

Compound Exercises to Develop Rapid Strength and Achieve the Weightlifting Class (F40) for the National Team Players in Athletics for the Disabled

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Abstract

There are many differences for athletes with disabilities, including the category of short stature, category (40), whose height does not exceed (125-130) cm, and the length of the limbs of their body is shorter compared to the specifications of healthy athletes. The importance of the research lies in the use of compound exercises that serve the physical aspects of the effectiveness of pushing the weight for the category of short stature in order to identify the strengths and weaknesses, not the technical performance of this activity in order to modify them using compound exercises and thus develop their technical performance. The results that will be reached are considered as foundations to be relied upon by the trainers and those interested in training or practicing this activity, and the problem of the research was in the weakness of some of the physical abilities of the weightlifting players, the category of short stature, and their development during the preparation of complex exercises by the researcher to achieve the best achievement. The research is the preparation of complex exercises to develop rapid strength and achieve the weight-push class (40 F) for the national team players in athletics for the disabled, And to identify the effect of the use of compound exercises to develop quick strength and achieve the weight pushing category (40 F) for the national team players in athletics for the disabled, and the research hypothesis was that there were statistically significant differences between the pre and posttest for the development of quick strength and the achievement of pushing the weight category (40 F) for the team players The national athletics team for the disabled, and the researcher used the experimental method in a one-group style, and the research community was the research community. The researcher chose the research community in a deliberate way, and they represent the weightlifting players of the category (F40) in the national team in athletics for the disabled, and the number of them is two players, who represent the original community by (100%). The most important conclusions were that the compound exercises prepared by the researcher contributed to the development of the rapid strength of the arms and legs of the national team players in athletics for the disabled.

1- Introduction to Research

1. 1-Introduction And Research Importance :

The weight-pushing activity is one of the throwing activities in athletics for healthy people as well as for people with disabilities. This activity takes place under the framework of the laws of

objects ejected at a certain angle with the horizon, taking into consideration the three physical laws of Newton and their application to the geometric path, whether this path is linear or rotational, where the distance of the horizontal tool is subject to pushing the weight to obtain the achievement. There are many differences for athletes with disabilities, including the category of short stature, category (40), whose height does not exceed (125-130) cm, and the length of the limbs of their body is shorter compared to the specifications of healthy athletes. Hence, the player must be psychologically prepared during practical and theoretical training, due to the differences in morphology and anthropometric aspects, and the application of the correct and appropriate biomechanical conditions for their specifications, as well as the training method used and the extent of its reliance on the precise scientific method to serve the goal. Hence the importance of the research in the use of compound exercises that serve the physical aspects of the effectiveness of weight-pushing category of short stature in order to modify them using compound exercises and thus achievement.

2-1. Research Problem

Despite the availability of studies and research that study the effectiveness of weight lifting for healthy people, but there is a dearth or lack of research that deals with the study and analysis of special weight throwers, and that there are many problems that need to be studied and stopped by preparing appropriate exercises for them and accurate scientific analysis for the purpose of their arrival in achieving the best achievements.

By noting the researcher being an athletics coach for people with disabilities that there is a weakness in the ability of the fast -acting force and the failure to use modern exercises that keep pace with scientific development in the field of sports training

Accordingly, the problem of the research lies in the weak ability of the rapid strength of the weightlifting players, the category of short stature, to develop it by preparing complex exercises by the researcher to achieve the best achievement.

1-3. Research Objectives

The research aims to:

1. Preparing complex exercises to develop rapid strength and achieve weight-bearing class(40 F)For the national team players in athletics for the disabled.
2. Recognize the effect of using compound exercises to develop rapid strength and achieve weight -bearing class 40 (F) for the national team players games has powers for the disabled.

1-4. Research Hypotheses

- There are significant statistically significant differences between the pre and post test for the development of rapid strength and the achievement of pushing the weight class .(40)F (For the national team players in athletics for the disabled).

1-5. Research Scope

1-5-1. Human field :National team players for the category.(. 40) F (in throwing weight

1-5-2. Time range :from 5/1/2021 – 15/4/2021

1-5-3. Spatial domain: the stadium of the local administration

2- Research Methodology and Field Procedures:

2-1. Research Methodology:

The researcher used the experimental method in a one -group style to suit the problem to be researched to complete the research process.

