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A COMPARATIVE ANALYSIS OF SELECTED PHYSICAL FITNESS AND ANTHROPOMETRIC VARIABLES OF OF MALE VOLLEYBALL PLAYERS AGED FOURTEEN TO SIXTEEN YEARS

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ABSTRACT

Participation in sports is one among the common traits of human character and it starts to develop from the terribly starting of childhood. The main objective of study was to analyse and compare the selected physical fitness and anthropometric variables of male volleyball players of different age groups. A total of forty five male volleyball players belonging to Dr. A. V. N. High School , Davangere, Bengaluru, (Karnatka) ranging between fourteen to sixteen years were selected for the study. The physical fitness variables i.e. Cardio-respiratory endurance, Agility, flexibility and anthropometric variable i.e. weight, height, body were chosen for the study. Nine-minute run For Cardio-respiratory endurance, Sit and reach for Low back/hamstring flexibility, Bent knee sit-ups in one minute for Abdominal muscle strength/endurance and Triceps and sub-scapular skin-folds for body Composition were administered. To assess the selected physical fitness and anthropometric variables of male Volleyball players ranging between 14 to 16 years of age means, standard deviations and F-ratio were computed. The results of the study indicated the significant differences among the different age groups of male volleyball players on modified sit-ups and 8 minutes run/walk,. Significant difference was not seen among male volleyball players from fourteen to sixteen years of age on sit and body composition, The abdominal strength and endurance had significantly improved with advancement of age. The cardio-respiratory endurance of male volleyball players did not improve significantly with advancement of age

Key Words: Physical fitness, Anthropometric, male, volleyball players, Body composition

1. INTRODUCTION

Participation in sports is one among the common traits of human character and it starts to develop from the terribly starting of childhood. But, with the event aged, some individuals participate in recreational sports or amateur sports whereas only a few individual dedicate themselves to become true sportspersons by regular apply and coaching that alter them to enhance their psychological adjustments towards their goal. The characteristics of associate athlete primarily depend on physical fitness, having components like flexibility, speed, power, agility, balance, muscular strength and endurance, cardio-respiratory endurance etc. But, these elements, could terribly in athletes involving completely different sports activities.

The physique and body composition including the size, shape and form are responsible for the performance of sportsmen (Sodhi & Sidhu, 1984). The performance of a sportsman in any games or event also depends on speed, strength, endurance, agility, flexibility and co-ordination. Along with these Psycho-physiological components and physical variables also play an important role in the execution of the performance.

Taleja. (1986) resulted insignificant difference in the physical fitness between rural and urban high school students, and have no significant difference in physical fitness between rural and urban high school students.

Physical fitness is the combination of three basic components i.e. muscular endurance, muscular strength and cardio-respiratory endurance. Whereas the motor fitness includes the more four parts i.e. muscular power, agility, flexibility and speed (Clarke, 1971).

Interventions to promote health-related physical fitness should not only consider gender and age of schoolchildren, but also selected sociodemographic and behavioral factors, especially socioeconomic class and leisure activities (Guedes etal.,2012).Dutt (2005) indicated the improper development of muscular strength endurance in boys which may be due to their habitual life style for an attractive physical appearance. Down fall of body fat percent was observed among boys in 8 to 13 years of age groups and Sharpe rise in body fat% was exhibited after the age of 14 years to 17 years of age.Worldwide health planners have been reported the importance of the contribution of health Education and physical Fitness in the development of total fitness among children.(Knuttgen, 1961; Campbell & Pohndof, 1961; Sloan, 1966; Ruskin, 1978 and Ishiko, 1978).Many researchers have been conducted studies on Health-related physical fitness which refers to cardio-respiratory fitness, muscular strength, speed-agility and body composition components of boys and girls in different age groups (Benhnke & Wilmore, 1974; Nelson and dorociak, 1982; Haywood, Clarke & Mayhew,1986; AAHPER, 1987; Shephard, Berridge & Montelpare, 1990; Muhammad, 1998; Kumar and Sathe,1999).

