

Quantitative Analysis Of Fitness Abilities On Female Gymnasts Of Hyderabad Sports Schools

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Abstract:

This Study Was Designed To Analyse Fitness Abilities On Sports Schools Female Gymnasts Of Hyderabad. The Scholar Selected 40 Subjects Randomly Who Are Taking Training From Two Different Sports Academies. Their Age Ranged Between 15-18 Years. Anthropometric Measurements Consisting Of Age, Height, Weight And BMI Were Obtained. The Protocol For The Fitness Abilities Information Was Collected By 50m Run In Seconds For Testing Speed, Sit & Reach Test In Centimetres For Testing Flexibility, Shuttle Run In Seconds For Testing Agility, Flexed Arm Hang In Seconds For Testing Muscular Strength And Standing Broad Jump In Meters For Testing Explosive Strength. T-Test Was Used To Find Out The Significant Difference In Fitness Abilities Between The Two Sports Schools. The Level Of Significance Was Fixed At 0.05. After Examination, There Was No Significant Difference In Speed, Flexibility, Agility, Muscular Strength And Explosive Strength Between Two Sports Schools.

Keywords: *Gymnastics, Fitness Abilities, Flexed Arm Hang, BMI, Explosive Strength*

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Gymnastics has a rich history that dates back to ancient civilizations, where it was often used as a form of military training. Today, gymnastics is a popular and highly respected sport, with competitions held at the local, national, and international levels.

There are many different types of gymnastics, including artistic gymnastics, rhythmic gymnastics, acrobatic gymnastics, trampoline gymnastics, and tumbling gymnastics. Each discipline has its own unique set of rules, apparatus, and techniques. It is a sport that involves a variety of physical movements and routines that require strength, flexibility, agility, balance, and coordination. It is a discipline that can be practiced by people of all ages and skill levels, from recreational to elite athletes competing at the international level.

Artistic gymnastics is a discipline that involves performing a variety of physical movements and routines on different apparatus such as the vault, uneven bars, balance beam, and floor exercise. It is a highly skilled and demanding sport that requires strength, flexibility, agility, coordination, and balance.

Rhythmic gymnastics combines ballet, dance and acrobatics with expressive movement and the manipulation of apparatuses such as the ball, clubs, hoop, ribbon and rope. This sport is ideal for developing flexibility, strength, as well as body coordination.

The main aim of this study is to analyse fitness abilities fitness quantitatively among artistic and rhythmic women gymnasts of Hyderabad. Because it is necessary to ensure the learning quality of gymnastic events and also it has the biggest influence on girls' performance of gymnastics elements.

I. Selection of the Subjects:

The scholar had selected a total of 40 subjects randomly. The subjects were women gymnasts who have been undergoing training from sports academies i.e. Sports authority of Telangana (SAT, N=20), and Sports authority of India, (SAI, N=20) of Telangana. These women subjects were between the 15-18 years of age and participated voluntarily with informed consent for this study.

II. Selection of variables

The research scholar selected speed, flexibility, agility, muscular strength and explosive strength as fitness ability variables of women gymnasts.

III. Materials and Methodology

Twenty female gymnasts from sports authority of Telangana (n=20) and twenty female gymnasts from sports authority of India (n=20), sports schools situated in Telangana, India selected for this study. Their age ranged between 15-18 years. Anthropometric measurements consisting of age, height, weight and BMI were obtained. The protocol for the fitness abilities information was collected by 50m run in seconds for testing speed, sit & reach test in centimetres for testing flexibility, Shuttle run in seconds for testing agility, flexed arm hang in seconds for testing muscular strength and standing broad jump in meters for testing explosive strength. All tests were conducted with informed consent of the subjects and before performing tests the warm-up for 10 minutes is mandatory.

Statistical tools used for analysis

The raw data were arranged separately, tabulated and subjected for the descriptive statistical analysis by using SPSS. The statistical tool for analysing the data was independent T-Test to find the significant difference in mean between the two sports schools fitness abilities. The level of significance was fixed at 0.05.

Results

the research related data are presented in the following tables and graphs below:

Table 1: Anthropometric characteristics between SAT and SAI

S.No	Variables	Mean±SD	Mean±SD	Mean difference	SEMD	T-Value
		SAT	SAI			
		(N=20)	(N=20)			
1	Age(Yr)	15.85±0.89	16±0.80	-.10	.278	-.359 NS
2	Height(cm)	149.35±2.85	153.95±2.53	-4.60	.905	-5.081 S
3	Weight(Kg)	49.65±3.23	49.95±2.13	-.40	.914	-.438 NS
4	BMI	2.22±0.87	21.15±0.58	1.02	.230	4.42 S

*NS-not significant,*S-significant

Table 1 clearly indicates the differences between SAT (sports authority of Telangana) and SAI (sports authority of India) in anthropometric measurements of age and weight were no significant difference however there was significant difference in height and BMI. T values were -.359,-5.08,-.438 and 4.42 respectively. Because of the height difference between two sports schools the BMI influenced significant differences.

