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A Comparative Analysis of Technical Proficiencies: Viktor Axelsen Versus Anders Antonsen in Men's Singles Badminton During the 2023 World Tour



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Abstract | This study conducts a comparative analysis of technical characteristics between top world-ranking and Top 1 Malaysia Athletes in men's singles badminton matches during the 2023 World Tour. The objective of this research is to analyse gameplay between two players, providing insights for coaches and athletes to enhance their training and performance techniques. The focus of this study is Viktor Axelsen, the top 1 world ranking, and Lee Zii Jia, the Malaysian athlete. The technical characteristics that have frequently been analysed were (serve, drop, net, smash, lob, defence, drive and clear). Variables were obtained using YouTube videos and notational analysis $r = 0.99$ and % of error 0.3%. Mann-Whitney U was used to describe and to determine the difference in the technical characteristics used by the Top 1 World Ranking and Top 1 Malaysia Athletes, between the groups' analyses, significant found out only seven out of 16 (success and unsuccessful) which was lob unsuccessful ($p = 0.03$, $r = 0.252$), clear success ($p = 0.001$, $r = 0.60$), clear unsuccessful ($p = 0.021$, $r = 0.28$), drive unsuccessful ($p = 0.001$, $r = 0.46$), defend unsuccessful ($p = 0.001$, $r = 0.51$), drop unsuccessful ($p = 0.35$, $r = 0.23$) and smash unsuccessful ($p = 0.016$, $r = 0.29$). The study revealed that technical characteristics can improve player performance for better tournament results. It highlights the importance of using these characteristics as guides for improving performance. Effective play increases the chances of winning, while poor performance leads to losing matches.

Keywords: *Badminton, technical characteristics, Danish player, Mann-Whitney U test, performance analysis.*

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I. INTRODUCTION

Badminton is characterized by high-speed movements and shot executions, which demand high tactical, technical, and psychological abilities as well as a high level of physical conditioning [1]. Badminton is a sport characterized by intermittent efforts of moderate to high intensity, caused by short and repetitive actions [2]. Viktor Axelsen and Anders Antonsen are two prominent figures in men's singles badminton, each with distinct playing styles and technical characteristics. Axelsen is known for his aggressive style of play, characterized by powerful smashes and swift footwork [3]. On the other hand, Antonsen is recognized for his tactical finesse, employing a combination of deceptive shots and strategic court coverage to outmaneuver opponents [3]. In terms of achievements, Axelsen has secured numerous titles, including the World Championships and the All England Open, showcasing his dominance at the highest level of the sport [3]. Technical analysis allows coaches and analysts to dissect the playing styles of players such as Axelsen and Antonsen, identifying their strengths and weaknesses in different areas of the game.

II. METHODS

This study used a non-probability sampling approach, specifically "purposive" sampling, to compare the technical characteristics of renowned Danish badminton players. The men's singles badminton matches for the year 2023, which took place from January to December 2023., were analyzed. The athletes participated in 10 tournaments, and the study included 86 match videos ($N = 86$), covering all rounds from the first to the final. Data was collected from the Badminton World Federation's (BWF) official website. The study focused on measuring technical characteristics such as smash, drive, lob, net, drop, defend, clear, and serve. Video data for analysis was sourced from YouTube, and world ranking information was obtained from the BWF website.

III. RESULTS AND DISCUSSION

The non-parametric test, which is the Mann-Whitney U test, was used to analyze the data. The Mann-Whitney test was used for variables that did not have a normal distribution. [2]. This is to determine if there were any significant differences in technical characteristics (serve, lobbing, clear, netting, drive, defend, drop shot, and smash) between Viktor Axelson and Anders Antonsen. The value of alpha has been set at 0.05. Significant differences were found in six out of 16 technical categories (both success and unsuccess rates). However, 10 technical characteristics didn't show significant differences. These included serve success and unsuccess, lob success and unsuccess, net success and unsuccess, drive success, defend success, and smash success and unsuccess. The p -value for these 10 characteristics was greater than 0.05. (Table 1). The first technical characteristic discussed in this study was clear success. Anders Antonsen ($mean = 17.50$) makes more successful clear shots than Viktor Axelsen ($mean = 8.98$). The clear shot is important in badminton because it helps move opponents to the backcourt, giving players time to get into an attacking position [4]. The study also looked at clear unsuccess. Viktor Axelsen has a lower mean value of clear unsuccess ($mean = 1.55$) compared to Anders Antonsen ($mean = 3$). Failing to execute a clear shot well can lead to losing points, giving the opponent an advantage [5]. Next, the study discussed drive

