

A study on body composition of children participating in regular football, cricket and gymnastic training

Dr. Madhab Chandra Ghosh** Dr. Saikot ChatterjeeMr.Pikai
Ghosh****Miss Susmita Dey*****Dr.Sukhendu Das*****Dr. Bhaskar
Chakraborty.**

**Assoc Prof. Dept of Physical Education University of Kalyani,*

*** Asst. Prof. Dept of Physical Education University of Kalyani,*

****Student Dept of Physical Education University of Kalyani,*

*****Research Scholar Dept of Physical Education University of Kalyani,*

******Asst. Teacher Bansberia High School,*

******Asst. Teacher Seoraphuli Surendranath High School, West Bengal, India.*

Abstract: *Physical education and sports have emerged as scientific discipline very recently and the vast areas in these fields are untouched, virgin and unexplored. In this newly developed area of scientific discipline Body composition the term used to describe the different components that, when taken together, make up a person's body weight composed of a variety of different tissue types including lean tissues (muscle, bone, and organs) that are metabolically active, and fat (adipose) tissue that is not a crucial variables, are greatly influenced by sport performance at the same time have wide range of impact on health and wellness of and individual require amicable studies to be worked upon. The recent works done in this area have provided that there is a relationship between body composition and sports. Moreover body composition is an important determinant for health and wellness of an individual. The scholar being a sport person as well as a professional in the field of physical education and sport with the view of bridging a gap between participation in sporting activities and their impact on body composition and anthropometric components premeditated to carry out the study with the title "A study on body composition of children participating in regular football, cricket and gymnastic training". The chief purpose of the study was to compare the anthropometric and body composition status of children participating in football, cricket and gymnastic training camps. Based on data analysis the scholar arrived at the conclusion that Footballers have significantly lower BF% and Fat Mass than those of the gymnasts but they doesn't have significant difference on lean mass. Footballers have significantly lower BF% and Fat Mass than those of the cricketers moreover they have significantly higher lean mass than the trainee cricketers. Gymnasts have significantly lower BF% and Fat Mass than those of the cricketers but they don't bear any significant difference on lean mass.*

Key words: *Body Composition, football, cricket, gymnastic.*

I. Introduction

Physical education and sports have emerged as scientific discipline very recently and the vast areas in these fields are untouched, virgin and unexplored. Extremely significant work has been done in other discipline but comparatively too little seems to have been done in physical education and sport. For instance, generalizations from the field of psychology have been extensively used in building up theories of education on such issues as learning, development, motivation, behaviour etc. But the principles of psychology have yet to be properly made use of in studying the behaviour of sports men as a type and as a class. The physical educationists' under takes historical research in order to study the past practices and their relationship with the present ones. Physical fitness, competitive sports and health instructions are some of the areas which being gradually developed on a sound scientific footing. Similarly research is being very vigorously pursued, in such areas, as motor learning, psychology of competition, motivation, personality structure of sports men etc. by using human being as subjects. Research in physical education and sports also encompasses management of class teaching, curricula formulation, skill learning programmes, philosophy of physical education, and sociology of sportsmen, bio mechanics, sports medicine and myriads of other fields relating to the human movement.

Physical education and sports have emerged as scientific discipline very recently and the vast areas in these fields are untouched, virgin and unexplored. In this newly developed area of scientific discipline Body composition the term used to describe the different components that, when taken together, make up a person's body weight composed of a variety of different tissue types including lean tissues (muscle, bone, and organs) that are metabolically active, and fat (adipose) tissue that is not are crucial variables which are greatly

influenced by sport performance at the same time have wide range of impact on health and wellness of and individual require amicable studies to be worked upon. The recent works done in this area have provided that there is a relationship between body composition and sports. Moreover body composition is an important determinant for health and wellness of an individual. The scholar being a sport person as well as a professional in the field of physical education and sport with the view of bridging a gap between participation in sporting activities and their impact on body composition and anthropometric components premeditated to carry out the study with the title “A study on body composition of children participating in regular football, cricket and gymnastic training”. The chief purpose of the study was to compare the anthropometric and body composition status of children participating in football, cricket and gymnastic training camps. Based on data analysis he scholar arrived at the conclusion that Footballers have significantly lower BF% and Fat Mass than those of the gymnasts but they doesn't have significant difference on lean mass. Footballers have significantly lower BF% and Fat Mass than those of the cricketers moreover they have significantly higher lean mass than the trainee cricketers. Gymnasts have significantly lower BF% and Fat Mass than those of the cricketers but they don't have significant difference on lean mass.

