

# COMPARE THE RESULTS OF THE RELATIVE STRENGTH AMONG POWERLIFTING DISABLED WOMEN BETWEEN PARALYMPIC GAMES BEIJING (2008) AND LONDON (2012)

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## Abstract

The aim of the research is to compare the results of the relative strength among powerlifting disabled women between Paralympic games Beijing (2008) and London (2012).

The sample consisted (162) players, researchers has used the content analysis of the results of the two Paralympics championship, Beijing /2008and London/ 2012 for women in the sport of powerlifting for the disabled. The best successful trial of the athlete in each weight category and for all categories has been chosen.

The percentage of the female lifters of London Paralympic games were the best in relative strength which has exceeded the double in five weights at 50% of the total weights whereas in Beijing /2008 Paralympic games, it was in three weights at 30% of the total weigh

The discussion of the research indicates from the tables the order has been per maximum relative strength and doesn't agree- for some extent- with the sequence of women's weight categories, the so-called "the direct relation between weight and relative strength in the science of training. Light weight categories (48, 40, 44) have gained the highest relative strength issued by the weight category (48kg) exceeding the double real weight.

The relationship between strength and weight have been converse, in other words the more the weight of the female player, the less is her relative strength The researcher ascribes this to the fact that in light weights, fats are too less in middle weights categories while in heavy weights fats are much more which minimizes the player's adequacy.

Finally, No significant differences have been detected between the mean relative strength of women between the Beijing and2008 and London/2012 Paralympics games, the relative mean strength of women in London/2012 was the best. The researcher submits a number of recommendations proper to the aims of the research.

**KEYWORDS: Compare. Relative. Strength. Disabled. Women. Paralympic. Being (2008).London (2012)**

## 1. INTRODUCTION & PROBLEM OF THE STUDY

The analysis and research of the important factors to reach the high level of sport that gives us a real indication of the level of development and delays in sports, if he supported the correct analysis in scientific bases.

Interest has increased rivalries sports for the disabled because it represents human being as well as the objectives of the sports segments of society plagued by blocking him is able to compete with the bad eggs target.

In the Paralympics the athletes compete in several events, including weightlifting, which real heavily on strength, but as the result of T-athlete achieved in strength all linked weightlifting law which requires the athlete to compete in the category of grains and specific power is thus here called relative strength.

There tore the importance of research in the analysis of the results of relative strength of women weightlifting posts in Paralympic games was in two sessions of the Beijing 2008 and London 2012.

### The problem of research

Access to high level of sport cannot be achieved without following the best ways of training and scientific and means to achieve goals, and longer analysis and investigation of the results achieved one scientific means and research in the smallest details that up to the required level.

Hence the research problem ,which the analysis of the relative strength of weightlifting women at Paralympic games Beijing 2008 and London 2012 ,to answer the following questions:

1. Is the weight categories in order of relative strength indices?
2. Is the weight categories that evolve from one session to another, and what are the more sophisticated and what are the categories that have no achieved relatively developed?

## 2. METHODOLOGY

The researchers has used the descriptive analytic method through a statistical technique for its convenience with the nature of the research.

### The Research's population and sample:

The population of the research has been chosen intentionally from the athletes participated in the Paralympics games of Beijing/2008 and London /2012 in powerlifting for women, totaling (143) players. <sup>(9) (10) (11)</sup>

As for the sample of the research, it has included weight lifters (women) and the research sample consisted (162) players who were able to do achievement in the championship (and it was excluded 19 players because of injuries for failure to complete the games). Regardless the order they have gained in the weight category they participated with after excluding the lifters that have failed in gaining any result regarding the weight category they have participated with after they have failed in lifting the required weight for three trials, or those who were excluded from the contests as a result of injury or any other reason prevented them from participating within the specific weight category.

