Talent identification in soccer: Are there any early markers of success?

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Aims

• To provide a brief overview of sports science research on talent identification in soccer

• To consider potential implications for talent development and recruitment
What is Talent Identification?

“...entails predicting performance over various periods of time ...”  (Régnier et al., 1993)

“... identifying those who have the potential to benefit from a more systematic approach to practice and training...”  (Williams & Reilly, 2000)
The Role of Scouts/Coaches
INDIVIDUAL PLAYER REPORT

Name: 
Position: 
Club: 
Age: Height: Physique: 
Fixture: Competition: 
Date: Score: Conditions: 

<table>
<thead>
<tr>
<th>Goalkeeper</th>
<th>Outfield</th>
<th>Excellent</th>
<th>Good</th>
<th>Average</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handling</td>
<td>Awareness</td>
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<tr>
<td>Distribution</td>
<td>Determination</td>
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<td>Crosses</td>
<td>Stamina</td>
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<td>Command of Area</td>
<td>Control</td>
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<tr>
<td>Kicking Dead Ball</td>
<td>Passing</td>
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<tr>
<td>Vocal</td>
<td>Heading</td>
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<td>Tackling</td>
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<td>Shooting</td>
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<td>Pace</td>
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<td>Right Foot</td>
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<tr>
<td></td>
<td>Left Foot</td>
<td></td>
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</tbody>
</table>

Character and Temperament: 

General Remarks: 

Could the player handle a big match? YES NO

Should we: SIGN HIM WATCH AGAIN FORGET HIM

Signed: Print Name: Date:
The Scouting Check List: An Eye For a Player!

• **TABS** – Technique, Attitude, Balance, Speed
• **SUPS** – Speed, Understanding, Personality, Skill
• **TIPS** – Talent, Intelligence, Personality, Speed
The Role of Sports Scientists
Talent Identification

Sports Science

Anthropometry  Physiology  Psychology  Sociology

Predictors of Future Elite Players
Anthropometry

- Height
- Weight
- Body Size
- Bone Diameter
- Muscle Girth
- Somatotype
- Body Fat
Table 1. Anthropometric characteristics of elite and sub-elite 15-16 year old footballers (± SD).

<table>
<thead>
<tr>
<th></th>
<th>Body Size</th>
<th>Body Composition</th>
<th>Somatotype</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mass (kg)</td>
<td>Stature (m)</td>
<td>Sum of Skinfolds (mm)</td>
</tr>
<tr>
<td>Elite</td>
<td>63.38 (0.14)</td>
<td>171.16 (4.69)</td>
<td>47.92 (9.71)</td>
</tr>
<tr>
<td>Sub-elite</td>
<td>66.54 (0.25)</td>
<td>174.86 (5.57)</td>
<td>63.12 (14.49)</td>
</tr>
</tbody>
</table>
Potential Problems and Shortcomings

• Most characteristics amenable to training and dietary influences
• Measures affected by rate of physical growth and maturation
• Can create bias towards early maturers
Seasonal Birth Date Bias in Elite Soccer

6078 Premier League Academy Players (9-16 years)
## Seasonal Birth Date Bias in Elite Soccer

<table>
<thead>
<tr>
<th>Country</th>
<th>Months 1-3</th>
<th>Months 9-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>50.0</td>
<td>17.1</td>
</tr>
<tr>
<td>France</td>
<td>43.9</td>
<td>14.6</td>
</tr>
<tr>
<td>Germany</td>
<td>50.5</td>
<td>3.8</td>
</tr>
<tr>
<td>Italy</td>
<td>46.8</td>
<td>3.9</td>
</tr>
<tr>
<td>Netherlands</td>
<td>36.8</td>
<td>15.8</td>
</tr>
<tr>
<td>Spain</td>
<td>47.2</td>
<td>2.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>45.9%</strong></td>
<td><strong>9.0%</strong></td>
</tr>
</tbody>
</table>

National youth teams U15, U16, U17, U18 - Helsen et al. (2005), JSS
Seasonal Birth Date Bias in Elite Soccer: 2000-2001 vs. 2010-2011

