



The Influence of Eye-Hand Coordination and Wrist Fitness on The Forehand Smash Ability of 13-17-Years Table Tennis Athletes

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Abstract

This research aims to determine the influence of eye-hand coordination and wrist flexibility on table tennis forehand smash ability. This research uses a path analysis design with statistical processing using the SPSS application version 23.00 and a significance level of 0.05. The population is all Pinrang Regency table tennis athletes aged 13-17 years with total sampling. The research results from the structural regression analysis test show that the influence of wrist flexibility on the ability to hit table tennis forehand smashes is 0.001 and the research results from the structural regression analysis test show that the effect of hand-eye coordination on the ability to hit table tennis forehand smashes is 0.040. Judging from the α value of 0.05, all variables are accepted because they are below α 0.05. The research results of the influence of hand eye coordination on table tennis forehand smash ability were = 0.682 or 68.2%. Wrist flexibility on table tennis forehand smash ability is = 0.556 or 55.6%. So it can be concluded that there is an influence of hand eye coordination and wrist flexibility on the ability of table tennis forehand smashes in athletes aged 13-17 years.

Keywords: Hand Eye Coordination, Wrist Flexibility and Forehand Smash.

1 Introduction

In the current era of nation building, development in the field of sports is part of efforts to improve human quality, which aims to increase the physical and spiritual freshness of the entire community, the formation of character, discipline and sportsmanship as well as the development of sports achievements that can awaken a sense of national nationality. With sustainable policies, especially in the world of sports in Indonesia, it is not impossible that training in Indonesia will create human resources with broad knowledge and quality. So that with quality training, all matters related to sports problems will be resolved quickly. One of the sports that is fostered and developed in Indonesia, especially in South Sulawesi, is table tennis. According to (Miloni et al., 2018) "Table tennis is a racquet sport that is practiced by millions of athletes and has been part of the Olympic program since 1988." Olympics since 1988 (Wong et al., 2020) "Table tennis is a competitive sport that requires technical

preparation, tactics, and mental and motor training" Table tennis is a competitive sport that requires technical preparation, tactics, as well as mental and motor training. Table tennis is known as a sport with the highest level of speed compared to similar sports that use balls, it also has very fast counter smashes and requires high precision (Tomoliyus & Sunardianta, 2020). Table tennis practiced in free time can offer a lot of fun, emotion and relaxation, which of course is beneficial for health. (Biernat et al., 2018) "The belief that training is fun can increase the likelihood of incorporating training sessions as a priority into your daily routine and exercising more often." daily routine and practice more often. while (Zagatto et al., 2018) "Table tennis is a racquet sport characterized by a profile of intermittent movements, including short rallies interspersed with short breaks" Table tennis is a racquet sport characterized by a profile of intermittent movements, including short rallies interspersed with short breaks. Forehand drive and backhand drive are two attack techniques in table tennis. Table tennis players must improve technique, not only forehand but also backhand drive technique in the game (Ren et al., 2019). To hit a forehand perfectly, a person must have good arm muscle strength (W.-L. Wu et al., 2021). Some of the research results above really support this research, so it can be concluded that forehand smashes influence the results of table tennis matches, because smashes have a very important role in getting points in a match.

Problem FormulationThe formulation of the problem in this research is very important to facilitate research and create hypotheses that are within the scope of the research being carried out, so based on the background of the problem that has been described, the problem formulation can be put forward as follows, and Is there an influence of hand eye coordination on the forehand smash ability of table tennis forehand smashes in athletes aged 13-17 yearsadanIs there an influence of wrist flexibility on the forehand smash ability of table tennis forehand smashes in athletes aged 13-17 years?

2 Method

This research is quantitative research. Basically, the method is a tool used to search for scientific evidence which is carried out systematically to reveal and provide answers to the problems raised in a research so that the direction and aim of revealing facts or truth is in accordance with what is stated in the research so that it is correct. -correctly meets the expected goals.

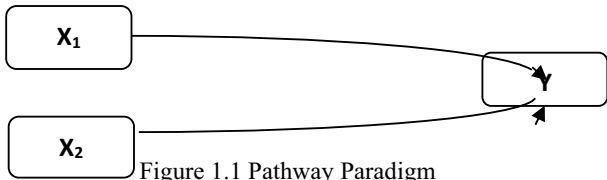


Figure 1.1 Pathway Paradigm
Sumber: (Sugiono, 2014)

3 Results And Discussion

Wrist flexibility data was measured using wrist flexibility measurements, arm length using an arm length measurement test, eye-hand coordination using a wall ball throwing test and a forehand hitting ability test in table tennis. All of the variables mentioned above refer to standardized measurement tests. The results of descriptive statistical analysis for each research variable can be seen in the following table.

Table 4.1. Results of descriptive analysis of wrist flexibility and eye-hand coordination on forehand smash ability in table tennis among at in athletes aged 13-17 years.

