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Swimming Knowledge and Freestyle Swimming Skills: A Correlational Study in Grade VIII at SMP Negeri 10 Jambi City

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Abstract: This research was motivated by observations during the School Field Practice or *Praktik Lapangan Persekolahan* (PLP) at SMP Negeri 10 Jambi City, which indicated that students had not yet fully understood or mastered the freestyle swimming technique. This study aimed to determine the relationship between swimming knowledge and freestyle swimming skills among eighth-grade students. this research employed A quantitative method with a correlational approach was employed. Data were collected through a questionnaire to measure knowledge and direct observation to assess skills. The research sample consisted of 50 students from classes 8D and 8E, selected using simple random sampling. The results showed that the majority of students' knowledge of freestyle swimming was in the good (54%) and very good (32%) categories. In contrast, their swimming skills were more varied: 34% were in the very good category, 28% good, 22% poor, and 16% very poor. The Pearson correlation test yielded a value of r = 0.184, which is categorized as very low. This indicates that students with good swimming knowledge do not necessarily possess adequate practical skills. In conclusion, mastering freestyle swimming requires repetitive, directed, and balanced motor practice alongside theoretical understanding. Therefore, swimming instruction should emphasize the integration of cognitive and psychomotor aspects.

Keywords: Swimming Knowledge, Freestyle Swimming Skills, Physical Education.

INTRODUCTION

Education is a crucial element for ensuring the sustainability of human life. Through education, individuals can develop intelligence, positive attitudes, and the capabilities necessary to navigate life (AK et al., 2024). Education plays a role in creating human resources that are not only sufficient in quantity but also high in quality, enabling them to become innovators, motivators, and agents of change (Rokhani & Purnami, 2021). Education consists of a series of activities and efforts to enhance an individual's personality by nurturing their inherent potentials—both spiritual (thought, will, feeling, creativity, and conscience) and physical (the five senses and various skills) (Rahman et al., 2022).

One form of education aimed at developing physical potential is Physical, Sport, and Health Education (PJOK). This is a subject designed to develop students' abilities through physical activity. PJOK encourages students to enhance and refine their skills, including gross and fine motor skills, cognitive abilities, reasoning skills, and the capacity to understand affective, mental, and spiritual values. In addition to physical activity, PJOK also imparts knowledge about how to maintain a healthy lifestyle. This aims to ensure balanced child development, encompassing both motor development and the development of students' thinking patterns (Imawati & Maulana, 2021).

Physical, Sport, and Health Education (PJOK) is a form of learning that predominantly utilizes physical activities (running, walking, jumping, throwing, etc.) conducted outside the classroom (Mustafa, 2022). One of the topics within PJOK is the sport of swimming. According to Nohantiya in Rizky et al. (2022), swimming is a water-based sport that includes four main strokes: the front crawl (freestyle), breaststroke, backstroke, and dolphin stroke (butterfly), performed as a means to improve physical and spiritual well-being. Among these various swimming strokes, the freestyle (crawl) is the one most commonly performed by beginners, making it suitable for initial

instruction for those learning to swim (Rusmayani & Dewi, 2023).

Previous research indicates that many junior high school students still face difficulties in learning the freestyle stroke. Students often can perform the freestyle (crawl) but without knowing the correct steps and techniques (Hidayat & Nenggar, 2024). Furthermore, many students struggle with breathing coordination, as the technique requires turning the head to the right or left side during the stroke (Sukmawati & Hartoto, 2015). A similar situation was observed at SMPN 10 Kota Jambi. Based on observations conducted by the researcher during the School Field Practice (PLP) from September to October at SMP N 10 Kota Jambi, it was found that eighth-grade students had not fully comprehended the freestyle swimming technique. While some students understood the basic concept of swimming, they were unable to execute the movements correctly, partly due to time constraints during lessons.

Several factors may contribute to this issue, including a lack of clear understanding of swimming theory or a lack of student motivation to learn the theoretical aspects of the sport. This may explain why students have not yet fully mastered the practical skills required for the freestyle. This gap presents an opportunity to investigate the relationship between theoretical knowledge of swimming and practical freestyle swimming skills. Based on this background, the researcher aims to conduct a study on the relationship between swimming knowledge and freestyle swimming skills among eighth-grade students at SMP N 10 Kota Jambi. This rationale drives the current research to determine whether a significant relationship exists between theoretical knowledge and practical skill in swimming.

METHOD

This study employed a quantitative approach with a correlational method. Correlational research is a non-experimental analysis method used to examine the relationship between two or more variables using statistical analysis techniques. This approach does not aim to investigate the influence of external variables on the variables under study (Ramadhani & Albina, 2025). The research was conducted at SMP Negeri 10 Kota Jambi from September to October.

