

TRAINING THE MOMENTUM (POWER AND TORQUE) OF THE LEGS AND ARMS AND ITS IMPACT ON THE EF- FICIENCY OF PUSHING AND MOTOR TRANSPORT AND ACHIEVEMENT OF THE LONG JUMP

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Abstract

The problem of the research represented by that there is no one of the researchers or the trainers ensures about the importance of the correlated trainings of the instantaneous force as it is considered the basis to achieve the integrity to retain the linear momentum before and after upgrade and training the linear momentum training as it is a complementary factor for the weighted movements after pushing and upgrading and maintaining the mechanical situation of the body and its angular momentum and specially the conductor during application the skillful performance and what is the role of these trainings for legs and arms in dealing with the body mass and length as a whole during performance the skill of long jump, so the researchers depended on the second law of Newton of linear and angular movements to prepare the pushing trainings and the momentum and determination the pushing efficacy and the nature of motor transportation and mechanism of training and their role in the achievement. The goals of the research about identification the instantaneous pushing of the leg muscles and the instantaneous momentum of the leading leg muscles and arms which are necessary to perform Integration to upgrade with the long jump of the applicants and was chosen (8) jumpers who achieved best achievements during tests before championship clubs that Held at 22-24 / 10/2014 and divided into two groups and the experimental group applied the special program of power pushing training of the pushing leg and the instantaneous momentums for the leading legs and arms, tribal and posteriori tests were conducted in the variables of instantaneous pushing and motor transport and achievement. The results showed the superiority of the experimental group in all the variables and achievement for the long jump.

KEYWORDS: TRAINING. MOMENTUM. TORQUE. EFFICIENCY. TRANSPORT.

1. INTRODUCTION

The Total instantaneous pushing during upgrade for the jumpers considered one of the physical abilities that the level of performance stops at it in different jumping competitions (3:19) which are linked with the internal and external forces that face the jump during upgrading that the jumper supposed to get benefits from it to do the good achievement after completion the mechanical benefit that reflex on his performance if applied according to the optimal relationship between linear and angular forces at this moment to achieve best results in the long jump competition as considered the main cause to change the amount of jumper movement without large decrease during upgrade many researchers agreed that the jumper must be characterized by integrity by the final instantaneous so enables him to do best achievement and so the importance of the research represented by the importance of the training force and instantaneous momentum for the integrity of the upgrade performance by long jumping that in it, the level stops on the high performance and on the power quantities that can be produced by the athlete in his muscles which work on the correlated joints in this skill at this

moment . The attempt of the body to retain an amount of movement comes from preservation of the body on the instantaneous pushing force and achieving the suitable momentum for the other parts of the body that correlate directly with the its mass and speed (linear and angular) and this case is required in some movements which need stability of the movement and this needs harmony between the skill parts and without noted stops during upgrade. retaining the amount of the body movements (body momentum) at the upgrading moment means retaining the self-decrease that means body mass \times body speed at its kinetic force as noted in the long jumping and this is considered a standard for the high kinetic streamline and motor transport and consistency of the movement of body parts and the high motor rhythm ..etc. (1: 121). For this the strength training must be directed towards the instantaneous pushing development and the instantaneous momentum and the ratio between them as the result represent the integration of instantaneous pushing efficacy that associated with momentums training according to the absolute angle that correlated with the body (2: 104).(Mac Callaway) sees that the individuals whose characterized by strength can achieve better athletic level (4: 163) and (Harrah's) and (Moleef) confirm on the importance of the muscular strength and their types during performance the kinetic skills (4:34) (5: 73)and agreed with him both of (Welmeez) and (Mattyous) that athletes need the muscular power whatever their activities (6:32) (7:12). Some researches sees that the muscular force of any group of body groups represent absolute force of that group and the summation of these absolute forces of the muscular groups of the body represent the maximum force (8: 92).

