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## THE EFFECT OF USING DIFFERENT RESISTANCE IN THE DEVELOPMENT OF THE RELATIVE STRENGTH AND ABSOLUTE ARM AND LEGS AND COLLECTION KINETIC EFFECTIVENESS SHOT PUT OF STUDENTS

RAED FAEQ ABDUL JABBIER<sup>1</sup>, GEVAT CECILIA<sup>2</sup>

### Abstract

*Aim:* to identify the absolute and relative force of the muscles of the arms and legs and the level of achievement of the effectiveness of kinetic extrusion shot put for the second phase of students for the academic year 2014-2015. Identify the training effect using different resistances in the development of the absolute and relative force of the muscles of the arms and legs and the level of achievement of the effectiveness of kinetic extrusion shot put for the second phase of students for the academic year 2014-2015. . Identify the differences in the post tests for the two experimental and control the impact of training using different resistances in the development of the absolute and relative force of the muscles of the arms and legs and the level of achievement of the effectiveness of kinetic extrusion shot put for the second phase of students for the academic year 2014-2015.

*Method.* The researchers used the experimental approach to the suitability nature of the problem. the research community and appointed: population comprised students of the second phase in School Physical Education - University of Sulaymaniyah for the academic year (2014-2015) totaling (120). Was selected sample of students and only those who achieved the best record numbers during the performance of these exams effectiveness totaling (14) The student has been to divide them a control group and experimental group each (7) students and random in a manner. Test the absolute and relative force of the legs and arms. Is calculated relative force through the application of the following equation . whether to link arm or leg or trunk as well as training to jump over inhibitions heights special and application of the ropes rubber performance movements (6-8 iterations) number totals (4) rest between aggregates (2-4 minutes) and intensity used (80-90%), This is the change in resistance through the addition of mass to the body during the execution of performance exercises. The rest time between iterations was adopted researchers time to rest ratio of time to work, and the training is training two units per week for a period of (10) a week so that the total number of units (20) and a training unit. And the control group only used body mass in her exercises plus motor performance and complementary exercises. Statistical bag was used (SPSS) in the treatment of these results.

*Results.* The experimental group showed that the value of (t) calculated for the variables of the absolute and relative force of the leg, arms are smaller than the significance level (0.05) This means that there is a difference between the results of pre and post tests and in favor of the post. The experimental group showed that the value of (t) calculated in the variable Kinetic collection is smaller than the significance level (0.05) This means that there is a difference between the results of pre and post tests and in favor of the post.

*Conclusion.* The results showed that the experimental group had a clear evolution in the absolute and relative force of the muscles of the arms and legs and the level of achievement and performance.

The results showed that the differences were in favor of posttest measurement in absolute and relative force of the muscles of the arms and legs and the level of achievement and performance for the two experimental and control group.

*Key words:* different resistance, relative and absolute Force, collection kinetic, shot put .

### Introduction

Muscle power is one of the important indicators of physical and effective for extending the application of physical and kinetic performance of the different events and throwing ejaculation. As well as it represents one physical indicators upon

which to achieve the best achievement in throwing events and ejaculation in general and especially the effectiveness of the shot put , It is a mechanical act to change the movement of the body both when the transitional movements performed by the players ejaculation shot put, whether horizontal or vertical,

<sup>1</sup>Faculty of Physical Education and Basic, Suleiman of University, IRAK

<sup>2</sup> Ovidius University of Constanta, ROMANIA

E-mail: dr\_raedsport@yahoo.com

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most sources indicate that the research and shot put ejector is characterized by good muscle strength in order to be able to achieve a better standard of digital, As a result of this force necessary when performing movements within throwing and ejaculation in athletics, including the effectiveness of ejaculation shot put and the need to perform at this event .