II. Methodology

Subjects of the study were selected from the different coaching camps. Footballers were selected from veterans club of Kalyani, cricketers were selected from Kalyani municipality coaching camp and gymnasts from Kalyani University coaching camp. All the male players were within the age group 9-12. In the present study for the assessment of Body composition variables like Lean mass, Fat mass and Body Fat percentage the following skin folds like Abdomen, thigh, Triceps and Suprailiac were measure separately for footballers, cricketers and gymnasts. The skinfold estimation methods were based on a skinfold test, also known as a pinch test, whereby a pinch of skin was precisely measured by calipers at several standardized points on the body to determine the subcutaneous fat layer thickness. The data gathered were duly analyzed through statistical procedures. The SPSS software 10.01 version was used for the purpose.

III. Result And Discussion

In this chapter the results are presented in tabular and graphical form and related discussion have been made accordingly.

Table-1. Showing descriptive statistics of selected Body composition variables of various groups

Variable	Game	N	Mean	Std. Deviation
B F %	Cricket	20.00	12.17	3.91
	Foot Ball	20.00	5.65	1.20
	Gymnastic	20.00	8.01	2.89
Fat Mass	Cricket	20.00	3.50	1.74
	Foot Ball	20.00	1.69	0.53
	Gymnastic	20.00	2.16	0.99
Lean Mass	Cricket	20.00	24.21	4.82
	Foot Ball	20.00	27.81	3.39
	Gymnastic	20.00	24.14	2.78

From table 1 it is clear that the mean BF % of the cricketers is 12.17 and their SD is 3.91 the mean BF % of the Footballers is 5.65 and their SD is 1.20 the mean BF % of the gymnasts is 8.01 and the SD is 2.89. the mean fat mass for the cricketers is 3.50 and SD 1.74 the mean fat mass of the footballers is 1.69 and SD 0.53 and the mean fat mass of the gymnasts is 2.16 and their SD 0.99. In case of lean mass the mean of the cricketers is 24.21 and SD 4.82 for footballers mean and SD are 27.81 and 3.39 whereas for gymnasts they are 24.14 and 2.78 respectively.

Fig 1. Difference of BF% among cricketers, footballers and gymnasts

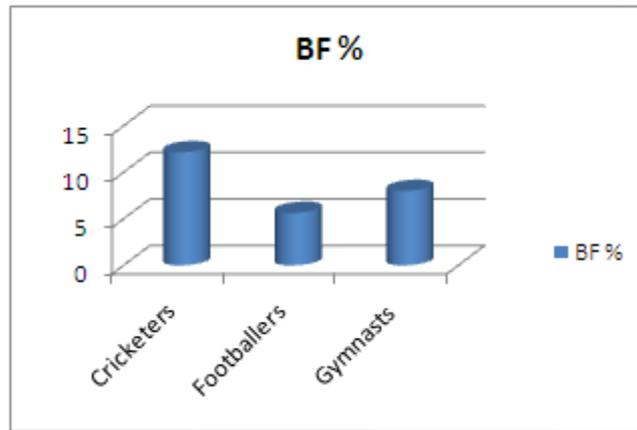


Fig 2. Difference of BF% among cricketers, footballers and gymnasts

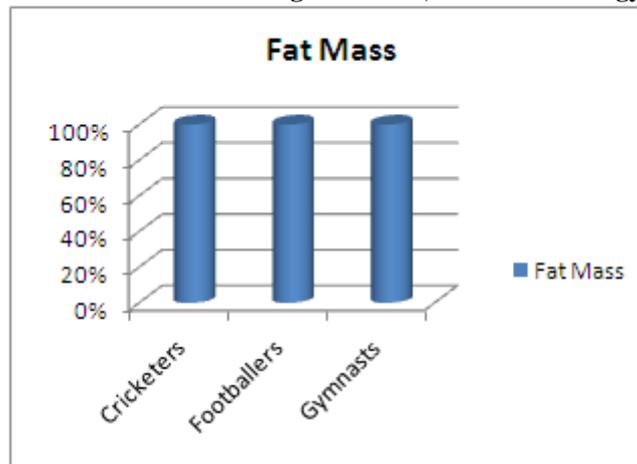
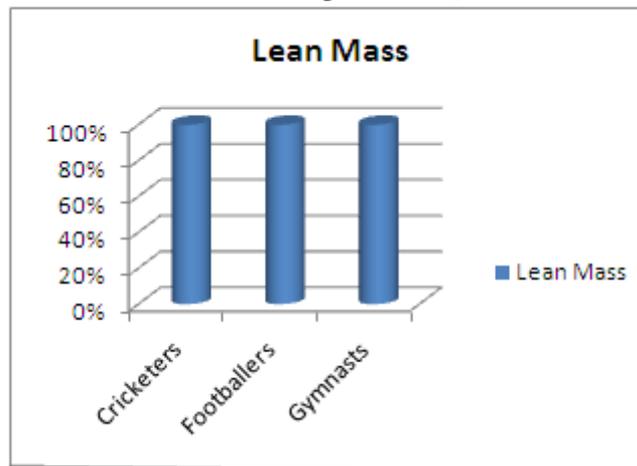


Fig 3. Difference of Lean Mass among cricketers, footballers and gymnasts



Once again to determine the degree of difference between the means independent samples t test was computed. The results are presented hereunder.

