THE EFFECT OF PHYSICAL EXERCISES FOR SOME BIOKINETIC ABILITIES TO PREVENT THE MOST IMPORTANT INJURIES OF THE LOWER EXTREMITY OF FUTSAL FOOTBALL REFEREES

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ABSTRACT

The importance of the research lies in preparing physical exercises to develop some motor abilities to prevent injuries to the lower extremities of futsal referees. Research problem: Through field observation of the researcher being a first-class referee for the game of futsal and after reviewing the sources in the field of practical specialization, he noticed that there is a neglect of the preventive aspect. The referees and the focus on the theoretical side of the law in the special tests for futsal referees, while prevention is no less important, and as a result of our sports medical institutions’ lack of modern and advanced prevention methods given to referees before injury, and the researcher believes that the reason is due to the weakness of the vital motor abilities on which the physical effort to rule is built. Therefore, the researcher decided to use and develop exercises to develop vital motor abilities in a scientific and studied way for prevention. One of the most important injuries of football referees to the lower extremities halls through the use of exercises by some modern means and methods in sports training. One of the most important injuries to the lower extremities in futsal. As for the research methodology and field procedures, the researcher used the experimental method to solve the research problem, while the research sample was selected in a studied and numbered manner (20) from football referees for the futsal region in the Eastern Province. The Euphrates region is a first category for the sports season (2020-2021) representing the research community, and after excluding the elderly judges for the specificity of their exercises, the number of the sample was (12) judges, then it was divided randomly. By lot to two equal groups by (6) judges in each group. The experimental group used the exercises prepared by the researcher. As for the control group, the method prepared by the judgment was used, and then the data was processed by the appropriate statistical methods. The most important conclusions are: - Exercises according to some motor abilities carried out by the experiment. The group achieved an important development in all vital motor abilities (transitional speed, motor response speed, endurance speed, coordination, flexibility, balance) as well as the prevention of the most important injuries of the lower limbs of football referees. Futsal football, for exercises according to some vital abilities, without any injury to the experimental group in the futsal referees tests, especially in the lower extremities, and among the most important recommendations: Emphasis on trained referees or referees in futsal. Football that the duration of the training sessions for vital motor abilities should be close to the times of actual work in the match and similar to the performance in the special tests of referees in futsal football, as well as attention to the exercises. He is responsible for preventing the most important injuries that football referees are exposed to at home.

I. INTRODUCTION

The field of sports training science has been affected in recent years by the revolution of science and technology. All fields and through the trainers’ efforts to choose the best and latest methods that are suitable for the specialized activity, with the aim of achieving and investing the specificity of training related to the type of activity in order to reach a direct impact to improve the physical, skill and physiological level. Therefore, the adoption of scientific means in sports training in its various forms has become very important for the purpose of achieving progress at the athletic level.
The referees in the game of futsal make a great effort through sudden and multi-directional movements, and this depends on the bio-kinetic capabilities of the referee based on it during his performance of arbitral tasks, where the referee must be able to move quickly, follow-up and change direction during the course of the match and the transition. With the ball during defense and attack, and for the success of this, the physical tasks must be effective, especially the muscles, joints and tendons of the main lower extremities responsible for performance, and despite all the precautionary measures currently used in the sports field to prevent and reduce injuries, whether during training or competitions, we note a high rate of these injuries. Continuously as a result of the high effort in repetition of movements, as this leads to creating great opportunities for exposing referees to injuries to the extent that these sports injuries have become constantly recurring and injuries often occur to the lower limbs as injuries (joints, muscles, ligaments, synovial wallets and muscle tendons), which is the main tool. Executing the requirements of the activity of the rulers and then showing its negative impact on the general level for them, and with increased effort to its importance in the tests and requirements of football referees for the halls, there must be exercises to develop these biokinetic capabilities, as these physical exercises are directly directed towards the capabilities to be developed and are specific to the special performance of the referee, which raises the efficiency of the integrated performance of the referees using exercises prepared from before the researcher. Hence the importance of the research in preparing physical exercises to develop some biokinetic abilities to prevent lower limb injuries among futsal referees.

Research Problem:
Through the field observation of the researcher being a first-class referee for futsal football and after reviewing the sources in the field of practical specialization, he noticed that there is a neglect of the preventive aspect of referees and a focus on the theoretical side of the law in the special tests for futsal referees, while prevention is no less important and a result. Because our sports medical institutions lack modern and advanced prevention methods that are given to referees before injury, the researcher believes that the reason is due to the weakness of the bio-kinetic capabilities on which the physical effort is built for judgment. For the halls in the lower extremities through the use of exercises by some modern means and methods in sports training.

