THE EFFECT OF INTERRUPTION OF TRAINING ON SOME AEROBIC VARIABLES AND FAST FORCE FOR YOUNG BASKETBALL PLAYERS

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ABSTRACT

The purpose of this paper is to identifying the level of some aerobic variables and the fast force of the young basketball players and identifying the relationship of interruption of training with some aerobic variables and the fast force of the young basketball players. The researchers used the experimental method with pre, inter- and post-measurement, and the research community and for the academic year (2020-2021) consisted of (52) players, and the sample was selected from them and (20) players, which represented a percentage of 80% of the research community. The researchers reached several conclusions, which are that there is no discrepancy between the training period and the three-week interruption period, and after that, in the development of explosive ability, transitional speed, and motor coordination among young basketball players. And the adoption of continuous training without interruption from training works to develop the distinctive strength, speed and agility of young basketball players.

I. INTRODUCTION:

Sports training is a comprehensive and integrated process that has scientific foundations and principles aimed at preparing the player and the team to the highest levels in various sports, and the principle of continuity is one of the physiological foundations of the training process in order to complete the physiological adaptation processes of the functional organs, which in turn is the main objective of the training process, there is no doubt that The ability of the players to perform the great physical effort in its various forms and types during the match or training comes only as a natural result of the relatively chronic physiological adaptations, which in turn occurred as a result of regular, regular and continuous physical training.

Research problem:

The problem of the research is to try to answer the following question: Is the periods of absence from training in this team game converge in its rates, or does it differ greatly due to the quality of the difference in the game itself, whether it is in some aerobic variables or the rapid strength of young basketball players.

Research objective:

• Identifying the level of aerobic variables and quick strength for young basketball players.

• Identifying the effect of the period of interruption from training on some aerobic variables and the fast force of young basketball players.

Research hypotheses:

• There is a negative effect of interruption training on some aerobic variables and the fast force of young basketball players.

• There is a difference in the effect of the period of interruption from training in some aerobic variables and the fast force of young basketball players.
Field research procedures:
The researchers used the experimental method with pre, inter- and post-measurement, and the research community and for the academic year (2020-2021) consisted of (52) players, and the sample was selected from them and (20) players, which represented a percentage of 80% of the research community.

The researchers identified the following variables:
(Po2 blood oxygen pressure) (Heart rate, respiratory rate) And from the rapid force (explosive ability - force characteristic of speed)

The researchers used tests for aerobic variables:
- Blood oxygen pressure (Po2): It was measured by an oximeter.
- Heart rate: it was measured in (15) seconds by the carotid artery and then multiplied by the result x 4, two measurements were taken before the effort and the measurement after the effort *.
- Respiration rate: It was measured in (15) seconds, and the result was multiplied by 4 to calculate it. Two measurements were taken before the effort and the measurement after the effort *
- *The researchers used the test on the treadmill to give the effort for a period of (3) minutes with (3) minutes to warm up and an average treadmill speed (12.0) km / h.

Fast Force Tests:
- Explosive ability: Vertical jump test of the muscles of the trunk and legs
  \[
  \text{Vertical explosive power} = \frac{\text{Player mass} \times \text{ground acceleration} \times \text{vertical distance}}{\text{time}}
  \]
- Force characterized by speed: the reciprocal partridge test for the farthest distance in (10) seconds.

Exploratory experiment:
For the purpose of identifying the obstacles and difficulties that may arise when carrying out the main experiment, the researchers conducted an exploratory experiment on Tuesday, 2/3/2021, on a sample of (5) young basketball players, to reveal the obstacles that the researchers might face while carrying out the main experiment.

Pre-tests:
The application of the pre-tests of the aerobic variables (blood oxygen pressure - heart rate, respiratory rate) and rapid force (explosive ability - force characteristic of speed), on the research sample, on Thursday, 11/3/2021, at two o’clock in the afternoon in (the closed hall for athletic talent in Hilla city).

Main study (interruption period):
The main study related to the period of absence from training, which was determined before the exams for the players’ interruption due to the start of their mid-year exams, began after determining the day of the players’ interruption from training and it was eight days before the start of the exams, which fell on Friday 12/3/2021 After the interruption period, when the players finished their mid-year exams, they joined training on Friday, 2/4/2021, and this means that the interruption period was only three weeks.