The population of this study was the eighth-grade students of SMP N 10 Kota Jambi, consisting of 7 classes (A, B, C, D, E, F, G). The sampling technique used was simple random sampling, where the researcher determined the sample by drawing lots, akin to a lottery, using a random number table (AK et al., 2022). Based on the draw results, the selected samples for this study were students from classes 8D and 8E at SMP Negeri 10 Kota Jambi.

Data collection techniques in this study utilized questionnaires and observation. The questionnaire was used to measure students' knowledge of the freestyle (crawl) swimming technique. It consisted of several questions scored on a scale where the highest score for a correct answer was 4, an answer approaching correctness received 3, an incorrect answer received 2, and the most incorrect answer received 1. Direct observation was conducted to assess how respondents performed the freestyle swimming movements in the pool.

The data analysis techniques used in this study were Pearson Correlation (r) and Spearman Rank Correlation, to determine the presence or absence of a relationship between swimming knowledge and swimming skills. Prior to data analysis, to ensure the validity and reliability of the findings, tests for validity, reliability, and homogeneity were conducted.

RESULTS AND DISCUSSION

Results

Data for this study were collected through questionnaires distributed to 8th-grade students at SMP N 10 Kota Jambi. From this distribution, data were obtained from 50 respondents to examine the relationship between swimming knowledge and the freestyle swimming skills of the 8th-grade students. The results of the freestyle swimming knowledge test, obtained from questionnaires completed by 50 students from classes 8D and 8E, are as follows:

Table 1. Results of the Freestyle Swimming Technique Knowledge Test

Interval	Category	F(n)	P (%)
20-34	Very poor	0	0
35-49	Poor	7	14%
50-64	Good	27	54%
65-80	Very good	16	32%

The results of the freestyle swimming knowledge test for the 8th-grade students of SMP

N 10 Kota Jambi, when displayed in a bar chart, are as follows:

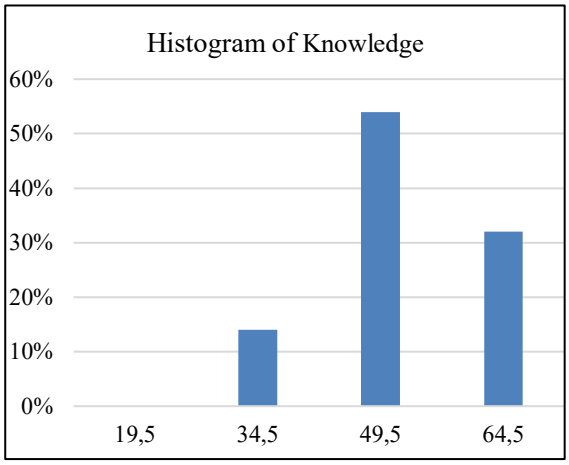

Figure 1. Graph of Freestyle Swimming Technique Knowledge Test Results

Based on the results of the freestyle swimming knowledge test for the 8th-grade students of SMP Negeri 10 Kota Jambi, obtained through questionnaires from 50 students in classes 8D and 8E, it was found that no students were in the "very poor" category. Seven students, or 14%, were in the "poor" category, while the majority of students, 27 individuals or 54%, were classified as "good." Furthermore, 16 students, or 32%, were in the "very good" category. These results indicate that, overall, the students' knowledge of freestyle swimming technique is generally good, although a small number of students still require improvement in their understanding. Meanwhile, the results of the freestyle swimming skills test for the 8D and 8E students of SMP Negeri 10 Kota Jambi, obtained from observational data, are as follows:

Table 2. Results of the Freestyle Swimming Technique Skills Test

Interval	Category	F(n)	P (%)
0-2	Very poor	8	16%
3-4	Poor	11	22%
5-6	Good	14	28%
7-8	Very good	17	34%

The results of the freestyle swimming skills test for the 8th-grade students of SMP N 10 Kota Jambi, when displayed in a bar chart, are as follows:

