

THE EFFECT OF THE DISABLING FORCE USING PARACHUTE IN DEVELOPING THE FAST AND EXPLOSIVE FORCE IN TERMS OF THE INSTANT PUSH TOWARDS THE TWO STAGES OF THE APPROACH AND THE UPGRADE TO THE LONG JUMP FOR YOUTH

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Abstract

The researcher moves towards delineating one of the assisting training tools which is the new training method through parachutes, using them as resistant force in an airy medium via drag force benefiting from the mechanical laws in determining training hardness of long jump players through controlling the umbrella surface that is exposed to air and the player's body speed. This resistance, then, will lead to a burden on working muscles which will heighten the level of explosive and speedy power which will be reflected on the level of achievement. It will also lead to link between steps of closeness and rising without a decrease in in speed, and, here lies the significance of the study. Therefore, in order to have an improvement in the level of special bodily abilities by using assisting tools so as to achieve integration in bodily abilities and performance especially in the final step and rising to gain good accomplishment.

The researcher made use of the experimental approach of the one experimental group design due to its appropriateness to the nature of the study. Sample of the study is deliberately selected, comprising of (5) players in Diyala high jump under 20 years team 2014-2015. Moreover, the study field procedures included photography, tests and measurements used in the research. Photography is included in the physical tests which comprised speedy and explosive power. These trainings are applied within the main part of the training unit, lasting from 45 to 50 minutes, 3 units per week for a period of 8 weeks, with a total of 24 training units. The load is gradually increased each two weeks as trainings were repeated each two weeks. The load is gradually increased in the other two weeks and so on. For the sake of having an effective and influential training based on scientific bases, the researcher adopted the frequent training method, then resting duration is specified to be the ratio between effort time and rest time. The study concluded that using force according to drag force law via parachutes (as training tool) has positively influenced the development of speedy and explosive powers of the study sample.

Keywords: Parachute

1. INTRODUCTION

Using the assistive devices in implementing the special training which are accompanied with improving force has become a necessary matter. As setting the exercises according to these devices help in perfecting the performance and integrating the muscle strength, and it will be the main condition of the force related to the exercises of the performance stages influence.

Each sporting efficiency needs the athletic to have levels of physical, motor and physiological abilities rather than its mechanical conditions. The training approach and training methods according to the requirements of the sporting efficiencies in developing the most important physical and mechanical abilities during the different training stages have a role in evaluating the sports performance and revealing the strengths and weakness in the performance in order to enable finding out the errors in the movement and avoiding reasons thus achieving compatibility for reaching the target fully as possible.

The target of using the aids in the training is developing the physical abilities and the technical performance related to the correct mechanic conditions for developing the achievement for the different sports games as the training methods and the directions are different for the players of athletics especially the speed activities. The trainers and the researchers are looking for the best of what is serving the education process and increasing the numbers' development. Developing physical abilities per each sports skill should be done according to scientific basics related to the training of any skill.

The researcher has turned to one of the helpful training methods which is the new training method by Parachute and used it as a resistant force in an air milieu through the law of the disabling force and benefiting from the mechanic forces in determining the training intensity for the long jump players by controlling the surface of the Parachute which is displayed for air and the speed of the player's body. The resistance will lead to occur a burden on the working muscle. This leads to upgrade the level of the fast and explosive force which is reflected on the level of achievement (Al-Fadli: 288, 2010) as this method provides the chance for the player for taking the appropriate mode in his body's joints rather than the suitable slop angle . as well as it leads to the efficiency of the working muscles, its development, its results from developing the fast and explosive force which may lead to connect between the

