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Relationship of weight, Skelton muscle mass % and fat % among drug addicts and physical education students

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Abstract

In the present study the researcher find out the relationship of weight, Skelton muscle mass % and fat % among drug addicts and Physical Education students respectively. It was found out that in drug addicts weight was insignificantly correlated with Skelton muscle mass % but significantly correlated with fat %, while as fat % was significantly correlated with Skelton muscle mass %. Among Physical Education students it was found out that weight was significantly correlated with both Skelton muscle mass % as well as with fat %. A significant correlation was also found between fat% and Skelton muscle mass %.

Keywords: Physical Education students, drug addicts, weight, Skelton muscle mass % and fat.

Introduction

The primary physiological outcome in exercise is contraction of Skelton muscle. The human organism has over 600 muscles and a total of more than 6 billion muscle fibers dispensed among them. Muscle is of two types: Fast twitch muscle fibers and slow twitch muscle fibers. They are identified according to their twitch contraction time. Fat twitch muscle fiber are better suited for the anaerobic work and slow twitch muscle fibers are better suited for aerobic work. Myosin is the contractile elements of Skelton muscle. The most immediate chemical source of energy for muscular contraction is ATP (adenosine triphosphate). There are different types of muscles in human body i.e. smooth muscles, cardiac muscle and Skelton muscles. The muscle used in the movements of the body is Skelton Muscle as they are attached to the part of the skeleton. The skeleton system provides a frame work to the body. Skelton muscle is under almost complete voluntary control (Larry. G.S Pp 1). Skelton muscle is the largest non-adipose tissue component in the tissue level system of the body. Muscle free from fat is being termed as a surrogate muscle mass but it does not point out accurately the specific changes in the mass of the muscles showing any differences among individuals as wells (Wang, W., Z et.al 1999)^[7]. Studies have revealed out a method known as dual X-ray absorptiometry (DXA) for finding out the total muscle mass among male and female of different age group. The appendicular muscle mass can also be estimated through DXA (Angela. A 2015). Muscle Contraction is the primary cause of the movement without contraction the movement of the body is not possible. (Hartmann and Tunneman (1986) recommend duration of 6-12 weeks when training for the muscle hypertrophy is done and 5-6 weeks when training to improve strength by improving inter and intra-muscle coordination (Singh. H 1995). The students that participate regularly in physical activity and sports are better in strength, endurance, speed, flexibility and coordinative abilities then sedentary students.

Weight is a relative mass or the quantity of matter contained by it with addition to force of gravity on that matter. Weight can be calculated by using the formula " $w = m \times g$ ".

Since weight is a force, scientists also write the equation as $F = mg$.

- F = symbol for weight, measured in Newton's, N.
- m = symbol for mass, measured in kilograms, or kg.
- g = symbol for gravitational acceleration, expressed as m/s^2 , or meters per second squared.
- If you're using meters, the gravitational acceleration at the earth's surface is $9.8 m/s^2$.
- If you're using feet, the gravitation acceleration is $32.2 f/s^2$.

During adolescence, body size and composition markedly change. These changes are strongly associated with the development of various physical performance characteristics. The

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assessment of body composition in children and adolescent is of great importance, as it expresses the life, and health status of the population and its influence on the morbimortality risks. Human body is

Composed of fat mass and fat free mass which consists of muscle, water, bone and organ. Fat are also known as lipids, fats are essential for proper body functioning. They are important for controlling inflammation, blood clotting, and brain development (Ifeoma, F. O. 2015) [3]. Fats are also an important energy source. When the body has used up the calories from carbohydrates, which occurs after the first 20 minutes of exercise, it begins to depend on the calories from fat. Healthy skin and hair are maintained by fat. It helps the body absorb and move the vitamins A, D, E, and K through the bloodstream. There are different types of fats including saturated and unsaturated (monounsaturated and polyunsaturated), which all have specific functions within the body. The “bad” fats include Tran’s fatty acids and hydrogenated or partially hydrogenated fats and have been linked to increased LDL (bad) cholesterol and heart disease. Body fat distribution (often assessed by the waist circumference or the waist: hip ratio) is an important independent predictor of morbidity. Although this review focuses on weight gain and the development of overweight and obesity, it is acknowledged that increases in abdominal fatness (particularly, intra-abdominal fat) pose a greater risk to health than increases in fatness around the hips and limbs. In general, the causes of weight gain and abdominal weight gain are the same and it is the characteristics of the individuals (such as sex, age, menopausal status) that influence the distribution of the fat that is gained (BA Swinburn *et al.*, 2004) [2]. The key to achieving and maintaining a healthy weight isn't about short-term dietary changes. It's about a lifestyle that includes healthy eating, regular physical activity, and balancing the number of calories you consume with the number of calories your body uses.

