



# 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: \_\_\_\_\_

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

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** – **T**echnique, **A**ttitude, **B**alance, **S**peed
- **SUPS** – **S**peed, **U**nderstanding, **P**ersonality, **S**kill
- **TIPS** – **T**alent, **I**ntelligence, **P**ersonality, **S**peed

# 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



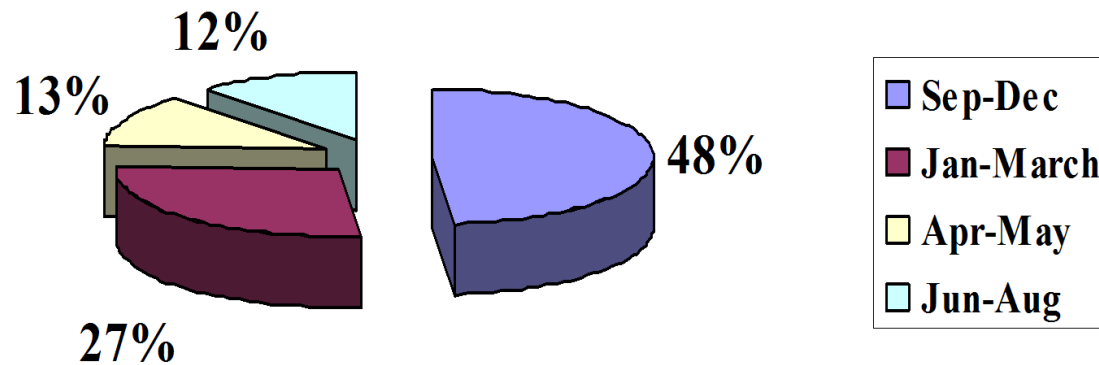
**Table 1. Anthropometric characteristics of elite and sub-elite 15-16 year old footballers ( $\pm$  SD).**

	Body Size		Body Composition		Somatotype		
	Mass (kg)	Stature (m)	Sum of Skinfolds (mm)	Body Fat (%)	Ectomorphy	Endomorphy	Mesomorphy
Elite	63.38 (0.14)	171.16 (4.69)	47.92 (9.71)	11.33 (2.09)	2.91 (0.89)	2.12 (0.48)	4.02 (0.87)
Sub-elite	66.54 (0.25)	174.86 (5.57)	63.12 (14.49)	14.05 (3.84)	3.09 (0.93)	2.93 (1.05)	3.82 (1.15)

# 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



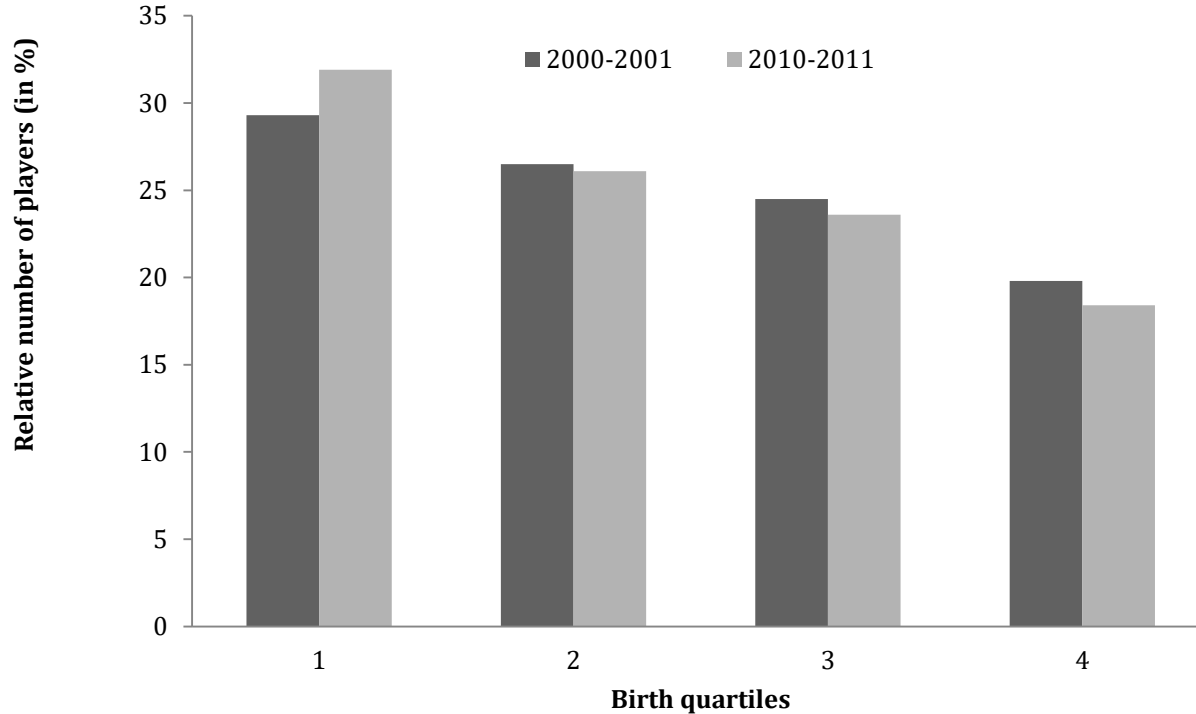
6078 Premier League Academy Players (9-16 years)

# Seasonal Birth Date Bias in Elite Soccer

Country	Months 1-3	Months 9-12
England	50.0	17.1
France	43.9	14.6
Germany	50.5	3.8
Italy	46.8	3.9
Netherlands	36.8	15.8
Spain	47.2	2.7
Total	45.9%	9.0%

