

## The effect of varied training methods with smaller class sizes on students' front crawl swimming skills

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### Abstract

Students have unique aquatic abilities, given that each student's aquatic experience can be different. However, the swimming learning process sometimes generalizes these abilities. The purpose of this study was to reveal the effect of varied training methods with smaller class sizes on students' front crawl swimming skills. The research used an experiment with a one-group pre-test-post-test design. The study population was 93 students, they take swimming lessons at the Sports Education Study Program, Garut University the 2022/2023 Academic Year. The sampling technique uses purposive sampling. The sample that reached the criteria was 22 students. The research instrument used a front crawl swimming skills test. Research procedure - giving treatment with varied methods with smaller class sizes. The data analysis technique uses Paired Sample t Test. Treatment with varied lesson delivery with smaller class sizes obtained sig values. (2-tailed) of 0.000. Based on the results of the research findings revealed the value of sig. (2-tailed) obtained is 0.000. The score was lower than 0.05, so it was concluded that the method's effect varied with smaller class sizes on students' swimming skills on the front crawling swimming skills. The conclusion of this study is that using classroom settings and methods can affect swimming skills and front crawling style.

**Keywords:** Varied training methods, smaller class sizes, skills, front crawl swimming.

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**Authors contribution:** a – Preparing concepts; b – Formulating methods; c – Conducting research; d – Processing results; e – Interpretation and conclusions; f - Editing the final version

### INTRODUCTION

Swimming is one of the most popular sports in Indonesia (Putra & Wayan, 2020). Swimming can be defined as a type of sport done by moving the hands and the feet continuously to reach a certain distance in water (Eskiyeczek, 2020). Swimming benefits health (Oja et al., 2015),

cardiorespiratory fitness, and body composition (Charmas & Gromisz, 2019). Front crawl or freestyle is one of the four styles used in swimming (Emir et al., 2021). The other three strokes are known as breaststroke, butterfly and backstroke. The front crawl swimming technique is a style that is suitable for children who are just learning to swim because, philosophically, the style of swimming freedom has a range of movements that are almost similar to daily walking activities (Rezki et al., 2022).

Students have their own characters shaped by their experiences inside or outside the school environment. Students can have positive experiences, but sometimes they can be negative. Some of the negative experiences that have been reported by students, parents or even guardians include drowning by someone else, fall, non-fatal drowning, negative experiences in a swimming pool or beach, negligence of an instructor, lack of instructors, students getting away from the instructor during the lesson, and jump before the instructor is ready (Peden & Franklin, 2020). Therefore, it is very common for some students to experience excessive fear (phobia) during swimming lessons. Related to these issues/problems, additional support, such as smaller class sizes, slowing down the speed of the learning process, and variation of learning is needed (Peden & Franklin, 2020).

Many factors impact students' negative experiences. Regardless, school is considered the ideal place to promote physical activity (Watson et al., 2017) and provide students with knowledge, skills, and behaviour along with the purpose of national education (Wang, 2023). School is an educational institution that is designed to provide learning spaces and environments for students under teachers' instructions (Bozkuş, 2014). An important factor in supporting learning success is how teachers choose the learning method to prepare for learning and teaching activities (Nguyen et al., 2022). The position of a method is as a learning strategy and as a tool to reach goals (Akdeniz, 2016).

Regarding the problem in the previous paragraph, varied training methods are one of the recommended solutions (Peden & Franklin, 2020).

A varied training method is a way to present learning materials to students in order to achieve expected learning goals (Apriyanti, 2021). Teachers teach by using one method and varied training methods at once (Willey & Liu, 2018). The varied training methods can make learning more interesting and exciting for students.

Many methods have been used to learn motor skills. Based on the results of many sources, blocked and random practice methods are often used in learning motor skills and have a very significant impact (Doewes et al., 2022), as well as blocked and serial practice methods that have a positive impact on motor skills (Geertsema & le Roux, 2020). Most articles compare both or all three methods. However, the author has yet to find all three methods combined to learn movement skills. The three methods will be applied in the same class but adjusted to the characteristics of each student.

