

THE EFFECT OF JUMP SQUATS WITH HEAVY AND LIGHT WEIGHTS IN THE DEVELOPMENT OF SOME PARTICULAR PHYSICAL QUALITIES AND 100M ACHIEVEMENT BY (DEAF AND DUMB) DISABLED ATHLETES

Alaa Khalaf Haider^a, Emad Kâdhim Ahmed^b, Riaydh A Farhan^c

^{a,b,c} *University of Diyala -College of Physical Education*

alaakh.sport@yahoo.com

Amad@sport.uo.diyala.edu.iq

Riaydh-77@yahoo.com

Abstract

That muscle strength is the foundation component of all fitness components, and among the sports in which the recipe force clearly appears next to the speed and endurance speed, in training and competition of the methods used to develop the types of force Among those means are exercises that lead Palmquaomat any training with weights and is using bars of iron as well as Aldmpelsat for the development of power in any of the parties to the body, and is improving lower limb is crucial if we know that this requires the development of the power of all kinds to the muscles of the two men for runners different weights in which it operates as well as the mechanism of action through training with weights any style best training jumping Baldbna heavy compared to training with weights Baldbna light when jumping exercise leads to the development of the capabilities of the players such as transitional explosive speed and the ability to aggressive 100 m disabled

Keyword: *Jump, Weights, particular Physical, Achievement, deaf and dumb, Athletes*

1. INTRODUCTION

The muscular strength is considered as a basic component to all components of physical fitness, it is the basis for building and developing the physical and other kinetic or dynamic components, so the first things coaches usually think about are generally to develop and improve physical capabilities and kinetic qualities and particularly the muscular strength, whether in an individual or group practicing activities. In addition, trainers consider other sports as well, in which the muscular strength is clearly concerned with, along with the speed and endurance. This means that such kinetic activities require different types of strength whenever being performed in training and competition. That is why coaches attempt to develop the macular strength in their players. There are several means which can be used to develop various kinds of strength, among those means are exercises, that are basically performed by utilizing bodybuilding resistance bands i.e. weightlifting training, which is basically carried out by using iron bars or plates and dumbbells to develop physical strength in any parts of the human body. Improving the lower parts of human body is crucial given that this requires developing the strength of runners' legs muscles, especially when doing exercises with different weights, and various mechanisms of action through weightlifting training. Hence the research importance seeks to identify any better training method in regards to *jumping squats with heavy weights* in comparison to training by jumping squats with light weights, particularly whenever exercises by jumping contribute to develop the players' capabilities for example the transitional speed and the explosive capability for 100 m of disabled runners.

The Problem

Being coaches with extensive expertise, the researchers have observed the lack of interest and attention paid by some trainers in terms of utilizing certain training methods of heavy and light weightlifting, in the development of the provisional speed and the explosive capability through which disabled runners can accomplish 100m achievement.

The Aims

The research is designed to:-

1. Prepare exercises and trainings by jumping with heavy and light weights in order to develop some special qualities (maximum strength, explosive capability, and an achievement of 100 m by disabled (deaf and dumb) runners.
2. Identify which of the two methods is the best in developing special physical qualities (maximum strength, explosive capability, and achievement of 100 m (at maximum speed) by disabled (deaf and dumb) runners.

Hypotheses

It is hypothesized that:-

1- There are significant statistic differences between the two methods of jumping squats with (heavy and light weights) in the development of special physical qualities (maximum strength, explosive capability and an achievement of 100 m (at maximum speed) by disabled (deaf and dumb) runners.

Keywords:

Physical Qualities: Maximum strength is one of the basic physical qualities which humans cannot pursue or practice any bodily movement without it, and through which it is possible to change the rate and direction of the strength so we can change the shape and speed of movement (Adel Abdul Basir, 1999, 98)

Deaf and dumb: they are people who can *neither hear nor speak*. (Qais Jead, Alaa Khalaf, 2013, 51)

2. RESEARCH METHODOLOGY AND FIELD PROCEDURES

1. Research Methodology

The researchers used the experimental method of equivalent groups as it seems appropriate to answer the research question and resolve the research problem and to achieve its objectives.