The researchers aims to explain the importance of the instantaneous force and momentum of the linear and angular movements during upgrade and building a special training program for the long jumping Iraqi applicants that suffer from stopping the level of achievement of them as well as the need of this event to training indicators that explain and determine the relationship between the instantaneous force and momentum to reach to better skillful performance level. The research aims to identify the values of instantaneous pushing efficacy indicators (linear and angular)and motor transport with the significance of momentum and chancing it and achievement for the research sample and achieving its hypothesis that say that there are statistical significance differences between the tribal and post tests for these variables.

2. RESEARCH METHODOLOGY

2.1 RESEARCH CURRICULUM

The researchers used the experimental research curriculum.

2.2 RESEARCH SAMPLE

8 jumpers who did best achievements during tests before the championship of 2014 for the long jumping activity .The researchers divided the sample into two groups randomly , one of them is experimental and the other is control after conducting the pumpkin to determine that , the number for each group were 4 players .

2.3 MEANS AND TOOLS OF THE RESEARCH

the researchers used All references and researches and the international information network which is related with the research subject as well as using the platform of measurement of the force and some mechanical laws , rapid cameras (1000 picture / sec) (2)

- The research variables were calculated after photographing all the attempts by using video camera putted vertically on the upgrade plate at distance of 13 meter and height of 1.10 meter and after analyzing the data , the following variables extracted (3:45):
- Efficiency of instantaneous pushing = (the instantaneous momentum of the leading leg and arms / instantaneous pushing) $\times 100\%$ and the momentum was measured according to the following equation :
Instantaneous momentum = momentum of self-decrease \times the angular speed) which is equal to:
Force = (mass of the leg or arm \times the half of the diameter² \times angular speed) \div distance \times Time (Newton)
- The Motor transport with significance of linear momentum = angle of flying \div
(The final momentum – the primary momentum) (m / m / sec)
- As well as measuring the Achievement (in meters)

2.4 TRIBAL TESTS

Conducted on 08.01.2014

2.5 TRAINING CURRICULUM

The researchers prepared a training curriculum for the training of the instantaneous power of the two legs and relied in determining training intensity in which on the amounts of rapid force which related to the two legs that obtained by researchers through a jump test for five consecutive jumping of stability by changing the legs (which are related) by using Newton's second law, where the researchers used additive weights for the weight of the two legs (to train force push) and the application of a player for long jump movements with these weights, jump training with the resistance of rubber cords by two legs and arms (as instantaneous momentums) and the use of different sloping platforms to upgrade on them , and the approach continued for three months, and by two training sessions per one week (in accordance to scientific practical approach prepared by the researchers)and applied this approach on the members of the experimental group and the control group left for training trainers.

2.6 POSTERIORI TESTS

Conducted on 04.10.2014

2.6 STATISTICAL METHODS

the use of SPSS statistical system.

3. PRESENTATION AND INTERPRETATION OF DATA AND ANALYSIS

Table (1) : (T) Values for the level of achievement and efficiency of and the instantaneous pushing and motor transport for the two sets of tests (tribal and posteriori)

Variables	Group	Tribal		Posttest		P -	P _h	Calculated t	Level of Error	Significance
		A -	SD±	A -	SD±					
Achievement (M)	Experimental	6.75	0.46	6.93	.06	6.17	1.68	3.67	0.002	significance
	control	6.75	0.32	6.80	0.1	1.12	0.59	1.89	0.264	Not significance
Instantaneous pushing efficacy (%)	Experimental	0.42	0.12	0.82	.091	0.105	0.029	3.62	0.032	significance
	control	0.40	0.14	0.45	0:11	0.5	0.513	0.974	.342	Not significance
Motor transport (M / M / SEC)	Experimental	4.68	0.64	7.38	0.58	13.05	3.89	3.278	0.006	significance
	control	4.37	1.11	4.54	1.1	1.17	2.38	0.491	0.641	Not significance

Level of error ≤ 0.05 and below degree of freedom (4-1) = 3

Table (2): Values of (t) for level of achievement of the instantaneous pushing efficacy and motor transport for the two groups of the research between the posteriori tests

