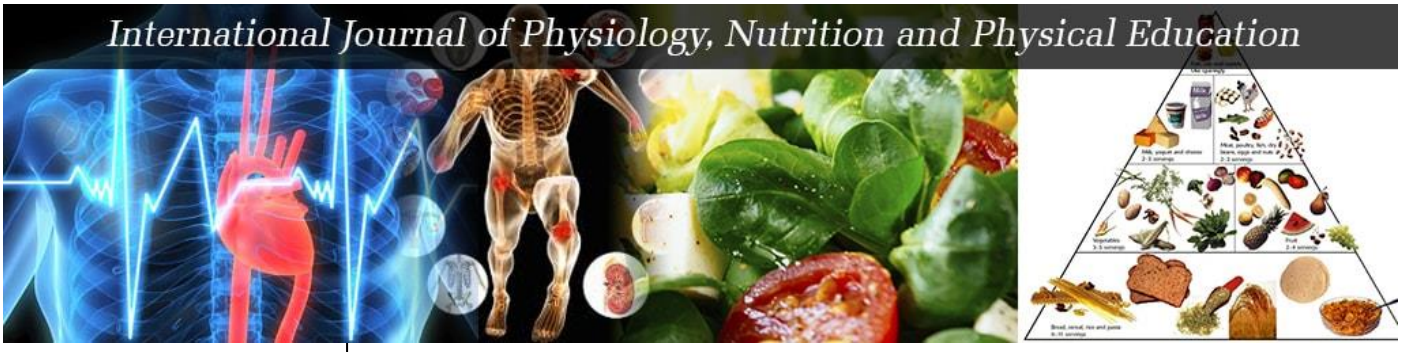

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Investigation of relative strength between men and women senior national weightlifters

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Abstract
The main purpose of this study was purposive selected from the relative strength among the different weight categories of 70th Men & 33rd women senior national weight lifters. Men and women weightlifters participated in various weight categories, acted as the subjects. The age of the subjects ranged from 18-35 years. The total subjects were selected one hundred ninety eight (N=198) Ninety nine (99) men and Ninety nine (99) Women subject were selected. Since the data's for the study is taken from the performance of 70th Men &33rd women senior national weight lifters for the 21st to 25 January 2018, held at Mangalore, Karnataka India. In order to measure the relative strength of various lifters of different groups, The sum of the best one lift for (snatch and clean & jerk) of respective events was considered as the scores of the lifters. The analysis of data were using Statistical Package for the (SPSS) version 21 computing Mean, S.D. and t-ratio were compare the significant difference between "70th MEN & 33rd Men and Women" weightlifters on the Relative Strength for the different weight category. It was discovered that the calculated t- value (13.75) was more than the tabulated value (1.962), so there was significant difference between the mean scores of Comparative relative strength between men and women senior national weight lifters.

Keywords: Senior national, Mangalore, Karnataka weight categories, relative strength, men, women, weightlifting

Introduction
The sport or activity of lifting barbells or other heavy weights. There are two standard lifts in modern weightlifting: the single-movement lift from floor to extended position (the *snatch*), and the two-movement lift from floor to shoulder position, and from shoulders to extended position (the *clean and jerk*)

Relative strength is an aspect of fitness that we focus on as opposed to simply strength in general. Relative strength is the strength of an individual in relation to their bodyweight. It's easy to be strong and huge, but this does not always serve the most efficient function. This sort of strength development means being super strong for your size.

You have to appreciate competition…whether it's in sport, exercise, the workplace, or any other facet of life, competition is the driving force behind greatness. At an evolutionary level, it is what is responsible for the advancement of human kind. Competitions for resources, for power, and for wealth have been the catalysts for all of the great leaps in human civilization. Today we'll be looking at one of the oldest and most basic physiological forms of competition….strength.

For thousands of years, man has been testing his strength against others. Going back to the ancient Olympic Games, human beings have always valued the accumulation and development of raw physical power. But how do we judge how strong a person really is? Today, I'll be explaining the advantages, disadvantages, and differences of the two types of strength, absolute and relative. First we will start with some basic definitions.

Absolute strength is the type of strength the average person is most familiar with. Anyone who has spent any time in a gym has certainly been asked, "How much do you bench?" or "How much can you squat?" These questions refer to absolute strength, or, the maximum amount of force that someone can exert, irrespective of body size or weight. This type of strength is best measured with 1-rep maximum calculations in different weight training movements (i.e. max bench, max squat, max clean).

Relative strength is just what it sounds like….the maximum amount of force that someone can exert in relation to body size or weight. Relative strength is commonly measured with body weight exercises such as pushup and pull-ups. However, these types of measure are not always accurate as they sometimes measure muscular *endurance* as opposed to power. For this reason, it is more accurate to use a measure of 1RM and then compare it on a scale of body weight, or use a maximum athletic effort such as the 40-yard dash or high jump.

To make the comparison a little easier, I will use an example. Let's take two athletes…Athlete 1 weighs 150 pounds, can bench press 200 pounds, and can squat 300 pounds. Athlete 2 weighs 200 pounds, can bench press 250 pounds and can squat 350 pounds. So Athlete 2 is stronger right? Well, sort of….Athlete 2 does have greater absolute strength, but Athlete 1 actually has greater relative strength (A1 can bench press 1.33 times his weight and squat 2 times his weight while A2 can only bench 1.25 times his weight and squat 1.75 times his weight). So you can see that the "strongest" person is not always the one who can lift the most weight!

Objectives of the study

To compare the relative strength among the different weight categories of 70th Men &33rd women Elite senior national weight lifters.

