SPECIAL TRAINING TO DEVELOP SPATIAL & TEMPORAL FIELDS AFTER STARTING FOR 100 M DASH YOUNG RUNNERS

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Abstract

Therefore, the importance of the study lies in the focus on studying width, length and frequency of the step at the starting moment and what is following. This is found in Iraqi athletes in 1000 meter dash races and their reflections on achievement by focusing on their personal physical characteristics. This information may help trainers in planning their training courses depending on biomechanics. Hence, the researcher refers to one of the training topics in the field of biomechanics at the same time. These studies are restricted to the study of steps' length, frequency, speed rates of the different stages if this race and many other variables. However, as far as the researcher knows, there was no study tackling step width (side distance between feet at the moment of start or running). Through the researcher's observation, as one of the specialists in athletics, sport training, biomechanics and technical field, he noticed that a lot of champions of this competition are characterized by short steps with clear width between them. The study aims to identify measurements of the side distance and some physical abilities related to temporal and spatial variables for 1000 meter dash runners.Tests of the Study Explosive ability test: this ability is represented in the long jump from stationary position. The distance jumped by the player (as the result of distance and dividing it to performance time) due to the following role:

Explosive ability (result of jumping distance) = strength X performance time, so strength = result of jumping distance / performance time) measuring unit is meter / sec. Jumping distance is measured using measuring tape and performance time is measured by videotaping and kinetic analysis. Conclusions There was a clear excel for members of the empirical group which focused on achieving side step capacity while starting and at the first acceleration phase in all mechanical aspects related to the step Training on developing speed ability helps integrate all step variables to make good achievement. Achieving side step capacity reinforces motive strength while starting and providing necessary acceleration.

Keyword: Special Training, Develop Spatial, Temporal Fields, Starting for 100 m, Young Runners"

1. INTRODUCTION

Most of the studies that discussed short distances in athletics, especially the 100 m dash race, tackle aspects of steps length, frequency and speed rate. Trainers give instructions to athletes to take short steps, make high frequencies for steps after starting in dash races and keep body's bending posture in order to reinforce rotation torques. This gives the body the needed linear momentum and positive speed acceleration. Although empirical data of some studies related to step length in 100 meter dash races (side distance between feet at the moment of start or running) did not show its importance in speed rate and good achievement. Therefore, the researcher thinks that studying this variable may contribute to reinforce special and effective information in acquiring positive acceleration and enhance achievement in 100 meter dash races. The natural increase appears in the step when the ability against the ground is used through enhancing step frequency, so the best way to enhance steps is not in the way of implementing the technique, but the best way is to enhance susceptibility to produce ability (such as speed and strength) as natural increase in the step appears while using ability against the ground through enhancing steps frequency or traditional short running. Running rate in short distance races is faster than with tall runners who run faster in longer distance races as they require speed and extension.

Therefore, the importance of the study lies in the focus on studying width, length and frequency of the step at the starting moment and what is following. This is found in Iraqi athletes in 1000 meter dash races and their reflections on achievement by focusing on their personal physical characteristics. This information may help trainers in planning their training courses depending on biomechanics. Hence, the researcher refers to one of the training topics in the field of biomechanics at the same time. These studies are restricted to the study of steps' length, frequency, speed rates of the different stages if this race and many other variables. However, as far as the researcher knows, there was no study tackling step width (side distance between feet at the moment of start or running). Through the researcher's observation, as one of the specialists in athletics, sport training, biomechanics and technical field, he noticed that a lot of champions of this competition are characterized by short steps with clear width between them. The study aims to identify measurements of the side distance and some physical abilities related to temporal and spatial variables for 1000 meter dash runners.

2. METHODOLOGY:

The researcher used the empirical research method.

Sample of the Study:

The researcher chose a purposive sample of 1000 meter dash race young players of Baghdad clubs for the 2015 season (8 runners) with arithmetic mean of the ir ages (18.6) and standard deviation (0.86).

Tests of the Study:

The plan of the study included measuring some quick abilities related to variables of the step (capacity, length and frequency of steps) and these abilities were as follows:

- Explosive ability test: this ability is represented in the long jump from stationary position. The distance jumped by the player (as the result of distance and dividing it to performance time) due to the following role:

Explosive ability (result of jumping distance) = strength X performance time, so strength = result of jumping distance / performance time) measuring unit is meter / sec.

