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The effect of special strength training on developing biomechanical variables run up, hurdle during tuck (Tsukahara) Round off Back performance on the jump table

[1]Asst. Prof. Dr. Zina Abdel Salam; [2]Asst. Lect. Farah Alaa Jaafar

Abstract

The strength exercises greatly affect the speed of the motor performance, especially the stage of performing the approximate running and upgrading, where the player needs a force that sheds it at the moment of rise to pass the jumping platform, and these exercises must be built according to real indicators based on scientific results to know the nature of this power of the player and the extent of its impact on The length of the gauntlet step during the moment of the rise to pass the advancement plate, through sweating at the nature of the force falling to the initial wheel the last three steps and hitting the rise plate can be used (Foot scan) to determine this dominant force and correct the foot position and areas of pressure projected in order to develop this strength and thus influence the variables Mechanical and achieve a good performance for this skill. It was studied in order to avoid excessive movements in performance and the dispersion of forces, so the researcher was keen to measure these forces by using a foot scanner and extracting Kinematic variables for the Arab jump skill, especially the approximate running stage and upgrading through video imaging and motor analysis and preparing special exercises to develop these variables in order to solve This problem and the researcher imposed no statistically significant differences between the pre and post tests in the (foot scan) and kinematic indicators and the dominant force of the skill of Tsukahara round off Back tuck (Tsukahara) developed on the jump platform. The research was applied to the research sample on the players of the national team for juniors in the technical gymnastics for ages (11-13) years, whose number is (6) players, and the value of (T) was extracted between the results of the tribal and post-tests, and the researcher concluded. The effectiveness of the exercises placed within the training curriculum in improving the approximate running and upgrading according to the indicators (Foot scan) and kinematic in the performance of Round off Back tuck (Tsukahara) on the jumping platform, and worked to reduce the deviation of the foot from the true path of the rough run, which helps to save time and effort and reduce Distance and skill development.

Keywords*: Foot Scanner, Approx Running, Rollup, Leverage, Video*

Introduction

The nature of the performance on the horse jumping device is characterized by its being in the form of a single sporting movement, which makes it related to the characteristic force characteristic of speed along with other characteristics such as transmission speed, stable balance and special agility (Mohammed, 1992). Hence training must begin to develop strength and ability at an early age in order to achieve the maximum potential and complete the skills required for higher competitions. It is necessary for the gymnast to have enough explosive force in the muscles of the lower limb in order to

[1] University of Baghdad: College of Physical Education and Sports Science for Girls, zena@copew.uobaghdad.edu.iq

[2] Central Technical University / Institute of Management / Rusafa

implement many of the required jumping skills while maintaining body control (Ford, 2011) (Bencke, 2002). It is essential for players to have advanced explosive energy in the lower and upper muscular system, especially for jumping and heart performance (Jemni, 2006) (Bradshaw, 2004) (Bradshaw, 2014) It is recognized that reaching the elite level in gymnastics requires high levels of strength, ability, and flexibility Agility and intense physical training and therefore must begin at an early age (Bale, 1990) (Kums, 2005). The skilled performance on the horse jumping device passes several technical stages, interlinked and sequential, and the success in the performance of each stage is a good indication of the success of the next stage in the overall skill performance. The stages of performance on a jumping horse can be summarized in "Approaching - Upgrading - First Flight - Hand Focusing and Pushing - Second Flight - Landing" (**Atiković, 2012**). These stages are interconnected among them and the success of any stage depends on the success of the stage preceding it and the stage of hitting the advancement plate needs to be successful on the approximate run, here the player needs a force that is shed by the moment of rise to pass the jumping platform, as well as when landing on the rug, so these exercises must be built according to indicators Real based on scientific results to know this dominant power of the player and the biomechanical variables for the first and second stage by using a foot scanner. It helps in detecting the amount of power applied to the feet, the time of contact and the pressure applied, and the extent of the benefit of these basic indicators in developing training methods. The strength depends on the biomechanical principles and to achieve good performance through the use of kinetic analysis according to the kinetic performance required by preparing the strength training necessary for its development. (Essam, 2005) mentioned that muscular strength is one of the most important physical and motor abilities that affect the level of performance in sports activities, and muscle strength is one of the main distinctive capabilities in all forms of sports activity, however, the degree of its presence varies with respect to each physical performance, but there is muscle strength in every color of sports activity, as physical performance is always against different resistance (Dinyman, 1998).

