

Predictors of Skill Expertise in Team Sports: A Netball Case Study

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Overview / Aims

- Develop a series of perceptual-cognitive and motor skill tests for inclusion in a regular servicing & talent ID testing battery
- 5 years of data
- **Research Aims:**
 - Identification of expertise effects
 - Determination of key discriminatory tests
- Practice / coaching applications for team sports

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Participants & Design

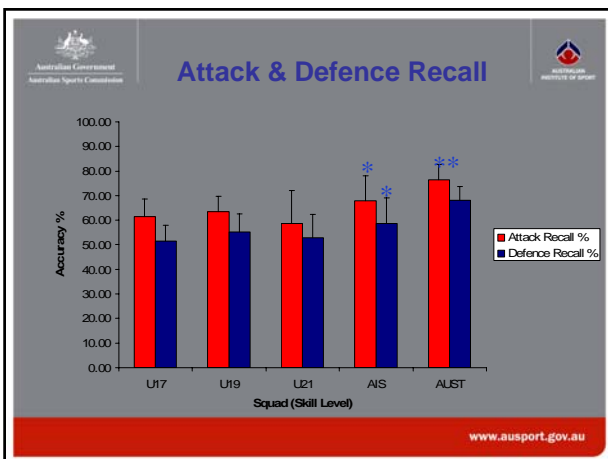
- **149 Participants (5 Squads)**
 - Australian (Nat. Team)
 - AIS (Nat. U21)
 - State U21
 - Aust U19
 - Aust U17
- **Testing Battery**
 - Pattern Recall
 - Decision Making
 - Pass Selection & Accuracy Task
 - Reactive Agility
- **Data Analysis**
 - Series of MANOVA's
 - DFA

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Pattern Recall Test Background for Inclusion

- Purely perceptual test of a players ability to recognise typical patterns of play
- Has been identified as a capacity that separates expert from lesser skilled athletes (e.g., Helsen & Starkes, 1999; Williams & Davids, 1995)
- Recall ability linked to theory of chunking
- A mechanism thought to support skilled decision making

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Discussion

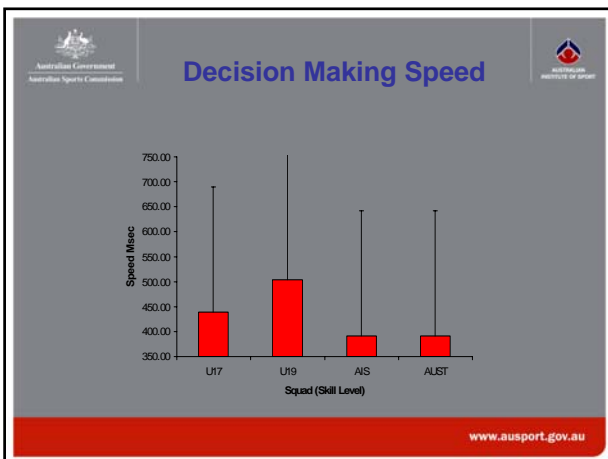
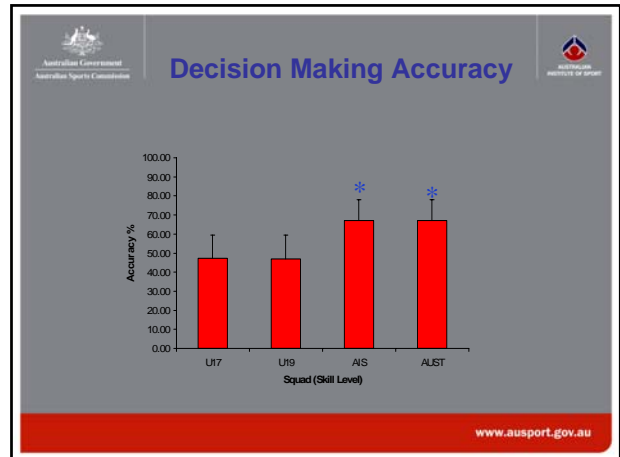
- Aust players superior recall to all others
- AIS players superior to U21 and U17
- Attacking players easier to recall than defensive players
 - Test artefact or actual effect?
- High skilled players (Aust / AIS) have superior defensive player recall than other skill groups
 - Strongest discriminator across skill levels
 - Source of recall advantage? (Abernethy, Baker & Cote, 2005)

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Decision Making Test Background for Inclusion

- Purely perceptual test of a player's ability to determine best passing choice
- Has been identified as a capacity that separates expert from lesser skilled athletes (e.g., *Berry & Abernethy, 2006; Williams & Davids, 1995*)
- Operationalising of pattern recall
 - Strength of relationship to pattern recall?