	Wrist Flexibility	Hand Eye Coordination	Forehand smash ability
Mean	153,45	12,53	26,10
Std. Deviation	9,832	2,353	5,710
Range	44	10	20
Minimum	131	7	18
Maximum	175	17	38
Sum	6138	501	1044

From the table above, which is a data description of wrist flexibility, arm length and eye-hand coordination on forehand hitting ability in table tennis for students at in athletes aged 13-17 years, it can be stated as follows:

- 1) The wrist flexibility of In athletes aged 13-17 years obtained a total score of 6138, average 153.45, standard deviation 9.832, minimum data 131, maximum data 175 and range 44.
- 2) The eye-hand coordination of In athletes aged 13-17 years obtained a total score of 501, average 12.53, standard deviation 2.353, minimum data 7, maximum data 17 and range 10.
- 3) The forehand ability of In athletes aged 13-17 years obtained a total score of 1044, an average of 26.10, a standard deviation of 5.710, a minimum data of 18, a maximum data of 38 and a range of 20.

Table 4.5 Substructure Model Test

Hipotesis	R-Square	Standardized Coefficients Beta	Probabilitas	Kesimpulan
Hand-eye coordination (X1) with forehand smash ability (Y)	0,832	0,682	0,040	Signifikan
Wrist flexibility (X2) with forehand smash (Y)	0,832	0,556	0,001	Signifikan

Based on the table above, the R-Square value is 0.832 and the significance value for variables X1 and X2 is 0.040, 0.001 respectively. Because the significance values of X1 and X2 are <0.05, they are considered significant. So the results obtained between hand eye coordination on forehand smash ability were = 0.682 or 68.2% and wrist flexibility on forehand smash ability was = 0.556 or 55.6%.

Then the value (ϵ) of the path coefficient of other variables on forehand hitting ability so that the path equation is as follows:

$$Y = \rho yx_1 + \rho yx_2$$

$$Y = 0,556 X_1 + 0,682 X_2$$

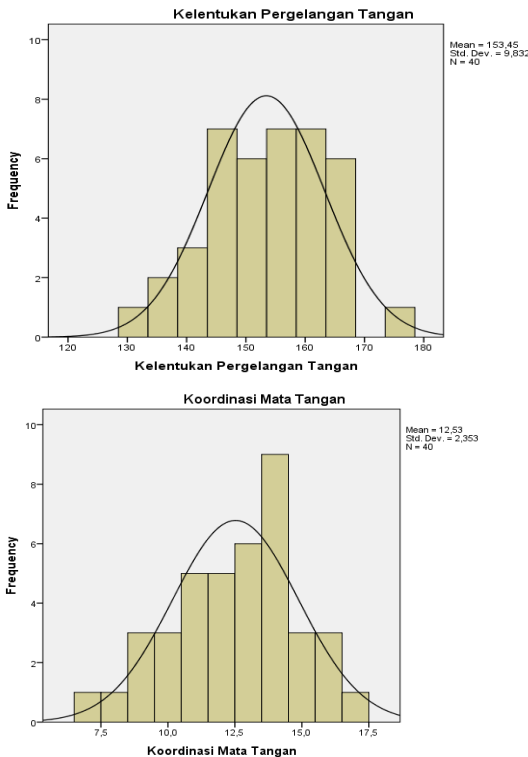


Figure 1.2 bar chart

4 DISCUSSION

1. Eye-hand coordination has a direct effect on forehand hitting ability in table tennis. The results of hypothesis testing show that hand-eye coordination has a direct effect on forehand hitting ability by 68.2%. Hand-eye coordination is really needed in table tennis, both in terms of training, the teaching and learning process, and during matches. Because good hand-eye coordination will really help when it comes to forehand shots. So every table tennis athlete must have good eye-hand coordination because this means they can make forehand strokes well and quickly.
2. Wrist flexibility has a direct effect on the ability to hit a forehand smash in table tennis. The results of testing the third hypothesis show that wrist flexibility has a direct effect on forehand hitting ability by 55.6%. The ability to hit a forehand is a movement that is done by hitting the ball in the same direction as the bet holder's strongest hand, then quickly hitting the

ball firmly into the opponent's court area, with the wrist slightly bent in, and the ball is expected to dive sharply. If you fall in the opponent's field, wrist flexibility is definitely needed. With good wrist flexibility, it will be very helpful in making good forehand shots.

Table tennis players who have poor wrist flexibility will certainly find it difficult to hit a forehand shot. In table tennis, wrist flexibility is one of the most influential factors in getting maximum forehand results.

5 Conclusion

Based on data analysis and discussion, the results of this research can be concluded as follows:

1. There is an influence of eye-hand coordination on the ability of table tennis forehand smashes in athletes aged 13-17 years.
2. There is an influence of wrist flexibility on the ability of table tennis forehand smashes in athletes aged 13-17 years.

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