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## A comparative study of relative strength between men and women elite junior national weightlifters

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### Abstract

The main purpose of this study was purposive selected from the “53<sup>rd</sup> men & 29<sup>th</sup> women junior national” for the 30 November to 4 December 2016. Men and women weightlifters participated in various weight categories, acted as the subjects. The age of the subjects ranged from the according to IWF 15-20 years. The total subjects were selected forty five (N=45). Twenty four (24) men and twenty one (21) Women subject were selected. The first group women weight categories (48 kg, 53 kg, 58 kg, 63 kg, 69 kg, 75 kg, & 75+ kg.), And second group Men weight categories (56 kg, 62 kg, 69 kg, 77 kg, 85 kg, 94 kg, 105 kg, & 105+ kg). The main objective to compare the relative strength among the different weight categories of 53<sup>rd</sup> men & 29<sup>th</sup> women junior national weight lifters. Since the data's for the study is taken from the performance of “53<sup>rd</sup> MEN & 29<sup>th</sup> WOMEN JUNIOR NATIONAL” for the 30 November to 4 December 2016. This was held at BHUBANESWAR (ODISHA), India. In order to measure the relative strength of various lifters of different groups, The sum of the best 3 lifts for the each weight category 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 “53<sup>rd</sup> MEN & 29<sup>th</sup> WOMEN” weightlifters on the Relative Strength for the different weight category. It was discovered that the calculated t- value (3.75, 3.84) was more than the tabulated t- value (2.00), so there was significant difference between the mean scores of Comparative relative strength between the 53 men & 29<sup>th</sup> women Junior National weightlifters

**Keywords:** Relative strength, weight categories, weightlifters Bhubaneswar, Odisha All India University

### Introduction

Doncash Seaton *et al* (1956) by environment human beings are competitive and aspires from excellence in every field. Sport is not an exception, changes are the order of the day. Changes are taking place each day in every walk of life. Life of people, their philosophy, ways of living etc. are undergoing changes due to basic and applied research in various fields. Man has reached the space age from the primitive “Stone Age” because of continuous changes. Records have been sprucing as a result of combined improvement in the technique of training and coaching. New techniques are established in laboratories and scientific methods are applied to obtain the level of performance. Sports by their very nature are enjoyable, challenging, absorbing and require a certain amount of skill and physical condition.

Bucher Today we all know that now a day is an area of smallest input and extreme output and for this, every possible work is being done to increase efficiency. Every perception angle is being thoroughly scrutinized by researchers and scientists together, so that sportsmen can get maximum mechanical advantages to improve their performance, clear insight of sports during Greek period was reflected in the Epic poems of Homer. Games were the part of the daily life of the people, or any important event.

C.N. Gardiner (1955) <sup>[1]</sup> Games and sports are a popular pastime activity for the young and the old, for boys and girls and for men and women. They offer an opportunity for all to obtain exercise, fun and relaxation. They can play an important role in developing physical fitness and skills for use in leisure time, now and perhaps more important, in later years. Many of the skill developed thought games and sports may be used in years to come to help keep physically fit.

Strength training has made the single, most positive contribution to this type of improvement. Witness the performance this year of tennis ace Serena Williams and Giants Slugger Barry Bonds.

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Maximum strength is the backbone upon which all other strength qualities depend. You'll hear me talk a lot about being fast and the importance of speed, power, reactive ability etc.

All of these qualities of strength are very important, but truthfully, unless you have enough raw horsepower in your engine you won't be going anywhere or doing anything in a hurry! In the case you can think of horsepower and maximum strength as being synonymous.

While only power lifters need to maximize and demonstrate maximum strength in competition, all athletes need to develop maximum strength as a foundation for other such as explosive strength, reactive strength, strength endurance, agility and others.

For this reason, absolute muscular strength must first be brought to optimal levels and simultaneously blended into strength that you can use for your sport, or "functional" strength. Maximum strength can be displayed through 2 types of muscular actions:

1. Concentric Strength: The ability to overcome a resistance through muscular contraction, i.e. the muscle shortens as it develops tension. Lifting a weight is an example of concentric strength.
2. Eccentric Strength: Displayed when a muscle lengthens as it yields to a resistance. Eccentric strength is normally 30-50% greater than concentric strength, meaning that you can lower significantly more weight in good control than you can actually lift.

