



ISSN: 2456-0057  
IJPNPE 2019; 4(1): 1294-1296  
© 2019 IJPNPE  
www.journalofsports.com  
Received: 23-11-2018  
Accepted: 26-12-2018

**Sijo TF**  
Guest Faculty, Dept. of Physical  
Education, St. Michael's College,  
Cherthala, Kerala, India

## Impact of image and video visual analysis in sports

**Sijo TF**

### Abstract

The 20<sup>th</sup> century marked a drastic change in all walks of life. Sports were no exception. when technology made its entrance to sports the games become more fair and interesting to watch. Camera assistance in referee's decision making was the best thing that came to sports with the help of technology. Photo finish, the very word came into existence when a photo merged with the finishing line. Then we saw third umpire in cricket, The word 'hawk eye' sounds unfamiliar but one of the first technique introduced by the electronic gait Sony in the year 2001. later it was used by challenging in tennis in 2006. This paper study studies in details about the history of camera and video assistance in referee's decision making. This paper also explains how does the image and video assistance and analysis affects the flow of the game and what are the major opinions challenging this technology.

**Keywords:** Image, video visual analysis, sports

### Introduction

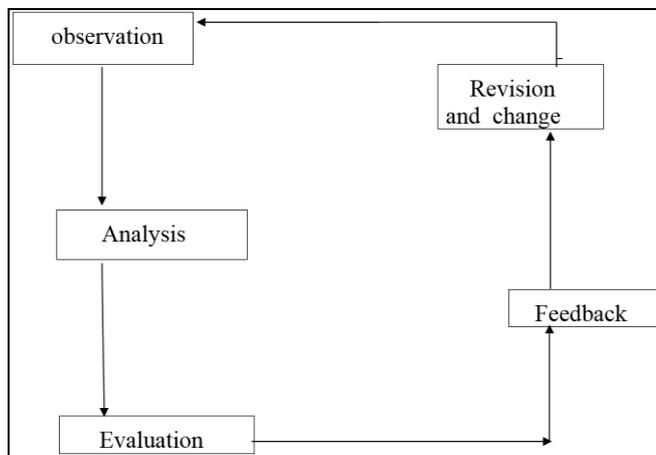
The world of sports is always been subjected to great changes. Technology and its multiple uses embraced sports very recently, but very soon it has become an inevitable part of the game. From the starting line to the victory stand technology has marked its changes. With digitalization and technology sports has transformed to the biggest industry of the world. It isn't just entertainment anymore. A keen observer of sports loved all these changes and watched these new sprouts with interest. New inventions in the field of photography and video telecasting made sports more popular. Later the magic of lens been used in training, scoring and in judgement. The most controversial moments in sports arise if there is any doubt or need for clarification regarding the game situation or in judgment. The referee was the last word in these situations. But blink of an eye may take an entire nation's proud. Video analysis provides great help in the field of coaching too. The saved video or photo can be analyses at any time. This paper studies in detail about the history of camera assistance in referee's decision making. How major events like football, cricket, tennis and sprint make use of this technology. Its advantages. How it marked a change in the games and how important is referee's part after the arrival of camera assistance and analysis. This paper also explains how does the image and video assistance and analysis affects the flow of the game and what are the major opinions challenging this technology. The paper will be presented with the help of power point presentation and videos. This paper will give an overall idea about image and video analysis in sports, especially while taking decisions.

### Performance analysis using video recording and image

It is impossible for a coach to stay 24X7 with the athlete. By recording the video of performance the coach and athlete can critically analyses and enhance coaching should be always based upon objective to understand the performance in objective based valuation. Keeping all these video files in hand the coach can prepare and view the statistics Observation is the most active examination done by the coaches to determine the strength and weakness of an athlete. The coaches will also get aware about the bio mechanical changes that appear in the athlete through video analysis self critic by viewing his own performance video. By getting the athlete and coach on the same visual page together they will share and view the same perspective. It will help them to move hand in hand towards the same goal. can be best analyzed through video recording.

