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Exploring Happiness and Sports Commitment in Village School Students Participating in Basic Bocce Training

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Authors' Contribution: A: Study design, B: Data collection, C: Data analysis, D: Manuscript preparation, E: Discussion and conclusion

ABSTRACT

Study aim(s): This study aims to examine the effect of bocce training on middle school students' happiness and sports commitment. Additionally, it seeks to contribute to the literature by exploring whether a relatively simple and accessible physical activity like bocce can support students' psychological well-being and promote long-term involvement in sports.

Methods: The study sample consisted of 70 middle school students who were randomly assigned to either an experimental or a control groups. The experimental group participated in an 8-week bocce training program, while the control group continued with their regular school routine without any additional physical activity. Happiness and sports commitment scales were administered as pre-tests and post-tests. The study employed an experimental, sequential design. Data were analyzed using SPSS with a significance level set at .05. For group comparisons, the Mann-Whitney U test was applied to independent groups, and the Wilcoxon Signed Ranks test was used for dependent group comparisons.

Results: Pre-test results indicated no significant differences between the experimental and control groups in terms of happiness and sports commitment. However, post-test findings showed a significant increase in both variables for the experimental group, whereas no meaningful changes were observed in the control group. Additionally, post-test comparisons revealed a significant difference between the groups, with the experimental group demonstrating higher scores.

Conclusions: The findings suggest that bocce training has a positive impact on middle school students' happiness and sports commitment. These results highlight the potential benefits of incorporating structured bocce programs into school activities to promote students' emotional well-being and foster long-term engagement in physical activity.

Keywords: Bocce, Happiness, Sports Commitment

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INTRODUCTION

Bocce is as an umbrella term encompassing the game systems of Raffa, Volo, Petanque, and Bowl. The word 'Bocce,' derived from Italian, corresponds to 'Boules' in French and 'Bowls' in English. Among these systems, Raffa was the first to be introduced in our country and is commonly referred to as Bocce, reflecting its Italian origin. Consequently, "Bocce" has become the standard term for these game systems and has been fully integrated into our language. Notably, the small target ball used in all four games has different names across languages: it is called "pallino" in Italian, "jack" in English, and terms such as "but," "le petit," "bouchon," or "cochonnet" in French. Interestingly, the Türkiye Bocce Bowling and Darts Federation used the term "marbles" in their Bocce Competition Instructions. Despite efforts to establish a suitable term in the local language, "Bocce" ultimately became the standardized name for these four sports, all governed under the same federation [1]. Given the structural characteristics and accessibility of bocce, it is important to explore the potential effects of this sport on individuals' psychological well-being, particularly their levels of happiness.

Throughout history, happiness has consistently been one of the humanity's ultimate aspirations. People continually strive for a higher quality of life and greater fulfillment in their existence. According to the Turkish Language Institution, happiness is defined as the pleasure, satisfaction, and bliss derived from achieving a desired goal. It encompasses the positive emotions experienced through life satisfaction, shaping individuals' outlook in a constructive way and fostering a more meaningful existence. Based on these definitions, happiness can be seen as a lifelong pursuit – a constant drive to attain and sustain this state [2].

Physical activity and sports induce significant positive effects on the brain and nervous system. Engaging in sports not only relaxes the body's muscles but also promotes mental tranquility, fostering peace of mind. Exercise reduces the release of stress hormones, alleviating symptoms of depression and anxiety, and leading to a state of calm, peace, contentment, and happiness. Additionally, physical activity stimulates the secretion of serotonin, often called the "happiness hormone," which enhances well-being, improves sleep quality, and supports overall mental health [3].

Sport is an activity recommended to begin at an early age and to be practiced with discipline and consistency, as it enhances physical and psychological well-being, strengthens personal skills and abilities, and serves as an important means of self-actualization [4]. Commitment to sport refers to an athlete's confidence in performing their discipline, belief in future success, demonstration of effort and perseverance, and the ability to utilize their abilities effectively while maintaining sustained engagement in their sport. Athlete commitment is conceptualized as comprising three elements: confidence, belonging, and vitality [4]. Within the sporting context, this commitment is reflected in athletes' self-confidence, performance, and effort, as well as their behaviors in and participation in sporting activities, ultimately reflecting a positive psychological experience [5].

