JVHS

Research Article

e-ISSN: 2147-7892
Published: February 2026
https://dergipark.org.tr/en/pub/inonusaglik

PHYSICAL ACTIVITY, POSTURE, LONELINESS, AND QUALITY OF LIFE IN BOARDING SCHOOL CHILDREN

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Citiation Yıldız, A., Bardi, S., Rozumbayeva, A., & Göksu, E. (2026). Physical Activity, Posture, Loneliness, and Quality of Life in Boarding School Children. *Journal of İnönü University Vocational School of Health Services,* 14(1):,2, 1–13.

doi 10.33715/inonusaglik.1645594

Received: February 24, 2025 / **Accepted:** October 15, 2025

Abstract

This study aimed to evaluate the relationships among physical activity level, postural status, body awareness, loneliness, and quality of life in children attending regional boarding schools. A total of 60 students from regional boarding schools in Sakarya province participated in the study. Physical activity was assessed using the Baecke Habitual Physical Activity Questionnaire (BQHPA), posture with the New York Posture Assessment (NYPA), body awareness with the Body Awareness Questionnaire (BAQ), loneliness with the UCLA Loneliness Scale, and quality of life with the Pediatric Quality of Life Inventory (PedsQL). Weak but statistically significant negative correlations were found between loneliness and physical health (r=-0.273, p=0.035), social functioning (r=-0.288, p=0.025), psychosocial health (r=-0.282, p=0.029), and overall quality of life (r=-0.273, p=0.035). Physical activity subdimensions such as leisure time (r=0.367, p=0.004) and sports (r=0.352, p=0.006) were positively associated with quality of life. Regression analyses revealed that psychosocial health significantly predicted loneliness (β=-0.282, p=0.029). However, posture and body awareness scores were not significantly associated with loneliness or quality of life (p>0.05). Postural abnormalities such as shoulder drop, kyphotic posture, and shoulder protraction were commonly observed among participants. Loneliness emerges as a key psychosocial factor that negatively affects the quality of life of boarding school children, while physical activity contributes positively. Although posture and body awareness did not show significant effects, the prevalence of postural problems highlights future physical health risks. A holistic approach combining physical activity programs, posture education, and psychosocial support is recommended.

Keywords: Body awareness, Physical activity, Postural abnormalities, Psychosocial well-being, Quality of life, Boarding school children.

INTRODUCTION

Childhood is a critical period during which the foundations for lifelong physical and psychosocial well-being are established. A child's posture, physical activity level, and psychosocial state are all dynamic constructs shaped by their environment, habits, and social interactions. These factors are particularly significant in children enrolled in boarding schools, where access to family support, recreational spaces, and diversified movement patterns may be limited.

Regional Boarding Schools (RBS), operating in rural areas of Türkiye, serve children from economically disadvantaged or geographically isolated communities. The institutional setting of these schools brings with it environmental and psychosocial limitations. Students remain separated from their families for long periods, face restrictions in physical activity opportunities due to spatial and time limitations, and may experience emotional difficulties such as loneliness (Çitil Akyol & Kutlu, 2023; Yavuz, 2023).

These factors collectively influence multiple aspects of child development. Previous research has documented how inadequate physical activity and poor posture may impair musculoskeletal and neuromotor development, while loneliness has been shown to negatively affect emotional regulation, self-perception, and overall life satisfaction (Loades et al., 2020; Moksnes & Espnes, 2013).

Posture, defined as the alignment and positioning of the body in space, plays an essential role in maintaining the musculoskeletal system's health and efficiency. Proper posture ensures anatomical alignment with minimal energy expenditure and maximum mechanical efficiency (Behnke & Plant, 2021). Inadequate posture in school-aged children has been linked to various physical problems such as scoliosis, lordosis, and kyphosis, which can progress into adulthood if left unaddressed. These conditions are also associated with discomfort, lower academic participation, and decreased quality of life (Ahmed Ali Gadu, 2019a).

Physical activity is another crucial determinant of children's health. According to the World Health Organization, children should engage in at least 60 minutes of moderate-to-vigorous physical activity daily (WHO, 2023). However, research suggests that students in boarding schools often fail to meet these recommendations due to rigid scheduling, limited access to exercise spaces, and insufficient physical education programs (Marcen, Piedrafita, Oliván, & Irela, 2022). Regular physical activity not only contributes to cardiovascular and musculoskeletal health but also improves mood, cognitive performance, and social engagement (Janssen & LeBlanc, 2010)(Ngahu, 2021).

