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Differences in the three swimming style learning outcomes from gender

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ABSTRACT

This research was conducted because swimming style learning outcomes are still weak in terms of gender. This study aims to determine the interaction between gender and swimming style learning outcomes. This type of research is a quasi-experimental using a 2x3 factorial design. The research method used is descriptive-comparative, with a sample of 100 sports education students. The questionnaire is an effective data collection method to test the variables to be measured and the answers expected by the respondents. The questionnaire applies a Likert scale by providing an opportunity to answer each item. Hypothesis testing was carried out with the SPSS 22.0 program using one-way ANOVA, and two-way ANOVA analysis. The results showed that (1) there were differences in the learning outcomes of swimming style in terms of gender, (2) there was an interaction between gender and swimming style. The learning outcomes of male students' swimming style were higher than female students, both in the breaststroke, butterfly, and freestyle.

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Introduction

Swimming is an aquatic sport that is in great demand. Swimming is a very popular recreational activity in the United States. While sports and water activities are something that can be fun for almost anyone. It is for this reason that we must know how to swim agilely and correctly. Safer and more fun. No one would dare to jump from the side of a pool or from a diving board, three meters high into water twelve feet (3½m) deep without first having basic swimming or jumping lessons. That is dangerous! There's a lot to learn before you jump into the water. PRSI data states that there is an increase in the number of swimming athletes who take part in the competition every year. There is an increasing interest in aquatic sports every year, especially in swimming. The improvement assessment was carried out by the All-Indonesian Swimming Association (PRSI), which is the parent body of water sports unions by holding a year-end event in the form of the All-Indonesian Inter-Association Swimming Championship (KRAPSI). Around 1200 swimmers participated in the KRAPSI held by PRSI in 2014, an increase of about 100 swimmers compared to 2013 with the aim of attracting young athletes (Juniato, 2014).

The achievement of swimming athletes is influenced by several things, including anthropometric factors such as the length and width of the hands or feet, physiological and biomechanical bodies of swimming athletes (Rahman, 2021). Of these three factors, muscles have a very dominant role where the muscles used in each movement, especially movements when swimming are an important indicator to determine the success of

an athlete's training results assessment (Fozia, Sharma, & Arora, 2019). The performance of muscles, especially the leg muscles used during circuit training, is considered very important because circuit training with a specified time interval can improve the performance of leg muscle power in swimming athletes where leg muscles are one of the anthropometric aspects that can be calculated and affect swimming results. Various kinds of swimming styles affect the athlete's VO2 Max results, especially the butterfly style swimming which requires the greatest force and strength. Butterfly style is a branch of swimming with snaking body movements like dolphins (dolphins) swimming. When the hands are pulled back, both feet press down. Different from other styles that are generally easy to master, beginner swimmers need more time to learn the coordination of hand and foot movements in the butterfly stroke and use more O2 when doing this style of swimming (Fédération Internationale de Natation, 2013).

Swimming can be done by anyone, regardless of gender, age, male or female, young or old, all can do it (Einfalt, Zecha, &Lienhart, 2018). Swimming is very economical, because by spending a little money, people can enter the pool and swim to their heart's content. Swimming can also be done at any time, regardless of time, it can be morning, afternoon, evening, or night and can be done individually. Then to be able to excel in the sport of swimming it needs to be supported by adequate physical components. Because there is no point in a swimmer in a race who can swim with a beautiful style but is unable to complete the entire specified distance (Brunner, Melnyk, Sigfússon, & Wattenhofer, 2019). The learning process should be a series of gradual increases from one stroke to the next most likely starting from swimming like a dog paddle and floating on the back and progressing to the more advanced stages of each stroke, namely the freestyle and the backstroke. When a beginner swimmer, progresses to an intermediate level and then an advanced swimmer, he will be able to learn other styles (Rusdi, Dlis, Lubis, Nata, &Whalsen, 2020). Swimming styles such as walking, incline, breaststroke, backstroke, butterfly, freestyle, entry-level backstroke, incline with arms up and breaststroke are among some of the skills that advanced swimmers can learn. carry on.

