Journal Physical Health Recreation (JPHR)
Volume 6 Nomor 1 ; Desember 2025
https://jurnal.stokbinaguna.ac.id/index.php/JPHR
e-ISSN : 2747- 013X

The Effectiveness of Using Kickboards and Pull Buoys for Aquaphobic Students with Freestyle Swimming Ability

Akbar Yusuf[1], Ikadarny[2], Haeril[3]

{Akbaryusuf0@gmail.com[1], ikadarny@unm.ac.id[2], Haeril@unm.ac.id[3]}

Sekolah Tinggi Keguruan dan Ilmu Pendidikan Yayasan Pendidikan Ujung Pandang Makassar, Jl. Andi Tonro No.17, Pa'baeng-Baeng, Kec. Tamalate, Kota Makassar, Sulawesi Selatan 90223[1], Fakultas Ilmu Keolahragaan dan Kesehatan, Universitas Negeri Makassar, Jl. A. P. Pettarani, Tidung, Kec. Rappocini, Kota Makassar, Sulawesi Selatan 90222[2] , Fakultas Ilmu Keolahragaan dan Kesehatan, Universitas Negeri Makassar, Jl. A. P. Pettarani, Tidung, Kec. Rappocini, Kota Makassar, Sulawesi Selatan 90222[3]

Abstract. This study aims to determine the effectiveness of kickboard and pull buoy use for students with aquaphobia. It also aims to determine whether kickboard and pull buoy use affects their freestyle swimming ability. The Aquaphobia Scale Questionnaire (ASQ) questionnaire was used to determine the effect of kickboard and pull buoy use on freestyle swimming ability. The research method used was a randomized purposive randomized experimental study (pretest-posttest). A pretest was administered to all 20 STKIP YPUP students enrolled in swimming courses with aquaphobia. These students were divided into two groups using paired ordinal matching. Data analysis used a t-test with a significance level of 0.05.

The results of this study indicate a significant difference in the effect of kickboard and pull buoy training groups, with an average of 12.09 at a significance level of 0.25. There was a significant difference in the effect of the kickboard and pull buoy training groups using the Aquaphobia Scale Questionnaire (ASQ) questionnaire, with an average increase of 7.70 at a significance level of 0.25. This indicates excellent effectiveness of using the kickboard, both using the Aquaphobia Scale Questionnaire (ASQ) questionnaire and through direct practice with freestyle swimming skills.

Keywords: Kickboard and pull buoy, aquaphobia, freestyle swimming.

1 Introduction

Swimming is one of the essential basic skills that every individual should possess. In addition to serving as a sport that enhances physical fitness, swimming is also a vital survival skill in water-related emergencies. According to Sutrisno (2012), swimming is the act of moving from one place to another in water using the limbs either the legs, arms, or a coordinated

combination of both. Swimming skills not only help maintain physical fitness but also foster courage, self-confidence, and adaptability to aquatic environments. According to Kasmad and Basit (2021), among swimming styles, the breaststroke is the slowest compared to the other three styles: freestyle, backstroke, and butterfly.

Swimming provides numerous benefits, including maintaining and improving physical fitness, promoting health, ensuring personal safety, and developing physical abilities such as endurance and muscle strength. It also contributes to children's physical growth and development, serves educational and recreational purposes, and can be used for rehabilitation (Ahmad et al., 2018). Swimming consists of four strokes, each with different levels of difficulty (Anam et al., 2017). These four strokes are butterfly, backstroke, breaststroke, and freestyle (Abdul Gani et al., 2019). One of the fundamental strokes that swimmers must master is the freestyle, known as the fastest among all swimming styles (W. A. Nugroho et al., 2021). Freestyle is considered an efficient and relatively easy technique because it uses an alternating arm motion above the water surface (Rezki et al., 2019), with the body facing downward (Farizal & Akbar, 2020). Freestyle is also the most commonly contested stroke, and in all swimming events, speed serves as a key measure of performance. Speed refers to an individual's ability to perform continuous, repetitive movements in a short period (Tofikin et al., 2019).

According to Olih Solihin Akhmad and Sriningsih (2016), swimming requires a person to move their arms and legs to float and move from one point to another. Meanwhile, Yusuf Abdhul (2021) defines swimming as a popular aquatic sport in which movements are entirely performed in the water and require coordination of nearly all body parts. Based on these definitions, it can be concluded that swimming is an aquatic sport that involves the active movement of the entire body and engages almost all muscles. In swimming, safety is the most critical factor since it carries a high risk. The active movement of the body helps prevent drowning and allows the swimmer to float on the surface or dive underwater. Therefore, in any swimming activity or instruction, safety must always be prioritized.