Physical fitness is the capacity to carry out reasonably well various forms of physical activities without being unduly tired and includes qualities important to the individual's health and wellbeing. Fitness may be described as a set of attributes that an individual has or has acquired which help in their ability to perform physical activity. Physical fitness can be divided into two district categories the heath related physical fitness and skill-related physical fitness. Health related physical fitness components are cardio-respiratory fitness, body composition, abdominal strength, muscle endurance and flexibility. Skill related physical fitness includes components important to play sports well, such as speed, strength, endurance, agility, flexibility, balance, power, co-ordination etc. Both type of physical fitness are important for all the sportsmen in order to achieve better performance (**Kaur, 2015).**

2. METHODOLOGY

2.1 Selection of Subjects

A total of forty five male volleyball players belonging to Dr. A. V. N. High School , Davangere, Bengaluru, Karnatka ranging between fourteen to sixteen years were selected for the study. Their age records were collected from school records and the subjects were tested within one month of their birthdays.

2.2 Selection of Variables

The physical fitness variables i.e. Cardio-respiratory endurance, Agility, flexibility and anthropometric variable i.e. weight, height, body composition (Triceps skin-fold and sub-scapular skin-fold were chosen for the study.

2.3 Test used

Nine-minute run For Cardio-respiratory endurance, Sit and reach for Low back/hamstring flexibility, Bent knee sit-ups in one minute for Abdominal muscle strength/endurance and Triceps and sub-scapular skin-folds for body Composition were administered.

2.4 Statistical Analysis:

To assess the selected physical fitness and anthropometric variables of male Volleyball players ranging between 14 years to 16 years studying in Dr. A. V. N. High School , Davangere, Bengaluru, (Karnatka), means, standard deviations and F-ratio were computed.

3. RESULTS

To assess the selected physical fitness and anthropometric variables of male volleyball players ranging 14 to 16 years of age, mean and standard deviation were computed and data pertaining to this, has been presented in Table 1.

TABLE 1
MEAN AND SD ON PHYSICAL FITNESS AND ANTHROPOMETRIC VARIABLES OF MALE VOLLEYBALL PLAYERS AGED FOURTEEN TO SIXTEEN YEARS

S.N0.	Variables	Age	Mean	SD
1	Weight	14	48.39	1.32
		15	52.60	1.65
		16	55.11	1.28
2	Height	14	157.80	2.81
		15	160.85	2.93
		16	163.88	1.92
3	Modified sit-ups	14	21.00	4.53
		15	24.67	4.03
		16	26.40	5.17
4	9 minute Run/Walk	14	13.32	1.91
		15	11.70	0.40
		16	12.07	0.62
5	Sit and Reach	14	29.30	5.21
		15	25.83	3.28
		16	27.01	3.80
6.	Body Composition	14	9.94	2.25
		15	10.32	1.56
		16	11.22	1.38

The mean scores of selected physical fitness and anthropometric variables of male volleyball players ranging 14 to 16 years of age have been depicted in figure 1 to 6.