Smaller class sizes make teachers more interactive with students. The sizes allow teachers to give more personal attention and enhance active interaction, especially for students who experience difficulty (Hastie & Saunders, 2014). Furthermore, in smaller classes, teachers can spend more time with the students who have difficulty with class contents or dealing with discipline problems caused by students who have behavioural problems (Li et al., 2021). As for the students, smaller class sizes help students have more time to focus on the teachers who are teaching lessons so that active interaction between students and teachers will increase.

Important factor is related to smaller class sizes. Smaller class sizes and the level of equipment provision are two important features in physical education as they relate to engagement in motor-appropriate activity (Kirkham-King et al., 2017). Smaller class sizes can benefit all educational levels, from elementary to high school (Filges et al., 2018). Therefore, this research aims to investigate how varied training methods with smaller class sizes affect college students' front-crawl swimming skills.

## METHOD

Research data was obtained by using an experimental method. The method's main characteristic is the treatment imposed on the research subjects or objects. The research uses an experimental method with one group pre-test-post test design, where there is a pre-test before treatment and a post-test after treatment. Thus, it can be known more accurately, because it can be compared to what was done before the treatment.

The research population is all the students who took Aquatic Course I at the Sports Education Study Program, Faculty of Islamic Education and Teacher Training, Garut University, for the 2022/2023 Academic Year. It consists of three classes with the following details:

**Table 1.** Students Population of Sports Education Study Program

No	Class	Total
1	A	24
2	B	33
3	C	36
	Total	93

The process of determining the sample in this study used purposive sampling techniques. Purposive sampling is a sampling technique with certain considerations. The criteria for students used as research samples include:

1. Gender: Male ;
2. Took aquatic course I;
3. An active student in Odd Semester of 2022/2023; and
4. Have a negative experience in Swimming Pool or other places.

The research instrument uses front crawl swimming skills (Dalamatros et al., 2014). More details about front crawl instruments are as follows:

1. Purpose: To evaluate swimming ability for the front crawl
2. Validity and Reliability: Validity coefficients of 63 for the front crawl and reliability coefficient of 67 for the front crawl.
3. Personal: One person as a starter/time and one person as a recorder. Students act as partners, one holding the subject stationary in the water. Students can also count the number of strokes for 25 yards.

4. Equipment: A swimming pool, lane dividers, a stopwatch, score sheets, and pencils.
5. Space: 25-yard swimming pool.
6. Test Items: The number of strokes to swim 25 yards for the front crawl.
7. Preparation: Placing the lane divider
8. Direction Front Crawl Start: The student starts from a stationary prone floating position, legs straight, toes touching the wall, both arms reaching straight out parallel with the body. The elbows should be close to ears. A partner holds the swimmer at the waist, with one hand on the abdomen and one on the back. On the "ready, go" signal, the holder releases the swimmer and steps back. The swimmer swims the front crawl stroke as fast as possible.
9. Scoring: The number of strokes needed to complete 25 yards for the front crawl.

The research procedure consists of three phases, including the first phase, which is the initial test using front crawl swimming skills. Initial tests are used to determine initial freestyle swimming skills before the treatment is given. The second phase is treatment using varied training methods (blocked, random, and serial practice) with smaller class sizes. The treatment is given for 8 weeks (until mid-term exams) with 3 x 50 minutes for each session. Training sessions consist of warm-up, exercise, and cool-down. The details can be seen in Table 3. The third phase is the final test, using the same instrument as the initial test, using front crawl swimming skills. The final test is conducted with the aim of knowing the effect on initial freestyle swimming skills after the treatment given.

