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Analysis of Breaststroke Technique in Physical Education, Health, and Recreation Students at Karimun University

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Abstract. Observing many students' inadequate ability to effectively and accurately master the breaststroke technique, this study aims to describe the movement analysis in breaststroke technique among Physical Education, Health, and Recreation students at Karimun University. The research focuses on aspects such as body position, arm movement, leg movement, breathing, and coordination. It adopts a quantitative descriptive research design with a population of 30 individuals. The sampling technique used is purposive sampling. Data collection involves direct observation of breaststroke movements by the researcher in the field. After collecting the data, it will be analyzed using quantitative descriptive analysis methods. The research findings are as follows: 1) The ability to master the breaststroke technique can be measured based on the body position indicator, which reaches 62.00%, falling into the "good" category; 2) The ability to master the breaststroke technique can be measured based on the arm movement indicator, which reaches 54.80%, falling into the "sufficient" category; 3) The ability to master the breaststroke technique can be measured based on the leg movement indicator, which reaches 59.93%, falling into the "sufficient" category; 4) The ability to master the breaststroke technique can be measured based on the breathing indicator, which reaches 58.00%, falling into the "sufficient" category; and 5) The ability to master the breaststroke technique can be measured based on the coordination indicator, which reaches 52.67%, falling into the "sufficient" category. Therefore, based on the research results from 30 students, the overall level of mastery in the breaststroke technique is 55.93%, falling into the "sufficient" category.

Keywords: analysis, swimming technique, breaststroke

INTRODUCTION

The general goal of education is to enhance the abilities and skills of human resources in various sectors, including sports. Education plays a crucial role in developing the potential of learners. Through education, individuals' potential is expected to be expanded and developed, making them competent, intelligent, and skilled in their chosen fields. This, in turn, allows them to effectively contribute to the development process in Indonesia. To achieve this goal, the government needs to actively play a role in improving education by providing adequate educational facilities and infrastructure, as well as updating the curriculum. The Physical Education, Health, and Recreation program (Penjaskesrek) have a role in the development of sports and also carry the responsibility for development in this field. The mission of the Physical Education program is to produce graduates who possess the necessary knowledge and skills to be professionals in sports, have moral integrity, a national perspective, a strong work ethic, and exhibit good behavior. Therefore, in the Physical Education program, students are encouraged to develop their abilities through learning. According to (Hidayat et al., 2020) physical education serves as a medium to facilitate the balanced growth and development of motor skills, physical capacity, knowledge, thinking abilities, value appreciation (including attitudes, mental, emotional, spiritual, and social aspects), as well as forming healthy lifestyle habits.

Some sports included in the curriculum of the Physical Education, Health, and Recreation program are swimming, which is a compulsory course for all male and female students in the Physical Education program in order to obtain a bachelor's degree. According to (Syahrastani et al., 2018) swimming is one of the highly beneficial forms of physical activity supported by the government in the field of health. Swimming offers various advantages that can be attained. There are four different swimming techniques: freestyle, breaststroke, backstroke, and butterfly. Breaststroke is one of the techniques taught to students in the basic swimming course within the Physical Education program. Although it is not as challenging as other swimming techniques, breaststroke still holds significant importance. According to (Haryanto et al., 2021) breaststroke is a specifically designed method for executing

swimming movements using the breaststroke style. If an athlete fails to master the breaststroke technique effectively and accurately, it will affect their swimming speed.

In the basic swimming course, the breaststroke technique is taught to all students, considering them as beginner swimmers. The researchers believe that there are various factors that can influence an individual's success in swimming, both internal and external factors. Internal factors originate from the swimmer themselves, such as physical condition, technique, and mental state. On the other hand, external factors include the quality of the coach or instructor, available facilities, and the environmental conditions in which the learning process takes place. In this regard, the author states that internal factors, particularly technique-related factors, have a dominant influence on the ability to perform the breaststroke. Technique-related factors encompass body position, arm movements, leg movements, breathing techniques, and coordination of movements. Furthermore, according to (Haryanto et al., 2021) possessing good and correct mastery of the breaststroke technique is not the sole factor determining the achievement of optimal performance. Skill mastery is just one of several factors that influence performance in breaststroke swimming. If a swimmer can master these movements well and correctly, their breaststroke skills will also be good. Additionally, according to (Can et al., 2021) coaches and athletes need to understand several principles related to swimming, including the principles of drag and propulsion, action-reaction principle, momentum transfer principle, square law theory principle, and buoyancy principle. These principles play a crucial role in achieving success and speed in swimming.

Based on an interview with one of the swimming course instructors and the researcher's field observations, it is evident that there are still students, particularly those in the Coaching Education Department, who have not been able to perform the breaststroke technique properly. The researcher observed that many students have not mastered the breaststroke technique concerning body position, arm movements, leg movements, breathing technique, and coordination. The author suspects that this is due to students relying solely on face-to-face instruction during class hours to learn the breaststroke technique, without engaging in practice outside of class either individually or in groups. Several factors influence swimming technique proficiency, as mentioned by (Herfiandi & Masrun, 2020) If an athlete lacks talent and motivation, they will encounter difficulties in achieving optimal success in mastering swimming techniques, especially in the breaststroke skill.