2. 2- Sample of the Study

The researcher chose the research community in a deliberate way, and they represent the weight-pushing players category(F40) In the national team in athletics for the disabled, the number of which is an athlete,who represent the original community by.(%100)

2-3. Homogeneity of the Sample :

For the purpose of verifying the homogeneity of the sample,the researcher took some measures to control the variables and that the homogeneity was carried out on the population.Therefore, statistical means were used by means of the arithmetic mean, standard deviation ,and coefficient of variation for morphological measurements to find out the reality of the difference or not, and Table (1) illustrates this.

Table (1) : The Homogeneity Of The Research Sample In Age, Height And Weight Using The Coefficient Of Variation ,Which Shows Values Less Than 30%

Variation Coefficient	Standard Deviation	Arithmetic Mean	Measuring Unit	Measurements And Variables
39 .2	8.48	54 3	Month	Chronological Age
5.51	8.16	48 1	Month	Training Age
4.20	2.82	67.5	Kg	Bloc
0.45	0.70	129.50	CM	Height
2.76	1.41	0.51	CM	Arm Length
4.58	3.53	0.77	CM	Man Length

4- 2means and tools used:

✓ Means of collecting information:

⊙ Arab and foreign sources. ⊙ Personal interviews. ⊙ experimentation. ⊙ Test and measurement.

✓ Tools and equipment used:

⊙ tape measure. ⊙ type video camera Sony Japanese-made, with a frequency of 300 images / sec. ⊙ type video camera Sony (Japanese-made with a frequencyof 25 images / sec . ⊙ Japanese made

whistle. ⊙ Medical scale. ⊙ hand-held calculator CASIO Japanese made. ⊙ type laptop computer (Dell Ci7) Irish made.

⊙ laser discs (DVD) number 6. ⊙ Legal throwing track ⊙ The weight of the weight is (3) kg, the number is.(2).

⊙ electronic stopwatch type Casio.

5- 2tests used in the search:

1-5- 2test based front bend the arms and Mayorma put to base (10 seconds) (1) :

- **Purpose of the test: To** measure the speed characteristic of the two arms.
- **Necessary tools :**an electronic clock, a registration form, and an assistant.
- **Performance description :**The tester lies on the floor, resting on his arms .And be with his arms outstretched, when hears the signal to start .He quickly flexes and extends his arms in 10 seconds.
- **Calculation of degrees :**Calculates the number of times the arms are bent and extended in a time of 10 seconds.
 - the number of attempts: once

2- 5.2 - test characteristic strength of the two men as fast as half Dbna (half squat (10 seconds). (2)

- **The purpose of the test: To** measure the speed characteristic of the legs.
- **Necessary tools :**an electronic watch, a registration form, an assistant and a 20 cm high training barrier
- **Description of performance :**The tester stands in front of the barrier, when he hears the start .He bends the legs and touches the barrier with the hands and gets up quickly in 10 seconds.
- **Calculation of degrees :**Calculates the number of times the legs are bent and extended in a time of 10 seconds.
- Number of attempts:once.

3-5- 2Achievement Test Extrusion Of Gravity

The achievement of pushing the weight is measured according to the international law in athletics for the disabled, and it does not differ from the law of the International Federation of Orphans. The only difference is the weight of the tool (3) kg

Number of attempts: (6) attempts per player

Scoring: Take the best horizontal distance from the inner edge of the bumper rest to the nearest trace of weight.

6- 2exploratory experiments:

First reconnaissance experiment- :

It has conducted a researcher exploratory experiment on Tuesday 21 20/ 1 / 5 , am nine am in the stadium local administration in Thi-Qar province on the national team players in athletics for the disabled and of the number (players) from the research community to apply the tests and after a period of 7 days was re - test the same Procedures in terms of time and place and the purpose of this experiment is to know the negative aspects and variables that will face the work ,as well as to ensure the following :

1. Finding the scientific basis for the tests
2. Know the appropriate tools and equipment to perform these tests.
3. Know the appropriate time and place to conduct it.
4. Ensure the adequacy of the auxiliary staff.
5. Defining the assistant staff on how to apply these tests.
6. Knowing the difficulties and problems facing the researcher in applying these tests before applying them in the main experiment.

