3D Volleyball project
28 October 2021
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Title

« Relevance of 3D video observation training tool in competitive context: Exploratory research with volleyball coaches »
Starting point

Analysis of the literature treating about the observation by coaches in competition

➔ It is a problem because of the importance of the competitive context and the coach for the performance

How can we explain this lack of data?

1) Difficulty to get an access to the observation
2) Difficulty to act without interfering with the context
Starting point

Creation and evaluation of a 3D device

Analysis of the interest of the 3D device as an education tool

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**Descriptive tool**

1) Analysis of the observations during the game
2) Analysis of the use of these observations during the timeout

**Self-evaluation tool**

1) Analysis of the awareness of his/her strategy of observation
Project structure

Analysis of the literature

(Article 1)

Creation and analysis of the 3D device

(Article 2)

Descriptive tool

1) Observations during the game
   (Article 3)

2) Use of the observations during the timeout
   (Article 4)

Self-evaluation tool

(Article 5)
Article n° 1 – Scoping review

Step 1 – Research question: What does the literature contain concerning the observation by the actors in an open competitive context?

Step 2 – Identifying the relevant studies:

- **Inclusion criteria**: English/french, 2001-2021, peer-review, « observation » as study object, competition context, open context

- **Research strategy**: Sport* AND ("Visual attention" OR "Visual attentions" OR Observation* OR Sighting* OR Vision* OR "Visual search" OR "Gaze Pattern" OR "Gaze patterns" OR "Gaze behavior" OR "Gaze behaviour" OR "Gaze Behaviors" OR "Gaze behaviours") AND (Competition* OR Contest* OR Championship* OR Tournament* OR Game*)

- **Database**: SPORTDiscus, Psycinfo, Eric, Sciencedirect, Scopus → 107/13,229 articles

- **Bibliography**: 65/4,667 articles

- **Main journals database** (12): 14/8,927 articles

- **Total**: 186/26,823 articles
Article n° 1 – Scoping review

Step 3 – Articles selection: 2 researchers + 1 if difficulty to find consensus → 60/128 articles

Step 4 – Data extraction:
- Descriptive information: year, country, journal type, aims, designs, tools, sport, population
- Thematic information: results of the studies

Step 5 – Results
Article n° 1 – Scoping review

Step 5 – Results

- Observation more and more studied through the last years in several types of journals
- Majority of cross-sectional studies using eye-tracking → Lack in term of phenomenon comprehension + Eye tracking limits
- Very few studies using new technologies
- Only two studies analysed an entire competition
- Very few studies analysing coaches observations
Article n°2 – Creation and evaluation of the device

◊ **Aim:** Characterize the coaches’s feelings in the environment

1) 17 coaches
Article n° 2 – Creation and evaluation of the device
Great score of immersion despite the lack of some important elements: body movement, self-representation, interaction … (Salter & Wilbur, 1997) BUT Engagement because of the scenario and the texture of the environment \( \rightarrow \) Correlation between immersion and learning outcomes (Makransky & Lilleholt, 2018)

Great score of flow for an environment without interaction BUT the lack of interaction is mentioned in the open-ended questions \( \rightarrow \) Use of the device limited to the observation of the action

Great score of judgment is important to remain involved in a task (Gagné & Deci, 2005)

Very few negative consequences

More positive than negative emotions \( \rightarrow \) Positive for the intrinsic motivation
Article n°3 – Analysis of the observations

**Aims**: Analysis of the coaches’ observations and the capacity of the device to give interesting information for coaches education
Article n°3 – Analysis of the observations

- 24 coaches
- Two independant variables:
  - Gender of players
  - Trainers expertise
- Multidimensional analysis: referencial/target/register (tactical, technical...)
- Analysis of specific actions
Article n°3 – Analysis of the observations

Main results:

1) General
   1) More than 80% of observations on his/her team

2) Referencial
   1) The experts seem to take their eyes off the ball more than the others (Serve/Attack vs Reception/Block)
   2) Coaches of male teams look more the block and less the defense

3) Register
   1) The experts seem to target more their observations

4) Specific actions
   1) More frequent observations by the experts
   2) Confirmation of the decentration of the gaze theory
Article n°4 – Observation during the timeout

Aim: Analysis of the relevance of the information selected and transmitted to the players during the timeout
Article n° 4 – Observation during the timeout

- 17 coaches

- Two dependant variables:
  - The relevance of the content transmitted during the timeout (information <-> score /10)
  - The delay between the observation and the timeout
  - Two independant variables:
  - Coaches characteristics : expertise + level of coaching
  - Characteristics of the situation
Article n°4 – Observation during the timeout

Main results:

1) General
   1) Operating ratio: 20%
   2) High importance score (P50=8/10, P75=10/10)
   3) 30% of the information recalled in each 1/3 de séquence

2) Relevance score
   1) Only 2 coaches with the maximal score
   2) Higher in a difficult game situation

3) Delay score
   1) Median: 7 elements
Article n°5 – Analysis of the interest of the device as a self-evaluation tool

◊ **Aims**: Analysis of the impact of the protocol on the awareness of his/her observation strategy

- **Cases study – 7 coaches**
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<thead>
<tr>
<th>Nombres d'informations</th>
<th>Graphiques</th>
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<tbody>
<tr>
<td>Libro</td>
<td>Référentiel</td>
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<tr>
<td>Sans objet</td>
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<td>Un des ses joueurs</td>
<td>8</td>
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<tr>
<td>Equipe adverse</td>
<td>13</td>
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<td>Attaque</td>
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<td>Coach adverse</td>
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<td>Autre</td>
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Nombre d'observations enregistrées

Taux des interventions

Acteurs ciblés

Types d'actions considérées

Registres concernés
A.3) Les types d’actions considérées

La figure 4 démontre la proportion des observations concernant la nature des actions de jeu. De nouveau, les bâtonnets bleus et verts concernent respectivement les observations des autres coaches et les vôtres.

![Diagramme de types d’actions considérées](image)

Au-delà des interventions « sans objet », 5 types d’actions sont plus observées que les autres par l’échantillon. Dans l’ordre, il s’agit de l’attaque, de la passe, du service, de la réception et du contre. La défense, la relance, les couvertures, la prise de temps mort et les écrans sont en-dessous de 10%.

A.4) Les registres d’action

La figure 5 traite des grandes catégories d’observation pouvant se réaliser. Encore une fois, les bâtonnets verts représentent vos observations.

![Diagramme de registres concernés](image)
Article n° 5 – Analysis of the interest of the device as a self-evaluation tool

Analysis of the results:

- Multidimensional analysis
  - Observations report
  - Debriefings
  - Remarques du rappel stimulé
  - Final interview
Article n° 5 – Analysis of the interest of the device as a self-evaluation tool

Analysis of the results:

- 6/7 coaches question their observation strategy
- Positive points: no cybersickness, report, practical aspect, individualisation, quality of the device (immersion, visual quality, innovation)
- Improvement points: Longer cycle, level of the game, lack of interaction
Thank you for your attention!