Based on the aforementioned issues, including errors in body position, arm movements, leg movements, breathing technique, and coordination, the researcher concludes that these factors have the potential to influence a swimmer's ability and success in performing the breaststroke technique. If these issues are not addressed properly, there is a possibility of new errors emerging that can have a negative impact on the ability to execute the breaststroke technique.

METHODS

The type of research to be conducted in this study is quantitative descriptive research. According to (Sulistyawati et al., 2022) quantitative descriptive research involves explanation, investigation, and description of observed phenomena in an objective manner, drawing conclusions based on measurable and numerical data (Marlina, 2020). The purpose of this research is to study the breaststroke technique in various aspects such as body position, arm movements, leg movements, breathing technique, and coordination

RESULT AND DISCUSSION

The results of the assessment of breaststroke technique by three judges on 30 students from the Physical Education Department at Karimun University, including arm movements, body position, leg movements, breathing, and coordination, are as follows:

a. Body Position

By taking the median score (NT) from thirty (30) individual samples in the breaststroke technique, an analysis was conducted, resulting in the highest score of 18 and the lowest score of 9. The average score or mean obtained is 12.4, indicating a mastery level of 62.00% in the technique. In this analysis, we present the results based on the total score and the percentage we obtained:

Table 1. Scores for Body Position

No	Class Interval	Frequency		% TPT	Category
		Absolut (individuals)	Relative (%)		
1	16.2 – 18.0	1	3.33	90	Excellent
2	14.3 – 16.1	6	20.00	76.7	Good
3	12.4 – 14.2	1	3.33	70	Adequate
4	10.5 – 12.3	17	56.67	58.5	Less than Adequate
5	8.6 – 10.4	5	16.67	49	Very Poor
Total		30	100		

b. Arm Movement

By taking the median score (NT) from thirty (30) individual samples in breaststroke swimming technique, an analysis was conducted which resulted in the highest score of 20 and the lowest score of 10. The average score or mean obtained was 13.70, indicating a mastery level of 54.8% in the technique. In this analysis, we present the results based on the total scores and the percentage we have obtained:

Tabel 2. Scores for Arm Movement

No	Class Interval	Frequency		% TPT	Category
		Absolut (individuals)	Relative (%)		
1	18 – 20	5	16.7	74.4	Excellent
2	15 – 17	5	16.7	63.2	Good
3	12 – 14	12	40	51.3	Adequate
4	9 – 11	8	26.7	42.5	Less than Adequate
5	6 – 8	0	0	0	Very Poor
Total		30	100		

c. Leg Movement

By taking the median score (NT) from thirty (30) individual samples in breaststroke swimming technique, an analysis was conducted which resulted in the highest score of 19 and the lowest score of 8. The average score or mean obtained was 13.23, indicating a mastery level of 52.93% in the technique. In this analysis, we present the results based on the total scores and the percentage we have obtained:

Tabel 3. Scores for Leg Movement

No	Class Interval	Frequency		% TPT	Category
		Absolut (individuals)	Relative (%)		
1	16.8 – 19.0	6	20	70.7	Excellent
2	14.5 – 16.7	1	3.3	64	Good
3	12.2 – 14.4	10	33.3	53.2	Adequate
4	9.9 – 12.1	12	40	44.7	Less than Adequate
5	7.6 – 9.8	1	3.3	32	Very Poor
Total		30	100		

d. Breathing

By taking the median score (NT) from thirty (30) individual samples in breaststroke swimming technique, an analysis was conducted which resulted in the highest score of 11 and the lowest score of 6. The average score or mean obtained was 8.70, indicating a mastery level of 58.00% in the technique. In this analysis, we present the results based on the total scores and the percentage we have obtained:

Table 4. Scores for Breathing

No	Class Interval	Frequency		% TPT	Category
		Absolut (individuals)	Relative (%)		
1	10 – 11	9	30	71,9	Excellent
2	8 – 9	14	46,7	55,7	Good
3	6 – 7	7	23,3	44,8	Adequate
4	4 – 5	0	0	0	Less than Adequate
5	2 – 3	0	0	0	Very Poor
Total		30	100		

e. Coordination

By taking the median score (NT) from thirty (30) samples of individuals in breaststroke swimming technique, an analysis was conducted which resulted in the highest score of 13 and the lowest score of 5. The average score or mean obtained was 7.90, indicating a mastery level of 52.67% in the technique. In this analysis, we present the results based on the total scores and the percentage we have obtained:

Table 5. Scores for Coordination

No	Class Interval	Frequency		% TPT	Category
		Absolut (individuals)	Relative (%)		
1	11.4 – 13.0	2	6.7	83.3	Excellent
2	9.7 – 11.3	4	13.3	73.33	Good
3	8.0 – 9.6	13	43.3	56.9	Adequate
4	6.3 – 7.9	7	23.3	46.7	Less than Adequate
5	4.6 – 6.2	7	23.3	39.0	Very Poor
Total		30	100		