Research Objectives:
1. Preparing physical exercises according to some of the biokinetic abilities to prevent the most important injuries of the lower extremity of the football referees for the halls.
2. Recognizing the effect of physical exercises according to some of the biokinetic abilities to prevent the most important injuries of the lower extremity of the futsal referees.

Imposing search:
Physical exercises have a positive effect in developing some biokinetic abilities to prevent the most important injuries of the lower extremity of the futsal referees.

II. RESEARCH METHODOLOGY:
The selection of the appropriate approach is one of the most important steps on which the success of the research is based, and this is determined by the nature and type of the problem that requires the researcher to follow the appropriate procedures to solve this existing problem and in order to ensure the achievement of the research objectives in accordance with sound scientific rules and foundations and in line with the ways to solve it, so the researcher used the approach Experimental in the manner of the two equal control and experimental groups with pre and post tests for the purpose of solving the research problem. “Experimental research is the most accurate type of scientific research that can affect the relationship between the variables of the experiment” (1). The table below shows the design of the experimental aggregates for the research sample.

The research community and the appointees
The research community, represented by football referees in the first middle Euphrates circuit for the sports season (20-20-20) was limited to (4) governorates (Najaf, Karbala, Diwaniyah), and Babylon (and the number of rulers in the research community (20)) certainly. The sample was also chosen in a purposeful way, totaling (12)
judgments representing the research community, and after excluding the senior judges from the age of the privacy of their exercises, so that the sample number (12) judgments were random through drawing. The lottery is divided into two equal groups by (6) judges in each group, thus the proportion of the research sample (60%), which is an appropriate proportion to truly and honestly represent the research community, as the first group. It uses the exercises prepared by the researcher, while the control group may use the approach prepared by the referee.

**Samples of homogeneity**

The researcher found the homogeneity of the experimental and control groups using the coefficient of deviation in terms of (height, weight, and age), and the results showed the heterogeneity of two studies that scattered the distribution normally, and then there were no outliers. Where the coefficient values were limited to the deviation between (±1), which indicates the normal distribution of the two groups, and the following table shows the homogeneity of the research sample in the selected variables. Table No. (1) Shows the homogeneity of the research sample in the selected variables

<table>
<thead>
<tr>
<th>skew modulus</th>
<th>standard deviation</th>
<th>Arithmetic mean</th>
<th>measuring unit</th>
<th>Statistical means</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.725-</td>
<td>6.17</td>
<td>170.08</td>
<td>Poison</td>
<td>height</td>
</tr>
<tr>
<td>0.761</td>
<td>4.73</td>
<td>66.33</td>
<td>Kg</td>
<td>weight</td>
</tr>
<tr>
<td>0.143</td>
<td>1.19</td>
<td>24.21</td>
<td>Months</td>
<td>Age</td>
</tr>
<tr>
<td>0.123</td>
<td>1.557</td>
<td>9.436</td>
<td>Months</td>
<td>training age</td>
</tr>
</tbody>
</table>

**Equal two sets Search**

In order to return the reasons to the experimental factor in all the changes that occur in the results of the tests, and before starting to apply the exercises used for the two groups, the researcher worked on trying to control the experimental and making the two research groups stand on one initiation line as much as possible to verify the equality of the members of the research sample for the two experimental and control groups and in all of the study variables, through tribal tests to use test ( t ) for independent samples and as their results appeared in Table No ( 2 ) showing the equivalence of the control and experimental groups

<table>
<thead>
<tr>
<th>Indication type</th>
<th>Test significance level Sig</th>
<th>Values(t) calculated</th>
<th>control group</th>
<th>experiment group</th>
<th>measuring unit</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>insignificant</td>
<td>0.333</td>
<td>1.018</td>
<td>0.12</td>
<td>2.18</td>
<td>0.27</td>
<td>Responsiveness</td>
</tr>
<tr>
<td>insignificant</td>
<td>0.400</td>
<td>0.879</td>
<td>0.23</td>
<td>4.81</td>
<td>0.53</td>
<td>Transition speed 30m</td>
</tr>
<tr>
<td>insignificant</td>
<td>0.476</td>
<td>0.741</td>
<td>3.74</td>
<td>58.73</td>
<td>2.98</td>
<td>60.18</td>
</tr>
<tr>
<td>insignificant</td>
<td>0.173</td>
<td>1.467</td>
<td>0.30</td>
<td>8.19</td>
<td>0.29</td>
<td>the second agility</td>
</tr>
<tr>
<td>insignificant</td>
<td>0.981</td>
<td>0.025</td>
<td>2.24</td>
<td>50.36</td>
<td>2.38</td>
<td>50.33</td>
</tr>
<tr>
<td>insignificant</td>
<td>0.102</td>
<td>2.051</td>
<td>0.37</td>
<td>6.22</td>
<td>0.55</td>
<td>the second Compatibility</td>
</tr>
</tbody>
</table>
Table No. (2) Shows that the signal values are greater than the significance level (0.05) and the degree of freedom (5), and this means that the differences were random between the two research groups in some vital abilities, and this indicates parity between the control and experimental groups.

