THE EFFECT OF COMPARATIVE COMPETITION METHOD DUE TO SOME KINEMATIC VARIABLES ON CORRECTING SOME MOTOR PERFORMANCE ERRORS IN SHOOTING FROM OVERHEAD FOR THE 3RD STAGE STUDENTS

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Abstract

The idea of the study lies in determining the effect of comparative competition method due to some kinematic variables on correcting and learning the skill again in a better way through correction of some performance errors in shooting from overhead by handball players. The researchers used the competition method as it is proper to the nature of solving problem of the study. The sample of the study was selected purposively (20 female students at the 3rd stage at Faculty of Sport Education, Diala University as they learned this skill in previous stages. 10 students were eliminated (6 for the exploratory trial and 4 not conforming with it). The researchers used this method which included the number of educational units by preparing the skill of shooting from overhead for the sample of the study. Results showed that this method has a positive effect on correcting errors of the skill due to mechanical variables determined by the researchers serving to solve the problem o the study and based on scientific research and biomechanical academies. The study also found improvement in skill learning and development in handball through extraction of statistical results by applying the Statistical Package of Social Sciences (SPSS) program.

Keywords: comparative competitive method, motor performance, handball, kinematics, shooting

1. INTRODUCTION

Each of the used learning methods represents applied contents among the multiple and variable motor learning theories, so they are also considered main psychological theories. The comparative competitive method depends on continuous repetition of the skill with consideration of individual differences in learning. Adoption of learning means and methods in an organized way makes learners engaged and highlights their roles to implement requirements of the game as learning a skill and the ability to perform it is one of the basic conditions of mastering it.

Comparative competition is an educational philosophy which asserts that under suitable learning conditions, all students can learn what is beneficial for them completely. It is supposed that within suitable conditions and atmosphere that most students manage to invest their utmost abilities in learning process (9:2) if there is a right feedback about their motor performance and on time in addition to sufficient time to master what they learn. Finally, if there are clear criteria of mastering components, this ensures reaching the players' highest stages of motor development.

According to the development which handball witnessed and its extending supporting base at most countries around the world, the researchers continue researching to solve problems related to skillful performance and achievement to analyze them and set suitable solutions. A lot of researches, field and experimental studies were conducted related to handball through multiple educational courses working to develop all basic and important skills related to shooting in handball without consideration of biomechanical aspects related to special performance requirements of shooting skill. In order to make learning comprehensive, there should not be any deficiency in any of these characteristics. A loss of any of these characteristics leads to incorrect building of motor performance that depends on good utilization of biomechanical and skill characteristics due to correct mechanical conditions related to skill performance.

Not utilizing bio-kinematic characteristics related to performance in a good manner leads to mistakes in stages of overhead shooting at the center position, failure in shooting in terms of accuracy and quickness in scoring and not diagnosing these mistakes in motor bio-kinematic paths of the player's body and the ball with objective treatment through setting correct and suitable solutions.

2.   PROBLEM OF THE STUDY

The researchers noticed that assessment of performance value by specialists depends on self-observation according to what they see without aid from modern technology that records and analyzes motor skills in order for accurate and effective diagnosis of weakness and strength points. In addition, lack of knowledge about mechanical basics affects movement and its minute parts to determine the most significant performance errors based on objective and scientific criteria. The researchers conducted this study to set correct scientific solutions for the previous problem through training process according to correct mechanical conditions. This is on order to correct these errors in motor paths of the skill due to some indicators such as velocity, angles and heights related to performance requirements related to shooting skill in handball.

Objective of the Study

The study aims to determine the effect of comparative competition method in correcting some motor performance errors in shooting from overhead due to kinematic variables by handball players.

3.   METHODOLOGY

The researchers used the empirical method as it is proper to the nature of solving problem of the study. This method is the most suitable one foe solving the problem of the study as empirical research aims to make a purposive and accurate change of factors determining a certain event with observation and explanation of factual changes in this event. Thus, it is closer and more valid to solve many scientific problems practically and theoretically.

Sample of the Study

The sample of the study is very important as on which many aspects such as measurements and results depend. Research sample selection is a very important step that should be considered. The researchers selected the sample purposively from students of Faculty of Physical Education & Sport Science for the academic year 2014 / 2015 in the 3rd Stage. As for the sample, (20 students at were selected randomly in Section (A). 10 (6 were eliminated for the exploratory trial and 4 were eliminated for being absent). The researchers used the single sample method with pre- and post-tests. Table (1) shows homogeneity among members of the sample through some tests such as age, length and weight. Members of the study sample are distributed normally as skewness coefficient is between +1 and 456-6.