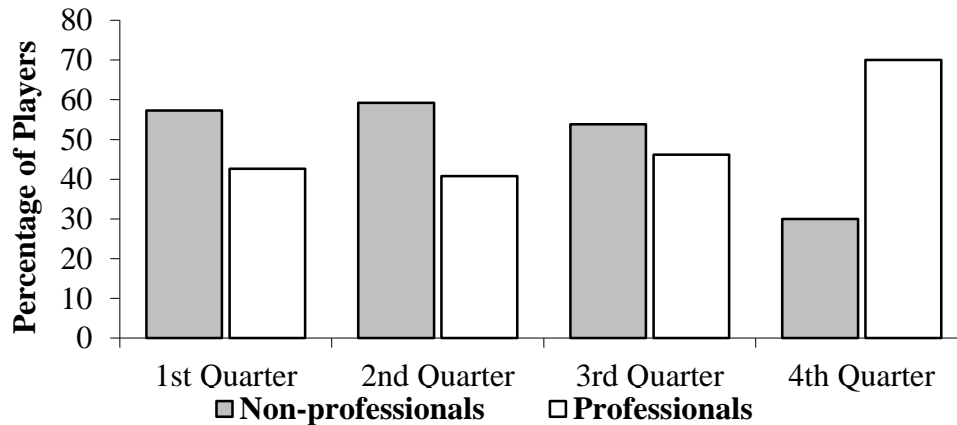
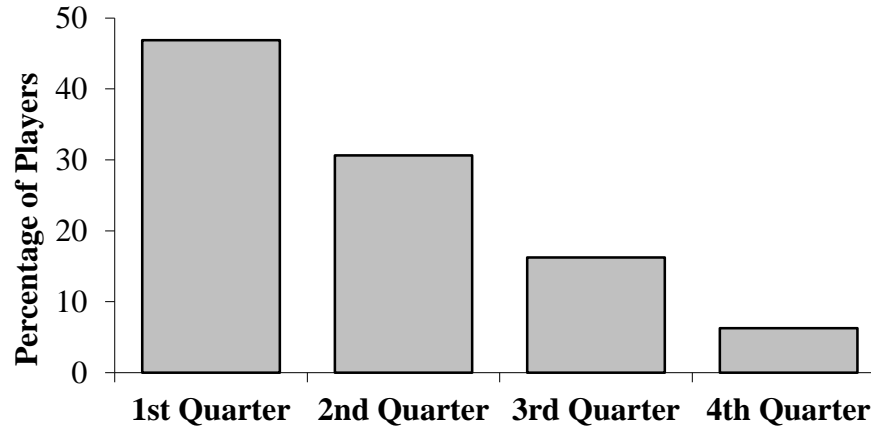
National youth teams U15, U16, U17, U18 - Helsen et al. (2005), JSS

# Seasonal Birth Date Bias in Elite Soccer: 2000-2001 vs. 2010-2011



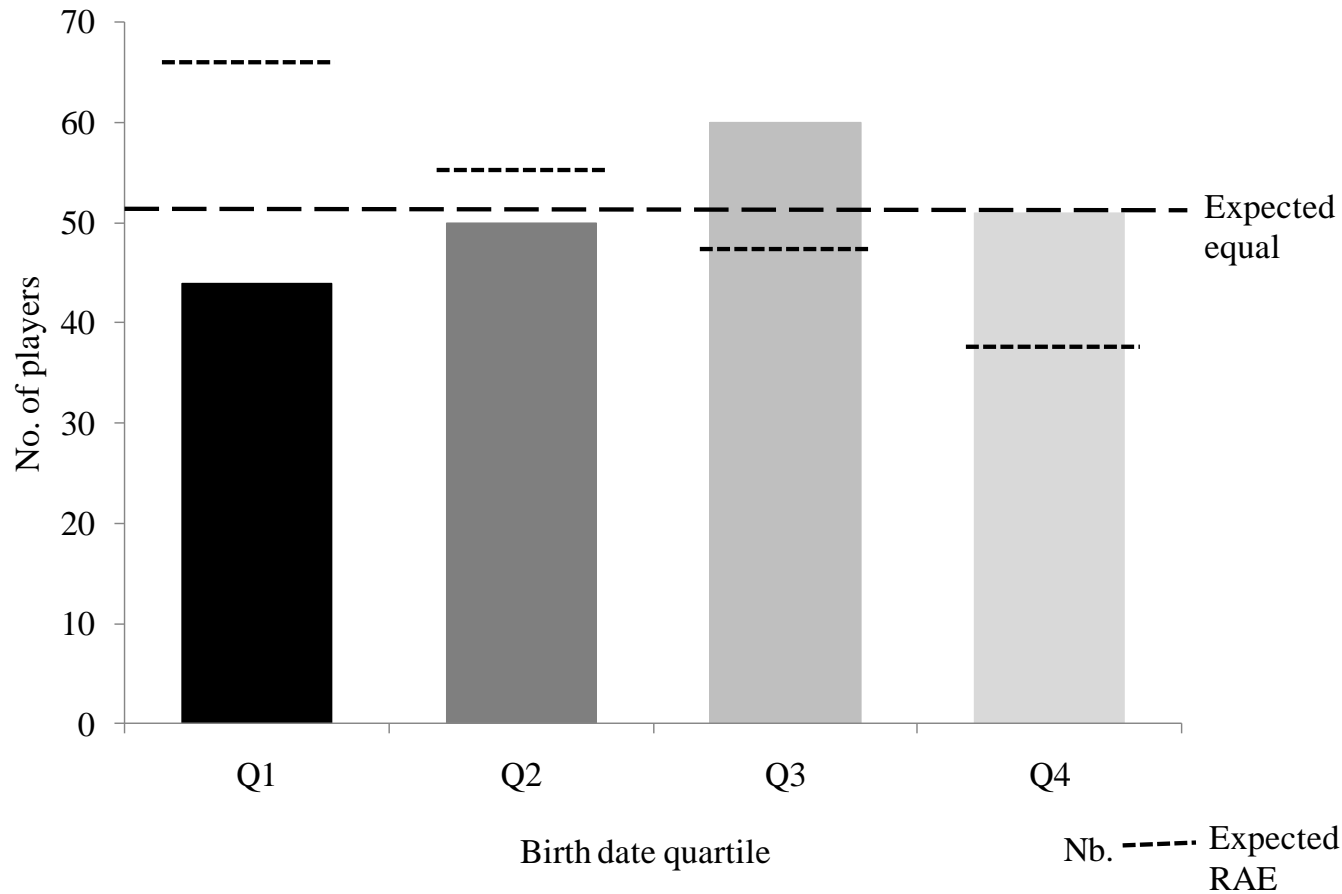
Helsen et al. (2012)

# Seasonal Birth Date Bias in French Super-Elite Soccer



Carling et al. (2009)

