

**THE EFFECT OF AGILITY, EYE COORDINATION AND
CONCENTRATION ON THE SKILLS OF PLAYING
BADMINTON ATHLETES**

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Abstract

The problem in this study is the lack of agility in carrying out movements, eye-hand coordination, and lack of concentration in performing badminton playing skills. This study aims to analyze the direct and indirect effects of agility, hand eye coordination, and concentration on badminton playing skills. The research method used is inferential quantitative research. The sampling technique was purposive sampling with 21 athletes from a total population of 90 athletes. The data analysis technique used is the path analysis approach. The results showed: 1) There is a direct effect of agility on the skills of playing badminton in West Sumatra athletes, 2) There is a direct effect of eye-hand coordination on the skills of playing badminton in West Sumatra athletes, 3) There is a direct effect of concentration on the skills of playing badminton in West Sumatra athletes, 4) There is a direct effect of agility through concentration on the skills of playing badminton in West Sumatra athletes, 5) There is a direct effect of eye-hand coordination through the concentration of skills in playing badminton in West Sumatra athletes. From the results of this study, trainers should have a number of things that must be considered to achieve achievement, namely physical, technical, tactical, and mental condition factors, where skills start from basic technical abilities that must be mastered well, namely physical. The conditions given are according to the athlete's needs, and the mentality is to increase the athlete's flying hours to add to the athlete's mental experience when competing.

Keywords: Agility; Eye-Hand Coordination; Concentration; Playing Skills

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INTRODUCTION

Badminton is a very popular branch in the world, including Indonesia. Badminton including sports games (Kurniawan, Tri et al., 2018). It has been proven that several Indonesian athletes are ranking 1st in the world (PBSI, 2022). For instance, one of them in West Sumatra, starting from an early age, teenagers,

adults, to old age play badminton and always hold matches between all sub-districts to provinces. The development of badminton in West Sumatra is evidenced by the number of clubs or Badminton Associations that have been established and nurture talented athletes. This is the potential to reach more achievement. The game of badminton is a game sport that aims to drop the shuttlecock into the opponent's area by starting the first shot from one of the areas in a cross with a rectangle that is bounded by the net (Zarwan, 2014).

Badminton is also known as one of the fastest games and has a high mastery of technique with regular movements that make the game complete when making precise strokes called badminton playing skills. However, to improve the skills of playing badminton, other supporting factors are also needed. This is explained by (Syafuruddin, 2012), he stated that a person's ability in a match or competition is basically determined by four factors, namely: (1) physical condition, (2) technique, (3) tactics, (4) mental. This means that there are several factors caused badminton playing skills to have good performance. They are physical condition, technique is part of skills, tactics and the mental game of badminton. Good physical condition can have a good impact in carrying out various movements, one of which is to perform basic technical movements such as serving, performing forehand and backhand strokes, smashes, strokes (Hidayat et al., 2020).

Skill means being able to do something according to predetermined rules and technique is a special skill that must be mastered by athletes. Grice in (Donie, 2009; Pada et al., 2000) stated the skills needed in badminton include grip (handle), footwork (setting the foot work), stroke (mastery of the stroke), tactics and mental. This means that the skill comes from the technique of the branch itself that is already proficient in doing so. Basic components of physical condition in terms of the muscular concept include: (1) endurance, (2) strength, (3) explosive power, (4) speed, (5) flexibility, (6) agility, (7) balance, (8) coordination.

Strength according to (Sudarsono, 2015) is a component of a person's physical condition regarding his ability to use muscles to accept loads while working. Strength is also an element of physical condition in badminton smash. (Reza et al., 2017) stated coordination is an integrated motion between the hands, eyes and feet at the same time. Players with good eye-hand coordination will produce a precise and careful movement. For instance, athlete performs strokes and backhand clear movements simultaneously without any problems. (Humaedi & Andi Sultan Brilin, 2017; Nafi'ah, 2015; Trisnowiyanto, 2016) said agility is the ability to change direction quickly without balance disorders or loss of balance and awareness of body position. Agility is important in badminton because badminton is required to be agile in mastering the deep field such as being agile in doing stroke techniques. It is also said that in playing badminton, besides having good basic techniques, athlete must also have agility. Yusuf in (Fattahudin et al., 2020) stated agility is very closely related to the game of badminton, especially playing skills. In addition to the physical conditions described above, each athlete must ensure that his concentration and focus are well maintained. Therefore, it can be said that every activity in the game of badminton itself requires qualified concentration (Jannah, 2017).

Tactics and strategy is one of the most influential in badminton sports matches. According to Nossek and Prasetyo in (Firmansyah, 2016) defined tactics as setting a definite plan of struggle to achieve success in the match. Strategy is a tactic or mindset that is used just before the match starts to seek a sporting victory, Alviyanto in (Firmansyah, 2016). Players learn these attentional strategies from 'experience' but a coach can speed up the learning process by first knowing and communicating what attentional focuses are important in specific sport situations (Wilson et al., 2006).

