



## RESEARCH ARTICLE

# Approach to the Game Take the Ball to Practice Swimming Skills for Beginners in Physical Education

Martinus MARTINUS<sup>\*1</sup>, Jujur Gunawan MANULLANG<sup>2</sup>, Hilmy ALIRIAD<sup>3</sup>, I Bagus ENDRAW<sup>1</sup>  
, Karlina DWIJAYANTI<sup>5</sup>, Naimatul JAMALIAH<sup>6</sup> and M. Fransazeli MAKOROHI<sup>1</sup>

<sup>1</sup>Universitas Bina Darma, Faculty of social Humanities, Physical Education, Palembang / Indonesia

<sup>2</sup>Universitas PGRI Palembang, Posgraduate, Master Physical Education, Palembang / Indonesia

<sup>3</sup>Universitas Nahdlatul Ulama Sunan Giri, Faculty of Teacher Training and Education, Physical Education, Sport, Health and Recreation, Bojonegoro / Indonesia

<sup>4</sup>Universitas Bina Darma, Posgraduate, Master Physical Education, Palembang / Indonesia

<sup>5</sup>Universitas Tunas Pembangunan Surakarta (UTP), Faculty of Teacher Training and Education, Physical Education, Indonesia

<sup>6</sup>Universitas Sains Cut Nyak Dhien, Faculty of Education, Physical Education, Kota Langsa, Aceh / Indonesia

<sup>7</sup>Universitas Islam Riau, Faculty of Teacher Training and Education, Physical Education, Pekanbaru, Riau /Indonesia

\*Corresponding author: martinus@binadarma.ac.id

## Abstract

This study aims to explore the effectiveness of the grab the ball game approach as an alternative method of teaching swimming skills to beginners in physical education. Teaching swimming skills to beginners in physical education is often challenged by the need to create an engaging and effective learning environment for students. This research method uses an experimental approach one group pretest posttest with the need for 8 sessions. Swimming skills were assessed before and after the intervention. The research sample was 15 students at Bina Darma University with the category of not able to swim or beginners. Data were collected by measuring test of swimming 50 meters freestyle. Data analysis using paired test between pre-test and post-test with SPSS version 21. Empirical findings show that students who were taught the grab-the-ball approach experienced significant improvements in swimming skills. The resulting t-statistics (23.858 for the pre-test and 19.192 for the post-test) indicate that these differences are very statistically significant, with p-values (Sig.) that are extremely low ( $p < 0.0001$ ). This means that the observed difference between the sample group average and the expected test score is very unlikely to have occurred by chance. Conclusion The results of this study indicate that the grab-the-ball approach can be an effective alternative in teaching swimming skills to beginners in physical education. The implications of these findings highlight the importance of using engaging and playful methods to improve student learning outcomes in swimming skills. Suggestions for future research include extending the research by including a larger sample, which may provide greater statistical power to support research findings in the area of swimming 50 meters freestyle.

## Keywords

Game Approach, Take The Ball, Swimming Skill, Beginner, Physical Education

## INTRODUCTION

Physical education in schools plays a vital role in the development of pupils' physical and mental health (Aliriad et al., 2023a; Endrawan et al., 2023). One of the most important aspects of the curriculum is swimming, as the ability to swim is

not only necessary for recreational activities, but also as a life-saving skill in water emergencies (Karatrantou et al., 2023). Swimming should be a good mastery of technical and physical skills and have wide benefits for physical and mental health. Physically, swimming uses almost every muscle in the body, increasing strength, endurance and

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flexibility. It improves cardiovascular and respiratory function and can be the sport of choice for people with certain health problems, such as joint injuries or asthma (Birrer & Morgan, 2010).

Swimming is one of the most popular sports among students and the community in general. Known to all people regardless of gender or age, swimming has become an integral part of an active lifestyle in society (Perrone et al., 2023; Tsalis & Kyriakidou, 2023). With the growing number of entrepreneurs and municipalities providing swimming pool infrastructure, the accessibility of swimming is increasing. This phenomenon also opens the door to introducing swimming at an early age, as well as facilitating the process of developing athletes and coaching performance (Dalamitros et al., 2023; Stanković et al., 2023). In addition, the appeal of swimming as a fun water sport has managed to attract the general public, creating a strong community spirit around swimming activities.