Freestyle swimming is the fastest of all styles. And the most popular style used in recreational and competitive swimming. In freestyle, the position of the swimmer's body is in a prone position, transverse stance, arms straight above the head, floating like a log. Many factors affect swimming style learning outcomes such as exercise, physical, psychological and gender factors (Matešić &Vrečko, 2019). Differences in gender and age can indeed affect swimming learning outcomes because the older a person gets, the greater the factors that influence it, especially external factors originating from the environment (Solihin, & Rachmawati, 2019). If someone who is more mature will tend to have more ability to carry out a learning activity, especially learning to swim (Laksana et al., 2021). Furthermore, the factors that influence swimming learning outcomes include age, gender, physical condition, ability and environmental atmosphere (Pharr et al., 2018). So it is suspected that there is a relationship between gender and age with swimming learning outcomes. So the authors are interested in studying research to determine the interaction between gender and learning outcomes of swimming style.

Method

This research is quasi-experimental research. The instrument used is a Likert scale model. The population is 100 students who take swimming lessons in higher education, with 50 males and 50 females, aged 18-19 years, and are from the 2020 and 2021 entry years, who were selected using the technique purposive random sampling. The experimental design used was a factorial design with the factorial design used categorized as a 2 x 3 factorial design. Hypothesis testing was carried out with the SPSS 22.0 program using one-way ANOVA, and two-way ANOVA analysis (Yigit, & Mendes, 2018). Furthermore, data was collected by distributing questionnaires to obtain information about swimming style, and gender. The questionnaire stands as an effective data collection method to examine the variables to be measured and the answers expected by the respondents (Smith, 2019). The questionnaire applied the Likert scale by providing opportunities to answer each item (Awang et al., 2016). Data collection is carried out in Higher Education with the following procedures: 1) Preparing students learning outcomes, and gender; 2) Provide an explanation of the instrument and how to fill it out; 3) Distribute instruments and invite students to fill them out; 4) Collecting instruments according to the plan. Data were analyzed by descriptive statistics that were designed to give information about the distributions of variables (Mishra et al., 2019), a regression that statistical analysis used to determine the effect of several independent variables on the dependent variable (Chen, & Chen, 2014). Data analysis is assisted by using the SPSS program. The 2 x 3 factorial design is used, as shown in Table 1.

Table 1. 2 x 3 . Factorial Design

Type Sex	Swimming Style		
	Freestyle (B1)	**Butterfly (B2)**	**Breaststroke (B3)**
Man (A1)	A1B1	A1B2	A1B3
Woman (A2)	A2B1	A2B2	A2B3

Results and Discussions

The research results presented include an overview of learning outcomes which can be seen in table 2.

Table 2. Description of Learning Outcomes

Gender	Swimming Style				
	Statistics	**Freestyle (B1)**	**Butterfly (B2)**	**Breaststroke (B3)**	**Total**
Female (A2)	N	7	5	4	16
	mean	8.10	7.47	7.17	7.67
Male (A1)	N	5	6	5	16
	mean	7.73	8.11	9.47	8.42
Total	N	12	11	9	32
	mean	7.94	7.82	8.44	8.04

Table 3. Inferential Statistics Test Results

Tests of Between-Subjects Effects

Source	df	Mean Square	F	Sig.
Swimming Style	2	.920	6.17	.006
Gender	1	5.121	34.35	.000
Swimming Style * Gender	2	4,549	30.52	.000

Source	df	Mean Square	F	Sig.
Swimming Style	2	171.22	4.70	.018
Gender	1	1049.22	28.80	.000
Swimming Style * Gender	2	561.25	15.41	.000