Table (1) arithmetic mean, standard deviation, median and skewness coefficient value among members of the sample to achieve homogeneity:

Statistical Methods / Variables	Mean -	S.D +	Median	Skewness Coefficient
Age (year)	20.48	1.3	21	0.28
Length (cm)	160.9	2.1	161.5	0.4
Weight (kg)	59.8	5.6	59.5	0.05

Field Study Procedures

The researchers determined kinematic variables of motor performance of shooting from overhead due to prior literature in Iraq and all over the world as it is shown in the following table:

Table (2) variables of motor performance of shooting from overhead

Mechanical Variables
Ball initiation angle
Ball initiation speed
Angular speed of the throwing arm (from preparation towards the goal)
Peripheral speed of the throwing arm (from preparation towards the goal)

| Radius of the throwing arm (from preparation towards the goal) |
| Removing object (thigh point) (from preparation towards the goal) |
| Ball handing (from preparation towards the goal) |

For the purpose of determining work accuracy related to the study, the researchers conducted an exploratory trial "it is a primary empirical study performed by researchers with a small sample before the main trial to choose tools and methods of the study" (79, 4. This was on 01/03/2015 by conducting an exploratory trial on 6 students from outside the study sample in order to determine the most significant obstacles that arise before conducting the main trial. The purpose of the trial is to:

- Know the validity of devices and tools used in tests.
- Define tasks of the assistant team and to clarify the instructions related to tests.
- Ensure the validity of the tests and devices places and suitability for test.

In order to determine kinematic variables that affect motor performance evaluation level, the researchers conducted pre-test on the main sample of the study on 05/03/2015 at 10 am in the indoor hall of the Faculty of Physical Education & Sport Science. In order to extract a scientific formula to study these variables, the researchers used video recording as it is considered one of the important means to detect errors and adjust how close or far away motor performance levels of athletes by drawing paths body points, describing movement and analyzing it based on determined variables. In addition, through the use of a scale, geometric path of the body can be determined as well as determining time path through change in photos in a single second (3. 328). To achieve the previous measurements, the sample of the study was video recorded using two video cameras model (3500 TM PANASQNNC) with frequency speed: (24 photos / sec) with a video cassette (VHD-RD). Both cameras were fixed on a big triple stand and the height was 1.20 m from middle lens on the ground.

Based on the previous, the researchers managed to extract data related to kinematic variables to study and analyze them in order to reach goals of the study. After that, the researchers started implementing the comparative competition method in order to correct and develop some performance errors in shooting from overhead prepared by researchers for the empirical group. This comparative competition method included:

1. Reeducation of skills in sessions of the course and they were similar in some procedures such as warming-up, physical training, educational activity and final section, but the applied activity differs as the empirical group only uses the comparative competition method.
2. The empirical group used the comparative competition method in reeducation of overhead shooting skill in a period of two months (16 units each one is 60 minutes) and the units were distributed as follows:
- Preparation part (15 minutes).
- Main part (40 minutes: 10 minutes education and 30).
- Final part (10 minutes).

After completing the application of the comparative competition method on the empirical group of the study, the researchers performed post-tests of video recording to select shooting accuracy from the center on 06/05/2014 depending on the same procedures in pre-tests at the same spatial and temporal conditions of the first test with the same assistant team.

4.   DISCUSSION OF RESULTS

The analysis of these results in light of the statistical rules used in the research and appropriate to this data in light of confirmed scientific references for this use in order for us to test hypotheses and research objectives based on field and applied procedures carried out by researchers who come to these findings and then discussed in the light of their reviewing framework.

Mechanical Variables	Pre-test		Post-test		Counted T Value	Tabulated T value (*)	Significance
	Mean	S.D	Mean	S.D			
Ball initiation angle	0.69	0.26	0.50	0.29	3.10		Significant
Ball initiation speed	42.12	1.60	29.10	0.69	6.55		Significant
Angular speed of the throwing arm (from preparation towards the goal)	839.50	28.60	790.58	25.10	10.52		Significant

Peripheral speed of the throwing arm (from preparation towards the goal)	10.11	0.18	8.80	0.27	10.65		Significant
Radius of the throwing arm (from preparation towards the goal)	60.40	1.77	55.25	1.11	4.55	2.09	Significant
Removing object (thigh point) (from preparation towards the goal)	20.10	0.66	24.70	0.69	7.80		Significant
Ball handing (from preparation towards the goal)	12.90	0.71	9.10	0.75	8.87		Significant