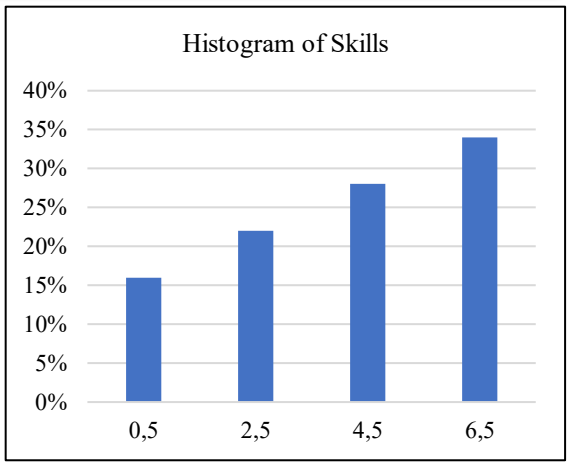

Figure 2. Graph of Freestyle Swimming Technique Test Results

Based on the results of the freestyle swimming skills test for students in classes 8D and 8E at SMP Negeri 10 Kota Jambi, obtained through observation, it is known that eight students, or 16%, were in the "very poor" category, while eleven students, or 22%, were in the "poor" category. Fourteen students, or 28%, were classified as "good," and another 17 students, or 34%, fell into the "very good" category. This data indicates that a majority of the students possess fairly good freestyle swimming skills, although there are still students in the "very poor" and "poor" categories.

Furthermore, prior to conducting the hypothesis test, prerequisite tests for validity, reliability, and homogeneity were performed. The results are as follows: A validity test was used to determine the suitability of a research instrument. A valid instrument indicates that the tool used can measure what it is intended to measure (Hikmawati, 2017). The validity test in this study employed the Pearson Correlation method, with the following results:

Tabel 3. Validity Test Results

Variable	**r count**	**r table**	**Validity**
X1	0,558364	0,2787	Valid
X2	0,329263	0,2787	Valid
X3	0,5787	0,2787	Valid
X4	0,442375	0,2787	Valid
X5	0,447313	0,2787	Valid
X6	0,588086	0,2787	Valid
X7	0,377571	0,2787	Valid
X8	0,514736	0,2787	Valid
X9	0,284961	0,2787	Valid
X10	0,298043	0,2787	Valid
X11	0,32899	0,2787	Valid
X12	0,516677	0,2787	Valid
X13	0,514577	0,2787	Valid

Variable	r count	r table	Validity
X14	0,47455	0,2787	Valid
X15	0,293445	0,2787	Valid
X16	0,420431	0,2787	Valid
X17	0,692423	0,2787	Valid
X18	0,357287	0,2787	Valid
X19	0,284435	0,2787	Valid
X20	0,3376	0,2787	Valid

Based on the validity test results in Table 3 above, it can be seen that all indicators have an *r-count* > *r-table.* Therefore, it can be concluded that all indicators in this study are valid. Subsequently, a reliability test was conducted to measure the extent to which the measurement, when applied to the same subjects, would yield consistent results. The results of the reliability test in this study are as follows:

Table 4. Reliability Test Results for Freestyle Knowledge

Reliability Statistics	
Cronbach's Alpha	N of Items
.761	20

Table 5. Reliability Test Results for Freestyle Skills

Reliability Statistics	
Cronbach's Alpha	N of Items
.735	8

Based on Table 4, it can be observed that all indicators have a Cronbach's Alpha value > 0.6. Therefore, all indicators in this study are declared reliable. Subsequently, a homogeneity test was conducted to determine whether the population variance of the data is the same or different between two or more data groups. The results of the homogeneity test in this study are as follows:

Table 6. Homogenity Test Results

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Hasil	Based on Mean	.624	1	48	.434
	Based on Median	.501	1	48	.482
	Based on Median and with adjusted df	.501	1	47.203	.482
	Based on trimmed mean	.662	1	48	.420

Based on the results of the Homogeneity test in Table 7 above, it is found that the significance value obtained is 0.434 > 0.05. Therefore, it can be concluded that the results are homogeneous.

Subsequently, after fulfilling the prerequisites of the validity test, reliability test, and homogeneity test, the obtained data were subjected to a hypothesis test using the Pearson Product Moment Correlation test (r). This test aims to determine the strength of the relationship between the variables, expressed by the correlation coefficient (r). The relationship between variable X and variable Y can be positive or negative. The guidelines for the degree of relationship are explained in the following table according to Sugiyono (2019):

Table 7. Correlation Test Criteria

Interval	Indicator
r = 0,00-0,199	Very high
r = 0,20-0,399	High
r = 0,40-0,599	Moderate
r = 0,60-0,799	Low
r = 0,80-1,000	Very low

$$r = \frac{n(\sum XY) - (\sum X)(\sum Y)}{\sqrt{[n\sum X^2 - (\sum X)^2][n\sum Y^2 - (\sum Y)^2]}}$$

$$r = \frac{50(\sum 15.739) - (\sum 2992)(\sum 260)}{\sqrt{[50\sum 182.874 - (\sum 2992)^2][50\sum 1.604 - (\sum 260)^2]}}$$

$$r = \frac{786.950 - 777.920}{\sqrt{[9.143.700 - 8.952.064][80.200 - 67.600]}}$$

$$r = \frac{9.030}{[191.636][12.600]}$$

$$r = \frac{9.030}{49.139}$$

r = 0,184

According to the table above, the significance value for variable X and variable Y is 0.621, meaning 0.621 > 0.05. Therefore, variable X and variable Y have a relationship or are correlated. From this table, we can also see that the Pearson Correlation between variable X and variable Y is 0.184, indicating that the degree of relationship between these two variables is very low, and the nature of the relationship is positive.

