Analysis of challenge request success according to contextual variables in elite badminton

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ESPAÑA
BADMINTON

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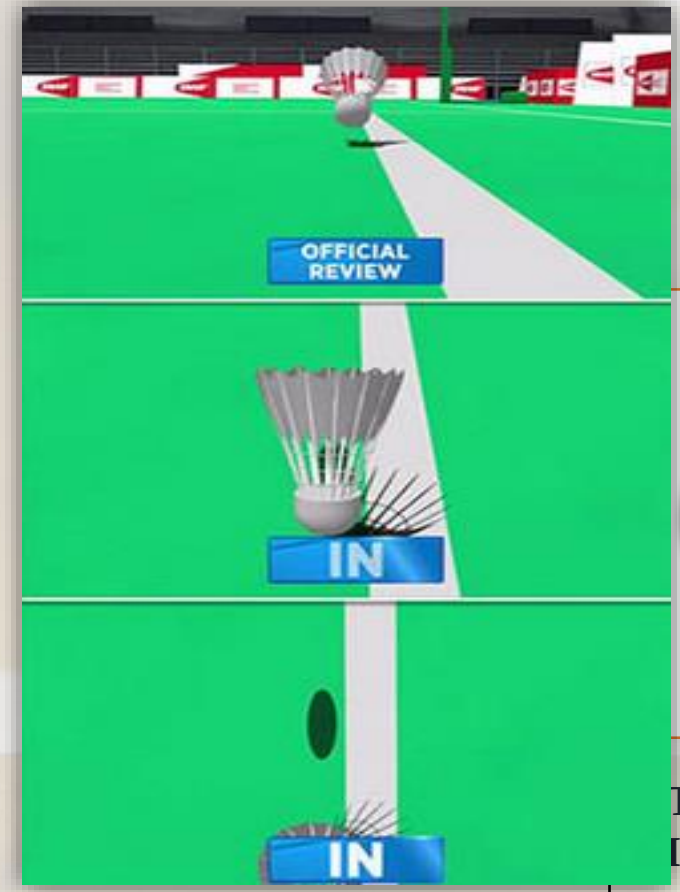
Introduction

INTRODUCTION

Badminton is a game consisting of hitting the shuttlecock across the other side of the court over the net, trying to send it to the opponent's area where it is hard to hit it back (Manrique, 2008).



NOTATIONAL ANALYSIS

PREVIOUS RESEARCH

3 MOST POPULAR SHOOTS (Lee, 2008)

15 OR 21 POINTS MATCH (Ming, Keong & Ghos, 2008)

GROUP STAGES AND PLAY-OFF STAGES (Chiminazzoa, Barreiraa, Luzb, Saraivab & Cayresb, 2018)

TO A BLINK-AND-MISS EVENT,
IES DOMINATING RALLIES

HAWK-EYE → **Notational Analysis** → **Contextual variables**
Microsituations

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2 Method

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METHOD

Sample

56 challenge actions

20 matches

QF- SF- F **WS - MS**

2 observers

Inter and intra reliability = 1.0

METHOD

Multivaried relationship

Crosstab Commands

Variables

D → D

- Challenge success
- Who requests the challenge
- Winner of the match

I → I

- International experience
- Who requests the challenge
- Who is successful in the request
- Next point winner

Statistical analysis

- Score-line
- Game
- Games in favor
- Challenges left per game
- Winner of the match

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Results

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Table 2. Frequency distribution (%) of challenge request according to contextual-related variables (Crosstab Command: Pearson's Chi-square, significance, expected frequency distribution, and effect size).

Variables	Challenge Request							
	Yes		No					
	%	n	%	n	χ^2	*P*	EFD	ES
Next point								
Winning	44.6	25	55.4	31				
Losing	55.4	31	44.6	25	1.29	0.26	1.29†	0.11
Interval								
1-11	33.9	19	33.9	19				
11-21	66.1	37	66.1	37	0.00	1.00	0.00†	0.00
Games in favour								
0	66.1	37	62.5	35				
1	33.9	19	37.5	21	0.16	0.69	0.16†	0.37
Challenges left								
1	8.9	5	28.6	16				
2	91.1	51	71.4	40	7.09	0.01**	7.39†	0.25
Match Status								
Winner	58.9	33	60.7	34				
Loser	41.1	23	39.3	22	0.04	0.85	0.37†	0.18
Player's Experience								
Less experienced	45.8	27	57.1	32				
Moderate experiences	33.9	19	23.2	13	1.6	0.45	1.604†	0.12
High expert	17.9	10	19.6	11				

P<0.05, ** P<0.01; EFD= expected frequency distribution; †Fisher's exact test was applied due to EFD lower than 5 or less than 5 cases in one box

Results

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Table 1. Frequency distribution (%) of challenge effectiveness according to contextual-related variables (Crosstab Command: Pearson's Chi-square, significance, expected frequency distribution, and effect size).