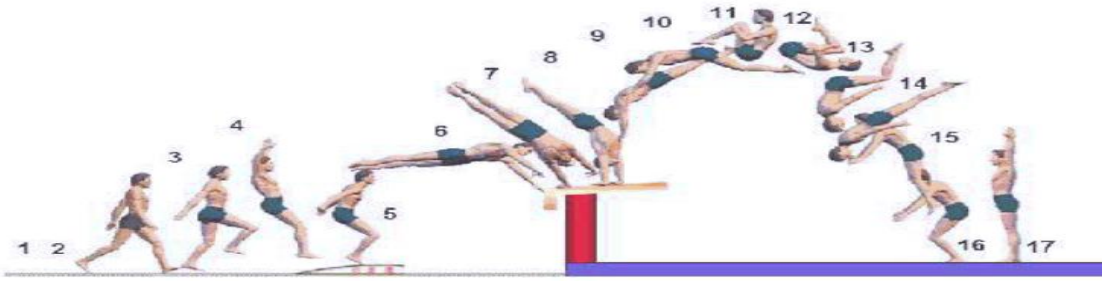

Figure 1: Round off Back tuck skill (Tsukahara)

Methodology

The sample: The research sample included the players of the national team for juniors of ages from (11-13) years, whose number is (6) out of (7) players, representing (71%) of the original community, and they were chosen in an intentional way, and the researcher used the one group method.), Length (139.92 ± 11.56), mass (35.75 ± 6.71), training age (6.5 ± 1.87) with participation in gymnastics competitions not less than three years, and all participants in this study were able to implement Round off Back tuck Tsukahara).

Steps: Before applying the training program, the two researchers adopted to measure the level of performance and biomechanical variables by photographing the performance in the presence of a foot scanner. The start beeping blast starts

toward the approximate jogging platform to perform Round off Back tuck (Tsukahara) skill. The data of each player (weight, age, and foot size) has been recorded in the computer connected to the foot scanner device so that the device is ready to measure the force, pressure, and angle of deflection of the foot and give the results directly after the attempt. The first two cameras were placed on the side of the jump platform and a distance of (8 m) and the second to Aside from the approximate running field, to shoot the phases of the jump, at a distance of (11.30 m) and at a height (130 cm). Then the performance was presented to each player to four arbitrators to evaluate the performance. Biomechanical foot scanner indicators were extracted for the individuals in the research sample. Three transformers were given to each player, and the best attempt was calculated.

Training Program: The strength training for the technical performance of the search skill jumping round off back tuck (Tsukahara) was placed on the jumping table for the research sample and the program was implemented on 19/4/2018 until 5/6/2018, and the application of exercises took (8) weeks by three Training units per week, each unit has a time of (35) minutes in the main part, for a total of (24) training units using repetitive training in the main section of the training unit.

Table (1) A sample of training units

T	The Exercises	The distress	The performance time	Redundancy	Comfort between redundancy	The totals.	Total Time	Comfort between the totals.
1	Jump jump between stairs with unequivocal right weight with the use of rope ,rubber with the help of a colleague	85%	8 tha	4	24	2	3.2	The return pulse to 120 bpm
2	Running on the runways at high speed	—	2 tha	5	6	2	1.2	
3	(Stand - stand up barriers) the knees bend and then jump over and landing in front of the highest anti-footed" together and then jump over the objection, the second landing and robot walking together		3 d	4	40 tha	2	3 d	
4	The jogging (125m) and the work of the Arab League and then jumping over the glove work of little airbag on the platform jumping		7 tha	5	21	2	3.9	
5	The jogging strides distance (10m) and then the work of the Arab metropolis jump bike is curled up on the platform jumping		6 tha	5	18	2	3.4	

