The Effect of Developing Some Coordination Capabilities by Using Novel Equipments on Improving Performance Level and Sport Confidence in Modern Dance

Manal Mohamed Sayed Ahmed Mansour

Department of Exercises, Gymnastics and Motor Expression, Faculty of Physical Education for Girls, Zagazig University, Egypt

Abstract: Modern dance is a type of sports characterized by rapid and dynamic performance throughout the time of a motor phrase. A skillful student can do these skills smoothly, rapidly with the least effort. The researcher observed that it is too difficult for most students to do these skills properly, especially in modern dance. This may be because they cannot do some coordination capabilities. For instance, they are not able to do skills smoothly, to feel the movement, to change direction, to have sense of rhythm, or to be balanced. The researcher's knowledge in this area helped in finding out a number of movements performed by using a group of modern equipment such as health ball, elastic bands and Swiss ball although it is rare to find studies that make use of such equipments to promote the coordination capabilities in modern dance. The researcher thinks that using novel equipments may lead to developing the coordination capabilities. Hence, the researcher designed a program aiming at identifying their effect on the physical fitness components, the performance level and the sport confidence of the third year students in Faculty of Physical Education for Girls, Zagazig University. The experimental approach was used on a sample of 34 students divided into an experimental group and a control group. Results showed that the program contents are able to develop the coordination capabilities and that the equipments used were truly targeted to develop these capabilities and they have a positive influence on all the variables studied.

Key words: Modern dance • Coordination capabilities

INTRODUCTION

Modern age is characterized with scientific progress and continuous development in the field of sport activity at all physical, skilful and psychological aspects. This is due to the use of applied research results in sport training and continuous search for the best methods that help in developing the performance level [1]. Theories of sport training field highlight the importance of developing special coordination capabilities that are in the direction of motor path for skilful performance. This is done through categorizing main goals of performance accurately, since this is considered an assistant factor to make the process of categorizing muscular work of this performance successful [2].

Coordination capabilities are considered the most important foundations that are necessary to prepare sport man to perform motor skills in different sports. To enable athlete to reach the highest levels in every specialized activity it must be concentrated on some related abilities that play an important part in the level of skilful performance, particularly these sports that require modifying motor performance to be appropriate with the requirements of this specialized sport activity [3]. Coordination capabilities are closely related with developing technical motor skills. Specialized sport activity determines the type of these abilities that must be developed since the athlete cannot perfect technical skills of specialized activity if he lacks these coordination capabilities. These coordination capabilities are always integrated. They enable students to move smoothly to reach the highest level of motor coordination and to accomplish different technical motor skills. Accordingly, the performance level will be improved [2, 4, 5].

Conventional training concentrates on performance in stability state, while training by using modern equipment makes several muscular groups work as a whole at the same time in stability and movement [6, 7].

Corresponding Author: Manal Mohamed Sayed Ahmed Mansour, Department of Exercises, Gymnastics and Motor Expression, Faculty of Physical Education for Girls, Zagazig University, Egypt.
Using equipment individually or collectively helps in developing athlete's motor ability and coordination capabilities [2, 8]. Athletes who have coordination capabilities have high ability to perform the basic stages of motor skills that enable them to achieve performance technical principles. And this is reflected on their ability to integrate technical skills in a form of motor phrases [9].

Providing assistant apparatus and equipment according to the educational situations are more effective and vital because they help students develop muscular sense and feeling of body position change through transferring from one movement to another. They also help in acquiring self confidence during performance [10]. Sport confidence is the most important psychological aspects and basic characteristics which sport man has to be characterized by. It is also considered a basic factor in determining the extent of his proficiency, effectiveness and performance results. Self confidence is based upon his character, abilities and skills. It contributes greatly in having a good performance and in knowing the limits of his abilities, as an attempt to invest these abilities in achieving goals. Self confidence-as a state-makes the athlete predicts his performance, responses and provides a progressive thrust of his self perception for performance results such as feeling success regardless of winning or losing [11].

Modern dance is a type of sports that are characterized by rapid and dynamic performance through performance time in motor phrase where technical skills of modern dance include fundamental locomotor movements and non-locomotor movements. Types of movements such as percussive, collapse, vibratory, sustained and so forth. Other influential components in modern dance are: space, focus, range, levels and directions. A skillful student can do these skills smoothly. Besides, she can do them rapidly and smoothly in a skillful way, with the least effort, using modern various scientific methods of training.

