

The Effect of Fixed Force Exercises by Using Different Tools in the Values of Some Bio Kinematics Variables to the Hit/Spike Skill in Volleyball for Young People

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Abstract

The muscular training by adopting fixed foundations is a modern training methods which is concerned with the development of muscle strength, in fullest stretch This is due to the quality of the exercises that selected and designed according to the requirements of skill performance which performance is subject to a set of variables that determine the characteristics of this technical performance of the hit/spike skill, it causes production of the kinetic system, needed by good skill performance as well as the appropriate correct compatibility that occurs between the variability in the kinematic and kinetic variables determined by the stress used is the best way to success performance as well as the stabilization and orientation of muscle groups to serve skill performance, so the researchers used the experimental method using experimental design of one group appropriate to the nature of the research, the The study sample was chosen by the researchers in purposive method, numbering 6 athletes, The researchers were keen to apply the stationary strength training using different tools for the purpose of some Bio kinematics indicators and the development of muscle strength for sample members (8) weeks and included (24) training units (3) units per week, The results of the research was the most important that all the exercises used to develop the fixed force, whether the muscles of the legs, torso or arms, increased the efficiency of the internal force, the strength of ligaments in the production of torque force.

Keywords: Bio kinematics, hit/spike, skill, volleyball, young people

Introduction

The great developments in volleyball today in all its skills ¹, including the skill of hit/spike led to achieve advanced results in the level of achievement at the Arab and global level because it is one of the skills covered by this development as a result of the competition of the countries of the world in the innovation of modern scientific foundations of training through conducting studies and research, which mixes two or more sciences of Physical Education Sciences ². Fixed strength is one of the physical characteristics should developed for volleyball players, which is related to the ability of the athlete and efficiency on the production of muscle strength related to rapid performance. Where the training of musculature by adopting the foundations of the fixed strength of modern training methods ³, which is concerned with the development of muscle strength in

the most elastic, this is due to the quality of the exercises selected and designed according to the requirements of skill performance in which the performance is subject to a set of variables that determine the characteristics of this technical performance of the skill of hit/spike , be the cause of the production of the kinetic system, which needs good skill performance as well as the appropriate compatibility ³ that occurs between variance in variables Kinematics and kinetics determined by the stress used is the best way to success performance as well as stabilize and guide muscle groups to serve skill performance and thus develop the level of muscle strength because these exercises put a relatively large muscle effort which leads to Stimulating muscle groups ⁴ to mobilize as many muscle fibers as possible and possessing the ability of rapid muscle contraction and stimulate them to work with great capacity, in turn contribute to the achievement of effective dynamic and

effective work during the sections of the skill, and in a way that serves the goal of performance is to achieve the farthest distance, ⁵ whether horizontal during the last step or vertical distance During the final payment, this is a real indicator in the development of the ability of the coach to understand and analyze the skill performance of the players in the light of the information that may help him in determining ⁶ the kinetic procedures required to accomplish the performance as efficiently as possible with the least effort.

Research methodology and field procedures

Research Methodology

The researchers used the experimental approach using a one-group experimental design appropriate to the nature of the research.

Research Sample

Six players were selected from the Iraqi volleyball team and deliberately in order to carry out the study and achieve its objectives, and table (1) shows the characteristics of the research sample.

Table 1. It shows the homogeneity of the sample in the variables of height, age of training and apparent weight

NO.	Properties	Arithmetic mean	Standard Deviation	Coefficient of variation
1	Length (cm)	188	0.72	1.96
2	Age of training (Year)	4.83	0.35	11.16
3	Outside weight	77	3.15	3.12

Exploratory trail

Researchers made exploratory trail On Saturday, (1/6/2019) on (3) players from the sample members were photographed to identify the location of the power measurement platform and make the cameras far and high and the clarity of the image and the time required for each shooting and the appropriate time to make the shooting as well as to identify the following:

- Height of cameras
- Identify the difficulties and obstacles that will appear during the implementation of tests and their progress.
- Identify the time to take the tests and how long it takes.
- The possibility of imaging and analysis of the results of mechanical variables.
- The ability of the sample to carry out the tests and their suitability.