Like other ejaculation shot put events that digital level depends on the flow of the performance according to the amounts of applied force that can be produced by the muscle groups working on the joints with the ejector while performing effective ejaculation shot put. To talk about the absolute force produced by the muscles working for the effectiveness of the shot put ejector in that, and that you should always take into account the proportion to body mass, the relative relationship between the absolute force and body mass known relative muscle force. So is the importance of research in the design of a training program using resistors different and the extent of its impact in the development of the sheer force and relative and achievement in the effectiveness of ejaculation shot put for the students, as seen researchers that in the process lessons and private lessons of track and field in general and the effectiveness of throwing and ejaculation need training indicators illustrate and define muscle force to be met with the students to get to their level of achievement of the best

There are many training problems, including the problem of the development of the manifestations of muscle force absolute maximum force it to muscle groups and not others, to develop maximum force the consequent the development of other manifestations muscle force, As some of them did not take into account the importance of absolute force and relative applied when performing the effectiveness of ejaculation shot put and the extent of the relationship between them and the evolution of the maximum force of any link from links the body, and the effectiveness of the maximum force, for example, the muscles of the arms or legs in dealing with the body as a whole block in the performance efficiency and What we need from amounts of force, So the researchers considered this issue scientific problem where they wanted to go as necessary to training programs build absolute maximum force required to perform according to the joints and muscles working on them, Which requires us to go to a new type of kinetic loads paths your performance and that also makes it imperative for researchers to determine the appropriate intensity for these muscles and the method for determining the size and comfort, Where it should fit into these bases and in accordance with the privacy of the sports body and

is characterized by the Motor system and the nervous system - the muscular sets it apart from the rest of the objects, which give him privacy in the application of force, depending on the joints that share a large margin in the performance of extrusion shot put, Such exercises require the selection of appropriate resistance (weight) and the tool used by the gradient in order to develop muscle force private muscles contribute to motor performance, And the impact of this development in the absolute and relative maximum force, and in order to put those in charge of training or educational process as an indicator of the evolution in their programs, especially when training effectiveness extrusion shot put.

Research goals to identify the absolute and relative force of the muscles of the arms and legs and the level of achievement of the effectiveness of kinetic extrusion shot put for the second phase of students for the academic year 2014-2015. Identify the training effect using different resistances in the development of the absolute and relative force of the muscles of the arms and legs and the level of achievement of the effectiveness of kinetic extrusion shot put for the second phase of students for the academic year 2014-2015. . Identify the differences in the post tests for the two experimental and control the impact of training using different resistances in the development of the absolute and relative force of the muscles of the arms and legs and the level of achievement of the effectiveness of kinetic extrusion shot put for the second phase of students for the academic year 2014-2015. Research hypotheses to There are significant differences between the absolute and the relative force of the arms and legs and collectable kinetic to extrusion shot put between tribal tests and post the two groups. There are significant differences between the absolute and the relative force of the arms and legs and collectable kinetic extrusion Shot Put a posteriori tests between the two groups in favor of the experimental group.

#### **Experimental protocol**

The researchers used the experimental approach to the suitability nature of the problem. the research community and appointed: population comprised students of the second phase in School Physical Education - University of Sulaymaniyah for the academic year (2014-2015) totaling (120). Was selected sample of students and only those who achieved the best record numbers during the performance of these exams effectiveness totaling (14) The student has been to divide them a control group and experimental group each (7) students and random in a manner. collection tools used data and devices, Personal interview , The Observer , Devices used Weights and discs and different medical balls weights , brassieres burdened



different weights , Pulleys device , Different elevations contraindications.

Used tests, Test the absolute and relative force of the legs and arms. Is calculated relative force through the application of the following equation (5: 362) , Relative force = maximum strength in legs or arms / body mass , training curriculum , It has been prepared workouts so based on experience researchers and some specialized sources, training for muscle force and absolute relative to the arms and legs and adopted in determining the intensity of training which amounts to maximum force for each of the arms and legs and obtained by the researchers of the tests, Was implemented exercises through design weights or special weights are training them and according to the inertia law using a single variables, whether to link arm or leg or trunk as well as training to jump over inhibitions heights special and application of the ropes rubber performance movements (6-8 iterations) number totals (4) rest between aggregates (2-4 minutes) and intensity used (80-90%), This is the change in resistance through the addition of mass to the body during the execution of performance exercises. The rest time between iterations was adopted researchers time to rest ratio of time to work, and the training is training two units per week for a period of (10) a week so that the total number of

**Results**

Table 1. Demonstrates statistical values to the variables of the absolute and relative force of the arms and legs in the experimental group before and after the tests.