**Correspondence**  
**Sijo TF**  
Guest Faculty, Dept. of Physical  
Education, St. Michael's College,  
Cherthala, Kerala, India

Always the performance made by other athletes, by viewing and analyzing the performance made by other athletes and also the coach to boost up his performance. It also provides the athlete with feedbacks. His or her performance in a faster way of his students. Studies shows that coaches are only able to recall 30 performance that they had witnessed. Each and every aspects of the.



## Content

### Performance analysis using video recording and image

It is impossible for a coach to stay 24X7 with the athlete. By recording the video of performance the coach and athlete can critically analyze and enhance the performance. The always based upon objectives, the video information will help the coach to understand the performance in objective based valuation. Keeping all these video files in hand the coach can prepare and view the statistical data of performance. Observation is the most active examination done by the coaches to determine the strength and weakness of an athlete. The coaches will also get aware about the bio mechanical changes that appear in the athlete through video analysis. The athlete can also be a self critic by viewing his own performance video. By getting the athlete and coach on the same visual page together they will share and view the same perspective. It will help them to move hand in hand towards the same goal. The movements, posture and action of the athlete can be best analyzed through video recording. The best text book in front of an athlete is always the performance made by other athletes, by viewing and analyzing the performance also the co-participants the athlete will develop more confidence also provides the athlete with feedbacks. A feedback helps the athlete to enhance faster way. The coaches may not be able to recall all the mistakes studies shows that coaches are only able to recall 30 – 50% performance that they had witnessed. But the video analysis helps the coaches to examine aspects of the training.

### Video analysis in refereeing

Referee is the one who decides the fate of the game. What if he came across a dilemma during the game? It is there the video analysis technique become useful in the track and field. Video analysis is the technique, most useful for the referee. Because when crucial moments come they can go for the replay or second opinion so that the errors can be avoided. The referee can finish the game without any complaints. When the referee needs further assistance or help from outside to make a decision regarding the game this technology becomes more useful. The players can also call for an appeal or challenge in tennis if he disagree with the referees decision.

Now video analysis has implemented in almost all the games and in track events. For major events that make use of video analysis technology is detailed below.

### Tennis

The technology that is used in tennis is known by the name Hawk-eye. It is the visual tracking of the ball and its path the same will be displayed statistically as a moving image. It provides a three dimensional view of the ball. It is used in challenge system since 2006. Players will be allowed to make three unsuccessful challenges per set at any tournament using Hawk-eye., plus one more if the set reaches a tie break. Hawk- eye was used for the first time by UK's channel 4. It was trialled at Davis Cup tennis tournament in 2002. Collins and Evans (2012, p.910) provide the following description of its working. Hawk-Eye is an example of what we call a 'Reconstructed Track Device' or RTD. RTDs use visible light television camera to follow the path of the ball and a procedure to filter the pixels in each frame. Certain pixels are taken to represent the position of the ball and others to indicate the position of the line or other features of the playing arena. The space and time coordinates of these pixels are represented numerically and a statistical algorithm reconstructs the flight and impact point of the ball and crucial features of the playing area by combining information about the size of the ball, the physics of its distortion, the width of the line, and so forth. From these calculations, the system then determines what decision should be given - for example, should the ball be called 'in' or 'out'? The reconstruction produced by Hawk-eye is presented as accurate, with the ball conclusively being in or out. In tennis Hawk-eye were understood as a device to assist umpires to avoid making mistakes, rather than being seen as an unarguable voice of authority, more accurate line calls, and consequently more effective operation of tennis, would occur.

### Cricket

Hawk- eye technology was introduced to cricket by the year 2009.it was a broadcasting tool in cricket since 2002 but adoption to officiating process took a long time. Hawk eye in cricket is considering only as a system of review and the final decision is made by the on field umpire. It is now also known by the name third umpire. A third umpire or TV umpire is the one who assist the umpire from off-field. He make use of television technologies and a number of software to review the decisions. Players can also ask for reviews regarding a particular decision made by the on field umpire. Mainly the cases of run out or stumped will be hand over to the third umpire for a close watch and the decision will be displayed in a screen on the gallery or communicated to the on field umpire through wireless communication mode.

