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Investigation of speed and flexibility among Maharashtra state level basketball, football and volleyball players

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Abstract

Speed and flexibility are main fitness components, important for success in many sports, especially team sports, like football, basketball, volleyball. The aim of the present study was to investigate speed and flexibility of Maharashtra State level Basketball, Football and Volleyball players. Randomly selected 30 Basketball players, 30 Football players and 30 Volleyball players, who participated at State level competitions held at Nagpur during the year 2017 and their mean age was 20.6 years with standard deviation of + 1.4 years. The data collected on speed and flexibility were compared for the differences existed among the players using statistical tool ANOVA. The study proved that football players were fastest, followed by basketball and then volleyball players. The post hoc analysis proved that football and basketball players' were significantly better than volleyball players ($P < 0.05$). There was no significant difference among the players on flexibility. It was concluded that state level volleyball players can concentrate more to improve their speed for better performances.

Keywords: Speed, flexibility, fitness, football, basketball, volleyball, players, performance etc.

Introduction

Speed is the ability to move quickly across the ground or move limbs rapidly to grab or throw. Speed is not just how fast someone can run, but is dependent on their acceleration, maximal speed of movement, and also speed maintenance. Thus, speed is one of the main fitness components, important for success in many sports many in team field sports, like football, basketball, volleyball etc. Flexibility is the static maximum range of motion (ROM) available about a joint and the joint structures can vary between individuals, and this must be recognised when assessing flexibility standards in athletes. Experimentally, this was shown by Toft *et al.* (1989)^[4], who found a 36% decrease in passive tension of the plantar flexors after three weeks of regular calf stretches. The relationship between static range of motion (ROM) and passive tension has been further supported by McHugh *et al.* (1998)^[3]. Research into the effects of flexibility of stretch shortening cycle (SSC) movements has shown that increased flexibility is related to augmented force production during SSC movements. In contrast, running studies have shown that flexibility has little performance effect, which is odd because running is a kind of SSC movement. For example, De Vries (1966)^[1] showed that while pre stretching increased static ROM in sprinters, it had no effect on speed or energy cost during the 100-yard dash. It has been shown that stiffer leg muscles in endurance athletes may make them more economical in terms of oxygen consumption at sub-max speeds. The reason for these converse findings is probably related to the principle of specificity, which seems to underlie all sports training. Research by Iashvili (1983)^[2] found that active ROM was more highly correlated with sports performance. Due to varied sports specific training for football, basketball and volleyball players, that involved different types of stretch shortening cycle movements that increased flexibility and stiffer leg muscles depending of their nature of play. This research was intended to find out how for these sports trainings influenced the Andhra Pradesh State level football, basketball and volleyball players' speed and flexibility.

Methodology

To achieve the purpose of this study, the investigator randomly selected 30 Basketball players, 30 Football players and 30 Volleyball players, who participated at state level competitions

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held at Nagpur during the year 2017 and their mean age was 20.6 years with standard deviation of + 1.4 years. Data were collected from the subjects, their speed through 50 M sprint and flexibility through sit and reach tests. The data were compared for the differences existed among the players using statistical tool ANOVA and Scheffe’s post hoc means where significant F value obtained.

Results

The descriptive statistics on speed, consisting, mean, standard deviation and range among Basketball, Football and Volleyball players are presented in Table 1.

Table 1: Descriptive Statistics, Mean (M), Standard Deviation (s), and Range of Basketball, Football, and Volleyball Players on Speed and Flexibility

Variable	Player	M	σ	Range
	Basketball	8.01	0.69	6.93 – 9.8
Speed	Football	7.87	0.78	6.36 – 9.72
	Volleyball	8.49	0.83	7.00 – 9.90
	Basketball	13.60	2.13	9.00 – 18.00
Flexibility	Football	12.97	1.61	11.00– 16.00
	Volleyball	13.00	1.70	10.00– 16.00

The results presented in Table 1 proved that there were differences in speed and flexibility of the Basketball, Football and Volleyball players. To find out the statistical significance of the differences among the selected groups, ANOVA was employed and the results presented in Table 2.