Variable	TesTs	n	X±SD	F	p
Relative strength of the arms	Pretest	7	0.281±0.008	9.357	0.000
	Posttest	7	0.327± 0.019		
Absolute force of the arms	Pretest	7	17.765± 0.435	13.579	0.000
	Posttest	7	20.684± 0.322		
Relative strength of the legs	Pretest	7	0.964±0.049	20.208	0.000
	Posttest	7	1.163± 0.057		
Absolute power of the legs	Pretest	7	61.215± 3.588	18.291	0.000
	Posttest	7	73.666± 3.698		

Upon the degree of freedom (6) the level of significance is less than or equal to (0.05). Shown by Table 1. There is a significant differentials between pretest and posttest and in favor of post-test experimental group where the value of (T) calculated respectively (9.357, 13.579, 20.208, 18.291) when the probability level (0.000, 0.000, 0.000, 0.000), which is less of the significance level (0.05).

Table 2. Demonstrates statistical values for collectible kinetic experimental group tested before and after

Variable	TesTs	n	X±SD	t	p
Performance	Pretest	7	2.428± 0.345	1.017	0.000
	Posttest	7	6.071± 1.017		
Accomplish	Pretest	7	7.910± 0.164	18.073	0.000
	Posttest	7	9.168± 0.223		

Upon the degree of freedom (6) the level of significance is less than or equal to (0.05). Shown by Table 2. There is a significant differentials between pre and post tests and in favor of post-test experimental group where the value of (T) calculated respectively (12.021, 18.073) at the

units (20) and a training unit. And the control group only used body mass in her exercises plus motor performance and complementary exercises.

Exploratory experiment, the researchers conducted an exploratory experiment of the purpose to make sure of the vocabulary of the training curriculum and its applicability and validity of the cameras and Team Assistant to work. tribalism tests, Tribalism tests were conducted on a sample of the research on the date 8 /01/2015, as was filmed three attempts that were given to the research sample for the purpose of performance, as well as achievement, and the date (9/01/2015) conducted to measure the absolute power of the arms and legs of the sample tests. posteriori tests , Posteriori tests were conducted on the date (9 - 10.03.2015) and applied the same conditions and measurements and procedures used by the researchers in the tribal tests

Data Analysis;-

Statistical bag was used (SPSS) in the treatment of these results and by the following laws: (arithmetic mean. Standard deviation, the test (t) of the analog samples, test (t) for the independent samples).



level of probability (0.000, 0.000), which is less than the significance level (0.05) .

Table 3. Shows the statistical values to the variables of the absolute and relative force of the arms and legs of the control group for the tests before and after

<i>Variable</i>	<i>TesTs</i>	<i>n</i>	<i>X±SD</i>	<i>F</i>	<i>p</i>
Relative strength of the arms	Pretest	7	0.281±0.007	13.748	0.000
	Posttest	7	0.308± 0.006		
Absolute force of the arms	Pretest	7	17.794± 0.441	13.599	0.000
	Posttest	7	19.364± 0.567		
Relative strength of the legs	Pretest	7	0.967±0.491	6.757	0.001
	Posttest	7	1.084± 0.057		
Absolute power of the legs	Pretest	7	61.251± 3.584	6.965	0.000
	Posttest	7	68.841± 4.698		

Upon the degree of freedom (6) the level of significance is less than or equal to (0.05). Seen from Table (5) There is a significant differentials between pre and post tests and in favor of post-test of the control group, where the value of (T) calculated respectively (13.748, 13.599, 6.757, 6.965) at the level of probability (0.000, 0.000, 0.001, 0.000), which is less of the significance level (0.05).

Table 4. Shows the statistical values for the collection of kinetic control group of tests before and after

<i>Variable</i>	<i>TesTs</i>	<i>n</i>	<i>X±SD</i>	<i>F</i>	<i>p</i>
Performance	Pretest	7	2.286±0.393	9.682	0.000
	Posttest	7	4.071± 0.787		
Accomplish	Pretest	7	7.826± 0.302	4.610	0.004
	Posttest	7	8.204± 0.390		

Upon the degree of freedom (6) the level of significance is less than or equal to (0.05). Seen from Table.4. there is a significant differentials between pre and post tests and in favor of posttest control group where the value of (T) calculated respectively (9.682, 4.610) at the level of probability (0.000, 0.004), which is less than the significance level (0.05).