6	The work of the full and the beep running to accelerate		10 tha	5	30	2	5.6	
7	Rapid jogging spot with lifting the knees High		3 tha	10	9	3	5.5	
8	with jumping up with the use of the weights	85%	3 tha	10	9	2	3.7	
9	Taking a step forward with the work of the Arab Jump Jump metropolis bike is curled up on the floor		3 tha	5	9	3	2.5	

Period: Special preparation // Unit: 19, 20, 21 (Unit Seven) // Exercise time: 32-35 minutes

After the completion of the training program, the two researchers conducted the dimensional tests on the research sample on 6/6/2018 in the hall of the training center for your technical gymnasium and used the same tools, devices, conditions and method in which the pre-test was performed, and measurements of the Foot Scan device indicators and biomechanical variables were taken for skill Research and evaluate the technical performance of the skill. SPSS: Paired-Samples T Test was used for correlated samples.

Results and Discussion

Table (2) arithmetic mean, standard deviations and calculated (T) value for (Foot Scan) indicators between the pre and post tests of the research sample.

T	The variables	The unit of measurement	Tribal Test		The Dimensional Test		O P	P-3	The calculated value of T *
			Q	P	Q	P			
1	The Force inflicted	Net/tha	935.9	202.7	1076.9	86.3	141	171.32	4.841
2	Pressure	Net/cm2	48.9	6.99	58.6	3.85	9.7	3.66	6.492
3	The angle of deviation	The degree	20.15	3.68	17.38	0.68	2.77	1.64	4.140
4	The time to seek	Tha	0.31	0.04	0.23	0.02	0.08	0.05	4,000

It is clear from Table (2) that the calculated (T) values were significant in favor of the post-test and the researchers attribute the reason for this progress in the indicators of the foot scanner to the exercises that were used and the use of auxiliary tools according to performance had a positive and effective impact in developing performance, especially the special strength training The equipment is based on the use of the Foot Scan and correcting the pressure areas of the foot During training on running in the form of steadiness and a hurdle that led to the development of the physical capabilities needed by the gymnast with a noticeable improvement in the kinematic variables of the two stages of the approximate run and upgrading and development with the development of momentum, which has an active role in improving the approximate running stage and upgrading with the relative decrease in its time, which He also developed initial hopscotch

movements before the elevation stage. (Dintiman) notes that "special exercises that help develop the work of the working muscles in running and lead to an improvement in the speed of their steps and the next maximum speed by less than (0.6 seconds) and more (Saeb; 1991). These exercises used also have an effective effect in stimulating the nervous system The central, which in turn developed into nerve signals and created a kind of counseling to stimulate the working muscle groups positively (Dinyman, 1998). As the strength was used in a relatively short period of time, the effect of force push was greater, as Saeb Al-Ubaidi emphasized. Its impact is greater than if in a long period of time. (Saeb; 1991) As for the foot pressure variable, the researcher attributes the reason for this improvement in the pressure force applied to the foot is the result of the corrective exercises that were applied with some tools and aids to jump and part according to the performance and also had a great impact on the reaction reaction (the force exerted at the moment of attachment), so improving the foot position at Implementing momentum moments in each step according to the resistance (pressure = vertical force / area) in the pre-test in which the area on which the foot was based was large, which reflected a few values of pressure strength in these tests and improved foot position in the distance tests through training running, jumping and parting Step improvement and foot placement. As for the angle of the angle of deflection of the foot at the moment of striking the glove, there appeared significant differences in favor of the post-test, which adds a distance to the horizontal distance that the player is running. The researcher attributes this development to the corrective exercises of the foot position and to the special strength exercises used to become the position of the foot during the approximate run, i.e. modifying the foot deviation from a path Approximate running. Through these exercises, you get the economy in distance and time to travel this distance. The auxiliary methods of running make the muscles of the legs more consistent and responsive to the muscular reactions at moments of momentary force push with the ground. These theories go in saying that the increased horizontal linear momentum resulting from the rapid running with help changes the ability of the knee joint and the entire movement, which allows the flow of strength to flow And economist (Kurz, 2001).