# Seasonal Birth Date Bias in Super-Elite Soccer



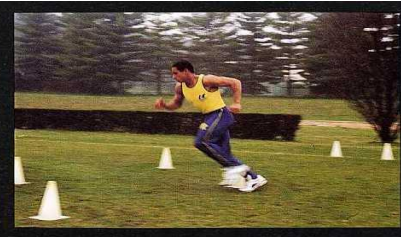
Ford & Williams (2012)





# Physiology

- Aerobic capacity
- Anaerobic endurance
- Anaerobic power
- Agility



# Physiological characteristics of elite and sub-elite 15-16 year old soccer players ( $\pm$ SD)

	Speed				(ml.kg <sup>-1</sup> .min <sup>-1</sup> )	Speed Endurance			Power	Agility
	5 m (s)	15 m (s)	25 m (s)	30 m (s)		Mean Score (s)	Fatigue Index (s)	Speed Endurance (s)	SVJ (cm)	(s)
Elite	1.04	2.44	3.67	4.31	55.60	6.42	0.25	6.24	55.80	7.78
	(0.3)	(0.7)	(0.3)	(0.1)	(1.61)	(0.16)	(0.19)	(0.19)	(5.82)	(0.18)
Sub-elite	1.07	2.56	3.79	4.46	52.39	6.74	0.39	6.74	50.21	9.53
	(0.6)	(0.2)	(0.7)	(0.1)	(3.76)	(0.29)	(0.37)	(0.31)	(7.58)	(0.73)

# Potential Problems and Shortcomings

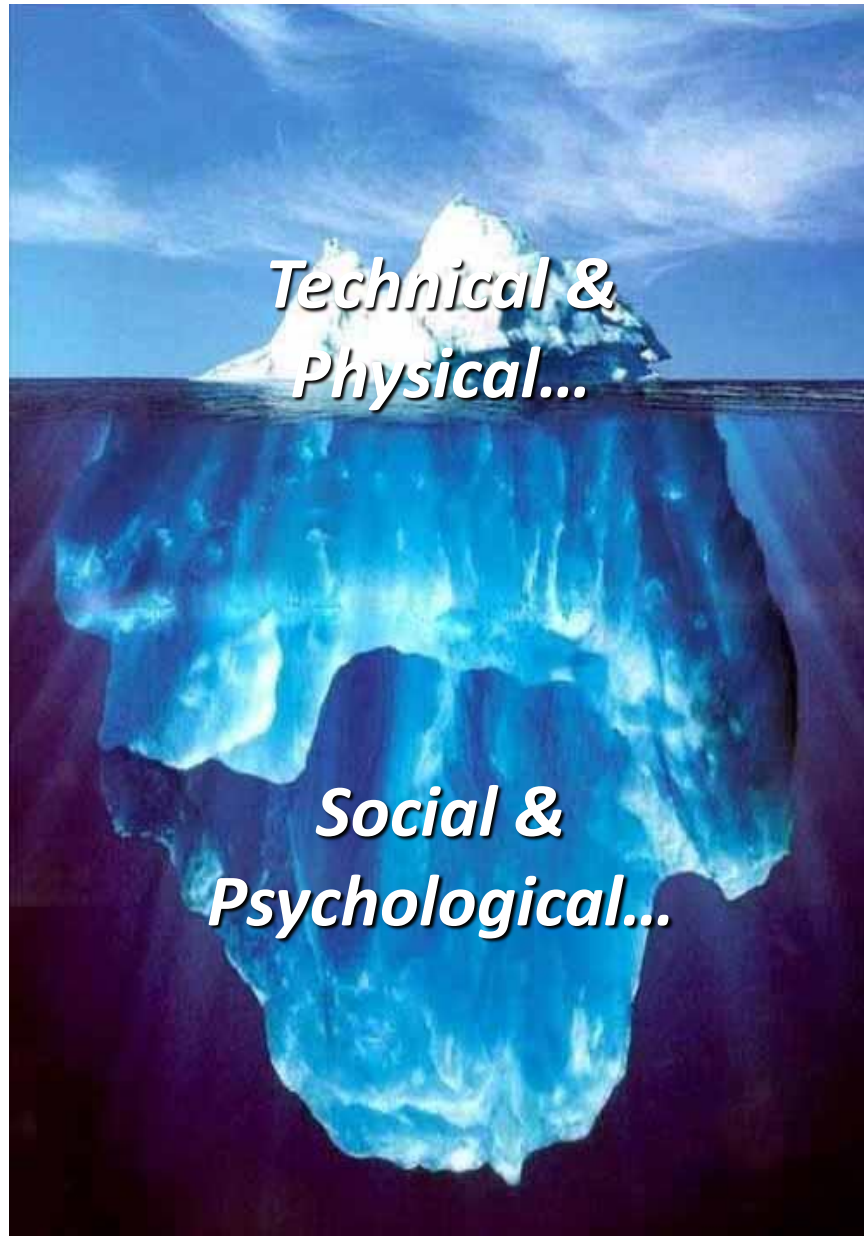
- Heavily influenced by training

# Heritability estimates (%) of variables (mean $\pm$ SD) related to talent in football (Reilly et al., 2000)

<b>Physical Characteristics</b>	
Height	85 $\pm$ 7
Leg length	80 $\pm$ 10
Height <sup>3</sup> /Weight	53 $\pm$ 19
Skinfolds	55 $\pm$ 26
Ectomorphy	35-50
Mesomorphy	42
Endomorphy	50
<b>Physiological Factors</b>	
VO <sub>2</sub> max	30-93
Slow twitch muscle fibres	55-92
Anaerobic power	44-97
Muscle endurance	22-80
<b>Field and performance tests</b>	
Sprinting	45-91
Jumping	33-86
Flexibility	69-91
Balance	24-86