However, in practice, not everyone can easily learn and master swimming skills. One of the most common obstacles, especially among beginners, is an excessive fear of water, known as aquaphobia. Aquaphobia is a specific type of phobia characterized by an intense, irrational, and persistent fear of water or water-related activities. The American Psychiatric Association (APA, 2013) defines aquaphobia as anxiety triggered by being near or in water, often accompanied by physiological symptoms such as rapid heartbeat, irregular breathing, muscle tension, and even panic attacks.

This condition can significantly hinder the learning process. Students with aquaphobia tend to avoid entering the pool, panic easily when in water, and struggle to focus on the swimming techniques being taught. According to Becker (2009), individuals with aquaphobia often experience impaired motor coordination because their muscles tense due to anxiety, making their movements stiff and ineffective. This poses a challenge for instructors, particularly when teaching the freestyle stroke, which requires coordinated movement of the legs, arms, and breathing in harmony.

Freestyle is one of the most common strokes taught to beginners, as it is considered fast, efficient, and relatively easy to learn. In this stroke, the body remains horizontal with the face downward, the arms alternately pull through the water, and the legs perform a flutter kick to provide propulsion. Breathing is done alternately to the side as one part of the head emerges above the surface (Maglischo, 2003). Although this technique is straightforward, students with aquaphobia often find the coordination of these movements difficult due to their overpowering fear when in the water.

To address this problem, instructors often apply various strategies, including psychological approaches, step-by-step learning, and the use of swimming aids. Swimming aids help learners feel safer, build confidence, and focus on technical aspects without worrying about sinking or losing balance (Barbosa et al., 2013).

Two of the most commonly used swimming aids are the kickboard and the pull buoy. The kickboard is a lightweight floating board used to practice leg movements. By holding the kickboard at the water's surface, beginners can practice their kicking technique while feeling safe, as the board helps support their body. The kickboard also increases confidence by providing a sense of stability (Sengun et al., 2018). Moreover, it allows beginners to focus solely on leg movements without having to coordinate arm movements or breathing.

Meanwhile, the pull buoy is a figure-eight-shaped float that is held between the thighs or ankles to practice arm strokes and help maintain body position in the water. The pull buoy enhances arm strength, body awareness, and stroke technique by minimizing leg contribution. It also helps swimmers maintain balance with minimal support (Maglischo, 2013). However, for students with aquaphobia, using a pull buoy can be more challenging because it provides less buoyancy compared to a kickboard, requiring them to be more comfortable in the water.

Using these aids is believed to help aquaphobic students overcome their fear of water and accelerate their mastery of the freestyle technique. The kickboard allows them to adapt to leg movements while remaining safely afloat, whereas the pull buoy develops balance and arm movement control once they become more confident in the water. However, there is still limited research specifically examining the effectiveness of these tools among aquaphobic students.

Previous studies have shown that using swimming aids generally speeds up the learning process. Barbosa et al. (2013) found that kickboard use improved children's swimming distance and leg-kicking technique. Similarly, Sengun et al. (2018) reported that swimming aids enhanced learning motivation and basic technical skills among learners. However, these studies did not explore the psychological conditions of students with aquaphobia.

From a motor learning theory perspective, the use of swimming aids aligns with Vygotsky's (1978) concept of scaffolding, which provides temporary support to help learners master skills initially beyond their independent capability. Aids such as kickboards and pull buoys function as scaffolds that allow learners to progress gradually until they can swim without assistance.

From a motor control theory perspective, aids help reduce cognitive load, enabling learners to focus on specific movement components. Schmidt and Lee (2011) argue that isolating movement components can enhance skill mastery more effectively before integrating them into a complete movement pattern.

From a psychological perspective, exposure therapy (Marks, 1987) suggests that gradual exposure to a feared stimulus—in this case, water—can help individuals reduce anxiety through habituation. By providing a sense of safety through swimming aids, aquaphobic students can gradually adapt to the aquatic environment and decrease their fear response.

Based on theoretical and empirical foundations, it is crucial to explore the effectiveness of kickboard and pull buoy use among aquaphobic students. This research aims to determine which of the two aids is more effective in improving freestyle swimming ability while reducing water-related anxiety.

