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Power and running velocity response to the influence of sprint training on football players

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Abstract

This study investigated the power and running velocity response to the influence of sprint training on football players. To achieve the purpose of the study 30 inter-collegiate male football players were selected from affiliated colleges of Bharathiar University, Coimbatore. The subjects were randomly assigned to two equal groups (n=15). Group - I underwent sprint training (STG) and group - II was acted as control group (CG). The sprint training was given to the experimental group for 3 days per week (Monday, Wednesday and Friday) for the period of twelve weeks. The control group was not given any sort of training except their routine work. Power (standing broad jump) and running velocity (sprint or speed tests) were measured. Before and after training period the data collected from the subjects was statistically analyzed with 't' test to find out significant improvement if any at 0.05 level of confidence. The result of the power and running velocity speculated significant improvement due to influence of sprint training with the limitations of (diet, climate, life style) status and previous training. The result of the present study coincides with findings of the investigation done by different experts in the field of sports sciences. Influence of sprint training significantly improved power and running velocity of inter-collegiate male football players.

Keywords: Sprint Training, Power and Running Velocity

Introduction

Speed is not just how fast someone can run (or cycle, swim etc.), but is dependent on their acceleration (how quickly they can accelerate from a stationary position), maximal speed of movement, and also speed maintenance (minimizing deceleration). Movement speed requires good strength and power, but also too much body weight and air resistance can act to slow the person down. In addition to a high proportion of fast twitch muscle fibres, it is vital to have efficient mechanics of movement to optimize the muscle power for the most economical movement technique (Wilmore and Costill 1994). Speed is one of the main fitness components, important for success in many sports. For some athletes such as Track and Field sprinters, sprint swimmers, cyclists and speed skaters, speed is the most important aspect of fitness. In many other sports, including team field sports, good speed is also very important as part of the overall fitness profile. A vote of the top sports requiring speed has the obvious ones of track and field sprinters on top. See also another list ranking sports in which speed is important.

Speed as a basic motor ability is very important in the execution of technical elements in the football game Dejan (2011) [1]. While speed of movement alone is most certainly an advantage to a soccer player, it is not vital. Speed of thought, however, is essential to success. Good perception and quick reaction can save much time. The following elements of speed combined are ideal. Perception Speed: the time that elapses between the occurrence of a situation in a game and its recognition by the player. Reaction Time: the time that elapses between the occurrence of the situation in a game and a player's initial physical reaction. Speed of Movement: how fast a player is able to move over a distance of 5 to 10 yards. Although it is important that a player be able to move quickly over this distance, it is more important that they are just as quick with the ball at their feet over the same distance. Often there are players who are quick sprinters, but lack the same speed with the ball at their feet.

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The hypothesis argued in this paper is that inter collegiate football players can significantly increase the power and running velocity and by combining normal technical and tactical sessions with a sprint training program over a consecutive 12 weeks period. Therefore, the object of this study was to investigate the changes in the parameters produced during 12 weeks of sprint training in 15 inter collegiate football players.

Methods

Experimental Approach to the Problem

In order to address the hypothesis presented herein, we selected 30 inter-collegiate male football players from affiliated colleges of Bharathiar University, Coimbatore. The subjects were randomly assigned in to two equal groups namely, sprint training group (STG) (n=15) and Control group (CG) (n=15). The respective training was given to the experimental group the 3 days per weeks (alternate days) for the training period of twelve weeks. The control group was not given any sort of training except their routine.

Design

The evaluated power was assessed by standing broad jump and the unit of measurement was in meters, running velocity

was assessed by sprint or speed tests the unit of measurement was distance / time. The parameters were measured at baseline and after 12 weeks of sprint training.

Training programme

The training programme was lasted for 45 minutes for session in a day, 3 days in a week for a period of 12 weeks duration. This 45 minutes included 10 minutes warm up, sprint training for 25 minutes and 10 minutes warm down. Every three weeks of training 5% of intensity of load was increased from 65% to 80% of work load. The volume of sprint training is prescribed based on the number of sets and repetitions. The equivalent in sprint training is the length of the time each action in total 3 day per weeks (Monday, Wednesday and Friday).