**Table 2.** Students Population of Sports Education Study Program

Meeting	Subject Material	Varied Training Methods
1	Taking a breath, floating, gliding movements	Blocked and serial practice method
2	Taking a breath, gliding, freestyle leg movements	Blocked and serial practice method
3	Taking a breath, floating, gliding, and freestyle leg movements	Blocked and serial practice method
4	Taking a breath, floating, gliding, freestyle leg movements, and freestyle arm movements	Blocked and serial practice method
5	Taking a breath, floating, gliding, freestyle leg movements, freestyle arm movements, and freestyle coordination	Blocked and serial practice method
6-8	Breathing, gliding, freestyle leg movements, free arm movements, and freestyle coordination.	Blocked, serial, and random practice methods

Data analysis techniques used in the research include: First - A data normality test is conducted to determine the distribution of data. Data normality test using Kolmogorov-Smirnov with decision making criteria: data is categorized as normal if the significant value is more than 0,05. Otherwise, if the significant value is less than 0.05, then the data is abnormal. Second, a data homogeneity test was conducted to determine whether two or more sample data groups come from populations with equal variance (homogeneous). The homogeneity test was conducted using the Levene test as the basis of decision-making for the Sig. Value or P-Value > 0.005. Thus the variance of two or more is homogeneous. Otherwise, if the value of Sig. Or P-value < 0.005. The variance of two or more is inhomogeneous. Third – the hypothesis test using a paired sample t-test with the testing criteria: if the significance value (2-tailed) < 0.05, then  $H_0$  is rejected or  $H_a$  is accepted. This means varied training methods with smaller class sizes have a significant effect on students' front crawl swimming skills. Otherwise, if the significance value (2-tailed) > 0.05, then  $H_0$  is rejected or  $H_a$  is accepted, meaning varied training methods with smaller class sizes do not significantly affect the student's front crawl swimming skills.

## RESULT

Descriptive Statistics is used to help understand the characteristics of research data. According to the descriptive statistical test results in Table 3, the minimum score was obtained on the pre-test (10) and post-

test (13), maximum pre-test score (24) and post-test score (29), mean pre-test score (14.36) and mean post-test score (17.64); and standard deviation pre-test score 3.274 and post-test score 3.910. A normality test was applied to determine whether the research data was distributed normally or not.

**Table 3.** Result of descriptive statistical test

	N	Minimum	Maximum	Mean	Std. Deviation
Pre Test	22	10	24	14.36	3.274
Post Test	22	13	29	17.64	3.910
Valid N (listwise)	22				

Table 4 shows the results of the normality test using a one-sample Kolmogorov-Smirnov test with decision-making criteria: if the significance value  $> 0,05$ , then the data used in the research has a normal distribution. Otherwise, if the significance value  $< 0,05$ . The data used, then, does not have a normal distribution. Table 2 shows the value of Sig in the pre-test data.  $0.140 > 0,05$ . Likewise, the post test data has the value of Sig.  $0.179 > 0,05$ . Thus, pre test and post test data are normally distributed.

**Table 4.** Results of the normality test

	Experimental Group	Kolmogorov-Smirnov <sup>a</sup>		
		Statistic	Df	Sig.
Experimental Results	Pre-Test	.161	22	.140
	Post-Test	.156	22	.179

a. Lilliefors Significance Correction

Table 5. shows the results of the homogeneity test using Levene's test method on the basis of decision making, if the value of Sig. The data variance is not homogeneous based on mean  $< \text{Research Alpha } (0.05)$ . Otherwise, if the value of Sig. The data variance is homogeneous based on mean  $> \text{Research Alpha } (0.05)$ . Based on Table 3, the value of sig. Based on mean  $> \text{Alpha } (0.522 > 0.05)$ , which means the data variance is homogeneous.