Jumping distance is measured using measuring tape and performance time is measured by videotaping and kinetic analysis.

- Quick strength (ability): represented in consecutive jumping of the four legs and stationary (running by jumping). Distance is measured (such as result of the distance he jumps) with performance duration. This test is a repetition of exerting explosive power for four consecutive times, so strength is measured as follows:

Ability (result of jumping distance) = strength x time

Strength = result of jumping distance x time (m/sec)

Trial of the Study and the Pre-Test:

The sample consisted of 8 dash runners who participated in the Iraq championship's race. Runners were randomly divided into two groups: empirical (4) and control (4) groups. Two video cameras were set in the position of the audience. One of them is to record the duration of touching the ball close to running field in the acceleration phase from zero to 30 meters. The other camera was set at the middle of the race to measure the longest distance of the step achieved in the race through regular speed. It was suggested that the 50 meters location of the race will provide the camera with a field for running between and meters which is necessary to provide this information. Direct linear transformation method was used for two coordinates (x and y) of runner's toes during the duration of touching the feet with the ground. Analysis results provided accurate measurements of step capacity through measuring the location of the feet on the ground sprayed by the boric substance. In addition, both tests of explosive strength and ability were measured in order to get information of performance duration, step length and frequency were measured through distance after starting for 30 meters and also the best length and frequency were measured in the distance between 40 and 60 meters in order to get real information from these variables.

3. Discussion of Results:

The following is a discussion and analysis of results for each group:

Table (1): difference of arithmetic means, standard deviation, counted and schedule T value and difference significance between results of pre and post tests in physical variables for the empirical group:

Variables	Measurement unit	Mean	S.D	T counted value	T schedule value *	significance
Explosive strength	m/sec	0.285	0.121	4.701	3.182	Significant
Speed strength	m/sec	1.653	0.146	22.615		Significant
Step length	Meter	1.10	0.679	3.238		Significant
Step frequency	Step/sec	0.758	0.186	8.165		Significant
Step capacity	Cm	0.980	0.210	4.65		Significant
Achievement	Sec	3.633	1.824	3.984		Significant

*** T schedule value at significance level (0.05) and freedom degree (3 = 1-4)**

Table (2): difference of arithmetic means, standard deviation, counted and schedule T value and difference significance between results of pre and post tests in physical variables for the control group:

Variables	Measurement unit	Mean	S.D	T counted value *	T schedule value	Significance

Explosive strength	m/sec	0.043	0.052	1.638	3.182	Insignificant
Speed strength	m/sec	0.063	0.085	1.464		Insignificant
Step length	Meter	0.355	0.445	1.597		Insignificant
Step frequency	Step/sec	0.133	0.087	3.035		Significant
Step capacity	Cm	1.720	0.649	2.65		Insignificant
Achievement	Sec	2.410	1.48	1.621		Insignificant

*** T counted value at significance level (0.05) and freedom degree (3 = 1-4)**

Table (1): difference of arithmetic means, standard deviation, counted and schedule T value and difference significance between results of post test in physical variables of the study:

Variables	Measurement unit	Empirical G		Control G		T counted value	T schedule value *	significance
		Mean	S.D	Mean	S.D			
Explosive strength	m/sec	3.30	0.199	3.03	0.103	2.353	2.447	Insignificant
Speed strength	m/sec	5.575	0.275	4.163	0.728	3.628	2.447	Significant
Step length	Meter	2.133	0.470	2.385	0.267	2.766	2.447	Significant
Step frequency	Step/sec	4.89	0.688	4.553	0.444	1.618	2.447	Insignificant
Step capacity	Cm	17.198	0.07	27.758	0.04	2.724	2.447	Significant
Achievement	Sec	11.23	0.45	11.65	0.87	3.631	2.447	Significant

*** T schedule value at significance level (0.05) and freedom degree (3 = 1-4)**

Table (1) shows that all counted T values in the empirical group are more than the schedule value (3.182) at significance level (0.05) and freedom degree (3). Since the counted value is more than schedule value, this shows the significance of differences between pre and post tests, physical, mechanical variables and achievement for the empirical group. Table (2) shows that all counted T values in the empirical group are less than the schedule value (3.182) at significance level (0.05) and freedom degree (3) except for the variable of step frequency. Since the counted value is less than schedule value, this shows the insignificance of differences between pre and post tests, physical, mechanical variables and achievement for this group. As for differences in post-test results between both groups, there were significant differences in speed ability, step length, capacity and achievement. There were no significant differences in step frequency and explosive strength.

