Evaluating the level of referees' performance by using video technologies with 3D photography quality in wrestling

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ABSTRACT:

The research aims to design a test to evaluate the performance of referees by using video technologies with 3D photography quality. This is achieved through specifying modified standard degrees in wrestling sport, specifying standard levels degrees for evaluating the level of referees' performance, and identifying the level of the referees' performance by using video technologies with 3D photography quality in wrestling sport. To achieve this, the research used the descriptive method by the survey technique because of its relevance to the nature and problem of the research. The research sample includes accredited referees (38 referees) from referee committee at Egyptian Wrestling Federation. The results of the study conclude that the test designed by the researchers has achieved its purpose, which is to assess the level of referees in the sport of wrestling. And that the largest number of referees falls within the "good" level, while the least number falls within the "acceptable" and "weak" level. Also, the general level of the research sample based on their mean are within the medium level.

Keywords:

(Evaluating the level of referees' performance - video technologies - 3D photography quality)

Research Introduction and Problem :

In order for wrestling to achieve its goals, it must respond to the technological revolution so that its programs and activities reflect the elements of this technology on the one hand and benefit from the inventions and products of that revolution in activating its activities and facilitating its tasks. The development in the wrestling through achieving global achievements in the past and present is only the result of research and scientific studies. These were aimed at developing the game in all its aspects and components, and what it characterized by the large number of its grabs and basic motor skills, diverse attack and defensive. And it depends on the physical, technical and tactical characteristics of the wrestler to achieve the best results. Because of a short time round (two minutes) for the cadets and (three minutes) for the adults with frequent attack or defensive movements, it requires the referee to have a high degree of attention and focus and a high knowledge of all technical cases and mistakes that occur during the competitions in order to reduce the mistakes made by some referees. With the technological development taking place and the use of video technologies with 3D photography quality, it should be used in wrestling to develop referees' capabilities and reduce mistakes made as a result of pressure and the quality of competitions.

Official competitions all over the world include players, coaches, and referees. Referees exert their performances in order to succeed in competitions. A coach, player, and referee in wrestling have a common knowledge base, but each of them has a different role. For example, the role of the coach is to train players, develop performance, tactics, and strategies. The role of the player includes physical, perceptual-cognitive training and performances. But the role of the referees may be more complex than them. Referees need a high degree of physical fitness as well as the ability of decisions making in complex situations in the application of competition rules. Therefore, performance evaluation criteria are different for players, coaches, and referees. This situation becomes even more complicated especially in sports involving several branches, and from which Wrestling with its two branches: Free-style and Greco-Roman wrestling which include different rules according to wrestling type and age categories. For this

reason, to be a wrestling referee is more complicated than to be any other sports referee. (5)

The researchers believe that the correct performance of referees during matches is one of the most indispensable requirements. Because the poor performance of the referees means an imbalance of control, then it becomes a mess. But the correct performance of the referees means that every player is assured of a proper and fair evaluation.

The wrestling game is characterized by its holds, and its basic and diverse motor skills: the defensive and the offensive. So the referee must have a wide knowledge and attention, especially in strong competitions. And through the experience of the researchers in the field of wrestling sport and personal interviews that took place with a large number of local and international Egyptian referees, they noticed that there is a lack of objectivity in the process of evaluating the level of referees, especially in the practical test. As if the referee is subjected to evaluating a competition without looking at the nature and strength of competitors. Therefore some referees fall into strong competitions and have a lot of points as a result of offensive and counterattack moves by the competitor. There are weak competitions that might be end from the first seconds as a result of the weakness of the opposing competitor, and both referees are evaluating with the same evaluation. In order to eliminate prejudice, discrimination and personal whims, we will rely on an evaluator with expertise and high efficiency. He will depend on its evaluation on the form that previously prepared for this purpose, and he has understood its content. This means that we follow the scientific method in determining the scientific basis for evaluation, which is honesty, consistency and objectivity, based on certain criteria.

And since the measurement here is not with the declared measurements such as centimeters and kilograms, but the measurement in our research is the efficiency of performance and we want to reach the truth by using scientific methods through specifying numbers according to specific rules. So the researchers used clear scores, marks, and points and convert the information into scales. And then these measures are subjected to statistical analysis and interpretation to facilitate the task of evaluating

referees, so that the committee can nominate the referees for the international stage without following the Subjectivity, but rather reaching the truth according to the proper scientific method. That is why the researchers designed a test that helps in evaluating the level of referees' performance using 3D video techniques in wrestling.

Research objectives:

1- Designing a test to evaluate the level of referees' performance using 3D video technology in wrestling.

2- Determining scores for standard levels to evaluate the level of referees' performance using 3D video techniques in wrestling.

3- Recognizing the referees' performance using 3D video technology in wrestling.

Research questions:

1- What are the modified standard degrees for evaluating the referees' performance?

2- What are the standard levels degrees for evaluating the level of referees' performance?

3- What is the level of the referees' performance according to the list of criteria which are prepared for this study?

