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EFFECT OF INTENSIVE SPORTS SPECIFIC ENDURANCE CIRCUIT TRAINING ON SELECTED MOTOR FITNESS COMPONENTS OF MALE HANDBALL PLAYERS DURING PREPARATORY PHASE

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Abstract

The aim of the study is to assess the effect of 12 weeks intensive sports specific endurance training on selected motor fitness components of male handball players. Twenty four (30) male handball players were recruited and randomly classified into two groups as intensive sports specific endurance circuit training group (ISSECTG) and control group (CG) of 15 subjects each. The intensive sports specific endurance circuit training was administered 3 days a week for twelve weeks. Our result showed twelve weeks of intensive sports specific endurance circuit training failed to show significant interaction effect on motor fitness components like speed and power ($p > 0.05$). We conclude that intensive sports specific endurance circuit training for 12 weeks is effective enough in maintaining motor fitness components like speed and power of handball players.

Keywords: Handball, intensive training, players, motor fitness, preparatory phase

Introduction

Morden handball requires greater physical fitness, physiological adaptation and psychological skills to excel in competition. Handball game requires motor fitness to execute jump and sprint. Motor fitness refers to the ability of an athlete to perform successfully at their sport[1]. The sprinting performance and explosive power found to be similar between elite and amateur handball players[2], however, elite players showed no changes in sprinting performance during entire season[3]. Earlier study had clearly showed that low intensity aerobic training administered during in season inhibits sprint performance but high intensity interval training along with strengthening of leg improved sprinting performance[3].

Coaches implement interval training to enhance players aerobic capacity which is

the important performance determinant factor. The athletes speed and explosive power development largely depends on the ability to recruit fast twitch motor units. Earlier it was identified that high intensity intermittent endurance training maintains speed[4-6] and power[7-11] which suggest that high intensity training recruits and trains fast twitch motor units. Chittibabu[12] clearly found that significant positive correlation of sprinting performance with agility and negative correlation with explosive power among handball players.

As the correlation exists between the motor fitness variables it should be noted and based on which the training has to be designed. The assessment of the physical capacities of athletes is one of the most important issues in modern sports, many test used in order that selection procedures, for screening candidates, or to monitor the efficacy of training regimes[13]. In order to improve or maintain the qualities of motor fitness components like speed and power through intensive sports specific endurance circuit training specific attention must be paid to create the optimal intensity, frequency, duration and recovery. Therefore the aim of study was to assess the effect of 12 weeks of intensive sports specific endurance training on selected motor fitness components of male handball players.

Methods

Subjects and variables

Twenty four (30) male handball players were recruited from Annamalai University as subjects after obtaining their written informed consent to take part in the study. The study was approved by the Institutions Human Ethics Committee, Rajah Muthiah Medical College, Annamalai University, Chidambaram, Tamilnadu, India. All the subjects were medically examined and declared fit to take part in the study by registered medical practitioners. Thereafter the subjects were randomly classified into two groups as ISSECTG and CG of 15 subjects each. In the study there was no dropout. The selected handball players have the average (±SD) age of 24.35 ± 4.05 years; height 178.75 ± 8.18 cm and weight 72.59 ± 9.70 kg. Speed was measured using 30 metre dash and power was measured using vertical jump test.

Training

The intensive sports specific endurance circuit training (ISSECT) was administered 3 days a week for twelve weeks. The ISSECTG performed 2 minutes of work bout at 90 to 95% of maximum heart rate and followed by 2 minutes of active recovery of walking. The 2 minutes duration work contributes to 50% of aerobic and 50% of anaerobic energy source during maximal work[14]. In this study 1:1 work rest ratio was followed. This training protocol was adapted from Helgerud et al.[15]. They performed 6 repetitions during first four weeks, followed by 7 repetitions during next four weeks and 8 repetitions during last four weeks of training.

Statistical technique

In the present study pre to post test changes are tested using paired t test in both ISSECTG and CG. All the statistical tests were calculated using the statistical package for the social science (SPSS) for windows (Version 16). The level of statistical significance was set at $p < 0.05$.

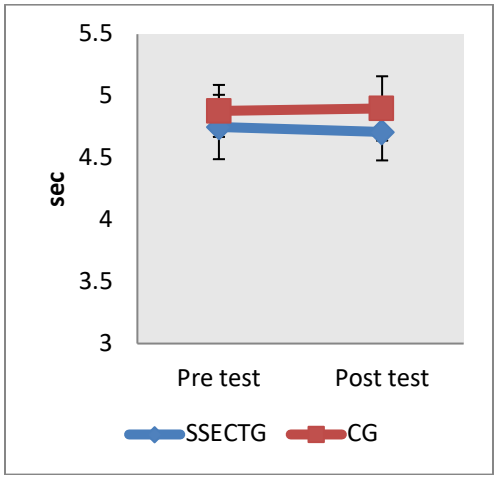
Results

The present study showed that there is no significant difference between groups

(F = 2.64, p = 0.105), testing conditions (F = 0.093, p = 0.763) and interaction (F = 1.680, p = 0.205) on speed (Figure 1).

Figure 1

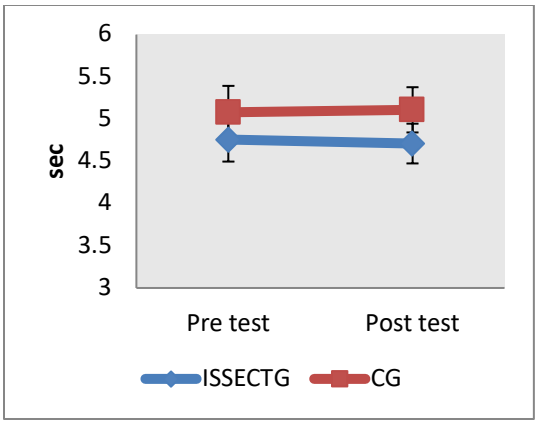
Changes in SSECTG and CG on speed of handball players



The present study showed that there is a significant difference between groups (F = 14.65, p = 0.001) but testing conditions (F = 0.098, p = 0.780) and interaction (F = 1.680, p = 0.205) on power (Figure 2).

Figure 2

Changes in SSECTG and CG on power of handball players



Discussion

In the present study speed and power remained unaltered after 12 weeks of intensive sports specific endurance circuit training on male handball players. Strength is the determinant factor for speed and power. In the present study endurance training interferes with strength related parameters which could limit the speed and explosive power of handball players [4,16,17]. In the present study sports specific endurance circuit training did not reduced speed and power related performance as the circuits possessed anaerobic activity which was sufficient enough to maintain speed and power. This observation of no interference effect parallels the results of similar aerobic endurance training studies involving in soccer players[18-20].

Conclusion

It is concluded that intensive sports specific endurance circuit training is not effective enough to enhance players speed and power of handball players. It is necessary to investigate the interference effect of aerobic capacity on speed and power of handball players.

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