approach and the upgrade steps without any decrease of speed. Thus the importance of the search lies on it, because of what the long jump competition suffers from lowering its levels in Iraq comparing to the regional, Arabic and international levels. We should search for all the new in the training terms and benefit from all the existing environmental conditions for coping these levels and harnessing it for developing the different sporting achievements including the long jump competition. So exploiting the environmental conditions in this field is considered one of the methods which can contribute to solve the problem of lowering the Iraqi number in the long jump competition. The long jump is one of the related competitions related to the mechanic conditions. So this study has conducted for finding some solutions which contribute to develop the physical abilities using the helping methods in order to achieve the integration in the physical abilities and the performance if there is a progress in the level of the physical abilities related to the technical performance especially during the last step and the upgrading thus achieving the good achievement. The targets of this research includes knowing the level of the fast and explosive force in term of the instant push of the search population and setting the exercises of the enabling force using Parachute for the research sample thus knowing the effect of these trainings in developing the fast and explosive force in terms of the instant push.

The research methodology: the researcher used the experimental approach in designing the experimental group in order to be fit with the research nature.

The research sample: the research sample is chosen in the intended deliberated way which includes about 5 players in the team of Dilleya club for youth long jump by finding the moderate mode for the research sample in terms length, age and mass using the twist factor. (± 3) indicates that there is an analogy between the sample's populations as indicated in table 2.

Table 1 shows the mathematical mean, the standard deviation, the catalyst and the twist coefficient for the variables of search sample, which are (the length, the age and the mass.

| The harmony element | The Mean | The deviation | The catalyst | The twist coefficient ± 3 |
|---------------------|----------|---------------|--------------|-------------------------------|
| The length (m) | 1.82 | 0.7 | 1.84 | .85 |
| The age (year) | 92.7 | 0.09 | 93 | .10 - |
| The mass (Kgm) | 26.75 | 3.15 | 26 | .71 |

The training tool, which is used in the research (Parachute)

One of the helping training methods which is used by the researcher is the Parachute. The researcher has used Parachutes in two different mass according to the international measures used in training the athletics which are set forth in the results of the researches and the studies in this regard. As the used Parachute was in the square shape composed from eight related pieces to form the final use Parachute. Its cloth's kind was Water proof. Its design was similar to the pilots Parachutes as much as possible because the measures of the first Parachute was 0.72 m² as the following: the circumference 6m, the length of each side is 1.5 m and deep of 1.15. the true length of the rope which tides the player and the deep point of the Parachute is 2.15m. while the second Parachute is in the mass of 0.48 m² as its circumference 5.20 m which means that the length of each side is 1.30 m with a depth of 90 cm. the rope length which tides the player and the Parachute depth was like the last measure 2.15 m. this Parachute is tied with an interlaced cloth which is Retractable and fixed on the external side per each Retractable eight interlaced pieces. These all eight pieces are collected in one point from it the rope is came out. This rope connects the player with the middle of the belt. The player fixes the belt above the waist. The Retractable is pulled after passing the required distances in the training.



Figure no.1 shows the training method

2. THE PROCEDURES OF THE FIELD RESEARCH:

The procedures of the photographing, the tests and the used measures in the research. The photographing procedures are included in the physical tests as it used a camera and it is fixed on the side vertically by the player. And in measuring the achieving distances in the tests. The camera is put in the middle of the player's movement during the performance. It will be at a distance of 4.65m and a height of 1.35m from the middle of the camera focus to the ground. The aim of the photographing for the physical tests is measuring the exerted force according to Newton's second act:

Force= mass × speedup. In the cases of pushing the jump vertically of the stability. The law will be in the following formula:

$$\text{Force} = (\text{mass} \times \text{speed}) / \text{time}$$

Through the height code= $(\text{speed up} \times \text{time}) / 2$. We get the flight time which means that:

$$\text{Speed} = \sqrt{2 \times \text{height} \times 9.8}$$

$$\text{The speed up} = \frac{2 \times 1}{\text{time}}$$

Y flight

By the video analysis, we get the instant pushing time, then we measure the body's mass and abstract the instant force from the force code= $(\text{the mass} \times \text{the speed}) / \text{the time}$. While measuring the instant force in the long jump is horizontal. So the steps as in the vertical jump of stability except that the speed measurement is in the following code:

$$\text{The speed} = \sqrt{\text{the distance} \times 9.8}$$

Like what is concerned measuring the speed fast as in testing the sequential jump so the force could be measured too according to the second law of Newton:

$$\text{Force} = \text{mass} \times (x_2 - x_1) \div (y_2 - y_1)$$

The researcher after ending the analysis of the videos according to the program of the kinetic analysis (Kinovea) for extracting all the variables according to the mechanical codes and extracting the variables related to the performance and the tests. The physical tests include the following:

