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DIFFERENCES IN SPEED AND STRENGTH OF NATIONAL LEVEL ATHLETES DURING DIFFERENT TRAINING SEASONS

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ABSTRACT

In many sports, training for successful competition has become virtually a year-round Endeavour. To assist in better preparation, a competitor's year may be divided into phases such as off-season and in-season, indicating reduced or increased competition commitments, respectively. A number of studies have described the effects of seasons or periods of competition, training, detraining and reduced training on aspects of physical fitness. The purpose of the present study was to examine the differences between speed and strength of National level athletes during competition and off season. The present study was conduct on Forty (40) male runners participating at National level selected from different districts of Karnataka. The age of selected subjects ranged between 16 to 25 years. The required data was collected twice during the competition and off season. Speed was assessed through thirty meters dash test and strength was measured through bent leg sit-ups. Standard procedure was employed in testing the selected subjects for speed and strength. The data were analyzed with the help of tables, charts, pictures and SPSS. Results were presented in a systematic manner appropriately according to research objectives. Pearson's product moment correlation coefficient was used to examine the relationship between Competition and off seasons with regard to Speed and Strength of National level runners selected for the present investigation. The speed and strength of National level runners between competition and off seasons significantly differed. Both physical fitness parameters declined significantly during off season. There was no maintenance of speed and strength performances during off season.

Keywords: Periodization, Competition Period, Off Season and National level.

INTRODUCTION

In many sports, training for successful competition has become virtually a year-round Endeavour. To assist in better preparation, a competitor's year may be divided into phases such as off-season and in-season, indicating reduced or increased competition commitments, respectively. A number of studies have described the effects of seasons or periods of competition, training, detraining and reduced training on aspects of physical fitness. Depending on performance level, the type of sport and the fitness parameter in question, the swings in fitness variables reported may be as high as 18% from one season to another, In elite competitors,

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anaerobic parameters, heart frequencies, subcutaneous fat, flexibility and hemoglobin levels remain relatively unchanged throughout the year. Aerobic metabolism and muscular strength may demonstrate noticeable (mostly unfavorable) changes, and plasma hormonal levels normally follow changes in training intensities. Aspects related to long term fatigue and genetics, and to appropriate training are just a few explanations for these observations. It is still not known whether greater fitness gains attainable with longer off-season training programs can be successfully maintained over the duration of the competition season. However, the consensus would seem to be that specialized training (based on technique and competition tactics only) is inadequate for fitness maintenance and/or improvements (Y Koutedakis 1995).

The Off-season is coming to a close and preparation for the sporting season begins. Sport-specific skills start to take priority; making this the opportune time to develop sport-specific power to excel the athlete to the next level. This is the period of time after the conclusion of the season where athletes decrease sport specific skill work and start to focus on functional movement and strength development. This change in focus will allow for greater gains in skill work as the foundation of their athletic pyramid grows. The off-season is divided into specific phases designed to maximize athletic development and work in collaboration with the skill-based training the athlete receives. With the sports season grower longer and the competition growing, it is of the utmost importance to maintain strength and mobility gains developed over the off-season through the entire season. With proper training habits, it is possible to be at your best when the games matter most. The key here it to maintain obligations to the sport you trained for with minimal losses in performance capabilities (Y Koutedakis 1995).

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The annual training cycle is commonly divided into **pre-season, competitive season, and off-season (transition period)**. Each season has distinct objectives and training characteristics. During the pre-season, emphasis is placed on developing maximum strength, muscular endurance, and overall physical conditioning. In contrast, the competitive season focuses on maintaining strength while enhancing speed, power, and sport-specific performance. The off-season is

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primarily intended for recovery, rehabilitation, and maintenance of general fitness, often resulting in reduced training intensity and volume (Atomi 2022).

Variations in training emphasis across these seasons lead to **physiological and neuromuscular adaptations** that influence an athlete's speed and strength capabilities. Strength levels may increase significantly during high-load resistance training phases, while speed performance often peaks during periods of reduced fatigue and increased neuromuscular efficiency. Understanding how this performance variables change across training seasons is essential for coaches, trainers, and sports scientists to design effective training programs (John McMahon 2017).

Despite the importance of seasonal training adaptations, limited research has comprehensively examined the **differences in speed and strength among national-level athletes across different training seasons**. Therefore, the present study aims to investigate and compare speed and strength performance of national-level athletes during the pre-season, competitive season, and off-season. The findings of this study may provide valuable insights for optimizing training strategies and enhancing athletic performance (John McMahon 2017).

METHODOLOGY

The purpose of the present study was to examine the differences between speed and strength of National level athletes during competition and off season.