# 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



*Technical &  
Physical...*

*Social &  
Psychological...*

# 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

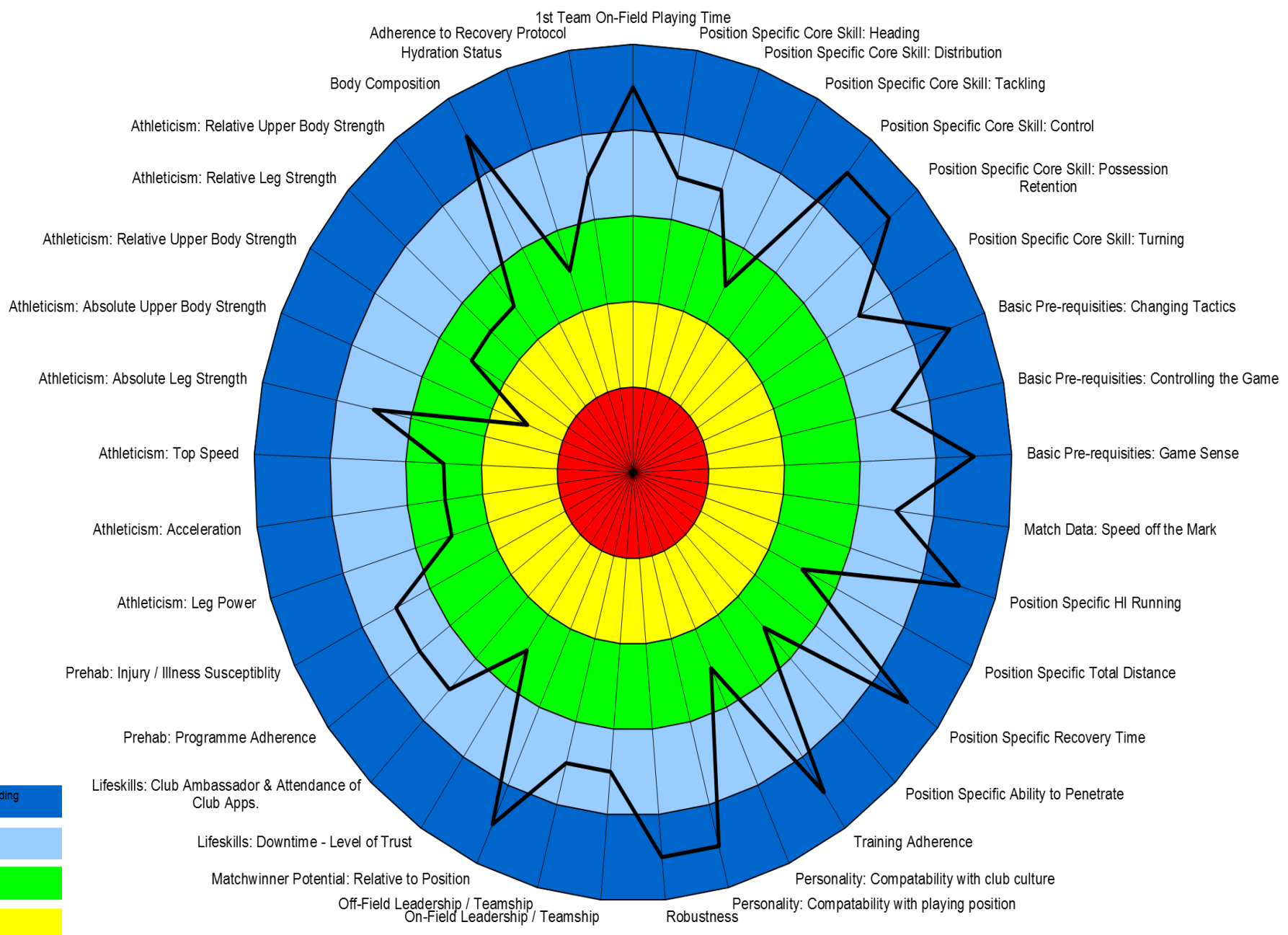
- Self-confidence
- Grit
- Motivation
- Resilience
- Mental Toughness

# 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
diameter	Bone
Body fat	



**Sociological predictors**

Parental support  
Socio-economic background  
Education Hours in practice  
Cultural background

**Potential predictors of talent in soccer**

**Physiological predictors**

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

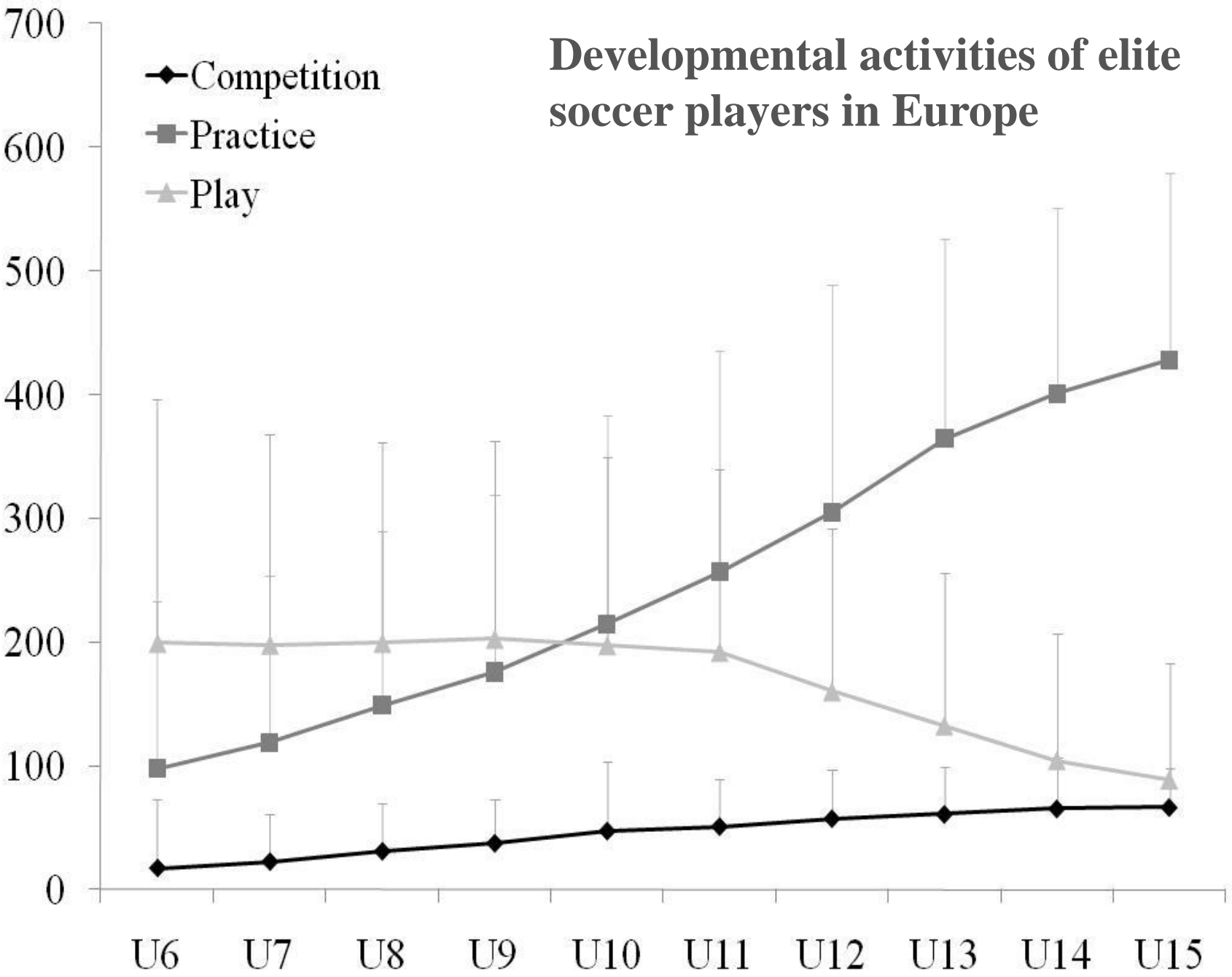
- Multidisciplinary approach for greater accuracy and improved understanding
- Longitudinal monitoring to determine predictive utility of measures
- More sensitive sport-specific measures
- Closer links between scouts and scientists