In this context, the phenomenon of sport commitment, shaped by the effects of sport on physical and psychological well-being – has been explored comprehensively in the literature through various theoretical approaches and variables. Sport commitment is understood as the relationship between positive cognitive and emotional states and athletic performance, suggesting that such experiences support the development of commitment to sport-related activities [6]. According to Kelecek and Koruç (2018) [7], the theory of sport commitment describes an athlete's development of a deeply rooted, positive cognitive and affective experience in sport, fostered by qualities such as self-confidence, sacrifice, and

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mobility. Research in this field has shown that athlete commitment is closely related to fundamental psychological needs, performance levles, and motivation. This theoretical framework, which emphasizes the psychological foundations of athlete commitment, highlights the importance of applied studies across different age groups and underscores the need to examine educational programs that influence children's attitudes toward sport.

This study aimed to examine the effects of an 8-week bocce training program on the happiness and sports commitment of 11-14-year-old village school students. To determine whether the training affects these variables, we compared pre-test and post-test results between the experimental and control groups to assess the presence of statistically significant differences. The results of this study will contribute to both national and international literature and to inform the planning of scientific and social projects aimed at understanding how regular participation in sports affect happiness and sports commitment. Additionally, students participating in the study will learn the basic rules of a sport they may not have previously experienced, fostering a positive change in their perception of the activity.

METHODS

Research design

This study employed a controlled experimental design, which is used to determine cause-and-effect relationships between variables. Experimental designs are typically classified as true, quasi-experimental, or weak experimental designs. In this study, one group was selected as the experimental group and another as the control group within the school where the research was conducted, indicating a quasi-experimental design. Using random assignment, the two groups were formed, and the same measurements were administered to both groups before and after the intervention [8].

Study sample

The study population consisted of 90 students aged 11–14 years who were enrolled at Diktepe Village Secondary School in Batman's provincial center during the 2023–2024 academic year. From this population, 70 students (37 boys and 33 girls) were selected using a simple random sampling and were then randomly assigned to control and experimental groups. This sampling technique ensures that each individual in the population has an equal and independent chance of being selected, meaning that the selection of one individual does not influence the selection of others [8].

Table 1. Demographic characteristics of the participants

Factors	Variables	Number	%
Gender	Female	33	47.1
	Male	37	52.9
Age	11	10	14.3
	12	27	38.6
	13	31	44.3
	14	2	2.9
Grade	6	31	44.3
	7	39	55.7
Mother's Educational Bg	Primary school	46	65.7
	High school	5	7.1

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	Others	19	27.1
Father's Educational Bg	Primary school	46	65.7
	High school	11	15.7
	Others	13	18.6
Previous Sports Experience	Yes	56	80.0
	No	14	20.0
Sport Played	Football	13	18.6
	Basketball	22	31.4
	Volleyball	15	21.4
	Boxing	6	8.6
	None	14	20.0

Table 1 shows that 47.1% (33 students) of the participants were male, and 52.9% (37 students) were female. Age distribution was as follows: 11 years, 14.3% (10 students); 12 years, 38.6% (27 students); 13 years, 44.3% (31 students); 14 years, 2.9% (2 students). Regarding grade level, 44.3% (31 students) were in 6th grade, and 55.7% (39 students) were in 7th grade. Mothers' educational backgrounds were reported as primary education, 65.7% (46 students); high school, 7.1% (5 students); and other education, 19% (13 students). Father's educational backgrounds included primary education, 65.7% (46 student); high school 15.7% (11 students); and other education, 18.6% (13 students). Of the participants, 80% (56 students) had prior sports experience, while 20% (14 students) had not participated in any sports. In terms of sports interest, 18.6% (13 students) were interested in football, 31.4% (22 students) in basketball, 21.4% (15 students) in volleyball, 8.6% (6 students) in boxing, and 20% (14 students) were not interested in any sports.

Data collection tools

The Adolescent Happiness Scale (AHS), developed by Işık and Üzbe Atalay (2019) [10], was used as the data collection tool in this study to assess adolescents' happiness levels. This single-factor scale consists of 15 items evaluated on a 5-point Likert-type scale, with total scores ranging from 15 to 75; higher scores indicate greater levels of happiness. The scale has strong psychometric properties, including item-total correlations exceeding .30, an internal consistency coefficient of .91, and a test-retest reliability coefficient of 74.