Statistical Analysis

The collected data before and after training period of 12 weeks on the above said variables due to the effect of sprint training was statistically analyzed with ‘t’ test to find out the significant improvement between pre and Post Test. In all cases the criterion for statistical significance was set at 0.05 level of confidence. ($P < 0.05$)

Table 1: computation of ‘t’ ratio on power and running velocity of inter collegiate male football players on experimental Group and control group (Scores in numbers)

Group			Mean	N	Std. Deviation	Std. Error Mean	T ratio
Experimental Group	POWER	Pre test	2.35	15	0.28	0.72	9.55*
		Post test	2.56	15	0.21	0.05	
	RV	Pre test	7.82	15	0.57	0.14	12.08*
		Post test	8.26	15	0.66	0.17	
Control Group	POWER	Pre test	2.36	15	0.27	0.07	1.51
		Post test	2.40	15	0.26	0.06	
	RV	Pre test	7.40	15	0.39	0.10	1.14
		Post test	7.43	15	0.39	0.10	

*significant level 0.05 level degree of freedom (2.14,1 and 14)

Table I reveals the computation of mean, standard deviation and ‘t’ ratio on power and running velocity of experimental group. The obtained ‘t’ ratio on power and running velocity were 9.55 and 12.08 respectively. The required table value was 2.14 for the degrees of freedom 1 and 14 at the 0.05 level of significance. Since the obtained ‘t’ values were greater than the table value it was found to be statistically significant.

Further the reveals the computation of mean, standard deviation and ‘t’ ratio on power and running velocity of control group. The obtained ‘t’ ratio on power and running velocity were 1.51 and 1.14 respectively. The required table value was 2.14 for the degrees of freedom 1 and 14 at the 0.05 level of significance. Since the obtained ‘t’ values were greater than the table value it was found to be not statistically significant.

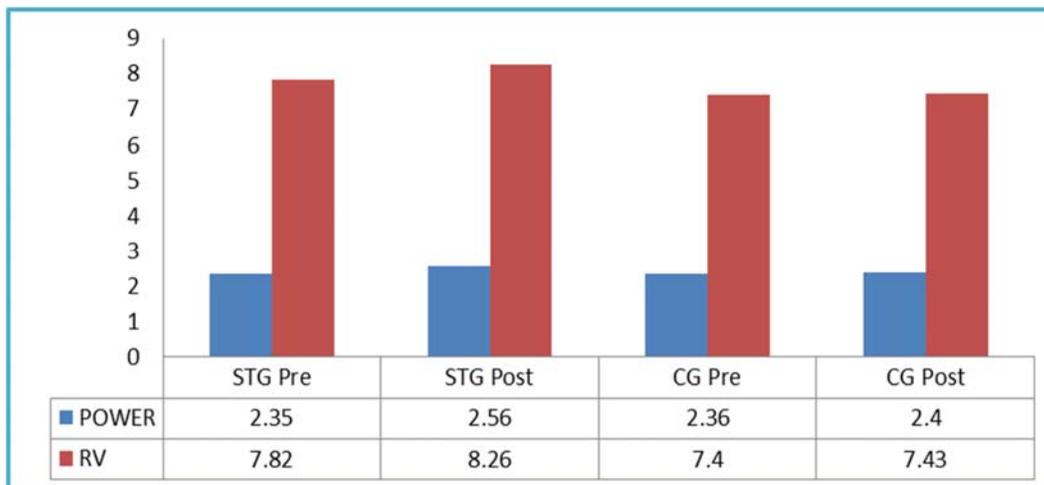


Fig 1: Bar diagram showing the mean value on power and running velocity of inter collegiate male football players on experimental and control group (Scores in numbers)

Discussion and Findings

The present study experimented the impact of twelve weeks sprint training on the power and running velocity of the inter collegiate male football players. The results of this study indicated that sprint training is more efficient to bring out desirable changes over the power and running velocity of the inter - colligate male football players. The finding of the present study had similarity with the findings of the investigators referred in this study Mahaboojan (2012) ^[2] reported that the hollow sprint training improved 100meters sprint performance among school boys. Sarachandra (2014) ^[3] reported that the sprint training was significantly improved the speed and agility among young high school football players. Robert *et al.*, (2013) ^[4] Acceleration speed was high improvement due to the effect of 8 weeks sprint training for basketball players compare with other training group plyometric training and sprint training. Pinder *et al.*, (2012) ^[5] dedicated measurements of maturation need to be included in future measurement of youth populations to better understand adaptation and train for speed throughout the athletes' development. Eskandar *et al.*, (2014) ^[6] reported that the plyometric group registered better records in agility, speed and explosive power.

From of result of the present study, it is speculated that the improvement in the power of the subjects may be due to the improvement in running velocity, further, the planned programme sprint training might have influenced the power and running velocity of the subjects involved in this study.

Conclusions

1. It was concluded that twelve weeks sprint training significantly improved the power and running velocity of the inter collegiate male football players.
2. Sprint training is one among the most appropriate means to bring about the desirable changes over speed parameters of football players. Hence, suggested that coaches and the experts deal with football players to incorporate sprint training as a component in their training programme.

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