The Impact of Circuit Training Technique in core muscles and Legs Flexibility for Junior Football players

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Abstract:
This research aims to identify the impact of the circuit training technique in improving core muscles and legs flexibility for the junior football players. The researchers used the experimental method as it fits the research nature, the research sample was consisted of (30) players of Al-Shorta Football Club in football for (14-16) years ages for the season (2018/2019). A training program was prepared involving exercises performed by the circuit training technique to improve the core muscles and legs flexibility for the junior football player. The pre-test was carried out to measure the core muscles and legs flexibility for the sample members, and then the post-test was carried out within the same procedures adopted in the pre-test, in two intermediate cycles with undulation load movement (3:1) in the amount of (8) short cycles. Many conclusions were figured out, the most significant of which, is that the circuit training contributed in improving the core muscles and legs flexibility for the junior football players, as well as, in selecting the exercises has a positive impact on improving the core muscles and legs flexibility for the players. The researchers set up many recommendations, the most significant of which, is applying the circuit training technique based on the scientific bases to improve the flexibility for the football players.

Key Words: The circuit training technique- core muscles and legs flexibility- football


1- Identification of the Research

1-1 The Introduction and the Research Importance

Improving football depends greatly on developing the physical qualities relating to performing the basic kinetic skills for the football players, and the player's ability to perform any skills necessarily required having physical abilities contributing in performing this skill perfectly. Flexibility is one of these basic qualities that affect the skillful performance and other physical qualities (force-endurance- speed- fitness) within training and matches. Depending on flexibility differs within the sports, especially football. Sports specialists agree on the importance of flexibility for the football player, especially the flexibility of the lower limbs, including the flexibility of muscles (ability to
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elongate). Without flexibility, the injuries of the players' joints, muscles, bones and sometimes the inner systems, increase.

From all mentioned above, the importance of the study is that the circuit training technique contributes effectively and has a positive impact on improving the flexibility for football players.

1-2 The Research Problem

As a result of the great correlation between the physical, skillful, tactical and psychological preparation in football, it's necessary to pay attention to the elements of fitness, especially flexibility, which is one of the most important physical qualities that affect the physical, skillful, tactical and psychological aspects of football. The researchers, interested in football and sports training, noticed that most trainers don't caring about selecting different scientific methods to improve flexibility, which negatively affect their levels in the aspects mentioned above. So, the researchers considered to study this problem aiming to improve the core muscles core muscles and legs flexibility through using the circuit training technique in order to achieve the ideal flexibility for football players.

1-3 The Research Objectives

- Preparing exercises correspond to the circuit training technique to improve the core muscles and legs flexibility for the football players.

- Identify the impact of the circuit training technique on improving the core muscles and legs flexibility for the football players.

1-4 Research Hypotheses

- There are statistical significant differences between the pre- and post tests of the core muscles and legs flexibility.

1-5 Research Domains

1-5-1 Human Domain: (30) junior players of (14-16) years ages represent Al- Shorta Football Club for the season (2018/2019).

1-5-2 Spatial Domain: The alternative field of Al- Shorta Football Club.

1-5-3 Temporal Domain: Time period from (1/2/2019) to (6/7/2019).

2- Research Methodology and field procedures:

2-1 The Research Method: is a group of processes and steps followed up by the researchers in order to verify their researches (Rashid Zerouati, 2002:119). The researchers adopted the experimental method with" one- pool" technique as it fits the study nature.

2-2 The Research Community and Sample: The research community represented by Al-Shorta football junior team of (14-16) years, which consists of (33) players for the season (2018/2019). The sample
willfully selected from the original community was (20) players by (60%) of the original research community.

When selecting the sample, the researchers cared about the following:

Excluding the goal keepers from the research sample, they were (3) goal keepers, as well as, (10) players for not being committed to the training units.

2-3 Means, Devices and tools used in the research:

2-3-1 Means used for gathering information:

1- Arabic and foreign references

2- Tests used in the research

3- The assistant teamwork

4- Exploratory experiment

5-Data recording form

6-A training program

7-Statistical program (spss)

2-3-2 Devices and tools used in the research:

1-(4) Diamond Chinese Stopwatches

2- (15) pillars

3-(5) whistles

4-(1) metal measuring tape (measuring unit: cm)

2-4 Tests used in the research:-

First: the core muscles flexibility test :( sit stretched) and bend the core forwards down to touch the chest with your legs (Adel Abdel Baseer Ali, 1999:208).

Second: The legs flexibility test (Stand holding a wall bar), exchanging raising the legs upside and being constant for (3 or 4 seconds) (Adel Abdel Baseer, 1999:209).

2-5 The proposed training program:

After analyzing the studies and the scientific references contents, the researchers attempted to design a training program in accordance with the circuit training technique based on scientific bases, it was introduced to the sports and football training specialists. Scientific notes about the training program were formulated as follows:
- The exercises were selected by analyzing the scientific references contents and by interviews with experienced specialists, these exercises could participate in the core and legs flexibility, they would be applied in the beginning of the second section of the main part of the training.