The test of the speed which is distinctive by the speed: the five test, the stability of the high speed and its measurement (Sareh El-Fadly: 2012)

The explosive force test of the feet: testing the long jump stability (Sareh El-Fadly: 2012)

The pretests:

The researcher has conducted the pretests on 20/10/2014. On this basis, the special trainings are set.

The training approach:

After seeing the sources and the opinions of the experts and specialized about the training approach situation. The researcher has set the training approach using Parachute in order to show its impact in developing the fast and explosive force in the terms of the instant pushing of the long jump for youth.

- the set training approach started on 15/11/2014. It is ended on 15/1/2015.

The training intensity was determined according to the parachute's surface and speed by which they are trained according to the law of air obstruction as the following:

The force of air obstruction= 1/2 of the air intensity X the obstruction constant X the body's surface X the square of speed.

When the air intensity and the obstruction constant are constant numbers, the researcher resorted to control the parachute surface and the sprinter's speed in order to determine the training intensity when using parachute as the following:

If the Parachute's surface was 0.72 m². when we suppose 50 m as a distance for running in the maximum speed using this parachute after the achievement time (100%) of this parachute, this parachute could be fixed and controlled by determining the intensity of the required training according to the maximum required time for this distance. For example:

If the achievement maximum time for passing the distance of 50 m with a parachute with a tabular of 0.48 m² is 9 seconds, the training frequency using this parachute and intensity of 90% and a frequency of 6 times is 10 seconds.

Which means that 9 seconds/ 0.90= 10 the required intensity.

As the training 50 m X 6 could be in 10 seconds using the parachute 0.48 m².

If we need to pass the same distance for a Parachute with a larger tabular, the resistance will be increased and it requires from the athletic to exert more effort in order to achieve 10 seconds for passing a distance of 50 m. thus the training is determined accordingly.

These trainings are applied within the main department of the training unit. It took from 45- 50 minutes in a reality of 3 times a week for 8 weeks. The number of the training units was about 24 unit then progressing upwards by the training load gradually after two weeks if the trainings are repeated every two weeks. The training load is increased gradually in the last weeks and so on. The researcher adopts the frequency training method for being the training effective depending on the scientific basics. The comfort period is determined from the percentage between the voltage's period to the comfort's period.

The distance tests: the distance tests are conducted on 25/1/2015

3. THE RESULTS DISPLAY, ANALYSIS AND DISCUSSION:

The display, analysis and the discussion of the variables results of the explosive fast force test of the two legs:

Table 2 shows the mathematical means, the standards deviations, and the differences of the pretests and Posty tests of the physical variables

| | | The pretests | | The posty tests | | D | D | | | |
|---------------------|--------|--------------|--------|-----------------|--------|-----|--------|-------|-------|-------------|
| | | X | Y | X | Y | | | | | |
| The explosive force | Newton | 905 | 161.92 | 1116 | 161.87 | 211 | 29.63 | 7.121 | 0.001 | Significant |
| The fast force | Newton | 2036 | 109.36 | 2290 | 157.15 | 254 | 69.589 | 3.650 | 0.000 | significant |

Table2 shows that the Tcalculated value for the search sample was under the error level less than 0.05 and the free degree of 4 in the fast and explosive force of the feet indicating the significance differences for the sake of the posty tests.

The researcher due the cause of this development to the training nature which is applied for the search sample which implies special training that aimed to develop the force of the muscular groups of the long jump especially for the lower limbs giving an indication to develop the technical performance control in the performance stages.