The findings of this study are expected to provide practical insights for swimming instructors and physical education curriculum developers in designing more effective and inclusive swimming programs. Understanding which aid is more beneficial can help instructors optimize learning strategies, allowing aquaphobic students to master freestyle swimming skills more quickly while overcoming their fear of water.

In conclusion, aquaphobia among students presents a real challenge in swimming education that requires practical solutions. The use of swimming aids such as kickboards and pull buoys offers an approach that helps students adapt to the water environment, reduce anxiety, and enhance freestyle swimming skills. However, the comparative effectiveness of these two tools for aquaphobic students remains underexplored. Therefore, this study is essential to contribute to the development of evidence-based, effective, and inclusive swimming instruction.

2 Method

This study employed an experimental method with a pre-test–post-test design. This design was chosen to determine the difference in the effectiveness of using kickboards and pull buoys on the freestyle swimming ability of students who exhibited tendencies of aquaphobia. The research was conducted during swimming classes held at the Andi Mattallatta Swimming Pool in Makassar. The subjects of the study were students of the Physical Education, Health, and Recreation Program at STKIP YPUP Makassar who were not yet proficient swimmers and were identified as having aquaphobia. Identification was carried out using the Aquaphobia Scale Questionnaire based on a Likert scale and initial interviews. The total number of participants was 20 students, divided into two groups: a kickboard group and a pull buoy group. The training sessions were held twice a week for eight weeks (a total of 16 sessions, including pre-test and post-test). A quantitative experimental method was used to examine the effect of specific treatments on other variables under controlled conditions (Sugiyono, 2018).

The research instruments included a freestyle swimming performance test over a 20-meter distance, measured by time, and the Aquaphobia Scale Questionnaire (ASQ) to assess the participants' level of anxiety in water. Data were analyzed using normality and homogeneity

tests to ensure that the data met the assumptions for parametric analysis, followed by paired t-tests to determine differences in swimming ability and anxiety levels within and between groups.

3 Result

This study aimed to determine the effectiveness of using kickboard and pull buoy aids in improving freestyle swimming skills among students experiencing aquaphobia. The results indicated that there were significant differences in the improvement of swimming ability between the group using the kickboard and the group using the pull buoy, both in terms of freestyle swimming performance and scores measured by the Aquaphobia Scale Questionnaire.

Table 1. Descriptive Analysis Results of Freestyle Swimming Ability Using Kickboard and Pull Buoy Aids

Variabel	Mean	Min	Max	Sum	Stdv
Freestyle Swimming Ability Kickboard Group	44,784	40,31	52,51	447,84	3,52
Freestyle Swimming Ability Pull Buoy Group	56,874	50,51	59,71	568,74	2,84
Aquaphobia Scale Questionnaire Kickboard Group	73,10	70	78	731	2,33
Aquaphobia Scale Questionnaire Pull Buoy Group	65,40	61	71	654	3,09

Table 2. Results of Homogeneity Analysis of Freestyle Swimming Ability Using Kickboard and Pull Buoy Aids

Variabel	Nilai Homogenitas	Sig
Freestyle Swimming Ability	0,590	0,05
Aquaphobia Scale Questionnaire	0,406	0,05

Table 3. Results of Normality Analysis of Freestyle Swimming Ability Using Kickboard and Pull Buoy Aids

Variabel	Nilai Normality	Sig
Freestyle Swimming Ability	0,590	0,05
Aquaphobia Scale Questionnaire	0,406	0,05

Table 4. Results of data analysis of the t-test for differences in the effectiveness of freestyle swimming ability with kickboard and pull buoy aids.

	Variabel	Mean	T-count	Ttable	Sig	α
Post Test	Freestyle Swimming Ability	12,090	6,158	2,262	0,000	0,025
	Aquaphobia Scale Questionnaire	7,700	5,190	2,262	0,000	0,025

4 Discussion

The results of the study showed that aquaphobic students using the kickboard demonstrated a significant improvement in their 20-meter freestyle swimming time, with an average of 44.784 seconds, compared to the pull buoy group, which had an average of 56.874 seconds—a difference of 12.090 seconds in favor of the kickboard group. This finding confirms the superiority of the kickboard in enhancing swimming efficiency and speed among beginners, particularly in the 20-meter freestyle test.