Body awareness is a related but less frequently explored concept that contributes to postural control and self-perception. It refers to an individual's ability to interpret sensory input from muscles and joints to regulate movement and posture. Low levels of body awareness can lead to postural abnormalities and reduced functional mobility (Mehling et al., 2011). In a school setting where children are sedentary for extended periods, especially in institutional environments, this lack of awareness can go unnoticed.

Loneliness, a subjective experience of social disconnection, is a significant emotional challenge for boarding school students. Research indicates that persistent loneliness during childhood can increase the risk of anxiety, depression, and low self-esteem, all of which can negatively impact academic performance and social functioning (Hards et al., 2022; Loades et al., 2020). The absence of family interaction and the rigid social structure of boarding schools can exacerbate feelings of isolation.

Despite the existing literature addressing physical activity, posture, and psychosocial well-being independently, there is a scarcity of studies examining these variables together within the context of boarding schools. Most prior studies have

focused either on urban day-school populations or have evaluated these variables in isolation, thereby missing potential interactions among them in high-risk institutional settings.

MATERIAL AND METHOD

Aim and Type of the Study

This study aims to fill that gap by examining the interrelationship between physical activity levels, postural health, loneliness, and quality of life in students attending RBS. Understanding these associations may help develop preventive and rehabilitative strategies tailored to boarding school children and provide insight into the long-term developmental implications of institutionalized education. The research was planned as a cross-sectional study. In addition, this study employed a cross-sectional design to examine the relationships among variables. However, this design does not allow for causal inferences; therefore, the findings are correlational only.

Population and Sample of the Study

The population of the study consisted of students aged between 6-13 years studying in RBS affiliated with Sakarya Provincial Ministry of National Education. The research was conducted with 60 students. A total of 77 students were evaluated; 17 students who did not meet the inclusion and exclusion criteria were excluded from the study. In the schools where the studies were carried out, students and teachers were informed and explained both verbally and in writing about the purpose of the study, application methods and what to do during the tests, and the informed voluntary consent form was signed.

The sample was selected using a convenience sampling method from students attending regional boarding schools in Sakarya who volunteered to participate in the study. Random selection was not applied. Our sample size was limited due to the closure of other RBSs in the province.

Inclusion criteria: Participants were between the ages of 6 and 13, were enrolled in school, and had no cognitive or cooperation-related issues. Written consent was obtained from the children's legal guardians, and verbal information was provided to the children, as appropriate for their age group. Exclusion criteria: Individuals with neurological, orthopaedic or metabolic diseases that may affect posture or body awareness.

Data Collection and Analysis

Demographic information (age, gender, grade, height and weight) and the presence of any chronic disease were recorded by questioning the participants. Data collection took place between November and December 2024. Assessments were conducted in a quiet environment in the school's guidance unit, under the supervision of a physiotherapist. All measurements were taken by the same assessor, minimizing any differences that might arise from the practitioner.

In the study, the posture of the participants was evaluated with the New York Posture Evaluation Scale (NYPA), body perception was evaluated with the Body Awareness Questionnaire (BAQ), quality of life was evaluated with the Quality-of-Life Scale for Children (PedaQL), loneliness perception was evaluated with the UCLA loneliness scale, and physical activity level was evaluated with the Baecke Physical Activity Habitual Scale (BQHPA).

Posture Analysis: Posture analysis of the participants was assessed in bare feet and in a position in which they felt comfortable with appropriate clothing. The participants were assessed from three aspects: anterior, lateral and posterior. The NYPA is a standardised measurement tool developed to systematically and visually assess an individual's posture.

During the assessment, segments such as head position, shoulder alignment, scapular position, thoracic kyphosis, lumbar lordosis, pelvic tilt, hips, knees and feet are analysed. Each area is scored on a scale of 0 to 10 points; 10 points represent perfect posture, 5 points indicate moderate dysfunction, and 0 points signify significant postural dysfunction. Based on the total score out of 100, a score of 90–100 is classified as excellent, 80–89 as good, 70–79 as moderate, 60–69 as poor, and below 60 as very poor posture (Mustafaoğlu & Yıldız, 2020).

Body Awareness Questionnaire: It is a scale that measures the level of awareness of individuals towards their bodies and was developed by Stephanie A. Shields, Mary E. Mallory and Angela Simon in 1989. The scale assesses a person's physical, emotional and social sensitivity to changes and reactions in the body. In the first stage, a question pool consisting of 52 items was created, then validity and reliability tests were performed, and a final version of 18 items was prepared. This scale consists of four sub-dimensions: predicting body reactions, sleep-wake cycle, recognizing signs of illness early and paying attention to bodily changes. Participants rate each item from 1 to 7 to indicate how well it fits them. The total score range varies between 18 and 126, with higher scores indicating higher body awareness. The BAQ has been adapted in different languages by conducting validity and reliability studies and has been applied on both healthy individuals and patients (Karaca & Bayar, 2021).

