

Effect unbalance torque training in some biomechanics variables for tack off and landing and long jump achievement

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ABSTRACT

The Effect Of Unbalance Torque Training In Some Biomechanics Variables For Take-Off And Landing In Long Jump Achievement Sareeh Abudlkareem Abudlsaheeb Alfadly,, Univ. of Baghdad (Iraq) Varying special strength exercises to develop the athlete's abilities in long jump has improved over the years, and yet all these trainings did not take into consideration the importance of the athlete's motor path during phases. This was defined as the problem of this research, which proposed using unbalanced strength moments' training for the working muscles in long jump and gravity moments according to the performance of the two phases. These two phases are closely connected to instant push, acceleration, speed, and mass laws that directly affect biomechanical variables and achievement in youth long jump. Boxes of different heights and angles were used for jumping and added weights on the player to develop the strength of the arms, torso and legs. The aim is to identify the effect of some biomechanical variables of take-off and landing. The experimental method with a training program of three training sessions per week repeated for ten times were used and videotaped the long jump events. After 3 months the post-tests were conducted. The result concluded that these exercises affect the development of speed during the last stride as well as the angle and speed of take-off. Also, the training program develop the angles of attack during take-off and change the momentum and landing biomechanics that are considered important elements in archiving the best distance in long jump. Biomechanics variables for raising the long jump to the pilot group has significant development occurred after tests and impact strength training and control the movements of body parts. The training unbalance force plays an important role in controlling the change of moment of inertia and the angular acceleration. And "most important" Note in the system of levers in human structure is the very high proportion of muscular effort firm resolve that produces against certain resistance. Changing arm lever continuous hinge angle change affects produce such an effect which requires appropriate resistance force change for change in arm strength output owing to changed angle of the joint. This helped development of the efficiency of these muscles through exposure to muscular training effort of all body parts and knives performance and mobility at the same time giving the body's natural qualities as a projectile during the movement (Hang). Also, the strength training unbalance in accordance with torques which resembles as much as possible with performance, transactions carried out with the utmost precision the experimental group with the same motor level in terms of direction and extent of movement of the joint, and movement speed released.

Keywords: Movement; Instant; Take-Off; Landing; Unbalance.

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INTRODUCTION

A study of internal and external forces causing movement of the human body which outweigh uneven performance is important. Capering actors are jumping in athletics and especially long jump evens against internal and external torques scorching which shed on the body and its parts during the performance, especially when tack off and when landing which could adversely or positively according to optimum performance during these moments is related to biomechanics variables as mass and strength and speed that go into many laws biomechanics as torques as body parts are levers linked movements and articulations force revolve around these parts that must mock mathematical accomplishment service to this valuable event which requires that careful about performances and consequent terms of biomechanics in order to access the correct technical position to achieve better achievement.

Unbalance power was defined as "*the ability to produce muscular work or applying strongly to body movement*" (Allen et al., 1999), Georges a Mulligan (Georg Meglyn) muscle power Unbalance is "*expressible muscle or muscle group in case of lifting or moving or pushing resistance*" (George Meglyn Gltun, 1996) as to the nature of the human body and its parts which is a rotation axes (joints) which represents the trnysel point between two associated tissues and tendons and muscles, giving these parts feature mechanical levers, which must into account when training these muscles in those levers. Since all strength training exercises associated with body weight or using weights added, depends on the start when training to identify the levers and muscle (Jams G. Hang, 1976). Gravity works, such as disabling force also for muscle strength, rotation of objects like gravity determination, which can be used to improve movements and landing in the long jump (McCoy et al., 2005) Additionally did not include special exercises jumping develop muscle strength to overcome the largest value of resistance facing) (Mohamed Ibrahim Shehata and Mohamed Gaber Braiqaa, 1999)

The researchers noted that the achievements of this event did not rise to the level of ambition because the drills used did not take into account many variables related to motion path long jump player during the most important two stages raise and descent in terms of specific mechanical, the researchers promised biomechanics one of these scientific problems related to the application of unbalance forces which might give limits to long jump accomplishment in Iraq , So I went to use it's cool unbalance force exercises the muscles operating long jump torque gravity experienced by parts of the body during these two phases associated with instantaneous payment laws, speed up, speed, mass and which directly affect the variables biomechanics and long jump achievement for youth. So the research objectives: Torque unbalance power drill setting gravity to the working muscles of the body parts in Ascension and landing long jump Youth.& Identify the impact of training in some biomechanics variables plucks for tack off and landing and completion of long jump for youth. Hypotheses of research it was: Statistically significant differences exist between some fingerprinting tests biomechanics variables for tack off and landing a sample search & statistically significant differences exist in the level of achievement in the long jump Search sample

