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A Study to Draw the Relationship between Selected Body Composition Variables and Free Style Swimming Performance of School Boys.

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ABSTRACT

Swimming emerged as a competitive sport in the 1830s in England. In 1828, the first indoor swimming pool, St George's Baths was opened to the public."" By 1837, the National Swimming Society was holding regular swimming competitions in six artificial swimming pools, built around London. The sport grew in popularity and by 1880, when the first national governing body, the Amateur Swimming Association, was formed, there were already over 300 regional clubs in operation across the country. Weight and body composition are touchy subjects around most pool decks. Though many swimmers try to lose weight (or are told to do so), others believe that extra adipose may help swimming via added flotation as per Archimedes Principle. Others feel that a more curved body shape rounded by fatty tissue may also improve hydrodynamics. Yet despite any flotation benefits, frontal drag may be impaired by excess body mass. In a mixed-gender study, Geladas (2005) studied 263 swimmers aged 12-14 and examined predictors of 100m freestyle performance. In neither gender was body composition or weight significantly correlated with 100m. Several research studies have been conducted to analyze the impact of body or somatotype on sport also numerous studies conducted to assess the effects of body composition on various sporting events but according to the literature available very few studies have been conducted to locate the relationship between bodily fat mass, lean mass, fat percentage with swimming performance etc. thus the author felt encouraged to conduct the study entitled "A Study to Draw the Relationship between Selected Body Composition Variables and Free Style Swimming Performance of School Boys". The researcher conducted a study with 31students aged 13 to 17 years of Hooghly District School Swimming Competition – 2014. From statistical analysis i.e. correlation studies it appears that no positive correlation exists between BF% fat mass and lean mass with 50 mts. freestyle swimming performance.

Key words: *Freestyle swimming, Fat Mass, Body Fat percentage.*

I. INTRODUCTION

According to history 10,000-year-old rock paintings of people swimming were found in the Cave of Swimming near Wadi Sura in southwestern Egypt. An Egyptian clay seal dated between 9000 BCE and 4000 BCE shows four people who are believed to be swimming a variant of the front crawl. More references to swimming are found in the Babylonian has- reliefs and Assyrian wall drawings, depicting a variant of the breaststroke. The most famous drawings were found in the Kebir desert and are estimated to be from around 4000 BCE. The Nagoda bas-relief also shows swimmers inside of men dating back from 3000 BCE. The Indian palace Mohenjo Daro from 2800 BCE contains a swimming pool sized 30m by 60m. An Early modern era Leonardo da Vinci made early sketches of lifebelts. In 1539, Nikolaus Wynmann, a German professor of languages, wrote the first swimming book *Colymbetes.* His purpose was to reduce the dangers of drowning.

The Olympic Games were held in 1896 in Athens, a male-only competition. Six events were planned for the swimming competition, but only four events were actually contested: 100 m, 500 m, and 1200 m freestyle and 100 m for sailors. The first gold medal was won by Alfred Hajos of Hungary in the 100m freestyle. Hajos was also victorious in the 1200m event, and was unable to compete in the 500 m, which was won by Austrian Paul Neumann.

The swimming training is tried by using hydrodynamics technology. We research the optimization of swimming from analyzation of waves made by swimmer.

There are many reasons why people swim, from swimming as a recreational pursuit to swimming as a necessary part of a job or other activity. Swimming may also be used to rehabilitate injuries, especially various cardiovascular injuries and muscle injuries.

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Several research studies have been conducted to analyze the impact of body or somatotype on sport also numerous studies conducted to assess the effects of body composition on various sporting events but according to the literature available very few studies have been conducted to locate the relationship between bodily fat mass, lean mass, fat percentage with swimming performance etc. thus the author felt encouraged to conduct the study entitled "A STUDY TO DRAW THE RELATIONSHIP BETWEEN SELECTED BODY COMPOSITION VARIABLES AND FREE STYLE SWIMMING PERFORMANCE OF SCHOOL BOYS".

PURPOSE OF THE STUDY:

The purposes of the study are as follows:

(i) The study was formulated to explore the relationship between Fat mass and 50 mts. swimming performance.

(ii) The study was formulated to explore the relationship between Body Fat % and 50 mts.
swimming performance.

METHODOLOGY: The researcher randomly selected 31 boys within the age group 13 to 17 years from Hooghly District School Swimming Competition – 2014 as the volunteers of his study. The criterion measures are as follows: As Personal Data – Age, Height, Weight and lean mass, fat mass and body Fat percentage were estimated as measures of body composition.

Age: The age of the subjects were noted from order of events record of each subject.

Height- Each subject was asked to stand erect on a horizontal surface and stretch as much as possible taken in case that heels are touching in front of on wall. The highest point head touching the wall was recorded in (cm).

Weight- The subject stood on the standard weighting machine maintains erect posture. The body weight was recorded in (kg).

For estimation of Lean Mass Fat Mass and Body Fat percentage, in case of 13 – 17 Age boy's. Five skin measurements were like - Abdominal, Chest, Thigh, Suprailiac, & Triceps were measured.