Quality of Life Scale for Children: It is a quality-of-life scale developed in 1999 to measure the health-related quality of life of children and adolescents aged between 2-18 years. PedaQL, translated into Turkish as Quality-of-Life Scale for Children, consists of four sub-forms. These are physical health, emotional functioning, social functioning and school functioning. Scoring is done in 3 areas. Firstly, the total score of the scale, secondly, the total score of physical health, and thirdly, the total score of psychosocial health consisting of the scores of the items evaluating emotional, social and school functioning are calculated. The items are scored between 0 and 100. If the answer to the question is marked as never, the score is 100, if it is marked as rarely 75, if it is marked as sometimes 50, if it is marked as frequently 25, and if it is marked as almost always 0. The higher the total score of the scale, the better the health-related quality of life is perceived (Memik, Ağaoğlu, Coskun, Uneri, & Karakaya, 2007).

UCLA Loneliness Scale: UCLA Loneliness Scale: The scale consists of 20 items and aims to measure the level of loneliness felt by an individual in social interactions. Participants responded to each item on a 4-point Likert-type scale ("Often," "Sometimes," "Rarely," "Never"). Positively worded items were reverse scored to calculate a total score. Each item was scored from 0 to 3, and the total score ranged from 0 to 60. Higher scores reflect greater feelings of loneliness. The internal consistency of the original version of the scale was Cronbach's $\alpha = .96$, and test-retest reliability was 0.73 (Russell, Peplau, & Cutrona, 1980). The adaptation to Turkish and its validity-reliability study were conducted by Demir (Demir, 1989).

Baecke Physical Activity Habitual Scale: The BQHPA consists of 16 questions including three habitual physical activity scores for the previous 12 months: (1) occupational physical activity, consisting of eight questions, (2) leisure-time physical exercise, consisting of four questions, and (3) leisure and exercise activities, consisting of four questions. The BQHPA consists of three subscales: work activity, sports activity, and leisure activity. Each subscale can be scored from 1 to 5, with a maximum total score of 15. A higher total score indicates a higher level of physical activity (Yazici, Volkan Yazici, Ozkul, Varol, & Bayraktar, 2021).

Statistical Analysis

The sample size for the study was determined using priori power analysis. The analysis was based on a medium effect size (Cohen's d= 0.50), a 5% significance level (α=0.05), and 95% test power (1-β=0.95) (Rudrum, 2020). Based on these parameters, the minimum sample size required to detect statistically significant differences was found to be 54. The 60 participants in the study met this requirement and provided sufficient statistical power.

The statistical analysis of the study was performed using IBM SPSS Statistics version 27.0. Descriptive statistics (mean, standard deviation, frequency, and percentage) were used to summarize the data. As the data met the assumptions of normal distribution, parametric tests were applied. Relationships between variables were analyzed using the Pearson correlation test. Additionally, simple linear and multiple regression analysis was conducted to evaluate the predictive power of independent variables (physical activity, body awareness, posture, quality of life) on loneliness scores. A significance level of $p < 0.05$ was considered statistically significant in all analyses.

Limitations of the Study

The study has some limitations. First, the sample size is relatively small and limited to boarding schools in a specific geographical region. Conducting similar studies in different regions with larger samples would increase the generalizability of the results. In addition, it should be kept in mind that psychosocial variables such as loneliness and quality of life were assessed with self-report scales, so responses may be subjective. In future studies, it is recommended that qualitative data collection methods (e.g., interviews or focus group studies) be used to examine children's experiences of loneliness in more depth.

Ethical Aspects of the Study

Ethical approval was obtained from the ethics committee of Sakarya University of Applied Sciences (Document Date and Number: 15.12.2023-E.109042). The study was conducted in accordance with the principles of the Declaration of Helsinki. Written informed consent was obtained from the legal guardians of all child participants, and verbal assent was obtained from the children themselves. All ethical standards required for research involving human participants were strictly followed.

RESULT

The mean age of the participants was 11.91 ± 1.55 years. Information about the grade they were enrolled in, and the number and percentages of siblings are given in table 1. When the physical activity levels of the participants were evaluated, the total physical activity score was 8.74 ± 1.14, and leisure time activities (2.89 ± 0.68) and sports activities (2.91 ± 0.77) were found at similar levels (see table 1).

