

The effect of the 12-week judo physical activity program on the self-esteem of secondary school students during the COVID-19 period

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Abstract

Background and Study Aim During the COVID-19 period, participation in physical activity decreased, and at the same time, many psychological problems occurred in children and adolescents. Therefore, this study examines the impact of secondary school students' participation in regular exercise on their self-esteem.

Material and Methods The research was carried out with an experimental method and sequential design. The study, carried out in 2 sessions, started with the first measurement in November 2021 and ended with the last measurement in January 2022. 46 volunteer students forming the study sample were divided into experimental and control groups. Students in both groups completed the 'Personal Information Form' and the 'Coopersmith Self-Esteem Inventory' in the first week and the end of the 12th week. Statistical Package for Social Sciences (SPSS) 17.0 was used for data analysis. First, a descriptive statistical test was conducted to indicate the socio-demographic characteristics of the participants. Then, normality tests (Skewness and Kurtosis) were applied to determine whether the data showed normal distribution, and it was determined that the data showed normal distribution. Finally, the independent sample t-test and Paired Samples t-test were applied because the data met the assumption of normal distribution. The significance level was determined as $p < 0.05$.

Results A statistically significant difference was found between the self-esteem values of the experimental group before the physical activity program and after the exercise sessions. There was no significant difference in the self-esteem levels of the control group pre-test and post-test.

Conclusions In conclusion, this study reveals that participation in 12 weeks of regular exercise significantly increases middle school students' self-esteem.

Keywords: regular exercise, judo, physical activity, self-esteem, student

Introduction

It is known that regular participation in physical activity has a positive effect on the behavioral, academic, and psychological characteristics of children and youth [1, 2].

The World Health Organization (WHO) [3] recommends that children and adolescents aged 5-17 do at least 60 minutes of moderate-intensity, primarily aerobic, exercise once a week. In addition, at least three days a week, vigorous-intensity aerobic exercises and activities that will strengthen muscles and bones are recommended for children and adolescents. However, the COVID19 epidemic has affected the lives of individuals of all ages, including students. This situation has led to severe education, school, and exercise restrictions [4, 5]. Such adverse conditions can exacerbate stress, fear, and mental health disorders and cause psychological problems [6]. On the other hand, Qiu et al. [7] revealed that children exposed to less isolation at home experience fewer psychological problems.

Therefore, it is crucial to examine the self-esteem characteristics of children and adolescents exposed to closure during the pandemic and have additional issues and determine the factors that will positively affect their self-esteem [8].

Previous periods examined the relationships between physical activity and students' cognition, depression, anxiety, and self-esteem [9]. Some meta-analyses, reviews, and studies have reported that physical activities are influential and essential in improving the mental health of adolescents and improving psychosocial states such as cognition, depression, anxiety, and self-esteem [10, 11]. One of the critical issues of our study is how effective these positive impacts will be during the pandemic period and whether similar results can be achieved with the results of the studies conducted in previous years.

When the literature is examined, it is seen that many studies have been conducted on self-esteem. Most of the studies are cross-sectional studies and involve people from most segments of society [12, 13, 14, 15]. Some studies indicate that longitudinal studies should be given more place in examining self-

esteem [16]. There are various longitudinal studies on self-esteem in the literature [17, 18, 19, 20].

There are some criticisms about experimental studies in the literature. Some empirical studies mention a common effect between self-esteem and physical activity. While some studies show that short-term results such as 3-5 weeks can be achieved, medium and long-term outcomes are unpredictable. Some studies do not include sufficient detail in the findings [21, 18]. It has been stated that the number of longitudinal studies involving subjects selected from different cultures should increase [22]. Studies have proven that exercises increase self-esteem, but it has been emphasized that choosing mixed samples instead of only women or only men will contribute to the literature [23]. We think that testing the validity of our study in Turkish society and among secondary school students selected as a sample will contribute to our knowledge on self-esteem. In this study, physical activities (without music, combination, etc.), mixed sample, the fact that the exercises were more intense in weeks and hours compared to some studies, and the study was conducted in a different culture will help to remove some of the limitations of previous studies.

The study aims to examine the effect of secondary school students' participation in regular exercise on their self-esteem. The hypothesis of the research was formed as follows, considering that the exercises performed for 12 weeks, five days a week, and 1.5 hours a day will increase the self-esteem of the students:

H_1 : Participation in 12-week regular exercise has a significant and positive effect on secondary school students' self-esteem.

Materials and Methods

Research Model

This research was conducted with an experimental and sequential design.

Participants

Experimental group, the sample consisted of 23 secondary school students (16 females and 7 males) between the ages of 10-13 who were selected by random sampling and volunteered to participate in the research. The students in the experimental group participated as athletes in the sports activities carried out by the Burdur /Bucak Youth and Sports District Directorate of Turkey. Control group, the study consisted of 23 secondary school students (11 females and 12 males) aged 10-13 who did not participate in any sports activities and volunteered to participate in the research. The control group students, selected from 73 people, study at Burdur/Bucak Gundogdu Secondary School in Turkey.