Athletes who compete in weight-class events depend heavily on relative strength, as do athletes who must overcome their bodyweight to accomplish a motor task (i.e. long jump, sprinting etc.). Further, sports which have aesthetic requirements (figure skating, gymnastics etc.) demand the development of strength without a commensurate gain in bodyweight.

So how do you know if your strength to weight ratio is optimal? Simple, if your strength is going up faster than your bodyweight and your performance is improving as well then you're on the right track. You definitely don't need to be afraid of an increase in bodyweight so long as the strength gained from that bodyweight is functional.

If one weighs 150 pounds and squats 200 lbs and increases his bodyweight to 175 lbs and improves his squat to 300 lbs, his strength: bodyweight ratio has improved considerably!

Oftentimes a 10% increase in body-mass will lead to as much of a 30% increase in strength or more!

So how do you know when you've reached a point when you're becoming too strong? Simple. The thing to note is "eventually", but not "immediately", increasing strength and body-mass could result in negative effects on speed, size, and relative strength

**Objectives of the study**

To compare the relative strength among the different weight categories of 53 rd Men & 29<sup>th</sup> women Elite junior national weight lifters.

**Methodology**

**Participants**

The main purpose of this study was purposive selected from the "53<sup>rd</sup> & 29<sup>th</sup> women junior national" for the 30 November to 4 December year 2016. Men and women weightlifters participated in various weight categories, acted as the subjects. The age of the subjects ranged from the according to

IWF 15-20 years. The total subjects were selected forty five (N=45). Twenty four (24) men and twenty one (21) women subject were selected. The first group women weight categories (48 kg, 53 kg, 58 kg, 63 kg, 69 kg, 75 kg, & 75+ kg.), And second group were men weight categories (56 kg, 62 kg, 69 kg, 77 kg, 85 kg, 94 kg, 105 kg, & 105+ kg).

**Reliability of Data**

The reliability of data was ensured by establishing the instrument reliability and tester reliability.

**Instrument Reliability**

All the instruments and equipments like weighing machine, Bar, Weight plates, collars, platform and outfits were taken.

**Testers Reliability:** Since the data's for the study is taken from the performance of "53<sup>RD</sup> & 29<sup>TH</sup> WOMEN JUNIOR NATIONAL" for the 30 November to 4 December 2016. Which was held at Bhubaneshwar, Udisa, 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 relative strength of various lifters of different groups, the data was collected from the results for the "53<sup>RD</sup> & 29<sup>TH</sup> WOMEN JUNIOR NATIONAL CHAMPIONSHIP" year 2016, which was held at BHUBANESWAR, (ODISHA), 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 "53<sup>RD</sup> MEN & 29<sup>TH</sup> WOMEN" weightlifters on the Relative Strength for the different weight category. The results have been presented in the following table:

**Results and Findings**

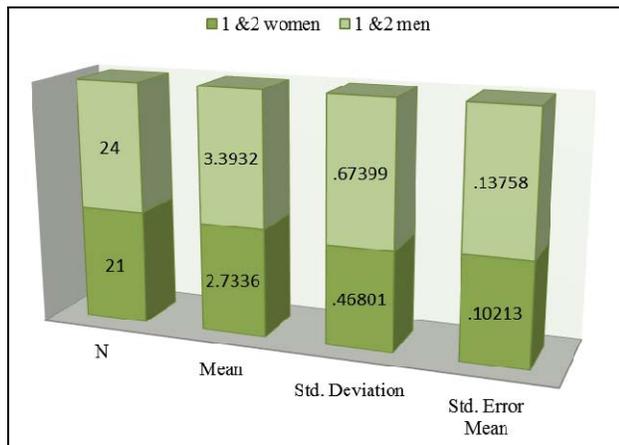
The total subjects were fifty five (45). The twenty one (21) subjects were selected from 29<sup>th</sup> women national and twenty four (24) from 52<sup>th</sup> men national weightlifting championship. The sum of the best 3 elite lifts each weight category like women (48, 53, 58, 63, 69, 75 and 75+) and men (56, 62, 69, 77, 85, 94, 100, 105 and 105+) for the Snatch, and cline & jerk of respective events total performance was considered as the scores of the lifters.

The Mean And Standard Deviation Values Of The 53 Men & 29<sup>th</sup> Women Junior National, Weightlifters.