The researcher observed that it is too difficult for most students to do these skills properly, especially in modern dance. This may be because they cannot do some coordination capabilities. For instance, they are not able to do skills smoothly, to change direction, to be balanced, to have sense of rhythm, to determine positions (spatial orientation), or to feel the movement, (motor sensation). Through the researcher's knowledge, she found the existence of movements performed by using a set of modern equipment such as health ball, elastic bands and Swiss ball. Health Ball helps in acquiring balance, changing direction and improving the mental state of who use it and increasing their feeling of delight. Its practices are performed by jumping with feet non-stop whether upwards or with changing direction and keeping body balance on ball base as well as performing movements with arms and trunk during jumping [12].

Elastic bands, which improve physical fitness components and muscular stretch, are one of the equipment used in resistance trainings. They are made of high quality rubber in different degrees of tighten to be used for different ages and levels [13]. Swiss ball helps in developing flexibility, muscular stretch, feeling balance and coordination. It is an elastic ball filled with high pressure of air with several colors and sizes, its diameter ranges from 55, 65, 75 to 95 cm to suit all sizes of its users whether they are children or youth or women or eldest [14]. The researcher observed that there are few studies that used these equipments to develop coordination capabilities in modern dance, using some novel equipments. Hence, the researcher designed a program, aiming at identifying their effect on the physical fitness components (flexibility - agility - balance and muscular power), the performance level in modern dance and the level of sport confidence (as a state), the performance level in modern dance of the third year students specialized in motor expression.

**Hypotheses**

- There are statistical significant differences between the pre and post measurements of the experimental group in the variables in behalf of post measurement.
- There are statistical significant differences between the pre and post measurements of the control group in the research variables in behalf of post measurement.
- There are statistical significant differences between the experimental and control groups in the research variables in behalf of the experimental group.

**MATERIALS AND METHODS**

The researcher used the experimental method for its appropriateness of the research nature by using the pre-post measurements of the two groups, the experimental group and the control group. The population, of 45 students, was selected deliberately from the third year students specialized in motor expression at the Faculty of Physical Education, for Girls, Zagazig University for the years 2009/2010. A pilot sample was selected randomly of 11 female students to find scientific
coefficients and conducting a pilot experiment hence, the sample became 34 female students. The researcher divided them randomly into two groups, one is the experimental group and the other is the control group, 17 female students for each. The results showed that skewness coefficients are ranged from 0.290 to 0.426, which was restricted between ±3 indicating data normality in all variables. This shows the normality of data in all variables and the normality and homogeneity of the population. Equivalence was found between the two groups in the selected variables. The results showed the equivalence of the two groups.

Validation: The researcher used distinction validity to insure the selected tests validity. It was applied to a pilot sample of 11 students taken from the population (a distinguished group) and a random sample of 11 from the first year students (an undistinguished group). The results showed that calculated (t) value was statistically significant between two groups in all variables indicating validity of these tests in measuring what they were put for.

Reliability: The reliability of the tests was calculated by applying “Test-Re test”. There is an interval of 7 days between the test and the re-test. Applying the first test was on February 20, 2008 and the second test was on February 27, 2008. The correlation coefficients scores ranged from (0.934, 0.995) P. (0.05) = 0.714.

The Suggested Training Program of Coordination Capabilities: The researcher developed a training program by using some equipments such as health ball, elastic bands and Swiss ball aiming at developing coordination capabilities to promote performance level in modern dance, developing selected physical fitness components, enabling female students to acquire self confidence, to do the motor skills smoothly, to change direction, to be balanced, to have sense of rhythm, to determine position " spatial orientation " and to feel the movement. Specialized experts in the field of motor expression, training and psychology highlight the importance of the coordination capabilities which suit the motor expression, particularly in modern dance. The researcher displayed the program contents to them and taking their advice into consideration, then the amended version of the program was submitted. The program therefore was applied on a pilot sample after getting the experts’ approval.

Temporal Division of the Program: According to the advice of the experts, the program took 8 weeks, 3 times a week. Each lesson took 50 min, at the beginning of the program. It began with 15 min of warming up, general and special physical preparation, (preliminary part), followed by 30 min including trainings by using health ball, elastic bands and Swiss ball to develop coordination capabilities (work out part) and 5 min of cool down (final part). The work out time increased gradually (2 min for each 3 lessons) to reach 65 min for each lesson at the end of the program. Consequently, the trainings numbers or the frequency of them was increased by increasing the time of the lesson.