Table 5. Shows the statistical values to the variables of the absolute and relative force of the arms and legs for the two experimental and control group in the post tests

<i>Variable</i>	<i>TesTs</i>	<i>n</i>	<i>X±SD</i>	<i>F</i>	<i>p</i>
Relative strength of the arms	Control	7	0.308±0.006	2.456	0.030
	experimental	7	0.327± 0.019		
Absolute force of the arms	Control	7	19.364± 0.567	3.411	0.005
	experimental	7	20.684± 0.322		
Relative strength of the legs	Control	7	1.084±0.057	2.586	0.025
	experimental	7	1.163± 0.057		
Absolute power of the legs	Control	7	68.841± 4.080	2.279	0.042
	experimental	7	73.666± 3.698		

Upon the degree of freedom (12) the level of significance is less than or equal to (0.05). Shown by Table.5. There is a significant differentials in the post tests between the experimental and control groups And in favor of the experimental group, where the value of (T) calculated respectively (2.456, 3.411, 2.586, 2.279) at the level of probability (0.030, 0.0005, 0.025, 0.042) which is less than the significance level (0.05).

Table 6. Shows the statistical values for the collection of kinetic for the two experimental and control group in the post tests

<i>Variable</i>	<i>TesTs</i>	<i>n</i>	<i>X±SD</i>	<i>t</i>	<i>p</i>
Performance	Control	7	4.071± 0.787	4.113	0.001



	<b>experimental</b>	<b>7</b>	<b>6.071± 1.017</b>		
<b>Accomplish</b>	<b>Control</b>	<b>7</b>	<b>8.204± 0.390</b>	<b>5.669</b>	<b>0.032</b>
	<b>experimental</b>	<b>7</b>	<b>9.168± 0.223</b>		

Upon the degree of freedom (12) the level of significance is less than or equal to (0.05). Shown by Table.6. there is a significant differentials in the post tests between the experimental and control groups And in favor of the experimental group, where the value of (T) calculated (4.113, 5.669) at the level of probability (0.001, 0.032), which is less than the significance level (0.05).

### Discussion

Seen from the table (2) the existence of a function of statistical differences between the experimental group tests and post-test in favor of variable relative and absolute **force** of the arms and legs and This is due researchers This development is that training using resistors who consort adopted with scientific bases in determining the intensity required to develop muscle **force** aggregates responsible for the duty and basic kinetic of the arm and legs to the player extrusion shot put, The relative **force** means Maximum **force** (absolute) for a set of muscles and links in the body to deal with the total body mass, so when you increase the amount of **force** relative to this link results in the development of the efficiency of the muscles of set that link in dealing with body mass, which represents dealing with the influential force of gravity directly to the college body mass, which is one of the basic requirements to overcome this force. (Paish. W. 1994).

As for the table (4) the existence of a function of statistical differences between the tests the experimental group and in favor of post-test in kinetic collection variable (performance, achievement) and attribute the authors of this development to be flowing in the motor transport between the stages after he was kinetic path corrected through training, which led to the development of the level of performance and make it appear a good positive response, That gave special corrective information requirements of the performance was an active role as inputs are arranged through the senses to achieve the achievement, which suited with mechanical indicators as a result of what has been true to his performance of linking stages flowing performance in the transfer of power and speed behavior. "As the development stages of performance (a behavior kinesthetic) can evolve through an emphasis on a particular variable link and certain response that have an impact on these learning stages". (Bastawisi Ahmad, 1996).

As for the tables (3-4) the existence of a function of statistical differences between tribal

tests and post to the control group and in favor of post-test in the variables of the relative and the absolute **force** of the arms and legs, as well as kinetic collection, the researchers attribute to the use of resistance exercises body mass may have led to the development of relative and absolute **force** of individuals the control group. As well as the level of performance and achievement because the training using body mass resistance is also an event change in the productive **force**.