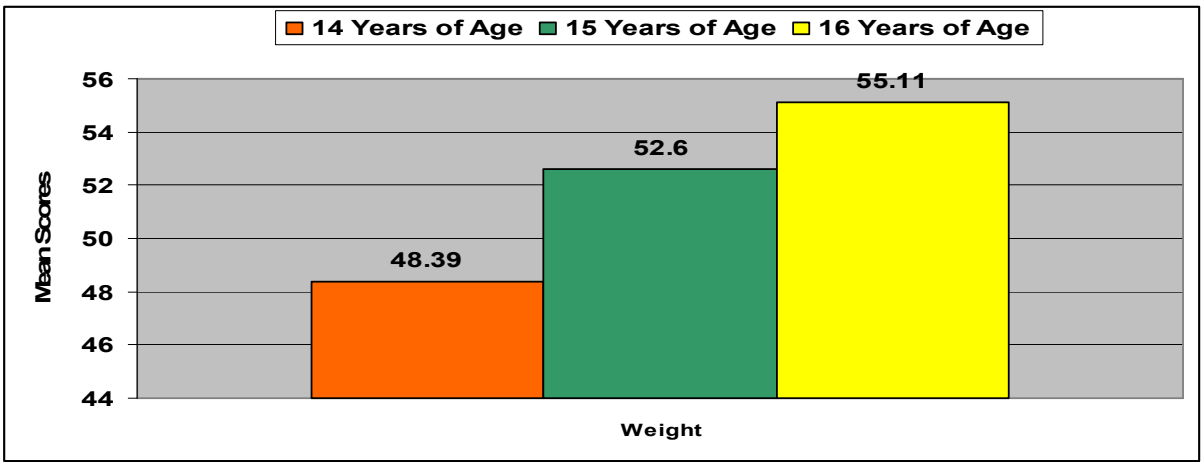

Figure. 1: Mean Scores of Weight of Male volleyball Players in Fourteen to Sixteen years of age.

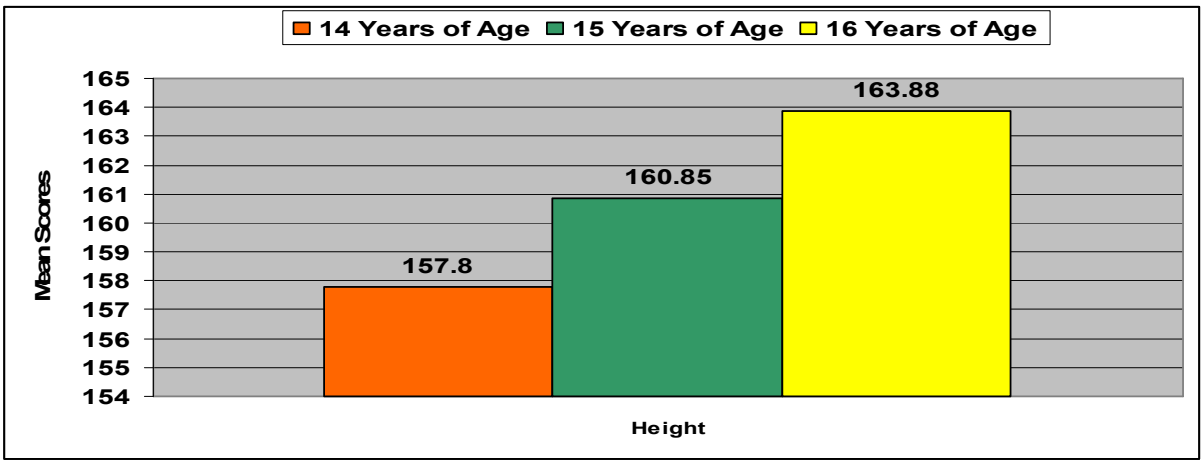

Figure. 2: Mean Scores of Height of Male volleyball Players in Fourteen to Sixteen years of age.

