THE EFFECT OF A TRAINING CURRICULUM ACCORDING TO THE PHYSIOLOGICAL INDEX AND THE TRANSITIONAL SPEED OF THE 100M HURDLES RUNNER

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Abstract

Recently, that there has been a decline in the levels of female players for this event in recent years compared to developments in the world, as this activity depends to achieve the highest level of performance on the physical capabilities and physiological indicators of the player who It is reflected in the achievement, which results in the loss of time for Iraqi female runners compared to the world champions in the (100) meter hurdles competition, which reflects on the level of achievement. The two researchers used the experimental approach in addressing the research problem, and the experimental design used the method of the two equal groups, the two experiments with the pre and post-tests. Female runner and second experimental group (4) female runners, and they were divided by the method of odd and even numbers according to the sequence of their achievements into two experimental and control groups. A set of tests and measurements were identified and using the approved tests in the research, and the two researchers conducted the main experiment for a period of (8) weeks. The researchers concluded The application of the training curriculum according to the comfort index works to develop some physiological indicators and the transitional speed of the 100m runner. It is recommended that the training curriculum be adopted according to the comfort index of the 100m hurdles runner.

Keywords: Comfort index. Physiological indicators. 100m hurdles runners

Introduction

The most important criteria for the success of the training process is a double-edged sword, and athletics is one of the sports that depends very much on the light of some physiological indicators and in the light of these variables. The training process aims to prepare a training curriculum at the level of physical capabilities, as each athletics event requires physical preparation And movement, especially the event of 100m hurdles for women, as the female runner must be characterized by special advantages and possess high-level physical capabilities and special training requirements to reach her to a motor and skillful performance along the stages of the race in order to achieve the required achievement in this event and for this a training curriculum was prepared in the development The physical and physiological aspect according to the comfort indicators in order to implement the training work for the purpose of achieving the required physical and physiological adaptation in terms of work requirements. Hence the importance of this study stems from preparing a training curriculum according to the comfort index in developing some physiological indicators and the transitional speed of the runners 100 / m hurdles, which can be provided by providing the foundations Scientific training exercises

that help the contestants to perform exercises under changing conditions in terms of comfort that have the most impact, for the purpose of bringing about development and then trying to keep pace with the internationally developed level in them. The problem of the research lies in the fact that it has been noticed lately that there has been a decline in the levels of female players for this activity in recent years compared to the developments taking place in the world. Compared with the world champions in the (100) meters hurdles competition, which reflects the level of achievement. The aim of the research is to identify the effect of the training curriculum according to the comfort index on some physiological indicators of the 100-meter hurdles runners. The research aims: Preparing a training curriculum according to the comfort index of the 100m hurdles runner. To identify the effect of the training curriculum according to the comfort index on some physiological indicators and the transitional speed of the 100m hurdles runner. Research hypothesis: There are statistically significant differences between the results of the pre and post-tests of the two (experimental) groups in some physiological indicators and the transitional speed of the 100m hurdles runner. The transitional field of the 100m hurdles runner Research fields: The human field: the players of the Sirwan Club, the Peshmerga Club, and the North Gas Club The temporal field: the period from 7/14/2022 to 9/12/2022. The spatial field: the stadium of the College of Physical Education, Sulaymaniyah University.

Method and Procedure

The experimental approach is one of the most important scientific research methods and the most widely used in the mathematical field, so the two researchers found that the nature of the problem that it addressed is the adoption of a specific type of research methodology and the most appropriate approach that can be used to solve the problem of the current research and reach the achievement of its goals and obtain reliable scientific results is the experimental approach in addressing The research problem, and the experimental design used the method of two equal groups, with two pre and post-tests (Table 1).

The research community and its sample: The research community was determined by the intentional method, and they are 100m hurdles runners from the youth category. And the selection of Sulaymaniyah club runners in athletics, and the sample was chosen intentionally, and the sample was divided into two groups randomly by drawing lots, and their number was (8) players. They were divided into two groups by drawing lots (a first experimental group (4) runners and a second experimental group (4) runners who practice Daily exercises The two researchers conducted homogenization for the research sample individuals in terms of (age, weight, height) and the normal distribution of the research variables. Homogeneity of the research sample can be shown in table 2 (Table 2). The normal distribution of the sample can be shown in table 3 (Table 3).