This phenomenon is consistent with the findings of Gourgoulis et al. (2019), who reported that training with a kickboard strengthens hip-driven kicks and improves body alignment, effectively reducing water drag. The kickboard isolates leg movements (flutter kick), allowing learners to focus on developing strong rhythmic kicks without the interference of arm coordination or breathing. This aligns with the findings of CoachSlava (2022) and SwimmingCourses.sg (2023), which emphasize the effectiveness of kickboard drills in improving leg stamina and postural stability.

In addition to the technical aspects, data from the Aquaphobia Scale Questionnaire (ASQ) revealed a greater reduction in aquaphobia scores among the kickboard group (73.10 points) compared to the pull buoy group (65.40 points). This difference indicates that using a kickboard not only enhances motor performance but also significantly reduces anxiety toward water. This finding is consistent with Bandura's self-efficacy theory as cited in Han Wang and Hui Han (2024), which states that successful mastery experiences, even small ones, serve as a key source of motivation and self-efficacy.

The kickboard provides a sense of safety and comfort for aquaphobic students: they can look forward, keep their heads above water, and practice kicking without feeling pressured. This experience reduces both physiological and mental tension, supporting the physiological/emotional state component of self-efficacy theory. The kickboard effectively creates a positive physiological state that strengthens confidence in swimming ability even before full mastery of the freestyle technique is achieved.

Within Vygotsky's (1978) scaffolding framework, the kickboard acts as a learning scaffold, providing physical support that allows students to operate within their Zone of Proximal Development (ZPD). They begin by learning basic kicking techniques in a safe environment and gradually progress toward full arm–breathing coordination without aids. In contrast, the pull buoy is less supportive in the early stages since it does not train kicking or allow active control of the upper body in the water.

Furthermore, Badruzaman et al. (2019), in a study comparing flippers & buoys, kickboards, and no aids, found that while flippers & buoys were the most effective, the kickboard still showed much better results than swimming without any aids. This supports the argument that the kickboard is an effective learning tool, especially in cases involving aquaphobia—even though it may not be the optimal tool in all contexts, since other aids such as the pull buoy require a higher level of technical readiness.

Additionally, the effectiveness of the kickboard in strengthening the leg and core muscles is supported by modern training literature. Kickboard exercises engage the quadriceps, hamstrings, core, and hip muscles intensely—essential for maintaining a streamlined position while swimming. Strong kicks enable swimmers to stay afloat actively, reducing dependence on passive aids and enhancing self-control in the water.

On the other hand, the pull buoy has practical weaknesses as a “crutch” if introduced too early. According to Your Swim Log (2023), the pull buoy artificially supports the hip position without requiring the core and hips to engage actively, limiting hip rotation and weakening the body’s kinetic chain. This dependency often results in a loss of stability once the aid is removed. Therefore, using a pull buoy can actually slow down performance in swimmers with strong kicks, since it replaces the legs’ primary propulsion role.

Overall, the findings support the hypothesis that the kickboard is more effective than the pull buoy for aquaphobic students. The kickboard provides physical support, fosters early mastery experiences, and facilitates psychological adaptation to the aquatic environment. The pull buoy remains useful in later stages for refining arm and breathing techniques, but it is not the ideal primary aid during the initial adaptation phase—especially for individuals experiencing water-related anxiety.

5 Conclusion

The results of this study indicate that the kickboard is a more effective training aid than the pull buoy in freestyle swimming instruction for aquaphobic students, both technically and psychologically. The kickboard allows students to focus on strengthening their leg kicks, maintaining a stable body position, and reducing water resistance (drag), thereby improving swimming technique more rapidly. In addition, the sense of safety experienced when using the kickboard helps reduce anxiety toward water, which in turn enhances self-efficacy.

The researcher would like to express sincere gratitude to all parties who have contributed to the completion of this research. Without the support of various individuals and institutions, this study would not have been successfully accomplished. May Allah SWT reward all the kindness that has been given. The author also extends special thanks to the leadership of STKIP YPUP for granting permission and providing the necessary facilities, which made it possible to carry out this research effectively. In addition, the author expresses appreciation to all the students who participated enthusiastically in the swimming learning program, especially those with water-related difficulties or fears.

