Effect of Some Coordination Abilities Exercises on the Muscular Power and Record Level of Young Athletes in the Youth National Project

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Abstract: This research aims to identify the effect of the coordination abilities exercises on muscular power (vertical jump of stability, throwing a 200 grams ball to the farthest distance) for youth athletes in the national youth project and the record level of some athletes events (running 75-meter-long jump-shot put-running 1000 meters) for youth athletes in the national youth project. The researcher has used the experimental method using the pre and post-measurement design for one experimental group as it suits the nature of this research. The sample was of 100 youth athletes selected by the purposive method of youth athletes in the national youth project, born in 1997, representing some of the lower and upper governorates (El-Qaliubiya-El-Dakahlia-Alexandria-El-Minya-Assiut-Sohag). Results indicated the existence of statistical differences in all variables on topics in favor of the post-measurement. The improvement rate of legs muscular power was 43.97% and arms muscular power was 53.50%. The record level improved in the events of running 75m by 11.97%, running 1000m by 16.76% and long jump by 24.17% and 26.22% to shot put.

Key words: Coordination Abilities Exercises %Muscular Power %Record Level

INTRODUCTION

Coordination abilities are compound character includes agility, accuracy, reaction, attention and concentration. These qualities do not appear separately during motor performance, but appear in a complex manner along with mutual relations with other physical qualities such as speed, strength, endurance and flexibility, due to this complicated combination of the coordination abilities, its development is also associated with the development of the different associated physical and skill qualities [1]. El-Sayed [2] confirms that these qualities do not appear individually, but they always linked to each other not only to serve constructing the total movement in a coordinative manner, but also to other terms of sport achievement as physical abilities. Rakers [3] referred that coordination abilities divided to physical abilities, sport motor performance abilities and mixed abilities, these abilities considered the main base of reaching the optimal skill performance.

Coordination abilities considered the back boon of developing the sports specific technical kills, as mastering the motor skills along with its coordination abilities is an essential matter so that the movement performed in its correct course in terms of its suitable power, speed, timing and rhythm [4]. Moreover, Jadach [5] referred that the coordination abilities are of the most important requirements specified to the motor performance and even a term for performing the skills of any activity, where individuals can easily execute the required tasks achieving the real aim through the correct performance of the skill, which depends on the existence of such abilities. Hockey [6] refers that the availability of the coordination motor abilities of individuals in a correct manner will properly helps to good thinking and ease of learning and developing the motor skills, therefore the coordination abilities are essential and necessary for all sports activities because of its availability will help improving performance and achieving better results. In addition, Stanistaw and Duda [7] mentioned that developing the coordination abilities plays an important role in achieving the best results where there is correlation between the coordination abilities and motor skills, where the coordination abilities represents an essential basis for the acquisition of motor skills. Liakh [8] stated that these abilities are factors of the (Technical-coordinative) performance factors and thus the coordination abilities are closely and mutually related to
the motor skills (technical performance), which is obvious in the form and method of acquiring and learning new skills. As well as the optimal use of such skills, speed of the learning processes, the skills performance mastery degree and economizing the exerted physical effort. Therefore, training the coordination abilities is the base of training the skills performance in the specific sport activity, where the athlete will effectively learn and raises his achievement level (his skills performance).

Abdel-Khalek [9] stated that if the coordination abilities work has been coordinated, the highest possible level of the required general motor coordination achieved to the motor performance for achieving the motor skills. The coordination abilities reflected to the quality of motor performance, the speed of motor learning and the effectiveness, beauty and smooth of movements. Tawfiq [10] indicated that the sports skills level in general depends on the athletes capabilities that are relevant to the skill. Moreover, Sharma [11] confirmed that the conscious and purposeful interest of developing coordination abilities has become more necessary recently the set goals often achieved to the required extent in training youth. In addition, confirms that existing decrease in technical performance-in most cases-may be due to the lack of the coordination efficiency resulting in the wrong fixation of the skills. The coordinative weaknesses reflected in less development of or slack in developing the improvement of the sports technical performance and affect the competition in terms of sporting achievement.