- Identify the devices and tools necessary to carry out the experiment and tests.

- The possibility of measuring the strength of the device used.

- The total time required by the experiment and the definition of the team and the nature of the experience and requirements.

Main trail

Exercises were prepared after reviewing a set of sources of sports training related to the subject of the research and after presentation to the gentlemen experts have been the application of exercises, the exercise method was (Repeat contraction) in order to improve the fixed strength of the research sample members using different training tools on 5/6/2019 to 6 / 9/2019 in (8) weeks and includes (24) training units, some solid resistances have been used, some of which are manufactured, which allow the player to use technical conditions similar to the technical performance of the skill to develop the fixed muscle strength and muscle

at its maximum elongation and is a new training trend because it focuses on the development of iso-metric contraction which is the boundary between the central and decentralized contractions which contributes to increase The values of muscle strength and thus maintain the momentum of muscular and kinetic momentum at the highest efficiency possible according to the limits of the muscular moment allowed anatomically and technically and thus increase the strength and speed of the costly part of the performance and high efficiency by fixing the tension on the muscle with the Changes and differences in the angles of muscular work during the performance of muscle exercises using fixed resistances, rest was given between iterations according to the time of effort to rest .

The researchers used the method of repetitive training by three training units per week at the time of

one training unit (35 - 45 minutes). Below is a summary of how to use the intensity of different exercises:

- For fixed workpiece workouts with fixed solid resistances, the maximum contraction time for a specific time is determined and the training intensity is determined accordingly.

Statistical means

The researchers used the SPSS statistical program to process the results.

Presentation, discussion and analysis of results

Presentation and discussion of the results of differences in the values of some Bio kinematics indicators for the hit/spike of the pre- and post-test of the research group .

Table 2 shows the values of the arithmetic media, the standard deviations and the calculated value (T) of the values of some Bio kinematics indicators of the pre- and post-tests of the research group.

NO.	Processors Variables	Measuring unit T	Pre-test		Post test		Calculated time value	Significance level 0.05	result
			from	s±	from	s±			
1	Approaching speed	m/sec	3.30	0.07	0.07	3.88	18.014	0.000	moral
2	Cruising speed	m/sec	2.73	0.13	0.06	3.16	8.861	0.000	moral
3	Angle of advancement	min	76.62	0.74	0.53	87	32.031	0.000	moral
4	Maximum height	m	1.34	0.01	0.01	1.48	29.238	0.000	moral

The researchers attribute the reason for this development to the nature of the exercises applied by the research sample using muscle groups to perform in the same general direction to perform the same skill led to the development of the strength of the strength in the muscle groups working in a way that helps the player to complete the kinetic duty in the best technical style, as well as the impact of this positive In developing the

efficiency of muscle strength according to the internal and external forces that were consistent with the size of the force generated during the performance, the muscles were stimulated to work with a high force, starting with the change in their length before their shrinking. As the moral differences that appeared in the approach speed variable researchers attribute to the nature of the exercises applied by the research group contributed to

the development of muscle strength and adaptation of muscle groups to shrink strongly and high speed as well as the adaptation of the feet to take the right positions when touching the ground with a little contact area, and to take the situation appropriate for the method of performance of the skill to be the force projected on the surface of the foot is highly effective and rated time according to the intensity used in training led to sizes or reduce the time touching the ground during the movement and thus increased the speed of the player's thrust towards the ball in a vertical and smooth Good muscular consistency had a great impact on the development of cruising speed

as the positive output obtained by the research sample enabled them to push the maximum intraday moment associated with full stretch in a joint and in an ideal manner, which means that the level of progress was faster and better than the level of special force not to mention that it helped On reducing the distance between the center of gravity of the body and the gravitational line, which in turn contributed to the formation of a base or a suitable starting position contributed to positioning the center of body mass at the highest possible point, an effective indicator of its efficiency to shrink as quickly as possible.