**Table 5.** Results of the homogeneity test

		Levene Statistic	df1	df2	Sig.
Experimental Results	Based on Mean	.417	1	42	.522
	Based on Median	.231	1	42	.633
	Based on the Median and with adjusted df	.231	1	40.748	.633
	Based on trimmed mean	.327	1	42	.570

A hypothesis test is used to test whether there is an effect of varied training methods with smaller class sizes on students' front crawl swimming skills. The results of the hypothesis test are as follows:

**Table 6.** Results of a hypothesis test

Pair	PreTest – PostTest	Paired Differences				T	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
1		-3.273	.985	.210	-3.709	-2.836	-15.588	21	.000

Based on Table 6 above, the obtained value of sig. (2-tailed) is 0,000. The value is lower than 0,05. Thus, it is concluded that the  $H_0$  is rejected, and the  $H_1$  is accepted. This means that varied methods with smaller class sizes affect students' front crawl swimming skills.

## DISCUSSION

The results of the analysis obtained a Sig. (2-tailed) 0,000 less than 0,05. This means that varied training methods with smaller class sizes have a significant effect on students' front crawl swimming skills. The findings do not support the contextual interference effect (CIE) because when practice schedules are manipulated, as in the blocked and random schedules, the basis for establishing different levels of contextual interference becomes the presentation of the variations themselves (Dira Fauzi et al., 2023; Rezki et al., 2019). However, it is found that varied training of blocked practice followed by serial practice or random practice, even when combined, can produce better learning than exercises done only in blocked practice, serial practice, or random practice.

According to Rocha et al. (2018), Basic aquatic skills include: Breath control, horizontal buoyancy, body position, body position at dorsal gliding, and leg kick with breath control. The position is critical to help learn



more complex skills. Srem-Sai et al., (2019) explained that blocked practice (low CI) has a better influence than random practice in skill acquisition. Blocked practice can be helpful during early learning, where practice is completed on one task before practice on another task is undertaken. Some people can move on to other skills using serial (moderate CI) or random (high CI) practice. Another practice session was learning skills using serial practice for several experiments. After doing several repetitions, it is expected to be able to do skills and move on to learn other skills using serial practice or random practice. From the first to the last training session, the training variations may differ according to the development of the skills being learned. An effective teacher can recognize that each individual has differences. Specific varied trainings, taking into account background and learning style, is one of the factors that can impact academic achievement for each individual (Yassin, 2015). Therefore, individual weaknesses can be addressed through varied training methods in the classroom.

The results are related to self-efficacy. The theory of self-efficacy that every human being has is expressed in social cognitive theory, which emphasizes the importance of the role of human agents (Aliyyah et al., 2020). The idea of human agency, states that a person has influence or control over what he can achieve. Self-efficacy is a belief in the ability of a person to organize and carry out all actions that are important to produce certain achievements (Wulandari & Jannah, 2018). The belief influences an individual's chosen actions, the amount of effort exerted, how long they can persist, and how long their efforts will be maintained in order to complete a task in the face of difficulty and challenges.

According to self-efficacy theory (process variables as mediators), efficacy beliefs influence student outcome variables through First - self-efficacy belief can have an effect on outcome variables through cognitive processes, which include goals, attributions, decision making, and problem-solving; Second, self-efficacy belief can affect outcome variables through behavioral processes, including choice, selection, effort, and

persistence; Third, self-efficacy belief can affect outcome variables through emotive processes, which include anxiety, arousal, depression, confidence, and flow (Aliyyah et al., 2020).

Based on the self-efficacy theory and the available research evidence, M. Li et al., (2021) proposed a conceptual model regarding the mediating relationship between perceived motor skill competence, successful practice trials, and motor skill. In a conceptual model, as shown in Figure 3, it is suggested that successful practical trials serve as a mediating process variable in the relationship between perceived motor skill competence and motor skill performance. Successful practice trials will serve as a source of experiential mastery, which in turn enhances students' self-efficacy.