Table-2.Independent samples t test between cricketers and footballers.

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	Df	Sig. (2-tailed)
B F %	Equal variances assumed	10.28	0.00	7.12	38.00	0.00
	Equal variances not assumed			7.12	22.55	0.00
Fat Mass	Equal variances assumed	16.17	0.00	4.47	38.00	0.00
	Equal variances not assumed			4.47	22.47	0.00
Lean Mass	Equal variances assumed	2.47	0.12	-2.74	38.00	0.01
	Equal variances not assumed			-2.74	34.09	0.01

From the table it is clear that the footballers have significantly lower BF% and Fat Mass than those of the cricketers moreover they have significantly higher lean mass than the trainee cricketers.

Thus from the statistical analysis it is clear that the footballers have better somatotype in comparison to trainee cricketers.

The decision to reduce body weight rests largely on how that athlete's physique compares with the accepted ranges for their sport. But, while a reduction in body fat may help a long distance runner, it may have less benefit for a shot putter. In fact, body fat may be beneficial in contact sports as it cushions bones and organs (Brewer and Davis 1995).

Historically cricket players never trained as hard as other sportsmen in team based sports such as rugby and soccer and in fact, many were overweight which dispelled any reason to be trained for their sport (Woolmer & Noakes, 2008).

Thus the findings of the present study have close proximity with the findings of other eminent researchers.

Table-3.Independent samples t test between cricketers and gymnasts.

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	Df	Sig. (2-tailed)
	Equal variances not assumed			4.59	37.48	0.00
B F %	Equal variances assumed	0.87	0.36	3.82	38.00	0.00
	Equal variances not assumed			3.82	34.98	0.00
Fat Mass	Equal variances assumed	5.92	0.02	3.01	38.00	0.01
	Equal variances not assumed			3.01	30.11	0.01
Lean Mass	Equal variances assumed	4.95	0.03	0.05	38.00	0.96
	Equal variances not assumed			0.05	30.34	0.96

Table no.3 reveals that the gymnasts have significantly lower BF% and Fat Mass than those of the cricketers but they doesn't have significant difference on lean mass

Table-4.Independent samples t test between footballers and gymnasts.

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	Df	Sig. (2-tailed)
B F %	Equal variances assumed	8.66	0.01	-3.37	38.00	0.00
	Equal variances not assumed			-3.37	25.36	0.00
Fat Mass	Equal variances assumed	3.17	0.08	-1.88	38.00	0.07
	Equal variances not assumed			-1.88	29.01	0.07
Lean Mass	Equal variances assumed	0.39	0.53	3.75	38.00	0.00
	Equal variances not assumed			3.75	36.58	0.00

From table 4 it is clear that the footballers have significant lower BF % but doesn't differ significantly with respect to fat mass or lean mass.

Similar findings have been deduced other eminent researchers.

Another study that looked at the body mass index and performance among elite gymnasts found that "although there was a trend toward thinner athletes performing better, the athletes who performed best were neither the thinnest nor the heaviest" (Sherman 1996).

Historically cricket players never trained as hard as other sportsmen in team based sports such as rugby and soccer and in fact, many were overweight which dispelled any reason to be trained for their sport (Woolmer & Noakes, 2008).

The decision to reduce body weight rests largely on how that athlete's physique compares with the accepted ranges for their sport. But, while a reduction in body fat may help a long distance runner, it may have less benefit for a shot putter. In fact, body fat may be beneficial in contact sports as it cushions bones and organs (Brewer and Davis 1995).

Ostojic and Zivanic (2001) reported that in elite Serbian soccer players the main improvements in the sprint times were associated with reduction in body fat percentage. As body fat content decreased during the season, players became faster.

Based on the above cited literatures and consultations with many others the investigator confidently arrived at the conclusion that the trainee Footballers have significantly lower BF% and Fat Mass than those of the cricketers moreover they have significantly higher lean mass than the trainee cricketers. Gymnasts have significantly lower BF% and Fat Mass than those of the cricketers but they don't have significant difference on lean mass. The author is also of the view that the training schedule of the footballers should be incorporated for better fitness and overall performance in other games or sporting events or rather those may be extremely beneficial in minimizing the menacing problem of childhood obesity and related problems.

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