The trainings that applied during the training approach aims to develop the ability of the proportional muscles through its exposure to the training burden and its continuity to extract this force as soon as possible. The time force is limited. (the greater the muscular force to overcome the components, the greater is the speed) (Hamadi: 162, 1988)

The existence of the significant differences in the pretests and posty tests in the physical variables indicates that the used trainings of ability was effective in getting this result. As the training which used Parachute helps to increase the amount of the muscular ability of the search sample. (Gamal Sabri: 31, 2008) thinks that, "the force increase in the feet muscles by the resistance training leads to the feet's speed thus the increase of the muscular force is important for the athletic activities depending on the muscular ability.

The researcher thinks that the development in the level of the fast speed was effective and clear in developing the achievement. (Kamal Al-Rabdy: 42, 2004) points to the ability of developing the fast force through giving similar trainings to the required performance in the competitions but the effort's frequency should be little.

Some researchers has pointed to that the development in the explosive force as one of the most important abilities of developing the skillful techniques that should be developed as confirmed by (Abo El-Ella: 1997, 113) as the ability has a special importance in perfecting the skillful performance during the competition and the skill's acquisition.

(Al-Beik: 117, 1992) thinks that the force amount is less than the maximum amount and also the speed amount was less the maximum one though it is very high as the force is characterized by the speed represented by the frequency without waiting for a while in order to collect force like the rapid running.

It indicates that the applying vocabulary which the researcher adopts in determining the tools which contributes to develop the required physical performance work as a result of the dependence on determining Parachute during performing exercises. The area and the difference of the linked parachute area of the player works on motivating the largest amount of the muscular groups related to the performance and passing the jogging distances which are adopted in the training which the researcher is applied on the search sample. Organizing these trainings according to the disability law which the researcher adopts contributed greatly to develop and reduce the time of passing the test area adopted from the researcher thus it reflects on the players' performance in the pretests conducted by the researcher.

(Al-Fadly: 223, 2007) has pointed to that the importance of this training kind contributed to develop the muscles force in the movements of the spring and bending in the feet which depends in the performance of the jogging movements on highlighting the force in order to access the body a limited distance with the least possible time. It indicates the development of all the muscles within the kinetic springs related to the performance which depends on highlighting force during the spring of the joints which are responsible for movement. It gives a concept of the development of the sample's fast explosive force through the long passed distance by short instant pushes. The majority of the methods of developing the force is resulted from the training depends on the training of the constriction by the muscular lengthening and shortening whether it was for the knees or the legs especially with the youth and the beginners. It gives a clear difference in the level of the muscular force.

The researcher thinks that the force development and its fast explosive force development using this trainings has an importance of the long jump players. (Block: 60, 1990) confirms that the explosive force occupies the first rank between the order of the physical abilities in most of the athletic activities. It was confirmed by (Hasaneen: 1998, 22) as this ability has a special importance in its role in the skill performance during the competition and acknowledging the competition.

4. THE CONCLUSIONS

- 1- using the intensity according to the disability force act using Parachute (as a training method) has a positive impact on developing the explosive fast force for the research sample.
- 2- the trainings which are applied on the research sample leads to develop the fast explosive force values of the legs.
- 3- suing parachute leads to develop the achievement level.

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6. APPENDIX

Training module

| The week | The unit | The distance | The intensity | The frequency | The comfort between the frequency | The groups | The comfort between the groups |
|-----------|-----------|--------------|---------------|---------------|-----------------------------------|------------|--------------------------------|
| The first | The first | 50 m | 80% | 5 | 3:1 | 4 | 3.2 |
| | | 80 m | 85% | 4 | 3:1 | 4 | 3.2 |
| | | 120 m | 85% | 4 | 3:1 | 3 | 3.2 |
| | | 80 m | 80% | 5 | 3:1 | 4 | 3.2 |
| | The third | 150 m | 85% | 4 | 3:1 | 3 | 3.2 |
| | | 120 m | 90% | 4 | 3:1 | 4 | 3.2 |

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