The Sports Commitment Scale, developed by Guillen and Martinez-Alvarado (2014) [9], utilizes a 7-point Likert scale (1 = Never to 7 = Always) for its items. Total scores range from 10 to 70, with no items requiring reverse coding. Both sub-dimension scores and the overall scale scores were used in the evaluation. Higher mean scores on the sub-dimensions or the total scale indicate stronger sports commitment, while lower mean scores reflect weaker commitment. Construct validity was assessed using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), and criterion validity was evaluated by examining the relationship between the Sports Commitment Scale and the Athlete Burnout Scale. Reliability was determined through Cronbach's alpha coefficients and test-retest method.

Data analysis

The data obtained from the questionnaires were entered into SPSS program, and descriptive statistics were initially used to present the sociodemographic characteristics of the participants. To compare pre-test and post-test results between the experimental and control groups, the Mann-Whitney U test was employed (Experimental Group Pre-test × Control Group Pre-test / Experimental Group Post-test

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× Control Group Post-test). To compare pre-test and post-test results within the same groups, the Wilcoxon Signed Ranks test was applied (Experimental Group Pre-test × Experimental Group Post-test / Control Group Pre-test × Control Group Post-test).

FINDINGS

In this study, the pre-test data of the experimental group, which participated in the 8-week bocce training, and the control group, which did not participate, were analyzed using the Mann-Whitney U-test. The results showed no significant differences between the experimental and control groups in the pre-test scores. (U=569,00, p>.05) (Table 2).

Table 2. Pre-test Mann-Whitney U test results for happiness levels in experimental and control groups

Group	n	Rank Average	Rank Total	U	p
Experimental Group	35	34.26	1199	569.00	.61
Control Group	35	36.74	1286		

p< 0.05

Table 3 shows the pre-test and post-test happiness scale results for the experimental group that participated in the 8-week bocce training, analyzed using the Wilcoxon Signed Ranks Test. The results revealed a significant difference (z=5.06, p<.05). Considering the rank averages and sums of the difference scores, this difference favors the positive ranks, indicating higher post-test scores. This finding shows that 8 weeks of bocce training affected students' happiness levels (Table 3).

Table 3. Wilcoxon signed ranks test results for pre- and post-test happiness levels in the experimental group

Post-test/ Pre-test	n	Rank Average	Rank Total	z	P
Negative Rank	1	6.00	6.00	5.06	.00
Positive Rank	34	18.35	624.00		
Equal	0	-	-		

p< 0.05

In this study, the pre-test and post-test data of the control group, which did not participate in the 8-week bocce training, were analyzed using the Wilcoxon Signed Ranks test. The results showed no significant difference between the pre-test and post-test results for the control group (z=0.45, p>.05) (Table 4).

Table 4. Wilcoxon signed ranks test results for pre- and post-test happiness levels in the control group

Post-test/ Pre-test	N	Rank Average	Rank Total	z	P
Negative Rank	1	1.00	1.00	0.45	.66
Positive Rank	1	2.00	2.00		
Equal	33	-	-		

p< 0.05

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The table presents the post-test results of happiness scale results for the experimental group, which participated in the Bocce training, and the control group, which did not. The Mann-Whitney U test revealed a statistically significant difference between the groups (U = 124.50, p < .05). The experimental group students who participated in the 8-week bocce training had a mean happiness rank of 49.44, while the control group students had a mean rank of 21.56. This result indicates a significant positive effect of participating in 8 weeks of bocce training on students' happiness levels (Table 5).

Table 5. Post-test Mann-Whitney U test results for happiness levels in experimental and control groups

Group	n	Rank Average	Rank Total	U	p
Experimental Group	35	49.44	1730.50	124.50	.00*
Control Group	35	21.56	754.50		

p< 0.05

Table 6 presents the pre-test data for the experimental group, which participated in the 8-week bocce training, and the control group, which did not. The Mann-Whitney U-test revealed no significant difference between the experimental and control groups in the pre-test scores (U=512,00, p>.05) (Table 6).

Table 6. Pre-test Mann Whitney U test results for sports commitment levels in experimental and control groups

Group	n	Rank Average	Rank Total	U	p
Experimental Group	35	38.37	1343.00	512.00	.24
Control Group	35	32.63	1142.00		

p< 0.05

In this study, the pre-test and post-test data of the control group, which did not participate in the 8-week bocce training, were analyzed using the Wilcoxon Signed Ranks Test. The results showed no significant difference between the pre-test and post-test results for the control group (z=0.21, p>.05) (Table 7).