# Practice History Profiles of Elite Performers

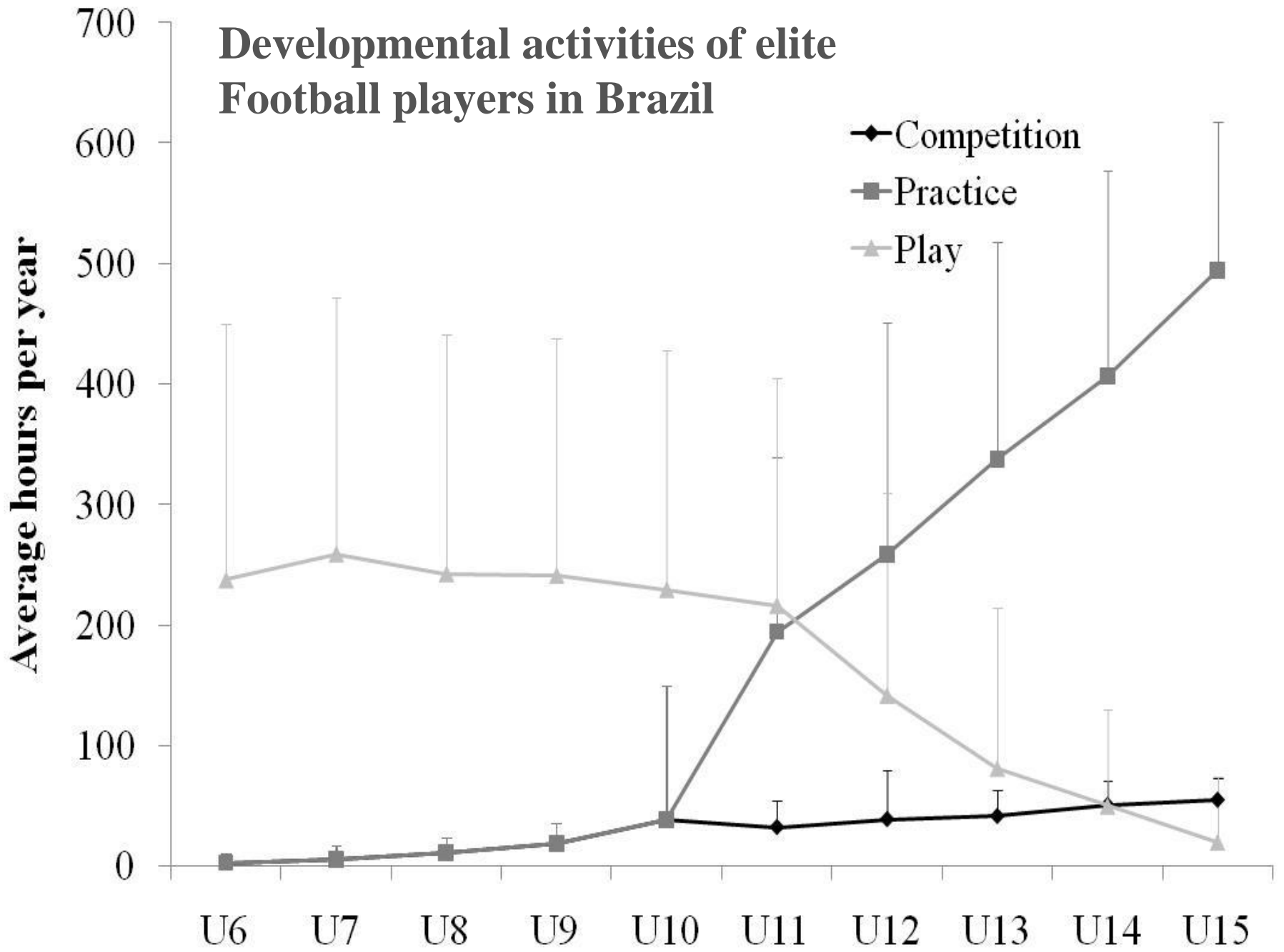
# Developmental activities of elite soccer players in Europe