Research Procedures:

Research Method: The researchers used the descriptive method by survey technique because it is suitable for the nature and problem of the research.

Research Sample: The research sample was identified, it includes referees accredited in the referees committee at the Egyptian Wrestling Federations, and they numbered (38) referees.

Research Fields:

- Human Field: Accredited referees in the Referees Committee at the Egyptian Wrestling Federations.

- Time Field: From 1/8/2018 to 15/12/2018.

- Place Field: Wrestling hall.

Field Research Procedures:

Referees' evaluation test in wrestling:

After reviewing the previous studies and presenting a questionnaire to a group of experts and specialists in the field of testing, measurement and wrestling sport, a test is designed to measure the level of wrestling referees' performance to ensure fairness in conducting the practical test. So that the referee is subjected to the same situations of the other referee that include difficult competitions, therefore our evaluation will be more objective.

Test Name: Kamal BO Aziza Test. (3)

Test Aim: Measuring the level of wrestling referees.

Used Tools: Laptop, 3D glasses, iPhone mobile, Wi-Fi, and error registration form.
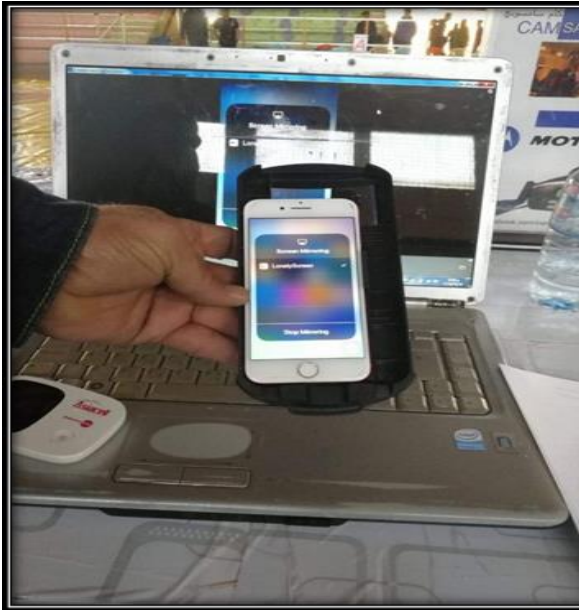
Performance Description:
The tester places a 3D glasses and he will be in front of the table of referees on which there is a laptop, So that he displays the video movie at the same time with the iPhone. When performing the show, the tester refers to the score points for both wrestlers. At the same time, the Referees' Committee records in the mistakes form the number of errors committed by each tester to calculate the level of testers.

Note: connection process between laptop and iPhone was done using the Lonely Screen program by downloading and installing the program on the laptop. And the connection between the two devices is by Wi-Fi network,

and it must be on the same network. After that, the movie is played through the iPhone by pressing the screen mirroring button, and the connection occurs after that, as shown in the figure (1, 2).

Evaluation: Calculating the scores according to the standard levels of the testers, Relative to the number of errors.

Indicates the connection process between iPhone and Laptop.   **Indicates referee evaluation test.**

The first exploratory experiment:

The researchers conducted the exploratory experiment on 10/15/2018 on a sample of (8) referees and its aim was to:

- Checking the validity of the sets and tools used in the research.
- Making sure of staff understanding and competence in application of the test and recording results.
- Identifying the time required to carry out the tests.
- Checking the suitability of the place for carrying out the tests.
- Knowing the obstacles that may appear in the main experiment, and avoiding errors.
- Extraction of the scientific foundations of the test.

The second exploratory experiment:

Scientific criteria for the test:

Validity:

Researchers used the content Validity by presenting the contents of the test to a group of experts and specialists in the field of testing and measurement and wrestling game to take their scientific observations and the approval rate was (100%).

Reliability:

The reliability factor was found by testing and retesting on the exploratory experiment sample which are (8) referees, representing the research community. This test was applied on 10/15/2018. Then re- testing was applied to the same sample, taking into consideration the same conditions that were performed in the first test on 10/22/2018, which is after seven days. The value of the simple correlation coefficient (Pearson) between the first and second tests was (0.85), which means that all tests have a degree of reliability.

Objectivity:

Objectivity means that "There is no difference in experts' opinions on something or on a specific topic". That is, it is the degree of agreement between experts and specialists and avoiding subjective opinions, and the test is objective (4). Where the tests were applied under the supervision of two Olympic referees, each one has a registration form for errors, after the results were collected and then statistically treated, the simple correlation coefficient (Pearson) was calculated between the degrees of impartial referees and reached (0.90), which indicates the objectivity of the test.

The main experience:

The researchers applied the test to the research sample on 1/11/2018, which numbered (38) referees from the referees registered in the wrestling referees committee in the two (Egyptian - Iraq) federations, and who are

participants in the championships to know their degrees and levels and evaluate them basing on their practical test.

Results presentation and discussion:

Presentation and discussion of the first question: "What are the modified standard degree for evaluating the referees' performance?"

