

INTRODUCTION

Badminton

- ▼ Over 200 million fans worldwide
- ▼ Involves sporadic movements of moderate and high intensity
- ▼ Long list of skills & abilities needed for development:
 - ⇒ Agility, flexibility, speed, strength, core stability, tactical & spatial awareness, reflexes, psychological aptitude, coordination, etc.

Junior elite profiles

- ▼ Little is known about the junior elite athlete
- ▼ More focus placed on adult elites
- ▼ Increased knowledge on junior elites needed
 - ⇒ Coach's knowledge and opinion important
 - ⇒ Talent detection and identification needed for continuity and future success in the sport

The role of talent identification testing in badminton

- ▼ Essential for creating developmental opportunities and sustainability in the sport
 - ⇒ Talent identification is an ongoing developmental process
 - ⇒ Talent identification can be achieved in multiple ways and tailored to meet the specific needs of the sport

The general aim of this dissertation was to approach talent identification in badminton from a multifaceted perspective, inclusive of various scientific domains: anthropometric, physical performance, motor coordination, psychology & executive functions. It also identifies the differences that exist between the elite and novice profile and highlights what factors are needed for one to succeed as an elite/professional athlete in badminton.

ORIGINAL RESEARCH

Participants recruited from:

- ▼ Top sport academy
- ▼ Clubs at various levels (regional, national & international)
- ▼ Secondary schools and universities
 - ⇒ Recruitment period: 2017-2019
 - ⇒ Over 600 participants tested:
 - Via scientific equipment at various locations
 - Via scientific laboratory
- ▼ Cross sectional design approach

Chapter 1:

- ▼ **Aim:** Identify and compare importance of key characteristics in table tennis, tennis and badminton as viewed by coaches.
- ▼ **Methods:** Coaches completed an online survey.
- ▼ **Results:** Key differences and similarities were identified amongst the three racquet sports. The discriminant analysis correctly allocated coaches according to their respective sports.
- ▼ **Conclusion:** Findings suggest that racquet sport coaches of the three sports are well aware of the differences among the sports. However, the importance and value of testing an assortment of skill components was also highlighted. This was accomplished by use of a generic test battery.

Chapter 2:

- ▼ **Aim:** Identify benchmarks for various scientific domains by comparing youth badminton players of different levels through the use of a multidimensional test battery.
- ▼ **Methods:** Anthropometric, physical performance, motor coordination and psychological characteristics were measured by various testing methods and instruments. 
- ▼ **Results:** Significant differences were found in physical performance (explosive power, flexibility, speed & endurance) as well as for BMI and motor coordination. For psychology, perfectionism was significantly different and elites scored highest. The discriminant analysis reported 100% correct classification of participants and 80% cross validation.
- ▼ **Conclusion:** The results have contributed significantly to the limited availability on youth badminton player's reference values. They also confirm that there is value in generic testing

and importance in including a psychological component for youth athletes.

Chapter 3:



🦶 **Aim:** Investigate the use of contextual information for anticipation in badminton.

🦶 **Methods:** Reaction time and accuracy assessments via badminton specific video-based occlusion tests with kinematic or contextual information.

🦶 **Results:** Participants were slower when provided with contextual information. However, elites still outperformed other groups on reaction time speed and accuracy. All participants were better at making side predictions as opposed to length.

🦶 **Conclusion:** Results indicated that even at the highest level, anticipatory performance can be discriminated between groups of expert performers. Further research is needed to clarify the role that contextual information plays in anticipation in badminton.

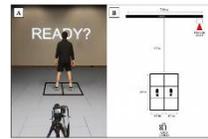
Chapter 4:

🦶 **Aim:** Explore the differences in anticipatory behaviour amongst elites, sub-elites and novices between in-game strokes and serves in badminton.

🦶 **Methods:** Participants responded to blocks of badminton video occlusion tests of serves and in-game strokes in a laboratory.

🦶 **Results:** Elite athletes generally showed faster and more accurate responses. Responses from all participants were faster in the in-game strokes condition as opposed to the serves condition.

🦶 **Conclusion:** These results add valuable information to the current body of knowledge on anticipatory behaviour in racquet sports. It is also one of the first studies to have made a simultaneous comparison of in-game strokes and serves in badminton. It also discusses the practical implications that exist for coaching and training in the sport of badminton.



🦶 **Methods:** Participants completed a test battery in the following domains: anthropometry, physical performance, motor coordination, psychology and executive functions (cognition).

🦶 **Results:** Overall most elites were generally taller and had a leaner body mass and outperformed the reference population in explosive power, agility, sprints, endurance, motor coordination and some aspects of the psychological domain. However, most elites did not show impressive scores in the cognitive domain.

🦶 **Conclusion:** These findings confirm the presence of a part of the youth elite player that appears to be essential, or what the minimum level on each of these dimensions is required in youth elite badminton. The probability also exists that weaknesses of the elites are compensated for in other skills that they excel in and thus, coaches make their talent selections based on these factors and the potential and number of 'trainable' skills that an individual possesses.

The future of multidimensional testing (Case study):

🦶 **Aim:** Explore how far the 'compensation phenomenon' theory spans with regards to elite youth badminton performance in a small elite sample of seven athletes. The elites were compared to a reference population of 372 boys and girls.

Conclusion:

- 🦶 Possible to identify badminton talent via a generic test battery, but sport-specific testing is also recommended.
- 🦶 Coaches appear to be well aware of the characteristics they are looking for in potential athletes.
- 🦶 Research on visual anticipation and expert attunement to kinematic and contextual information provide valuable information that can improve performance in badminton.

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Curriculum vitae: Kamasha Robertson was born in the twin island Republic of Trinidad and Tobago in the southern Caribbean. She is a two time scholar, having received National Sports and Commonwealth Scholarships. Kamasha specialised in the fields of physical education and sport and applied sport and exercise psychology. In 2016, she moved to Belgium to pursue her PhD in the Department of Sports and Movement Sciences under the guidance of her supervisors Prof. Dr. Matthieu Lenoir and Prof. Dr. Frederik Deconinck. During her PhD, Kamasha has presented her research at various international conferences and national symposiums. Kamasha is also a former national badminton player for her home country and is an active International Badminton World Federation (BWF) accredited umpire.

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