Inter-tests:
The researchers deliberately set the conditions for measurements and tests in terms of place, time, test method and work for the team as much as possible in order to achieve the same conditions when conducting inter-tests for the research sample and follow the same procedures that were conducted in the pre-tests, and the inter-tests were conducted on Friday 2/4/2021.

Tests after the interruption:
The researchers deliberately set the conditions for measurements and tests in terms of place, time, test method and teamwork as much as possible in order to achieve the same conditions when conducting post-tests for the research sample and followed the same procedures that were conducted in the inter-and pre-tests, and the tests were conducted after three weeks of tests inter-test, on Friday 23/4/2021.

**Statistical methods used in the research:**

The researchers used nonparametric statistics by the following means: the median, the quartile deviation, and the Friedman test.

### II. RESULTS AND DISCUSSION:

Table (1): shows the median, quartile deviation, and the calculated and tabulated Friedman value for the aerobic variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Pre interruption test</th>
<th>Interstitial test</th>
<th>Post interruption test</th>
<th>F value</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>median</td>
<td>quartile deviation</td>
<td>median</td>
<td>quartile deviation</td>
<td></td>
</tr>
<tr>
<td>PO2</td>
<td>98</td>
<td>0.5</td>
<td>97</td>
<td>0.5</td>
<td>1.13</td>
</tr>
<tr>
<td>Heart rate before exertion</td>
<td>76</td>
<td>1.5</td>
<td>72.5</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Heart rate after exertion</td>
<td>74</td>
<td>0</td>
<td>71</td>
<td>0</td>
<td>1.5</td>
</tr>
<tr>
<td>Respiration rate before exertion</td>
<td>44</td>
<td>2</td>
<td>47</td>
<td>2</td>
<td>6.65</td>
</tr>
<tr>
<td>Respiration rate after exertion</td>
<td>68</td>
<td>2</td>
<td>70</td>
<td>1.5</td>
<td>7.37</td>
</tr>
</tbody>
</table>

Table (2) Shows the median, interquartile deviation, and Friedman's computed and tabular value of the fast force variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Pre interruption test</th>
<th>Interstitial test</th>
<th>Post interruption test</th>
<th>F value</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>median</td>
<td>quartile deviation</td>
<td>median</td>
<td>quartile deviation</td>
<td></td>
</tr>
<tr>
<td>Explosive ability</td>
<td>6.5</td>
<td>1.5</td>
<td>27</td>
<td>1</td>
<td>2.38</td>
</tr>
<tr>
<td>Force characterized by speed</td>
<td>18</td>
<td>2</td>
<td>13</td>
<td>1</td>
<td>8.6</td>
</tr>
</tbody>
</table>

Degree of freedom = number of columns -1=3-1=2 at the significance level of 0.05 and tabular Friedman's value = 5.99

**Discussion Aerodynamic Variables**

Results:
Table (1) shows the results of the aerobic variables, and after the statistical treatment, the calculated (Friedman) values were (1.13), which are not statistically significant, in front of the tabular value (Friedman) of (5.99), which indicates the random differences between the three tests before and after the training cessation and the inter-period. The researchers attribute the reason to the fact that blood pressure is related to the lack of hemoglobin in the blood, and the results show a stable blood pressure level among the three tests. (Salama, 2000) “Oxygen atoms inside red blood cells are carried specifically by the hemoglobin dye, and from here we can conclude that any obstruction that stands in the way of oxygen may cause a lack of oxygen access to the tissues. And lung, anemia and heart failure” (Salama: 2000) (1), and that the training processes through exercises did not cause a change in the level of blood pressure and oxygen, but rather a change in the target characteristic, and this is consistent with what was indicated by (Macardle, 1981) “The specificity of training creates adaptations Special effects generated by the training process (Macardle, 1981) (2). In the heart rate test before exertion, it appeared after the statistical treatment, the calculated (Friedman) values were (1.09), which are not statistically significant in front of the tabular value (Friedman) (5.99), which indicates the random differences between the three tests before and after the training cessation and the interruption. The heart rate after exertion after the statistical treatment was the calculated (Friedman) values (1.40), which are not statistically significant in front of the tabular value (Friedman) (5.99), which indicates the random differences between the three tests before and after the interruption of training and the inter-period.