The second exploratory experiment:

The second exploratory experiment was conducted on Tuesday 12/1/2021 at nine in the morning at the local administration stadium in Thi-Qar on the research sample and some complex exercises were applied for the purpose of the following

1. Codifying those exercises and find their load components (intensity, volume and comfort).
2. Knowing the extent of the sample's ability to apply those exercises.
3. Knowing the time required to apply these exercises.
4. The knowledge of the assistant staff and the trainer on how to apply these exercises because the researcher does not have the right to apply them himself because it is considered a currency bias.
5. Knowing the difficulties and problems facing the researcher in applying these exercises before applying them in the main experiment

2-7. Basis Of Scientific Test:

✧The truth:

To find out the sincerity of the test data , the researcher used the honesty virtual (sincerity of arbitrators " , (which means that the test seems sincere in virtual image because he has to be measured in terms of the job , (/3) "as display tests on a group of experts and specialists have agreed on the validity of the measure designed to measure, and is the wage - earners honest in the tests as it refers (Mustafa Mahmoud et al⁾⁾ (1990 , .he can be is honest test if presented a number of specialists and ruled that measures what position to measure efficiently. (/4))"

✧The Consistency:

In order to extract the reliability coefficient for the tests , the principle of the constant test must be applied, "which gives close results or the same results if it is applied more than once in similar conditions , (/5) "and are in similar circumstances have been the researcher used to

calculate the reliability coefficient (test method and re - test) and the interval of time between the first test and the second (7) days where a first test on Tuesday 2021 / 1 / 5 at nine am and was brought back in on Tuesday 21 20/ 1 / 12 , am ninth morning , the research sample .

✧Objectivity- :

The researcher found the objectivity coefficient for each of the skill tests by finding the simple correlation coefficient (Pearson) between the results of the two arbitrators (/*) In the first application that was conducted during the exploratory experiment, the correlation coefficients were high, which indicates the objectivity of the tests used in the research, and Table (3) shows that.

Table (2): The Reliability and Objectivity Coefficients of The Tests Are Shown

No.	Test	Coefficient Consistency	Sig.	Objectivity Coefficient	Sig.
1	Arm Speed Test	0.999	0.02	0.999	0.01
7		0.998	0.01	0.998	0.02

The correlation coefficient is significant at the significance level (0.05).

2-8. Measures Search Field:

2-8-1. Tests Tribal of The Research Sample:

The researcher conducted a tribal tests of experimental groups and the control before starting the implementation of the training curriculum on Thursday, a brief summary of 21 20/ 1 / 14 nine o'clock in the morning (at the stadium local administration(have been identified on the measurements) lengths, mass and age , (then the researcher with Mr. supervisor and the team auxiliary work by conducting tests on the research sample

2-8- 2 Exercises The Vehicle

Informing the researcher of the sources and references for sports training to obtain effective exercises that fit the requirements of the research, and in order for this information to enrich the researcher, understand and apply it correctly, the researcher used one of the scientific research tools, which is the personal interview with the officially accredited trainers in the Iraqi Paralympic Committee in the Federation Athletics. The exercises began on Sunday, 1/17/2021, until Sunday, 3/14/2021, for a period of eight weeks, with three training units per week (Sunday, Tuesday, and Thursday).

Here are some clarifications on the compound exercises:

- 1- The duration of the training curriculum is two months (eight weeks).
- 2- The number of training units per week is three units.
- 3- The number of training units in the curriculum (24) training units.
- 4- Training days (Sunday - Tuesday - Friday) in the morning.
- 6- The training method used - the high intensity and repetitive interval training method

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7- Finding the average intensity of the group for each exercise and adopting the principle of gradual intensity.

8- Using 1-3 corrugations in stressing between training units.

9- Taking into account the scientific foundations in training and the relationship between the components of the training load (intensity, size, comfort)

10- The training volumes and their rest time between repetitions and between groups were determined through the second exploratory experiment, taking the opinion of their coach.