Below are tables show the number of participants and the excluded athletes for each weight category for women in the two Paralympics championship, Beijing/ 2008and London/2012 as follows:

**Table 1: shows the number of participants, the excluded women athletes and the percentage of weight categories in Paralympic games Beijing's (2008)**

No.	weigh categories	Total number	No. of excluded	No. of participants	%
1.	- 40	8	-	8	100
2.	- 44	8	2	6	75
3.	- 48	9	2	7	77.7
4.	- 52	9	1	8	88.8
5.	- 56	8	-	8	100
6.	- 60	7	-	7	100
7.	- 67.5	10	2	8	80
8.	- 75	7	-	7	100
9.	- 82.5	8	1	7	87.5
10.	+ 82.5	8	1	7	87.5
Total		82	9	73	89.02

**Table 2: Shows the number of participants, the excluded women athletes and the percentage of weight categories in Paralympic games London (2012)**

No.	Weight categories	total	No. of excluded	No. of participants	%
1.	- 40	8	1	7	87.5
2.	- 44	8	1	7	87.5
3.	- 48	8	1	7	87.5
4.	- 52	8	2	6	75
5.	- 56	7	1	6	85.7
6.	- 60	8	1	7	87.5
7.	67.5	9	2	7	77.7
8.	- 75	8	1	7	87.5
9.	- 82.5	8	-	8	100
10.	+ 82.5	8	-	8	100
Total		80	10	70	87.5

**Table 3: Table showing the research community and sample of women and percentage of the participants in two sessions Paralympic games –Beijing (2008) and London (2012)**

No.	Session	Total	excluded	No. of participants	%
1.	Beijing 2008	82	9	73	89.02
2.	London 2012	80	10	70	87.5
	Total number	162	19	143	88,27

### Means of data collecting:

The researchers has used the content analysis of the results of the two Paralympics championship, Beijing /2008and London/ 2012 for women in the sport of powerlifting for the disabled. The best successful trial of the athlete in each weight category and for all categories has been chosen.

**Statistical Analysis:** The researchers has used the arithmetic mean, the normative deviation, T-test, percentage and change coefficient to handle the data statistically through applying the statistical package SPSS. <sup>(1)</sup>

### 3. RESULTS AND DISCUSSION

#### Presentation and discussion of results relative strength for women

##### The order of weight categories accordance with the relative

##### Strength index in Beijing 2008 and London 2012

**Table 4: shows the order of weight categories accordance with the relative strength Index for women in the Paralympic games in Beijing (2008)**

Weight Categories Kg	Average relative strength	order of categories
- 48	2.218	1
- 40	2.139	2
- 44	2.046	3
- 52	1.899	4
- 60	1.772	5
- 56	1.695	6
- 67.5	1.627	7
- 82.5	1.578	8
- 75	1.567	9
+82.5	1.273	10
X	1.7814 Kg	

From table (4) of relative strength for women in Beijing Paralympics games /2008, the research findings have shown the following:

The order has been per maximum relative strength and doesn't agree- for some extent- with the sequence of women's weight categories, the so-called "the direct relation between weight and relative strength in the science of training. Light weight categories (48, 40, 44) have gained the highest relative strength issued by the weight category (48kg) exceeding the double real weight.

Relative strength values have ranged between (2.218, 2.139, and 2.046). The other weight categories have come below the double weight and per the sequence of other weight categories except (56kg, 75kg). The relative strength has ranged between (1.899-1.373). And the relationship here has been converse, in other words the more the weight of the female player, the less is her relative strength. The researcher ascribes this to the fact that in light weights, fats are too less in middle weights categories while in heavy weights fats are much more which minimizes the player's adequacy.

**Table 5: shows the order of weight categories accordance with the relative strength index for women in the Paralympic games in London (2012)**

Weight Categories Kg	average relative strength	order of categories
- 48	2.298	1
- 40	2.245	2
- 52	2.189	3
- 44	2.110	4
- 56	2.099	5
- 60	1.846	6
- 67.5	1.823	7
- 75	1.665	8
- 82.5	1.563	9
+82.5	1.283	10
X	1.9121 Kg	

From table (5) regarding the relative strength of women in London Paralympics games/2012, the research findings have shown the following:

The order has been per the maximum relative strength and hasn't agreed with the sequence of women's weight categories as known in the science of training or the direct relation between the weight and the relative strength. Light weight categories (48, 40, 52, 44, 56) have gained the highest relative strength issued by the weight category (48kg) exceeding the double real weight. Relative strength values were ranging between (2.298, 2.245, 2.189, 2.110, 2.099) respectively.