Through the work of the researcher and his experience in the field of athletes, noted that most of the players, especially beginners face some difficulties during learning and performing technique events in athletes, represented in the weak record level of youth in athletes events. That provoked the researcher to identify the effect of coordination abilities exercises on the muscular power and the record level of some athletes youth events in the national youth project. This research aims to identify the effect of the coordination abilities exercises on:

C Muscular power (vertical jump of stability, throwing a 200 grams ball to the farthest distance) for youth athletes in the national youth project

C The record level of some athletes events (running 75-meter-long jump-shot put-running 1000 meters) for youth athletes in the national youth project.

Hypotheses of the Research: There are significant differences between pre and post measurement in favor of the post-measurement in:

C Muscular power (vertical jump of stability, throwing a 200 grams ball to the farthest distance) for youth athletes in the national youth project

C The record level of some athletes events (running 75-meter-long jump-shot put-running 1000 meters) for youth athletes in the national youth project.

MATERIALS AND METHODS

The researcher has used the experimental method using the pre and post-measurement design for one experimental group as it suits the nature of this research. The sample was of 100 youth athletes selected by the purposive method of youth athletes in the national youth project, born in 1997, representing some of the lower and upper governorates (El-Qaliubiya-El-Dakahlia-Alexandria-El-Minya-Assiut-Sohag). For describing the sample, statistical coherence between the samples of the research was conducted in height, weight, age, variables of the research.

The results of Table 1 illustrate the coherence between the research variables in the variables on topics, where the skewness coefficient ranged between ±3.

Steps of Implementing the Research

Pre-Measurement: The pre-measurement was conducted on Wed. 20th and Fri. 21st of Jan. 2011 in the collective meeting at Ismailia governorate, where muscular power and record level measured, as follows: The First day consisted of the following tests and measurements and in the same order: Transition speed (running 75 meter), Shot put, legs muscular power (vertical jump of stability). The second day consisted of the following tests and measurements and in the same order: Long jump, arms muscular power (throwing a ball weighing 200 grams to the farthest distance), cardiovascular

<table>
<thead>
<tr>
<th>Table 1: Describing the sample of the research's variables</th>
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<tbody>
<tr>
<td>Variables</td>
</tr>
<tr>
<td>Height (m.)</td>
</tr>
<tr>
<td>Weight (kg.)</td>
</tr>
<tr>
<td>Running 75 meter (s.)</td>
</tr>
<tr>
<td>Running 1000 meter (s.)</td>
</tr>
<tr>
<td>Vertical jump(cm.)</td>
</tr>
<tr>
<td>Throwing a 200 g. ball (m.)</td>
</tr>
<tr>
<td>Long jump</td>
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<tr>
<td>Shot put</td>
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</table>
endurance (running 1000 meters). All tests and measurements measured by a group of Ismaili’s athletes region referees. Three referees of the tests (transition speed and cardiovascular endurance) took time by calculating medium time.

**Implementing the Training Program:** After reviewing scientific references and previous studies and through the researcher experience in the training field and training youth athletes and supervising the national youth project since 2008 until now, the researcher has determined the following:

- Coordination abilities related to performance and most required to the youth athletes of the national youth project born in 1997 are motor PEG-motor rhythm-the sense of motion-the ability to exert maximum effort-the ability to balance (Mobile and stable)-the ability to accuracy-the ability to organizing and directing of motion. Also, muscle power including vertical jump of stability and throwing a ball weighing 200 grams to the farthest distance. Events that will be trained are running 75 meter-long jump-shot put-running 1000 meters. The training program was applied during the second session of the national youth project born in 1997, lasted for five months as three training units per week.

- **RESULTS AND DISCUSSION**

  Table 2 results indicate that there are significant differences between the pre and post measurement averages in favor of the post measurement on topics.