Research Design

This study was conducted by the Declaration of

Helsinki. All participants were informed about the study processes, and an informed consent form was obtained from each participant. The experimental implementation phase of the research was carried out in the gym of the Burdur/Bucak Youth and Sports District Directorate for 12 weeks between November 2021 and January 2022. In addition, the scale application phase for the control group of the research was carried out in Burdur/Bucak Gündoğdu Secondary School classrooms. The scales were applied face to face with the students. In addition, the necessary permissions for the research were obtained from the Bucak Youth and Sports District Directorate (no: 92070095-100-1259915) and the Bucak District National Education Directorate (no: E-99848340-605.99-36435905).

Procedure

Judo physical activities were planned for 1.5 hours, five days a week, after the necessary safety precautions were taken, and were done in 3 parts. The first is the preparatory phase, which includes various educational games and warm-up exercises. The second stage, basic techniques specific to the branch of judo were applied. For example, basic techniques of Te-waza for the first four weeks. Nage-Waza attack and defense, Koshi-Waza, Ashi Waza, Sutemi-waza, Katame-waza, Osaekomi-waza, Shime-waza, Kansetsu-waza for later weeks. The third phase is the final phase, which includes cool-down and recovery exercises. In any phase of physical activities, the loading intensity did not exceed 50%. The intensity of exercise was determined by the Rating of Perceived Exertion (RPE).

Table 1 shows the judo exercise program.

Data Collection

The researchers created a 3-question "Personal Information Form" to determine the participants' demographic characteristics (gender, age, and class). The "Coopersmith Self-Esteem Inventory", developed by Coopersmith [24] and adapted into Turkish by Turan and Tufan [25], was used to determine the self-esteem levels of the participants.

Coopersmith Self-Esteem Inventory: The original inventory consisted of 58 items, but different versions were revised over time as the School Form, the School Short Form, and the Adult Form. In this study, a school form consisting of 25 items was used. This scale form consists of answers that can be answered as "like me" and "not like me." In items 1, 4, 5, 6, 8, 9, 14, 19, and 20, the expression "like me" is scored with 1. In items 2, 3, 7, 10, 11, 12, 13, 15, 16, 17, 18, 21, 22, 23, 24 and 25, the expression "not like me" is scored with 1. The overall score of the inventory is obtained by multiplying the total scores obtained from the items by 4. The highest score obtained from the inventory is "100", while the lowest is "0". High scores on this scale mean high self-esteem, and low scores mean low self-esteem. In the study carried out by Turan and Tufan [25],

they determined the test-retest reliability of the scale, which was performed at one-year intervals, as .65 and .76.

Statistical Analysis

Statistical Package for Social Sciences (SPSS) 17.0 package program was used for data analysis. First, a descriptive statistical test was conducted to indicate the socio-demographic characteristics of the participants. Then, normality tests (Skewness and Kurtosis) were applied to determine whether the data showed normal distribution, and it was determined that the data showed normal distribution. Finally, the independent sample *t*-test and Paired Samples *t*-test were applied because the data met the assumption of normal distribution. The significance level was determined as $p < 0.05$.

Results

When Table 2 is examined, no significant difference was found between the experimental and control groups regarding pre-test self-esteem scores ($p > 0.05$).

When Table 3 is examined, a significant difference was found between the experimental and control groups regarding post-test self-esteem scores ($p < 0.05$).

Table 4 shows significant differences between pre- (72.00 ± 12) and post-test (81.65 ± 9) scores of self-esteem in the experimental group ($p < 0.05$). On the other hand, no significant difference was found between pre- (68.78 ± 10) and post-test (67.82 ± 13) scores of self-esteem in the control group ($p < 0.05$).

Discussion

The data obtained in this section have been tried to be examined in the light of the relevant literature.

Forty-six middle school students aged 10-13 participated voluntarily, 23 in the experimental group and 23 in the control group. According to the findings, participation in 12-week regular exercise has a significantly positive impact on the self-esteem of secondary school students. This finding reveals that participation in a 12-week regular judo exercise program significantly increases the self-esteem

Table 1. Judo exercise program

Exercises phases	1. and 2. week	3. and 4. week	5. and 6. week	7. and 8. week	9. and 10. week	11. and 12. week
	Duration	Duration	Duration	Duration	Duration	Duration
Preparation phase (games and warm-up gymnastics)	20 mins.	20 mins.	20 mins.	20 mins.	20 mins.	20 mins.
Main phase (basic techniques)	Basic techniques of te-waza 60 mins.	Basic techniques of te-waza 60 mins.	Nage-waza koshi-waza 60 mins.	Ashi waza sutemi-waza 60 mins.	Katame-waza osaekomi-waza 60 mins.	Shime-waza kansetsu-waza 60 mins.
Final phase (recovery exercises)	10 mins.	10 mins.	10 mins.	10 mins.	10 mins.	10 mins.