Table (3) showing the results of the kinematic variables and the technical performance of the Arab leap skill followed by frequent air flips on the jump platform

T	The variables	The unit of measurement	Tribal Test		The Dimensional Test		O P	P-3	The calculated value of k*
			Q	P	Q	P			
1	Running approximate speed(10m)	M/sec	6.61	0.647	7.47	0.622	0.86	0.730	4.598
2	The approximate time of running (10m)	Tha	1.50	0.145	1.27	0.185	0.23	0.096	5.897
3	Just a step glove	M	2.45	0.795	2.63	0.076	0.18	0.132	5.806
4	The time of the three step	Tha	0.81	0.006	0.76	0.026	0.05	Merely 0.039	3.333

5	The point of departure for the body	The degree	60	2	63	1.5	3	1.245	5.905
6	The angle of the advancement of	The degree	63	3	68	2.75	5	2.949	18.803
7	Performance	The degree	10.25	1.275	11.41	Views 167 Popularit y 0.130	1.16	0.910	4.205

It is clear from Table (2) there are significant differences between the pre and post tests biochemical variables and technical performance and the researcher attributes that the exercises that were developed for rapid running for a distance of 10 m-15 m led to adaptation to this run helped to develop the approximate running speed and the development of the player's technique in running and its rhythms and thus affected the Improving the length of the glove step, as “players should exercise more reliance on visual vision to hit the glove by a wide step with no or less loss in running speed” (Muslim, 2008) and also this supports the results from the previous literature that exercises Enemy speed can increase (Meylan, 2009). As for the approximate running time and the three-step time, it was significant and the researcher attributed the reason for the impulsion and excitement to perform special exercises that enable the player to control the speed of his body and that are related to the running time.Acceleration of horizontal velocity and kinetic energy thus decreasing performance time "(Serih, 2005). Highlighting likely strength enhancement by improving time to start muscle shift and the ability to recruit specific muscle fibers, most notably type 2. However, the results conflict with (Ahmed, 2013) who found no difference in running time after exercise. The current study adds to the current literature that running speed can be increased through exercises, however, it is not possible to distinguish between the 18 stage that was mostly affected. In addition, the increase in running speed, and the distance from the height to the distance of the board, all of which have been positively reinforced to a "moderate" degree, can be attributed to an improvement in the tide shortening cycle as a result of the exercises. Decentralized contractility during downward plantar flexion and knee flexion efficacy of flexion and tide in gastrocnemius and quadriceps muscles (Ball, 2009) (Chimera, 2004). Concentric contractions follow immediately, allowing the elastic component of the chain to boost strength production (Bobbert, 1996). As for the angle of departure of the body and the angle of rise, it was significant, and the researcher attributes it, because the exercises that were used are of a skillful nature and the development of the push process at the moment of rise. Nizar Talib sees that "the highest height that the body reaches after the start depends largely on the angle of launch and its speed" (Nizar, 1982). The increase in the amount of the rise angle leads to an increase in the starting angle, depending on their capabilities and their ability to transfer the largest amount of energy to the vehicle of the speed closest to the vertical and to obtain a very simple height for the performance of the Arab hedge. The body, i.e. decreased body weight resistance "(Sharm, 1995). The improvement of these angles has to do with the result of the variation in the proximate distance between the vertical between the force of the ground and the center of gravity and the mutual effect outside the center of gravity at the moment of rise in the sense that the starting angle is affected by the angle of rise and this is confirmed by its scarcity." As the lower

the angle of rise, that is, the further it moves away from the level close to the vertical, this will affect the increase in the movement of the horizontal speed at the expense of the vertical and thus increase the horizontal kinetic energy, that is, the starting of the body will be close to the horizontal (Mohamed, 1989).

Conclusions

1. Improving the converging run and advancing positively affect the improvement of the degree of performance.
2. It showed the effectiveness of the exercises placed within the training curriculum in improving the proximity run and upgrading according to the indicators (Foot Scan) and kinematic in the performance of Round off Back tuck (Tsukahara) on the jumping platform.
3. The exercises worked to reduce the deviation of the foot from the true course of the converging run, which helped to save time and effort and reduce distance.
4. Exercises used with tools and aids according to skill performance within the special strength and speed training, so he helped him to improve the force and pressure exerted at the moment of a close run and upgrading.

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