Performance Analysis in Soccer

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Performance Analysis in Soccer

- WHY?
- WHAT?
- WHEN?
- HOW?
  - hand-based
  - video
  - computerized (video/GPS)
WHY analyse matches?
WHY analyse matches?

Constraints

- Viewing Environment
- Limitations of Human Memory
- Set views and Prejudices
- Effects of Emotions on Judgement

Performance Analysis = OBJECTIVITY
WHAT can be analyzed?

- Tactical
- Behavioral
- Physical
- Technical
WHAT can be analyzed?

Behavioral

- Anticipation
- Decision making
- Body language
- Communication
- Coach behaviors
Time-Use Analysis of Practice

Practice Activity
- Physiological
- Technical Practice
- Skills Practice
- Functional Practice
- Phase of Play
- Possession Games
- Conditioned Games
- Small Sided Games

Time per Session (%)
- Elite
- Sub Elite
- Non Elite

Training Form
Playing Form

Practice
Theory

Time-Use Analysis of Practice Workshop 2017
Time-Use Analysis of Practice

Training Form

Playing Form

Practice

Theory

Physiological Technical Practice Skills Practice Functional Practice Phase of Play Possession Games Conditioned Games Small Sided Games

Time in Activity (%)

Physiological Technical Practice Skills Practice Functional Practice Phase of Play Possession Games Conditioned Games Small Sided Games

Playing Form

Physiological Technical Practice Skills Practice Functional Practice Phase of Play Possession Games Conditioned Games Small Sided Games

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Time in Activity (%)
WHAT can be analyzed?

**Behavioral**
- Anticipation
- Decision making
- Body language
- Communication
- Coach behaviors

**Physical**
- Distance covered
- Intensity
- Pitch coverage
- Workload/tempo
## Typical Physical Data Sets

### Midfield Analysis: Total Distance run

<table>
<thead>
<tr>
<th>Player</th>
<th>Distance (m)</th>
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<tbody>
<tr>
<td>Player 1</td>
<td>12000</td>
</tr>
<tr>
<td>Player 2</td>
<td>9000</td>
</tr>
<tr>
<td>Player 3</td>
<td>8000</td>
</tr>
<tr>
<td>Player 4</td>
<td>7000</td>
</tr>
<tr>
<td>Player 5</td>
<td>6000</td>
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### Graph

- **X-axis**: Time (s)
- **Y-axis**: Speed (km/h)
- **Legend**: Defender, Forward

### Bar Chart

- **Y-axis**: % Distance run in each activity
- **X-axis**: Game No. (1-5)

### Pie Chart

- **Walking**: 46%
- **Jogging**: 34%
- **High-speed**: 17%
- **Sprinting**: 3%

<table>
<thead>
<tr>
<th>Activity</th>
<th>Game 1</th>
<th>Game 2</th>
<th>Game 3</th>
<th>Game 4</th>
<th>Game 5</th>
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<tbody>
<tr>
<td>% Sprinting</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
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<tr>
<td>% Cruising</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>35</td>
<td>40</td>
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<tr>
<td>% Jogging</td>
<td>30</td>
<td>35</td>
<td>40</td>
<td>45</td>
<td>50</td>
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<tr>
<td>% Walking</td>
<td>40</td>
<td>45</td>
<td>50</td>
<td>55</td>
<td>60</td>
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</table>
Typical Physical Data Sets
## WHAT can be analyzed?

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<thead>
<tr>
<th>Behavioral</th>
<th>Physical</th>
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<tr>
<td>• Anticipation</td>
<td>• Distance covered</td>
<td>• Technique</td>
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<tr>
<td>• Decision making</td>
<td>• Intensity</td>
<td>• Positioning</td>
</tr>
<tr>
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<td>• Pitch coverage</td>
<td></td>
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<td>• Workload/tempo</td>
<td></td>
</tr>
<tr>
<td>• Coach behaviors</td>
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<td></td>
</tr>
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</table>
WHAT can be analyzed?

Tactical

- Sets plays (for and against)
- Entries into final third
- Turnover of possession
- Attempts on goal (for and against)
- Movement off the ball
- ‘Shape’ of back four
WHAT should be analyzed?

“Not everything that counts can be counted, and not everything that can be counted counts”

“More is not necessarily better!”

“Added value and link to coaching process”
WHEN to analyse?

- Pre Game
  - Opposition analysis
  - Scouting
- In Game
  - Half-time briefing
  - In-game decisions
  - Review key events
- Post Game
  - Actual v planned
  - Team performance
  - Player performance
  - Always analyse
HOW to analyse?