Discussion

This study originated from the School Field Practice (PLP) conducted at SMP N 10 Kota Jambi from September to October. The researcher observed that the eighth-grade students had not fully grasped the instruction on the freestyle swimming technique. While some students understood the sport of swimming theoretically, they were unable to execute the skills correctly during practical sessions, largely due to time constraints. Based on this observation, the study aimed to investigate the relationship between swimming knowledge and freestyle swimming skills among eighth-grade students at SMP N 10 Kota Jambi, utilizing two assessment instruments: a swimming knowledge test and a freestyle swimming skills test.

Swimming is an aquatic sport; therefore, an individual must meet the necessary requirements for learning and training, which first entails possessing knowledge of swimming techniques and the underlying mechanical principles. Understanding swimming techniques must be grounded in specific mechanical principles that are directly related to the swimming movements. A deficiency, absence, or neglect of this knowledge regarding mechanical principles will result in inefficient strokes, particularly in basic swimming for beginners (Rezki et al., 2019).

The test results indicated that the swimming knowledge of the eighth-grade students at SMP N 10 Kota Jambi was distributed as follows: 16 students (32%) were in the "very good" category, 27 students (54%) in the "good" category, 7 students (14%) in the "poor" category, and 0 students (0%) in the "very poor" category. Regarding the freestyle swimming skills test, the results showed: 17 students (34%) in the "very good" category, 14 students (28%) in the "good" category, 11 students (22%) in the "poor" category, and 8 students (16%) in the "very poor" category.

Observations revealed that students' knowledge levels were quite varied. Some students achieved good scores on the knowledge test, while others still performed poorly. In the practical skills test, although some students demonstrated good freestyle technique, a majority struggled to perform the movements correctly. This difficulty likely stems from an inability to fully coordinate the complex motor sequences involved in the freestyle stroke, leading to suboptimal performance.

To analyze the correlation results, data from the swimming knowledge test and the freestyle swimming skills test were examined. The criteria for the correlation test state that if the calculated *rxy* > *r table*, then a significant relationship exists. The results from the validity and reliability tests showed a calculated *r-value* of 0.184 and a table r-value of 0.2787 at a 0.05 significance level, which falls into the "very low" correlation category. These results were obtained from a sample of eighth-grade students at SMP N 10 Kota Jambi. The finding that students with very good theoretical knowledge of swimming are not necessarily proficient in performing the freestyle stroke indicates that practical skill is achieved through consistent and proper practice to yield desired results.

This finding aligns with the study by Aquino et al. (2016), which reported a relationship between theoretical knowledge of movement and practical sports skills, but with a tendency for low correlation because motor skills require repetitive practice and habituation. This is consistent with the present study, where although most students possessed good knowledge of freestyle technique, not all could apply it with adequate skill. Similarly, research by Kartikasari et al. (2023) stated that factors such as practical experience, training frequency, and students' psychological conditions also influence swimming skills, even when their technical knowledge is sufficient.

The results of this study imply the need for a more balanced approach to swimming instruction, integrating both cognitive and psychomotor aspects. Physical education teachers should not only emphasize theoretical understanding but also allocate sufficient time for hands-on practice in the pool. Students will more easily master the freestyle if instruction is delivered through direct practical methods with gradual repetition of movements. Furthermore, swimming proficiency is influenced not only by knowledge and practice but also by factors such as courage, motivation, and the learning environment.

CONCLUSION

The results indicate that while students at SMP Negeri 10 Kota Jambi generally possess good theoretical knowledge of freestyle swimming, their practical skills vary considerably, and the correlation between knowledge and skill is very low. This

demonstrates that theoretical understanding alone does not guarantee practical mastery, as swimming requires intensive and coordinated motor practice. These findings underscore the necessity for an instructional approach that balances theoretical instruction with structured, hands-on practice in the swimming pool. Future research could explore innovative methods, such as video-based learning, guided discovery, or psychological training, to strengthen the connection between cognitive understanding and psychomotor skills in the context of swimming instruction within the Physical Education, Sport, and Health (PJOK) curriculum.

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