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Design and development of digital match analysis system for kabaddi matches

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ABSTRACT

Match analysis is a major subject among coaches, team managers and sport scientists and it is gaining an increasing relevance day by day. Information and the relevant data processing are the key factors while referring to this aspect of the sports training methodology. In India Kabaddi is a major sport, which is played all over the India. The present study attempts to design and develop a digital match analysis system for Kabaddi matches. The data were collected during South Zone Inter-University Kabaddi tournament for men 2010-2011 held at Karnataka University, Dharwad was used for analysis. After getting various inputs from experts and literature, the investigators had designed and developed a digital match analysis system. A survey was conducted among 15 Coaches, Physical Educators, Players and officials which revealed that the 16 factors which are essential for analysing the performance of the team & individual. This study was a preliminary work and needs testing at all levels. It was also concluded that the result of the study may be very much helpful to the Physical Educationists and Coaches in enhancing the performance level of the Kabaddi players. The outcome of the study may act as a tool to analyse the team & individual performance in the game of Kabaddi.

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Introduction

Technology is making a significant, positive impact on all fields in the society and the field of sports is no exemption. While the overall effect is not yet fully assessable, technology can motivate games experts to take more care in crafting their work. The presence of technology in so many different aspects of the profession makes it important to more clearly recognize and appreciate its potential role. Technology is making a significant, positive role in sports.

Match analysis processes are currently facing major evolution and developments and apparently the new technologies are providing to the analysis huge amounts of raw data, which need further filtering, processing and interpretation. Presenting the outcome of these processes in a convenient fashion, in order to be understood at various levels, is a crucial part of this methodology. This finding accordance with the Darst, (1989); Madella, (2007); Ruscello (2008).

The traditional method of analyzing a match has been for an observer or group of observers, usually the coach or the game experts to watch a match and make subjective conclusions about the individual's or team's performance. This system of match analysis is limited by the knowledge, experience, and perspective, of the observers. Even with introduction of video recording and the ability to subsequently view matches, most game experts still relay on subject evaluation. Match analysis is the common feature in almost all sports disciplines. In coaching the match analysis is very common in Basketball, Cricket and Football whereas the match analysis is not that popular in Kabaddi. This may be due to several reasons.

In India Kabaddi attained National status in the year 1918. Maharashtra was the pioneer state to bring the game to the National platform and give it further popularity. Standard rules and regulations were formulated in 1918 but were brought out in print in the year 1923 and in this very year, an All India

Tournament was organized at Baroda with these rules. Kabaddi has not looked back since then and numerous tournaments are organized all over the country throughout the year. Kabaddi received its first Inter-National exposure during the 1936 Berlin Olympics, demonstrated by Hanuman Vyayam Prasarak Mandal, Amaravati, Maharashtra. The Amateur Kabaddi Federation of India, the new body, came into existence in the year 1972. The excitement and thrill provided by the game has made it very popular and Kabaddi is rightly called the Game of the masses, since spectators totally involve themselves and give the players a great deal of encouragement. More than fifty million people of 65 countries of the world play this game.

Match analysis is a major subject among coaches, team managers and sports scientists and it is gaining relevance day by day. Information and the relevant data processing are the key factors while referring to this aspect of the sports training methodology.

Currently the concept of "match analysis" is used in several countries to define the process of observing and evaluating a "whole of behaviours" performed by the players during a match, applying different methodologies and using specific instruments and tools, in order to

1. Collect and process relevant data concerning the different features of a game or athletic discipline, under different point of views,
2. Provide the relevant presentations appropriately formatted, in order to show the collected and processed data in an accessible way to all the concerned people, at different level (i.e. Coaches, Players, Sports Scientists, officials, Managers, Journalists, etc.)
3. Provide an interpretation of the collected and processed data, in order to better define some performance. (i.e. the physiological side of the performance or the biomechanics or tactical features of a match or game) with the ultimate aim of

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improving these aspects through the appropriate administration of the relevant training processes.

Digital analysis will be more accurate and data will be received much faster. Computer software is a general term used to describe a collection of computer programmes, procedures and documentation that perform some tasks on a computer system. The term includes application software such as word processors which perform productive tasks for users, system software such as operating systems which interface with hardware to provide the necessary services for application software, and middleware which controls and co-ordinates distributed systems.

Need of the Study

Physical Educators and Coaches need to make use of the latest computer technologies when promoting their programmes. Digital match analysis systems have already demonstrated its potential to transform every aspect of life and it is high time that such software developments are attempted in Sports also. Kabaddi being the game of the soil, the investigator is attempting to design and develop digital match analysis systems for the analysis of Kabaddi matches.

Objective of the Study

The present study attempts to design and develop a digital match analysis system for Kabaddi matches.

Methodology

After getting various inputs from experts and literature, the investigator had designed and developed a digital match analysis system. A survey was conducted among 15 Coaches, Physical Educators, Players and officials which revealed that the following 16 items were essential for digital match analysis system, which would give the complete performance of the team & individual.

1. Total Points scored in each team
2. Total Number of Raids in each team
3. Total Number of Successful raids by each team
4. Total Number of Successful raids with points by each team
5. Total Number of failure raids by each team
6. Total Numbers of failure raid with points by each team
7. Total Numbers of Bonus points
8. Total Number of Successful defense by each team
9. Total Number of failure defense by each team
10. Total Number of Lonas set by each team
11. Maximum point scoring Positions by each team
12. Maximum Point losing Positions by each team
13. Points scored by each individual raid by each team
14. Points scored by each individual defense by each team
15. Total Number of cards received by each team
16. Total Number of time out taken by each team

From the above survey the 16 factors which are essential for digital match analysis system were finalized. Software was developed by the investigator with the help of computer experts for analyzing the Kabaddi matches. A pilot work was done during practice match to see it's effectiveness. The shortcomings in the software were corrected during the stage of pilot work.

Result and Discussion

A video of the final league match in the South Zone Inter-University Kabaddi tournament for men 2010-2011 held at Karnataka University Dharward, was used for analysis. The investigator with the help of the Software developed attempted to quantify the data in numbers. With the help of the numbers

the complete details about each team as well as the individual were compiled. The results are tabulated here under.

S.No	Analysing factors	Annamalai University			University of Madras		
		1 st Half	2 nd Half	Total	1 st Half	2 nd Half	Total
1.	Match Score	07	02	09	07	05	12
2.	Total No. of raids	19	19	38	19	18	37
3.	Total No. of Successful raids	14	13	27	16	18	34
4.	Total No. of Successful raids with points	04	01	05	02	Nil	02
5.	Total No. of failure raid	01	04	05	Nil	Nil	Nil
6.	Total No. of failure raid with points	Nil	01	01	01	Nil	01
7.	Total No. of Bonus points	01	Nil	01	02	Nil	02
8.	Total No. of Successful defense	Nil	Nil	Nil	L.D 01	05	06
9.	Total No. of failure defense	LD, L.C,R.D 3	Nil	03	LD2, LC(in)1	02	05
10.	Total No. of Lona set in each team	Nil	Nil	Nil	Nil	Nil	Nil
11.	Maximum points scoring position in each team	L.D 2,	r.d	----	LD,R.D , LC	Nil	----
12.	Maximum points losing position in each team	L.D1,L.C. 1, R.D.1	Nil	----	L.D2, LC(in)	R.D	----
13.	Points scored in individual raid	11-4, 7-1	9-1	----	9-3 (B-2)	Nil	----
14.	Points scored by individual defense	Nil	Nil	----	L.D	LD1, RD2,LC 1	----
15.	Total No. of players cards	----	Nil	----	----	----	----
16.	Total No. of time out taken	01	01	02	01	02	03

LD – Left Dash, L.C. -Left corner, R.D.-Right Dash, L.C.(in) – Left Corner (in)

In the first half both university teams scored 7 points each. The University of Madras team's defense played well in the

second half to beat Annamalai University by 3 points (12 – 9). From the above table, we can identify the successful and failure number of raids as well as defense. Various minute details about the team as well as about the individual can be analyzed with the help of the above table.

The above analysis reveals that the defense play of the University of Madras has proved to be more useful in winning the game than their successful raiders. In the field of high level sport performance, evaluation of game actions during competition is a matter of great interest (Hughes, 1995). Systematic assessment of team game matches represents a basic method to understand this sport, its physical training as well as its strategy and behavioral techniques (Franks, 1986).

During a match, we can observe a high number of technical actions in a short decision time between one set and the following one. Due to this complexity, a systematic evaluation model of game actions is necessary to understand the strategy of each player, possibly improving their performance. These findings are in accordance with Pradas, et al. (2010).

Conclusions

This study was a preliminary work and needs testing at all levels. It was also concluded that the result of the study may be very much helpful to the Physical Educationists and Coaches in enhancing the performance level of the Kabaddi players. The outcome of the study may act as a tool to analyse the team & individual performance in the game of Kabaddi.

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