Objectives

1. To find out the relationship of weight, Skelton muscle mass % and fat among drug addicts.
2. To find out the relationship of weight, Skelton muscle mass % and fat among Physical education students.
3. To find out the difference in relationship of weight, Skelton muscle mass % and fat among drug addicts and Physical education students.

Hypothesis

1. There will be significant differences in relationship of weight, Skelton muscle mass % and fat% among drug addicts.
2. There will be significant differences in relationship of weight, Skelton muscle mass % and fat% among Physical Education students.

Delimitations

- The study was delimited to the subjects between age group of 18 to 30 years.
- The study was delimited to drug addicts from drug de addiction rehabilitation homes of (Punjab)
- The study was also delimited to Physical Education students from Lovely Professional University.
- The study was delimited to 100 samples i.e. 50 samples of drug addicts and remaining 50 samples of Physical Education Students.

Limitations

- Life style pattern, socio-economic background, nature of activity will be considered as a limitation of the study.

Material and Methods

- The study was collected on 100 samples i.e. 50 samples of drug addicts and remaining 50 samples of Physical Education Students. To measure Weight, Skelton muscle mass % and fat % among the subjects was measured by using OMRON Body composition monitor with scale Model HBF-362 was used.

Statistical Technique

Data was statically analyzed using descriptive statistics and Pearson Product Multi Correlation Coefficient was used (PPMCC).

Table 1

Descriptive Statistics	Mean	Std. Deviation	N
weight	66.7610	8.89684	50
Skelton muscle mass % %	33.7140	3.95443	50
Fat %	18.6100	4.78225	50

Table 2

Descriptive Statistics	Mean	Std. Deviation	N
Weight	62.9580	12.10810	50
Skelton muscle mass % %	34.1480	2.27527	50
Fat %	34.1480	2.27527	50

Mean and standard deviation of drug addicts and Physical education students is presented in table 1 and 2 respectively.

Table 3

Correlations		weight	Skelton muscle mass % %	Fat %
weight	Pearson Correlation	1	-.247	.423**
	Sig. (2-tailed)		.083	.002
	N	50	50	50
Skelton muscle mass % %	Pearson Correlation	-.247	1	-.311*
	Sig. (2-tailed)	.083		.028
	N	50	50	50
Fat %	Pearson Correlation	.423**	-.311*	1
	Sig. (2-tailed)	.002	.028	
	N	50	50	50

The table 3 shows the correlation coefficients along with their P-values and sample size of drug addicts. The product movement correlation coefficient is also known as Pearson correlation because it was developed by the British Mathematician Karl Pearson. The Correlation coefficient with one asterisk mark is significant at 5% whereas with two asterisks mark is significant at 1% level (J.P. Verma 2011) [5]. All those correlation coefficients having P-value less than 0.05 are significant at 5% level. As the research hypothesis is two – tailed that defines a significant correlation between the variables. Following conclusion can be drawn from the table 3.

1. The weight was insignificantly correlated with the Skelton muscle mass % % as the p- value was greater than 0.05 level of significance but significantly correlated with the fat % among drug addicts because the P-value .002 was lower than the level of significance at 0.05.
2. The Skelton muscle mass % was insignificantly correlated with weight but significantly correlated with the Fat % as

the P-value .028 was less compared to 0.05 level of significance.

- Fat % is significantly correlated with weight i.e. P-value .002 was lower at 0.05 level of significance.

Table 4

Correlations		Weight	Skelton muscle mass %	Fat %
Weight	Pearson Correlation	1	-.622**	-.622**
	Sig. (2-tailed)		.000	.000
	N	50	50	50
Skelton muscle mass %	Pearson Correlation	-.622**	1	1.000**
	Sig. (2-tailed)	.000		.000
	N	50	50	50
Fat %	Pearson Correlation	-.622**	1.000**	1
	Sig. (2-tailed)	.000	.000	
	N	50	50	50

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

* . Correlation is significant at the 0.05 level (2-tailed).

The table 4 shows the correlation coefficients along with their P-values and sample size of Physical Education Students. Following conclusion can be drawn from the table 4.

- The weight was significantly correlated with the Skelton muscle mass % and Fat %. This is rightly so as the p-value .000 was less at 0.05 level of significance. On the other hand Skelton muscle mass % was significantly correlated with the Fat % as P-value 0.00 is less at 0.05 level of significance.

Conclusion

The present study showed insignificant correlation of weight with Skelton muscle mass % in drug addicts thus rejecting the hypothesis, but on the other part study found out a significant relationship of fat% with Skelton muscle mass %. The second hypothesis was accepted, as the findings of the study supported the hypothesis i.e. Weight was significantly correlated with both Skelton muscle mass % as well as with fat%. A significant correlation was also found between fat% and Skelton muscle mass % among Physical education students.

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