Comparison of Different Athletes' and Mountaineers' Fat Content

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The biggest problem faced by the world today is excess of fat ie Obesity. Various research related to this subject are being done; like research on reasons for the increase in body fat content, exercise or activities which will help lower the fat levels, diet to be taken to maintain or lower fat content, etc. Exercise helps us burn calories and lose weight in two different ways. First, it causes muscles of the body to do more work and second it enlarges our muscle tissue, thus raising our metabolic rate. This is because our muscle is more metabolically active than body fat, so physical activity immediate in calorie expenditure during a particular workout and also helps in burning extra calories even when our fitness routine is over. In order to know how much fat is necessary various researches on individuals have been done. Data from all categories of the society were collected and average fat requirement for normal human beings were known. The normal fat content required is presented in table 1.

Table 1

Body Fat Ranges for Individuals (Wikipedia**)**

Category	Males	Females
Exceptionally Lean	6-10%	10-15%
Very Lean	11-14%	16-19%
Lean	15-18%	20-25%
Moderate	19-24%	26-29%
Over fat	25%+	30%+

Lower is Not Necessarily Better

Individuals have always considered that lower fat content is always better, but a certain amount of body fat is **vital** for the body to function normally and healthy. In fact striving for a body fat percentage that is **too low** can be dangerous. Measuring your body fat percentage calculates your **TOTAL** body fat.

The total body fat can be split into two categories:

- **Storage Fat:** This consists mainly of fat deposited just under the skin or subcutaneous fat. Storage fat for men and women is fairly similar. For the

average man 12% of bodyweight is storage fat and for the **average** woman 15% of bodyweight is storage fat.

- **Essential Body Fat:** For the body to function normally and healthily a certain amount of body fat is required. This is called **essential fat**. For women the **average** amount of essential fat is 12% of bodyweight and for men it is 3%.

Trying to achieve a body fat percentage that is so low it affects your **essential fat** stores is **NOT GOOD** for your health. Some storage fat is also required for good health. It's used to protect internal organs in the chest and abdomen. So remember...Aim to stay within the range for age and gender and rest assured you are.

But the problem faced was that these were for normal individuals, but what about sportsmen. The sportsmen with such body fat content were considered as obese. So research on sportsmen was essential. Fat content of elite sportsmen were collected and average fat content according to the games were presented (Table 2).

Table 2

Average Body Fat Percentage of Sportsmen (sport-fitness-advisor.com**)**

Sport	Male	Sport	Male	Sport	Male
Athletes	13%	Rowing	14%	Tennis	16%
Basketball	12%	Rugby	12%	Volleyball	14%
Body building	8%	Shot Putters	20%	Weightlifters	16%
Cycling	15%	Soccer	12%	Wrestlers	16%
Gymnastics	12%	Sprinters	10%		
Ice/field Hockey	15%	Swimming	12%		

Objective of Study

The objective of the study was to compare the fat content levels of different sports with that of mountaineers. For the current study fat percentages of only male sportsmen are considered.

Hypothesis: Researcher is interested in testing whether Mountaineers belong to the population of sportsmen with respect to percent body fat and hence stated the following hypothesis

H_1: Mountaineers do represent the Population of sportsmen with respect to percent body fat

Subjects

The fat content of the sportsmen was known through books, few researches and on websites. To find out the fat content of mountaineers the researcher used the Bioelectrical Impedance Analyzer and tested **240 Male Mountaineers** aged 17 to 30 years. Two groups were formed according to age:

Group 1: Boys 17 to 23 years, Group 2: 24 to 30 years.

Tools of study

The fat content of mountaineers was measured using the Bioelectrical Impedance Analyzer (Omron Machine).

Statistical Analysis

Descriptive statistics (Prakash, 2000) was done and mean score of the fat content of mountaineers was calculated. The mean scores of fat content of Group 1 and Group 2 are 16.42 and 20.06 respectively.

Table 3

Descriptive Analysis of Mountaineers

Group	N	Mean	Std. Dev
1	120	16.4258	5.20987
2	120	20.0642	4.77715

One tailed 't' test was employed and the mean of fat percentages of both the groups of mountaineers were compared with the fat percentages of different sportsmen. The analysis is given below.

Table 4

Descriptive Statistics of Fat Percentages of Different Sportsmen

N	Mean	Std. Deviation	Std. Error Mean
16	13.5625	2.82769	.70692

Table 5

Comparison of Fat Percentages with Different Sportsmen

Group	Test Value	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
						Lower	Upper
1	16.42	-4.042	15	.001	-2.8575	-4.3643	-1.3507
2	20.06	-9.191	15	.000	-6.4975	-8.0043	-4.9907

Null Hypothesis

Researcher was interested in testing whether Mountaineers belong to Athlete with respect to percent body fat hence he stated the following Null hypothesis for testing purpose

H_0: Mountaineers do not represent the Population of sportsmen with respect to percent body fat

$$M_1 \neq M_2$$

Alternative hypothesis

H_1: Mountaineers do represent the Athlete Population with respect to percent body fat

$$M_1 = M_2$$

Results and Discussion

When the mean score of percent body fat was compared with the percent body fat of other sportsmen with the help of one sample tailed 't' test, it is seen that there occurs significant difference between percent body fat of Mountaineers and other sportsmen at 0.01 level of significance, hence null hypothesis is rejected.

The reasons for the higher fat content in mountaineers are to be known and study in this related field is required. Research says that "Cold weather mountaineers stay warmer at night if they have a bedtime snack high in slow burning food fuel (fat)". It is due to this that the fat content of mountaineers is higher than other sportsmen.

Conclusions

It proves that Mountaineers show more fat content than other sportsmen.

Recommendations

- Relative measures are to be taken in order to decrease the fat content among mountaineers.
- Research has proved that mountaineering is an activity requiring high amount of calories and hence the Fat content of Elite mountaineers is to be found out in order to find out the average requirement of fat for mountaineers.

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