It is noted from tables 4 and 5 that the values of the torsion coefficient were confined to (+3) all of them, and this indicates the homogeneity of the research sample in the variables referred to in the table, which are within the normal curve (Tables 4 & 5).

The equivalence between two groups: The equivalence of the sample (the experimental and control groups) was conducted in the pre-tests of the research variables, and by extracting the value of (T), it was found that all the results are not significant, and this indicates that the sample is equivalent and in one line of initiation to start the main experiment, as shown in table 4.

The values of the (t) test calculated for the research variables between the first and second experimental groups in the pre-test were all random. The differences in the research variables in the pre-test, which indicates equivalence between the two experimental group.

Table 1: Shows the experimental design adopted in the research The research community and its sample.

Post tests	Experimental design	Pre tests	The groups
• The physiological indicators • Transitional speed	• Transitional speed training curriculum With a relatively sufficient rest time (2) minutes and more	The physiological indicators Transitional speed	The first experimental
• The physiological indicators • Transitional speed	• short rest time (1)minute and less	• The physiological indicators •Transitional speed	The second experimental

Revista Iberoamericana de Psicología del Ejercicio y el Deporte. Vol. 18, nº 3 (2023)

259

Table 2: Shows the homogeneity of the research sample in some anthropometric measurements.

The variables	Measuring unit	n	Arithmetic mean	Mediator	standard deviation	torsion coefficient
height	cm	8	167.7	167	2.750	0.631
Weight	kg	8	58.40	59	3.062	0.241
age	year	8	17.1	17	0.567	0.091

Table 3: Shows the normal distribution of the sample in some research variables.

The variables	Measuring unit	n	Arithmetic mean	Mediator	standard deviation	torsion coefficient
Transitional speed	second	8	4.192	4.22	0.158	0.738-
C. p. K at rest	Mmol/L	8	130,25	130.5	2.375	0.650-
C. p. K post achievment	Mmol/L	8	163.25	163.5	2.712	0.007-
Pulse at rest	b/m	8	63,08	61,00	2,07	-0,301
Number of breaths	n/m	8	15,16	15,00	0,16	-0,003

Table 4: Shows the equivalence between the two pre-experimental research groups.

The variables	Measuring unit	The first experimental		The second experimental		calculated t value	Error level	Indecator difference
		Arithmetic mean	Standard deviation	Arithmetc mean	Standard deviation			
Transitional speed	second	4.115	0.188	4.270	0.087	1.496	0.185	random
C. p. K at rest	Mmol/L	135.0	2.302	128.0	3.559	0.878	0.414	random
C. p. K post achievment	Mmol/L	163.00	2.943	163.50	2.886	0.243	0.816	random
Pulse at rest	b/m	63,08	1,16	64,9	0.9	4,1	0.002	random
Numberof breaths	N/m	15,16	0,71	16	0,6	3,07	0.002	random
Degree of freedom (n-2) = 6 and level of significance (0.05)								

Table 5: It shows the arithmetic means, standard deviations, differences, the calculated t-value, and the level of significance for the first experimental group in the transitional velocity and the c.p.k enzyme between the pre and post tests.

The variables	Measuring unit	pretest		Post test		medial difference	Medial deviation	Calculated t value	Error level	indicator
		Arithmetic mean	standard deviation	Arithmetic mean	standard deviation					
Transitional speed	second	4.115	0.188	3.862	0.049	0.252	0.176	2.855	0.065	random
At rest C. p K	Mmol/L	131.0	2.449	135.25	0.957	4.250	2.061	4.123	0.026	moral
Post effort C. p K	Mmol/L	163.0	2.943	152.50	2.380	10.50	1.290	16.267	0.001	moral
Pulse rate at rest	b/m	65,5	1,16	64,9	0.9	0,58	0,51	3,99	0.002	moral
Breath rate	n/m	16,5	0,52	16	0,6	0,5	0,52	3,3	0.002	moral

Means of Collecting Information, Tools and Devices Used In the Research

Means of collecting information: Arabic and foreign sources. World Wide Web of Internet Information. Personal interviews.