References

Abdul Gani, R., Sukur, A., & Nugroho, S. (2019). Peningkatan Kemampuan Renang Gaya Kupu-Kupu Melalui Strategi Pembelajaran Variatif Bagi Mahasiswa. Multilateral Jurnal Pendidikan Jasmani Dan Olahraga, 18(2), 107–113. https://doi.org/10.20527/multilateral.v18i2.7621

Ahmad, E., Tangkudung, J., Wijaya, Y. S. K., & Widiastuti. (2018). Motivasi Belajar Siswa SMK N 1 Payakumbuh dalam Pembelajaran Renang. Journal Sport Area, 3(1), 6–13. https://doi.org/10.25299/sportarea.2018.vol3(1).1433

Anam, M. S., Sugiarto, T., & Wahyudi, U. (2017). Pengembangan Variasi Latihan Teknik Dasar Renang Gaya Bebas Dan Gaya Dada Melalui Video Compact Disk Pada Kegiatan Ekstrakurikuler Renang Di Smp Negeri 8 Malang. Gelanggang Pendidikan Jasmani Indonesia, 1(1), 74. https://doi.org/10.17977/um040v1i1p74-86

Badruzaman Badruzaman. (2019)The Increase of Swimming Distance Ability Using Tools for Flippers & Back Buoys and Kickboard on Freestyle Swimming Learning for Sports Science Students Beginners. https://doi.org/10.2991/icsshpe-18.2019.97

CoachSlava (2022) Why You Need a Kickboard in Your Swim Training, https://www.coachslava.com/swimming-gear-equipment/why-you-need-a-kickboard-in-your-swim-training

Farizal, I., & Akbar, T. (2020). Analisis Kecepatan Renang Gaya Bebas Pada Atlet Sekolah Olahraga Negeri Sriwijaya (Sons). Penjaskesrek Journal, 7(1), 188–203. https://doi.org/10.46244/penjaskesrek.v7i1.1017.

Han wang and hui han (2024) Causes of Aquaphobia in Swimming Beginners Aged 6 to 12 and Related Strategies in Swimming Instruction, Journal of Education and Educational Research Vol. 9 No 2. hal 73-76 https://doi.org/10.54097/x14h9053

Kasmad, M. R., & Basit, M. (2021). Hubungan Kelentukan, Kekuatan Lengan dan Daya Ledak Tungkai Dengan Renang Gaya Dada pada Mahasiswa FIK UNM Makassar. SPORTIVE: Journal Of Physical Education, Sport and Recreation, 5(1), 49. https://doi.org/10.26858/sportive.v5i1.20255

Nugroho, W. A., Umar, F., & Iwandana, D. T. (2021). Peningkatan KecepatanRenang 100 Meter Gaya Bebas Melalui Latihan Interval Pada Atlet Para-Renang Sekolah Khusus Olahraga Disabilitas Indonesia (SKODI). Jurnal Menssana, 6(1), 56–65.

Olih solihin Akhmad dan sriningsih. (2016). Pintar belajar renang. Alvabeta.

Rezki, Jatra, R., & SM, N. R. (2019). Analisis Teknik Renang Gaya Bebas Pada Mahasiswa Mata Kuliah Renang. Journal Sport Area, 4(1), 258–265. https://doi.org/10.25299/sportarea.2019.vol4(1).2319.

Sugiyono. (2018). Metode penelitian kuantitatif, kualitatif dan R&D. Alfabeta.

Swimming Courses.sg (2023) Using Swimming Aids: Kickboards, Pull Buoys, and Fins for Beginners to Learn to Swim https://www.swimmingcourses.sg/swim-class/using-swimming-aids-kickboards-pull-buoys-and-fins-for-beginners-to-learn-to-swim

Tofikin, Damrah, & Nurmai, E. (2019). Pengaruh Daya Ledak Otot Tungkai, Kecepatan Dan Kelincahan Terhadap Kecepatan Tendangan Sabit Pada Atlet Pencak Silat Persaudaraan Setia Hati Terate Di Kota Pekanbaru. Jurnal Pendidikan Rokania, IV(2), 209–219. https://doi.org/10.37728/jpr.v4i2.213

Vygotsky, L. S. (1978). Mind in Society: The Development of Higher Psychological Processes. Cambridge, MA: Harvard University Press.

Your Swim Log (2023) The pull buoy is one of the most common swim aids you will see at the end of a swimmer’s lane. Here is a detailed look at what pull buoys are, the pros and cons of pull buoys, and how to use them properly. https://www.yourswimlog.com/pull-buoy/?utm_source

Yusuf Abdhul. (2021). Pengertian Renang, Sejarah, Gaya, Dan Manfaat. https://penerbitbukudeepublish.com/materi/olahraga-renang/