RESULT AND DISCUSSION

In this part of the research report tables depicting descriptive statistics inferential statistics and related discussion have been presented.

Descriptive statistics of personal data is as follows:

Table-1 Mean and SD of age height and weight of the swimmers

	Mean	SD
Age yrs.	14	00
Height cms.	162.26	5.71
Weight kgs.	50.26	7.95

According to table no. 1 the mean age of the swimmers is 14 years. The mean height is 162.26 and their SD is 5.71. The mean weight is 50.26 and SD is 7.95 respectively.

Table-2 Pearson Correlation between BF% fat mass and lean mass.

Correlations

		BF%	BF	Lean Mass	Time secs
BF%	Pearson Correlation	1	.963**	.512	.257
	Sig. (2-tailed)		.000	.051	.355
	N	15	15	15	15
BF	Pearson Correlation	.963**	1	.705**	.255
	Sig. (2-tailed)	.000		.003	.359
	N	15	15	15	15
Lean Mass	Pearson Correlation	.512	.705**	1	.239
	Sig. (2-tailed)	.051	.003		.391
	N	15	15	15	15
Time secs	Pearson Correlation	.257	.255	.239	1
	Sig. (2-tailed)	.355	.359	.391	
	N	15	15	15	15

**. Correlation is significant at the 0.01 level (2-tailed).

The above table shows Pearsons correlation (product moment method) between 50 mts. freestyle swimming performance and the variables BF %, Fat Mass and Lean Mass. From the data analysis it appears that no positive correlation exists between BF%, fat mass and lean mass with 50 mts. freestyle swimming performance.

Table-3 Correlation between BF% fat mass and lean mass. (Non-Parametric)

Correlations

			BF%	BF	Lean Mass	Time secs
Kendall's tau_b	BF%	Correlation Coefficient	1.000	.907**	.517**	.301
		Sig. (2-tailed)	.	.000	.008	.123
		N	15	15	15	15
	BF	Correlation Coefficient	.907**	1.000	.615**	.364
		Sig. (2-tailed)	.000	.	.001	.060
		N	15	15	15	15
	Lean Mass	Correlation Coefficient	.517**	.615**	1.000	.096
		Sig. (2-tailed)	.008	.001	.	.620
		N	15	15	15	15
	Time secs	Correlation Coefficient	.301	.364	.096	1.000
		Sig. (2-tailed)	.123	.060	.620	.
		N	15	15	15	15
Spearman's rho	BF%	Correlation Coefficient	1.000	.964**	.648**	.361
		Sig. (2-tailed)	.	.000	.009	.187
		N	15	15	15	15
	BF	Correlation Coefficient	.964**	1.000	.782**	.368
		Sig. (2-tailed)	.000	.	.001	.177
		N	15	15	15	15
	Lean Mass	Correlation Coefficient	.648**	.782**	1.000	.164
		Sig. (2-tailed)	.009	.001	.	.558
		N	15	15	15	15
	Time secs	Correlation Coefficient	.361	.368	.164	1.000
		Sig. (2-tailed)	.187	.177	.558	.
		N	15	15	15	15

**. Correlation is significant at the 0.01 level (2-tailed).

Since the number of subjects was less both parametric and non-parametric correlations were computed to assess the degree of relationship between the 50 mts. freestyle swimming performance and the variables BF %, Fat Mass and Lean Mass.

From the correlation studies it appears that no positive correlation exists between BF% fat mass and lean mass with 50 mts. freestyle swimming performance.

Lätt (2009) tracked 26 female swimmers for two years and examined relationships between biomechanical, bioenergetic, and anthropometric factors. Anthropometric factors included body mass, body fat percentage, fat free mass, bone mineral mass, and total bone density (authors also tracked age, height, and arm span). At the two year follow up, biomechanical factors were most predictive of performance, followed by bioenergetics. Anthropometrics had the weakest relation to performance compared to other factors.

In a mixed-gender study, Geladas (2005) studied 263 swimmers aged 12-14 and examined predictors of 100m freestyle performance. For boys, upper extremity length, horizontal jump, and grip strength were significant predictors of 100 m freestyle performance. In girls, body height, upper extremity and hand length, shoulder flexibility, and horizontal jump were all significantly related to 100 m freestyle time. In neither gender was body composition or weight significantly correlated with 100m performance. Juriimae (2007) later found similar results among 29 young boys in a 400m time trial, as stroke mechanics, arm length, and in-water VO2 peak were most correlated with performance while body weight and body composition showed no significant performance relationship. Some findings of eminent scholars have been presented above and it is somehow clear from the presentation that the results of the presentation have close association with those above findings.

Findings: From the correlation studies it appears that no positive correlation exists between BF% fat mass and lean mass with 50 mts. freestyle swimming performance.

Conclusion: Thus the researcher arrives at the specific conclusion that the body composition variables like BF%, Fat Mass and Lean Body Mass does not have any close association with 50Mts. swimming performance of male swimmers. On the other way the perception like greater amount of Body fat is better for swimming performance or Body fat facilitates swimmer with greater bouncy is like a misconception.

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