Devices and tools used in the research: Casio electronic stopwatch number (2). Various training cones. Hurdles. Jumping boxes. Square test box. Weights. Medical scale. Metal metric tape measure. Korean HP laptop. Legal running field for athletics. Starting blocks, various plastic cones Sizes. (4) white flags. Centrifuge device (Center fuge) Plastic medical syringes. Vials for preserving blood serum. Special kits for finding minerals in the blood. A set of supplies for drawing blood Steps to conduct the research:

Tests used in the research:

• Transitional speed test 30 meters

• **Purpose of the test:** to measure the maximum translational velocity

• Tools: a stopwatch, a whistle, identifying two parallel lines with a distance between them (30 m). The first line represents the starting line and the other line represents the finish line.

• **Description of the performance:** The tester stands behind the starting line from the high starting position, and upon hearing the launcher's whistle, the tester starts firing at the highest possible speed until crossing the finish line.

• **Performance conditions:** More than one player performs the test together to ensure the availability of the competition factor.

• **Method of registration:** The tester is given only one attempt. The time it takes for the tester from the start line to the finish line is calculated in seconds. The test has logical validity approved by the American Association for

Health and Physical Education (Figure 1).

Measurements of Physiological Indicators

First:

The objective of the test: measuring biochemical variables in the blood. **Tools used:** Laboratory medical tools

Method of work: The laboratory sits on the chair and the person conducting the test draws (5cc) blood, then analyzes it inside the laboratory by giving a picture of the blood and giving the results.

Recording: The results of the variables are taken after being processed in the laboratory in the resting position, as follows.

C.P.K. enzyme

Second: The resting pulse rate.

• **The aim of the test:** to measure the number of heart beats at rest.

• **Testing tool:** a device to measure the heart rate.

Execution of the test: This variable is measured according to the unit of measurement, stroke / minute, using a device that gives the number of heart beats per minute. Take the measurement for at least (10) minutes, and at that point the tester presses the start button, as the measurement that appears on the screen is taken, and the number of pulses is calculated for a minute, and then the data is recorded in the registration form.

Third: the number of breathing times at rest

• **The aim of the test:** To measure the number of breathing times at rest.
Measurement method: The player sits on a chair, the test person puts the

260

Revista Iberoamericana de Psicología del Ejercicio y el Deporte. Vol. 18, n° 3 (2023)
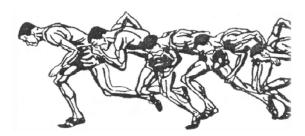
Figure 1: Shows the 30-meter sprint test.

Table 6: It shows the arithmetic means, standard deviations, differences, the calculated t-value, and the level of significance for the second experimental group in transitional speed and c.p.k enzyme between pre and post tests.

The variables	Measuring unit	pretest		Post test		medial difference	Medial deviation	Calculated t value	Error level	indicator
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation					
Transitional speed	second	4.270	0.087	4.010	0.077	0.26	0.948	10.765	0.002	moral
At rest C. p K	Mmol/L	129.5	2.380	131.75	1.258	2.250	2.872	1.567	0.215	random
Post effort C. p K	Mmol/L	163.50	2.886	157.50	1.290	6.00	2.449	4.899	0.016	moral
Pulse rate at rest	b/m	65,6	1,38	63,08	1,16	2,58	0,66	13,3	0.002	moral
Breath rate	n/m	16,75	0,75	15,16	0,71	1,58	0,51	10,6	0.002	moral

Table 7: The arithmetic means, standard deviations, differences, the calculated t-value, and the level of significance show the differences between the first experimental group and the second experimental group in motor abilities.