The mean score of the UCLA Loneliness Scale was 43.70 ± 6.82. When the postural evaluation results were analyzed, the most prominent postural disorders were found to be shoulder drop (4.27 ± 1.10) and shoulder protraction (4.20 ± 1.12). General postural status was evaluated with NYPA total score, and the mean was calculated as 60.63 ± 4.46 (see table 1).

Body awareness was assessed with the BAQ scale and the body awareness score of the participants was 71.75 ± 17.88. Quality of life was assessed with the PedaQL scale, and the physical health score was 65.33 ± 16.23, the psychosocial health score was 67.56 ± 14.23 and the overall quality of life score was 67.42 ± 14.80. The highest score was found in social functioning (77.83 ± 17.74) and the lowest score was found in emotional functioning (62.33 ± 18.45) (see table 1).

The study findings indicated statistically significant weak negative correlations between loneliness and several domains of quality of life. Specifically, loneliness was inversely associated with physical health (r = -0.273, p = 0.035), social functioning (r = -0.288, p = 0.025), psychosocial health (r = -0.282, p = 0.029), and overall quality of life (r = -0.273, p = 0.035). These findings suggest that individuals experiencing higher levels of loneliness tend to report lower levels of well-being across these areas. While the correlation strengths were weak, they were nonetheless statistically significant, indicating a consistent pattern across multiple quality of life domains. In contrast, habitual physical activity—particularly in the domains of sport and leisure time—demonstrated moderate positive correlations with quality-of-life indicators. Notably, sport activity scores were positively correlated with emotional functioning (r = 0.296, p = 0.022), social functioning (r = 0.260, p = 0.045), school functioning (r = 0.318, p = 0.013), and total quality of life (r = 0.352, p = 0.006). Similarly, leisure-time activity scores were positively associated with school functioning (r = 0.314, p = 0.015) and psychosocial health (r = 0.360, p = 0.005). These results suggest that higher engagement in physical activity, particularly in sport and leisure contexts, may be moderately associated with better perceived quality of life in school-aged children (see table 2).

Table 1. Descriptive Statistics for Participant Demographics (N = 60)

Variable	N (%)	M	SD
Age		11.91	1.55
Weight		44.58	13.15
Height		151.04	19.32
BMI		19.32	5.08
Gender			
Male	31 (51.7)		
Female	29 (48.3)		
Class			
4	10 (16.7)		
5	10 (16.7)		
6	14 (23.3)		
7	13 (21.7)		
8	13 (21.7)		
Number of Siblings			
0	5 (8.3)		
1	12 (20.0)		
2	16 (26.7)		
3	12 (20,0)		
4	9 (15.0)		
5	4 (6.7)		
6	2 (3.3)		
Baecke Questionnaire of Habitual Physical Activity			
Work PA		2.95	0.36
Sport PA		2.91	0.77
Leisure time PA		2.89	0.68

Total PA		8.74	1.14
UCLA Loneliness Scale		43.70	6.82
Newyork posture questionnaire			
Lateral flexion of the head		4.73	0.69
Dropped shoulder		4.27	1.10
Spinal curvature		4.87	0.50
Hip symmetry		4.80	0.61
Leg disorder		4.77	0.65
Foot arch disorder		4.60	0.81
Protraction of the head		4.67	0.84
Chest depression		4.93	0.36
Shoulder protraction		4.20	1.12
Kyphotic posture		4.87	0.50
Trunk posture		4.73	0.86
Abdominal posture		4.53	0.93
Waist posture		4.70	0.81
NYPA Total		60.63	4.46
Body awareness questionnaire		71.75	17.88
Quality of Life Scale for Children			
Physical health total score		65.33	16.23
Emotional functioning score		62.33	18.45
Social functioning score		77.83	17,74
School functionality score		62.50	17.31
Psychosocial health total score		67.56	14.23
Total score		67.42	14.80

Table 2. Correlation of Quality-of-Life Scores with Other Parameters

		UCLA	BAQ	BQHPA Work	BQHPA Sport	BQHPA Leisure time	BQHPA Total	NYPA Total
PedaQL - Physical health total score	r	-.273*	.191	.013	.279*	.189	.311*	.224
	p	.035	.145	.924	.031	.149	.016	.085
PedaQL - Emotional functioning score	r	-.150	.241	-.114	.296*	.211	.289*	.190
	p	.253	.064	.384	.022	.105	.025	.146
PedaQL -Social functioning score	r	-.288*	.051	.137	.260*	.015	.228	.108
	p	.025	.700	.298	.045	.912	.080	.413
PedaQL -School functionality score	r	-.240	.137	-.176	.318*	.314*	.347*	.118
	p	.065	.298	.179	.013	.015	.007	.371
PedaQL -Psychosocial health total score	r	-.282*	.181	-.064	.365*	.225	.360*	,174
	p	.029	.167	.627	.004	.085	.005	.183
PedaQL - total points	r	-.273*	.232	-.068	.352*	.250	.367*	.202
	p	.035	.074	.605	.006	.054	.004	.121