The researchers attributed the random differences between the three tests to the fact that the heart rate is related to the level of physical fitness as well as the functional and health status of the internal body organs, as the lack of heart rate in athletes is an economic condition for the work of the heart and has a high health importance. The heart rate or cardiac output is affected by the type of exercises and the time training and rest to create adaptations. Therefore, the results show that the type of exercises or exercises and the times of their performance that were practiced by the research group and which have brought about adaptations in the heart muscle and thus on the rate of the pulse level before and after the effort and this is consistent with what was indicated by (Abdel-Fattah and Hassanein, 1997) when He talked about the heart rate, “The phenomenon of slow heartbeat is related to the type of sports activity practiced and it appears clearly in athletes who engage in activities that are related to endurance, such as marathon runners, long distances, skating and bicycles, as their heart rate ranges between 50-40 strokes/minute, and some sources mention that And his blows may sometimes reach “40-28 strokes/minute” (Abdel-Fattah and Hassanein,1997) (3)

And in the respiratory rate test before exertion, after the statistical treatment, the calculated (Friedman) values were (6.65), which are statistically significant, in front of the tabular value (Friedman) (5.99), which indicates the significant differences between the three tests before and after the training cessation and the intermittent period, and in Respiratory rate test after exertion, the calculated (Friedman) values were (7.37), which is statistically significant, in front of the tabular value (Friedman) (5.99), which indicates the significant differences between the three tests before and after the training cessation and the intermittent period.

The researchers attribute the significant differences between the three tests and in favor of the test before the interruption, as the respiratory rate before after the effort is related to the intensity of training, and this was confirmed (Abdel-Fattah and Nasr El-Din, 2002) "The higher the intensity of the load, the faster the oxygen consumption, so the greater the volume of oxygen consumption during work." Intramuscular using more than (50%) of the body’s muscles with the maximum consumption of oxygen or aerobic capacity” (Abdel-Fattah and Nasr El-Din: 2002) (4) and the training loads affecting the internal, functional and bodily organs in a gradual and logical manner as a result of following the rules of sports training, and adaptations were made in respiratory rates It is mentioned (Ahmed, 1999). “The efficiency of muscle work is related to the presence of a large proportion of oxygen in the muscles or its transfer from the lungs to the muscles for movement through aerobic and anaerobic interactions” (Ahmed: 1999) (5) and emphasizes (lauralee, 2004) “The result of training changes occurs, the capacity of the aerobic and anaerobic systems increases, especially Vo2max), and the efficiency of the oxidative metabolism system increases to nearly 45%” (lauralee, 2004) (6). This is consistent with what was indicated by (Mathews, 1976) "The regular practice of training seriously leads to a change in the rates of the vital functions of the body’s organs and this effect appears in their responses to loads of different intensity" (Mathews, 1976) (7).

Discussion of Fast force Results:

Table (1) shows the results of the aerobic variables, we note that the explosive power test after statistical treatment, as the calculated (Friedman) values, was (2.38), which is not statistically significant, in front of the
The researchers attribute the random differences between the three tests to the fact that the explosive force has a relationship to the quality of the force and the time of its performance, or the shortness of the performance time, i.e., a fast, instantaneous force that leads to the maximum intensity, and between that (Hussein and Ahmed, 1997) “the instantaneous ability of a muscle or muscle groups to release the maximum muscle contraction for once and quickly Possible time” and they added on another site, “What is understood about this term is that it is the moving force in a specific period of time, and it is related to the amount of moving mass. The rapid force is determined by two main factors, namely (muscles and nerves).” (Hussein and Ahmed: 1997) (8), in addition to that, it needs a special type of exercise (plyometrics), which is characterized by the type of strong and rapid performance, and the use of this type of exercises for multiple periods or stages of training in order to develop, as many sports training experts agree that The use of "plyometrics exercises are characterized by a long preparation period, which is originally limited to the development and development of explosive ability" (Annotated & Schiffer 1995) (9) and at the same time require scientific conditions and determinants of performance, as the height of the exercise used varies, each according to the weight and height of the athlete, as it shows (Crossly 1984) "The heights of the used boxes should preferably range between (50 cm - 80 cm) In order for the exercise to be effective and not dangerous” (Crossly1984) (10), or the quick push with the arms and the use of weights in performing the exercises depending on the type of sports levels and the type of game or activity, and this did not happen to the research sample, so the results were logical that there were no differences between the tests.