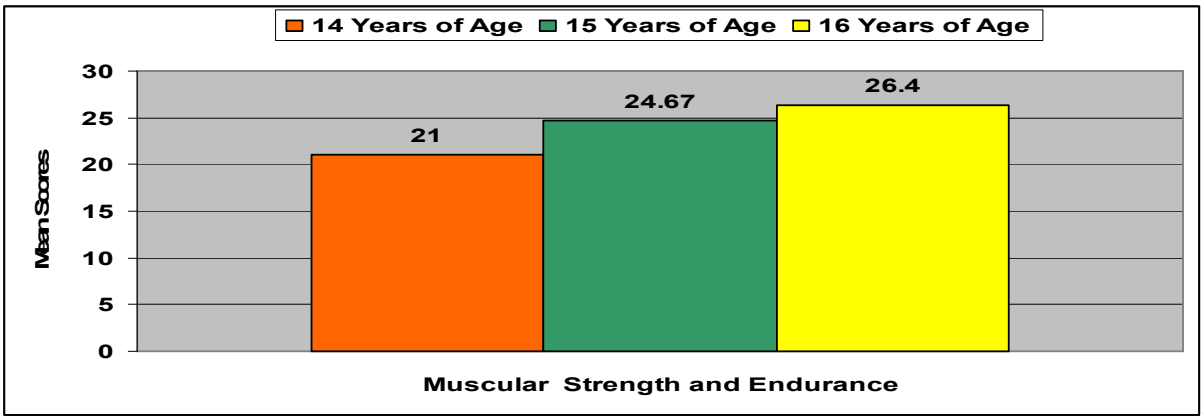

Figure. 3: Mean Scores of Muscular Strength and Endurance of Male volleyball Players in Fourteen to Sixteen years of age.

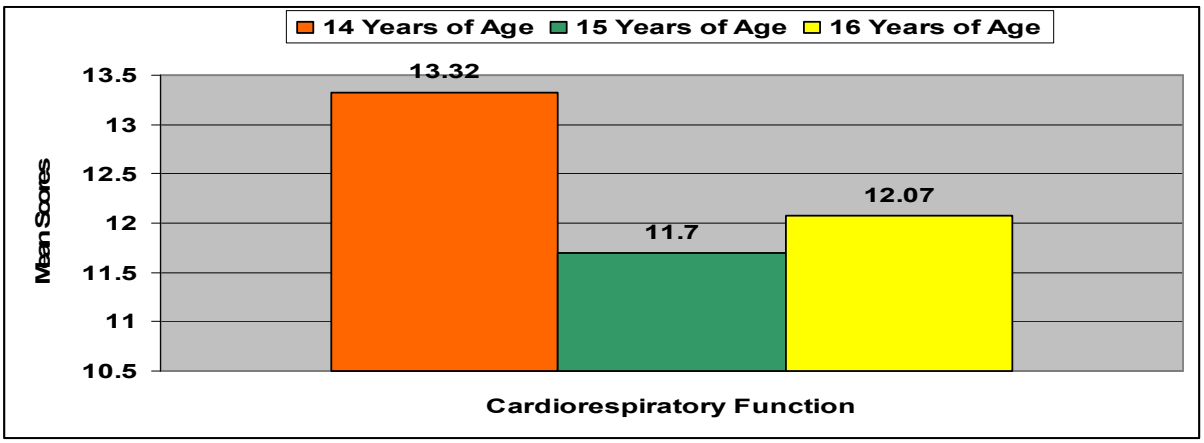

Figure. 4: Mean Scores of Cardio-respiratory Function of Male volleyball Players in Fourteen to Sixteen years of age.

