The Influence of Exercise Media and Hand Eye Coordination on Badminton Playing Skills

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Abstract. The problem in this study is that there is no use of media in doing badminton training so that the training has not achieved the expected results (mastery of playing skills in badminton). This study aims to determine the effect of media training and hand eye coordination on badminton playing skills. This type of research is quasi-experimental (Quasy experiment), the population of this study was 46 players, while the sample in this study was 40 people. Then after the hand-eye coordination test was carried out with the Miller Wall Volley Test, the next group division was done 20 levels of high coordination and 20 levels of low. The instrument used in this study was a test to play badminton skills. Data were analyzed using two-way analysis of variance (ANAVA 2x2). The results of data analysis showed that: (1) badminton playing skills trained through audio-visual media were better than groups trained through non-audio visual media, (2) There was an interaction between media training and eye hand coordination on the results of badminton playing skills., (3) In groups that have high hand eye coordination who are trained through audio-visual media the results are better than in groups that are trained through non-audio visuals, (4) In groups of players who have low hand eye coordination who are trained through audio-visual media the results lower than the group trained through non-audio visual media.

Keywords: Media · Training · Coordination · Badminton

1 Introduction

Badminton is one of the sports that is very popular and is in demand by all people of the city or village community, elite class or subordinate. Badminton also attracts the interest of various age groups, because this sport is suitable for all people, men, women, old, young, and even children. Badminton has evolved over time, and is still developing in accordance with the recovery period. This branch of badminton has become one of the most well-known sports in the world and is questioned internationally, nationally, regionally, and in smaller relationships such as between clubs.

Badminton game is done by hitting the shuttlecock in the air by using a racket to get over the net with the aim of dropping the shuttlecock into the opponent's game area [1]. In this game the basic technique of playing must be really mastered to be able to develop

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the shape of the game. The basic skills of badminton can be divided into several parts, including the first blow (service), the ability to punch (clear shot), and the strength of the punch (power) [2].

Around the middle of the 20th century the business of visual utilization was complemented by the use of audio equipment, so the name was born of audio-visual. Along with the development of Science and Technology (Science and Technology), especially in the field of education and training, the use of tools or media is now increasingly widespread and interactive, such as computers and the internet [3]. Likewise in practicing basic badminton skills, if this audiovisual media is applied in the training process it will certainly be very helpful in terms of mastering the techniques that exist in badminton.

Badminton games require a good level of eye hand coordination [4]. Because with the coordiation of a good hand a player will be easy to do blows with the expected direction and desire [5]. The arrival of the shuttle cock, especially when it comes from the opponent is not always as well as expected, but it is indeed more often makes these players desperately need the ability to coordinate vision and effective and efficient hand gestures. Thus hand eye coordination in badminton games is needed both to support an exercise, especially in playing games.

2 Research Methodology

This type of research is a quasi-experimental study, with the aim of this study to determine the effect of the given training media and hand eye coordination on badminton playing skills. The population in this study was PB Lubuklinggau Badminton Players in South Sumatra as many as 46 (40 male and 6 female) people. In this study sample withdrawal is done by purposive sampling technique, the intention is to determine the sample technique with certain considerations that only taken male players who are members of the PB, while 6 women are not included. Thus the total sample of 40 people.

The next step is a hand-eye coordination test to all sample group members with the Miller Wall Volley Test. After the test results are then sorted from the highest score to the lowest score. To determine the high and low categories of a score in the two treatment groups can be done by dividing group members by percentage techniques (post hoc blocking). The intended percentage technique is to assign 20 from the highest score group and 20 from the lowest score group for each group [6]. The results of the sample groupings referred to experiments can be seen in the following table (Table 1).