To apply tactics and strategies in badminton also requires a good mentality. Drever in (Lismadiana, 2017) stated mind or mental is the whole

structure and psychological processes, both conscious and unconscious, from the inside of an organized psyche. Because mental is the whole element of one's psyche, one of which is concentration. Concentration greatly affects the skills of playing badminton because with high concentration the athlete can make the accuracy of the shuttlecock hit on target and thinking about the tactics of the game pattern quickly will make the game more effective.

Based on the explanation above, we can understand that badminton playing skills are a basic technique that has been systematically mastered, and conscious when performing these movement techniques so that they can make precise and accurate strokes. The physical condition factor is a factor that is demanded in every sport. Good physical quality will directly support the quality of movement that can be displayed (Sudarsono, 2015). To improve badminton playing skills, it is also necessary to have supporting factors such as physical, technical, tactical, and mental conditions, where these factors are to improve the quality of playing skills so that they have good movement and stroke techniques.

West Sumatra is one of the developing areas in the world of badminton achievement. It is proven by many badminton achievement development associations among students in West Sumatra. The achievements of this West Sumatran badminton athlete can be categorized to only have achievements in the regions, provinces and regions of Sumatra. It is proven that there are many successful badminton athletes in the province but do not have achievements at the national level. The athletes are Fergi, Naofal, Hanif, Nova, and others who won in KEJURPROV representing West Sumatra but did not passed at the 2022 National Selection test.

Based on the observations of researcher, athletes of West Sumatera are less agile and often lose of agility, not flexible body like the waist and arms in doing jumping smash so that it is not optimal. Besides, coordination of the eye of the hand, namely the accuracy of the movement between the blow and the touch

of the shuttlecock often fails so that it makes a poin for the opponent and there is no power to do a smash so it is easily returned by lawns. The coaches from both parties agreed that West Sumatera are also lacked of concentration in a game that makes hitting accuracy on playing skill badminton is not right on target. Another weakness is at the and of the first game, the athlete has already experience fatigue in badminton and athletes are not quick to catch up shuttlecock given by the opponent.

Based on the background of the problems outlined above, there are many problems that can be used as the focus of research related with skills in playing badminton of West Sumatera athletes. There are some problems that causes a decrease in athlete performance. There are a decrease in physical condition in possessioning, and lack of concentration wich results in percormance drop in badminton playing skills.

METHOD

The method used in this study was a quantitative method using a Path Analysis approach. This research was at the Badminton Court for Development, Padang State University and Hall PB. Fort De Kock, Bukittinggi City. This research was conducted from August to September 2022. The total population 90 people.

Table 1. Overall population of athletes

No	Club	Age category	Sex		Total
			Male	female	
1	UNP Badminton specialization and Advanced Students	Adult	35	9	44
2	PB. Fort De Kock	Early age until Taruna	36	10	46
		Total			90

The sampling technique used was purposive sampling. So the sample studied was 21 people from the total population.

Table 2. Overall sample of athletes

No	Club	Age category	Sex	Total
			Male	
1	UNP Badminton Specialization and Advanced Students	Adult	10	10
2	PB. Fort De Kock	Early age until Taruna	10	11
Total				21

To determine a person's agility in carrying out physical activities, the researcher used the Agility T-Test test (Widiastuti, 2015). To determine eye-hand coordination, an eye-hand coordination test was used by throwing a ball to catch a tennis ball on a wall that had been given a target (Ismaryati, 2008). In the implementation of the concentration test using the Grid Concentration Exercise test (Harris & Harris. B.L., 1984) and the athlete's badminton playing skills test using the Badminton Skills Diagnostic Model instrument (Donie, Yudi et al., 2020). In this study, the researcher described the current condition in a quantitative context which was reflected in the variables. The test was Normality test and homogeneity test for each data variable.

RESULT

The normality test on the variables was the Kolmogorov-Smirnov normality test with SPSS version 26 application. The results of the normality test with an unstandardized residual value were $0.200 > P\text{-value } 0.05$. It can be concluded that the data comes from a normally distributed population and the research hypothesis testing can be continued.

Table 3. Structural Model Path Coefficient 1

Direct effect	Path Coefficient (P_{ij})	T_{test}	Sig.	α	Conclusion
X_1 toward X_2 (P_{21})	-0,334	-1,543	0,05	0,05	Significant

Structural model 2 is the variable of agility (X_1), hand-eye coordination (X_2) and concentration (X_3) of badminton specialization students. Concentration (X_3) obtained Sig. $0.009 < 0.05$ which means significant with the calculation results. Obtained a value for agility (X_1) to concentration (X_3) the path coefficient

(P_{31}) was 0.119. From this analysis, it can be seen that the path coefficient (P_{31}) is significant. Coefficient of eye-hand coordination pathway (X_2) to concentration (X_3) (P_{32}) obtained Sig. $0.02 < 0.05$ which means significant. The results of the acquisition of path coefficient values for eye-hand coordination (X_2) to concentration (X_3) (P_{32}) was 0.286. So the error model 2 (ϵ) = $1 - R^2 = 0.894$.