The variables	The first experimental group		The second experimental group		T	Error level	indicator
	Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation			
Transitional speed	3.862	0.049	4.010	0.077	3.201	0.019	Moral
At rest C. p K	135.25	0.957	131.75	1.258	4.427	0.004	Moral
Post effort C. p K	152.5	2.380	157.50	1.290	3.693	0.010	Moral
Pulse rate at rest	b/m	63,08	1,16	64,9	0.9	4,1	Moral
Breath rate	n/m	15,16	0,71	16	0,6	3,07	Moral

right hand under the sternum, ie: taking the feeling of the protrusion of the wall of the abdominal muscles with every normal inhale, then the test person holds a stopwatch with the left hand, the clock starts when feeling regularly Breathing is a process (inhalation and exhalation) with "alert the player that the measurement is not for the purpose of calculating the number of breaths in order to obtain accurate results" (15:264). The counting process can be repeated more than once if necessary, and the number of breaths per minute is calculated. The data is recorded in the registration form.

The survey experiment: The survey experiment is a practical mini-training for the two researchers to find out for themselves the negatives and positives that they encounter during the test in the future. Therefore, the two researchers conducted a survey experiment on (Thursday) on (7-14- 2022) on a sample consisting of three players outside the main sample.

Pre-tests: The two researchers, along with the assistant work team approved by the two researchers, carried out tests on the research sample on (Sunday and Monday) on (7/21-22/7/2022) using the approved tests in the research, as follows:

The first day: Measuring height, weight and age. Transitional speed

The second day: All measurements were taken on 7/18/2022 at (9) in the morning (to reduce the effect of circadian rhythms). Blood was drawn, and the laboratory was seated at an angle of (90 degrees). All analyzes were done using (one-time use) syringes and Whit tubes. The sorted blood serum samples were sent to the device, as they were chemically treated by the analyst (Zana Hussein Muhammad) of the laboratory (Bakhshin Hospital) with special chemicals to extract the percentage of enzyme (k.C.p) in the blood.

The main experiment (training curriculum): The two researchers conducted the main experiment on Wednesday, 7/20/2022, and completed it on Wednesday, 9/7/2022, for a period of 8 weeks. The training curriculum was applied according to the comfort index. The first experimental group, according to a relatively sufficient rest (2) minutes and more, and the second group (1) minutes and less, which is relatively less than the first experimental group, and the researchers adopted these exercises during two units per week within the curriculum prepared for training the speed component (Sunday and Thursday)

The curriculum was adopted during the main part of the training: an integrated complementary training system aimed at simulating competition by

dividing the speed into three main components: linear speed, speed of change of direction, agility, and interactive motor speed: the number of training units in the main experiment was (16) training units, within the department The main course, the time of the exercises ranges between (30-50) minutes from the time of the main section for team training, the use of quick performance for a short time in the development of interactive movement, the use of jumping and rotation exercises, then the launch, the use of front, back and side bouncing exercises, then the launch, the use of hopscotch and kicking exercises With the leg and then the start, the use of starts for different distances to develop the linear speed, the diversification and change in the performance of the exercises between one training unit and the next, the use of rest periods between all the exercises performed with intensity from (90% -95%), the groups were determined to be from (3-5) group For each exercise, the number of repetitions was determined from (3-5) for each exercise. The rest for the first experimental group was relatively long (2) minutes or more. As for the second experimental group, the rest was relatively short. Complete rest was not reached. The sample underwent a training course for a period of (8) weeks. The medium of each cycle consists of four weeks, the formation of the monthly pregnancy is 1:3, that is, 3 weeks of rise and one week of fall. The training curriculum was applied to the two experimental groups during the special preparation period.

Post tests: The two researchers, along with the assistant work team, conducted the post-tests on the research sample on Sunday and Monday on (11-12/9/2022), taking into account the same conditions related to the pre-tests.

Results and Discussion

After presenting the results in tables 5-7, it was found that the most important components of transitional velocity are motor abilities, and here (Wajih Mahjoub) shows that motor ability is part of the physical factors and means "innate ability and readiness." It also means the extent of motor skill, its accuracy, speed, and strength. 307:13) Since the training curriculum based on modern training foundations has the main role in raising the ability of female runners, and this is consistent with what (Saad Mohsen) mentioned in "that the training curriculum inevitably leads to the development of achievement, if it is built on a scientific basis in organizing the process Training and under the supervision of specialized trainers under good training conditions in terms of place, time and tools used" (98:7) (Tables 6, 7).