In the Force characterized by speed test, it appeared that the median in the test before dropping out of training after the statistical treatment was (Friedman) values (8.6), which are statistically significant, in front of the tabular value of (Friedman) (5.99), which indicates the significant differences for the test before stopping training.

The researchers attribute the significance of the differences to the test before dropping out of training that the force characterized by speed has a relationship with the two qualities of strength and speed, which is a dual-formation physical ability as it represents the close relationship between strength and speed, and that the height of one of either force or speed causes a positive change to the compound ability, the force characterized by speed, as the various types of muscle contractions that were used during training daily, through which the level of skill performance of basketball players is raised, as (Allawi and Nasr El-Din, 1982) indicate that “the most important characteristic of outstanding athletes is that they possess a great deal of strength and speed.” And they have the ability to link them in an integrated way to the events of strong and rapid movement in order to achieve optimal performance” (Allawi and Nasr Al-Din: 1982) (11), which is the result of the work of the muscular and nervous system in overcoming resistances with resistances such as body weight. As the practice of daily exercises according to a specific program aims to raise the level of players’ abilities to resist the conditions of specialized performance at a high speed, and (Abdel-Fattah, 1996) indicates that “the distinctive strength is related to speed with the degree of mastery of skill performance, the higher the degree of skill preparation, the higher the level of compatibility between the fibers And between the muscles and improving the temporal and dynamic distribution of motor performance, and the athlete does not achieve a high level of strength characterized by speed except in the case of a high level of skill performance” (Abdel-Fattah 1996) (12). Of course, this does not happen unless there are continuous exercises in order to raise the level of adaptations by raising the level of strength and speed of the specific muscles involved in the movement that the player makes during his transition or jumping and jumping because these exercises target the basic working and auxiliary muscles and thus created a physiological adaptation in the muscles of the body and Creating special adaptations for functional devices and this was reflected in the development of the level of speed and strength. This result is consistent with what was mentioned by (Klafs&Aranhaim 1973), that the best method for developing strength characterized by speed is by using weights to train muscle groups working in the practiced sports activity” (Klafs&Aranhaim, 1973) (13).

Some of the studied variables need a longer interruption period to have a significant and tangible change that affects the measurement results, and this is what appeared in the results, which were logical.

III. CONCLUSIONS AND RECOMMENDATIONS:

Conclusions:
• There is no discrepancy between the training period and the three-week interruption period and thereafter in the development of explosive ability, transitional speed and motor compatibility among young basketball players.

• The adoption of continuous training without interruption from training works to develop the distinctive strength, speed and agility of young basketball players.

• There is no discrepancy between the training period and the three-week interruption period and after that in the development of motor compatibility among young basketball players.

• There is no difference between the training period and the three-week interruption period and then in the heart rate and the rate of blood oxygen pressure before and after the effort among the young basketball players.

• The adoption of continuous training, continuous training without interruption from training, works to develop the respiratory rate before and after training for young basketball players.

Recommendations:

• Implementation of the mechanism of using the mentioned time period to develop the physical and physiological abilities of youth in basketball.

• Conducting more research on different time periods that have not been addressed.

• Adoption of the results of the study on the coaches of the Babylon national basketball team for youth.

• Conducting similar research to develop training and linking it with the time period of interruption.

IV. REFERENCE:

3. Abdel-Fattah, Abu El-Ela Ahmed, and Hassanein, Mohamed Sobhi: (1997); Mathematical Physiology and Morphology, Measurement and Evaluation Methods, 1st Edition, Cairo, Dar Al-Fikr Al-Arabi
4. Abdel-Fattah, Abu El-Ela Ahmed, and Nasr El-Din, Ahmed: (2002); The Physiology of Physical Fitness, Cairo, Dar Al-Fikr Al-Arabi.
5. Ahmed, Bastawisi: (1999); Foundations and Theories of Sports Training, Cairo, Arab Thought House.
10. Allawi, Mohamed Hassan, and Nasr El-Din, Ahmed: (1982); Motor Performance Tests, Cairo, Dar Al-Fikr Al-Arabi.
11. Abdel-Fattah, Abu El-Ela Ahmed: (1996); Pregnancy of Training and Athlete's Health - Positives and Risks, Cairo, Dar Al-Fikr Al-Arabi.