Tools of Data Collection:

- Apparatus and instruments: A wrist meter to measure height and weight (in centimeter and kilogram), a stop watch to measure time (in seconds), Swiss balls, health balls and elastic bands. These apparatus were calibrated with other apparatus to ascertain their suitability.
- Forms: Experts opinions survey to determine the most important coordination capabilities that are suitable for this research.
- Tests and measures: A standing bending reach test (flexibility), a test of zigzag running (agility), balance test, Johnson test (conformity), a test of broad jump from stability (muscular power), Wiener Koordination Parcours (WKP) test to measure coordination capabilities, sport confidence test (Germany).

Performance Level: The researcher designed a motor phrase to measure performance level. She consulted specialized experts to determine the extent of performance level for the research sample as much as 30, including several of basic skills for modern dance by using music. The motor phrase lasted 3 minutes. The researcher used the pre and post measurements with a triple committee formed from experts in the field to give the female student a score based upon her performance level in the motor phrase.

A Pilot Experiment: The researcher conducted a pilot study from February 20, 2010 to February 27, 2010 on a random sample of 11 female students from the population in purpose of verifying appropriateness of apparatus and instruments used in measurements, verifying appropriateness of coordination capabilities trainings for the research sample, knowing how tests are suitable for the sample and Finding scientific coefficients for the selected tests and measures.
Steps of Applying the Research Experiment: The pre measurement: Age, height, weight, physical fitness components, coordination capabilities, performance level measured by the formed triple committee and sport confidence (as a state) on March 1, 2010.

Applying the Research: The researcher applied the suggested program on the experimental group from March 2, 2010 to April 27, 2010. As for the control group, the researcher supervised their training on the course of motor expression with hours that are equal to hours in which the suggested program of the experimental group lasted.

The Post Measurement: The post measurements were conducted, the same way as the pre-test, on April 28, 2010.

RESULTS AND DISCUSSION

Results of Table 1 indicated that there were statistical significant differences between the pre and post measurements in behalf of post measurement of the experimental group in all the variables. This means that the components of the suggested program are able to develop coordination capabilities that leads to develop physical fitness components, improve the performance level in modern dance, increase sport confidence of students. Consequently, improvement in all variables occurs because health ball depends on maintaining body balance on the base on which the ball is fixed and jumping upwards, forwards and backwards with rotation in the air making movements with arms, trunk and head, keeping body balance position on the ball.

In addition, using elastic bands helps in performing movements, with the least effort and controlling body gravity center, in addition to improving many of physical fitness components such as: muscular capability, flexibility, balance, agility and coordination, keeping body position and posture and the type of proper movements. Using Swiss ball helps in developing neuromuscular coordination, neuromuscular stability and acquiring physical and motor fitness components. This ball is very interesting and very easy to be used. The performance level recorded a high improvement rate of 188.28% indicating that developing coordination capabilities has a positive effect on performance level in modern dance.

Abdel-Maksoud [15] argued that perfection in performing motor skills is not achieved but through a gross development of coordination capabilities, because performance level is improved by coordination capabilities improvement and they represent a fundamental basis to acquire the motor skills. Developing coordination capabilities influences the motor performance level positively [12, 16, 17]. Coordination capabilities are one of the most necessary conditions required to perfect motor performance and have a great importance in training where the level of coordination capabilities is reflected directly on performance level [3, 18]. Coordination capabilities are responsible for learning, performing, developing skills and doing motor phrases smoothly [19].

The researcher attributes positive differences and improvement in sport confidence to the improvement in performance level in modern dance through developing coordination capabilities that help in achieving the highest body and mind competency that leads to increase confidence for students during performing motor skills,

<table>
<thead>
<tr>
<th>Variables</th>
<th>The pre measurement</th>
<th>The post measurements</th>
<th>T value</th>
<th>Variance rates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arithmetic mean</td>
<td>Standard deviation</td>
<td>Arithmetic mean</td>
<td>Standard deviation</td>
</tr>
<tr>
<td>Flexibility</td>
<td>5.823</td>
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<td>16.882</td>
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<tr>
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<td>4.937</td>
<td>32.000</td>
<td>5.074</td>
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<tr>
<td>Performance level</td>
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<td>24.588</td>
<td>2.785</td>
</tr>
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<td>Koordinations Parcours Wiener (WKP)</td>
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<td>4.800</td>
<td>33.117</td>
<td>2.546</td>
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<tr>
<td>Sport confidence</td>
<td>60.588</td>
<td>3.554</td>
<td>92.411</td>
<td>3.536</td>
</tr>
</tbody>
</table>

P. 0.05 = 2.120
concentrating in performance, the ability of motor response, balance sensation, having a sense of rhythm and doing skills smoothly in performance with the least body effort. Self confidence is important because it is related with sport man self esteem, making him exerting effort for the sake of Excellency. Self confidence is formed as a result of one's physical and skilful abilities advancement through integration between mind and body that provides the feeling of secure, promotes specialized performance level [20, 21].