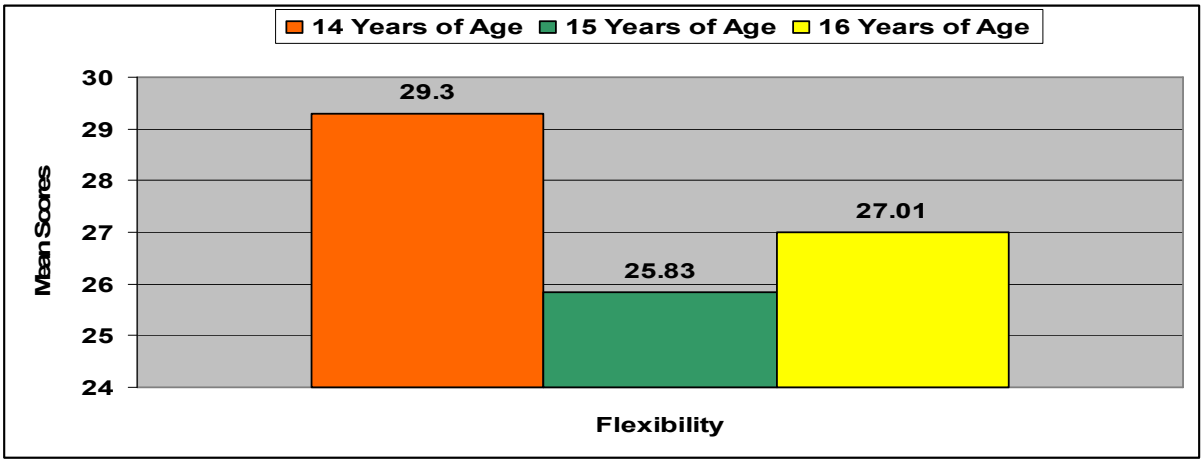

Figure. 5: Mean Scores of Flexibility (Sit and Reach) of Male volleyball Players in Fourteen to Sixteen years of age.

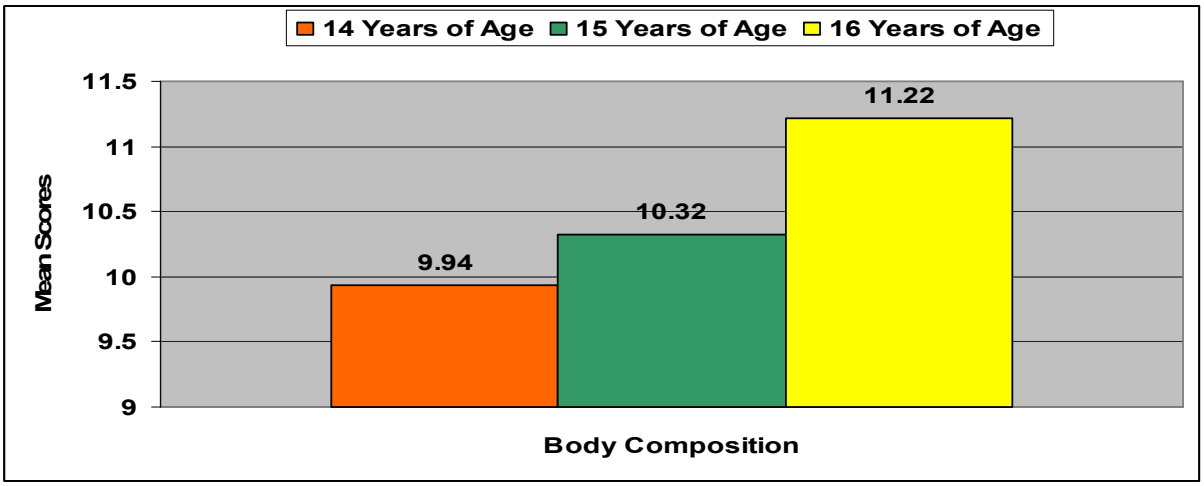

Figure. 6: Mean Scores of Body Composition of Male volleyball Players in Fourteen to Sixteen years of age.

To determine the significance of difference among mean scores of male volleyball players of 14 to 16 years of age on selected physical fitness and anthropometric variables , One Way Analysis of Variance (ANOVA) was computed and data pertaining to this has been presented in table 2 .

TABLE 2
ANALYSIS OF VARIANCE ON SELECTED PHYSICAL FITNESS AND ANTHROPOMETRIC VARIABLE OF MALE VOLLEYBALL FROM FOURTEEN TO SIXTEEN YEARS OF AGE

S . N0.	Component	Source of variance	df	Sum of Squares	Mean of Square	F-value
1	Modified Sit-ups	Between groups Within group	2 42	228.04 888.93	114.02 21.17	5.39*
2	9 minute Run/Walk	Between groups Within group	2 42	21.37 58.80	10.68 1.40	7.63*
3	Sit and reach	Between groups Within group	2 42	91.50 733.15	45.75 17.46	2.62
4	Body composition	Between groups Within group	2 42	12.96 131.78	6.48 3.14	2.07

*Significant at .05 level,
F .05(2, 42) =3.23

It is clearly evident from table 2, that there were significant differences among the different age groups of male volleyball players on modified sit-ups and 8 minutes run/walk, as the obtained F-values of 5.39 and 7.63 respectively were higher than the require value of F.05 (2,42)=3.23. But significant difference was not observed among male volleyball players from fourteen to sixteen years of age on sit and body composition, as the obtained F-value of 2.62 and 2.07 respectively were less than the required F.05 (2,42)=3.23.