**The means, tools and devices used in the research**

**The means used in the research (data collection methods)**

The most important means used by the researcher in collecting information and data are:


**Devices and tools used in research**

Type a laptop (Lenovo). Camcorder Type (Panasonic Japanese made HD) (1200 fps) (1). Ariston height and weight scale 4 training strips. (4) 4 meter long ladders. Wooden platform and boxes of different heights (25, 30, 35, 40) cm. Measuring tape length (20 metres).

Medicine balls with weights (1.5 g, 2, 2.5) kg each weighing two balls. Whistle No. 2 Sports stopwatch No. 2. 10 plastic cones.

**III. FIELD RESEARCH PROCEDURES**

**Determining the search variables**

The variables were identified for research in both (Boerque capabilities) and the subject of data relationship research, and after briefing the various researcher on the various scientific sources and the experience of the first-class researcher and in cooperation with the supervisor, some research possibilities. Selected. Dynamic and dynamic in line with the nature of the research and the material variables as shown in the table, as well as the experience of the supervisor and researcher in the field of specialization, and then presented to the scientific committee for approval of the draft. Subject are experts and specialists in the field of training, for which the following nominations have been approved:

**Vital motor abilities**

Transmission speed, response speed, download speed, agility, flexibility. Eye compatibility with the man.

**Determination of special tests in some vital abilities**

After identifying some motor abilities, the researcher recommended a set of tests that were used from scientific sources, which are standard tests used to measure physical and motor abilities by other researchers.

**Survey experience**

The survey experience First: (tests, equipment and tools used in the research). After identifying some variables for the vital motor abilities and tests, the researcher first conducted an exploratory experiment on a group of (sample 3), arbitrators were randomly selected from the research sample. The aim of this experiment is the following:

**The second survey experiment: Executing the research sample exercise**

The second survey experiment was conducted with the help of the work team in a procedure in the second stadium at the Najaf International Stadium, on a research sample carried out by (3) arbitrators, in order to determine the suitability of some arbitrators. Exercises used. For the research sample and the pressures used in each exercise, as well as determining its size and the amount of rest between repetitions and between groups, as well as knowing the obstacles that may accompany the main experience.

**IV. MAIN EXPERIMENT PROCEDURES**

**Initial Test**

The tribal tests were conducted on a sample of (12) referees representing the experimental and control groups, and on the second court at the Najaf International Stadium. On the first day, P recorded the results of the bioenergy potential data test. Researcher Z, with the help of the team, gave a brief explanation of how the tests were conducted.
and sequenced, whereby Researcher validated all tests of conditions in terms of time, place and climate so that he could create the like or the like. Conditions when conducting subsequent tests.

**Executing the exercises**

The researcher distributed the research sample into two groups, control and experimental. The control group followed the curriculum prepared by the referee himself or according to the coach with the referee. As for the experimental, the researcher prepared physical exercises organized by the experiences of the researcher and supervisor, relying on scientific sources in sports training. Use these exercises in the main part of the training unit. As for the control group, it was under the supervision of the coach for the referee or the referee himself and his own method. Below is a breakdown of how to use these exercises in the ways mentioned? The training period is on Saturday 20/20 to // 20/21 (ie 8 weeks) with three training units per week and the training was (90 minutes and one time unit) and the exercise time was within the main part (one minute). Where the days of the training units were on Saturdays, Tuesdays and Thursdays of every week and with work (2-1). These days are determined after referring to the training syllabus and taking into account the directions in the training modules prepared by the trainer. Or the rule itself, wherever it is, and repetitive and periodic training methods (high intensity and low intensity) will be adopted in implementing the proposed curriculum; the researcher will use the ripple principle in planning the training load during the special preparation period in a ratio (2: 1) during the weeks. The intensity was extracted from the individual's maximum ability to perform for 1RM and then the required intensity for repetition. By doing several tests to determine the intensity of each exercise, whether in time, resistance or speed, to build the exercises and also make it difficult to perform using the same previous exercise, but using a medical ball with rubber ropes ... etc ... for example. Physical exercises were performed at the end of general preparation and the beginning of special intensity (75%-100%)

**Posttest**

The test represents the dimensions of the judgment sample (12) of the experimental and control groups. In the second court of Najaf International Stadium, a record. On the first day of the match result. Test data transmission capabilities Researcher Z, with the help of the team, provided a brief explanation of how the tests were conducted and their sequence, and the researcher demonstrated all the special conditions of the tests in terms of time, place and climate. You are able to create similar conditions or a similar approach when conducting pretests.

