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Designing computer software to evaluate offensive performance level in handball through match

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Summary

-Introduction of research:

computer is one of the technological methods which are very important in the field of training and analysis of handball matches so that the computer is the most important and most accurate technological devices that attract interest of the specialists in many fields, and it is one of the devices used for analysis and presentation and transmission of information in various forms in addition to that saves time and effort.

The software is the latest methods and techniques of modern technology in the field of physical education, especially in the field of handball where these programs allow the possibility of assessing the players and the storage and collection of their data to try to stand on the strengths and weaknesses points through match.

-Research problem:

Match analysis in handball is one of coaches tools for objective way to identify the level of each player of team or the team as a whole at performance for different skills, whether in training or in the matches themselves.

The Ibanez et all (2005) say that during training or competition coaches take tactical decisions, technical, relying on their intuition and experiences without the support of objective data, and this is why it is important to develop recording and analysis and quantitative evaluation, therefore ,it is clear to us the role of the use of computers in it.

The computer in one of the advanced methods that can be reliable to evaluate the performance of the players inside the stadium through the analysis of data on the results of actual performance and then to build the training program and develop ways to appropriate play for the team, the trainer can get the data evaluation process for his team through match using the software.

When a researcher personal interview with one of the officials by the Egyptian federation for handball and the question of software used by the federation for the analysis of matches, the result that the federation needs to such programs as the federation has one program for the analysis of some variables in handball, but not all.

Through researcher reading the statistical report of the latest analysis system matches of offensive work found that this system or data that is obtained from the program used to analyze the performance gives information on the individual performance of players and the sum of these performances for the team, such as:

- Shooting from some centers and regions (for the player - the team)
- Fastbreak (for the player - the team)
- Break through (for the player - the team)
- places of shooting in goal.
- legal errors (for the player - the team)

Is that previous information help coach to modify weakness aspects (technically) of his team or this information is considered as the statistics of the media?

The researcher suggests that this system lacks other offensive variables, including:

- Errors of pass, receiving and dribbling.
- Different types of shots
- shot from various centers.
- Different kinds of feint.
- Cases of fastbreak (simple / extended / tactical)
- offensive formations in case of (Complete number / decrease number)
- tactical methods (individual / collective / teamly)
- Offensive formations (crossing / screening / exchange position / half exchange position)
- Cooperation between preparer and finisher in offensive formations.

From the above the research problem appears as an attempt to design a computer program to evaluate all variables of offensive performance in handball through match in order to help coaches to know the weaknesses points of his team to be developed in the training process.

-The importance of research:

- The importance of this research is to use computers to design a program to analyze and evaluate offensive performance through match because the computer velocity in output reports quickly compared to manual analysis

- The designed program a mean or method in the selection systems of players according to their results .
- The results of this study may give an opportunity for Egyptian handball federation to find out what the difference of the results achieved and to identify the strengths and weaknesses, which helps in the development of some of the objectives of the Egyptian Federation for handball.

-Aims of Research:

This research aims to design a computer program to evaluate the level of offensive performance in handball through match and through which can know :

- 1- The level of offensive skillful performance for handball team .
- 2- The level of offensive tactical performance for handball team .

-Research questions:

- 1- Can you evaluate the level of offensive skillful performance for handball team using a designed computer program?
- 2- Can you evaluate the level of offensive tactical performance for handball team using a designed computer program?

-Search procedures:

-Research Methodology

The researcher used the experimental method when designing a computer program and the descriptive method approach when evaluating handball matches.

-Sample :

The sample included (11) matches as follows :

-Exploratory sample

6 matches which are (Germany - Poland),(France - Croatia), (Angola-Cameroon),(Egypt-Denmark),(Egypt-Brazil),(Poland-Denmark).

-Basic sample

Basic Sample included (5) matches for the Egyptian team handball played in the African championship in Cairo in 2010 and the sample selected randomly and matches are (Egypt - Gabon), (Egypt - Cameroon), (Egypt - Congo), (Egypt - Morocco), (Egypt – Tunisia).

-Methods and tools of data collection

Video Camera / camera tapes / computer / TV Card / analysis of documents and forms / References / Note substantive interview / expert opinion

- Administrative procedures

The researcher has taken the administrative procedures to obtain official approval to shooting matches of the African championship in Cairo in 2010.

-The exploratory studies

1- The first exploratory study:

This study aim to identify variables offensive performance (skills - tactics) in the handball by doing some remarkable scientific and exploratory matches .

2- The second exploratory study:

The aim of this study to designing and editing various reports that are the output from the computer software by manual analysis , and determine efficiency marks for offensive work in handball .

3- The third exploratory study:

This study Aims to identify the most appropriate venue for the imaging process and knowledge of external constraints that may affect the continuation of the imaging process

-Research variables:

Variables were identified through literature review and analysis of matches as well as exploratory studies in addition to expert opinion the following variables have been reached:

(1) Offensive performance skills:

*** Receiving, passing and dribbling the ball :**

Variables are (error of short pass / error long pass / error dribbling the ball).

***Shotting**

-Types of shotting:

(high jump / long jump/ built with the proposal arm / built with the effort level of the pelvis arm / built opposite arm / by running / from stability / front fall / side fall with arm / side fall opposite arm / front fly / side fly / from both feet / a penalty shot / shot from free throw / backhand shot / lop shot/ spin Shot)

Centers of shotting

(RW / L / LW / RB / CB / LB)

Areas of shots

(Shots of 6 m / shots of 9 m / shots of the penalty shot).

***Feint** (by body / by pass / by dribble /by shot).

(2) Tactical offensive performance:

*** Fast break** (individual simple / extended collective / tactical)

*** Systematic attack**

- In the case of completion of the number (3:3 / 4:2 / 2:4 / 5:1)

- In case of lack of number (4:1 / 3:2 / 4: 0)

***Tactical offensive formations** (crossing / screening / exchange position / half exchange position / Break through).

-Build and implement a computer program:

- planning to build the program:

The researchers have made flow chart of the contents of A computer software.

-Select program language:

The researcher used the visual basic language and some other programs such as: Microsoft Access. / Microsoft Crystal Report 4.6 /Flash Swf Quicker / Microsoft Excel / setup Factory.

-Designing Program :

Through the study of researcher Academy (AGC Academy) to study the integrated program for professional engineering software industry and designing programming web pages, the researcher designed a computer program, the design process has gone through several stages:

- 1- Data Collection and select relation of data .
- 2- Designing Database.
- 3- Programming Software.
- 4- Trial Software.
- 5- Program Fixation.

-The program validity:

The researcher used content validity to make sure that the Windows screen analysis contains all the offensive performance variables and aims of the analysis.

The researcher used the sincerity of the arbitrators, and he introduced the program to a group of experts in the handball field, who possess the experience of not less than (10) years in the training of handball, the opinions of the experts agreed on:

- 1- Link the program with the objective to be achieved.
- 2 - A computer program designed to include all the variables associated with offensive performance results and reports to be obtained.
- 3 - Easy to use computer program OPAS For Handball.
- 4-The program provides the ability to display video file in the game until the process of scientific observation.
- 5 - A computer program is considered one of modern technologies in the field of ICT training in handball.

- The stability of the program:

The researcher find the stability of the note on the match set up between (Poland-Denmark) in final of the World championship in Croatia in 2009, the researcher evaluated the performance of the Poland team in order to find stability coefficient, the researcher used the method of application and re-apply the test Test-Retest interval of week in order to calculate reliability coefficient, Transactions were conducted on the calculation of the stability of the total occurrences of offensive performance and the results confirm that the stability observed in the data entry program OPAS For Handball and the power used to evaluate the level of offensive performance.

-program subjectivity:

The researcher find an objective observation of the two arbitrators, who applied a computer program OPAS For Handball to evaluate offensive performance of the Denmark team in (Poland-Denmark) in final of the World championship in Croatia in 2009, with transactions accounting for objectivity in the total occurrences of offensive performance , The results revealed the presence of statistical significance for the correlation coefficient between the results of applying the first and second arbitrator of the results of total offensive performance and tactical skills when you use the OPAS For Handball to evaluate the offensive performance, which indicates the objective observation in the data entry program.

- Main Study

The researcher evaluated performance (skill - tactical) attacking the Egyptian team handball using the computer program OPAS For Handball during the actual time of the sample matches the basic hall Greater Cairo International Stadium in Cairo of the African Nations Championship 2010.

-Statistics:

Percentage
Means
Person Correlation
Standard Deviation
Efficiency

-Conclusions:

Through aims of research and inquiries and on the basis of statistical treatments the following were extracted:

- 1 – The designed computer program is characterized by honesty, validity and consistency.
- 2 - The software is characterized by doing all a specific statistical transactions through match.
- 3-You can print statistical reports resulting from the process of evaluating offensive performance (skill / tactical) at any time through match.
- 4-Characterized by the software outlet (chart) for each report of statistical reports resulting from evaluation of offensive performance process, and some illustrations of the handball court explained it was clear from some of the statistical reports
- 5- Egyptian team depends on the shotting from (CB-RB-LB).
- 6 - More systematic attack formations to use and most effective offensive formation (3:3) and the offensive formation (4:2).
- 7- The Egyptian team during matches depend on the tactical work, followed by individual work and tactical collective action by all of team.
- 8 - There are deficiencies in the use of the Egyptian team with screaning and half exchange positions through matches .
- 9 - There is no cooperation between the players in the back line and wing positions during the matches

-Recommendations:

Based on the results reached by the researcher through the conduct of this research, the researcher recommends the following:

- 1 - The necessity of mainstream the use of a computer program to evaluate the level of offensive performance (skill / tactical) to coaches of handball at the local level by the Egyptian Handball federation.
- 2 - Guided by the windows of this program to develop a vision of similar programs to evaluate the performance of defense
- 3- The establishment of laboratories for the evaluation of the level of performance by using computer programs in all sports colleges of Physical Education.

4 - The necessity of train the Egyptian team handball on the use of tactical team work extensively to increase the proportion of its effectiveness to achieve the goals.

5- The necessity of train the Egyptian team handball that there is cooperation between the players in the back line and front-line which decreased during the sample of research.