### Sprint

Time is the Lord of the track. Results will change upside down within the fraction of a second. So it is important for track and field events to record and keep the files ready in hand to refer to it at any time. Especially the events like sprint always mark tight competition and the winners will be decided with accurate accuracy. And of course for selecting the winner finish line photos are taken in almost all the racing events. It is the most important evidence that shows who is the winner. It makes use of another kind of photography known as strip photography. It swaps the time and space dimension, showing a variety of times at a fixed location. Digital cameras use a 1- dimensional array sensor to take 1-

pixel- wide sequential images of the finishing line. Another method for creating this strip involves combining the individual photographs. A high speed camera or a movie camera is used to take a continuous series of partial frame photos at a fast rate, leaving no blank space between the cells. At the finishing line photocells and digital cameras are used to establish the placing. In sprint all eight athletes can be separated by less than half second.

### **Video assisted referee in football**

The biggest game across the world. From Europe to Asia football is one of the most popular games. Video Assisted Referee or VAR technology introduced to football in the year 2010, under the directions of Royal Netherlands Football Association. VAR is a kind of technology that helps the referee through assistant referees, who watches the live streaming of the game. The assistant referee can access to quick replays of the game or a particular incident of the game. The referee in the ground is connected through wireless headset. The assistant referee can communicate with the referee at any time especially during the events like goals, penalties, red cards and mistaken identity. VAR is not just watching the replay of the game but it make use of a software. It requires a technician to mark the video, for particular moments like goals, errors and also to mark the involvement of each player. These moments can be filter at any time. Game highlights can also be quickly generates through this software.

### **Conclusion**

Video based visual training is the most appropriate technique that can be used to train the emerging sports stars. According to the Social Science Research Networks 65% of people learn more easily through seeing and watching rather than through listening. This is same in the case of sports coaching too. The coaches can extract the maximum level of performance from their students through this mode of coaching. The athletes improve and self reflect by seeing themselves on video rather than just listening to their coach. If athletes can be shown where they need to improve they can learn very faster. If they are shown a slow motion video or any image related to their posture where they need to correct they will mentally take it on board what is being explained. Regularly using video and video analysis in matches and training will provide many benefits to the caches and athletes. It provides instant feedback, demonstrates progress and accurate too. The outside referee is criticised for making an pause in the game. Many are of the opinion that potentially prevents serious injuries. It provides the referee help to complete his duty without any error. The assistance from the outside field will be more the outside opinions may make the game lost its flow and it may look and feel more unnatural. But the real lover of the game will be ready to show patience and that is what adds beauty to the game.

### **References**

1. Best. Joliii W. Research in Education, New Delhi: Prentice Hall of India Pvt Ltd. Clarke, 1972.
2. Harrison H, David Clarke H. Advanced Statistics with Application to Physical Education, London: Prentice Hall, Inc., 1972.
3. Hardeman Singh. Science of Sports Training, New Delhi: D.V.S. Publications, 1991.
4. Johnson Perry, Donald Stobberg. Conditioning, Englewood Cliffs, New Jersey: Prentice Hall Inc., 1971,

67.

5. Johnson Barry L, Jack K. Nelson Practical Measurement for Evaluation in Physical Education, Burgers Publishing Company, 1982.
6. Hojjat Shahla. Has conducted a study on the effects of two methods of plyometric and weight training on the kicking, explosive power and the speed of soccer players, 2001.
7. Calder AW, Chilibeck PD, Webber CE, Sale DG. Comparison of whole and split weight training routines in young women. Canadian Journal of Applied Physiology, 1999, 185-199.
8. DeBeliso M. A comparison of period ised and fixed repetition training protocol on strength in older adults, 2005.
9. Schiffman JM, Bensel CK, Hasseiquist L, Gregorczyk KN, Piscitelle L. Effects of carried weight on random motion and traditional measures of postural sway. Appi Ergon. 2006; 37(5):607-614. [PubMed]
10. Turbeville SD, Cowan LD, Owen WL, Asal NR, Anderson MA. Risk factors for injury in high school football players. Am J Sports Med. 2003; 31(6):974-980. [PubMed]
11. Van Lieshout R, Reijneveld EE, Van den Berg SM, Haerkens GM, Koenders NH.