The present study was conduct on Forty (40) male runners participating at National level selected from different districts of Karnataka. The age of selected subjects ranged between 16 to 25 years. The required data was collected twice during the competition and off season. Speed was assessed through thirty meters dash test and strength was measured through bent leg sit-ups. Standard procedure was employed in testing the selected subjects for speed and strength.

The data were analyzed with the help of tables, charts, pictures and SPSS. Results were presented in a systematic manner appropriately according to research objectives. Paired sample 't' test was used to examine the differences between Competition and off seasons with regard to Speed and Strength of National level runners selected for the present investigation.

FINDINGS

TABLE 1.
DESCRIPTIVE RESULT OF DIFFERENCE IN SPEED AND STRENGTH IN DURING COMPETITION AND DURING OFF SEASON MALES NATIONAL LEVEL PARTICIPATION OF KARNATAKA

Variables	Time of season	Mean	Std. Deviation	Std. Error Mean
Speed (in seconds)	During Comp. Season	.52	22	03522
	During Off Season	.70	21	03270
Strength (in counts)	During Comp. season	7	.02	.26734
	During Off Season	7	.42	.85695

From table.1 It is clear that the speed of National level runners during competition period (4.52±0.22) was different from that during off season period (4.70±0.21). Strength national level participation athletes during competition period testing score (57.10±8.02) was different from that during off season period (46.90±5.42). Paired sample 't' test was employed to elicit differences in Speed and strength during competition and off season periods.

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TABLE 2
RESULT OF DIFFERENCE IN SPEED AND STRENGTH IN DURING COMPETITION AND DURING OFF SEASON MALES NATIONAL LEVEL PARTICIPATION OF KARNATAKA

Variables		df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Speed	3.642	78	0.000	0.175	0480
Strength	6.667	78	0.000	0.200	1.529

From table 2 it becomes clear that the obtained 't' value for difference in speed (3.642) and strength (6.667) between competition and off seasons are greater than table value (2.021) required for significance at 0.05 levels of significance. Hence it can be inferred that there is significant difference in Speed and strength national level runners during competition period and off season period. Graphical representation of results pertaining to differences in speed and strength between competition and off seasons of runners is provided in figure 1 and 2.

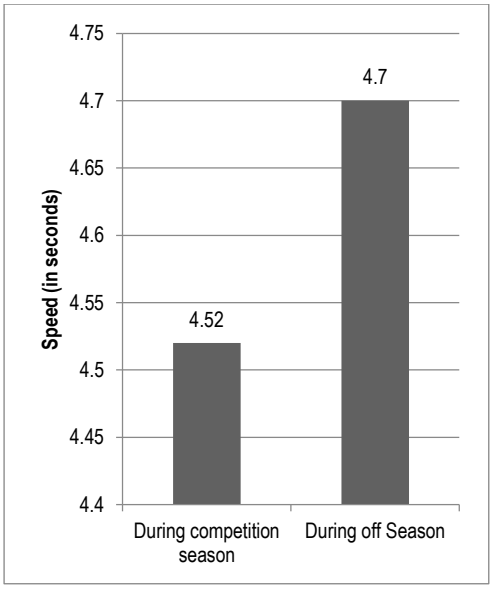

Fig. No. 1: Graphical representation of speed between competition and off seasons of runners.

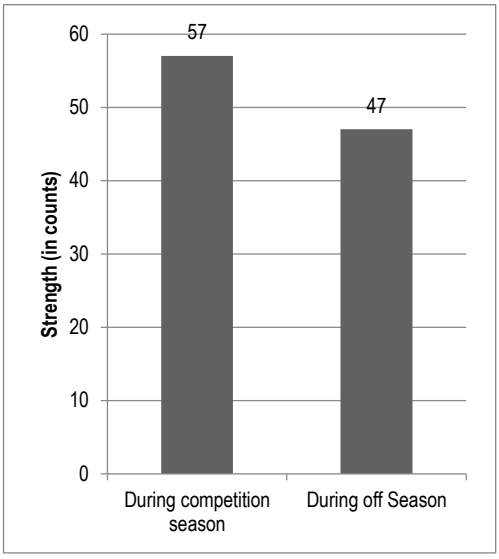

Fig. No. 2: Graphical representation of strength between competition and off seasons of runners.

Discussion

The speed and strength of National level runners in the present study significantly differed between competition and off seasons. This suggests that the speed and strength performance of runners were not maintained during off seasons. This may be one of the reasons for stagnation or decline in performance of runners in coming seasons. Every athlete should take care for maintenance of performance during off season. Coaches should strategically plan the periods of training so as to avoid decline in performance during off season.

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CONCLUSION

The speed and strength of National level runners between competition and off seasons significantly differed. Both physical fitness parameters declined significantly during off season. There was no maintenance of speed and strength performances during off season.

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