Variables	Challenge Success							
	Yes		No					
	%	n	%	n	χ^2	*P*	EFD	ES
Request								
Yes	19.6	11	80.4	45				
No	80.4	45	19.6	11	41.29	<0.01**	44.29†	0.61
Next point								
Winning	60.7	34	39.3	22				
Losing	39.3	22	60.7	34	5.14	0.02*	5.18†	0.21
Games in favour								
0	47.2	34	52.8	38				
1	52.8	38	47.2	34	0.62	0.43	0.62†	0.75
Challenges left								
1	25.0	14	12.5	7				
2	75.0	42	87.5	49	2.87	0.90	2.92†	0.16
Match Status								
Winner	64.3	36	55.4	31				
Loser	35.7	20	44.6	25	0.93	0.33	0.93†	0.09
Player's Experience								
Less experienced	60.7	34	44.6	25				
Moderate experienced	19.6	11	37.5	21	4.55	0.10	4.5214†	0.20
High expert	19.6	11	17.9	10				

* *P*<0.05, ** P<0.01; EFD= expected frequency distribution; †Fisher's exact test was applied due to EFD lower than 5 or less than 5 cases in one box

Results

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Table 3. Frequency distribution (%) of match status according to contextual-related variables (Crosstab Command: Pearson's Chi-square, significance, expected frequency distribution, and effect size).

Variables	Match status							
	Winner		Loser					
	%	n	%	n	χ^2	*P*	EFD	ES
Challenge request								
Yes	42.9	24	57.1	32				
No	57.1	32	42.9	24	2.29	0.13	2.29†	0.14
Challenge success								
Yes	66.1	37	33.9	19				
No	33.9	19	66.1	37	11.57	<0.01**	11.78†	0.32

P<0.05, ** P<0.01; EFD= expected frequency distribution; †Fisher's exact test was applied due to EFD lower than 5 or less than 5 cases in one box

Results

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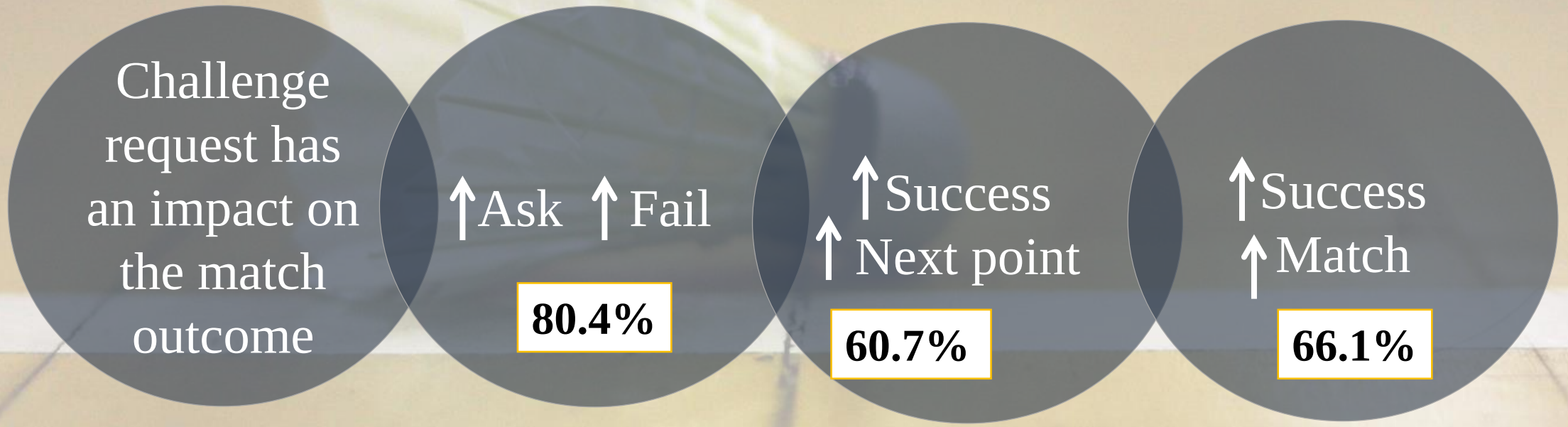
Table 4. Results of success in challenge request according to the independent variables.

Success in challenge request	B	SE	Wald	Df	*P*	OR	OR (95% CI) Lower	Upper
Intercept	-.89	.90	.98	1	.32			
Request (a)								
Yes	2.89	.56	27.00	1	.00	.65	-.15	2.15
Next point (b)								
Winning	-.44	.57	.59	1	.44	.65	.21	1.98
Interval (c)								
1-11	-.12	.58	.04	1	.83	.89	.28	2.76
Games in favor (d)								
0	-.05	.69	.01	1	.92	.95	.32	2.84
Challenge left (e)								
1	-.31	.78	.16	1	.70	.74	.16	3.38
Score-line (f)								
Winning	.26	.63	.16	1	.69	1.29	.38	4.44
International years (g)								
Less experienced	.23	.74	.10	1	.75	1.26	.30	5.36
Moderate experience	1.00	.78	1.63	1	.20	2.72	.59	12.64
Match result (h)								
Winner	-1.547	.711	4.73	1	.03	.21	.053	.86