Standard degrees are of great importance in evaluating test results and converting the main degrees obtained by the test putter from applying the test to standard degrees. This gives the results a clear meaning and indication. Accordingly the researchers converted the main degrees obtained by applying the test to the research sample of (38) referees to standard degrees. Noting that the mean equals (6.263), and the standard deviation of all values obtained by the sample equal (1.537), while the value of the modified standard degree ranged between (12.242 - 18.242). And as shown in Table (1), by means of the standard degrees, we can extract the standard levels of the test.

Table (1)

Main degrees and modified standard degrees of the test for the research sample

Serial	The main degree	Modified standard degree	Serial	The main degree	Modified standard degree
1	9	18.242	20	6	15.242
2	9	18.242	21	6	16.242
3	9	17.242	22	6	16.242
4	8	16.242	23	6	16.242
5	8	16.242	24	6	16.242
6	8	18.242	25	6	16.242
7	8	17.242	26	6	15.242
8	7	16.242	27	5	14.242
9	7	16.242	28	5	13.242
10	7	16.242	29	5	14.242
11	7	17.242	30	5	14.242
12	7	16.242	31	5	13.242
13	7	16.242	32	5	13.242
14	7	17.242	33	4	12.242

15	7	15.242	34	4	13.242
16	7	15.242	35	4	13.242
17	7	15.242	36	4	14.242
18	7	15.242	37	4	14.242
19	7	15.242	38	3	14.242
the mean for the main degrees			6.263		
the standard deviation the main degrees			1.537		

The previous table indicates the main degrees and modified standard degrees for the referee's assessment test in wrestling sport, as well as the extraction of the mean for the main degrees which reached (6.263) and the standard deviation which reached (1.537). The researchers believe that the standards and achievement tests are necessary in educational and sport measurement. Because an individual's score on a test which is known as a row score has no meaning in itself, and it is not suitable for comparison with his score or other tests or with another person on the same scale unless we return it to a standard that defines the meaning of these scores. And through it, we can know the position of an individual or player in relation to the group to which he belongs. Thus, the answer to the first question has been fulfilled which is "What are the modified standard degree for evaluating the referees' performance?"

Presentation and discussion of the second question: What are the standard levels degrees for evaluating the level of referees' performance?

After extracting the modified standard degrees, it was worked out to find standard levels through which test results can be evaluated. And the difference between the standards and levels are "The standards are information that shows us how individuals actually perform, while the levels tell us what individuals should perform". For that the researchers developed test levels to assess the level of referees using 3D video technology.

Table (2)

Standard levels, categories, and frequency of the research sample

S	levels	Categories	Frequency
1	Very good	18.242 – 17.042	7
2	good	17.041 – 15.841	12
3	medium	15.840 – 14.640	7
4	acceptable	14.639 – 13.439	6
5	weak	13.438 – 12.238	6

The previous table indicates standard levels, categories, and frequency of the research sample for referees' test evaluation in wrestling sport. We notice the largest number of referees are in the level of "good" as they numbered (12) referees. While the lowest number was in the "acceptable" and "weak" levels, as they reached (6) referees. Therefore, it needs more numbers in order to upgrade their levels. Thus, the researchers believed that the second question has been answered which is "What are the standard levels degrees for evaluating the level of referees' performance? ".

Presentation and discussion of the third question: "**What is the level of the referees' performance according to the list of criteria which are prepared for this study?"**

Table (3)

The level of research sample individuals

Mean for main degree	Corresponding standard degree	level
6.263	15.242	The medium

The previous table indicates that the level of referees is in the "medium" based on their mean for main degree which is (6.263) and the

corresponding standard degree which reached (15.242) for the sample as a whole. The researchers attribute this level of referees to the fact that the evaluation method used was not fair to a large number of referees in terms of determining their actual and real level which was most in need of a neutral evaluation method far from chance standard. That is, the pursuit of achieving justice among referees by exposing them to the same conditions and situations. What the researchers believe has been achieved by evaluating the performance level of the referees and identifying weaknesses and strengths in order to reach appropriate solutions to contribute to the development of this important component. This is done through the use of 3D video technology designed to evaluate wrestling referees which revealed the need to prepare more courses and experiences to improve their level to reach the higher levels in order to be able to manage the most toughest and strongest competitions. Thus researchers believe that the third question has been answered which is: "What is the level of the referees' performance according to the list of criteria which are prepared for this study?"

Conclusions and recommendations:

Conclusions:

- The test designed by the researchers has achieved its aim of assessing the level of referees in wrestling sport.
- The largest numbers of referees are within the "good" level, while the fewest number are within the "acceptable" and "weak" level.
- The general level of the research sample based on their mean is within the "medium" level.

Recommendations:

- The use of a test designed to assess the level of referees for the practical aspect as it ensures fairness in the test.
- Conducting a similar study on referees in other activities and games.
- Working to organize advanced courses for referees within a fixed agenda for the federation according to the evaluation results.

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Attachment (1)

Referee evaluation form

T	Refereed Case	Referee Evaluation for the case		Notes
		True	**False**	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Total				

Final score

Name:

Scientific name:

University and College:

Date: