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The Effect of Swimming Training on Sources of Self-Confidence in Sports and Self-Assessment of Swimming Skills

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A B S T R A C T

Objective: The aim of the study was to examine the effect of swimming training given to University students on the Swimming Skills Self-Assessment and Sources of Self-Confidence in Sports scale.

Methods: Questionnaire scales were used before and after 14 weeks of swimming training with 1st and 2nd class students studying at Kocaeli University Faculty of Sports Sciences. Participants in the study were students aged 21 with the highest percentages (31.7%), male with 58.5%, students in the Sports Management Department with 52%, 1st class year students with 69.9%, students with an average height of 170-179 cm with 34.1% and students weighing 50-69 kg with 30.1%. The Swimming Skills Self-Assessment Scale and the Self-Confidence Sources Scale in Sports were applied to the students. The students' demographic characteristics and scale analyses were analyzed in the SPSS program.

Findings: The study found that before swimming training, women's Swimming Skills Self-Assessment results (2.45±1.08) were lower than men's (3.17±1.01), but the difference decreased after the training. It was determined that no significant differences occurred in the Swimming Skills Self-Assessment and Sports Self-Confidence scales in terms of gender, department, and class after swimming training. The analysis results indicate that sporting activities enhance skill development and confidence.

Conclusion: The study found that University Students' Swimming Skill Self-Assessment and Self-Confidence in Sports improved after swimming instruction, and there were no differences across all variables. In conclusion, it can be said that sporting activities are important for developing skills and confidence in individuals.

Keywords: *Swimming, Skill, Self-Assessment, Self-Confidence*

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1. Introduction

In addition to meeting the activity requirements necessary for a healthy and balanced life, sport is a tool that enables individuals to develop physically, mentally, emotionally, and socially. Sports activities develop knowledge, skills, leadership abilities, and individual discipline. Exercise also fosters physical development, muscle strength, and motor skills. Swimming is an Olympic sport consisting of sequential movements that not only require motor skills but also features such as strength, speed, rhythm, coordination, and technical skills, as well as a high level of aerobic and anaerobic endurance (1, 2). Land training plays a crucial role in improving swimmer performance, as do water training. Because it's a sport played against water resistance, it contributes significantly to strength and conditioning (3). Researchers have noted that participation in sports not only contributes to physical and physiological development but also has positive effects on certain psychological and social characteristics (4).

Self-confidence in sports is seen as one of the psychological factors that determine and influence performance in sports (5). Self-confidence is an important personality trait for a student to learn to swim effectively. According to Stillwell (6), a person must develop the self-confidence and excitement to be in deep water before beginning to swim. Students who overcome their fear of water activities are expected to have a greater opportunity to learn more about swimming skills. Self-confidence is crucial for an individual to have positive experiences, develop their abilities, and foster their strengths to become successful individuals (7). It has been suggested that athletic confidence, like other personality traits, can be a multidimensional construct with many facets. Accordingly, athletic self-confidence encompasses dimensions such as learning and applying physical skills, using psychological skills (such as visualization and achieving a flow state), using perceptual skills (such as decision-making and adaptability), and being satisfied with one's physical fitness level (8). When athletes are confident, they can more easily translate their athletic potential into superior performance by utilizing psychological skills during competitions. When they lack confidence, even the slightest setback or obstacle can have a profound impact on their performance (9). In the literature review of self-confidence scale studies in sports, it is applied as a valid and reliable scale in terms of the criteria of consistent swimming movement and stable swimming posture of university students, where recreational or professional activities develop self-confidence in individuals (10). Athletes with high self-confidence are more hardworking, productive, successful in overcoming difficulties, able to achieve set goals and have higher motivation than athletes with low self-confidence. Self-confidence also influences sound decision-making and a high degree of concentration (11).

The Swimming Proficiency Assessment Scale (SCAS) was designed and developed by specialized instructors to measure the aquatic skills of children in Norwegian primary schools. The criteria were to observe and evaluate basic aquatic skills by examining parameters such as water entry, front stroke, surface dive, swim/rest, backstroke, and exit. The results demonstrate that it is a valid tool for researchers and practitioners to observe and record children's aquatic skills for the purpose of screening and improving aquatic education (12). Athletes' swimming proficiency values are thought to be related to the frequency of swimming training (13). The positive effects of swimming are expected to be effective in individuals who begin this sport. Self-confidence in sports is thought to express the level of confidence an individual has in their own abilities to be successful in sports environments. Impact of self-confidence on an athlete’s performance is one of the most intriguing topics in sport (14).

Research indicates that, in addition to performance improvement, sports and water sports have positive effects on individuals, including increased self-confidence, positive thoughts, and the accuracy of skills performed. This research aims to foster a relationship between the development of swimming skills and the development of self-confidence in sports.

2. Methods and Materials

2.1 Research Method

The study employed a general survey model, a descriptive method. This study aims to examine the relationship between Swimming Skills Self-Assessment (SSA) and Sports Self-Confidence Sources (SCS) of university students before and after swimming training. Swimming training was provided as part of the Faculty's compulsory lesson. The first 1-2 weeks included an introduction to basic swimming skills in a small pool (depth: 60 cm, length: 10 m training pool) with exercises such as standing in the water, breathing out in the water, and foot kick. In 3-6 weeks, foot kick, arm pull and breathing drills were performed with a kickboard in a normal pool (depth 1.60 cm, length 25 m). In weeks 7-14,

basic swimming skills were taught through technical swimming drills such as standing in the water, exiting the sprint stone, turns, freestyle backstroke, breaststroke and butterfly. At the beginning of the lessons, students received a 10-minute warm-up drill on land by the pool, followed by a 40-minute introduction to the water and basic skills, and the last 10 minutes concluded with getting used to the water and fun water games (For example, in groups of 2-3, throwing a colored object into the water and catching it, saying a shape or number made with your hands underwater, covering a certain distance in the shortest time, etc.). In order to ensure safety in the water and reduce risks, the lesson was planned with one instructor standing in the water and the other standing outside the water. Students completed and recorded surveys before and after 14 weeks of 60-minute swimming lessons, once a week, at the university. Students were informed about the surveys at the beginning of the semester, and their voluntary participation was ensured. Surveys were administered via Google Form before and after swimming lessons.

The minimum sample size was calculated as 82 with α=0.05 and 80% power for correlation analysis according to the effect size of 0.3 in the G*Power 3.1.9.7 program (15, 16).

2.2 Research Group

The study population consisted of students at Kocaeli University's Faculty of Sports Sciences. The sample of the study consisted of 123 students from the Coach Education Department (CED) and Sports Management Department (SMD) who attended compulsory swimming lessons and participated on a voluntary basis. According to the descriptive data of the students, 51 females and 72 males participated at the ages of 18(n=30), 19(n=28), 20(n=26) and 21(n=39), respectively. The students' heights were 150-159 cm(n=11), 160-169 cm(n=34), 170-179 cm(n=42) and 180 cm and above(n=36), and their body weights were 50-59 kg(n=37), 60-69 kg(n=37), 70-79 kg(n=27) and 80 kg and above(n=22). It was determined that there were 59 students from the Coach Education department and 64 students from the Sports Management department, 86 students in the first class and 37 students in the second class.

2.3 Data Collection

To obtain data, volunteers were asked to complete the scales online using Google Forms. Data collection tools included a Personal Information Form for demographic data, a Swimming Skills Self-Assessment (SSA) Form, and a Sources of Self-Confidence in Sports (SCS) Survey Form. Data were collected twice, before and after swimming training.

Swimming Skills Self-Assessment Scale: The swimming skills self-assessment scale was developed by (1) Gošnik et al., (2011) in order to measure the swimming skills of university students. The adaptation of the swimming skills self-assessment scale of university students into Turkish was made by Arıkan and İnce (2023) (17) to students studying in the Physical Education and Sports department. The scale consists of 12 questions. The participant was asked to mark the appropriate statement when answering the 5-point Likert-type scale (For example: “I can stay steady on water” (1) I can’t, (2) I can do it a little, (3) I can do it moderately, (4) I can do it well, (5) I can do it very well).

Self-Confidence in Sports Scale: This scale was developed by Vealey et al. (5) in 1998 with the aim of conceptualizing the sources of self-confidence and developing a valid and reliable scale. The Self-Confidence Sources in Sports questionnaire, adapted into Turkish by Miçooğulları and Kirazcı (2010) (18), was applied to athletes in different sports branches. The scale consists of 43 questions. The participant was asked to mark the statement that best suits him/her when answering the 7-point Likert-type scale (Example: "Generally, my self-confidence in the sports I do increases when..." (1) Not Very Important, (2) Not Important, (3) Somewhat Important, (4) Moderately Important, (5) Important, (6) Quite Important, (7) Very Important).

2.4 Analysis of Data

Data from the surveys were filled out using Google Forms and saved in Excel format. The data were analyzed using the SPSS 26 package program. The Shapiro-Wilk test determined that the data were normally distributed, and the relationship between the surveys was examined in depth using the Pared Sample T test, a parametric test, and regression analysis. Repeated measures ANOVA analysis was performed for the time evolution of the study. The significance level was set at $p<0.05$. The sample size of the study was determined by a priori power analysis using the G*Power 3.1.9.7 program. For the results of "Two-tails", effect size = 0.3", "$\alpha = 0.05$" and "$1 - \beta = 0.80$", there should be at least 82 people. The study included n = 123 students.

3. Results

In the data analysis of the research, the descriptive statistics of the students, according to Table 1, were examined in terms of gender, age, height and body weight, as well as department and class data. A significant improvement was found in both scales after the students' swimming training.

Table 1. Research Group Descriptive Statistics Data Table

	Parameters	Frequency	%
Gender	Female	51	41,5
	Male	72	58,5
Age	18	30	24,4
	19	28	22,8
	20	26	21,1
	21	39	31,7
Height	150-159 cm	11	8,9
	160-169 cm	34	27,6
	170-179 cm	42	34,1
	180 ve üstü	36	29,3
Body Weight	50-59 kg	37	30,1
	60-69 kg	37	30,1
	70-79 kg	27	22
	80 ve above	22	17,9
Department	CED	59	48
	SDM	64	52
Class	1. st class	86	69,9
	2. st class	37	30,1

(CED; Coach Education Department, SMD; Department of Sports Management)

According to Table 2, a significant difference was found in the first and last measurement values of the SSAS ($p<0,001$) and the first and last measurement values of the SSCS ($p<0,001$) of the students participating in the study.

Table 2. Research Group Swimming Skills and Confidence Scale First and Last Measurement Analysis Table

	N	Mean	SD	r	p
SSAS First	123	2,87	1,093	,546	,000
SSCS Last	123	3,87	,574		
SSAS First	123	5,24	,767	,516	,000
SSCS Last	123	5,83	,609		

(SSAS; Swimming skills self-assessment scale, SSCS; Sources of Self-Confidence in Sports)

In the study, improvements were observed in all sub-parameters in the first and last measurements. According to Table 3, a significant difference was found in the first and last measurements in the analysis of the Swimming Skills and Confidence scale according to the research group gender, Department and Class variables ($p < 0,001$).

Table 3. Scale analysis table according to Research Group Gender, Department and Class Variable

Parameters				N	Mean	SD	P
Gender	Female	SSAS	First	51	2,45	1,081	,000*
			Last	51	3,83	,513	
		SSCS	First	51	5,14	,777	,000*
			Last	51	5,71	,613	
	Male	SSAS	First	72	3,17	1,008	,000*
			Last	72	3,90	,615	
		SSCS	First	72	5,32	,756	,000*
			Last	72	5,92	,596	
Department	CED	SSAS	First	59	2,83	1,063	,000*