unsuccessful. Viktor Axelsen ($mean = 0.55$) had fewer unsuccessful drives compared to Anders Antonsen ($mean = 1.39$). A higher rate of unsuccessful drives, as seen with Antonsen, can indicate difficulties in maintaining precision and control under pressure. The drive shot is crucial for its speed and effectiveness, especially in doubles matches [6]. For unsuccessful defenses, Viktor Axelsen ($mean = 4.03$) had fewer unsuccessful defenses compared to Anders Antonsen ($mean = 7.33$). Effective defense relies on good anticipation and positioning [7]. Poor defensive shots can result in losing points [8]. Another characteristic discussed was drop shot success. Viktor Axelsen ($mean = 7.33$) had fewer successful drop shots compared to Anders Antonsen ($mean = 15.83$). A drop shot requires precision and finesse and is a key technique in badminton [9]. Lastly, in drop shot unsuccessful, it shows Viktor Axelsen ($mean = 0.33$) and Anders Antonsen ($mean = 0.72$). The drop shot, along with other shots like the smash, net shot, and clear, are essential components of a player's arsenal in badminton [10]. The lower unsuccessful rate for Viktor Axelsen implies that he likely has better precision and consistency in performing drop shots.

TABLE 1
MANN-WHITNEY U TEST RESULT

Test	Statistic	<i>p</i> -value	Effect Size
Serve Success	Mann-Whitney U 848	0.463	Rank Biserial Correlation 0.0788
Serve Unsuccess	Mann-Whitney U 890	0.744	Rank Biserial Correlation 0.0326
Lobbing Success	Mann-Whitney U 828	0.425	Rank Biserial Correlation 0.1005
Lobbing Unsuccess	Mann-Whitney U 797	0.249	Rank Biserial Correlation 0.1342
Clear Success	Mann-Whitney U 335	< 0.001	Rank Biserial Correlation 0.6364
Clear Unsuccess	Mann-Whitney U 478	< 0.001	Rank Biserial Correlation 0.4804
Netting Success	Mann-Whitney U 811	0.345	Rank Biserial Correlation 0.1190
Netting Unsuccess	Mann-Whitney U 763	0.167	Rank Biserial Correlation 0.1712
Drive Success	Mann-Whitney U 754	0.151	Rank Biserial Correlation 0.1804
Drive Unsuccess	Mann-Whitney U 568	0.001	Rank Biserial Correlation 0.3832
Defend Success	Mann-Whitney U 831	0.443	Rank Biserial Correlation 0.0967
Defend Unsuccess	Mann-Whitney U 309	< 0.001	Rank Biserial Correlation 0.6647
Drop Shot Success	Mann-Whitney U 256	< 0.001	Rank Biserial Correlation 0.7223
Drop Shot Unsuccess	Mann-Whitney U 727	0.051	Rank Biserial Correlation 0.2098
Smash Success	Mann-Whitney U 838	0.477	Rank Biserial Correlation 0.0897
Smash Unsuccess	Mann-Whitney U 755	0.137	Rank Biserial Correlation 0.1793

$p < 0.05$

Based on past journals [2], descriptive statistics (mean, minimum, and maximum standard deviation) were used to present the data collected. Based on the data collection, the highest amount of mean and standard deviation was netting success for both Viktor Axelsen ($mean \pm SD = 41.100 \pm 17.047$) and Anders Antonsen ($mean \pm SD = 44.522 \pm 15.722$), while the lowest amount of mean and standard deviation was serve unsuccessful for both Viktor Axelsen ($mean \pm SD = 0.325 \pm 0.526$) and Anders Antonsen ($mean \pm SD = 0.304 \pm 0.553$).



Fig. 1 Mean value for performance indicators

IV. CONCLUSIONS

In conclusion, clear success, clear unsuccessful, drive unsuccessful, defend unsuccessful, drop shot success, and drop shot unsuccessful showed a significant difference between Viktor Axelsen and Anders Antonsen. The study demonstrated that technical characteristics are essential for determining the performance of badminton players.

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