Table 7. Wilcoxon signed ranks test results for pre- and post- test sports commitment levels in the control group

Post-test/ Pre-test	N	Rank Average	Rank Total	z	P
Negative Rank	5	5.90	29.50	0.21	.84
Positive Rank	5	5.10	25.50		
Equal	25	-	-		

p< 0.05

In this study, the post-test scores on the Sports Commitment Scale for the experimental group, which participated in the bocce training, and the control group, which did not participate, were compared. The Mann-Whitney U test results revealed a significant difference between the groups (U=169.50, p<.05). The mean rank for sports commitment among the experimental group students who participated in the 8-week swimming training in a public school was 48.16, compared to 22.84 for the control group participants. This finding shows a significant positive relationship between participation in the 8-week bocce training and students' level of commitment to sports (Table 8).

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Table 8. Post-test Mann Whitney U test results for Sports Commitment Levels in experimental and control groups

Group	n	Rank Mean	Rank Total	U	p
Experimental Group	35	48.16	1685.50	169.50	.00
Control Group	35	22.84	799.50		

p< 0.05

DISCUSSION

This study investigated the effects of an 8-week structured bocce training program on the happiness and sports commitment levels of middle school students in a village setting. Students were divided into experimental and control groups. By the end of the study, the experimental group demonstrated a significant increase in both happiness and sports commitment levels, whereas the control group, which did not participate in training, showed no significant changes.

In a study by Demirelli and Öktem (2023) [11], sport climbing was found to have a positive, though not statistically significant, effect on happiness among individuals with no prior experience in the activity. This finding aligns with prior research suggesting that physical activity can enhance psychological well-being. For instance, Doğaner (2017) [12] demonstrated that individuals in a regular exercise program experienced a significant reduction in stress and perceived self-efficacy deficits compared with a control group. Additionally, the experimental group reported significantly higher happiness scores than the control group.

Similarly, Köse et al. (2019) [13] observed that regular, moderate-intensity exercise helps neutralize stress hormones and stimulates the release of endorphins, often called the "happiness hormone," thereby promoting feelings of happiness and vitality. These results emphasize that engaging in sports and physical activity promotes relaxation, happiness, and energy.

Mallı (2018) [14] examined the happiness levels of high school students who participated in school sports competitions compared with those who did not. The findings revealed that students involved in sports had higher levels of happiness. This study highlights the positive impact of sports participation on psychological well-being and underscores the importance of encouraging young people to engage in physical activity.

Yanık (2018) [15] found that a significant difference in sports commitment levels based on students' participation in extracurricular school sports activities. The study concluded that students who never participated in such activities had lower levels of school engagement compared with those who did. Additionally, it was observed that students' engagement scores increased with the number of years they participated in extracurricular sports activities. These results suggest that extracurricular sports activities in schools play an important role in increasing students' school engagement. Öcal and Koçak (2010) [16] found that individuals who participated in school-based sports activities were more socially outgoing, more responsible, and more culturally and emotionally balanced than those who did not. Similarly, Martin et al. (2015) [17], concluded that individuals who are enthusiastic and determined exhibit a stronger commitment to sports.

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CONCLUSION

Based on the findings of this study and supporting evidence from the literature, it can be concluded that regular participation in sports positively impacts individuals' happiness and sports commitment levels. Engaging in sports consistently enhances happiness through the release of endorphins, promoting well-being, reducing stress, and improving mood. In addition to these psychological benefits, regular sports participation also contributes to better physical health and increased self-confidence.

Regarding sports commitment, regular participation in physical activities significantly boosts performance, resilience, and strength, fostering a greater motivation to continue engaging in sports. The sense of relaxation and satisfaction experienced after the exercise further reinforces this commitment to sports.

Additionally, regular participation in sports fosters time-management skills, expands social networks, and strengthens social bonds. It also supports individuals in setting goals and achieving both intrinsic and extrinsic motivations. Collectively, these benefits highlight the multifaceted value of engaging in sports regularly, contributing to personal well-being and fostering a stronger commitment to an active lifestyle.

Promoting accessible sports such as bocce in schools can facilitate students' participation in physical activity, particularly in rural areas, and enhance their happiness.

Expanding extracurricular sports activities can further strengthen students' commitment to both sports and school.

Sports like bocce are easy to learn and economically feasible in terms of equipment, making them highly suitable for implementation by teachers in both curricular and extracurricular activities.

Given the positive effects of regular physical activity on psychological well-being, schools may consider increasing the number of weekly physical activity hours.

This study was limited to a single school, and it focused exclusively on bocce, without including other sports.

CONFLICT OF INTERESTS

No potential conflict of interest was reported by the authors.

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