- The training program for the experimental group lasted for (8) weeks by two intermediate cycles and four training units in each short cycle, as (Copper) suggested for (4) times a week in order to assure the training impact when performing the sports activity (Copper:1988:39).

- The training method used in the training program is (high-intensive periodical) method.

The exercise duration is (20) seconds, the breaks between each exercise and the other is (10) seconds, and the duplication of the cycle (4-7) cycles, the work is with intensity of (95-100%) of the maximum endurance that the player could bear.

- The researchers cared about that every two training cycles should involve in its contents exercises for core muscles and legs flexibility.

- The training unit was performed on (Saturdays, Sundays, Tuesdays, and Wednesdays), the experimental group performed (32) training units.

- Loads were controlled by changing the size

- The breaks between the duplications and the groups were determined by the exploratory experiment and by analyzing the scientific references contents i.e. the breaks between each exercise and the other shall be (10) seconds, and between the cycles (2-3) minutes enough for the players to recover.

- The undulation load movement depended on the size of the training load.

2-6 The exercises used in the research:

The exercised consist of two cycles; each cycle contains five exercises performed successively by pairs. Every pair starts with the first cycle which has (6) exercises for the core muscles flexibility, then they move to the exercises of the second cycle which has (6) exercises for the legs flexibility. In case of finishing the twelfth exercises of the two cycles, every pair duplicate the two cycles for (4) times in the first and the second weeks, and (5) times in the third and the fourth weeks, (96) times in the fifth and sixth weeks, (7) times in the eighth week. The maximum time of every cycle is (5) minutes. Here are the details of the exercises of the first and the second cycle:

Firstly: The exercises of the first cycle:

* Exercise (1): Bending the core and kneeling-squatting, with changing touching the feet with the opposite hand (20) seconds.

* Exercise (2): lie straight on the ground, with the legs lying forward. Keep the back straight (flat). Keep the left leg straight and flat on the floor. Bend the other leg (20) seconds.
Exercise (3): lie on the ground with Hands behind the player's head (neck). The elbows and head touch the ground. Bend your knees, with feet on the ground, as long as the shoulders apart. Tighten the gluteus and abdominal muscles in harmony so that the back is flat on the ground (20) seconds.

Exercise (4): push- up from longitudinal sitting with legs stretched. The colleague pushes-up the player’s shoulders. The lower part of the body fixed on the ground (20) seconds.

Exercise (5): Lie on the ground with finger cross behind the neck. The colleague holds the player's arms from the wrist joints and lifts the head and chest from the ground (20) seconds.

Exercise (6): The colleague moves the player’s shin through his body to the other side while keeping the shoulders touching the ground. The colleague pushes down the player's leg (20) seconds.

Secondly: The exercises of the second cycle:

Exercise (1): The right leg is fully stretched; the soles of the left foot touches the right thigh; the same movement repeated with the left leg (10) seconds.

Exercise (2): Sit and open the legs as wide as possible. Bend the knee and slowly bend the core forward while keeping the quadriceps muscle of thigh relaxed, preventing the hip from turning back. Use the arms forward as a support (10) seconds.

Exercise (3): Touch the feet of the front right leg stretched with the opposite hand. Change the legs (10) seconds.

Exercise (4): With the right foot flat on the ground, move the right foot forward until the wrist is above it and the right knee becomes on the ground and back. Lower the hip down and use the hands to balance. Make sure the feet are on one line (10) seconds. Change the two legs.

Exercise (5): Sit and lean the back on a particular pillar. The colleague takes the two legs off the ground and pushes them toward his head (10) seconds.

Exercise (6): From standing and leaning against a particular pillar. Put the leg forward bending it from the knee. Stretch the back leg and move the hips slowly while keeping the core straight. Keep the heel of the stretched leg fixed on the ground directed forwards (10) seconds. Change the legs.

2-6 The exploratory experiments: For adjusting the variables of the experiment, the researchers attempted to performing two exploratory experiments on five players of the sample original community, and they were excluded from the research sample. The first exploratory experiment was on(1/5/2019), it's purpose was applying some items of the training program. The second exploratory experiment was on(2/5/2019), its purposes were:

1-Assuring the possibility of applying and appropriateness the exercises used in the research sample of the training program

2-Identify the real time when performing the experiment.
3-Assuring the interactions of the sample members through performing the experiment

4-Identify the possibility of the team work to help in carrying out the training program and the tests.

5-Assuring the safety of the tools used in the research

2-7 The field procedures used in the study:

2-7-1 The pre- tests: The researchers attended to perform the pre- tests before the training program, as they were carried out on(7/5/2019) involving two tests for flexibility of the core and the legs.