The results showed a significant difference in the learning outcomes of swimming styles for students in terms of gender. Based on descriptive data, the average learning outcomes of the three swimming styles were higher than female students. This shows that there is a role of gender in the acquisition of swimming learning outcomes (Lenneis, Agergaard, & Evans, 2020). This fact is also supported by several experts such as (Lazaridi, Krommidas, Syrmpas, Digelidis, 2021) who say there are also other factors in the acquisition of learning outcomes, namely gender which indirectly affects the improvement of swimming style learning outcomes. Gender is everything that is associated with an individual's gender, including roles, behaviors, preferences, and other attributes that describe manhood or womanhood. In secondary schools, gender differences began to appear in attitudes, it was observed that female students had a more positive attitude towards lessons than male students. Boys are encouraged by teachers and parents to engage in more physical learning. Their experience in studying the two subjects turned out to be compatible with their visual and spatial skills, thus getting high marks. This ability is obtained by boys from their playing experience (Nunaki, Damopolii, Kandowangko, & Nusantari, 2019). Boys are encouraged by teachers and parents to engage in more physical learning. Their experience in studying the two subjects turned out to be compatible with their visual and spatial skills, thus getting high marks. This ability is obtained by boys from their playing experience (Nunaki, Damopolii, Kandowangko, & Nusantari, 2019). Boys are encouraged by teachers and parents to engage in more physical learning. Their experience in studying the two subjects turned out to be compatible

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Generally, boys spend more time outdoors. The unstructured external environment causes boys to be more dependent on space (location) than time. Boys design their own games, during play boys use more visual skills than verbal skills, and use of language is only limited to completing work. This behavior enhances the development of visual and spatial skills (Salavera, Usan, & Jarie, 2017). This difference will affect the presence of female and male students in school. School is a structured environment that runs based on a time schedule, selected facts, rules with a certain pattern, and conveys teaching mostly using verbal instructions (Ratna, & Samie, 2017). This means that girls feel more comfortable in this kind of environment, whereas boys do not feel comfortable in this kind of environment (Pinto, Bigozzi, Vettori, & Vezzani, 2018).

Based on several results of research that has been done, it can be concluded that there are differences in physical and psychological characteristics between men and women. The existence of fundamental differences regarding the characteristics of each of these sports allows for differences in the psychological characteristics of athletes. Each sport has different characteristics, ranging from body movement activities, the rules used in the sport and the athlete's behavior resulting from each sport will form different characteristics (Bebetsos, Filippou, & Bebetsos, 2017). The difference is also due to gender. Gender is the main factor influencing learning patterns (Bang, Won, & Park, 2020). Students who have the best appearance and can certainly have good psychological characteristics. These psychological characteristics can be influenced by gender. Male students have higher motivation when compared to female athletes (Lombardo & Deaner, 2018). The key difference between good performances and bad performances lies in the level of players' psychological skills which are better than physical skills (Chiang, Yang, & Yin, 2019). That does not mean that psychological skills are more important than physical, tactical or technical. All these aspects are important and should be practiced regularly. Male students have higher motivation when compared to female athletes (Lombardo & Deaner, 2018).

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In addition, gender can also determine differences in student learning outcomes. Men and women are physically different, both anatomically and physiologically (body functions). This anatomical difference causes men to be better able to carry out physical activities and sports that require greater strength and other dimensions (Lenneis, Agergaard, & Evans, 2020). There are differences between male and female anatomical structures, both morphologically and histologically. These differences occur in the cardiovascular and respiratory systems, hormonal systems, nervous systems, as well as the musculoskeletal system (Einfalt, Zecha & Lienhart, 2018).

Conclusions

Based on the research that has been done, it can be concluded that the theoretical and empirical data show that there are differences in the learning outcomes of the three swimming styles between male and female students. The learning outcomes of male students' swimming style are higher than female students, both in the breaststroke, butterfly, and freestyle. These results can be used as an illustration for teachers in organizing or modifying an effective style given to students at school. In addition, based on these results, it is recommended to use effective learning methods to support the success of the learning process given to students. However, it must also be understood that in routine training, educators serve as evaluators and facilitators. This is useful to support the effectiveness of the method used. Also, educators must master the learning methods used.

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