METHODOLOGY

The researchers used experimental method. Search sample amounted to ten players from the youth who represent the overall research community specialty Center players to take care of the Ministry of youth sports talent 2016-2017, in order to know the researchers used normal distribution sample distribution coefficient convolution as shown in Table 1.

Table 1. Sample characteristics.

f.	Variable	The unit of measurement	Man	±Sdf	Mediator	Convolution
1.	Age	Year	16.4	0.699	16.5	0.78.
2.	Nugget	Kg	76.3	7.64	76	0.117
3.	Length	Cm	178.20	7.42	178	0.489
4.	Achievement	Meter	6.15	0.86	6.10	0.651

Convolution results indicate the sample distributed naturally if torsion coefficient values between ± 1 , int section the sample into two groups according to the accomplishment achieved.

Research studies and scientific reports and publications results from the International Athletics Federation. Technical observation and experimentation. Tests and measurements. The tools and devices used Search is Different weights and weights training tools. rubber Sling burdened.2. Number 2 cams 120 quickly pictures per second. Calculator is not top. Different measurement tools (a metal tape measure 50 m timers. balance)

Measurement of body mass and mass of body parts and tests

Body mass was measured by a medical thermometer to the nearest kg and measured stem mass and body mass by striking arm in arm and torso block ratio to as following equation (Outright Abdul Karim, 2007). (Body mass x relative stem mass and body mass x relative arm block)

Long jump achievement test

Gives the lab three attempts under international law is the best selection of athletics for analysis to extract the variables biomechanics.

Bio mechanical variables

Extract the variables under study through biomechanical using (Kenova) is as follows: Starting speed. Instant pay body parts modes angle: the angles of the leg, thigh and torso driving men final impulse moment. This was determined angles between the longitudinal axis of each part with the axis passes from bespoke swab . The starting angle player: located between the Centre of gravity of the horizontal line body moment of final payment and the path laid down by the body's centre of gravity for a moment leave painting advancement. Less difference between the corners of body positions: representing the minus of the largest value of the lesser value between the corners of the payment moment body parts modes (Purely religion Mohamed Ali El Haggar, 2003). The high status of w my moment upgrade and landing: it is the vertical distance between the centre of gravity the body before leaving the Promotion Board and the land and the moment of touching the ground on landing. Momentum changed when upgrading and landing: the difference between a linear body momentum to the body between my moment Miss and leave Earth my moment upgrade and landing.

Tests

Conducted The Prial tests Friday on 15/7/2020 at 4:00 a.m. at the National Centre for the care of the Ministry of youth sports talent behind people's stadium, and test conditions was installed in order to provide when testing gateway. special exercises used in the research: The proposed training began On Monday. 18/7/2020 until Monday 12/9/2020 and it took eight weeks training application, and (3) training units per week days (Monday, Tuesday, and Wednesday) any total (24) training unit during the duration of the experiment and a special preparation training included (physical) from the President of the module, and special exercises included mechanical principles firmly between training (80-100)%, given the best different funds on upgrading training rises to develop rhythm the last two linked to jump, and use the overburdened with these exercises and heavy-intensity was used ranging from b yen (2.7)% of the mass of the torso or arm for each player in

practice, Furthermore, been using rubber cords to opponents with the direction of motion and against a rack in at other times when application performance skills, both when tack off or when landing, using training seats (Swedish funds) to help implement the landing and mastery with heavy usage during performances on these boxes and identified rest according to the percentage of work to rest between iterations (Allen et al., 1999) and aggregates (2-2, 30 minutes). If the training principle adopted by the researchers is using the law of maximum distress torques in determining intention of this law depends on the resistance point of impact resistance (weight) on the spindle (shoulder or hip or knee), can be increased by increasing the resistance of gravity torque required to overcome both work with arm or men or trunk when applying skill performance, and that the increase in the intensity dependent on the border to arm's length was always resistant weight constant (arm).Post tests on Friday 16/11/2020 at 4 p.m. in the same sequence of tests.