- ◆ Competition
- Practice
- ▲ Play

Average hours per year

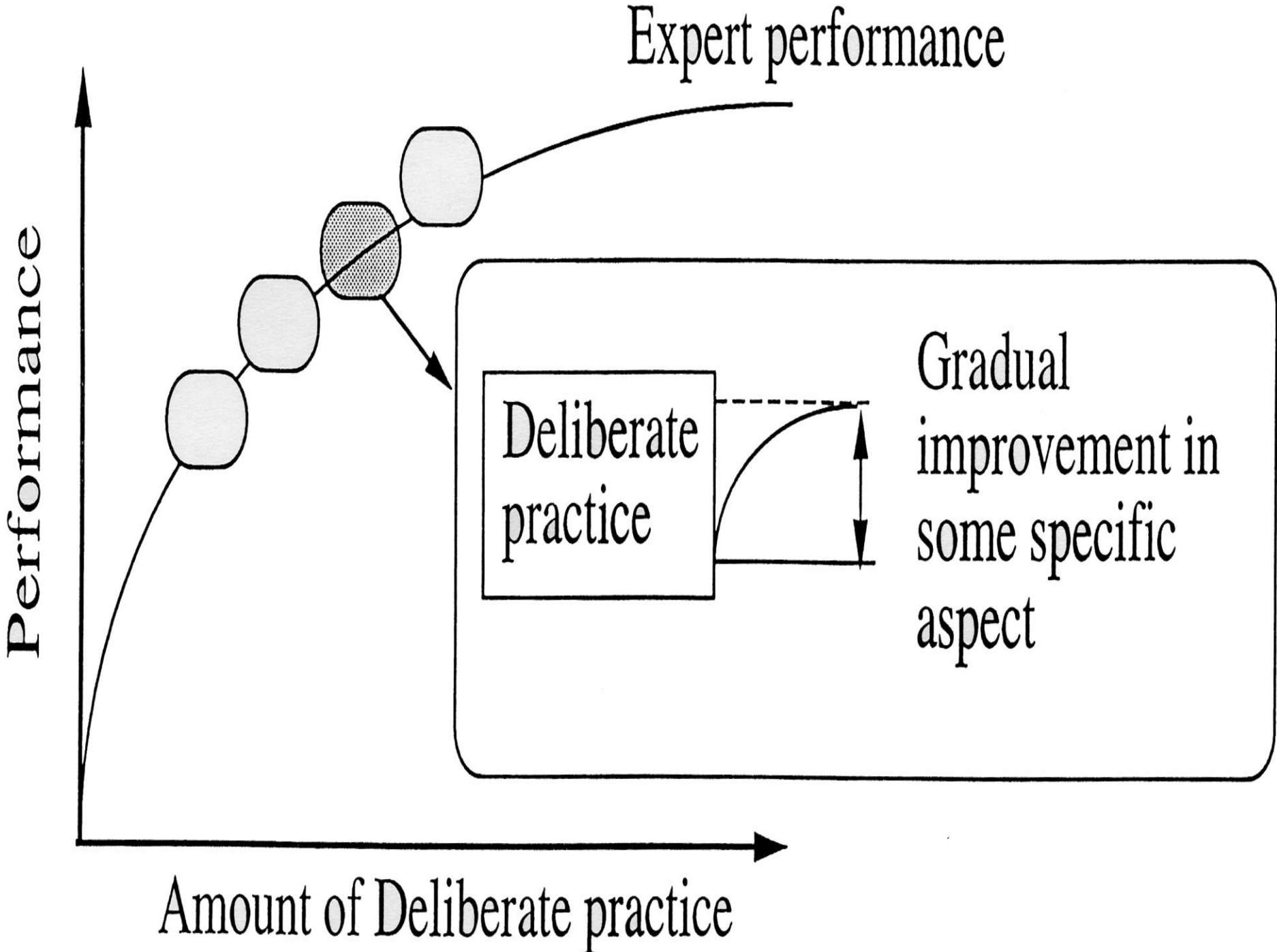


# Developmental activities of elite Football players in Brazil



# Quantity vs. Quality of Practice





Expert performance

Performance

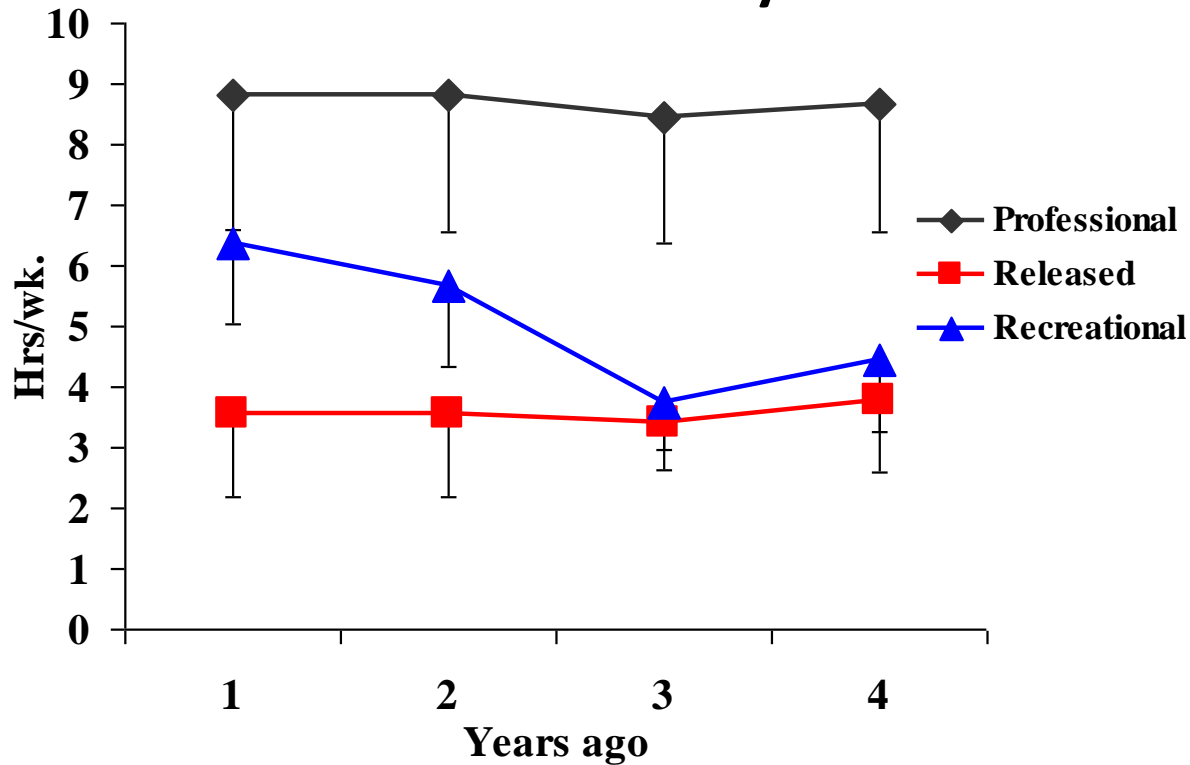
Amount of Deliberate practice

Deliberate practice

Gradual improvement in some specific aspect

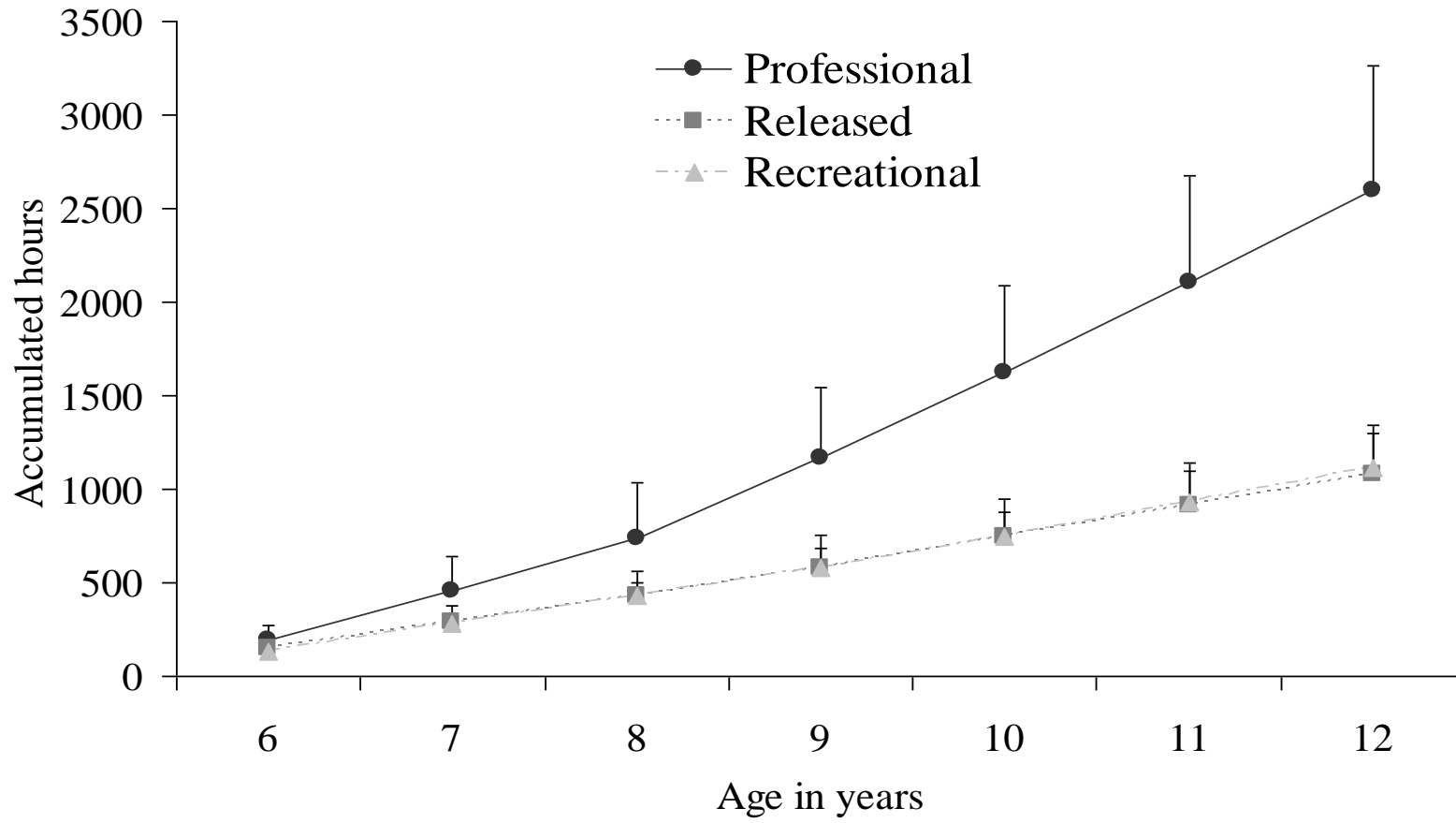
# Non-Coach Led Practice Activity (13-16 years)

## 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'!

## Instructional Phases

## Performance

## Learning

Convey Information



Always demonstrate  
Lots of instruction

Infrequently

Structure Practice



Blocked/constant  
practice

Random/variable  
practice

Provide Feedback

Often and detailed

Infrequent and  
descriptive



World Cup

Default lead 2

SHOT AT GOAL

### ANALYSIS OF MATCH ACTIONS

DRIBBLE WITH BALL	WALK WITH BALL	RUN WITH BALL	THROW-IN	CROSS
SHOT AT GOAL	FREE KICK	PASS	CORNER	CLEARANCE
Goal	Pass	Ground	Short Pass	Head
On Target	Cross	Chest Height	Cross	Foot
Off target	Shot	Over Head Height		
Blocked	Goal			
Headed	On Target			
Set Play	Off Target			
Set Play 2nd Phase	Blocked			
Open Play				
Own Goal				