  The first hypothesis results indicated that there is statistical indication between the pre and post measurement in the legs and arms muscular power in favor of the post measurement. Moreover, indicated to the improvement of legs muscular power by 43.97% and arms muscular power by 53.50%. The researcher returns that to the coordination abilities training program that included exercises linked between power and speed, which led to the improvement of the muscular power and that is consistent with prior studies [2, 3, 7, 11-13] that coordination abilities exercises lead to the improvement of the physical abilities including muscular power.

  The researcher returns the increase in arms improvement rate than legs to the interference of the technical performance in "throwing a hockey ball" test than "vertical jump" test. In addition, the researcher returns that improvement in the muscular power to the concentration on the coordination abilities exercises related to the motor PEG, the sense of motion, the ability to exert maximum effort and the ability to organizing effort.

  The second hypothesis results indicated that there is statistical indication between the pre and post-measurement in the record level at all events included in the national youth project in favor of the post measurement. Moreover, indicated to the improvement of the record level to the events of running 75m by 11.97%, running 1000m by 16.76% and long jump by 24.17% and 26.22% to shot put. The researcher returns that to the coordination abilities training program that included exercises specified to improving the record level of all national youth project’s events. Moreover, the selected exercises suit youth athletes and the events on topics. That is consistent with previous studies [2, 3, 8, 12, 14-16] that the coordination abilities exercises lead to the improvement and development of the skills level and performance, thus the record level, if included in a standardized training programs and in a scientific manner specified to youth athletes. The researcher returns that improvement to the coordination abilities exercises that
Table 2: Indication of the significant differences between pre and post-measurement and the changing rate of the variables on topics (N=100)

<table>
<thead>
<tr>
<th>variables</th>
<th>pre-measurement</th>
<th>post-measurement</th>
<th>Difference between averages</th>
<th>&quot;T&quot; Value</th>
<th>changing rate %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arithmetic mean</td>
<td>standard deviation</td>
<td>Arithmetic mean</td>
<td>standard deviation</td>
<td></td>
</tr>
<tr>
<td>Running 75 meter (s.)</td>
<td>11.55</td>
<td>0.40</td>
<td>10.17</td>
<td>0.36</td>
<td>1.38 *</td>
</tr>
<tr>
<td>Running 1000 meter (s.)</td>
<td>3.42.18</td>
<td>37.24</td>
<td>3.08.33</td>
<td>11.23</td>
<td>37.85 *</td>
</tr>
<tr>
<td>Vertical jump(cm.)</td>
<td>35.75</td>
<td>4.79</td>
<td>51.47</td>
<td>3.57</td>
<td>15.72 *</td>
</tr>
<tr>
<td>Throwing a 200 g. ball (m.)</td>
<td>28.83</td>
<td>4.31</td>
<td>44.25</td>
<td>6.65</td>
<td>15.42 *</td>
</tr>
<tr>
<td>Long jump</td>
<td>4.01</td>
<td>0.18</td>
<td>4.98</td>
<td>0.22</td>
<td>0.97 *</td>
</tr>
<tr>
<td>Shot put</td>
<td>6.99</td>
<td>0.31</td>
<td>8.82</td>
<td>0.45</td>
<td>1.83 *</td>
</tr>
</tbody>
</table>

The indexed "T" value at significant level of 0.05=1.99

work to developing the motor PEG, the sense of motion, the ability to exert maximum effort and the ability to organizing effort. In addition, the researcher returns the increased improvement in shot put and long jump to the interference of the technical performance in these events than both running 75m and 1000m.

**CONCLUSION**

Within the limits of the research sample, the proposed program and the used statistical program, the researcher reached following conclusions:

C There are significant differences in all the research variables.
C Improvement of the legs muscular power by 43.97% and by 53.30% to the arms muscular power
C The training program has improved the record level of running 75m event by 11.97%.
C The training program has improved the record level of running 1000m event by 16.73%.
C The training program has improved the record level of long jump event by 24.17%.
C The training program has improved the record level of shot put event by 26.22%.

**Recommendation:**

C Applying the training program and this study on male and female athletes, in general.
C Applying this study on male and female youth athletes and on different events.
C Applying this study on the first-degree male and female athletes.

**REFERENCES**


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