Methodology

Participants

The main purpose of this study was purposive selected from the "70th Men and 33rd women senior national weightlifting championship held at Mangalore, Karnataka 21st to 25 January 2018. Men and women weightlifters participated in various weight categories, acted as the subjects. The age of the subjects ranged from the 18- 35 years. The total subjects were selected one hundred ninety eight (N=198) ninety nine (99) men and ninety nine (99) women subject were selected. And first group were men weight categories (56 kg, 62 kg, 69 kg, 77 kg. 85 kg, 94 kg, 105 kg, & +105 kg). The second group women weight categories (48 kg, 53 kg, 58 kg, 63 kg, 69 kg. 75 kg. 90 kg & +95 kg.),

Testers Reliability: Since the data's for the study is taken from the performance of 70th Men and 33rd women senior national weightlifter" for the 21st to 25 January 2018 held at Mangalore, Karnataka, India and was conducted by the qualified National referees, these scores were assumed to have higher level of reliability.

Collection of Data

In order to measure the kinematic analysis for snatch lift of elite Indian weightlifters of different weight category men & women, the data was collected from the results for the 70th Men and 33rd women senior national weightlifter" for the 21st to 25 January 2018 held at Mangalore, Karnataka, India. The sum of the best 3 lifts for the each weight category of respective events was considered as the scores of the lifters.

Data Analysis

The data thus collected were statistically treated by using Statistical Package for the (SPSS) version 21 computing Mean, S.D. and t-ratio were compare the significant difference between "70th Men and 33rd women senior national weightlifter on the Relative Strength for the different weight category. The results have been presented in the following table:

Results and Findings

The total subjects were one hundred ninety nine (198). The ninety eight (98) subjects were selected for each group 70th Men and 33rd women senior national weightlifting championship. The sum of the best 1st lift for respective event (snatch and clean and jerk) each weight category like women (48, 53, 58, 63, 69, 75, 90, and +90 kg) and men (56, 62, 69, 77, 85, 94, 100, 105 and +105) was considered as the scores of the lifters.

Table 1: The Mean And Standard Deviation Values of The 70th Men & 33rd Women Junior National, Weightlifters.

Mean And Standard Deviation					
Groups		**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Senior National Weightlifters	Men	99	3.6327	.48435	.04868
	Women	99	2.6653	.50541	.05080

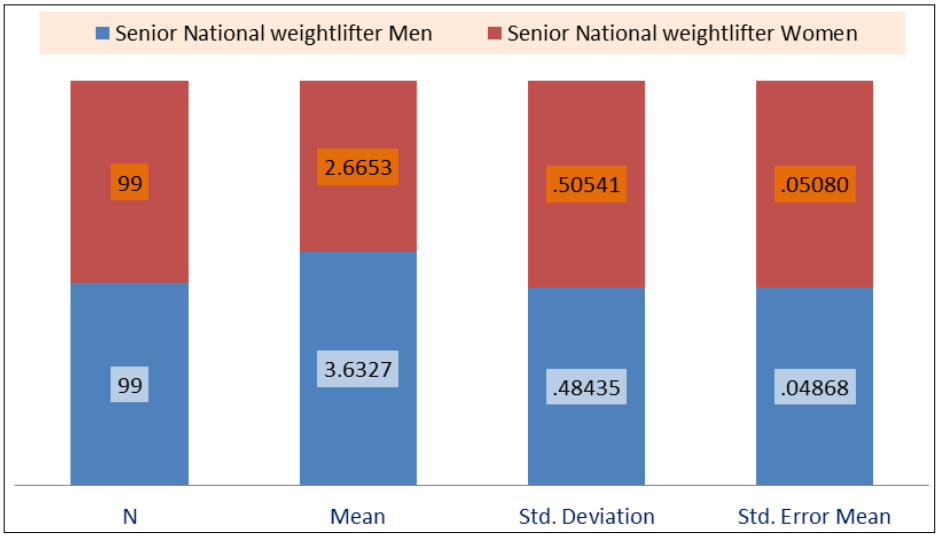

Fig 1: Graphical Representation of mean and standard deviation with regard to Comparison of relative strength between the 70th men & 33rd women senior National weightlifters.

Table 2: Independent t-test for the data of Relative Strength between men and women senior national weightlifters.

Independent T-Test						
S.N.	**Groups**	**M**	**MD**	**SED**	**Calculated T-Ratio**	**Tabulated-T-Ratio**
I	Senior National Men Weightlifter	3.63	.0706	.07036	13.75	1.962
II	Senior National Women Weightlifter	2.66	.0706	.07036	13.75	1.962

*Significant at 0.05 level (198,) = 1.962

Conclusion

Analysis of the data reveal that the calculated t- value (13.75) was more than the tabulated t-value (1.962), so there was significant difference between the mean scores of Comparative relative strength between the 70th men & 33rd women senior National weightlifters from various weight categories like men (56 kg,62 kg, 69 kg,77 kg, 85 kg, 94 kg, 105kg,and 105+) And women (48,53,58,63,69,75,90 and +90) Total one hundred ninety eight (N=198). Ninety nine (99) men, Ninety nine (99) women senior national championship 21st to 25 January 2018 held at Mangalore, Karnataka, India. which has determined that different weight categories of relative strength. After applying the independent t-test it was found to have a significant difference in both groups in their relative strength. Significance was selected 0.05. This is probably due to the different nature of the training components and pre-requisite for lifters. These results may be due to muscular strength according to individual differences male and female and other factors such as different types of body, differences in body composition, etc.

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