THE EFFECT OF VIDEO-BASED PERCEPTUAL TRAINING ON THE OBSERVATION CONDITIONS AND THE NUMBER OF FOOTBALL COACH FEEDBACKS

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Abstract

During the training sessions, the football coach is supposed to ensure optimal conditions of observation for players so as to improve and/or correct their performance. He gives his feedbacks that represent information about the difference between the state of an objective and its performance (Schmidt, 1992).

The objective of our work was to analyze the effect of the perceptive training based on video on the conditions of observation on the one hand, and the number of feedbacks given by the football coaches during a mini game on the other hand.

We concluded that the perceptual training based on video would have a beneficial effect on the conditions of observation either for moving (In movement vs. Fixed) or for the adopted point of view (front of the action vs. of profile vs. Back) Our findings also showed that the video-based perceptual training leads to a reduction in the number of feedbacks given by football coaches in a mini game

KEYWORDS: Video-based perceptual training. Conditions of observation. Number of feedbacks

1. INTRODUCTION & PROBLEM OF THE STUDY

Referring to the history of education, namely physical and sport education, we identified a flagrant duality of perception that goes alongside the observé and the environment. In other words, the observer and the environment are closely linked. They create an interactive and cohesive dual necessary to obtain the relevant information about the athlete in order to act well and manage his permanent environment. Gibson (1979) emphasizes the indivisible nature of the relationship Observer-environment, and the link between perceive and act. The famous quote from Gibson (1979):"We must perceive to act, but we must also act to perceive" explains this interdependence between the observer and the environment.

Perception is a dynamic element. It is a very important tool to make progress and to reach perfection in sports. However, the perceptual stagnation before the sports development (timeliness sporting gestures) creates gaps and problems.

In this perspective, the transfer of the improved visual performance systematically generates the enhancement of the sport's performance (Quevedo, Sole, Palmi, Planas, & Saona, 1999). The visual perception is an integral part of the conditions of observation through which coaches can evaluate and judge properly and in a relevant way the sports activities of their players.

In fact, few studies have examined the conditions of observation. They have focused mostly on the individual (Jarraya & Amorim, 2004; Jarraya, Amorim, & Bardy, 2005), rather than the team sports.

Similarly, the activities in the perceptual field give importance to the players, insofar as they improve access and desirable performance, as well as to the coaches despite the importance of perception in general, and the visual in particular in its function.

The conditions of observation are multiple such as. They include placement, displacement, view angle, spatial orientation...

In football, the coach must ensure good conditions of observation during the training session to better correct the players by giving the appropriate feedbacks, which establishes a hinge between the coach and the player.

Without taking into account the conditions of observation, some football coaches tend to give quasi-anticipated feedbacks. It is necessary to find a perfect cohesion between the conditions of observation and the feedbacks to ensure an effective "corrective action" for the players.

In fact, several studies have demonstrated the effectiveness of perceptual video-based training in making decisions (Devos et al. 2009; Helsen, & Starkes, 1999) the trajectory calculation (Jin et al. 2011), the increase of the quiet eyes time (Causer, Holmes, & Williams, 2011).

Recently, Milazzo & Fournier (2015) demonstrated à significant improvement in decision-making performance of karatékas after nine sessions of perceptual video-based training resulting in the decrease in their reaction time and the increase of the relevance of

their decisions. The interest and importance of this work lie in the focus on the field of the observation conditions of the coaches in a team sport with a new perspective and a methodology that is based primarily on perceptual training based on video while using the technique of the visual occlusion that represents the most classical method for studying perceptual processes in sport (Abernethy, 1986).

2. METHODOLOGY

PARTICIPANTS

10 male football coachent (35.5 ± 8.9 years) belonging to Tunisian professional and semi-professional teams, participated in this study. They were divided into two groups of 5 coaches: Experienced coaches with a professional career in the training domain exceeding 10 years (16.2 ± 3.9 years) and less experienced ones with less than 5 years in the training domain (3.2± 1.1 years).