2-7-2 Carrying out the main experiment of the study:

The training program started on(11/5/2019) to(4/7/2019), where the experimental group applied (exercises prepared by the researchers) with the circuit training technique by(4) training units in the short cycle for(8) weeks. The cycle was divided into two medium cycles; therefore,(32) training units were carried out, and this program was carried out at the beginning of the first section of the main part of the training unit.

2-7-3 The post- tests:

The post- tests were carried out on (6/7/2019) with the same procedures, conditions and requirements within which he pre- tests were carried out as much as possible.

2-8 The statistical means

The statistical bag (spss) was used in statistical treatments.

3- Introducing and discussing the results

3-1 Introducing and discussing the results of the pre- and post- tests of the core and legs flexibility

Table (1): Arithmetical means, standard deviations,(t) value,( sig) value and the significance differences between the pre- and post- tests of the core and the legs flexibility

<table>
<thead>
<tr>
<th>significance differences</th>
<th>value (sig)</th>
<th>value (t)</th>
<th>Freedom degree</th>
<th>Post test</th>
<th>Pre-test</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>n± h</td>
<td>n± h</td>
</tr>
<tr>
<td>Core flexibility</td>
<td>0.000</td>
<td>-22.58</td>
<td>19</td>
<td>0.36 4.15</td>
<td>0.47 2.30</td>
</tr>
<tr>
<td></td>
<td>significant</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

| significant            | 0.000       | -27.60    | 19             | 0.31 4.40 | 0.52 2.50 |
|                         |            |           |                | Core degree | Legs flexibility |
|                         |             |           |                |            |            |

Table(1) shows the following:

From the results shown in table(1), we notice that (sig) value of the two tests of the core and legs flexibility is(0.000), it's less than(t) value(0.05) at the freedom degree(19), which indicates that there are significant differences in favor of the post test results. The researchers attribute the significant
differences between the pre- and post- tests results to the joints’ ability to reach the natural extent allowed in the anatomy of the joint when moving them, in addition to the muscle's ability to stretch to the extent of the physiological aspect of the muscular fibers. All these resulted in performing the used exercises according to the circuit training technique, as one of the properties of this training technique is improving the physical and kinetic abilities of the person( muscular force, endurance and speed, fitness and flexibility) and the compound( enduring the speed, enduring the force, ability and others…).

Many and few people participate in the performance at the same time( Essam Abdel Khaliq, 2005:208). (Mufty Ibrahim Hammad) added that” the circuit training technique can be applied within any method of the three basic methods of training(Mufty Ibrahim Hammad, 2001:216). About the same topic, both (Hussien Ali and Ammer Fakhr) assured that” everyone can practice the training according to a certain amount that fits its current level. Also, we can graduate the training loads correctly on subjective bases, in addition to being characterized by diversity, suspense and excitement (Hussien Ali and Ammer Fakhr, 2010:64). The researchers also attribute the differences of the training program effectiveness to its qualities of flexibility and controllability according to the players' need without complying with a certain way or a certain area, through clear diversity of different high-intensive exercises. All this affects positively the improving of the flexibility for the sample members of the study. The researcher's using of the flexibility exercises by four units a day and successively within a week, may improve the flexibility, this was assured by( Adel Abdal Basser Ali)” the continuous duplications of performing the stretch exercises may improve the flexibility within a short time. It was proven that daily exercising of flexibility improves it more than exercising day after day(Adel Abdal Basser Ali, 1999:146).

5- Conclusions and Recommendations:

5-1 Conclusions:

According to the results that figured out by the measurements and tests used in the study, and within the study sample represented by Al-Shorta football team of (14-16) years, which exercised (5) successive times a week, and in the light of the study, depending on the results of the statistical method, the researchers figured out the following results:

1- The experimental group achieved a remarkable improving in the variables of the study (core flexibility, legs flexibility) as a result of using the circuit training technique.

2- The experimental group achieved a remarkable improving in the variables of the study (core flexibility, legs flexibility) as a result of using the flexibility exercises everyday and successively, not day after day, through the training program.

3- The experimental group achieved a remarkable improving in the variables of the study (core flexibility, legs flexibility) as a result of using the flexibility exercises according to the circuit training technique at the beginning of the main section of the training unit.

4- Selecting, regulating and performing the exercises, have a psychological effect on the sample, and contribute in improving the effectiveness and desire of the players.
5-2 The Recommendations:

According to the results figured out by the researchers depending on the research methodology, the proposed training program and the sample on which this program was applied, we figure out the following recommendations:

1- Applying the proposed training program because of its effectiveness and positive effects on the football players within the preparation stages.

2- Assuring the use of the circuit training technique when preparing the training programs as it affects the quality of flexibility.

3- Guiding the coaches to use the circuit training technique as it has a great importance in improving the aspects of training in football, and getting away from the traditional methods in training.

4- Caring about performing the flexibility and stretching exercises, at the beginning of the main section, before and after every training unit and successively, instead of day after day.

5- Doing similar researches and studies on other regular sports and for different ages.

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