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Discussion

- DM accuracy strong predictor between skill groups
 - Aust and AIS players superior DM accuracy relative to underage squads
- No significant differences in DM speed
- Significant training gains in this capacity
- Computer-based and interactive simulation programs implemented with AIS squad

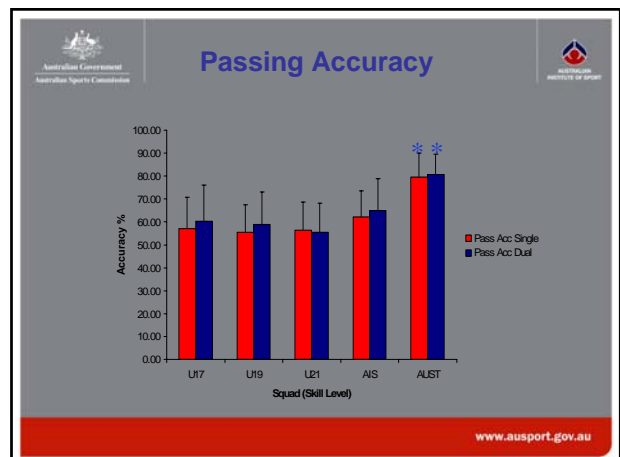
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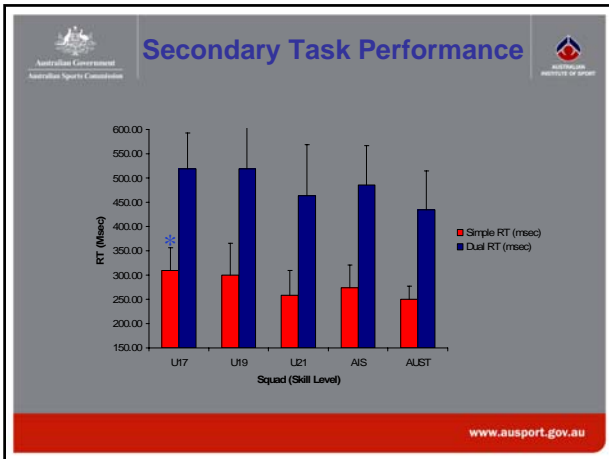
Passing Skill: Dual Task Background for Inclusion

Parker (1981)

- Examines a player's ability to complete two tasks simultaneously
- Provides a means of determining whether a player has automated the attentional control of the primary skills of their sport
- Expertise effects evident (*Abernethy, 1988*)

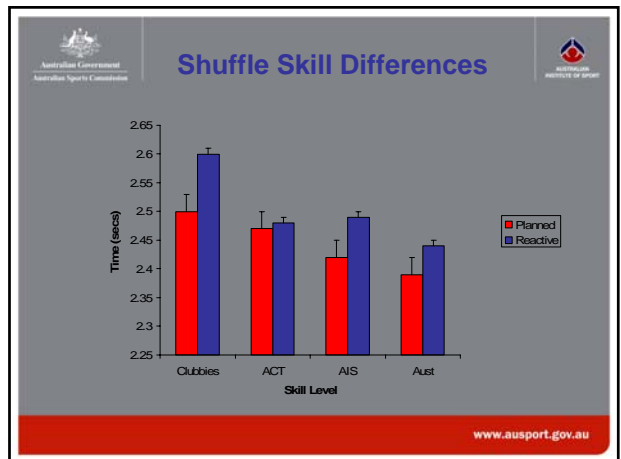
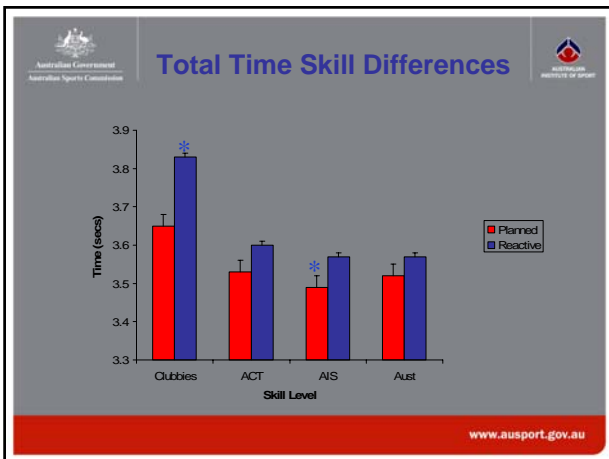
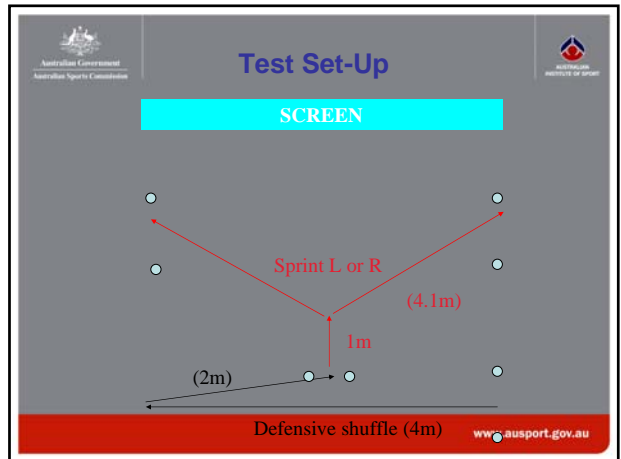
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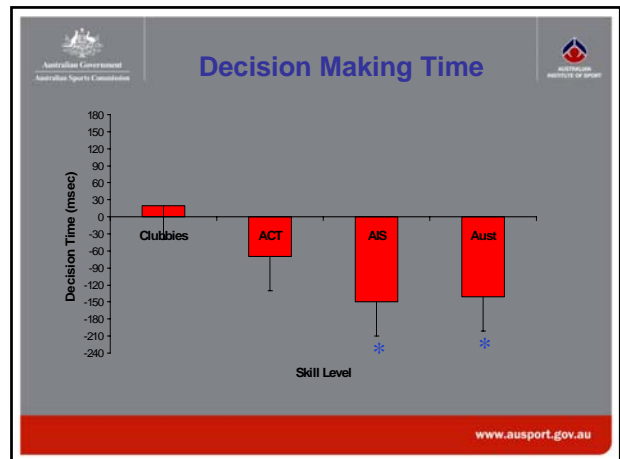
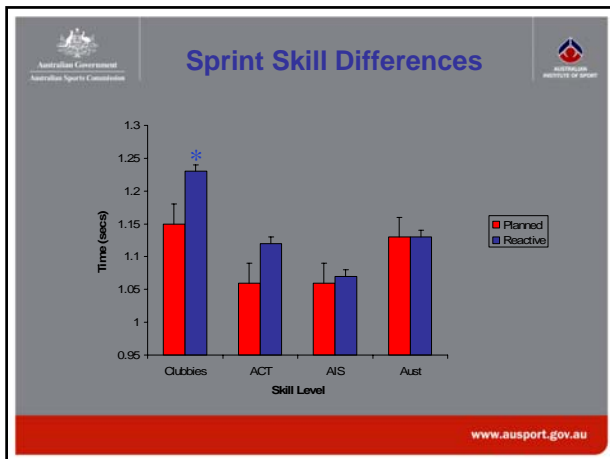