Freedom degree (19=2-20) at error level ≤ 0.05

5.   DISCUSSION OF RESULTS OF THE STUDY VARIABLES FOR PRE- AND POST-TESTS

Table (3) shows that there are significant differences between results of research in pre- and post-tests in the variables as the counted T value was less than the tabulated T value at all variables which shows that there is a clear effect of the comparative competition method in developing the study sample which means that directing the ball by the sample became based on more accurate mechanical variables than pre-test. The researchers attributed this to the sample that managed to use suitable amount of strength in arm with suitable speed. This was the focus of the method as this method led to take actual performance of the selected skill. Osama Kamel Rateb asserted on this as he said that: "when the nature of training method and the used training are the same as the nature of skill performance, this performance is improved to the maximum degree" (78:1). Moreover, the increase in speed variable means an increase in peripheral speed (wrist with the ball). This increase came as a logical result of the positive change in the forearm's radius, arm angles and joints. This is because these positive variables are closely related to peripheral speed. This speed can be measured through the total multiplying of angular speed of throwing arm by the length of the same arm's radius (6:28) and these factors developed significantly in post-tests.

Researchers also refer to the mechanical change of the player's body position in the last step which plays a great role in preparing the biggest basis for positioning in order to move the trunks with maximum possible rate from the bask towards the front. This is because maintaining body balance during quick movement requires a big positioning basis in order to make torques of strength affect the body. The strength of body rush forwards affects torque which equals the amount of this strength multiplied by its vertical length (67:5) away from falling edge towards the position of foreleg. Accordingly, this flows into the determined variables. Researchers also assert the development happened in the variable of radius angle of the throwing arm through big turning around radius related to this arm during the stage of preparation for throwing. In addition to the increase in the throwing arm's angle in post-test of the same stage achieves mechanical advantages in multiple throwing events including handball shooting through preparing a bigger motor range or field to increase acceleration. Nevertheless, at throwing position from upwards, extending joint of the throwing arm increases radius with measurement with thigh axe, spine and sternum joint (286:4). This also increases peripheral speed of the throwing arm in addition to developing explosive strength and speed strength of arms which is reflected positively on having a technical position at this level due to application of mechanical and technical conditions of the right performance. All of this results from using the comparative competitive method by members of the sample. Thus, the speed of a player's weight center (thigh point or body buffer) comes through benefits of the levers law which says that movement range can be increased through increasing resistance arm.

Researchers found that the presence of significant differences at most variables of the study was because of focusing on developing mechanical variables due to performance stages. At the throwing stage, the researchers focused on preparation which is one of the difficult and important stages that should be considered at the field of motor analysis especially when it comes to joint movements and the effect of motor range of these joints in performance. This stage is directly related to the main goal of the skill which is to provide the maximum possible benefit from preparation for the main stage. If an athlete exerts a certain muscular torque, this torque's value will increase through his big arm (7:57). If the angle is bigger in all variables, this means that there is a maximum range for resisting body flow at the throwing moment which requires players to resist movement through exerting a muscular strength through which foot can be fixed. As a reaction to this strength, the body turns around the center point (center foot). With muscular torque of the upper part, a reaction is created in the lower part and a motor response emerges to achieve the hoped goal to be achieved which is shooting with a speed and a high level of accuracy. Achieving the goal of the skill and how it is related to other prior stages appears at this final stage and tasks through which we can determine requirements of the skill in terms of utilizing physical, skilled and mechanical abilities which all need to be applied. It is also noticed that there is a significant relation between body weight center at the highest point and initiation angle at the highest point which is the most important factor

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affecting initiation speed, so there is a direct relation (98:6) as the bigger the turning around radius, the bigger the peripheral speed will be and this can be explained based on the following mechanical relation:

Peripheral speed = angular speed x radius

This clearly shows that there is a direct relation between angle's length and speed suitable to the throwing arm and thus we can reach the highest position suitable for the skill.

6. CONCLUSIONS:

The comparative competitive method used on the sample of the study showed indications of enhancing kinematic variables selected for the sample through stages of technical performance shooting from overhead at center. It also led to correct the skill by members of the sample better than before.

- The use of comparative competitive method is important in learning and acquiring basic skills in sport games and activity due to its effective role in learning by students for its numerous advantages.

7. RECOMMENDATIONS

- Statistics reached by the researchers through kinematic variables in the field work should be considered.
- Similar studies should be conducted using other variable methods for other kinematic variables and skills using modern devices in photography and analysis to detect errors.
- Adoption of good and unfamiliar learning methods by the specialists lead to learn skills better and faster

8. REFERENCES

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