Swimming also has a positive effect on mental health. It can help reduce stress and anxiety, improve mood and provide a sense of relaxation and calm (Seifert & Carmigniani, 2023; Wirth et al., 2022). Swimming is also an effective form of aerobic exercise that has been shown to increase the production of endorphins, hormones that can increase feelings of happiness and relieve pain (van Duijn et al., 2021). The game approach to teaching swimming is a fun and effective way to overcome fear and increase motivation for beginners (Chan et al., 2023). By incorporating game elements into the learning process, students can feel more comfortable and motivated to overcome their fears, speeding up the learning process and increasing their confidence in the water.

The challenge for beginners in swimming is the fear of water, so the coach needs to research the right learning method to train mentally and have fun in the process of learning to swim (de Oliveira et al., 2023; Misimi et al., 2023). Previous research provides insight into the different methods of teaching swimming (Ostrowski et al., 2022; Wilson et al., 2023). However, it has not looked at approaches for beginners to have fun in the water to improve their mental and courageous swimming. Most studies also tend to focus on the technical and physical aspects of swimming (Nindorera et al., 2021; Warreman et al., 2023), without paying attention to the psychomotor and fun aspects of

learning, which are the main focus of the grab the ball game approach.

The development of swimming techniques for beginners can be achieved through correct swimming technique, including an understanding of the simultaneous use of arms and legs to assist and control breathing exercises (Carter & Koch, 2022; Hello et al., 2022). Light strength training on land and endurance training in the water can be done to increase endurance and strength while swimming (Mao et al., 2021; Zhang et al., 2023). One way to increase strength in the water is to play the game of catching the ball. However, the use of correct technique should be the first priority when introducing the exercise. Games with balls are used to make students feel comfortable and motivated while swimming. One option that can be considered is to use coordination and flexibility exercises to improve motor skills in swimming (Sundan et al., 2023; Tsai & Hsu, 2022). Novice swimmers can also make use of available technology, such as recording videos of themselves swimming and then reviewing them with instructors or peers. This can help them to better understand their body movements and identify areas for improvement.

This study offers a new approach to teaching swimming that is expected to increase motivation and make the learning process more enjoyable for beginners (Borioni et al., 2022; Veiga et al., 2022). The aim of this study is to determine the benefits of the game approach and to make recommendations for the further development of learning to swim in physical education. Although many studies have highlighted the use of AIDS in learning to swim, there have been no studies specifically investigating the use of the ball as an aid in training the ability to pick up the ball in the water for beginners. This gap indicates the need for more research focused on developing effective approaches to training this skill.

There are many theories in the literature that support the use of AIDS in learning to swim. The concept of learning through play has also been shown to be effective in improving students' motivation and skills in a variety of learning contexts, including aquatics. Numerous studies have shown that students' interaction with buoy media aids in swimming activities can help them feel more confident and increase their enjoyment of learning (Ramadhan et al., 2023). Constructivist learning theory also supports this concept, emphasising that fun and memorable learning

experiences can facilitate students' understanding of the concepts of movement in water (Backes et al., 2022; Do et al., 2023). Furthermore, studies by (Chalmers et al., 2021; Demarie et al., 2022) show that learning through play, including the use of the ball in swimming activities, can increase students' motivation and optimise the development of their motor skills. From this perspective, exercises specifically designed to improve swimming skills with games in the water have been shown to be effective in increasing the success rate of students in achieving swimming learning objectives (Wei et al., 2023).

The findings of this study are expected to contribute significantly to the development of more effective swimming learning methods, particularly for beginners, and pave the way for further research in the field of swimming. The aim of this study is to test the effectiveness of the 'take the ball' approach as a tool to train the ability to take the ball in the water for beginners learning to swim. In addition, this study also aims to evaluate the effectiveness of this approach in improving students' swimming ability and confidence in the water.

**MATERIALS AND METHODS**

This research method uses an experimental approach one group pretest posttest with the need for 8 sessions (Aliriad et al., 2024).Swimming skills were assessed before and after the intervention. Independent study population of 32 students. The

sample was selected using purposive sampling. The sample consisted of 15 students of Bina Darma University with the category of unable to swim or beginner. The study was conducted for 2 months. The procedure for the game of "catching the ball in the water" begins with the preparation of safety and the division of the teams, before the ball is placed in the centre of the pool. Each team swims to retrieve the ball using the appropriate technique and then tries to bring it back to the edge of the pool, while protecting it from the opposing players. Points are awarded to the team that manages to bring the ball back to the edge of the pool, and safety is paramount during the game.