Helsen et al. (2012)
Seasonal Birth Date Bias in French Super-Elite Soccer

Carling et al. (2009)
Seasonal Birth Date Bias in Super-Elite Soccer

Ford & Williams (2012)
Physiology

- Aerobic capacity
- Anaerobic endurance
- Anaerobic power
- Agility
Physiological characteristics of elite and sub-elite 15-16 year old soccer players (± SD)

<table>
<thead>
<tr>
<th></th>
<th>Speed</th>
<th>Speed Endurance</th>
<th>Power</th>
<th>Agility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5 m (s)</td>
<td>15 m (s)</td>
<td>25 m (s)</td>
<td>30 m (s)</td>
</tr>
<tr>
<td>Elite</td>
<td>1.04 (0.3)</td>
<td>2.44 (0.7)</td>
<td>3.67 (0.3)</td>
<td>4.31 (0.1)</td>
</tr>
<tr>
<td>Sub-elite</td>
<td>1.07 (0.6)</td>
<td>2.56 (0.2)</td>
<td>3.79 (0.7)</td>
<td>4.46 (0.1)</td>
</tr>
</tbody>
</table>
Potential Problems and Shortcomings

• Heavily influenced by training
Heritability estimates (%) of variables (mean ± SD) related to talent in football (Reilly et al., 2000)

<table>
<thead>
<tr>
<th>Physical Characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>85 ± 7</td>
</tr>
<tr>
<td>Leg length</td>
<td>80 ±10</td>
</tr>
<tr>
<td>Height³/Weight</td>
<td>53 ±19</td>
</tr>
<tr>
<td>Skinfolds</td>
<td>55 ±26</td>
</tr>
<tr>
<td>Ectomorphy</td>
<td>35-50</td>
</tr>
<tr>
<td>Mesomorphy</td>
<td>42</td>
</tr>
<tr>
<td>Endomorphy</td>
<td>50</td>
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</table>

<table>
<thead>
<tr>
<th>Physiological Factors</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>VO₂ max</td>
<td>30-93</td>
</tr>
<tr>
<td>Slow twitch muscle fibres</td>
<td>55-92</td>
</tr>
<tr>
<td>Anaerobic power</td>
<td>44-97</td>
</tr>
<tr>
<td>Muscle endurance</td>
<td>22-80</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field and performance tests</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sprinting</td>
<td>45-91</td>
</tr>
<tr>
<td>Jumping</td>
<td>33-86</td>
</tr>
<tr>
<td>Flexibility</td>
<td>69-91</td>
</tr>
<tr>
<td>Balance</td>
<td>24-86</td>
</tr>
</tbody>
</table>
Potential Problems and Shortcomings

• Heavily influenced by training
• Performance dependent on previous exposure to training
• Profiles become more similar at higher skill levels – other factors more important
• Not clear how fitness indicators track through from childhood to adulthood
Psychology

Perceptuo-Motor Skills
- Attention
- Anticipation
- Decision-Making
- Game Intelligence
- Creative Thinking
- Technical Skills
Potential Problems and Shortcomings

• Skills improve with experience
• Amenable to instruction and practice
• No longitudinal research
• Measurement sensitivity
Psychology

Social-Psychology

• Self-confidence
• Grit
• Motivation
• Resilience
• Mental Toughness
Potential Problems and Shortcomings

• What to measure?
• Accuracy of measurement
• Personality characteristics change over time
• Amenable to psychological interventions (heritability estimates – 30 to 60%)
Conclusions

• Practical utility of more scientific approach to talent identification unclear
• Expert performance is multifaceted and difficult to predict using a mono-disciplinary approach and cross sectional design
However:

- Objective data may be used to support subjective evaluations of coaches
- Help establish an extensive data base on player growth and maturation
Future Directions

• Multidisciplinary approach for greater accuracy and improved understanding
Physical predictors
- Height
- Muscle girth
- Weight
- Somatotype
- Body size
- Growth
- Bone diameter
- Body fat

Sociological predictors
- Parental support
- Socio-economic background
- Education hours in practice
- Cultural background

Potential predictors of talent in soccer
- Aerobic capacity
- Anaerobic endurance
- Anaerobic power

Psychological predictors
- Perceptual-cognitive skills
  - Attention
  - Game intelligence
  - Anticipation
  - Creative thinking
  - Decision-making
  - Motor/technical skills

- Personality
  - Self-confidence
  - Anxiety control
  - Motivation
  - Concentration
What is a Performance Management System?