2-8-3. Tests Posttest of The Research Sample- :

The test procedure posttest research sample in U m Tuesday brief summary) 2021 / 3 / 16 in the stadium 's military district (after the completion of the period of application of the curriculum , which took 8 weeks, the researcher was keen to provide the same test conditions data tribal of

2-9. Statistical Methods:

The researcher used the statistical methods that helped in processing the results and testing the research hypotheses through the use of the statistical package) IBM SPSS Statistics 24 (which are:

- Arithmetic Mean.
- Standard Deviation.
- Variation Coefficient.
- Pearson Correlation Coefficient.
- T-Test For Correlated Samples.
- Percentage.

3- Presentation, analysis and discussion of the results

3-1. Display and analysis of the results of strength characteristic speed tests tribal posteriori research group:

Table(3): The Values of The Arithmetic Means ,Standard Deviations, And the Value Of (T)Computed for The Values of The Rapid Strength of The Arms and Legs for The Pre and Posttest of The Research Group

Muscular Capabilities	Measuring Unit	Pre-test		Post-test		Calculated T-Value	Sig.	Result
		P	S	P	S			
The Speed Characteristic of The Arms	Frequent	8.08	0.79	11.91	0.99	4.98	0.000	Non-legal entity
The Speed Characteristic of The Legs	Frequent	8.81	1.02	11.16	1.94	3.67	0.001	Value

The values of the rapid strength of the arms and legs were extracted, and the results appeared for the pre and post tests of the research group as shown in Table (4). The variables were presented and analyzed as follows.

The arithmetic mean of the quick force of the two arms in the pre test was (8.08) with a standard deviation of (0.79), while the arithmetic mean of the quick force of the two arms in the post test was (11.91) and with a standard deviation of (0.99).) (4.98), with a significance level of (0.000).

The arithmetic mean of the quick strength of the legs in the pre-test was (8.81) with a standard deviation of (1.02), while the arithmetic mean of the quick strength of the legs in the post-test was (11.16) and with a standard deviation of (1.94).) (3.67) with a significance level of (0.001).

3-3. Results Discussion

3-3-1. Discussing the results of the force characteristic of speed for the arms and legs

From the table () it is clear that there is a clear progression of the results of the post-tests of the research group on which the compound exercises were applied to develop rapid strength. The exercises used in the training units that worked to develop and speed-distinguishing strength for the arms and legs, and this was what appeared when performing the dimensional tests. The accurately regulated repetitions within the training framework and in a scientific formula contributed widely to the development and strengthening of working muscles by activating the largest possible number of fast muscle fibers. And tightening and improving muscles to help contraction.

The researcher attributes the development in strength characterized by speed as a result of compound exercises. If the purpose of training is strength, it is at the expense of the frequency of steps and arm movements. But if the purpose is to develop speed, then it is at the expense of strength, and here is the principle to be reached, which is the development of rapid ability or strength characterized by speed, which is a compound of strength and speed in the development of the muscular ability of the players in the production of fast movements at every moment and this is what the sample trained in The use of some strength exercises to develop strength characterized by speed, such as the exercise of rapid frequency on the ground ladder and the reciprocal partridge. This was confirmed by (Abu Al-Ela Ahmed Abdel-Valak 1997). One of the characteristics of strength development characterized by speed is that it represents the ability (expresses the ability to quickly mobilize the largest number of muscle fibers at the beginning of the movement. Therefore, exercises must be performed in which the resistance is increased at the beginning of the movement and then the resistance is reduced in the following stages of the movement and then resistance). The positive results that appeared were appropriate to the results of the dimensional tests, in addition to the fact that the characteristic of strength characterized by speed is one of the basic physical characteristics of some types of sports, especially throwing saliva, which changes with continuous changes to the level of effort that results from it. Skills, and this was confirmed by Makram Al-Saadoun, "The individual's possession of a high level of physical abilities helps him to practice sports activities successfully." Since the special exercises that the researcher inspired from the actual situations of the competition, in addition to this, the use of auxiliary means that had an effective effect in the development of the movements of the arms and legs, because "the aids make the player able to address the shortcomings, especially those whose arm movements are slow and increase the The effectiveness of the training unit" () by observing the results that appeared in the development of the

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performance level of the research group in the dimensional measurements as a result of the effect of the special exercises that the researcher put in place during the period of implementation of the curriculum and represented by compound exercises that contributed to enhancing the players' abilities and had a positive impact on the development of the sample.

