



The Relationship of Shoulder Flexibility to Swimming Speed in Teenage Beginner Swimmers

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ABSTRACT

One of the improved physical components in juvenile novice swimmers is the speed of swimming. Swimming speed can be affected by several factors one of the factors is the flexibility of the shoulders. This study aims to determine the relationship between shoulder flexibility and swimming speed in adolescent novice swimmers in Club Renang Takahide, Badung Regency, Bali. The research design used was cross sectional and a sample of 10 people was obtained. In this study, there was a free variable, namely shoulder flexibility and the bound variable, namely swimming speed. Data collection for shoulder flexibility was measured using a shoulder elevation test, while swimming speed was measured with a digital stopwatch. Based on the calculation results using the Pearson Product Moment correlation test with a value of 0.001 and a very strong correlation of -0.875. This suggests the presence of a very strong correlation in a significant negative direction between shoulder flexibility and swimming speed in teenage novice swimmers. The swimming speed with the shoulder flexibility category is less good is slower compared to the very good shoulder flexibility category.

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INTRODUCTION

Adolescents are individuals who are undergoing developmental changes from childhood to adulthood and are experiencing changes in physical, cognitive and psychosocial functions (Nurhayati, 2016). Adolescence is often described



as a tumultuous period because adolescents are more at risk of emotional regulation disorders and in adolescent's physical activity decreases, especially during the COVID-19 pandemic which will cause a decrease in physical activity and result in a decrease in the level of muscle flexibility with age (Alexandr u et al., 2020; Cucinotta D., 2020). Through exercise, adolescents will optimize physical development and develop psychosocial in a positive direction (Godoy, 2020). One of the sports activities that aims to develop mental, psychic, social and physicalsik-physiological individual development is in swimming (Kalkan & Daglioglu, 2018). One of the improved physical components in juvenile novice swimmers is the speed of swimming.

Swimming speed can be affected by several factors one of the factors is the flexibility of the shoulders. The movement of the shoulder joint is the main mover when swimming, which is 90%. Low shoulder flexibility will add obstacles to swim movement, so it is very important to maintain as well as increase its flexibility (Walker, 2012; Nurkanti, 2012). This study is in line with (Oosterhoff, et al., 2018) which states that there is a relationship between flexibility in the shoulder joint which plays a role in shoulder rotation and affects swimming speed. This study was conducted to analyze the relationship between shoulder flexibility and swimming speed of novice swimmers, with sample specifications, namely male, aged 12-15 years, and joined the Takahide Swimming Club, Badung Regency, Bali.

MATERIALS AND METHODS

This study uses Design Cross Sectional which means that observations on samples are carried out once only and measurements are made on subject variables at the time of the study (Sandu and Ali, 2015). There was a free variable (X) in this study is shoulder flexibility and the bound variable (Y) in this study is swimming speed. The population in this study was members of the Takahide Swimming Club which numbered 28 people. The sampling technique in this study used the non-probability sampling technique, namely purposive sampling with a total sample of 10 people.

The selection of samples in this study used inclusion criteria, namely male adolescents aged 12-15 years by showing a student card, joining a swimming club within a maximum of 6 months and having never participated in a competition. Then for the exclusion criteria the sample is not in condition / has an injury history of injury. The data analysis technique used in this quantitative research is descriptive statistical analysis. Then then a normality test is carried out to find out whether the data that has been obtained is normally distributed or not. The normality test in this study used the Shapiro-Wilk test in the SPSS program. After that, the hypothesis test is carried out as an effort to find out whether or not there is a correlation between the variables tested. This test is to compare the statistical results of the sample with the values. The data can be said to correlate if it meets the requirements of a significance value of less than 0.05 (Sujarweni, 2015).

RESULTS AND DISCUSSION

The research results displayed are in the form of tables, frequency distribution data, descriptive analysis, and hypothesis tests using correlation tests. The researcher also elaborated on the results of the study and discussion. The results in this study are displayed in the following form:

Table 1. Descriptive Statistical Analysis of Shoulder Flexibility

Variable	N	Min	Max	Median	Mean	Standard Deviation
Shoulder Flexibility	10	23	36	32,00	30,10	4,864

Based on the descriptive analysis table above, the results of the shoulder flexibility value in the sample obtained a minimum value of 23 and a maximum of 36, an average of 32.00, while the mean value was 30.10 and the standard deviation was 4.864.

Table 2. Descriptive Statistical Analysis of Swimming Speed

Variable	N	Min	Max	Median	Mean	Standard Deviation
Swimming Speed	10	16,00	19,21	18,075	17,696	1,046

Based on the descriptive analysis table above, the results of the swimming speed value in the sample obtained a minimum value of 16.00 and a maximum of 19.21. For the median value of 18,075 while the mean is 17,696 and the standard deviation is 1,046.

Table 3. Normality as *Shapiro Wilk Test* Results

<i>Shapiro Wilk Test</i>				
	<i>Statistic</i>	N	<i>Itself</i>	Interpretation
Shoulder flexibility	.887	10	.157	Normal
Swimming Speed	.915	10	.320	Normal

Based on the normality test table above, a significant value for shoulder flexibility was 0.157 and a significant value for swimming speed was 0.320. It can be concluded that the data for shoulder flexibility and swimming speed are normally distributed because significant values on shoulder flexibility and swimming speed show values of >0.05 .

Table 4. Pearson Product Moment Correlation Test

<i>Uji Pearson Product Moment</i>			
		Shoulder Flexibility	Swimming Speed
Shoulder Flexibility	Pearson Correlation	1	-.875**
	Sig. (2-tailed)		.001
	N	10	10
Swimming Speed	Pearson Correlation	-.875**	1
	Sig. (2-tailed)	.001	
	N	10	10

Based on Table 4, it can be seen that the value of the significance of shoulder flexibility and the value of swimming speed is 0.001 which means that there is a relationship between shoulder flexibility and swimming speed. Pearson's correlation value obtained for the correlation level is very strong, this corresponds to the correlation value of -0.875 in Table 4, while answering the hypothesis made by the researcher that there is

a relationship of shoulder flexibility to swimming speed in male novice swimmers aged 12 – 15 years.

Based on the results of the research conducted, it can be described about the relationship between shoulder flexibility and swimming speed in male novice swimmers aged 12-15 years at the Takahide Swimming Club, Badung Regency, Bali. The physical components that support swimming speed consist of flexibility, agility, *endurance*, strength, muscular explosive power (Al Rasyid, 2017). The shoulder joint is the main driver in this sport, which is 90% (Walker, 2012) and it takes good shoulder flexibility to optimize the performance of swimmers (Gusfa, 2018). With this study, it can be concluded that in the relationship of shoulder flexibility to swimming speed in male novice swimmers aged 12-15 years there.

CONCLUSION

Based on the results of the study and discussion, it can be concluded that there is a relationship between shoulder flexibility and the swimming speed of male novice swimmers aged 12-15 years. This is evidenced by the results of the data correlation test using the Pearson product moment correlation test showing a value of 0.001 and pearson correlation which is -0.875 which means that there is a very strong correlation in the negative direction between shoulder flexibility and swimming speed.

CONFLICT OF INTEREST

All authors declare no conflict of interest in this research

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