A review of spatio-temporal metrics in invasion game sports.

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A review of spatio-temporal metrics in invasion game sports

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Introduction

\[ (x, y, t) \]

\[ \theta \]

= offence

= defence
Introduction

Positions

Distances

Angles

Spread

Area

Duration

Speed

Context

(x, y, t)

\[ \Delta t = t_2 - t_1 \]

\[ \Delta t = \frac{d}{t_2 - t_1} \]

No. of players
Introduction

Invasion Games

- Goal-throwing games
  - Basketball
  - Handball
  - Lacrosse
  - Netball

- Try-scoring games
  - Rugby union
  - Rugby league
  - American football

- Goal-striking games
  - Hockey sports
  - Football sports

Read & Edwards (1997) *Teaching children to play: A resources for primary teachers 5-11*
Method

Databases:

- Scopus
- PubMed
- Science Direct
- SPORTDiscus
- Web of Science
- GoogleScholar

Search criteria:

("performance analysis" OR "notational analysis" OR "performance indicator*")

AND (sports OR sport) AND (goal* OR scor*)

AND (offen* OR defen*) AND (team OR teams)
Method

Articles for review of title and abstract
n = 640

Articles excluded:
Unavailable, n = 37

Articles for review of title full text
n = 603

Articles excluded:
Unavailable in English, n = 22
Not about competitive sport, n = 47
Not an invasion game sport, n = 92
Not investigating open play, n = 73
No performance metrics, n = 14

Articles included
n = 355
1. Consensus on definitions

Operational definitions in performance Analysis and the need for consensus.

Jason J. Williams

Cardiff School of Management, Cardiff Metropolitan University, Cardiff, UK.
## Discussion

### 2. Sport-specific metrics

<table>
<thead>
<tr>
<th>Sport</th>
<th>Sport-specific actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Rules Football</td>
<td>Hit-outs, Kicks</td>
</tr>
<tr>
<td>Basketball (including wheelchair)</td>
<td>Rebounds</td>
</tr>
<tr>
<td>Hockey (field, ice, sledge)</td>
<td>Circle entries, Off-sides, Saves</td>
</tr>
<tr>
<td>Floorball</td>
<td>Saves</td>
</tr>
<tr>
<td>Football (Soccer)</td>
<td>Kicks, Off-sides, Saves</td>
</tr>
<tr>
<td>Futsal</td>
<td>Kicks, Saves</td>
</tr>
<tr>
<td>Gaelic football</td>
<td>Kicks, Saves</td>
</tr>
<tr>
<td>Handball</td>
<td>Saves</td>
</tr>
<tr>
<td>Rugby (league, sevens, union, wheelchair)</td>
<td>Breakdowns, Conversions, Jackals, Kicks, Line breaks, Mauls, Offside, Rucks</td>
</tr>
<tr>
<td>Water polo</td>
<td>Saves</td>
</tr>
</tbody>
</table>
Discussion

3. Data guides analysts

Discrete data

Continuous data
Conclusion

1. Consensus on definitions

2. Sport-specific metrics

3. Data guides analysis
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