No	Variables	Measuring unit	Pre-test Experimental group		Post-test Experimental group		Calculated time value	Significance Level 0.05	result	
			from	s±	from	s±				
1	Absorption moment	Absorption force	N	942.12	104.23	1407.60	81.28	7.381	0.000	moral
		Time of arrival	Sec	0.24	0.03	0.19	0.01	3.742	0.007	moral
2	Pushing moment	Maximum power	N	1121.74	228.47	1749.56	107.72	6.501	0.000	moral
		Time of arrival	Sec	0.18	0.02	0.13	0.01	4.697	0.002	moral

Presentation and discussion of the results of the differences in the values of some power-time indicators for the hit/spike of pre- and post-tests of the research group

Table 3. It shows the values of the arithmetic media, the standard deviations and the calculated (T) value of the values of some power-time indicators for the pre- and post-tests of the research group.

The researchers attribute the reason for this development as a result of the impact of stationary strength exercises using various tools applied by the research group on the scientific basis associated with Bio kinematicss, contributed to the development of internal strength and external strength as a result of the players to achieve a high muscle strain or contraction after the change in muscle length as a result of pulling or pushing, Greater than the muscles show in the case of shrinking or kinetic tension, as the player during this exercise works on the use of high strength against the weights are unable to move them and thus reflected positively on the technical performance of the skill and this was evidenced by the increase in the values of momentary

mechanical strength This is reflected in the appropriate linear or angular momentum and the possibility of retaining this value during the performance stages because it represents a good flow of movement, as the development in the values of maximum absorption force as it positively affected the maximum force values of the final push because the preparatory section serves the section The main objective is to create the necessary force for the performance of the kinetic , as the preparatory section is directly related to the goal of the skill, while the time achieved indicates the impact of the exercises on the development of strength and increase during the preparatory phase and the player's push towards the ball, As for the time variable power, the researchers believe that the time variable is one of the mechanical variables that play a big role in the variables of power and speed., so it can be important for this variable in achieving linear speed.

Conclusions

1. The emergence of a clear development in the level of technical performance of the skill of the hit/spike as a result of the development of fixed force using different tools and resistances.

2. All the exercises used to develop the fixed force, whether the muscles of the legs, torso or arms, increased the efficiency of the internal force, the strength of the ligaments in the production of torque force.

3. There was a continuation of the speed between the steps of the rhythm and the last step without any hindering forces that would occur if the jogging was a full contact with the foot as the forces of gravity, weight or friction.

4. The positioning on the lower foot area gives the positive feedback in increasing the momentary momentum and decreasing the relative base of the final base at the moment when the striker prepares him and provides him with a smooth and fast performance that allows to exert the required strength and speed to achieve a good speed and starting angle.

5. Static force training using various tools enhanced the reduction of the contact area of the foot with the ground, which facilitated the application of instantaneous force correctly according to absolute performance angles during the technical performance stages of the hit/spike skill.

6. The diversity in the training load configuration and the methods used in its application, and the nature of the fixed muscle contractions have had a significant impact in the development of mechanical strength of the stages of performance, and the spirit of competition among members of the research group.

Recommendations

1. Emphasis on conducting fixed strength exercises, especially for muscles working on the joints of the hips, knees and ankles, as well as on the muscles working on the joints of the shoulders, elbows and wrists, as applied in the research to its importance in achieving speed approach approaching and positioning the center of body mass at the highest possible height due to the development of muscle strength During performance.

2. Conducting strength exercises with fixed resistances, can contribute to the integration of performance and increase the efficiency of muscles and adapted to the goal of the required movement.

3. Conducting complementary studies aimed at studying other Bio kinematics variables (kinetic energy, angular power, etc.).

4. Emphasis on the application of various fixed strength exercises to develop the strength of the muscles stretching responsible for the maintenance of skill performance and integration.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Faculty of Education for Girls University of Thi-Qar and all experiments were carried out in accordance with approved guidelines.

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