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A Comparative Study On Explosive Strength And Muscular Endurance Between State And National Level Volleyball Players

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Abstract

Strength is the most indispensable factor of physical prowess and the best way to develop strength is through an organized programmer of weight training. Through the judicious use of weight training, we effectively improve strength local muscular endurance and power. The purpose of the study was to find out which is more important out of motor performance components of the Volleyball. The objective of the study was (i) Comparison of Explosive Strength between the state and national level Volleyball player performance. (ii) Comparison of Muscle Endurance between the state and national level Volleyball player performance. Explosive strength was measured by the horizontal distance covered in feet and inches between the take-off line and the nearer break made in landing using standing broad jump. Muscular strength was measured with the help of sit ups and the number of sit ups in one minute was taken as the score. The major findings of the study was Standing Broad Jump of national level Volleyball players was significantly high in comparison to state level players that mean they have more leg explosive power. Muscular Endurance of national level Volleyball players was significantly high in comparison to state level players that mean they have more muscular ability.

Keywords: Explosive; Strength; Endurance; Sports.

Introduction

Strength is one of the most important components of physical fitness, which affects the performance in all activities in some form or the other. Development of strength is essential for power and speed. Strength is a complex factor which depends upon both the stimulus given by the nervous system and upon the capacity of the muscles for contraction, their size and shape. As pointed out earlier and out of the latest scientific progress in the field of physical education and sports, it is a fact that strength is the most indispensable factor of physical prowess and the best way to develop strength is through an organized programmer of weight training and all the empirical evidence available shows conclusively that through the judicious use of weight training, we effectively improve strength local muscular

endurance and power, all of which are vital to the athlete. Logan has opined that strength is necessary for the stability of joints, particularly of the extremities. Volleyball is a sport comprised of many explosive efforts, characterized by multiple short bouts of high-intensity exercise, interspersed with brief rest periods (11,26). The high-intensity exercise and short recovery periods, with a total match duration of 60 to 90 minutes, would suggest that volleyball players require well-developed creatine phosphate and glycolytic energy systems as well as reasonably well-developed oxidative capabilities.

Statement of the Problem

A Comparative Study on Explosive Strength and Muscular Endurance between State and National Level Volleyball Players.

Reviews of related literature

Ana Pereira at al. (2015), Ajoy Bag, (2015), Singh (2014)., Khuman et al. (2014), Kumar (2014), ect.worked in this field.

Objectives of the Study

- Comparison of Explosive Strength between the state and national level Volleyball player performance.
- Comparison of Muscle Endurance between the state and national level Volleyball player performance.

Hypotheses of the Study

1. There will be significant difference of Explosive Strength between the state and national level Volleyball player.
2. There will be significant difference of Muscle Endurance between the state and national level Volleyball player.

Methodology

Selection of data

20 from state and 20 from national Volleyball players.

Selection of Variable

- Explosive strength
- Strength Endurance

Criterion Measures

- Explosive strength was measured by the horizontal distance covered in feet and inches between the take off line and the nearer break made in landing using standing broad jump.
- Muscular strength was measured with the help of sit ups and the number of sit ups in one minute was taken as the score.

Delimitations

1 The study was delimited to selected motor performance components.
   a. Explosive strength b. Strength Endurance
2 50 male state and National level Volleyball players from different sports club running in Bhopal.
3 Studies were also delimitated to 20 from state and 20 from national Volleyball players.
4 The subjects were aged from 17 to 25 years.

Administration of Tests

Explosive Leg Strength (Standing Broad Jump)

- **Equipment's:**
- A marking tape, long jump pit.

Muscular Endurance (Sit-Ups)

- **Equipment's:**
- A clean surface and a stopwatch.

Statistical Analysis

Findings

Table – 1 Significant Differences in the Mean Scores of state level and national level Volleyball player on Standing Broad Jump

Variable	Subject	N	Mean	S D	t – Value
Explosive Strength	State Level	20	2.243	1.645	3.745
	National Level	20	2.635	2.735	

***Significant at 0.05 level, t.05 (38) =2.024**

Table –1 reveals that the mean and standard deviations of players belonging to state level and national level. The observed mean and standard deviation of Standing Broad Jump were 2.243& 2.635 and S D 1.645 & 2.735 respectively.

There was a significant difference of Standing Broad Jump in the state level and national level Volleyball players as the obtained t value 3.745 was greater than the table value of t (2.024) at 0.05 level as shown in table. So that the null hypothesis may be rejected at 0.05 level of significance. Thus, it may be concluded that Standing Broad Jump of national level Volleyball player were significantly high in comparison to state level players which means national level players were more leg strength than the state level Volleyball players.

Table – 2 Significant Differences in the Mean Scores of state level and national level Volleyball player on Motor performance Components Variable

Variable	Subject	N	Mean	S D	t– Value
Muscular Endurance	State Level	20	28.32	4.325	- 5.635
	National Level	20	49.47	5.232	

***Significant at 0.05 level, t.05 (38) = 2.024**

Table – 2 reveals that the mean and standard deviations of players belonging to state level and national level. The observed mean and standard deviation of Muscular Endurance were 28.32 & 49.47and S D 4.325 & 5.232 respectively.

There was a significant difference of Muscular Endurance in the state level and national level Volleyball players as the obtained t value 5.635 was greater than the table value of t (2.024) at 0.05 level as shown in table. So that the null hypothesis may be rejected at 0.05 level of significance. Thus it may be concluded that Muscular Endurance of state level Volleyball player were significantly high in comparison to national level players which means national level players were more muscular endurance capacity than the state level Volleyball players.

- **Conclusions**

- The mean and standard deviations of Standing Broad Jump belonging to state level and national level players were 2.243 & 2.635 and S.D. were 1.645 & 2.735 respectively.
- The mean and standard deviations of Muscular Endurance belonging to state level and national level players were 28.32 & 49.49 and S D 4.325 & 5.232 respectively
- Standing Broad Jump of national level Volleyball player was significantly high in comparison to state level players that mean they have more leg explosive power. The obtained t value – 3.743 was greater than the table value of t (2.024) at 0.05 level.
- Muscular Endurance of national level Volleyball player was significantly high in comparison to state level players that means they have more muscular ability. The obtained t value -5.635 was greater than the table value of t (2.024) at 0.05 level

- **Recommendations**

In the light of content, results of the study and conclusions, the following recommendations have been suggested for further pursuit of experiments in the area:

- The result of this study can be used by the physical educationist and coaches as an aid in scanning and selection of Volleyball players.
- Similar studies may also be conducted by selecting other factors than those employed in the present study.
- It is recommended that the same study may be repeated on different age and training groups other than those employed in the present study.
- Logistic regression model may be developed to predict the Volleyball performance on the basis of physical, physiological and anthropometric variables.

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