- ### Discussion
- Demonstrates Aust players superior skill levels
 - Did not differentiate between remaining skill levels
 - Differences in SRT (U17's) make comparison of attentional control difficult
 - Sensitive to within-group (squad) differences
 - Assists coaches to objectively isolate "skill-related" issues with players
 - Can guide coach decisions regarding drill complexity
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- ### Reactive Agility Test Background for Inclusion
- Historically, agility has been measured via the time taken to complete a planned movement pattern
 - Such tests do not take into account that many movement patterns are in response to an external stimulus
 - Reactive Agility:
 - Addition of a decision-making component to traditional planned agility tests
 - Uses life-size, sports-specific, interactive video-footage as a stimulus to the movement pattern
 - Provides a measure of both movement time and decision-making time
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- ### Discussion
- Planned test condition faster than reactive condition
 - Clubbies slower than all other skill groups
 - Skill related differences most evident in the sprint component of the reactive condition
 - Not physical components – shuffle, planned sprint
 - Significant decision making difference – Aust / AIS faster than ACT who was faster than clubbies
 - Sensitive to within-group (squad) differences
 - Assists coaches to objectively isolate “perceptual” or “foot-speed” issues with players
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Discriminating Skill Classification Results (%)

	U17	U19	U21	AIS	AUST
U17	50.0	9.1	0	0	0
U19	18.75	63.6	0	0	0
U21	18.75	18.2	78.6	6.6	10.0
AIS	6.25	9.1	7.14	86.7	0
AUST	6.25	0	14.28	6.6	90.0

- 72.7% overall classification (50% cross validated)

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- ### Discriminators of Skill
- Not surprising some classification overlap between groups
 - Pattern recall of defensive players and DM accuracy most clearly differentiated between the squads
 - Pattern recall only contributes to decision making skill for higher skill levels
 - Talent ID implications
 - Strength of testing battery is the capacity to determine individual skill issues in “skilled” players
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- ### Feedback and the Future
- Test battery provides key information closely related to game performance that hasn't been provided previously
 - Player and coach feedback is positive
 - “Sport specific”
 - Coach rank ordering produces similar results
 - Similar initiatives being completed with other team sports (e.g., Aust Rules, Rugby, Basketball, Cricket)
 - Increased input from other sports sciences
 - Arousal / Anxiety
 - Fatigue – repeated efforts
 - Qualitative movement analysis
 - Enhanced measurement technology
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VIP's – Thanks!



- Norma Plummer
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