- **Manual notation systems**
  - pen and paper
  - verbal

- **Video-based analysis**
  - analogue v digital
  - keyboard v voice activated

- **Computer-based systems**
  - automatic tracking
  - semi-automated
General Principles

• Decide what information is needed
  ➢ WHAT before HOW
  ➢ Prioritise data/information
  ➢ Link to coaching process
General Principles

- Decide what information is needed
- Design system
  - Player
  - Action
  - Position
  - Time
  - Sequence
General Principles

• Decide what information is needed
• Design system
• Collate/present data
  ➢ Verbal
  ➢ Visual/graphical
Video Analysis

Match
Observed/Recorded

Analysis

Digital Video Editing & Data Coding

4 Core Elements

Results

Two-Dimensional Match Reconstruction

Database

Edited Match Video

Tables

Graphs

Spatial Data

Player

Action

Time

Position
Advantages

- Permanent record
- Slow-motion, real-time playback
- Capture information missed during match
- Cheap\cost-effective!
- User friendly
General Considerations

- **Accuracy** – live vs. broadcast
- **Objectivity** – definitions/training
- **Reliability** – test/re-test
- **Cost** – time and money
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<th>Company</th>
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<th>Software</th>
<th>Web Site</th>
</tr>
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<tbody>
<tr>
<td>Dartfish</td>
<td>Switzerland</td>
<td>DartTrainer</td>
<td><a href="http://www.dartfish.com">http://www.dartfish.com</a></td>
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<tr>
<td>Elite Sports Analysis</td>
<td>UK</td>
<td>Focus X2</td>
<td><a href="http://www.elitesportsanalysis.com/">http://www.elitesportsanalysis.com/</a></td>
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<tr>
<td>MasterCoach Int. GmbH,</td>
<td>Germany</td>
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<tr>
<td>Pinnacle Systems</td>
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<td>PosiCom AS</td>
<td>Norway</td>
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<tr>
<td>REM Informatique</td>
<td>France</td>
<td>StadeXpert</td>
<td><a href="http://www.af-d.com/">http://www.af-d.com/</a></td>
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<tr>
<td>Scanball</td>
<td>France</td>
<td>Scanfoot</td>
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<tr>
<td>Softory/Sportweb</td>
<td>Denmark/Germany</td>
<td>Matchanalyzer</td>
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<tr>
<td>SoftSport Inc</td>
<td>USA</td>
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<td><a href="http://www.softsport.com/">http://www.softsport.com/</a></td>
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<tr>
<td>Sportstec</td>
<td>Australia</td>
<td>SportsCode</td>
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<tr>
<td>Touch-Line Data Systems Ltd</td>
<td>UK</td>
<td>SoccerScout</td>
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</tr>
<tr>
<td>Wige Media AG</td>
<td>Germany</td>
<td>Wige data</td>
<td><a href="http://www.wige-mic.de">http://www.wige-mic.de</a></td>
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**Video-based Player Tracking Systems**

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<tr>
<td>Orad</td>
<td>Israel</td>
<td>CyberSet</td>
<td><a href="http://www.orad.co.il/">http://www.orad.co.il/</a></td>
</tr>
<tr>
<td>ProZone Holdings Ltd</td>
<td>UK</td>
<td>ProZone</td>
<td><a href="http://www.dalglish.pzfootball.co.uk">http://www.dalglish.pzfootball.co.uk</a></td>
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<tr>
<td>Symah Vision</td>
<td>France</td>
<td>EPSIS Locator</td>
<td><a href="http://www.epsis.com/">http://www.epsis.com/</a></td>
</tr>
<tr>
<td>Sport-Universal SA</td>
<td>France</td>
<td>AMISCO</td>
<td><a href="http://www.sport-universal.com">http://www.sport-universal.com</a></td>
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**Electronic Player Tracking Systems**

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<tr>
<td>Cairos Technologies AG</td>
<td>Germany</td>
<td>Cairo</td>
<td><a href="http://www.cairos.com">http://www.cairos.com</a></td>
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<tr>
<td>Trakus Inc</td>
<td>USA</td>
<td>Digital Sports Information</td>
<td><a href="http://www.trakus.com">http://www.trakus.com</a></td>
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Video-based notation systems

- Price
- Technical support
- Software usage
- Quality Control
- Results/Data
- Productivity
- Upgrades/improvements

Match Analysis Software
Video-based tracking systems (Prozone, Amisco, TRACAB)
Computer-based tracking systems (Cairos)
GPS Satellite Tracking
Summary

• Performance analysis crucial
• Must feed into coaching process
• Numerous systems
  ➢ simple v complex
  ➢ cheap v costly
  ➢ quick v data intensive
• Practice/on-going development essential