2 The Research Sample

The researchers chose the research community from players of Paralympics Team in Diyala province and they were just (6) players, who were divided into two groups with 3 players for each group. The first group trained by (jump squats with heavy weights) while the second group trained by (jump squats with light weights) so that the sample represented a percentage of (83 %), and the researchers harmonized among members of the research sample.

Table (1) Shows homogeneity of sample members for both groups of jumping squats with heavy and light weights

Variables	The unit of measurement	The first experimental group (the heavy weights)		The second experimental group (the light weights)	
		AM	SD	AM	SM
Age	Year	23.4	38, 1	6, 23	2, 3
Length	Cm	170.6	65, 3	4, 170	56, 3
Body weight	Kg	75.3	33, 9	73.1	62, 9

AM: Arithmetic means, SD: Standard Deviation

Field Procedures

The researchers made a pretest for the research sample and then applied a prepared curriculum on sample members. This curriculum consists of certain trainings and exercises through jumping squats with heavy and light weights, and these exercises are in fact carried out through using instruments of weighting (full squat and half squat exercises) by members of research sample after 60 days by (3) training units per week. Then posttests have been carried out on the research sample to determine the extent of developing the muscular strength and the level of achievement which attained by dump runners.

Applied Exercises (Appendix 1)

- A. Preparing physical exercises to improve muscular strength (explosive strength and speedy strength).
- B- Giving exercises in the main section of the curriculum which has already been prepared by researchers.
- C-Assigning the intensity of exercises between 75% to 95% for the group that is used to train with heavy squats.
- D-Assigning the intensity of exercises between 40% to 60% for the group that is used to train with light squats.

The researchers relied upon the heart pulse as an indicator for inter-resting among repeating exercises (repetitions) and among the whole sets of exercises. The number of heartbeats between repeating exercises reaches to (130-140 beat per minute) (BPM henceforth) which is basically equivalent to (3-4) minutes in terms of temporal factor.

E- The number of heartbeats during the time of rest or break between sets of exercises were between (110 – 120 BPM) which is equivalent to (4-5) minutes in terms of temporal factor.

F. Exercises should be given out successively and taking into account the conditions and characteristics of training with changing the rates and volumes of intensity and rest so that such exercises can be appropriate to members of research sample and their levels of training.

Statistical Means

Statistical Package for the Social Sciences (SPSS) has been used to extract the following steps:-

4. Presenting, analyzing and discussing the results.

4-1 It presents, analyzes and discusses the results of pretests and posttests which are achieved by first group, who jump squats with heavy weights.

Table (2) Shows arithmetic means, standard deviations and measured and tabular (T) value in pre tests and post tests of physical capabilities and the achievement of the first group (squats with heavy weights)

Means of Statistical processing Variables	The unit of measurement	Pre tests		Post tests		The measured value of (t*)	Significance of differences
		AM	SD	AM	SD		
Maximum strengths and powers	Kg	83.75	4.78	92.50	2.88	3.65	Statistically significant
Explosive capability	M	2.53	0.11	2.80	0.09	10.96	Statistically significant
Maximum speed (Achievem of 100 m)	Time	12.76	0.40	12.54	0.30	4.36	Statistically significant

* Tabular value of (T) at significance level of (0, 5) and degree of freedom at (4) is (2.78)

Table (2) shows the following:

Through what is included in table (2), it seems that the measured (T) value for the first group in regards to physical capabilities and level of achievement was greater than the tabular value of (T) which hits (2.87) under the significance level of (0, 5) and the degree of freedom of (4), indicating a statistically significant differences between pre tests and post tests though for the benefit of post tests.

4.2 Presenting, analyzing and discussing the results of pretests and posttests which are achieved by the second group members, who jump squats with light weights.

Table (3) Shows arithmetic means, standard deviations along with measured and tabular (T) value in pretests and posttests of physical capabilities and the completion of the second group (the light squats)

Means of Statistical processing Variables	The unit of measurement	Pre tests		Post tests		The measured value of (t*)	Significance of differences
		AM	SD	AM	SD		
	Kg	82.50	2.88	87.50	1.91	7.07	Statistically significant

Maximum Strengths or powers							
Explosive capability	M	2.60	0.09	2.51	0.08	2.31	Statistically significant
Maximum speed (Achievem of 100 m)	Time	13.14	0.14	12.99	0.14	1.50	Statistically significant

* Tabular value of (T) at significance level of (0, 5) and degree of freedom at (4) is (2.78)

Through what is included in table (3), it seems that the measured value of (T) for the second group in terms of physical abilities and an achievement was smaller than the tabular value (T) which hits (2, 87), the difference was quite significant under the significance level of (0, 5) and the degree of freedom (4) excepting the maximum strength or power, indicating a statistically significant differences between pre tests and post tests though tending for the benefit of post test for the maximum strength.