Table 2. Differences between experimental and control groups regarding pre-test scores of self-esteem

Group	n	X	SD	df	t	p
Experimental	23	72.00	12.41	44	3.993	.143
Control	23	68.78	10.64			

($p > 0.05$).

Table 3. Differences between experimental and control groups regarding post-test scores of self-esteem

Group	n	X	SD	df	t	p
Experimental	23	81.65	9.39	44	4.063	.000*
Control	23	67.82	13.34			

($p < 0,05$).

Table 4. Comparisons of pre-and post-test scores of experimental and control groups

Group	Test	n	X	SD	df	t	p
Experimental	Pre-test	23	72.00	12.41	22	-3.431	.002*
	Post-test	23	81.65	9.39			
Control	Pre-test	23	68.78	10.64	22	.529	.602
	Post-test	23	67.82	13.34			

($p < 0.05$).

levels of secondary school students. The result supports the research hypothesis (H_1 : Participation in 12-week regular exercise has a significant and positive effect on secondary school students' self-esteem). When the literature is examined, it is seen that there are many study findings consistent with the results of the present study.

Ouyang et al. [22] reported that participation in sports has a significant and positive effect on self-esteem in their study examining the impact of sports participation on body image, self-efficacy, and self-esteem on Chinese undergraduate students. In the study of You et al. [26] with 3658 Korean adolescents, the relationship between body image, self-esteem and depression was examined using variables such as age, gender, and intensity of participation in exercise. The study's findings showed that exercise was a significant predictor of self-esteem in low- and moderate-weight adolescents. The results of the study conducted by Ilkim et al. [27] with 35 individuals with Down syndrome between the ages of 10-23 reported that the level of self-esteem of individuals with Down syndrome who participate in regular sports activities is significantly higher than individuals with Down syndrome who do not participate in regular sports activities. The study by Barton et al. [28], in which they examined the effects of a 6-week swimming, other social activities, and green exercise program on the self-esteem of participants with mental problems, revealed that all groups experienced improvements in their self-esteem levels after six weeks. However, individuals who did not participate in any exercise were not included in the study. In addition, the demographic characteristics of the individuals participating in the exercise group were different. In the study of Legrand [29] conducted with female participants between the ages of 18-35 and with low socioeconomic status, it was reported that 7-week (2 exercises for 1 hour per week) exercises positively affected women's self-esteem. However, it was reported that the exercise program carried out in the study was carried out in the open air, and music was used as an auxiliary instrument. Such differences may have had an indirect effect on self-esteem.

In addition to all these findings, which are consistent with the results of the current study, there are also different study findings in the literature that are not parallel with the present study findings:

In the study conducted by Kaminsky and Dewey [16] on the participation of adolescents with type 1 diabetes and comparative adolescents, it was mentioned that there was no significant relationship between participation in physical activities and self-esteem. The results of this study, in which findings inconsistent with the current study were obtained, may be due to the different demographic characteristics of the participants, such as their physical abilities, age, income, and

marital status of the parents. In addition, the mentioned study is a cross-sectional survey study, and different findings may have been obtained for this reason. Different sample sizes and low response rates to questionnaires may be another reason for the inconsistencies between studies. In the study conducted by Walters and Martin [30], a group that received an intense aerobic exercise program for 13 weeks was compared with the control group. It was reported that exercise did not positively affect self-esteem at the end of the study. Therefore, the inconsistency between the present study results and this one may be the intensity of the exercises. In addition, the researchers mentioned that it is unlikely that the already high self-esteem will rise even more, referring to the studies of Walters and Martin [30], Stiffman et al. [31], who stated that the participants had high self-esteem even before starting the exercises.

Different data collection tools may cause the emergence of some inconsistencies between studies. The differences between the groups selected as samples (gender, age, etc.) and different dimensions (stress, anxiety, etc.) may change the effect of physical activity on self-esteem [32]. As can be seen in the study of Walters and Martin [30], exercise types of different intensities can lead to varying developments in self-esteem. While some studies stated that the relationship between physical fitness, body image, body mass index, self-esteem, and exercise were factors that affect each other [32], it is suggested that physical activity intensity is not effective on body image and therefore self-esteem [32]. Finally, in a meta-analysis examining the relationships between different variables such as the setting in which the exercise was performed, whether the exercise was performed as a uniform or combined exercise, and the duration of the intervention, there was very strong evidence that uniform exercises and school-based and gym-based interventions improved self-esteem compared to other settings [33].

Conclusion

In the present study, a single type of exercise, a 12-week intervention, and both school-based and gym-based participants revealed a positive and significant result between self-esteem and exercise participation. This is generally compatible with the relevant literature.

It should be noted that the demographic characteristics of the participants selected for the sample in the current study, their different mental characteristics, their relationships with the environment they live in, the type and intensity of exercise, and the biased responses they may have given to the scales are among the limitations of this study. Participants who gave incorrect answers to the scales or for different purposes were initially

excluded from the study without statistical analysis and were not included in the analysis. It was assumed that all the remaining participants gave unbiased answers to the scales.

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Conflicts of Interest

The authors declare no conflict of interest.

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