			Last	59	3,87	,591	
		SSCS	First	59	5,34	,776	,000*
			Last	59	5,82	,596	
	SMD	SSAS	First	64	2,91	1,128	,000*
			Last	64	3,86	,563	
		SSCS	First	64	5,16	,753	,000*
			Last	64	5,84	,625	
Class	1. class	SSAS	First	86	2,91	1,073	,000*
			Last	86	3,89	,577	
		SSCS	First	86	5,19	,783	,000*
			Last	86	5,83	,612	
	2. class	SSAS	First	37	2,77	1,148	,000*
			Last	37	3,82	,572	
		SSCS	First	37	5,37	,724	,000*
			Last	37	5,85	,609	

t: Paired samples t-test*: $p < 0.05$

In the first measurement of the swimming skills self-assessment scale, only the gender parameter was found to be lower for women than for men. However, this difference disappeared in the final measurement. No difference was found in the department and class comparisons. According to Table 4, in the first measurement of the Swimming Skills scale, men were found to be different from women [(Female; 2.45±1.08- Male 3.17±1.01) $p<0.05$], while in the last measurement, there was no difference, and women improved on the scale with swimming training ($p > 0,05$). It was observed that there was no significant difference in the first and last measurements of the scales' section and class parameters ($p > 0,05$).

Table 4. First and Last Measurement Analysis Table of Gender, Department and Class Parameters of Survey Scales

			N	Mean	S.D.	P
SSAS	Female	First	51	2,45	1,081	0
	Male		72	3,17	1,008	
	Female	Last	51	3,83	0,513	0,515
	Male		72	3,9	0,615	
	CED	First	59	2,83	1,063	0,695
	SMD		64	2,91	1,128	
	CED	Last	59	3,87	0,591	0,817
	SMD		64	3,86	0,563	
	1.st Class	First	86	2,91	1,073	0,57
	2.st Class		37	2,77	1,148	
	1.st Class	Last	86	3,89	0,577	0,721
	2.st Class		37	3,82	0,572	
SKGK	Female	First	51	5,14	0,777	0,353
	Male		72	5,32	0,756	
	Female	Last	51	5,71	0,613	0,247
	Male		72	5,92	0,596	
	CED	First	59	5,34	0,776	0,297
	SMD		64	5,16	0,753	
	CED	Last	59	5,82	0,596	0,97
	SMD		64	5,84	0,625	
	1.st Class	First	86	5,19	0,783	0,608
	2.st Class		37	5,37	0,724	
	1.st Class	Last	86	5,83	0,612	0,956
	2.st Class		37	5,85	0,609	

(SSAS; Swimming skills self-assessment scale, SSCS; Self-Confidence Sources in Sports, CED; Coach Education Department, SMD; Sports Management Department, *; $p<0.05$)

4. Discussion

This study was conducted with 123 volunteer students who are Kocaeli University Sports Sciences students and regularly attend compulsory swimming lessons in order to determine whether the swimming skill development and confidence development in sports are affected by the swimming training of university students before and after. The study examined the self-assessment of swimming skills and athletic self-confidence of students receiving swimming lessons. No control group was used in the study. Future studies will be designed to avoid impacting the inherent limitations of the study.

The SSAS and SSCS scale surveys were sent to students via Google Form to ensure their implementation. The results revealed that female students' SSAS survey results were lower than males' before swimming training. However, this difference was found to close after swimming training. In individual sports, females much more than males rely on social support and physical preparedness as important sources of their self-confidence. On the other hand, males show higher level of belief in presenting their skills. Social acceptance is more important for female athletes because it increases their self-confidence as confirmed by numerous researches (14).

Significant improvements were found in the gender, department, and class parameters within the group before and after swimming training. No differences were found between the groups in the gender, department, and class parameters before and after swimming. Repeated-measures ANOVA analysis also revealed no significant differences in time The research results indicate that prior to swimming training, students' skill awareness and self-confidence in sports improved significantly after swimming training. This suggests that students can develop their skills and confidence through athletic activities. Literature also supports these findings.