Table 2: Differences in Speed and Flexibility among Basketball, Football and Volleyball Players

Variables	Source of Variance	Sum of Squares	df	Mean Square	F	Sig.
Speed	Between	6.38	2	3.19		
	Within	51.43	87	0.59	5.40	0.05
Flexibility	Between	7.62	2	3.81		
	Within	290.17	87	3.34	1.14	NS

The results presented in Table 2 proved that there was significant difference on speed among Basketball, Football and Volleyball players and there was no significant difference among the groups on flexibility. Since significant F values were obtained on speed the results were further subjected to post hoc analysis using Scheffe’s post hoc interval test and the results presented in Table 3.

Table 3: Multiple Comparisons of Paired Means on Speed among Basketball, Football and Volleyball Players

Basketball Players	Football Players	Volleyball Players	MD	CI
8.01	7.87		0.14	0.47
8.01		8.49	0.48*	0.47
	7.87	8.49	0.62*	0.47

* Significant

The results presented in Table 3 proved that paired mean comparisons between Basketball and Volleyball players; and Football and Volleyball players were significant. There was no significant difference between Basketball and Football players on speed.

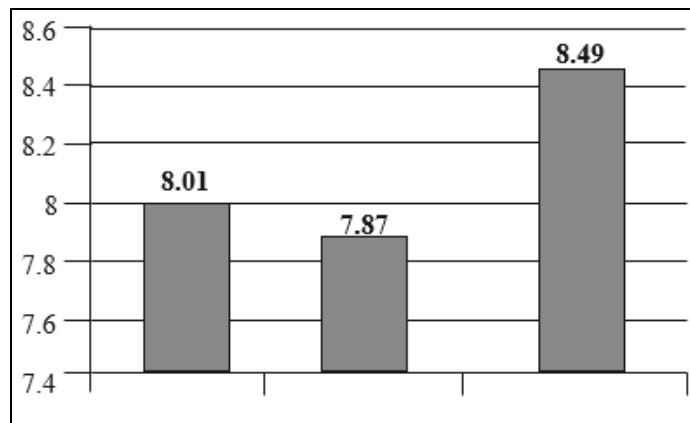


Fig 1: Mean Values of Speed of Players Compared

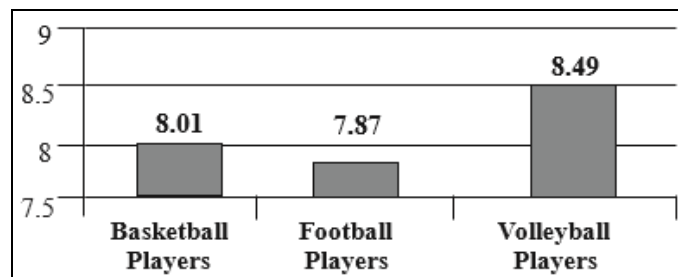


Fig 2: Means Values of Flexibility of Players Compared

Discussions

The results presented in this study gave way for consideration that the difference in speed among Basketball, Football and Volleyball players as the obtained F value was significant $P < 0.05$. The paired mean comparisons proved Basketball and Football players’ were faster than volleyball players. This may be due to the fact that Football and Basketball players involve themselves in running during their game situations

than Volleyball players. The study proved that there was no significant differences among Football, Basketball and volleyball players on flexibility as all these players were involved in active games which resulted in adequate stretch shortening cycles, which in turn provided them equal range of motion and improved flexibility. The findings of this study are in agreement with the findings of De Varies (1966)^[1] and Iashvili (1983)^[2].

Conclusions

The study proved that though there seem to be differences in speed among Basketball, Football and Volleyball players there was no significant differences among these players on flexibility. It was concluded that the players can improve their speed for improved performance.

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