**Table 1:** mean and standard deviation of scores of the relative strength of lifters between the 53<sup>rd</sup> men & 29<sup>th</sup> women Junior National weightlifters for the different body weight categories.

Groups	N	M	S.D.
Junior National Women	21	2.73	0.46
Junior National Men	24	3.39	0.13

Mean and Standard Deviation value of relative strength in kilograms.



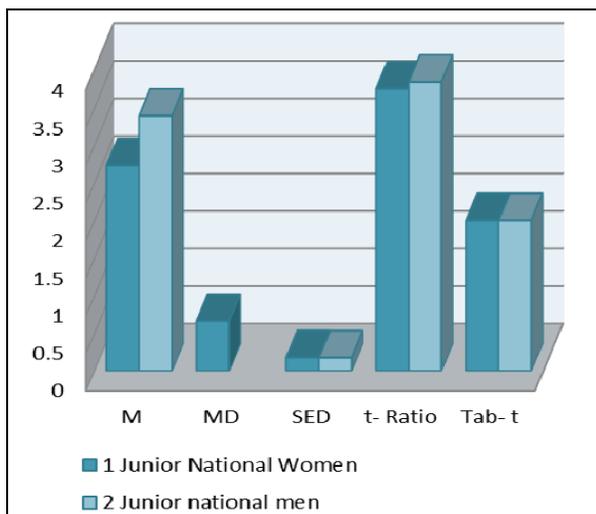
**Fig 1:** Graphical Representation of mean and standard deviation with regard to Comparison of relative strength between the 53 men & 29<sup>th</sup> women Junior National weightlifters.

**Table 2:** Independent t-test for the data of Relative Strength of different groups.

S.N.	GROUPS	M	MD	SED	t-Ratio	Tab-t
1	Junior National Women	2.73	0.65954	0.17547	3.75	2
2	Junior national men	3.39			0.17134	3.84

\*Significant at 0.05 level (58,) = 2.00

From table-2 It was discovered that the calculated t- value (3.75, 3. 84) was more than the tabulated t-value (2.00), so there was significant difference between the mean scores of Comparative relative strength between the 53 men & 29<sup>th</sup> women Junior National weightlifters



**Fig 2:** Graphical Representation of t- value with regard to Comparison of relative strength of the two groups from 53 men & 29<sup>th</sup> women Junior National weightlifting Championship.

**Discussion of Findings**

Analysis of the data reveals that there is significant difference in the relative strength between the “53<sup>RD</sup> MEN & 29<sup>TH</sup> WOMEN” various weight categories of lifters has been found in the selected significance level, 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. This is probably due to the different nature of the training components and pre-requisite for lifters. These results may be due to a small sample size and other factors such as different types of body, differences in body composition, etc.

**Summary**

The main purpose of the study was to compare the relative strength between “53<sup>rd</sup> Men & 29<sup>th</sup> Women” the belonging to various weight categories like men (56 kg,62 kg, 69 kg,77 kg, 85 kg, 94 kg, 105kg,and 105+)And women (48,53,58,63,69,75and 75+) Total fifteen (15) and best of 3<sup>th</sup> position were selected the total number of subject forty five (45). Twenty four (24) men, twenty one (21) women junior national championship participated in different weight categories. Which was held at Bhubaneswar, (Odisha), India in 30 November to 4 December 2016. Their strengths were recorded in kilograms. Scores or performance of male lifters were analyzed by calculated the means and standard deviation the data were subjected to independent t-test with unidirectional order to establish the meaning in the media. The results showed that participants in different categories lifters differ significantly in their relative strength. The level of significance was selected 0.05. After applying independent t-test the showed there was significant difference in relative strength. However. “MEN 53<sup>rd</sup> & 29<sup>th</sup> WOMEN JUNIOR NATIONAL weightlifters.

**Conclusions**

Within the limitations of the study the following conclusions were drawn:

The lifters participated in “MEN53<sup>RD</sup> & 29<sup>TH</sup> WOMEN JUNIOR NATIONAL CHAMPIONSHIP” weightlifters of various weight categories like men (56 kg,62 kg, 69 kg,77 kg, 85 kg, 94 kg, 105kg,and 105+)And women (48,53,58,63,69,75and 75+) showed a significant difference between the “men 53<sup>rd</sup> & 29<sup>th</sup> women junior national weightlifters in their relative strength.

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