To determine hand eye coordination, a test was used using the Miller Wall Volley Test [5]. Badminton play skills measurement consists of long service, short service, lob, and semes [7]. The research data obtained were analyzed using the two-way Variant Analysis (ANAVA) technique and continued with the Tuckey Test if an interaction was found between the exercise media variable and the hand eye coordination variable. Because this research is an experiment with 2x2 factorial design, the data analysis uses the two-way Anava technique, with a level of confidence $\alpha = 0.05$ [8].

Table 1. Grouping of Research Samples

Eye-Hand Coordination	Media of Exercise		amount
	Audiovisual (A_1)	Non Audiovisual (A_2)	
High (B_1)	10	10	20
Low (B_2)	10	10	20
amount	20	20	40

Table 2. The Frequency Distribution

No.	**Interval Class**	**Frequency**	
		Absolute	**Relative**
1	32,62 - 39,55	2	10,00
2	39,56 - 46,49	3	15,00
3	46,50 - 53,43	3	15,00
4	53,44 - 60,37	7	35,00
5	60,38 - 67,25	5	25,00
amount		20	100

3 Results

1. Data on the results of Group Badminton Playing Skills Trained through Audio Visual Media (A1)

From the results of sample measurements in this group, consisting of 2 groups of samples (n = 20) the highest score was 67.25 the lowest score was 32.62. The average is 52.69 then the standard deviation (Standard Deviation 9.37). The frequency distribution can be illustrated in Table 2.

2. Data on the results of Group Badminton Playing Skills Trained through Non Audio

Visual Media (A2) From the results of sample measurements in this group, consisting of 2 sample groups (n = 20) the highest score was 56.99, the lowest score was 36.67. Average 47.31 then standard deviation 5.91. The frequency distribution can be seen in the following Table 3.

3. Data on the results of Group Badminton Playing Skills with High Hand Eye Coordination (B1)

Table 3. The Frequency Distribution

No.	Interval Class	Frekuensi	
		Absolut	Relative
1	36,67 - 40,73	4	20,00
2	40,74 - 44,80	3	15,00
3	44,81 - 48,87	4	20,00
4	48,88 - 52,94	5	25,00
5	52,95 - 56,99	4	20,00
amount		20	100

Table 4. The Frequency Distribution

No.	Interval Class	Frekuensi	
		Absolut	Relative
1	36,67 - 42,79	3	15,00
2	42,80 - 48,92	4	20,00
3	48,93 - 55,05	5	25,00
4	55,06 - 61,18	3	15,00
5	61,19 - 67,25	5	25,00
amount		20	100

From the results of sample measurements in this group, consisting of 2 sample groups (n = 20) the highest score was 67.25, the lowest score was 36.67. The average score was 52.43, then the standard deviation was 8.90. The frequency distribution of results can be seen in the following Table 4.

4. Data on the Result of Group Badminton Playing Skills having Low Hand Eye Coordination (B2)

From the results of sample measurements in this group, consisting of 2 groups of samples (n = 20) the highest score was 56.99 and the lowest score was 32.62. The average score is 47.57 then the standard deviation is 6.80. The frequency distribution of the results of badminton playing skills can be seen in the following Table 5:

5. Data on the Result of Group Badminton Playing Skills having High Hand Eye Coordination Trained through Audio Visual Media (A1B1).

The results of sample measurements in this group, consisting of 1 sample group (n = 10) the highest score of 67.25 and the lowest score of 54.77. The average score is

Table 5. The Frequency Distribution

No.	Interval Class	Frekuensi	
		Absolut	Relative
1	32,62 - 37,49	2	10,00
2	37,50 - 42,37	2	10,00
3	42,38 - 47,25	4	20,00
4	47,26 - 52,13	5	25,00
5	52,14 - 56,99	7	35,00
amount		20	100

Table 6. The Frequency Distribution

No.	Interval Class	Frekuensi	
		Absolut	Relative
1	54,77 - 57,27	4	40,00
2	57,28 - 59,78	1	10,00
3	59,79 - 62,29	2	20,00
4	62,30 - 64,80	2	20,00
5	64,81 - 67,25	1	10,00
amount		10	50

59.62, then the standard deviation is 4.08. The frequency distribution of results can be seen in Table 6.