4.3 Discussing the results of pre tests and post tests for both groups of the research sample

Through observing the results and the statistical parameters of both pre tests and post tests, it can be noted that all differences were significant. The researchers attribute such significant differences to the test of maximum strength, stating that as long as trainings or exercises are well-organized, well-structured, based on scientific principles and consistent with the characteristics and duties of ideal training, then they (exercises) can be of a significant impact on the development and progress. As Qasim Hassan (1980:172) remarks that "the weightlifting exercises are in fact effective means which guarantee the improvement of the strength" ⁽⁹⁾.

Talhah Hussam El-Din states that "training burden is an essential instrument to influence functional levels of body organs in order to achieve a progress in regards to training, i.e. training results in an increase in the ability of athlete performance as a result of performing physical exercises for several days, weeks or months by adapting body organs to specific optimal performance of these exercises"(Hussam El-Din,1993:374) ⁽¹⁰⁾. Such an effort refers to an increase in the capability of an athlete, who exerts every effort and greater volume of strength to overcome the weight of his body along with heavy weights when jumping with heavy weights. Whereas the tension or stress is more oriented to minimize the time (at any speed) when jumping with light weights. This means that both of them have a feature for developing the muscular strength and physical capability, but this does not mean that levels of training or exercises on jumping have much less significant role to be played by athletes.

Mu'tasim Auotoq states that "Athletic results are always achieved through determining balanced proportions between the training volume and intensity of training"(Auotoq,1995: 102) ⁽¹¹⁾This in fact what has already happened in the performance of exercises, which were carried out for 8 weeks and by three training units per week through utilizing various levels of intensities, which proportionate with the ability of each athlete. Such exercises might affect significantly the results of the muscular strength and outcomes of the physical ability in the post test.

The results of the explosive strength were significant between both groups of the research sample. The researchers attribute that to idea that holding on the same level of intensity in training maintains the acquired adaptations but never develops them and here the needs arose for training with proper and new weights. This increase is an example "for realizing the principle of progressive development" (Alqat,1999:36) ⁽¹²⁾. Therefore the oriented training with heavy and light weights to certain muscular sets (muscles of trunk and legs) in this research has led to cause certain changes in these muscles. The researchers agree with the Mufti Ibrahim Hammad, who states that "involving the largest number of muscular fibers and arousing them with the correlation between the nervous and muscular biological systems have increased the volumes of resulted muscular strength and capability and ultimately the contraction rate became higher" ⁽¹³⁾. Hammad confirms that "the *principle of gradualness* has been adopted in exercises, as it has a positive impact on the development of explosive strength and capability and was represented by the test of vertical jumping from solid and squats.

The Development of a particular speed has been achieved by training; in addition, the training relied on resistance figures (the body weight with heavy and light weights) which basically aimed at achieving high burden or loading that exceeds what can be produced by traditional strength training. This qualitative development in terms of strength and capability has positively reflected on the speed development through mobilizing more motor units and engaging them in less time with more ability to overcome the weight of the body in order to achieve faster acceleration by increasing the strength. All the above points led to the emergence of the significant differences between the pre tests and post tests in which the post test were for first group in term of the achievement.

4.4 Presenting, analyzing the results of pre tests and post tests for both groups of the research sample.

Table (4) Shows arithmetic means, standard deviations along with measured and tabular (T) value for post tests of physical capabilities and the achievement between the first and the second groups

Means of Statistical processing Variables	The unit of measurement	1 st group		2 nd group		The measured value of (t *)	Significance of differences
		AM	SD	AM	SD		
Maximum Strengths	Kg	92.50	2.88	87.50	1.91	2.88	
Explosive capability	M	2.80	0.09	2.51	0.08	4.67	
Maximum speed (Achievem of 100 m)	Time	12.54	0.30	12.99	0.14	2.60	

* Tabular (T) value at significance level of (0, 5) and degree of freedom of (6) is (2.45)

Through what is included in table (4), which deals with results of post tests for physical abilities, it seems clear that all measured (T) values are higher or greater than the tabular (T) value, which records (2.45) at the significance level of (0.05) and at freedom degree of (6), indicating statistically significant differences between both experimental groups of research sample though tending for the benefit of the experimental group.

