Their average age was 22.3±4.2 years, height 170.1±2.8 cm, and weight 64.7±4.5 kg. Subjects and were divided randomly in two groups: active recovery (AR) and passive recovery (PR). Each group did two 30second-wingate anaerobic power testes with 15 minute recovery interval. The recovery period of AR group consist of pedaling on cycle ergometer with 60-70 HR-max whereas PR did not do any activity. Maximum anaerobic power at rest, 3 minute after the first test, before and after second test were measured. Statistical analyses were done using SPSS/16. The effect of exercise protocol was tested using paired t test and independent t tests for comparisons data. Statistical significance was set at $p<0.05$.

RESULTS AND DISCUSSION

The results first tests at the PR were 11.9±3.14 (w/kg-1) and second test 12.1±2.17 (w/kg-1). Also, the results first tests at the AR were 12.1±2.34 (w/kg-1) and second test 15.9± 2.75 (w/kg-1). The mean of maximum anaerobic power was Based on the study findings, maximum anaerobic power in AR group were higher than PR in the second Wingate test ($p<0.01$). (Tabel. I).

Table I. Maximum anaerobic power was

Groups	First Test (w/kg^{-1})	Second Test (w/kg^{-1})
PR	11.9±3.14	12.1±2.17
AR	12.1±2.34	15.9±2.75*

PR = Passive Recovery, AR = Active Recovery
** = Significant*

CONCLUSION

The findings of this research suggested that AR, significant changes in maximum anaerobic power has happened after an second test in AR group. In support of present research, the many studies done on the elite and with 30 seconds Wingate [13, 15, 16 and 17]. Indicated that short duration, high intensity exercise has useful effect on the maximum anaerobic power [4, 5].

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