In the study conducted on individuals who participate in sports and those who do not, it was found that individuals who participate in sports have higher internal and external self-confidence values, and that participation in sports has higher internal and external self-confidence values according to the gender variable, and there is no difference between men and women (19). In a study on self-efficacy and sportive self-confidence in swimmers who did and did not do land training, it was concluded that there was no significant difference in terms of gender parameters and sports background (20). It was concluded that swimming exercises applied to female students studying at university increased self-esteem and that the relationship between swimming skills and self-esteem revealed a positive correlation (21).

In a study examining the self-confidence levels of individuals who took swimming training at a sports complex in their spare time, it was found that there was a significant difference between the participants' self-confidence levels and the swimming frequency variable, and the mean self-confidence levels of those who did swimming three days a week were higher than those who did it two or four days a week (22). Swimming is a highly beneficial motor activity; therefore, it is suggested that more efforts should be made to reduce the proportion of non-swimmers. In today's modern society, swimming skills should be considered an essential skill for every adult (especially for a student in a higher education institution who hasn't learned to swim at a young age). A study examining the scales used to assess university students' swimming abilities concluded that both scales were effective (1). A study on the self-confidence of high school students participating in sports activities concluded that the students' preferred sports branch or their purpose in sports had no impact on their internal or external self-confidence. Furthermore, male students were found to have significantly different self-confidence than female students (7).

Hartoto, Khory, and Prakaso (2017) (23) concluded that the self-confidence scale, which they applied to 169 students receiving basic swimming training under 5 subheadings (1-Physical awareness; 2-Skill learning; 3-Social acceptance; 4-Behavior; 5-Physical skills), was effective. It is understood that it is suitable for measuring the confidence of students studying in the field of sports education regarding learning to swim. In this study examining the effect of self-confidence levels of Kocaeli University Faculty of Sports Sciences and Faculty of Education students on their decision-making skills, it was found that the students' decision-making skills had a direct and positive statistical effect on their self-confidence levels. Since the most important environments in which an individual can develop their self-confidence and decision-making skills are family, school, and university, it is thought to be important to conduct programs to increase the self-confidence levels and decision-making skills of university students (24). Significant differences were found between the average scores of adults who did and did not participate in sports on the self-confidence scale based on variables such as gender, marital status, age, whether they did sports, years of

participation in sports, whether they did individual or team sports, and the type of sport they engaged in. However, no significant difference was found between the average scores they received on the self-confidence scale based on the individual and team sports variable (25). Sönmez et al. support the research by finding that individuals with an average age of 18.45 who received swimming training in private swimming clubs may experience a decrease in anxiety levels and an improvement in their self-confidence in sports after 4 weeks of training (26).

5. Conclusion and Recommendation

Research has also shown that swimming instruction supports physical and social development in individuals. The study examined the effects of 60-minute swimming lessons, once a week for 14 weeks, on the Swimming Skills Self-Assessment Scale and the Sports Self-Confidence Scale in university students. The same scale was used for assessment at the beginning and end of swimming lessons. The study results revealed significant differences within the group in gender, department, and grade parameters before and after swimming lessons. When examining the parameters, it was determined that women differed from men only in the first measurement of the Swimming Skills Self-Assessment Scale, with a lower mean. This difference disappeared in the final measurement. No difference was observed between the pre- and post-measurement analyses of both scales. Therefore, it was determined that there were no differences based on gender, department, or grade, and that positive developments could be achieved as a result of swimming lessons. Consequently, it is believed that sports activities, whether specific to a specific branch or recreational sports, can enhance individuals' sports development and self-confidence.

Authors' Contributions

M.G. and P.P. designed and direct project; M.G. and P.P. planned the experiments; P.P. carried out the experiments; M.G. and P.P. planned and carried out the simulations; M.G. and P.P. contributed to sample preparation; M.G. and Y.K. analyzed the data; M.G., P.P. and Y.K. contributed to interpreting the results. M.G. took the lead in writing the manuscript with input from all authors. All authors discussed the results and commented on the manuscript.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

Ethics committee approval was received for this study from Kocaeli University (Date: May 14, 2024, Decision No: 12, Protocol No: E-94094268-020-591782).

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