Based on the evaluation of three (3) assessors using the Median Value (NT) method on thirty (30) samples in breaststroke swimming technique, the following analysis results were obtained:

Tabel 6. Analysis of Breaststroke Swimming Technique Overall

No	Indicator	Evaluation (individuals) Category					∑	%TPT
		BS	B	C	K	KS		
1	Body Position	1	6	1	17	5	30	62,00%
2	Arm Movement	5	5	12	8	0	30	54,8%
3	Leg Movement	6	1	10	12	1	30	59,93%
4	Breathing	9	14	7	0	0	30	58,00%
5	Coordination	2	4	13	7	7	30	52,67%
	Avarage Overall Indicator	5	6	9	9	3	30	57,48%

Through the analysis of the proficiency in mastering breaststroke swimming technique, including aspects such as body position, leg movements, arm movements, breathing, and coordination, conducted by three assessors on 30 samples, the overall mastery of breaststroke swimming technique was found to be 57.48%. The analysis of the data on breaststroke swimming technique reveals the presence of various technical errors, both in the overall breaststroke technique and in the individual indicators. The author suspects that this is caused by several factors, one of which is the reliance of students in the Physical Education and Sports Science Program at the University on face-to-face lectures to learn breaststroke swimming technique without practicing outside of class hours, either in groups or individually.

Additionally, besides sufficient time and consistent and systematic training, supportive facilities are also necessary to achieve mastery of breaststroke swimming technique. According to Cecil dalam (James, 2018) the supporting facilities in the swimming learning process include: "a) Kick Board, which is very useful for improving performance, especially in arm and leg exercises, b) Paddle training, which is a swimming equipment used on the palms to increase hand strength, c) Tube and donut, which are the most effective equipment for strengthening hand muscles, d) Fins, which are personal equipment required to strengthen and improve leg flexibility."

Furthermore, there are various forms of swimming technique exercises that can be performed. According to research conducted by (Dinata et al., 2021) it has been proven that the use of audiovisual learning in the form of videos has an impact on students' ability in breaststroke swimming. It is important to note that audiovisual learning is just one component in improving breaststroke swimming ability. Quality supervision and guidance from instructors, regular practice, and experience in the water are also crucial for developing good swimming skills.. The research results by (Wahyudi, 2022) indicate differences in the impact of different presentation media on learning outcomes in breaststroke swimming technique. The use of instructor-led demonstrations, video recordings, and a combination of both have an influence on the learning outcomes. The implementation of a combined media approach, which involves both instructor-led demonstrations and video recordings, has been shown to provide the most significant improvement, reaching 195% higher compared to using only instructor-led demonstrations or video recordings. Direct instruction by instructors allows for direct interaction between the instructor and the learners. Instructors can provide explanations, visual demonstrations, and immediate feedback to the learners. In the context of breaststroke swimming, instructors can give guidance on correct techniques, correct mistakes, and provide a deeper understanding of the desired movements. According to the research findings by (Arhesa, 2020) the statistical analysis revealed that the application of the directive instruction teaching model has a significant impact on the basic skills of breaststroke swimming. These findings are consistent with existing theories and previous research supporting them, which concludes that the directive instruction teaching model has a positive impact on the development of basic breaststroke swimming skills. For example, a study confirmed this by comparing an experimental group that received video-based learning and direct instruction on breaststroke swimming technique with a control group that did not receive such learning

According to the research by (Herpandika & Kurniawan, 2020) evidence was found that significant improvements in learning outcomes in breaststroke swimming can be achieved by applying the inclusive method approach. This inclusive method approach can be used as a guide in teaching swimming courses to students in future academic years. The inclusive method approach in teaching breaststroke swimming involves the acceptance, appreciation, and integration of learners with various abilities and needs in the same learning environment. The aim of this approach is to create an inclusive environment where all learners have equal opportunities to learn and develop breaststroke swimming skills. Based on the findings from the research by (Sistiasih, 2020) there is an observed improvement in the mastery of breaststroke swimming technique through the use of reciprocal learning methods. Reciprocal learning is an approach that involves interaction among learners in a small group or pair learning process, where they teach each other and gain a deeper understanding of the learning material. In the context of breaststroke swimming learning, this method can be used to enhance mastery of the technique through collaboration and knowledge exchange among learners. By utilizing reciprocal learning methods, learners can benefit from interaction, experiences, and deeper reflection on breaststroke swimming techniques. This collaborative approach can help improve mastery of breaststroke swimming technique through teaching, knowledge exchange, and constructive feedback among learners

CONCLUSION

After conducting an overall data analysis, it was found that there are technical errors that need to be addressed in swimming instruction. To improve breaststroke swimming technique, it is recommended to increase the quantity and quality of practice outside of class hours, follow a regular and systematic training process, and provide adequate supporting facilities for breaststroke swimming instruction. The author also

emphasizes the importance of adequate supporting facilities in the process of training breaststroke swimming technique, such as a swimming pool with proper facilities and appropriate swimming equipment. This will help learners in conducting breaststroke swimming technique practice more effectively.

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