As the F-ratio on different components of physical fitness was found to be significant, Scheffe's Test of Post-hoc Comparison was applied to find out the significance of difference between ordered paired means of different age group and data pertaining to this, has been presented in table 3 and 4.

TABLE 3
SIGNIFICANCE OF DIFFERENCES BETWEEN ORDERED PAIRED MEANS FOR MALE VOLLEYBALL PLAYERS FROM FOURTEEN TO SIXTEEN YEARS OF AGE ON MODIFIED SIT-UPS

14 Year	15 Year	16 Year	MD	C.I.
21.00	24.67	-	3.67	4.26
21.00	-	26.40	5.40*	
-	24.67	26.40	1.73	

*Significant at .05 level

The data in table 3 clearly reveals that mean differences between fourteen-sixteen and between fifteen and sixteen years of age male volleyball players were not found statistically significant, as the confidence intervals were higher than the mean differences. The significant difference was observed among male volleyball players between fourteen -sixteen years age group, as the confidence interval was higher than the mean difference. The data clearly indicate that abdominal strength and endurance improved with advancement of age.

TABLE 4
SIGNIFICANCE OF DIFFERENCES BETWEEN ORDERED PAIRED MEANS FOR MALE VOLLEYBALL PLAYERS FROM FOURTEEN TO SIXTEEN YEARS OF AGE ON 9 MINUTE RUN/WALK

14 Year	15 Year	16 Year	MD	C.I.
13.32	11.70	-	1.62*	1.09
13.32	-	12.07	1.25*	
	11.70	12.07	0.37	

*Significant at .05 level

The data in table 4 clearly reveals that mean differences between fourteen- fifteen followed by sixteen were found statistically significant, as the confidence intervals were higher than the mean differences. But the mean differences between fifteen-sixteen was not found statistically significant, as the confidence intervals were high than the mean differences. The data clearly indicate that cardio-respiratory endurance of male volleyball players did not improve significantly with advancement of age.

4. DISCUSSION

Findings of descriptive data of male volleyball players on physical fitness and anthropometric variables indicated the in creasing trend in abdominal strength and endurance, cardio-respiratory function, flexibility and fat accumulation. than their female counter part. The findings were supported by **Toriola and Monyeki (2012** This was also supported by **Amusal, Goon, Amey and Toriola (2011).**

When the male volleyball players were compared on different age groups for selected physical fitness and anthropometric variables, the statistically significant distinction was discovered among male volleyball players between 14 to 16 years of age in cardio-respiratory function and abdominal strength and endurance. But similarity was observed in flexibility and body composition of male volleyball players. This was partially supported by **Vinod (2001) and Tyagi (1993).**

The Scheffe's Test of Post-hoc Comparison showed the important distinction among male volleyball players in their mean scores between 14- 16 years of age on abdominal strength and endurance and insignificant variations in their mean scores between 14 - 15 and 15-16 years of age. The significant variations were also discovered among male volleyball players in their mean scores between 14 –16 followed by sixteen years of age on cardio-respiratory function.

5. CONCLUSIONS

1. Significant differences were found among the different age groups of male volleyball players on modified sit-ups and 8 minutes run/walk,.
2. Significant difference was not observed among male volleyball players from fourteen to sixteen years of age on sit and body composition.
3. The abdominal strength and endurance had significantly improved with advancement of age.
4. The cardio-respiratory endurance of male volleyball players did not improve significantly with advancement of age.

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