The researcher also attributes the reason for the development of the strength characterized by speed to the positive effect of the exercises applied and their good organization, as the increase in the number of repetitions in the forward leaning for a period of (10) seconds indicates the development of the characteristic of strength characterized by speed, as the performance of the exercises was applied during a period of (10) seconds, in order to maintain the development of this trait without engaging in the development of other traits, and the exercises given during the training curriculum were appropriate to the level of the sample in terms of intensity, size and comfort. This is what (Mahmoud Abdullah) believes that "giving exercises according to the correct scientific method enhances the work efficiency of the muscle groups involved in the performance of the various motor skills and physical abilities that the player acquires during training" (). This was confirmed by Al-Bassati, "The development of any physical component does not take place if there is no harmony and physical and natural adaptation between the players and the components of the training process in terms of quantity and quality on the one hand, and the level of the players and their age stage on the other hand. The development of the speed-specific strength of the arms is due to the use of exercises with medical balls and their appropriate weights in terms of their ages and abilities. Raysan Khreibet referred to "the various means in dynamic training that provide a diverse effect on the nervous system and also help in the blending of types of strength" (). The exercises applied in the general vocabulary of its training doses have been based on compound exercises with sub-maximal resistances and with different degrees of acceleration that reach the maximum possible acceleration for the members of the research sample, and this is in line with the training requirements to develop the strength characteristic of speed.

4. Conclusions and Recommendations

4.1. Conclusions

Based on the findings of the research results, and the accompanying statistical treatments, discussion and extrapolation within the limits and nature of the research sample, the researcher was able to reach the following conclusions:

1. The compound exercises prepared by the researcher contributed to the development of the rapid strength of the arms and legs of the national team players in athletics for the disabled.
2. The rapid improvement of the strength of the working muscles contributed to the achievement of the national team players in athletics for the disabled.

4-2- Recommendations:

- 1- Adoption of compound exercises in the training curricula of the national team players by pushing the weight of the disabled
- 2- Conducting similar studies for other age groups and with other training methods concerned with rapid strength development and knowing the results of these studies.

3- Adopting the results of the investigated variables and using them to compare with the results of athletes in other countries for comparison between them.

4- Emphasis on the use of the compound exercises that were applied in this research for the effectiveness of pushing the weight that was developed from the rapid strength, and then achieving the achievement in this activity.

Appendix (1)

Exercises, exercise code, and performance explanation

exercise icon	Explanation of the exercise	exercise name	
A	From a standing position, the player carries the medicine ball in front of the chest and throws it over the wooden wall with variable heights and weight of the ball according to the intensity of the exercise	Push the ball with both hands against the wall	
B	From a standing position in front of the ground ladder, the length of which is 10 m, the player makes rapid hesitation on the ground ladder and then carries the ball and throws it back with both hands. The weight of the ball according to the intensity of the exercise	Fast frequency on the ladder and throw the ball back	
C	From a standing position facing the wall, the player throws the ball on the circles drawn on the wall Three circles five times Number of circles Three circles numbered 3-1	Push the medicine ball against the wall	
D	From a standing position in front of the barriers facing the player with both feet Balothb number of barriers (10) and then perform the piste and shooting without a tool high barriers (20) cm	Jumping with both feet and performing the throwing stages	
E	The player is fixed with rubber ropes from the belt and is in the throwing circle and performs the slide and push the weight of the weight according to the intensity of the training unit	Zipline	
F	From the side standing position of the barrier, the player jumps with both feet on the barrier left right ten times, the height of the barrier is 20 cm	Double-sided jump over the barrier	
G	The player 's performance skill pay a weight vest wearers that increase the weighting of the mass of the player	Pushing the weight with the weight	