Ethical clearance (No.114/KEPK/RSI-U/V/2024) for this research was obtained from the Research Ethics of Health Research Ethics Committee of Malang Islamic hospital, Malang City, East Java, Indonesia Participant provided informed consent, with the volunteer form covering research details, risks, benefits, confidentiality, and participant rights. The research strictly adhered to the ethical principles of the Declaration of Helsinki, prioritizing participant's rights and well-being in design, procedures, and confidentiality measures.

**Statistical Analysis**

In the study, a 50-meter freestyle swimming test was performed using a device. Data analysis was performed using paired t test between pretest and posttest with SPSS version 23 (Wijaya, 2019). Percentage and frequency values were used to analyze demographic characteristics.

**Table 1.** Observation

Sample	Direct Observation		Difference
	Ability To Swim Before (1-5)	Ability To Swim After (1-5)	
Sample 1			
Sample 2			
Sample 3			
Sample 4			
and so on			

**Table 2.** Questionnaire

Questionnaire for students	1	2	3	4	5
What do you think of the 'take the ball' approach to learning to swim?					
Do you feel more confident about swimming after using this approach?					
Do you feel more interested in learning to swim after using this approach?					
Questionnaire for instructors	1	2	3	4	5
How effective do you think the 'grab the ball' approach is in teaching swimming skills to beginners?					
Have you noticed a significant improvement in the students' swimming skills after using this approach?					

**Table 3.** Swimming Skills Test

Sample	Swimming Skills Test		
	Before	After	Difference
Sample 1			
Sample 2			
and so on			

**RESULTS**

Table 4 shows the results of direct observation of swimming ability before and after training. Swimming ability is measured on a scale of 1 to 5, where a score of 1 indicates the lowest ability and a score of 5 indicates the highest ability. The results showed that most of the participants improved their swimming ability after the training. On average, the participants experienced an increase in swimming ability of 1.7333 points, with

a mean swimming ability score of 2.1333 before training and 3.8667 after training. In addition, the standard deviation for both pre and post training scores was 0.74322, indicating that the distribution of the data was relatively consistent. The minimum pre-training score was 1 and the maximum post-training score was 3. The maximum pre-training score was 3 and the maximum post-training score was 5. This shows that the training provided was effective in improving the participants' swimming skills.

**Table 4.** Direct Observation Results

Name	Ability To Swim Before (1-5)	Ability To Swim After (1-5)	Difference
Sample 1	2	4	2
Sample 2	3	4	1
Sample 3	2	4	2
Sample 4	3	5	2
Sample 5	2	4	2
Sample 6	1	3	2
Sample 7	1	3	2
Sample 8	2	4	2
Sample 9	2	4	2
Sample 10	3	5	2
Sample 11	3	5	2
Sample 12	2	3	1
Sample 13	3	3	0
Sample 14	2	3	1
Sample 15	1	4	3
Min	1	3	0
Max	3	5	3
Mean	2.1333	3.8667	1.7333
Std. Dev	.74322	.74322	.70373

Table 5 shows the results of two different questionnaires, one for students and one for instructors, on the 'take the ball' approach to learning to swim. From the students' perspective, the majority felt that this approach was effective, with 8 students scoring 4 and 9 students scoring 5. They also felt more confident (score 4) and more interested (score 5) in learning to swim after using this approach. From the instructors' perspective, the majority (10) gave a score of 4 to the effectiveness of the 'take the ball' approach in teaching swimming skills to beginners. Most instructors also reported a

significant improvement in students' swimming skills after using this approach. With a total of 14, 19 and 42 for scores of 1, 2 and 3 on the instructor questionnaire, the proportion of scores was 19%, 25% and 56% respectively. From the data presented it can be concluded that both students and instructors feel that the 'take the ball' approach is effective in learning to swim, with most feeling more confident, interested and seeing improvements in their swimming skills after using it.