• Enables storage and management of large, multi-disciplinary data sets
• Allows data to be analyzed and performance metrics established (real-time data modelling)
• Provides easy access and clear outputs that translate into concrete strategies
What are the potential benefits?

• Reduce injury risk and burnout through trend identification
• Identify relationships between data point(s) and performance metrics
• Benchmark player progression across clubs to ensure consistency/compliance
• Identify and potentially predict suitability of players for progression
What systems exist?

‘Off the shelf’ vs. Bespoke systems

- Scout 7
- Coaching Data
- Edge 10
- Green 4 Solutions
- Sports Data Hub
- Intelligent Training Systems
Some challenges

• How to collect data?
  – Validity/reliability/objectivity
  – Cost-benefit analysis
  – Confidentiality/ethics

• When to collect data?
  – Age
  – Frequency
  – Control groups

• What data to collect?
  – Why before how!
  – Link to development process
  – Assumption free analyses (neural nets)
Future Directions

• Multidisciplinary approach for greater accuracy and improved understanding
• Longitudinal monitoring to determine predictive utility of measures
• More sensitive sport-specific measures
• Closer links between scouts and scientists
Practice History Profiles of Elite Performers
Developmental activities of elite soccer players in Europe

Ford et al. (2010) JSS
Developmental activities of elite Football players in Brazil

Ford et al. (2010) JSS
Quantity vs. Quality of Practice
Expert performance

Performance

Amount of Deliberate practice

Gradual improvement in some specific aspect

Deliberate practice
Non-Coach Led Practice Activity (13-16 years)

Deliberate Play

Ford et al. (2008) High Ability Studies
Non-Coach Led Practice Activity (6-12 years)

Ford et al. (2010) PSE
Implications for Talent Development

• Recruit and retain as many athletes as possible
• Motivation, commitment and enjoyment key
• Practice opportunities need to be appropriate and abundant
• Provide appropriate systems and support networks
What is ‘appropriate practice’?

• Circularity of coaching doctrine – intuition, tradition and emulation
• ‘Practice’ must be based on empirical evidence
# Is there a theory vs. practice divide in coaching? Exploring The ‘Reversal Phenomenon’!

<table>
<thead>
<tr>
<th>Instructional Phases</th>
<th>Performance</th>
<th>Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convey Information</td>
<td>Always demonstrate</td>
<td>Infrequently</td>
</tr>
<tr>
<td></td>
<td>Lots of instruction</td>
<td></td>
</tr>
<tr>
<td>Structure Practice</td>
<td>Blocked/constant practice</td>
<td>Random/variable practice</td>
</tr>
<tr>
<td>Provide Feedback</td>
<td>Often and detailed</td>
<td>Infrequent and descriptive</td>
</tr>
</tbody>
</table>
### Training Form

<table>
<thead>
<tr>
<th>Practice Activity</th>
<th>Elite</th>
<th>Sub Elite</th>
<th>Non Elite</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiological</td>
<td></td>
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<tr>
<td>Technical Practice</td>
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<tr>
<td>Skills Practice</td>
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<tr>
<td>Functional Practice</td>
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<tr>
<td>Phase of Play</td>
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<tr>
<td>Possession Games</td>
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<tr>
<td>Conditioned Games</td>
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<tr>
<td>Small Sided Games</td>
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</table>

### Playing Form

- **Training Form**
- **Playing Form**

**Time-Use Analysis of Practice**
## Proportion of instructional behaviours

<table>
<thead>
<tr>
<th>Coach Behaviours</th>
<th>Instruction</th>
<th>Support and Encouragement</th>
<th>Prolonged Silence</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Form</td>
<td>33%</td>
<td>27%</td>
<td>16%</td>
<td>24%</td>
</tr>
<tr>
<td>Playing Form</td>
<td>32%</td>
<td>24%</td>
<td>23%</td>
<td>21%</td>
</tr>
</tbody>
</table>

Ford et. (2010) JSS
Conclusions

• No ‘genes’ that differentiate elite from near elite athletes – no holy grail!
• Motivation and persistence key
• No short cuts – practice, practice, practice!
• Better balance between focus on effective models and systems of talent development and talent identification