Figure 1. A conceptual model  
(M. Li et al. 2021)

Every motor learning process will go through certain phases. Parwata (2021) stated three phases for acquiring motor skills. First, the cognitive phase is the initial stage of learning motor skills. In the cognitive phase, learning begins with actively thinking about the movements being studied, trying to master them, and understanding the information provided about the movements. Additionally, during this phase, one still needs to perform the movements well. Second, the associative phase is also called the intermediate phase. This phase is characterized by the ability to perform a series of non-stagnant motions. Third, the autonomous phase or the final phase of the learning movement. The phase is characterized by the ability to perform skill movements automatically without being influenced by anything that can disturb it. To achieve the autonomous phase, regular repetitive practice is necessary. Developing motor skills is generally positively related to the amount of practice Parwata, (2021).

Individuals who dedicate a lot of time to activities related to practice will improve their performance. Meanwhile, players who spend little time practising usually show less improvement and experience a decline in performance.

Dividing students into small groups is important. The results of this research are consistent with previous research, class sizes that were < 25 students associated with significantly higher % MVPA during elementary physical education (Kirkham-King et al., 2017), achieving a moderate to high positive effect dengan small class size exergames on student physical education learning (Zhao et al., 2024). Smaller class sizes allow teachers to give more attention to individuals, and discipline in class will be easier with fewer students (Wright et al., 2019). Smaller classes create a more fun learning atmosphere and less distraction, so the students will quickly obtain the learning feedback (Filges et al., 2018). In smaller classes, teachers can have more time to guide and direct each student and less energy to control classes, allowing them to know more about students' characters or needs and adapt to the conveyed lesson. According to the experts' explanations, small group classes have positive effects on increasing the achievement of learning goals, individually or in groups with different characteristics (Jepsen, 2015).

From the findings that have been revealed in this study, the results can be inseparable from the characteristics of research subjects with students of the Sports Education Study Program, Garut University and activities and some influences that may affect the research findings. So that in the future it also requires excellent characteristics and supports the main interests in swimming athletes. Therefore, it is recommended that future research manage all factors that can affect consistency and create bias in research results. Furthermore, it is recommended that the effect of varied training methods with different motivations be analyzed on motor skill learning outcomes. Finally, the author suggests researching motor skills using other varied training methods.

## CONCLUSION

Based on the results of research and discussion, varied training methods with small class sizes have significance in improving students' freestyle swimming skills. Varied training methods, using blocked, serial, and random practice, provide a good training process, as the training method adjusts to the background or characteristics of students. In addition, the smaller class division can facilitate the delivery of subject material and supervision to all students.

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## REFERENCES

- Akdeniz, C. (2016). Instructional Process and Concepts in Theory and Practice: Improving the Teaching Process. In *Instructional Strategies*. <https://doi.org/10.1007/978-981-10-2519-8>
- Aliyyah, A., Wicaksono, B., Saniatuzzulfa, R., & Mukholid, A. (2020). Relevance of self efficacy and female futsal athletes' anxiety before the match. *Jurnal SPORTIF: Jurnal Penelitian Pembelajaran*, 6(1), 105–117. [https://doi.org/10.29407/js\\_unpgri.v6i1.14080](https://doi.org/10.29407/js_unpgri.v6i1.14080)
- Apriyanti, A. (2021). Metode Mengajar Bervariasi Untuk Meningkatkan Hasil Belajar Matematika Siswa. *Hipotenusa Journal of Research Mathematics Education (HJRME)*, 3(2), 79–86. <https://doi.org/10.36269/hjrme.v3i2.448>
- Bozkuş, K. (2014). School as a Social System. *Sakarya University Journal of Education*, pp. 4, 49–61. <https://doi.org/10.19126/SUJE.10732>
- Charmas, M., & Gromisz, W. (2019). Effect of 12-Week Swimming Training on Body Composition in Young Women. *International journal of environmental research and public health*, 16(3), 346. <https://doi.org/10.3390/ijerph16030346>
- Dalamitros, A. A., Manou, V., & Pelarigo, J. G. (2014). Laboratory-based tests for swimmers: Methodology, reliability, considerations and

