International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 04, 2020
ISSN: 1475-7192

Comparative study Of Absolute Strength and EMG of Weightlifter's Arms and Legs Muscles

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Abstract

Comparative study Of Absolute Strength and EMG of Weightlifter's Arms and Legs Muscles are attitudes and factors that affect maximum strength training one of these factors is the size of the muscle. The researcher compared the size of arms and legs muscles from the absolute strength point of view.

The research aimed at :

1- Identifying the differences between arms and legs muscles in absolute strength of weightlifters.

The researcher selected a random sample from the students of physical education and sport sciences/ university of Baghdad. The subjects were (6) weightlifters. Absolute strength tests were conducted on arms and legs. The data was collected and treated using SPSS.

The researcher concluded that arm muscles were higher in absolute strength compared to legs. He finally recommended the necessity of using EMG for developing absolute strength in muscles.

KEYWORDS: *EMG, Weightlifter's, Arms and Legs Muscles*

I. Introduction

1-1 Introduction of the research and its importance

The maximum strength is one of the most important physical capabilities because it affects the development of the physical side likewise ,in the rest of the cabailities on the other hand ,and since the maximum force has such a status, the factor affecting it are many,and from that ,it is more important to know the relative wight of the parts of the body in order to know the absolute strength of each part separately , Types of strength are still under the philosophy of training science and they need to a lot of reconsideration to keep pace with the progress made in various areas of sport, and perhaps (the super strength) that is considered one of the types of strength that left an opened controversy is still the subject of discussion among the concerned persons

1-2 Research problem

Strength maximum is considered as one of the most important types of strengths and the prevailing idea around it still indicates that it appears only under a certain emergency, such as panic, fear, electrical stimulation and other things that press on a person,The area of the cross section of the muscle is one of the most

Received: 15 Jan 2020 | Revised: 5 Feb 2020| Accepted: 30 Mar 2020

important factors affecting strength and this and the enjoyment of the muscles of the legs ,but if the maximum strength was measured according but rather there are training methods by which it is possible to develop this important physical characteristic as a type of force, and by this we try in our research to get to these methods in order to solve the problem of randomness in classifying cases in which the great strength appears and there is no better way than training with a negative range of movement.

1-3 Research objectives

1- Identify the differences between the muscles of the limbs arms and legs according to absolute strength

2- Identify the differences between the muscles of the limbs arms and legs in the electrical activity of the muscles

1-4 Research hypotheses

1-There are significant differences between the muscles of the limbs of the legs, the arms according to the absolute strength in favor of the muscles of the arms

2-according to the electrical activity of the muscles in favor of the muscles of the legs

Fields

1-5-1 The human field: - student of Physical college and sports sciences / University of Baghdad from weightlifters.

1-5-2 Timeline: - Wednesday 28/1/2019 until 26/3/2019

1-5-3 Spatial domain: - Weightlifting Hall / College of Physical Education and Sports Science

II. Theoretical and previous studies

2-1 Theoretical studies.

2-1-1 Exercises for strength reserves

Many sources emphasize that there are reserves that exceed the extreme limits that a person makes in certain cases, thereby confirming that the human does not use all his powers in natural situations but rather needs an external stimulus to provoke him towards the exclusion of these limits that exceed the limits and this is what they call the great strength. But the most important thing comes through clarifying the extent of trust in this vision and whether it is really that the superpower (the subject of the research) does not come out except under a specific emergency influence or there are ways by which these reserves could be taken out by force, especially with athletes in the activities of strength and perhaps the answer to these questions could be Interpreted by one of the training methods confirmed by some sources which is special exercises for specific muscle groups whose training content is up to (90%), means exceeding the athlete's maximum abilities. These exercises aim to stimulate muscle groups at high rates above the threshold Maximum excitement, but the movement of the exercise towards the ground gravity and the work of resistance to the weight of the weight by the player,

provided that there are two assistants are recovering the weight to its first position and then the player returns the performance to do the next repetition and so on. This is confirmed by (Mohamed Reda) in that the use of the intensity that exceeds the sport 's maximum strength by athletes who have a strong background of strength training including the application of this intensity using the method of decentralization by the upper-level quadrants who use percentages between (90%) of Maximum intensity for each exercise (3-4) times per week, taking into account the availability of assistants to the athlete when performing this intensity to avoid injuries during the exercise.

III. Research methodology and field procedures

3-1 Research methodology: The researchers adopted the descriptive method in the method of comparisons, and its angels of the research procedures

3-2 Research community and its sample

The researcher chose a random sample consisting of 6 players from students of the College of Physical Education and Sports Science whose countries are 70-80 kg and homogeneity was calculated in the measure of time age and body weight. Training age, which is shown in the table

skewensee	standard deviation	, median	mean	variables
0.305	1.63	20.50	20.66	lifetime
0.575	6.96	77.50	76.16	wigth
0.166	12.92	42	42.50	Age training

3-3 The means, tools and devices used

Observation –measurement and testing - iron weights - weightlift from 1-25 kg - medical scale - camera - electrical signal planning device

3-4 Field research procedures

The researchers have identified the physical test commonly used in the sport of weightlifting to measure the maximum strength of the muscles of the legs (squat) and also (pinj press) to measure the muscles of the arms as well as to measure the electrical activity of the muscle groups involved in the performance of the same tests, the researchers have relied on identifying these tests on scientific sources as follows :

1- Name of the test: Back Squat - (knees bent and extended from standing with iron lift)

Devices and tools used in the test: - Shaft iron (bar), iron discs , different weights, leather belt.