**Statistical methods used in the research**

The researcher used the statistical bag (spss) in analyzing the research results, including

Central account. Standard deviation, median, coefficient of deviation. T-test (for tangled samples. t-test) for independent samples. Simple correlation coefficient square test (C2).

Show results for D the differences between the two scales in the earlier and later variables under study are the abilities of the bourgeoisie to control and analyze the group.

Table No. (3) Shows the arithmetic averages and standard deviations of the tests of some vital capacity variables before and after, and the calculated value (t) and its statistical significance for the control group.

<table>
<thead>
<tr>
<th>Indication type</th>
<th>Test significance level Sig</th>
<th>value( t) calculated</th>
<th>The post test</th>
<th>pretest</th>
<th>measuri ng unit</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>±p s</td>
<td>±p s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>moral</td>
<td>0.015</td>
<td>3,609</td>
<td>0.4 ± 3</td>
<td>4,68</td>
<td>5,02</td>
<td>Speed transition 30 meters</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>morphological abilities</td>
</tr>
<tr>
<td>moral</td>
<td>0.045</td>
<td>2,656</td>
<td>0.0 ± 8</td>
<td>2,09</td>
<td>2,27</td>
<td>Response Speed ( Nelson )</td>
</tr>
<tr>
<td>moral</td>
<td>0.018</td>
<td>3,451</td>
<td>2,3 ± 7</td>
<td>59,2</td>
<td>60,1</td>
<td>The second bearing speed</td>
</tr>
</tbody>
</table>
**Table (4)**

<table>
<thead>
<tr>
<th>Indication type</th>
<th>Test significance level value (t calculated)</th>
<th>post test ±p</th>
<th>pretest ±p</th>
<th>measuring unit</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>moral</td>
<td>0.005</td>
<td>4,783</td>
<td>0.2</td>
<td>4.17</td>
<td>Speed transition 30 meters</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3,3</td>
<td>57,8</td>
<td>biokinetic abilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.3</td>
<td>6,82</td>
<td></td>
</tr>
<tr>
<td>moral</td>
<td>0.008</td>
<td>4,310</td>
<td>0.0</td>
<td>1,98</td>
<td>Response Speed (Nelson)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2,2</td>
<td>72,6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.1</td>
<td>6,82</td>
<td></td>
</tr>
<tr>
<td>moral</td>
<td>0.007</td>
<td>4,357</td>
<td>0.0</td>
<td>3,7</td>
<td>The second and its parts</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2,2</td>
<td>58,7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
<td>58,7</td>
<td></td>
</tr>
<tr>
<td>moral</td>
<td>0.005</td>
<td>4,784</td>
<td>0.3</td>
<td>7,81</td>
<td>the second and its parts</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>0.3</td>
<td>6,82</td>
<td></td>
</tr>
<tr>
<td>moral</td>
<td>0.000</td>
<td>24,576</td>
<td>0.0</td>
<td>0.3</td>
<td>the second balance</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
<td>24,576</td>
<td></td>
</tr>
<tr>
<td>moral</td>
<td>0.008</td>
<td>4,28</td>
<td>0.0</td>
<td>0.3</td>
<td>the second Compatibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.1</td>
<td>5,84</td>
<td></td>
</tr>
</tbody>
</table>

Significance level (0.05) and degree of freedom (5)

Presentation of the results of the differences between the two scales in the pre and post variables of vital movement abilities under the first empirical analysis of the study group:

Discussing the results of the variable tests of the kinetic abilities of tribal bioenergy and the dimensions of the experimental and control groups. Attributes of the reason for the development that occurred for the members of the control and experimental groups is the regularity in the training process and work according to a method prepared and organized by the researcher for the group according to the philosophy and nature of the exercises. Prepared by the researcher according to the vital motor abilities to prevent injuries to the lower extremities to judge the experimental group through muscle knowledge. Participation in the motor performance of the muscles of the lower extremities in terms of the work and function of each muscle for the referee in indoor football, and for the referee and coach of the control group, with the use of training methods to help that, as these exercises included strengthening the muscles of the lower extremities of the referees, through the use of exercises, The researcher said that the resistances are used in preparing the exercises, as the muscles of the lower extremities have a great role in the transient movement of the referee’s performance, so they must be strengthened and in line with the abilities of the rulers and their fundamental importance to the specifics of the game, as they contributed to increasing the amount of boarque abilities, especially the muscular strength resulting from muscle contractions, whether it was Decentralizing or centralizing and mobilizing the largest possible number of motor units performance, as well as these exercises worked to match the work of the arms and the eye, which led to an increase in compatibility with the performance requirements in the neuromuscular aspect. This was confirmed by Gamal Sabry in the training of vital abilities, “where the special development of vital motor abilities must be systematic, with a direct or indirect impact on other capabilities.” (2) One of the important things that the researcher is keen to apply here is the principle of giving priority to these abilities in the training unit that I need to have complete ready and it is necessary that the
central nervous system be in a ready state for At the same time, training loads do not take place at a single pace (intensity high or low), but rather follow the principle of ripples between high and low intensity in the exercises using exercises according to the vital motor abilities to avoid injury to the lower limbs of the referees. In addition to organizing the training of the skill in question in line with the desired goal and the principle of gradation from easy to difficult and from simple to complex, where the gradation rule works on coordination and regular linking between the exercises used in the training unit. And the upward rise in intensity and volume according to the player’s level in training.” (1) Abdul Ali Nassif says: “The programmed exercise has a significant impact on performance development” (2). The researcher also attributes the reason for the development of the judges of the two groups to the nature of the exercise data used. In training units that were somewhat similar to what is in the performance of football referees and the limits and volumes used in the training curriculum are similar and above the limit and volumes used in the actual performance of your performance, as well as the exercise data with the optimum and is known to be highly undesirable By the judges because the training requirements in light of the difficulty of catching up with them boredom, rejection and lack of seriousness in performance. Where these directed and unified exercises in terms of (intensity, volume and intensity) led to the development of the main working muscles, which helped to adjust the performance of the correct motor paths, in addition to increasing The speed of performance and reducing its time, and getting rid of the extra random movements that were present due to the lack of control over performance resulting from the presence of weak muscle strength in the legs, as “the skill performance of any sport depends mainly on physical numbers” (3) and this is what The researcher followed him in developing these skills, as he used preventive exercises by working on the muscles that help in developing and strengthening the muscles of the lower extremities, and this was confirmed by (Muhammad Jamal Al-Din). and Nadia Hassan) that physical preparation improves the work of the heart and blood circulation. It also develops muscles in a coordinated manner and at the same time paves the way for acquiring skills, movements and the ability to economize on physical effort. The necessary specialization can only be reached in this way, and this applies to a large extent in youth and youth sports (4) As well as to the use of rapid training at the beginning of the training unit and confirms this (Mohamed Sobhi Hessa Nin, Ahmed Kosour) “As a basis for speed training is the appropriate state for excitation of the central nervous system, and this is done through the effectiveness of running with well-organized rest periods after each repetition and between groups( 2), as the researcher attributed the absence of a difference between The members of the two groups are due to the use of exercises to develop the speed of the transition, especially the muscles of the lower side, as these exercises helped to develop strength and speed, especially when increasing the speed and the lack of resistance, which develops the speed of the transition, and small. Its support and strengthening muscles, it had a major role in strengthening the muscles and avoiding injuries to the lower extremities of the futsal referees.

V. CONCLUSIONS

Within the framework of the results shown by this study, the researcher reached the following conclusions:

1. The exercises according to some of the vital motor abilities implemented by the experimental group achieved an important development in all the vital motor abilities which are (transitional speed, motor response speed, endurance speed, compatibility, flexibility, balance) as well as the prevention of the most important injuries of the lower limbs of the futsal referees.
2. For training according to some motor abilities, no injury occurred to the experimental group in the futsal tests, especially in the lower extremity of the referee.
3. The duration of the independent variable training was, according to some Burkes, appropriate to create adjustments that reflect the extent to which the research group is capable of Buerca's experimental abilities.
4. Also, the exercises of the referees and their coaches in the control group had a positive effect on the development of some motor abilities, but not at the level of the experimental research group.

Recommendations

Through the conclusions reached by the researcher recommended the following:

1. The use of exercises according to some of the vital motor abilities prepared by the researcher by the futsal referees or their coaches to prevent the most important injuries of the lower extremity of the referee.
2. The necessity of using vital abilities exercises using modern training methods because of their importance in shortening effort and time.
REFERENCES

20. Foreign sources and references:
28. See Appendix 1 on pg. 148.