Graph No.1 Comparison of Physical characteristics between SAT and SAI

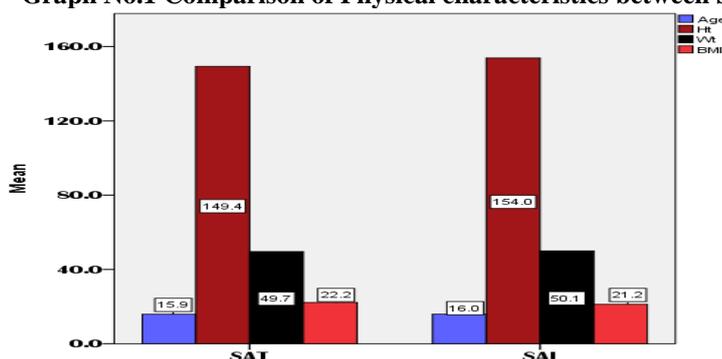


Table No.2 Fitness abilities mean differences between SAT and SAI

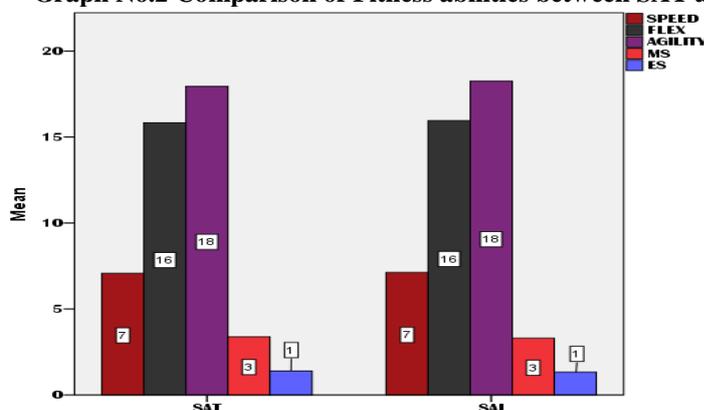
S.No	Variable	Group	Mean±SD	Mean difference	SEMD	T-Value
1	SPEED	SAT	7.07±0.65	-.052	.213	-.243 NS
		SAI	7.13±0.62			
2	Flexibility	SAT	15.83±1.55	-.125	.53	-.234 NS

		SAI	15.95±1.66			
3	Agility	SAT	17.94±0.69	-.308	.225	-1.36 NS
		SAI	18.25±0.66			
4	Muscular strength	SAT	3.39±0.67	.076	.229	.333 NS
		SAI	3.31±0.71			
5	Explosive strength	SAT	1.39±0.27	.067	.851	.787 NS
		SAI	1.33±0.23			

*NS-not significant,*SAT-sports authority of Telangana,*SAI-sports authority of India

Table 2 depicts the mean and SD, mean differences, SEMD and T values of sports authority of Telangana (SAT) and sports authority of India (SAI) sports schools women gymnasts fitness ability performances. The study was observed that there was no significant difference in speed, flexibility, agility, muscular strength and explosive strength between two sports school gymnasts with the T values being -.243,-.234,-1.36, .333 and .487.

Graph No.2 Comparison of Fitness abilities between SAT and SAI



Above graph explains the levels of fitness abilities in speed, flexibility, agility, muscular strength and explosive strength between sports authority of Telangana and sports authority of India sports schools at Hyderabad, Telangana state. In all components both the sports schools performance in terms of fitness is almost similar.

IV. Discussion and conclusion

The results showed that there was no significant difference in speed, flexibility, agility, muscular strength and explosive strength between two sports schools. The role of fitness abilities in women gymnasts greatly influenced their artistic gymnastics or rhythmic gymnastics events performance. Similar results found in many studies. Danilo Radanovic et.al. (2016) explained that physical preparation is necessary before learning mentioned gymnastic elements. Thus improving general and explosive strength and flexibility is primary. Obradovic & Radanovic (2011),Radanovic, Stajer,Popovic & Madic (2013),Popovic, Madic,Aleksic-Veljkovic et.al (2014) Delas-Kalinski et.al (2016) observed that fitness ability variables had a significant impact on performance variables in gymnastic techniques.

V. Recommendations

1. A similar study may be conducted on male gymnasts so that the results of this study would be more authenticated.
2. More studies should be conducted on cognitive abilities and physiological variables which could have an impact on performance of women gymnasts.

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