Received: 15 Jan 2020 | Revised: 5 Feb 2020| Accepted: 30 Mar 2020

The purpose of the measurement: - To measure the maximum strength of the quadriceps femor muscles of legs .

Method of performance: The player stands and holds the iron behind the neck on the shoulders from the back and grabs the iron from the sides with both hands and when given the starting signal the player bends the knees completely and stands again.

Recording method: The player is given three attempts, which are calculated according to the weight lifted.

2- Name of the test Panj Press (bending the arms and extending them from lying on a flat bench):

Test purpose: To measure the maximum strength of the arms .

- Used equipments :

1- Iron shaft weighing (20) kg.

2- Iron discs of different weights from (0.5 kg to 25 kg).

3 – Bench for exercising iron bar pressure with two hands (Banj Press).

The method of performance: The player lies on the flat bench , and carries the iron from the iron carrier over the chest and grabs the iron from the sides with both hands of equal dimensions, and when given the starting signal, the player fully bends both arms to the chest level and then the full extension of both arms.

Recording method: The player is given three attempts, which are calculated according to the weight lifted.

Secondly. Physiological tests

First: - Measuring the electrical activity of muscles (EMG)

The electrical activity of the anterior rectus muscles of the thighs has been recorded, by linking a device to measure the electrical activity of the muscles to the femoral straight muscle during the physical performance, squat back - leg, and the electrical activity of the three-headed brachial muscles has been recorded, by linking the device to measure the electrical activity of the muscles to the Brachial muscle during the Performance of Punj test, the results have been analyzed and highest electrical signal of the muscle (peak) has been extracted in a unit of measurement (micro volt)

3-4-2 Exploratory experience

It is a mini-experiment for the used tests, in which some conditions are available to get benefit of its results, as well as identifying the total time of the tests and defining the auxiliary team * with what is required of them. The exploratory experiment has been conducted in physical tests on Wednesday (28/1/2019) on a sample of 2 players outside the research sample.

3-4-2 Table of body parts weight ratios

The researchers used the absolute strength of the muscles of the arms legs written by the table

3-4-3 The main experiment.

%7	%7.06	head
%43	%42.7	, torso
%12	%11.58	thigh
%5	%5.27	leg
%2	%1.79	foot,
%3	%3.36	upper arm
%2	%2.28	forearm
%1	0.84	shoulder

It was conducted on the individuals of the research sample on Monday in the laboratory of the College of Engineering Al-Khwarizmi. The maximum strength tests included the arms and legs as well as measuring the electrical activity of the humeral triceps quadriceps

3-5 Statistical means

Researchers used the statistical bag of social sciences to extract research results

IV. The results are presented and discussed

4-1 Display and discuss the results of the maximum strength and electrical activity of the muscles of the research group.

4-1-1 Present the results of the maximum strength and electrical activity of the muscles

sig	E-Value	t	standard deviation	mean	test	
	0.010	20.709	0.44261	4.4433	Absolute Strength to leg	

معنوي			0.81288	12.2683	Absolute Strength to arm	

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-Means Moral under error level ≤ (0.05) and degree of freedom (10)

4-1-2 Present the results of the maximum strength and electrical activity of the muscles

test	sig	E-Value	t	standard deviation	test	
	0.030	2.530	453.50311	1631.3333	Measuring the electrical activity of the leg	1
			116.83279	1147.5000	Measuring the electrical activity of the arms	2

-

Means Moral under error level ≤ (0.05) and degree of freedom (10)

4-1-3 Discuss the results of the maximum strength and electrical activity of the legs and arms muscles:

The results of the absolute strength between the muscles of the two legs of the arms are greater than the muscles of the arms, despite their small size compared to the muscles of the legs, but the force outputs of the arms came greater because the distribution of the weight lifted by each one kilogram of the arm has a higher value than the strength outputs of the muscles of the legs and all of that is shown by the intent of measuring the strength of each part on Sharpness, whether the legs or arms, which is called absolute strength, which leads us to not involve other muscle groups during the exercise. The researchers believe that the reason for the superiority of the arms of the arms is due to the fact that the arms do not carry a lot of fat compared to the two men, as Al-Fadhli explicitly emphasizes that the increase in strength is due to the first two results from the decrease in the percentage of fat and the second is the increase in the absolute strength of the parts of the body. It is not the

most important and the prevailing influence as a major factor in the output of the maximum force, but there are other effects. While it is clear from the second table that the electrical activity of the muscles of the two legs came out superior to the muscles of the arms and this is subject to the influence of another factor affecting the maximum force, which is nervous equipping the muscles. Regulates the genesis and strength of contractility in the muscles to obtain maximum contractility, The use of a method in this method from the nervous system comes as an alternative to the cross-sectional area, as the high-speed frequency of the nervous question and the amount of the height of the curve that represents the top of the muscle contraction when measuring the signal shows that the maximum strength is affected by exercises moderately and development is due to the nerve cell that controls the muscle fiber

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Received: 15 Jan 2020 | Revised: 5 Feb 2020| Accepted: 30 Mar 2020