merge rows

Make movie

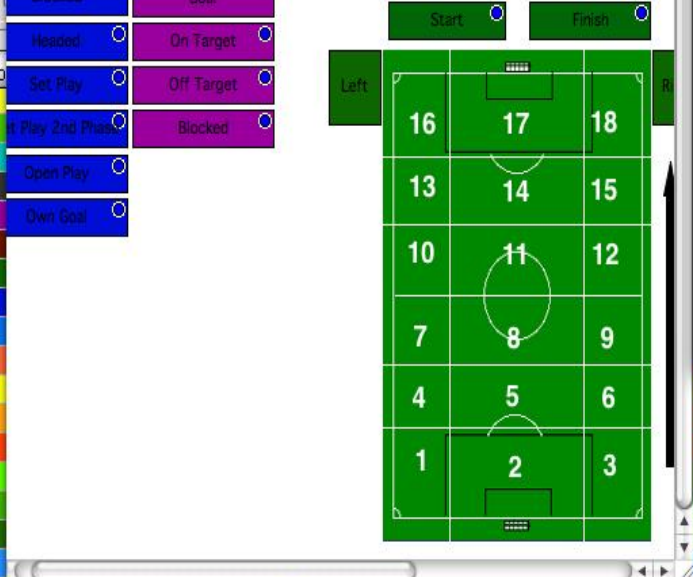
Append slow

Static text

Overlay

01:31:31.67

3	CLEARANCE	
4	WALK WITH BALL	
5	RUN WITH BALL	
6	CROSS	
7	FREE KICK	
8	THROW-IN	
9	CORNER	
10	SHOT AT GOAL	
11	DRIBBLE WITH BALL	
12	FORWARD BALL MOVEMENTS	
13	1 Pass Movement	
14	2 Pass Movement	
15	3 Pass Movement	
16	4 Pass Movement	
17	5 Pass Movement	
18	6 Pass Movement	
19	7 Pass Movement	
20	8 Pass Movement	
21	9 Pass Movement	
22	10+ Pass Movement	
23	REGAINED POSSESSION - ATTEMPT	



Matrix

Code matrix organiser, May, 27, 2008 10:51:04

Print

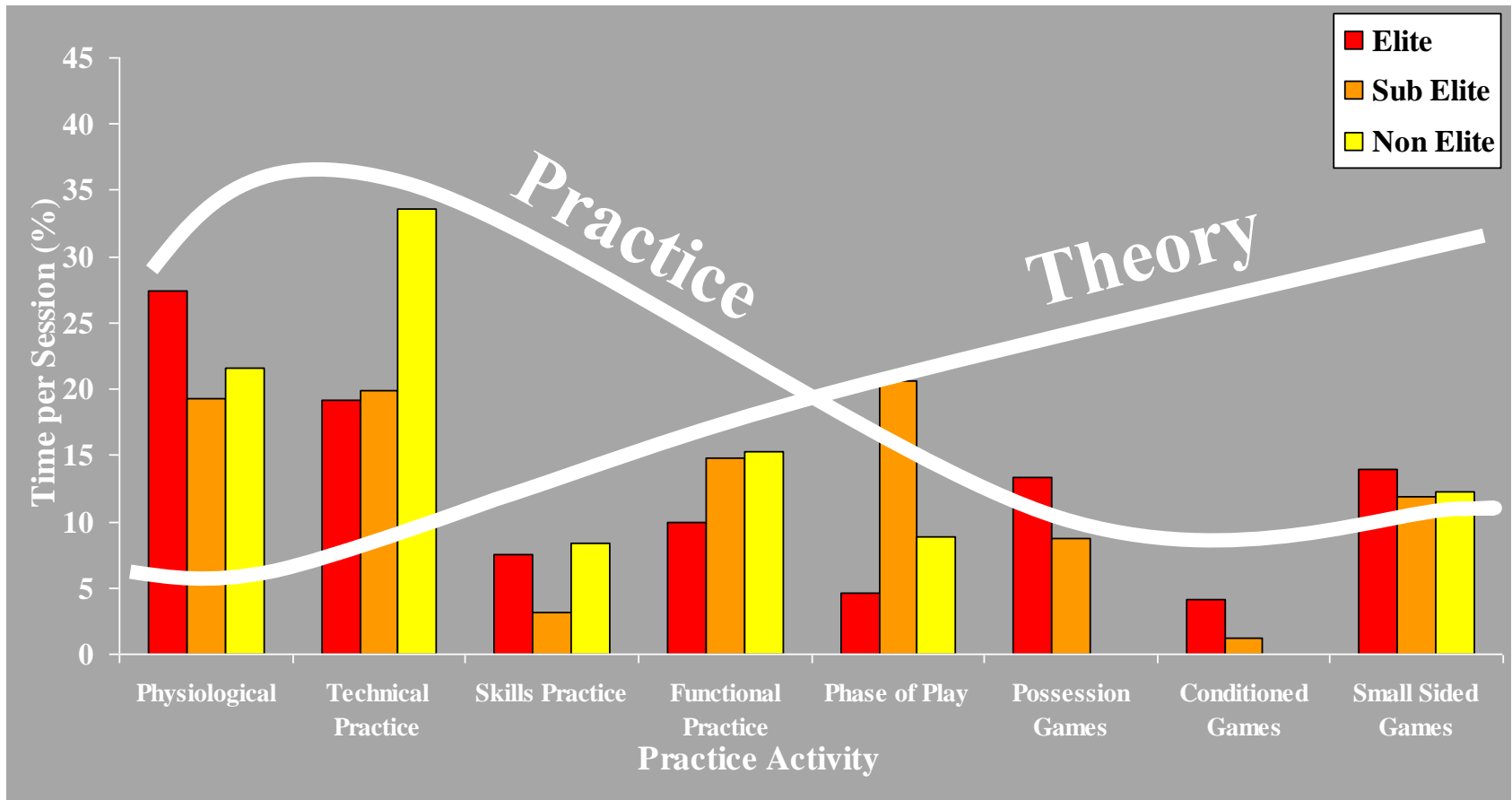
From Code matrix organiser. Linked to: Francevsitaly

	Attempt at Goal	Blocked	Chest Height	Cross	Finish	Foot	Goal	Ground	Head	Headed	Off Target	On target	Open Play	Over Head Height	Pass	Set Play	Short Pass	Shot	Start
code 1																			
PASS		8					226								22	1			
CLEARANCE						21		20											
WALK WITH BALL																			
RUN WITH BALL																			
CROSS																			
FREE KICK				2						1					10			1	
THROW-IN																			
CORNER					4													1	
SHOT AT GOAL	4																	6	
DRIBBLE WITH BALL																			
FORWARD BALL MOVEMENTS							121												121
1 Pass Movement		3					31												31
2 Pass Movement					1		15												15
3 Pass Movement							9												9
4 Pass Movement							8												8
5 Pass Movement						1													7
6 Pass Movement							6												6
7 Pass Movement							5												5
8 Pass Movement							1												1
9 Pass Movement							1												1
10+ Pass Movement							3												3



# Training Form

# Playing Form



# Time-Use Analysis of Practice



# Proportion of instructional behaviours

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Coach Behaviours	Instruction	Support and Encouragement	Prolonged Silence	Management
Training Form	33%	27%	16%	24%
Playing Form	32%	24%	23%	21%

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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