- relationship with front-crawl performance. *Journal of Human Sport and Exercise*, 9(1), 172–187. <https://doi.org/10.4100/jhse.2014.91.17>
- Dira Fauzi, Hanief Alifyah, Ruslan Abdul Gani, Irfan Zinat Achmad, Setio Nugroho, & Rekha Ratri Julianti. (2023). Keterampilan Teknik Dasar Renang Gaya Bebas (Crawl) Di SMPN 5 Karawang Barat : Ekspektasi vs Realita. *SPRINTER: Jurnal Ilmu Olahraga*, 4(1), 1–6. <https://doi.org/10.46838/spr.v4i1.251>
- Doewes, R. I., Elumalai, G., & Azmi, S. H. (2022). The effect of blocked and random practice on the underhand throw ability in male Boccia athletes with cerebral palsy. *Journal of Physical Education and Sport*, 22(12), 3094–3100. <https://doi.org/10.7752/jpes.2022.12392>
- Emir Rizkanto, B., & Rusdiawan, A. (2021). Kinematics analysis of freestyle swimming athletes at the 2019 Indonesia Open Aquatic Championship (IOAC). *Jurnal SPORTIF : Jurnal Penelitian Pembelajaran*, 7(2), 206–218. [https://doi.org/10.29407/js\\_unpgri.v7i2.15877](https://doi.org/10.29407/js_unpgri.v7i2.15877)
- Eskiyecik, C., Gül, M., Uludağ, B., & Gül, G. (2020). The Effect of 8-Week Core Exercises Applied to 10-12 Age Male Swimmers on Swimming Performance. *International Journal of Applied Exercise Physiology*, 9(3), 213–220. <https://doi.org/10.26655/IJAEP.2020.3.22>
- Filges, T., Sonne-Schmidt, C., & Nielsen, B. (2018). Small class sizes for improving student achievement in primary and secondary schools: a systematic review. *Campbell Systematic Reviews*, 14, 1–107. <https://doi.org/10.4073/csr.2018.10>
- Geertsema, S., & le Roux, M. (2020). The Effect of Blocked Versus Serial Practice in the Treatment of Developmental Motor-Based Articulation Disorder. *Communication Disorders Quarterly*, 41(4), 199–213. <https://doi.org/10.1177/1525740119836944>
- Hastie, P., & Saunders, J. (2014). Effects of Class Size and Equipment Availability on Student Involvement in Physical Education. *The Journal of Experimental Education*, pp. 59, 212–224. <https://doi.org/10.1080/00220973.1991.10806561>
- Jepsen, C. (2015). *Class size : does it matter for student achievement ? Smaller classes are often associated with increased achievement , but* (Issue September). <https://doi.org/10.15185/izawol.190>
- Kirkham-King, M., Brusseau, T. A., Hannon, J. C., Castelli, D. M., Hilton, K., & Burns, R. D. (2017). Elementary physical education: A focus on fitness activities and smaller class sizes are associated with higher levels of physical activity. *Preventive Medicine Reports*, 8(September), 135–139. <https://doi.org/10.1016/j.pmedr.2017.09.007>
- Li, X., & Li, M. (2021). The Effect of Large and Small Class Size in Compulsory Education in China. *Rangsit Journal of Educational Studies*, 8(1), 46–58. <https://doi.org/10.14456/rjes.2021.4>