**Table 5.** Questionnaire

Questionnaire for students		1	2	3	4	5
What do you think of the 'take the ball' approach to learning to swim?				4	3	8
Do you feel more confident about swimming after using this approach?				3	5	7
Do you feel more interested in learning to swim after using this approach?				2	4	9
Questionnaire for instructors		1	2	3	4	5
How effective do you think the 'grab the ball' approach is in teaching swimming skills to beginners?				2	3	10
Have you noticed a significant improvement in the students' swimming skills after using this approach?				3	4	8
Total				14	19	42
Prosentase				19%	25%	56%

Data collection was conducted in two stages, namely before treatment (pretest) and after treatment (post-test). The purpose of the post-test is to compare pretest and post-test results. Table 6 shows the results of the pre-test and the post-test for the 50 metre freestyle with an evaluation based on specific categories. It can be seen that none of the participants reached the "Excellent" category on the pre-test with a time of less than 33.22 seconds, but no one reached this category on the post-test either. A total of five participants (33.33%) reached the "good" category with a time between 33.22 and 40.55 seconds on the pre-test, increasing to nine participants (60%) on the post-test. However, the number of participants who reached the "fair" category decreased from six participants (40%) in the pre-test to three participants (20%) in the post-test. Meanwhile, the results for the "less" category remained stable with two participants (13.33%) in both the pretest and the posttest. For the "less than once" category, two participants (13.33%) in the pre-test and one participant (6.66%) in the post-test achieved a time of more than 55.20 seconds.

From the results of the pre-test and post-test on the 50-meter freestyle, it can be concluded that most of the participants experienced an increase in performance after undergoing a set program or exercise. Although none of the participants initially fell into the "excellent" category, a significant increase occurred in the "Good" category, where the number of participants who reached this category increased from five participants to nine participants. However, there was a decrease in the "moderate" category, which indicates that some participants may have difficulties or not have improved as expected. Despite this, there were no significant changes in the "less" category, indicating that participants who fall into this category remain stable in their abilities. In addition, there was a decrease in the number of participants who fell into the "less than once" category, indicating that most participants were able to improve their performance so as to reduce the time required to complete the track.

**Table 6.** Results of pre-test and post-test 50-meter freestyle swimming

Assessment norms	Category	Frekuensi Pretest		Frekuensi Postest	
		Absolute	Relative	Absolute	Relative
< 33,22	Very Good	0	0%	0	0%
33,22 - 40,55	Good	5	33,33%	9	60%
40,56 - 47,87	Moderate	6	40%	3	20%
47,88 - 55,20	Less	2	13,33%	2	13,33%
> 55,20	Less Than Once	2	13,33%	1	6,66%
Total		15	100%	15	100%

The data presented are the results of a 50 metre freestyle pre-test and post-test for 15 samples table 7. The pre-test measures the time it takes each sample to complete a 50-metre freestyle swim before a specific intervention or treatment, while

the post-test measures the time it takes after the intervention has been administered. The results showed significant variation in the time taken, with pre-test times ranging from 35.42 seconds to 60.25 seconds and post-test times ranging from 33.30



seconds to 56.32 seconds. The average pre-test time was approximately 46.4080 seconds, while the average post-test time was approximately 39.5333 seconds. The difference between the post-test and pre-test times for each sample, reflecting the effect of the intervention or treatment administered, varied from 2.12 seconds to 11.59 seconds, with an

average difference of 6.8747 seconds. These results indicate an improvement in 50 metre freestyle swimming performance after the intervention or treatment was administered, with significant variation in response to the intervention between the different samples.

**Table 7.** Descriptive analysis of pre-test and post-test 50-meter freestyle swimming

Name	50 Meters (Pre-test)	50 Meters (Post-test)	Difference
Sample 1	35.42	33.30	2.12
Sample 2	37.44	34.32	3.12
Sample 3	41.60	36.43	5.17
Sample 4	46.74	42.70	4.04
Sample 5	45.72	34.14	11.58
Sample 6	40.55	34.35	6.2
Sample 7	44.79	35.42	9.37
Sample 8	45.87	34.32	11.55
Sample 9	44.81	33.64	11.17
Sample 10	38.53	35.12	3.41
Sample 11	46.87	35.28	11.59
Sample 12	54.12	43.56	10.56
Sample 13	55.20	48.76	6.44
Sample 14	58.21	55.34	2.87
Sample 15	60.25	56.32	3.93
Min	35.42	33.30	2.12
Max	60.25	56.32	11.59
Mean	46.4080	39.5333	6.8747
Std. Deviation	7.53363	7.97780	3.67903

The results of the one-sample test in table 8. showed that there was a significant difference between the sample mean and the assigned test score (0). The resulting t-statistics (23,858 for the pre-test and 19,192 for the post-test) show that these differences are very statistically significant, with significance values (Sig.) that are very low (0.000). This indicates that the difference between the sample group average and the expected test score is very unlikely to occur by chance in the sample. The

average difference between the pre-test group and the expected test score was 46.40800, while for the post-test group it was 39.53333. The 95% confidence interval indicates that we are 95% confident that the difference between the pre-test average and the test score is between 42.2360 and 50.580, while the difference between the post-test average and the test score is between 35.1154 and 43.9513.