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H	From a standing position, the player holding the bar raises the knees alternately for a distance of 20 m, and the weight of the bar is 10 kg	Barbell knee raise	
I	From a standing position, the player throws the ball between the legs forward and then performs the front roll on the mat three times	Throwing the medicine ball forward and rolling	
G	From a standing position, the player carries the weight with the right hand with the arm extended above the head and moves to the left hand with the movement of the feet forward and backward ten moves	The feeling of heaviness alternately	0
K	From a standing position in the throwing circle with the player fixed with rubber ropes from the belt area and then performs the process of twisting the torso towards the throwing track ten times	Twisting the torso towards the rubber-roping field	1
L	From a standing position, the player hops with the right foot for a distance of 5 meters, then carries the medicine ball and pushes it with the aiming arm and the partridge with the left foot is 5 meters	Mutual partridge and throw the ball	2

Supplement(2)

Shows the intensity of the exercises used that were extracted on the basis of time for each exercise

The Stresses Used Were Extracted Based On Time, Tool Weight And Wall Height					exercise icon
% 80	% 85	% 90	% 95	% 100	
3.41sec-2.40 m	3.23s 2.55- m	3.06s 2.70 - m	2.89s2.85-	2.72s 3- m	A
10.55Tha-1kg	10.02Tha-2kg	9.49Tha 3- kg	8.96Tha-4kg	8.44Tha-5kg	B
6.33Tha-1kg	6.01Tha-2kg	5.69Tha 3- kg	5.38Tha-4kg	5.06Tha-5kg	C

12.21sec	11.59	10.98	10.37	9.76	D	
2.88s 1 - kg	2.73s 2- kg	2.59Tha 3- kg	2.44sec-4 kg	2.30sec-5 kg	E	
9.26sec	8.79	8.33	7.87	7.40	F	
4.26Tha 8- kg	4.04s 8.5- kg	3.83sec 9 - kg	3.62Tha-9.5kg	3.40sec-10kg	G	
14.76sec	14.02sec	13.28sec	12.54sec	11.80sec	H	
1-5.37kg	5.10Tha-2kg	4.83s 3- kg	4.56sec-4 kg	4.29Tha-5kg	I	
11.30sec-1kg	10.73s 2- kg	10.17Tha 3- kg	9.60sec-4 kg	9.04Tha-5kg	G	
13.88sec	13.18	12.49	11.79	11.10	K	
9.45Tha 1- kg	8.97Tha 2- k	8.50sec-3 kg	8.03Tha-4kg	7.56sec 5- kg	L	12

Appendix (3)

Shows the organizational structure of the complex exercises in the research

Develop speed characteristic strength of the upper and lower extremities			the aim	80%	intensity	the first	the week		
d 44.15		Main section time		Sunday	Today	first	training unit		
exercise time total	working time	Total rest		Exercise time	Rest between groups	Rest between repetitions	repetition	exercis icon	T
		between groups	between iterations						

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sec 568	sec 68	sec 180	sec 320	- m 240 tha 3.41	seconds 45	seconds 20	5	A	1	
sec 711	sec 211	sec 180	sec 320	- kg 1 sec 10.55	seconds 45	seconds 20	5	B	2	
sec 626	sec 126	sec 180	sec 320	- kg 1 sec 6.33	seconds 45	seconds 20	5	C		
sec 744	sec 244	sec 180	sec 320	sec 12.21	seconds 45	seconds 20	4	5	D	4

Improve performance and rapid strength through resistance and flexibility of the trunk				the aim	85%	intensity	the first		the week	
43.09d		Main section time			Tuesday	Today	the second		training unit	
exercise time total	working time	Total rest		Exercise time	Rest between groups	Rest between repetitions	total s	repetitions	exercise icon	T
		between groups	between iterations							
586sec	46sec	240sec	300sec	2kg - 2.88sec	60seconds	25sec	4	4	E	1
680sec	140sec	240sec	300sec	8.79	60seconds	25sec		4	F	2
604sec	4sec	640sec	2300sec	8.5kg - 4.04sec	60seconds	25sec		4	G	3
764sec	224sec	240sec	300sec	14.02	60seconds	25sec		4	H	4

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