Experimental Procedure:

Every coach carried out two experimental sessions, with and without perceptual training. During the first session, there were coaches in a standardized situation without perceptual training. During the second session we observed coaches after a perceptual training. The perceptual training consists of a viewing session (45 ± 10 min) of the proposed situation. This session consists of two steps:

First step: it consists of raining the awareness of the coaches about the different conditions of observation: observe and discuss the positioning mistakes (face to the action vs. sideways vs. behind) and displacement of the coach (moving vs. stationary).

Second step: it is a perceptual training of a «visual occlusion» type showing footage to our participants. After that, we put the sequence at the pause mode at a well determined action. The coaches are asked to plan the placements and displacements in relation to this action.

Proposed situation: Each coach must make a situation which consists of three variants in a space of 400 square meters with the participation of 12 players

First variant:

4 players against 4 with 4 recoverors who put back (2 per team) placed on the four sides of the square. Each team tries to keep the ball using recoverors to ensure the superiority in terms of number. Duration: 6 minutes.

Second variant:

Again, 4 players against 4 with 2 recoverors for each team placed on both sides of the square. Each team tries to keep the ball in order to put it on the bottom line of the opposing team (stop ball). Duration: 6 minutes

Third variant:

The same situation (4 players against 4 with 2 recoverors for each team) is instructed to work front of the goal. Each team tries to keep the ball to score a goal, by using the recovrers placed on the side lines of the square which can make a cross or pass the ball either back or forth. Duration: 6 minutes

The observation:

The observation of the situation has been effected by two cameras simultaneously. The first (type "Sony HD 800 X") was attached to a tripe at a height of roughly 10 meters in order to take off a wide shot.

The second camera was movable type "Sony DCR-SR42 HDD-" devoted essentially to the recording of the coaches' voice.

Video editing:

We used the pinnacle 12 software to synchronize footage of both fixed and mobile cameras.

STATISTICAL ANALYSIS

Statistical analyses were done using STATISTICA Software (StatSoft, France).The choice of appropriate statistical tests (parametric or non-parametric tests) was done after checking the normality of distributions through the Shapiro-Wilk test. The effect of perceptual training (before vs. after) and displacement (stationary vs. moving) was measured by the t- student. All statistics are considered significant for a probability level less than 5% ($p < 0.05$).

3. RESULTS

Our findings showed that the time of the condition «in movement» is significantly superior to that of the "fixed" condition ($p < 0.01$) after the perceptive training. On the other hand, there was no significant difference between both conditions before the perceptive training.

The findings showed that the time of the condition in front of the action is significantly superior to those of "profile" and «behind the action» ($p < 0.01$) before the perceptive training. Besides, the time of the "back" condition after the perceptive training is significantly lower than that before the training ($p < 0.01$).

Our findings showed that the number of feedbacks given by the trainers in the "fixed" condition is significantly different than issued in the same condition after the perceptive training ($p< 0.01$). However, no difference was observed «in movement "condition. The findings showed that:
The number of feedbacks given by the trainers decreased in both conditions "fixed" ($\Delta\% = 87.3$) and «in movement » ($\Delta\% 12.1$).
Meanwhile, the decrease of the number of feedback given in the " fixed " condition is significantly more important than that " in movement "conditions (87.3 vs.- 12.1 for the " fixed " conditions and in "movement" respectively ; $p< 0.01$).
The number of given feedbacks in the condition “in front of the action” are significantly greater than those given in the conditions "of profile" and "back" before the perceptive training ($p<0.01$).
the number of the given feedbacks in the conditions " in front of the action " and "back" after the perceptive training is significantly lower than that before the perceptive training ($p<0.01$).
The number of feedback given or issued by the trainers decreases in three conditions «in front of the action », « profile» and « back» respectively of 39.3 %, 38 % and 96.9%. Still more, it was noticed that the decrease of the number of feedbacks given in the "back" condition is significantly more important than that in the conditions «of profile» (-96.9 vs. -38; $p<0.5$) and in front of the action (-96.9 vs. - 39.3; $p<0.01$).

