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Effect of resistance training on selected physical fitness variables of tennis players

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Abstract

The impartial of this study was to travel the resistance training on selected physical fitness variables of tennis players, totally 30 inter collegiate players to participate in this study. Treatment group I underwent resistance training, group II acted as control group. All thirty subjects were inducted for pre and posttest on agility and leg explosive power. The ladder training was given to the experimental group for 5 days per week (Monday to Friday) for the period of eight weeks. The control group was not given any sort of training except their routine work. The agility (4 x 10 meter shuttle run in seconds) and leg explosive power (standing broad jump test) were assessed before and after training period. The result from 't' test and inferred that 12 weeks resistance training treatment produced identical changes over agility and leg explosive power of tennis players. Further, the findings confirmed the resistance training is suitable protocol to bring out the desirable changes over agility and leg explosive power of tennis players.

Keywords: Resistance training, agility, leg explosive power and tennis players

Introduction

Tennis is a sport based on unpredictability. The unpredictability of point length, shot selection, strategy, match duration, weather, and the opponent all influence the complex physiological aspects of tennis play. Designing and implementing training for tennis requires a solid understanding of the many physiological variables critical to optimal performance. Tennis requires short explosive bursts of energy repeated dozens, if not hundreds, of times per match or practice session. Tennis, unlike many other sports, does not have time limits on matches.

This can result in matches lasting less than one hour or as long as five hours (in five-set matches). This variability requires successful tennis athletes to be highly trained both an aerobically for performance, and aerobically, to aid in recovery during and after play. Although tennis is one of the most popular sports worldwide, few extensive reviews have been completed to help provide tennis scientists, coaches, and players with a summary of the tennis research. The relevance of resistance training on the increments of strength levels in children and youngsters is well expressed in the results obtained on a meta-analysis study, which makes it possible to conclude that children and youngsters' muscular strength has increased because of resistance training programs (Payne *et al.*, 1997) [15].

Besides, resistance training is a basic component on fitness and conditioning programs (Faigenbaum *et al.*, 2009) [18] and a safe, effective, and profitable method for youngsters (Faigenbaum *et al.*, 2003) [17]. Furthermore, it has been used by high-school strength and conditioning coaches who participated in a survey on strength and conditioning practices. Nevertheless, in the past years, a few studies have investigated the effects of resistance training programs on the improvement of adolescent athletes' exclusivity levels (Christou *et al.*, 2006) [21]. Resistance training has also become an essential method to improve athletes' speed and explosive power. Research results show that resistance training improves explosive power, vertical jump and speed in professional soccer players by affecting the leg extensor muscles (Balciu nas *et al.*, 2006) [22].

Materials and Methods

To attain the determination of the study 30 tennis players at the age group of 21-25 years were selected from various academy in Coimbatore district. The selected subject was randomly

assigned into two equal groups, consist of fifteen each, namely resistance training group (n=15) and Control group (n=15). The respective training was given to the experimental group the 5 days per weeks (Monday to Friday) for the training period of twelve weeks. The control group was not given any sort of training except their routine. The evaluated agility were measured by 4x10 meter shuttle run in seconds and leg explosive power were measured by standing broad jump test the unit of measurement was in meters. The parameters were measured at baseline and after 12 weeks of resistance training were examined. The intensity was increased once in two weeks based on the variation of the exercises. The training programme was lasted for 45 minutes for session in a day, 6 days in a week for a period of 12 weeks duration. These 45 minutes included warm up for 10 minutes, 25 minutes resistance training and warm down for 10 minutes. The equivalent in resistance training is the length of the time each action in total 5 day per weeks. (Monday to Friday)

Statistical analysis

The collected data on agility and leg explosive power due to the combination of resistance training was statically analyzed with “t” test to find out the significant improvement between

pre& posttest if any. In all case the criterion for spastically significance was set at 0.05 level of confidence ($p<0.05$).

Table 1: Computation of ‘t’ ratio on agility of tennis players on experimental group and control group, (Scores in Numbers / Seconds)

Group	Test	Mean	Std. Deviation	T ratio
Agility	Experimental Group	Pre test	11.32	14.64*
		Post test	10.43	
	Control Group	Pre test	11.29	0.82
		Post test	11.26	

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

Table 1 reveals the computation of mean, standard deviation and ‘t’ ratio on agility of experimental and control group. The obtained ‘t’ ratio on agility were 14.64 and 0.82 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 experimental group ‘t’ values were greater than the table value of 2.14, it was found to be statistically significant. The control group ‘t’ value is less then table value of 2.14 it was found to be statistically insignificant.