6. Data on the results of Group Badminton Playing Skills that have Low Hand Eye Coordination Trained through Audio Visual Media (A1B2)

From the measurement results of the samples in this group, consisting of 1 sample group ($n = 10$) the highest score was 54.40 and the lowest score was 32.62. While the average score is 45.75 then the standard deviation is 7.85. The frequency distribution of results can be seen in Table 7.

7. Data on the Result of Group Badminton Playing Skills having High Motor Ability Trained through Non Audio Visual (A2B1)

From the results of sample measurements in this group, consisting of 1 sample group ($n = 10$) the highest score was 53.75 and the lowest score was 36.67. The average score is 45.24 then the standard deviation is 5.96. The frequency distribution of the results of playing badminton skills can be seen in the following Table 8.

Table 7. The Frequency Distribution

No.	Interval Class	Frekuensi	
		Absolut	Relative
1	32,62 - 36,98	2	20,00
2	36,99 - 41,35	1	10,00
3	41,36 - 45,72	2	20,00
4	45,73 - 50,09	1	10,00
5	50,10 - 54,40	4	40,00
amount		10	100

Table 8. The Frequency Distribution

No.	Interval Class	Frekuensi	
		Absolut	Relative
1	36,67 - 40,09	3	30,00
2	40,10 - 43,52	0	0,00
3	43,53 - 46,95	3	30,00
4	46,96 - 50,38	2	20,00
5	50,39 - 53,75	2	20,00
amount		10	100

8. Skill Result Data Playing Badminton Groups that Have Low Hand Eye Coordination Trained Through Non Audio Visual (A2B2)

From the results of sample measurements in this group, consisting of 1 sample group ($n = 10$) the highest score was 56.99 and the lowest score was 38.05. The average score is 49.38 then the standard deviation is 5.35. The frequency distribution of results can be seen in Table 9.

4 Discussion

Through descriptive analysis obtained the average score of badminton playing skills trained through audio-visual media is different from the scores generated by groups trained through non-audio-visual media, respectively 52.69 and 47.31. This fact is supported by the results of inferential analysis which states that there is a significant difference between the group badminton playing skills trained through audio visual media and the group badminton playing skills trained through non audio visual media. Thus, overall audio visual media is far more effective than non audio visual media in improving badminton playing skills, especially those that are the subjects in this study.

Table 9. The Frequency Distribution

No.	Interval Class	Frekuensi	
		Absolut	Relative
1	38,05 - 41,84	1	10,00
2	41,85 - 45,64	1	10,00
3	45,65 - 49,44	4	40,00
4	49,45 - 53,24	1	10,00
5	53,25 - 56,99	3	30,00
amount		10	100

The magnitude of the standard deviation produced by audio visual media is 9.37 and non-audio visual media is 5.91. From the magnitude of the resulting standard deviations it appears that audio visual media produces a greater standard deviation compared to non-audio visual media. This can be interpreted, that the score of badminton playing skills produced by audio-visual media has a smaller variation of values and is more focused on values that are relatively greater than the variation of values produced by non-audio-visual media. For this reason it is said that the scores produced by audio visual media are more stable compared to the score of badminton playing skills produced by non audio visual media. This momentum depends on the ability of each individual [9-11].

5 Conclusion

1. Overall the results of playing badminton skills that are trained through audio-visual media the results are better than the groups trained through non-audio-visual media. This is indicated by the mean score of A1 group exercise media (using audio visual media) which is higher than the average score of A2 group exercise media (without audio visual). There is an interaction between the exercise media and hand eye coordination on the results of badminton playing skills.
2. In groups that have high hand eye coordination who are trained to use audio-visual media the results are better than in groups who are trained without audio-visual.
3. In the group of players who have low hand eye coordination who are trained to use audio-visual media the results are lower than in the group that is trained without audio-visual.

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