All this proved the first hypothesis, that there are statistical significant differences between the pre-tests and the post tests in the variables of the experimental group in favor of the post tests.

Results of Table 2 indicated that there are statistical significant differences and improvement between pre and post measurements in behalf of post measurement for the control group in all the research variables. The researcher attributes these differences and progress ratio, though they are slight comparing with the control group, to students' regularity in the conventional program. Although the conventional program is useful concerning the different physical aspects it doesn't contribute effectively in developing coordination capabilities and all the variables studied because of not using the equipment used in the experimental group. This highlights the importance and necessity of using this equipment with its different types.

Hesballah et al. [22] indicated that equipment help in coordinating students' movement, showing direction and adjusting rhythm and timing. All these results are agreed with previous studies, indicating that training in the traditional way focuses on performance itself regardless of the progress of its level since it causes slight improvement in performance level [6, 7]. Artens [11] stated that self confidence is the most important mental aspects that the athlete must be characterized by in addition to the progress in performance level because self confidence shows whether the athlete is skilful or not. All this proved the second hypothesis, that there are significant differences between the pre and post tests in the variables of the control group in favor of the post tests.

Results of Table 3 indicate that there are statistical significant differences between the experimental and control groups in post measurements of the research variables on behalf of the experimental group. The researcher thinks that these differences are because the suggested training program, which novel equipment is
used in, was designed in a scientific method since it contains movements, using equipment, performed in different directions and levels making use of space and motor range with concentration and spatial orientation, motor speed, feeling distance, motor progression, doing skills smoothly, speed of removing body position in the case of deviating gravity center from pivot base, involving all body parts in distinctive motor harmony and rhythm organization.

All this led to positive changes in the level of coordination capabilities that lead to positive changes in physical fitness components and performance level of modern dance as well as a positive improvement in students' sport confidence. The researcher attributes the control group progress in the research variables, though it is slight, to the use of the conventional method in training which has also a positive effect but less than the experimental group that used the suggested program. The researcher thinks that the slight progress of the control group because they did not work on developing the coordination capabilities and this was reflected on the performance level and sport confidence.

This indicated that the equipment used in the program was truly targeted for developing coordination capabilities and all the research variables and it was more accepted from students than the conventional program applied on the control group. The equipment is important, effective and has a positive effect on performance level. Besides, it makes students very active and keen. Furthermore, it is one of the best methods for excitement, variation, joy and delight. It makes them acquire alertness and self confidence [23]. This proved the third hypothesis that there are statistical significant differences between the experimental and control groups in post measurements in the research variables in behalf of the experimental group.

**CONCLUSIONS**

- The most important coordination capabilities in modern dance are the ability to do motor phrases smoothly, to change direction, to be balanced, to have speed response, to have sense of rhythm, to determine the position "spatial orientation" and to feel the movement.
- The program of developing coordination capabilities led to positive changes to physical fitness components (flexibility, agility, balance, coordination and muscular capacity), performance level in modern dance and sport confidence since the research results showed that there are statistically significant differences between pre and post measurements for the experimental group in behalf of post measurements.
- The program of developing coordination capabilities using equipment led to a great improvement in performance level in modern dance comparing with the effect resulted from the traditional program. Results showed a progress ratio in performance level in modern dance of 188% for the experimental group and 56% for the control group. This is due to the positive effect of coordination capabilities development program on variables of physical fitness components (flexibility, agility, balance, coordination and muscular power), performance level in modern dance and sport confidence where progress ratio of these variables of the experimental group was higher than the control group.

**Recommendations:**

- It is important to develop coordination capabilities of motor expression with its different branches for being one of the most important factors of promoting performance level.
- It is important to use equipment in lectures on other classes for their positive effect on physical and mental state.
- Conducting future studies by using different equipment for the training program of various sport activities.

**REFERENCES**