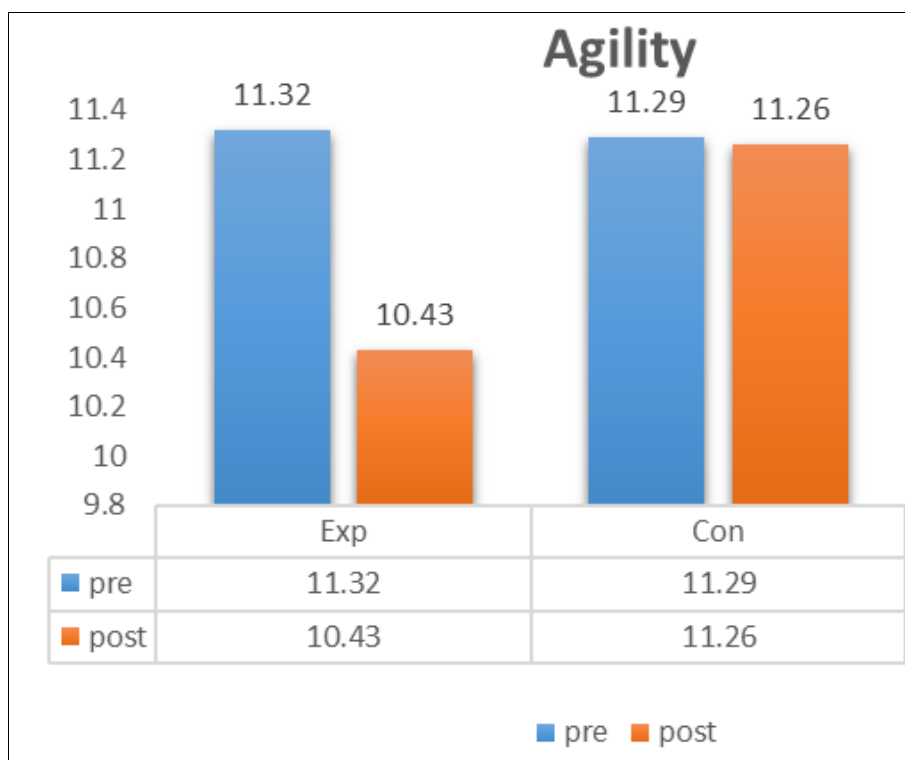


Fig 1: Bar diagram showing the mean value on agility of tennis players on experimental group and control group

Table 2: Computation of ‘t’ ratio on leg explosive power of tennis players on experimental group and control group, (Scores in Numbers / Seconds)

Group	Test	Mean	Std. Deviation	T ratio
Leg Explosive Power	Experimental Group	Pre test	1.46	8.30*
		Post test	1.62	
	Control Group	Pre test	1.46	1.52
		Post test	1.47	

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

Table 2 reveals the computation of mean, standard deviation and ‘t’ ratio on reaction time of experimental and control group. The obtained ‘t’ ratio on reaction time were 8.30 and 1.52 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 experimental group ‘t’ values were greater than the table value of 2.14, it was found to be statistically significant. The control group ‘t’ value is less then table value of 2.14 it was found to be statistically insignificant.

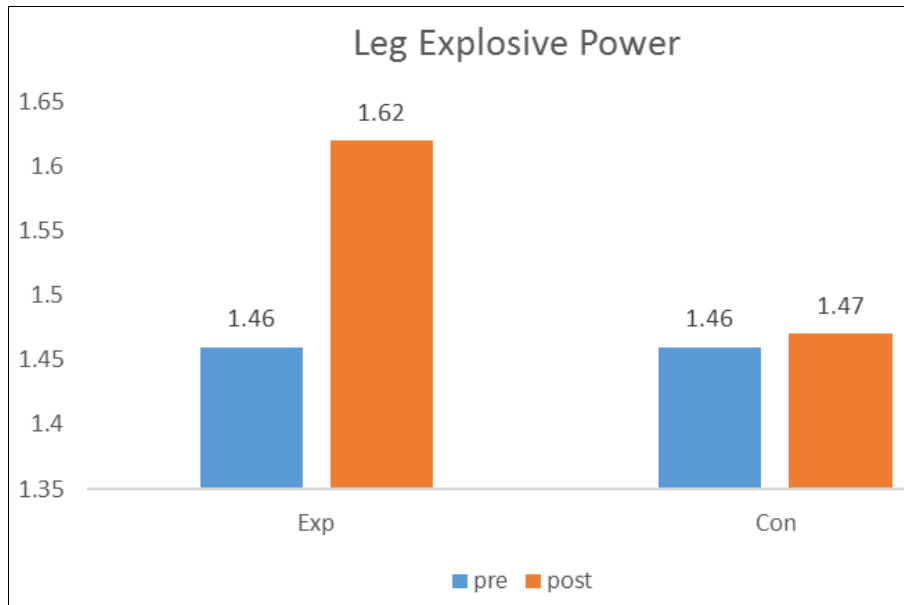


Fig 2: Bar diagram showing the mean value on leg explosive power of tennis players on experimental and control group

Discussion on Findings

The current study examined the effect of resistance training on the selected variables are agility and leg explosive power of the tennis players. The results of this study indicated that ladder training is more efficient to bring out needed changes over the agility and reaction time of the tennis players.

The results showed that eight weeks of resistance training had significant effects on reducing agility records. These results were consistent with Miller *et al.* (2006) [23] but did not match with Tartibyan *et al.* (2012) [20]. Agility along with other factors such as balance, coordination, speed, power, and reaction speed is one of the physical fitness factors related to skills. Probably, muscle fibers hypertrophy due to resistance training led to the subjects' ability to change situation and direction rapidly without losing precision and balance. The results showed that eight weeks of resistance training had not significant effects on reducing speed records. The results were consistent with Tartibyan *et al.* (2012) [20] but did not match with Shahidi *et al.* (2012) [19]. Research results show that resistance training improves speed in professional soccer players by affecting leg extensor muscles. Apart from increasing power, other factors such as muscle length and temperature, body shape and flexibility also should be noted in speedy performances.

The result from this study are very hopeful and it proves the benefits of resistance training. The tennis players are not only using dance exercises to improve their flexibility but also to improve the presentation. Also, the results support that development in mobility can occur 12 weeks of resistance training.

Conclusion

Based on the result of the study it was concluded that the resistance training have been significantly changes in leg explosive power of tennis players. It was concluded that the resistance training have been significantly changes in agility of tennis players.

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