Badminton is the fastest and most agile game sport with higher smash accuracy so that it requires good skills in playing the game. Therefore, to support fast movement, good speed and agility are needed (Diputra, 2015). Agility, where the balance is maintained properly, is even though the game is very fast so that the strokes are well coordinated and increase accuracy.

Table 4. Structural Model Path Coefficient 2

Direct effect	Path Coefficient (P_{ij})	T_{test}	Sig.	α	Conclusion
X_1 toward X_3 (P_{31})	-0,119	-0,507	0,009	0,05	Significant
X_2 toward X_3 (P_{32})	0,286	1,217	0,02		Significant

Structural model 3 is the variable agility (X_1), eye-hand coordination (X_2), concentration (X_3) and playing skills (Y) for badminton athletes of West Sumatra. Based on the results of the path coefficient analysis of the agility variable (X_1) on playing skills (Y) (Py_1), the Sig value of $0.0415 < 0.05$ which means it is significant. The results of the calculation of the agility variable path coefficient (X_1) to playing skills (Y) (Py_1) was -0.002. The eye-hand coordination path coefficient (X_2) on playing skills (Y) (Py_2) obtained a Sig value of $0.0095 < 0.05$, which means it is not significant. The results of the calculation of the path coefficient of the eye-hand coordination variable (X_2) to play skills (Y) (Py_2) was 0.229. The results of the calculation of the path coefficient of the concentration variable (X_3) on playing skills (Y) (Py_3) obtained the value of Sig $0.0485 < 0.05$, which means it is significant. The results of the calculation of the path coefficient of the concentration variable (X_3) to playing skills (Y) (Py_3) was 0.326. So the model error 3 (ϵ) = $1 - R^2 = 0.895$.

Concentration is the most important factor when playing badminton, such as agility which requires high focus so that it has a fast response to the object being seen. According to (Komarudin, 2015; Nusufi, 2016; Pamungkas Dwi, 2016) concentration is attention over a long period of time so that during sports activities what is needed is concentration. In addition, the accuracy of the right shot with high hand eye coordination is also considered important rule.

Table 5. Path Coefficient of Structural Model 3

Direct effect	Path Coeffecient (P_{ij})	T_{test}	Sig.	A	Conclusion
X_1 toward Y (P_{y1})	-0,002	-0,10	0,0415		Significant
X_2 toward Y (P_{y2})	0,229	1,377	0,0095	0,05	Significant
X_3 toward Y (P_{y3})	0,326	1,503	0,0485		Significant

Badminton skills has an influencing factor it is agility. Agility It is very useful in a fast game of badminton so that it is able to catch up in the direction the shuttlecock is falling without losing balance so that returning to its original position becomes very easy. (Yuliawan & Sugiyanto, 2014) emphasized, considering that badminton is a game that uses explosive movements and requires sudden fast movements, then agility plays a role in the success of these movements. In addition, eye-hand coordination and concentration also affect badminton games. It has a role in the accuracy between the eyes and hand movements that determine whether or not a shot is appropriate, and also concentration also affects badminton games where concentration or focusing on something will make it easy to move anywhere. Besides, concentration also determines the precision and accuracy in issuing strokes to be effective when playing badminton.

The test results using the SPSS application between variables will be visualized with the image below:

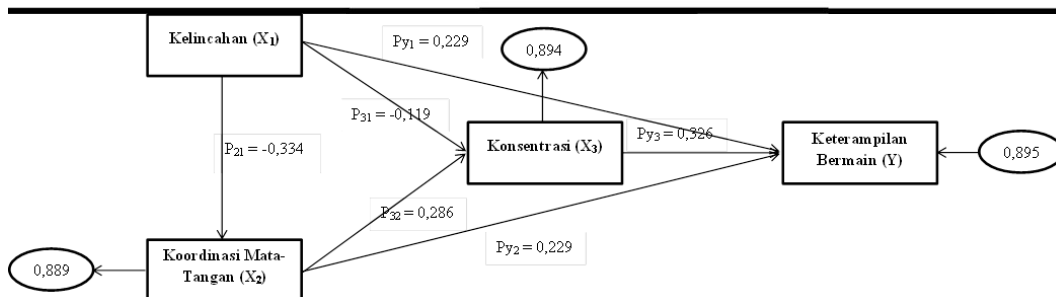


Figure 1. Diagram Analisis Path of Hypothesis Testing Results with SPS

CONCLUSION

Based on data analysis and research discussion, conclusions can be drawn, There was a direct influence of agility on the badminton playing skills of West Sumatra athletes by 1%. This means that every badminton athlete who has good agility can more easily master good badminton playing skills. There was a significant effect of eye-hand coordination on the badminton playing skills of West Sumatra athletes by 5%. There was a direct effect of concentration on the badminton playing skills of West Sumatra athletes by 0.2%. This means that every athlete who has good concentration will not be easily influenced when competing from outsiders, be it spectators or fellow athletes.

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