RESULTS

Table 2. Outcome variables the angles and elevation m w c between pre. post-tests.

Variables	Group	The test	Man Before	Man after	Defer.	Sdf.	T.calc.	Error	The indication
Tack off angle	Control	peri	17.2	1.48	4.2	1.17	3.58	.032	Signify.
		post	21.4	1.14					
	Experiment	peri	17.4	4.15	0.4	0.30	1.32	.451	
		post	17.8	1.51					
% Conditions of angles parts	Control	peri	15.8	0.83	9.2	1.56	5.88	.000	Signify.
		post	6.6	1.51					
	Experiment	peri	17.	2.12	0.2	0.085	2.33	.68	
		post	16.8	0.83					
High released	Control	peri	1.08	0.06	0.07	0.015	4.43	.002	Signify.
		post	1.15	0.04					
	Experiment	peri	1.01	0.03	0.01	0.008	1.13	.541	
		post	1.02	0.02					

Note. Degrees of freedom (4) and standard error ≤ .05.

Table 3. Statistical features of angles and high ideals and values (v) between the two groups post-tests.

The variable	Experiment.		Study		M.def	Error Stand.	T Calc.	Error level	Sign in.
	Mane	S.def	Mane	S.def					
Starting angle	17.8	1.14	21.4	1.51	3.6	0.67	5.32	.002	Signify
% Angle of conditions	16.8	0.83	6.6	1.5	10.2	1.92	7.98	.000	Signify
High mg	1.02	0.035	1.15	0.04	0.13	0.035	3.65	.001	Signify

Note. Degrees of freedom (8) and standard error ≤ .05.

Table 4. (t) for the speed and momentum variables and accomplishment of search.

Variables	Group	The test	Man Before	Man after	Defer.	Sdf.	T calc.	Error	The significant
Starting speed(M/sec	Contr.	Pre.	7.73	0.67	0.37	0.093	3.95	.003	Signify .
		Pos.	8.10	0.45					
	Experiment	Pre.	7.65	0.273	0.1	0.05	2.04	.078	
		Pos.	7.75	0.451					

Tack off momentum change(Kg. m/s)	Contr.	Pre.	185.71	37.56	85.79	16.62	5.16	.005	Significant.
		Pos.	99.92	31.74					
	Experiment	Pre.	188.15	75.29	20.21	8.21	2.46	.069	Non.Signify
		Pos.	167.94	73.68					
Landing momentum change (kg m/s)	Contr.	Pre.	123.86	41.92	103.6	26.10	3.97	.041	Signify
		Pos.	227.43	32.74					
	Experiment	Pre.	133.29	42.41	0.38	1.93	0.29	.15	Non.Signify
		Pos.	132.91	38.44					
Achievement	Contr.	Pre.	6.10	0.35	0.56	0.124	4.51	.009	Significant.
		Pos.	6.66	0.27					
	Experiment	Pre.	6.02	0.42	0.15	0.079	1.9	.091	Non.Signify
		Pos.	6.17	0.36					

Note. Degrees of freedom (4) and standard error ≤ .05.

Table 5. Results values (T) between the two groups post-tests.

The variable	Experiment.		Study		M.def	Error Stand.	T.Calc.	Error level	Signi.
	Mane	S.def	Mane	S.def					
Velocity (m/s)	7.75	0.451	8.10	0.45	0.43	0.111	3.84	.01	Signify
Tack off mom. change (kg .m/s)	167.94	73.68	99.92	31.74	94.26	29.4	3.21	.02	Significant
Landing mom. change (kg .m/s)	132.9	1.44	227.34	32.74	94.44	25.12	3.76	.01	Signify
Achievement	6.17	0.36	6.66	0.27	0.49	0.11	4.32	.03	Signify