**Table 8.** One-Sample Test pre-test and post-test 50-meter freestyle swimming

Test Value = 0						
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Pretest	23.858	14	.000	46.40800	42.2360	50.5800
Posttest	19.192	14	.000	39.53333	35.1154	43.9513

## DISCUSSION

The results of the data analysis showed that the intervention or treatment given to learn to swim, in this case indicated by the time difference between the pre-test and the post-test in 50 metre freestyle swimming, the results showed a significant impact on the students' performance. The improvement occurs after the intervention game of catching the ball at a predetermined time. This is in line with the theory of motor learning, which states that with the right practice and appropriate intervention, individuals can experience an improvement in their motor skills (H. Wu et al., 2021).

These findings are consistent with previous research supporting the effectiveness of interventions to improve motor performance in a variety of contexts, including swimming (Hassan et al., 2022; J. Wu et al., 2023). Previous research has shown that targeted practice and effective learning techniques can lead to significant improvements in motor skills (Capio et al., 2021; Misimi et al., 2022). This study reinforces the understanding that a systematic and focused approach to learning to swim can lead to significant improvements in students' skills (Ramadhan et al., 2023; Richards et al., 2021). However, there are several issues that need to be considered when interpreting these findings. Firstly, individual differences in response to such interventions suggest that not all students are likely to respond in the same way to the same learning programme. Factors such as an individual's initial level of fitness, motivation and learning style may influence the effectiveness of an intervention (Barbosa et al., 2021; Demarie et al., 2022; Mao et al., 2021). There is therefore a need to differentiate learning approaches to meet individual needs.

Improvement in post-test time indicates progress in motor skills, but other aspects of learning to swim such as breathing technique, efficient swimming style and confidence in the water must also be considered. It is important that the learning programme not only focuses on performance outcomes, but also pays attention to the development of technical skills and psychosocial aspects that are essential to becoming a competent swimmer. The implications of this research can help swimming coaches and instructors to design more effective and targeted learning programmes (Matsuda et al., 2021; Rajeh et al., 2023; Zeng et al., 2023). By understanding that appropriate interventions can improve student

performance, coaches can integrate learning strategies that meet individual needs and desired learning goals.

Based on the description above, the researchers provide a form of the Take the Ball exercise game, where the Take the Ball game is an exercise method used for beginners in swimming practice. This can be seen from the swimming speed results, which show an increase in the students' swimming speed. This is because one of the supporting components of an athlete's speed is strength (Johnson & Lawson, 2023; Polach et al., 2021; Seifert & Carmigniani, 2023). The strength of the swimmer's arm muscles has a great influence on the speed of the athlete during the race (Ananthapavan et al., 2023; Backes et al., 2022; Karatrantou et al., 2023). The stronger the arm muscles, the faster the swimmer. During the study, the athletes were enthusiastic about a particular training programme. The main aim of learning to swim is to improve the athlete's technical skills and performance in the water (Chalmers et al., 2021; Papadimitriou & Loupos, 2021; Wirth et al., 2022). In an effort to achieve this goal, various training and intervention methods have been developed and implemented. One of the training methods that has proven to be effective is the catching game.

### Conclusion

This study aimed to explore the effects of using the ball grab game training method to increase swimming speed in students. This study has some limitations that need to be considered. Generalisation of the findings must be made with caution, as the study sample may not be representative of the population as a whole. In addition, the long-term effects of such interventions need to be considered to ensure the sustainability of the performance improvements observed. Exercise methods such as grab-the-ball games may be an effective approach to improving students' swimming speed. However, further research is needed to gain a deeper understanding of the effects of these training methods and to explore other factors that may influence overall swimming performance.

### Conflict of interest

The authors declare no conflict of interest. No financial support was received

## Ethics Statement

Ethical clearance (No.114/KEPK/RSI-U/V/2024) for this research was obtained from the Research Ethics of Health Research Ethics Committee of Malang Islamic hospital, Malang City, East Java, Indonesia

## Author Contributions

Study Design, MM; Data Collection, MM, HA; Statistical Analysis, MM, HA, IBE and KD; Data Interpretation, MM, HA and KD; Manuscript Preparation, MM, IBE, KD and NJ; Literature Search, KD and NJ. All authors have read and agreed to the published version of the manuscript

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