Revista Iberoamericana de Psicología del Ejercicio y el Deporte. Vol. 18, n° 3 (2023)

261

And his study confirmed (Sarah Emad and Iman) "that the interest in using such training curricula or special exercises" (8: 134).

The study (Zainab Qahtan) indicated that "the special exercises in the training curriculum had a positive effect on the skillful performance and had a role in developing achievement in the 100m and 200m activities" (3: 1).

And the study (Zainab Qahtan) emphasized "interest in a training curriculum that has an effective role in developing some functional indicators for field and field players" (4: 161).

The study (Amer Fakher and Israa) indicates that "the special exercises led to the development of the motor response speed through the training curriculum for load technicians" (11:3).

And (Muhammad Hassan Allawi) indicates that "the motor response is related to the accuracy of visual and auditory perception, the ability to validate expectations, intuition, speed of thinking, the skill level of the individual, and the ability to choose the appropriate type of response. And motor speed" (165:14).

His study (Shaker et al.) showed that "the training curriculum is based on low repetitions, as well as rest and intensity, and leads to physiological adaptation" (9: 21) and that the effect of high-intensity exercises leads to achieving adaptation in the circulatory system, especially the heart muscle, and improving the pulse And its decrease in its amount, and thus (Bahaa El-Din Ibrahim Salama) sees "when performing a measured load, the pulse speed in its absolute amount is less for the athlete or the better trained group" (2:54).

A study (Amer Fakher and Sabah Nuri) indicates that "performing the work method using special exercises to develop performance speed and balance, and the training curriculum has an effective and positive role" (10: 71).

The two researchers believe that the prepared training curriculum affected the experimental group in the functional variables, and this agrees with (Moataz Younis Al-Taie) that "functional training needs planning, organization, and the imagination of a trainer who is able to evaluate the success of the goals and enter the goal of training" (12:66).

The study (Zainab Qahtan) indicates that "special exercises within a training curriculum have an effective role in developing motor abilities and thus have a positive impact on achievement." (6:14).

The study (Diana Ghanem and Aseel Jalil) showed that "special exercises develop some physical abilities and the level of achievement for the long jump." This confirms the role of special exercises in developing motor abilities (6: 92).

Hence, the importance of the exercises related to the use of the training network has affected the variable under study for the organizational aspect through the distribution of exercises on different areas in the training units as well as through the regular intake of training doses, which in turn led to changes in the functional body systems, especially the heart and blood circulation. (Abu El-Ela Abdel-Fattah and Mohamed Sobhi Hassanein) confirm that the increase in physical efficiency leads to an improvement and a decrease in the pulse, as the regularity of training works to increase the efficiency of the heart and its ability to pump the largest amount of oxygen through a small number of beats (1) 57: the number of breathing times. Rest time The researchers attribute this to the effect of high-intensity exercises that lead to achieving adaptation in the respiratory circulatory system due to the training loads used according to the training methods used under study, which led to an increase in the burden on both the circulatory and respiratory systems, and thus sought to develop efficiency Individuals of the experimental group in the functional indicator, the number of breathing times at rest as a result of the practice of the curriculum developed by the two researchers.

The similarity of the work with the study of (Suha Ali Tahir, & Dr. Abeer Dakhil) and (Kzar, M.H., & Al-Selmi, A.D.H)) (16-18)).

Conclusions

1.   Adopting a training curriculum based on the comfort index works to develop the transitional speed of the 100m hurdles runners.

2.   Adopting a training curriculum based on the comfort index works to develop the resting level of the enzyme (C.P.K) for the 100m hurdles runner.

3.   Adopting a training curriculum according to the comfort index works to develop the level of enzyme (C.P.K) after the effort of the 100m hurdles runner.

4.   The adoption of a training curriculum according to the comfort index works on the latest adaptation in the pulse and breathing level of the 100m hurdles runner.

Recommendations

1.   Emphasis on publishing a training curriculum based on the comfort index for athletics coaches.

2.   The need for the study to be approved by the Athletics Federation.

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262

Revista Iberoamericana de Psicología del Ejercicio y el Deporte. Vol. 18, n° 3 (2023)