As for the table 5) the existence of a function of statistical differences between the posttests between the two groups in favor of the experimental group in the variable relative and absolute **force** of the arms and legs, Researchers attribute it to the experimental group had used resistors and through the exploitation of one of inertia and variables of mass added to the leg as a disabling contribute to the development of maximum muscle **force** confrontation, As well as the muscles responsible for this confrontation is the leg muscles working mainly, which represent a small percentage of the total body mass and responsibility of the events of the movement and the speed of change that part of the body, Since this type of training results in the evolution of the physiological side during of the effort time that lead him these exercises in addition to the development of such a force as possible to be a cause of this link movement of the body, which is the real reason to change the whole body movement. The development of maximum **force** leads to the development of other indicators of **force**. As **force** training for various mechanical indicators and physical large muscle and speed and characteristic speed **force** and absolute and relative **force** (Dixon, 1996), this means that the muscle contraction decentralized exercises with added mass, which produces a negative any work accomplish mechanically Side be effective in the production of muscle strength over the central contraction (Hinson, Marily and Rosentswieg, Joel. 1990). Because almost less than half of the muscle fiber only shrinking decentralized and which results in the performance of duty motor, The central contraction shall be his duty to control the movement under an external stimulus is important to understand these two variables in motion (Assmussen, 1991).

As for the table (6) the existence of a function of statistical differences between the posttests between the two groups in favor of the experimental group in kinetic collection (assess



performance and achievement) and that this result back to That exercises the special force needed by the player extrusion shot put, according to the performance of the skill have given them the opportunity to acquire a motor skill speed and accuracy requisite of the variable according to the real requirements, As the dealing with one of variables the inertia and by the application of mechanical conditions led to the development status and links to the appropriate body and angles that have been emphasized during training on the principle of the inertia. As well as the feedback has contributed significantly to the application of the correct angle for all stages of performance and a special moment the launch shot put. To get the right situation in the flinging stage with the exploitation of physical indicators to participate in the launch angle to get fit in with these factors, which in turn increase. The extent of the extrusion shot put and achieves best distance. In addition to the feedback regarding the information corrective provided to them, which resulted in a change in performance with improved agrees sensory processes resulting from reference to this information with the level of kinetic performance (Bastawisi, 1996). Thus advancing see that duty kinetic the basic working performance of the joints, Accompanied by a positive development in the amount of sheer force of these muscles, which leads to increase the **force** of the ligaments and muscles peripheral joints such a proportional relationship between them (Talha, 1993).

### Conclusions

The results showed that the experimental group had a clear evolution in the absolute and relative force of the muscles of the arms and legs and the level of achievement and performance. The results showed that the control group had a clear evolution in the absolute and relative force of the muscles of the arms and legs and the level of achievement and performance. The results showed that the differences were in favor of posttest measurement in absolute and relative force of the muscles of the arms and legs and the level of achievement and performance for the two experimental and control group. The results showed that the differences in absolute and relative force of the muscles of the arms and legs and the level of achievement and performance in posttest measurement of the experimental group were better than the control group. As recommendations: It is possible to use the exercises used to search to their importance to improve the reality absolute and relative force of the arms and legs to the player's shot put. Necessity to build programs and methods of modern training. According to the theory of inertia, which inevitably leads to the development of achievement and performance and force. To do

periodic measurements to monitor and diagnose faults and imbalance in performance and build programs for the purpose of upgrading them. Conducting similar studies and research on other sporting events.

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### References

- Assmussen, E. 1991, Muscular Performance, in Muscle as a Tissue, Edited by K. Rod Ahl and S. N. Horvath. New York. Mc. Jraw – Hall Book Company, 1991, pp.18–19.
- Bastawisi Ahmad, 1996, Foundations and theories of movement, I 1, Cairo: House of the Arab Thought 0.1996
- Dxion, Joseph, 1996, the men's throwing events, I ted, British Library 1996, p.72.
- Hinson, Marily and Rosentswieg, Joel. 1990, Comparative Electromyography values of Isometric – Isotonic and Isokinetic Contraction, Research Quarterly, 1990, p78.
- issam Abdel-Khalek, 1999, Sports training - theories - applications, I 9, Alexandrina, Knowledge House 0,1999.
- Paish. W. 1994, Someinitedabserivtions on the new mensdascaus In. new studies in Athletics vole- 2- 1994. 3. p. 82.
- Talha Husamuddin. 1993. Biomechanics, I 1, Cairo: House of the Arab Thought, p.45