4. DISCUSSION

Perception and judgment represent two essential activities in the sports field allowing the trainer to act and to adapt himself in his interactions with its participants.
Indeed, the perceptive training took its sense in the fact that the perception is coming before the action and optimizes the performance.
In this research work we examined, in a first hypothesis the effect of the perceptive training based on video on the observation conditions of the football trainers during a mini game, then we tested it on the number of feedbacks given by the trainers according to their locations, their points of view and their movements.
This test enabled us to demonstrate that the perceptive training based on video has a positive effect on the trainers’ behavior (after watching the video), more exactly the time of the «in movement» condition was significantly upper than "fixed" after the perceptive training.
The findings confirm the works showing the positive effects of the perceptive training with video.
In fact, Causer et al. (2011) showed that the rifle shooters at the international level increased the period of QE (the quiet eye) through a perceptive training with video which influenced positively their precision in shooting.
The findings also confirm those of Catteeuw, Gilis, Jaspers, Wagemans, and Helsen, (2010) who showed the positive effect of the perceptive training with video on the decision-making of offside (better perceive the position of the forwards compared with defenders) for assistant referees of the football talent association.
It was also found that the perceptive training with video had a positive effect on the alteration of the football trainers’ perceptions. Indeed, the choice of the angle of view was successful because the trainers were facing the action in most times and this behavior was after a perceptive training. Furthermore, the time which was dedicated for the other angles of view (of profile; back) was decreased in a remarkable way after the training.
These observations come to support those demonstrated by the study of Jin et al. (2010) that the perceptive training with video improves the visual perception and the decision-making of badminton players. Other results reported by Catteew et al. (2010) showed the role of the perceptive training in the reduction of the error number in the decision-making of offside at high-profile assistant referees. Recently, Milazzo and Fournier (2015) demonstrated a significant improvement in the decision-making performances of the karatekas following nine sessions of perceptive training with video, translating by the decrease of their response times and the increase of the relevance of their decisions.
It would be safe to conclude that the first hypothesis is empirically verified. In other words, the perceptive training with video has a positive effect on the football trainers’ observation conditions in a mini game.
We also tested in the second hypothesis the effect of the perceptive training with video on the number of feedbacks given by the football trainers according to their movement (fixed vs. in movement) and their points of view (in front of the action vs profile vs. behind the action).
As regards the movement factor, the results showed that the number of feedbacks decreased in both conditions "fixed" and «in movement at all the trainers after the perceptive training with video.
It is interesting to indicate that the decrease of feedbacks’ number in the condition "fixed" is significantly more important than the condition “in movement». Indeed, the decrease of the number of feedbacks is due to the mobility of the trainers after the perceptive training. In other words, the trainers’ feedbacks became more rigorous and more precise thanks to the richness of the information engendered by the clarity of the play actions after the perceptive training. These observations confirm the findings of Gibson (1979) who showed that the perception and the taking of the relevant information (which are contained in the spatio-temporal structure of the brilliant energy) are caused by the observer movement.
The precision of the interventions of the trainers becomes a reality. There is a decrease of the frequency of feedbacks per minute in all the conditions and more particularly in the conditions «in movement» and "fixed" after the perceptive training.
Concerning the condition «in movement », the frequency was reached (3.77) before the perceptive training vs. (3.31) feedbacks per minute after the perceptive training, in spite of the increase of the time of this condition.