4.3 Discussing the results of post tests for both groups of the research sample.

It can be noticed through the above table that there are differences in arithmetic means and standard deviations between the two groups in variables of maximum strength, explosive ability and variable of maximum speed (the achievement) and were explained by results of post tests. The development in results of jumping squats with heavy weights group was much faster the jumping squats with light weights. This means that kinetic path of the first group was faster than that of second group and this can be attributed to the greater amount of resistance of the second group. The relationship between strength and speed is an inverse one, the bigger the resistance, the slower the speed. The performance of exercises by the first group was to develop and improve the explosive capability and strength at higher speed and this in turn stimulates the nervous system to perform speedily. The researchers agree with Mohammed Hassan Allawi and Ahmed Abū al-'Ulāa' that "extensibility feature of muscles contributes to increase the speed of kinetic performance in applied exercises" (Allawi & Abū al-'Ulāa',1984:139). In order to have explosive capability coupled with highest instantaneous speed in training on jumping with body weight or relatively added light weights, best ever achievement can be attained within accessible means.

Mehdi Kadhim Ali confirms that "the increasing of susceptibility to jump does not generally depend on the maximum strength of weight lifting but drawing upon exercises of jumping with body weight or lightweight (Ali,1995:338).

3. CONCLUSIONS:

1- Exercises of jumping squats with heavy and light weights affected the explosive capability and strength along with particular speed.

2- Training with heavy squats is better than training by jumping squats with light weights to develop the maximum strength and special speed.

4. RECOMMENDATIONS:

- 1- Resistance weight trainings and exercises in jumping squats with light weights to develop the explosive strength.
- 2- Training by using half jump squats and **quarter jump squats** with more heavy weights than the light weights particularly by 100m runners

5. RESOURCES

1. Hussam E. T. (1993). *Biomechanics: Theoretical and Practical Basics*. Egypt: Dar al-Fikr al-Arabi press.
2. Hussein. Q. H. (1980). *Isotonic Training in the Field of Sport Activities*. Baghdad: Al Watan Al Arabi press.
3. Alqat, M. A. (1999). *The Functions of Sports Training Members: An Applied Introduction*. 1st floor, Cairo: Dar al-Fikr al-Arabi.
4. Auotoq. M. (1995). *The Coach's Guide in Science of Sports Training*. Syria: Library of Training Centers.
5. Hammad. M. I. (1998). *Modern Sports Training: Planning, implementation and leadership*. 1st Edition, Cairo: Dar al-Fikr al-Arabi press.
6. Ali. M. K. (1995). A Study of Some Applied Methods to Develop the Speedy Strength in Triple Jump. *Journal of the College of Physical Education*, Baghdad University, 15, 338.
7. Khalaf. Q. J. & Haider. A. K. (2014). *Idiosyncrasy Sports*. 1st Edition, Diyala: University Central Press.
8. Abdul Basir. A. (1999). *Sports Training: An Integration between Theory and Practice*. Cairo: Markaz Dar Alkuttub (Center of Books Press).

Appendix 1

Model of the Training Module for the First Group (Heavy Squats)

Week	Exercise	Intensity	Duplications
I	Full Squat	75%	4 * 2
	1/2 Squat		6 * 2
	1/4 Squat		8 * 2
II	Full Squat	80%	4 * 2
	1/2 Squat		6 * 2
	1/4 Squat		8 * 2
III	Full Squat	90%	3 * 2.
	1/2 Squat		3 * 2
	1/4 Squat		3 * 2

Model of the Training Module for the First Group (Light Squats)

Week	Exercise	Intensity	Duplicates	Notes

I	Full Squat 1/2 Squat 1/4 Squat	40%	4 * 2 6 * 2 8 * 2	
II	Full Squat 1/2 Squat 1/4 Squat	50%	4 * 2 6 * 2 8 * 2	
III	Full Squat 1/2 Squat 1/4 Squat	60%	3 * 2 3 * 2 3 * 2	