Variables	Experimental		control		Calculated (t)	Level of error	Significance
	A -	SD±	A -	SD±			
Achievement(meters)	6.93	0.06	6.80	0.1	9.28	0.000	significance

Pushing efficacy (%)	0.82	0.091	0.45	0:11	20.55	0.000	significance
Motor transport (m /m / sec)	7.38	0.58	4.54	1.1	5.020	0.001	Significance

4. DISCUSSION THE RESULTS

Shown in Table (1) the existence of statistical differences by achievement for the two sets of research and in the efficacy of instantaneous pushing and motor efficiency after the implementation of the training program of the development of forces and momentums of the two legs of upgrade and leader and arms. the achievement developed with great effect as a result of the development of the power in the muscle groups that work on both legs and arms during the movement of the body as a whole during the effective upgrading, and training with added weights as an added mass to the body and its parts during the training was effective in the occurrence of development in the instantaneous the torque force in each of the pushing leg and the leader as well as the arms as well as the impact of training of rubber ropes and oblique surfaces during upgrading which boosted the skillful performance at the moment of upgrading in line with the occurrence of integration between the force of instantaneous and angular and thus these exercises have given positive effect in the development of the muscular strength and so development of the force and torque of these muscles and thus the evolution of power and torque to the muscles of these parts . as also led to the development of motor transport level in terms of flight angle and changing momentum for members of this group and the control and with control of various body parts at the performance for the long jump application and for this, these trainings achieved the benefits in two basic directions at the same time which is development of the instantaneous muscular strength and momentum as well as development the level of achievement and this is reflected positively on the development of achievement as well as the mastery of technical performance, which is one of the requirements for success in the performance of long jump .While the results of the control group refers to a lack of statistically significant differences in the values of (t) between tribal tests and post- tests in the variables of the study, in spite of the arithmetic means achieved some progress in the posteriori tests and this progress is attributable to the daily trainings and their effect on the instantaneous force and achievement which not reached to the level of appearance the differences.

Table (2) shows that the differences in the amounts of pushing efficiency in the posteriori tests between the two groups was statistically significant and this means superiority of the members of the experimental group on the control group in this indicator as a result of their use the training program and as a result a clear progress in the achievement has emerged for this group when compared with what has been achieved for the same level of achievement for the control group, and this shows that there is a particular trend in the training of these groups to serve the motor track of jumping when directed along the motor track when implementing technical stages and to the moment of starting the player the upgrade moment.

It also shows a statistically significant differences in motor transport between both groups, as a result of the exercises practiced by the experimental group members and reflected on the integration of effective link between the instantaneous force during pushing and instantaneous momentum and torque when become near and the torque during start and achievement of the optimal angle for starting without large change in the linear torque , all indicate the development of pushing efficacy and motor transport , as special exercises worked to develop the integration in pushing and motor transport of the experimental group because the nature of the strength trainings was very similar to the motor paths for most working parts of the body.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

1. Appearance of development in the instantaneous pushing (power and torque) to the muscles of legs and arms and the level of achievement and performance with long jumping for the experimental group.

2. Did not show any significant difference between the instantaneous pushing efficacy tests for the muscles of the arms and legs and the level of achievement with long jump for the experimental group.
3. Development of the motor transport for the experimental group clearly as a result of the special training that applied on this group.
4. The differences emerged in the favor of the experimental group in the post tests in all research variables.

5.2 RECOMMENDATIONS

1. Interest in measuring the instantaneous force and torque for the leg muscles and arms to ensure the integrity of the basis that affect in the achievement of performance of the long jump.
2. Ensure the availability of necessary force to perform this contest in the application of these indicators.
3. Trying to use the indicators of instantaneous pushing and momentum for training to the other events of jump
4. The use of motor transport and flight angle and changing the momentum as indicator for training and education.
5. Conducting a study to determine the relative strength of its importance in training and determination of payment received and that must be met at the completion of the various jumps.

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