All tests used in the field trial of the study are closely relate to strength ability which was focused on during the special strength training program used by both researchers on members of the empirical group. The development in these results of tests is an evidence of the effect of this training on developing muscular groups operating in extension and contraction joints related to these movements. The duration of extension and contraction reaches its minimum including a decrease in duration of 100 m dash running which expresses the individual's ability to exert the highest rates of speed and explosive strength to get the least acceleration average reflecting having the highest possible speed represented in decreasing the time of covering this distance (race distance). Most specialized studies referred that strength increase is indirectly proportionate with time and directly with speed with relative consistency of mass due to the following rule:

Strength = mass x speed/time.

Steps capacity, length and frequency were measured at starting and after starting for the 100 m dash distance for the sample of the study. It was found that the main distance between runners was in step length. It was also found that step capacity for both groups was low for the side from 0.39 ± 0.07 m in the step after start with an amount of 0.17 ± 0.04 m during running with complete step. Both researchers concluded that the big side capacity of the step will develop the motive strength through a long touching period of foot when running with complete step.

Speed strength training led to increase speed and explosive muscular strength and quick response to produce the highest muscular ability due to the type of the used resistance and raising it gradually. This means increasing its kinetic energy represented in increasing muscular frequency speed (contraction and extension) reflected on results of post-tests of this group, while there were insignificant differences for members of the control group as the researcher found that muscular fibers have the ability to produce great strength through the use of ability and explosive strength training depending on body weight as a resisting strength. Thus, the number of operating kinetic units will increase and their ability to produce kinetic power increases too. This refers to the development of these muscles' efficiency within kinetic aspects of performance depending on strength change within joints responsible for movement which gives a concept about the extent of explosive and speed strength development for members of this group throughout the covered long distance in a specific number of jumps.

As expected, there was a gradual increase in step length during the first part of acceleration phase. The increase patterns were similar for both groups. On the other hand, the empirical group had longer steps during acceleration phase. The same thing is correct while running with full steps. The length of line was longer with the average of 0.12 ± 0.03 meters which is the longest comparison with the control group at significance level ($p<0.05$). Step frequency was maintained mostly at one level at acceleration phase at 50 meters and during complete running steps for both groups. The empirical group showed that it reached high speed. In terms of side step speed, there was a difference between both groups, but it was clear that there was a capacity for all athletes from the first step with a value of 0.07 ±0.39 meters after the beginning to reach full step with a value of 0.17 ± 0.04 meters. These results refer that step capacity is the best in developing motive strength during short touching periods for both feet while running with full steps. There is a need for this mechanical study for step capacity.

4. Conclusions:

1. There was a clear excel for members of the empirical group which focused on achieving side step capacity while starting and at the first acceleration phase in all mechanical aspects related to the step.
2. Training on developing speed ability helps integrate all step variables to make good achievement.
3. Achieving side step capacity reinforces motive strength while starting and providing necessary acceleration.
4. Reaching regular speed for athletes is achieved through the assertion on side step capacity to ensure achieving a balanced step length and frequency and reach suitable speed average.
5.

5. Recommendations:

1. Runners should focus on reaching high step frequency in the beginning.
2. At the same time, runners should exert efforts to achieve longer steps than in the beginning.
3. It is useful to make starting steps wide in first steps and gradually decreasing from 0.4 m (at first steps) to 0.17 m while running with complete step.
4. Asserting the knowledge of mechanical basics and understanding them well due to their relation to training aspects and integration of physical characteristics of this competition to identify the extent of development during using training programs.
5. Assuring trainers the necessity of periodic control on step capacity, length and frequency as an indicator in determining speed rate.
6. Setting training courses whish are practically planned for and based on scientific principles to benefit from and reach the highest levels.

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