Notes: **P* < 0.05, ***P* <0.01, ****P* < 0.001; OR, odds ratios; CI, confidence intervals. The baseline categories when OR = 1 were (a) no; (b) losing; (c) 11-21; (d) 1; (e) 2; (f) losing; (g) high expert and (h) loser


Challenge request has an impact on the match outcome
↑Ask ↑Fail
80.4%
↑Success
↑Next point
60.7%
↑Success
↑Match
66.1%

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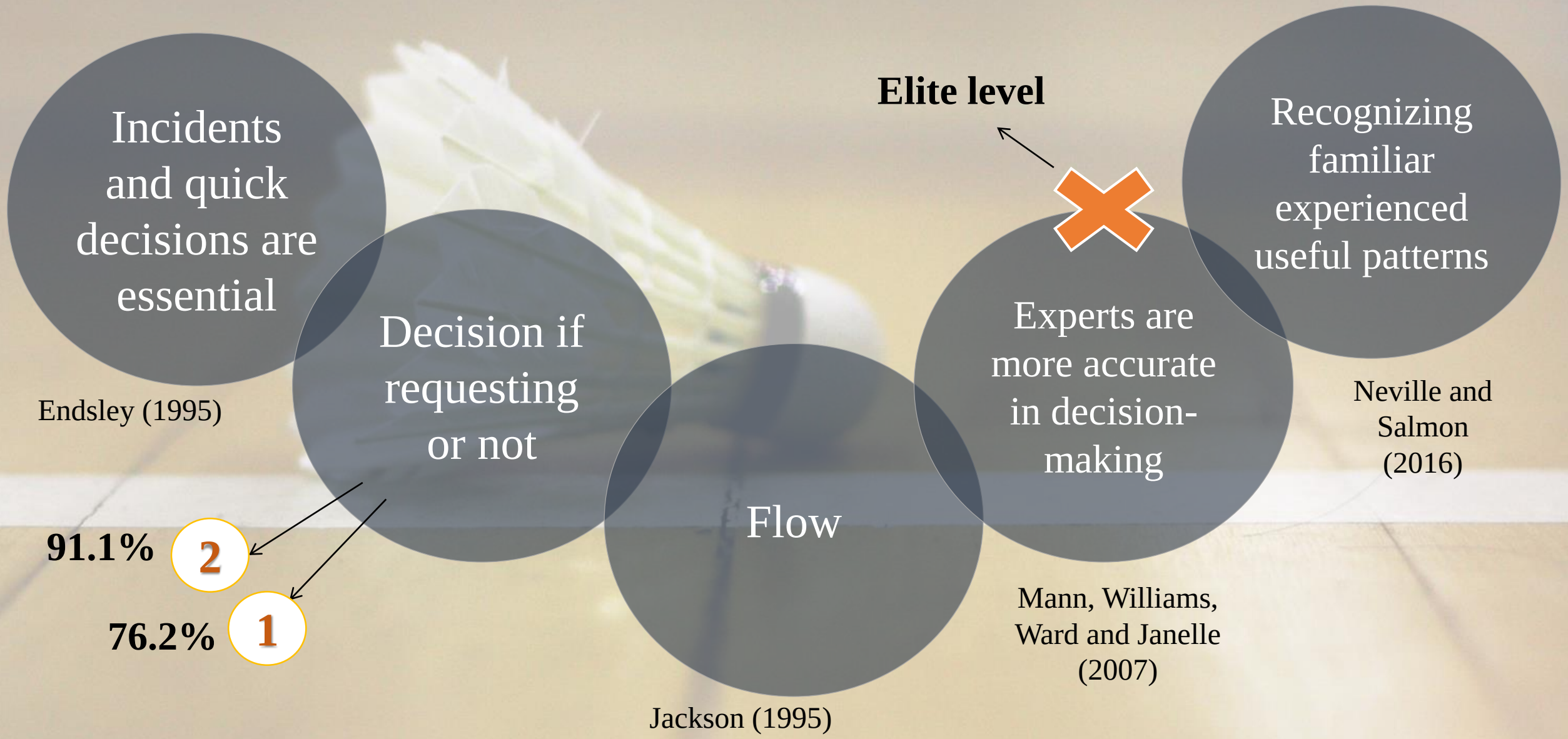
DISCUSSION


Incidents and quick decisions are essential
Endsley (1995)
Decision if requesting or not
91.1%
2
76.2%
1
Flow
Jackson (1995)
Elite level
Experts are more accurate in decision-making
Mann, Williams, Ward and Janelle (2007)
Recognizing familiar experienced useful patterns
Neville and Salmon (2016)

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LIMITATIONS

- Sample not large
- Further research - validity and utility

PRACTICAL IMPLICATIONS

- When to make the request or not is a decision that each player can do, but after that, he/she should know the consequences of this action.
- The possibility of developing training programs for helping athletes to manage these situations

Questionnaire

https://goo.gl/forms/XSSye50MCiu5X9X32