The remaining weight categories were below the double weight and per the sequence of other weight categories. Relative strength has ranged between (1.846, 1.283).

A general comparison of the two Paralympics games for women in relative strength shows that London Paralympic games was better in relative strength, exceeding the double weight in five weights, i.e. 50% of total weights. While in the Beijing Paralympic games/2008, it was in three weights, i.e. 30% of total weights.

**The comparison of relative strength between Beijing 2008 and London 2012**

**Table 6: shows a comparison between relative strength in both Beijing and London Paralympics games contests for women**

relative strength	Beijing 2008		London 2012		T.Calculator	Error rate
	M	SD	M	SD		
	1.7814	0.29	1.9121	0.33	0.92	0.36

From the table (6) regarding the comparison of the relative strength between the Beijing /2008 and London/2012 Paralympics games for women, the findings of the research have shown the following:

1. No significant differences have been detected between the mean relative strength of women between the Beijing /2008 and London/2012 Paralympics games, the relative mean strength of women in London/2012 was the best.

**The proportion of change in the relative strength**

**Table 7: shows the proportions of change (development) in the relative strength for the weight categories of women in both Beijing's/2008 and London/2012 Paralympics games**

No.	weight categories	Beijing 2008 Kg	London 2012 Kg	Chang proportion %
1.	- 40	2.139	2.245	4.95
2.	- 44	2.046	2.110	3.12
3.	- 48	2.218	2.298	3.60
4.	- 52	1.899	2.189	15.27
5.	- 56	1.695	2.099	23.83
6.	- 60	1.772	1.846	4.17
7.	- 67.5	1.527	1.823	12.04
8.	- 75	1.567	1.665	6.25
9.	- 82.5	1.578	1.563	- 0.95
10.	+ 82.5	1.273	1.283	0.78
X		1.7814	1.9121	7.33

From the table (7) regarding the change proportions of the relative strength for women's weight categories between the two Paralympics championships, London/2012 and China /2008, the findings of the research have shown the following:

1. A relative progress has occurred between the two Paralympics games, Beijing /2008, and London/2012 in favor of London's. Positive change proportions have ranged from (0.78% and 23.83%) in nine weight categories.
2. A relative falling behind between the two Paralympics games, Beijing /2008 and London/2012 has occurred in the last weight category (-82.5) kg by (-0.95%).
3. The highest positive change proportion was (23.83%) in (- 56kg).
4. The lowest positive change proportion was (0.78%) in (+82.5kg).
5. Change mean proportion between the two Paralympics games, Beijing /2008 and London /2012 in women's relative strength was 7.33%

**4. CONCLUSIONS**

1. The sequence relationship of the relative strength values with the different weight categories amongst women was converse.
2. The relative strength among light weight categories was better than that of the heavy weights.
3. The best weight category in the relative strength amongst women and is (48kg).
4. The female lifters of London Paralympic games were the best in relative strength which has exceeded the double in five weights at 50% of the total weights whereas in Beijing /2008 Paralympic games, it was in three weights at 30% of the total weights.
5. There have been no significant differences between the relative mean strength of women in both Paralympics of Beijing /2008 and London /2012. The arithmetic mean of women relative strength in London/2012 was the best.
6. The relative mean strength amongst women hasn't exceeded the double weight in both Paralympics of London and Beijing.
7. The development of the relative mean strength for women has reached 7, 33% between both Paralympics games.
8. The best development percentage in the relative strength for women was in (-56) weight, while the (-82.5) weight has fallen behind.

**5. RECOMMENDATIONS**

1. Select of the training curriculum, which is working to develop relative strength for outstanding achieve mentis.
2. Development of the relative strength in the heavy weight.

Try to develop or maintain the relative strength in the weight categories that showed rates of evolution and the development of good relative strength in categories which got delayed.

3. Interest in the development of muscle mass in heavy weightlifting cranes by choice of the weight categories of women with lowest weight and same efficiency.
4. Do longitudinal study of the relative strength of women between Olympics games circle to determine the level of development or delay the weight categories?
5. Conduct a study of the absolute strength of men and women.

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