- Nguyen, L. T., Kanjug, I., Lowatcharin, G., Manakul, T., Poonpon, K., Sarakorn, W., Somabut, A., Srisawasdi, N., Traiyarach, S., & Tuamsuk, K. (2022). How teachers manage their classroom in the digital learning environment – experiences from the University Smart Learning Project. *Heliyon*, 8(10), e10817. <https://doi.org/10.1016/j.heliyon.2022.e10817>
- Oja, P., Titze, S., Kokko, S., Kujala, U. M., Heinonen, A., Kelly, P., Koski, P., & Foster, C. (2015). Health benefits of different sport disciplines for adults: systematic review of observational and intervention studies with meta-analysis. *British Journal of Sports Medicine*, 49(7), 434–440. <https://doi.org/10.1136/bjsports-2014-093885>
- Parwata, I. M. Y. (2021). Pembelajaran Gerak Dalam Pendidikan Jasmani Dari Perspektif Merdeka Belajar. *Indonesian Journal of Educational Development*, 2(2), 219–228. <https://doi.org/10.5281/zenodo.5233331>
- Peden, A., & Franklin, R. (2020). Learning to Swim: An Exploration of Negative Prior Aquatic Experiences Among Children. *International Journal of Environmental Research and Public Health*, 17. <https://doi.org/10.3390/ijerph17103557>
- Putra, P., & Wayan, A. (2020). Motivasi Atlet Club Renang Di Kabupaten Badung Dalam Menjaga Kebugaran Jasmani Pada Masa Pandemi Covid-19. *Jurnal Ilmu Keolahragaan Undiksha*, 8(1). <https://doi.org/10.23887/jiku.v8i1.29745>
- Rezki, R., Zulkifli, Z., Jatra, R., & Aprianti, L. (2022). An Analysis Of Freestyle Swimming Technique on Students the Physical Education, Health And Leisure Study Program. *INSPIREE: Indonesian Sport Innovation Review*, 3(02), 93–105. <https://doi.org/10.53905/inspiree.v3i02.78>
- Rocha, H., Marinho, D., Garrido, N., Morgado, L., & Costa, A. (2018). The acquisition of aquatic skills in preschool children: Deep versus shallow water swimming lessons. *Motricidade*, 14, 66. <https://doi.org/10.6063/motricidade.13724>
- Srem-Sai, M., Hagan Jnr, J., Baba, J., & Schack, T. (2019). Assessment of Random and Blocked Practice Schedules on Motor Skills' Acquisition, Retention and Transfer Among Selected Senior High School Students. *American Journal of Sports Science*, 7, 26–33. <https://doi.org/10.11648/j.ajss.20190701.15>
- Wang, X. (2023). Achievement Goals and Motivation in Physical Education: A Correlational Study. *Journal of Innovation and Development*, pp. 5, 30–34. <https://doi.org/10.54097/jid.v5i2.07>
- Watson, A., Timperio, A., Brown, H., Best, K., & Hesketh, K. D. (2017). Effect of classroom-based physical activity interventions on academic and physical activity outcomes: A systematic review and meta-analysis. *International Journal of Behavioral Nutrition and Physical Activity*, 14(1). <https://doi.org/10.1186/s12966-017-0569-9>

- Willey, C. R., & Liu, Z. (2018). Long-term motor learning: Effects of varied and specific practice. *Vision Research*, pp. 152, 10–16. <https://doi.org/10.1016/j.visres.2017.03.012>
- Wright, M. C., Bergom, I., & Bartholomew, T. (2019). Decreased class size, increased active learning? Intended and enacted teaching strategies in smaller classes. *Active Learning in Higher Education*, 20(1), 51–62. <https://doi.org/10.1177/1469787417735607>
- Wulandari, Y. A., & Jannah, M. (2018). Pengaruh PETTLEP Imagery terhadap Efikasi Diri Atlet Lari 100 Meter Perorangan. *Jurnal Psikologi Teori Dan Terapan*, 8(2), 154. <https://doi.org/10.26740/jppt.v8n2.p154-164>
- Yassin, B. (2015). How to accommodate different learning styles in the same classroom: Analysis of theories and methods of learning styles. *Canadian Social Science*, 11(3). <https://doi.org/10.3968/6434>
- Zhao, M., Lu, X., Zhang, Q., Zhao, R., Wu, B., Huang, S., & Li, S. (2024). Effects of exergames on student physical education learning in the context of the artificial intelligence era: a meta-analysis. *Scientific Reports*, p. 14. <https://doi.org/10.1038/s41598-024-57357-8>