Note. Degrees of freedom (8) and standard error ≤ .05

DISCUSSION

Notice of the results presented in tables (2 and 3) biomechanics variables for raising the long jump to the pilot group has significant development occurred after tests and impact strength training unbalance and control the movements of body parts to control resistors used mementoes applied experimental group members progress events in special force by developing a strong ' torque around the joints factor when shooting performance compared with conventional resistance exercises used under other circumstances for the control group, the training unbalance force plays an important role in controlling the change of moment of inertia and the angular acceleration, and "most important" Note in the system of levers in human structure is the very high proportion of muscular effort firm resolve that produces against certain resistance (Qassim Hassan Hussein, Iman Shaker, 2000), changing arm lever continuous hinge angle change affects Produce such an effect which requires appropriate resistance force change for change in arm strength output owing to changed angle of the joint. This helped development of the efficiency of these muscles through exposure to muscular training effort of all body parts and knives performance and mobility at the same time giving the body's natural qualities as a projectile during the movement. (Ralf Gunter Jabs, 1979) The evolving body parts contribute to the main mode of payment research there was consensus a few difference values of the corners.

Note that the exercises used effectively influenced the development pace of the experimental group compared with control subjects during a second pitch which affected reduce the difference between pay-awhile pilot group which demonstrated high performance flow between my moment to approach and final

payment, and this is due to develop muscle power unbalance associated with principle through training on different resistors and arms control are appropriate for training, upper body and lower through the performance of different funds jumping movements with light and heavy opponents. During the exercise focused on pilot group members as well as the development of muscle efficiency according to skill performance, with emphasis on the development of the strength of the muscles in a good and proper angle, duplicating training with special strength training is the main mechanical requirements associated with maintaining performance (Sa'ad Allah Abbas Rashid, 2004).

The researchers believed that the power of your jump should take an important space in training and other exercises all kinds converge in the same direction for optimizing them. many studies show that specific strength training is essential to develop strength, as well as in developing coordination between the work of specific muscle movements required for this performance, so the training to develop strength of arms, trunk and legs depends based on kinetic paths correlation basically on race or skill exercises that depend on the performance on the all force integration and integration of body parts of the two men, with strength training unbalance following types of effort which overcome the opponents in specialized competition requirements maximum movement speed and dynamic medium frequencies up to maximum, and relatively low volume lest causing decline in attaining capacity due to fatigue phenomenon (Saltin, 1992), has pointed out (stamper) "*to develop the strength of muscles of arms and legs lead to faster performance*" (Stamper, 1983)

The researchers conclude that the strength training unbalance in accordance with torques which resembles as much as possible with performance, transactions carried out with the utmost precision the experimental group with the same motor level, in terms of direction and extent of movement of the joint, and movement speed released (Stasiuk, 1994) Helped develop the movement paths and strengthened the development of achievement, since it must be able to jumper from the right link between performance requirements and the correct motor skills with impressive opponents, recalling (Rachid, 2004) (James) "*the need for harmony between strength training exercises with efficiency requirements in order to get the best performance of kinetic art*" (Troub, 1990).

On this basis, researchers that jumper to invest the muscle action (torque) that serve the movement speed and kinetic compatibility good for net force is obtained with less to the torque change or tack off and moments that any delay of muscular action levers (torques) affects the starting speed heavily influencing the achievement) (www.Explosive Exercise).

CONCLUSIONS

- 1- The principle of change of force (unbalance) by how detailed motion like the primary objective for the evolution of torques, the impact on the evolution of both the starting angle body attack associated with it as well as the Centre of gravity height body starting moment.
- 2- The drills used may have influenced effectively in developing the final velocity.
- 3- To reduce the difference between the momentums of my moment take-off and landing demonstrated the effectiveness of muscle strength training associated with torque for high cruise performance.
- 4- Back in the Centre of gravity height variable body moment of payment proposed exercises.
- 5- Achievement identifies the evolution in power, speed and biomechanics variables and exercises in accordance with the nature of the transactions performed by long jumpers.

Recommendations

- 1- Use the special strength training unbalance in accordance with torques to develop physical abilities and skills to effectively long jump.
- 2- Kinetic analysis to identify periodic imbalances and weaknesses in performance to prepare her exercises.
- 3- Emphasize the integration of muscle power to all the muscles working either top or bottom end to enhance the mechanical conditions of the long jump players when performing movements jump.
- 4- Develop torque special power is essential in the competition in addition to Adaptive control nervous system which includes the value of exercise and increased speed of movement (ensures high velocity movement).
- 5- The need to define a sample search and long jump players executing transactions features like speed and launch angle and change the momentum and accelerate as biomechanics variables associated with the development of physical abilities for the development of special power in accordance with established practice.
- 6- Studies on other competitions as drills used.

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