As regards the "fixed" condition the decrease of the frequency was more marked because the time of this was also decreased. We recorded averages of (2.67) before the training, against (0.33) feedbacks per minute after the training.
However, our observations support those found by Pièron and Demelle (1981), which showed that the teachers can reach four interventions by minutes. These frequencies can seem higher when the latter practice their preferences' specialty.
Concerning the point of view's factor, our results showed that the number of feedback was decreased in three conditions (in front of the action vs. profile vs. behind the action).
Indeed, the decrease of the number of feedbacks can be explained by the improvement of the observation conditions particularly the condition in front of the action. In fact, the trainers were in front of the action most of the playtime after the perceptive training.
The improvement of this condition allowed the trainers to see suitably the actions and consequently they became more precise on their interventions in term of feedback.
Our observation finds support in that of Rieser (1989), Young (1989), May and Wartenberg (1995) who showed that the change of point of view facilitates the update of the spatial information.
Other findings reported by Jarraya et al. (2005) showed that the change of point of view affects the memorization and the perception of a complex biological movement.
This leads us to confirm the effect of the change of point of view on the perception of sports judgment generally and on the number of feedback issued by the football trainers in particular.
On the other hand, our findings showed that the improvement of the point of view causes a decrease of the number of feedbacks given by the trainers of soccer. This is approved by the decrease of the frequency of feedback per minute in all the conditions and more particularly in the condition in front of the action (5.31 before the perceptive training vs. 3.22 feedbacks per minute after the perceptive training).
Once more, our findings confirm those found by Fishman and Tobey (1978); Pièron and Demelle (1981, 1983); Brunelle, Spallanzani, Lord, Petiot (1983), who showed that the interventions in feedback vary from one intervention per minute to four or even five. So, we can confirm our second hypothesis: the beneficial effect of the perceptive training with video on the reduction of the feedback number given by the football trainers in a mini game.

5. CONCLUSIONS

In this research work we studied the effect of the perceptive training with video on the conditions of observation and the number of feedbacks given by the football trainers in a mini game.
We were able to conclude that the perceptive training with video could have a beneficial effect on the conditions of observation whatsoever for (movement) (in movement vs. fixed) or for the point of view (in front of the action vs. of profile vs. behind). In fact, the trainers were more dynamic after the perceptive training and it has proved by the increase of the condition's time " in movement " and the decrease of the "fixed" condition's time.
The findings also showed that the choice of the angle of view improved after the perceptive training, because the time of the condition «in front of the action» was further more increased.
On the other hand we recorded a remarkable decrease in the time of the other conditions «of profile and behind the action».
Also we noticed that the number of feedbacks given by the trainers was decreased in all the conditions after the perceptive training. This decrease was more interesting in the conditions «in movement» concerning the movement factor and «in front of the action » concerning the angle of view factor, in spite of their improvements in terms of time.

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Table 1: Mean ± SD, absolute differences (Δ), relative differences (Δ %) and extreme values of displacement time and number of feedback, before and after perceptual training according to the observation conditions (Fixed *vs*. In mouvement)

Parameters	displacement	Before	After	Δ (Δ%)
Time (s)	Fixed	367 ± 244	43 ± 38**	-323 (-88.2%)
	In movement	713 ± 244	1037 ± 38**	323 (45.3%) ##
Number of feedback	Fixed	48 ± 29	6 ± 7**	-42 (-87.3%)
	In movement	68 ± 34	60 ± 19	-8 (-12.1%) ##

**: Significantly different from before training de at p < 0. 01

##: Significantly different from fixed position at p < 0.01

Table 2: Mean ± SD, absolute differences (Δ), relative differences (Δ %) and extreme values of placement time and number of feedback, before and after perceptual training according to the observation conditions (front of the action *vs*. of profile *vs*. back)

Parameters	angle of view	Before	After	Δ (Δ%)
Time (s)	front of the action	970 ± 83	1019 ± 40	49 (5.1%)
	of profile	92 ± 82 ##	61 ± 39	-32 (-34.2%) ##
	back	18 ± 11### ++	0 ± 1**	-18 (-98.9%) ## ++
Number of feedback	front of the action	96 ± 34	58 ± 16**	-38 (-39.3%)
	of profile	16 ± 12	10 ± 8	-6 (-38%)
	back	3 ± 1	0 ± 0	-3 (-96.9%)

**: Significantly different from before training de at p < 0.01

##: Significantly different from de front of the action at p < 0.01; ###: p < 0.001

++: Significantly different from back at p < 0. 01