BAQ: Body awareness questionnaire, BQHPA: Baecke Questionnaire of Habitual Physical Activity, NYPA: Newyork posture questionnaire, PedaQL: Quality of Life Scale for Children, UCLA: Loneliness Scale
*p<0.05

Table 3 illustrates the intercorrelations among UCLA Loneliness, Body Awareness (BAQ), Physical Activity (BQHPA), and Posture (NYPA) scores. A statistically significant weak negative correlation was observed between physical activity in the work domain and sport domain ($r = -0.279$, $p = 0.031$), indicating that individuals more physically active in work contexts may participate less in sports activities. Furthermore, weak to moderate positive correlations were observed among various subdimensions of the BQHPA. For instance, sport and leisure time activity scores were positively correlated ($r = 0.271$, $p = 0.036$), and both showed a strong positive correlation with the total BQHPA score ($r = 0.748$ and $r = 0.769$ respectively, $p < 0.001$), reflecting internal consistency within the physical activity domains. Interestingly, no statistically significant associations were found between the UCLA Loneliness Scale and the other variables in Table 3, although there were weak, non-significant negative trends with physical activity and posture scores (e.g., $r = -0.241$ with BQHPA total, $p = 0.063$). These findings suggest that loneliness may not directly relate to body awareness, posture, or overall physical activity levels in this sample, at least not with strong effect sizes.

Table 3. Correlation of UCLA, BAQ, NYPA and BQHPA Questionnaire Scores

		UCLA	**BAQ**	**BQHPA Work**	**BQHPA Sport**	**BQHPA Leisure time**	**BQHPA Total**	**NYPA Total**
UCLA	r	1	-.060	.037	-.205	-.195	-.241	-.189
	p		.650	.778	.117	.136	.063	.149
BAQ	r	-.060	1	-.047	-.016	-.037	-.025	.177
	p	.650		.723	.901	.781	.847	.177
BQHPA Work	r	.037	-.047	1	-.279*	-.044	.103	.025
	p	.778	.723		.031	.741	.432	.852
BQHPA Sport	r	-.205	-.016	-.279*	1	.271*	.748*	.116
	p	.117	.901	.031		.036	.0001	.376
BQHPA Leisure time	r	-.195	-.037	-.044	.271*	1	.769*	-.081
	p	.136	.781	.741	.036		.0001	.537
BQHPA Total	r	-.241	-.025	.103	.748*	.769*	1	.040
	p	.063	.847	.432	.0001	.0001		.759
NYPA Total	r	-.189	.177	.025	.116	-.081	.040	1
	p	.149	.177	.852	.376	.537	.759	

BAQ: Body awareness questionnaire, BQHPA: Baecke Questionnaire of Habitual Physical Activity, NYPA: Newyork posture questionnaire, PedaQL: Quality of Life Scale for Children, UCLA: Loneliness Scale
*p<0.05

Table 4. Results of Single Regression Analyses

Dependent Variable	Independent Variable	β	B	Std. Error	t	p	R^2
UCLA	PedaQL -Psychosocial health total score	-0.282	-0.135	0.060	-2.236	.029*	.079
	PedaQL - total score	-0.273	-0.126	0.058	-2.157	.035*	.074
	BQHPA Total	-0.241	-1.449	0.765	-1.895	.063	.058
	NYPA Total	-0.189	-0.289	0.197	-1.464	.149	.036
	BAQ	-0.060	-0.023	0.050	-0.455	.650	.004
BQHPA Total	PedaQL -Psychosocial health total score	0.360	0.029	0.010	2.943	.005*	.130
	PedaQL - total score	0.367	0.028	0.009	3.008	.004*	.135
	UCLA	-0.241	-0.040	0.021	-1.895	.063	.058
	NYPA Total	0.040	0.010	0.033	0.308	.759	.002
BAQ	PedaQL -Psychosocial health total score	0.181	0.227	0.162	1.398	.167	.033
	PedaQL - total score	0.232	0.281	0.154	1.820	.074	.054

BAQ: Body awareness questionnaire, BQHPA: Baecke Questionnaire of Habitual Physical Activity, NYPA: Newyork posture questionnaire, PedaQL: Quality of Life Scale for Children, UCLA: Loneliness Scale
*p<0.05

Simple linear regression analyses were conducted to examine the predictive role of psychosocial and physical activity variables on loneliness levels. The results showed that physical health-related behaviors significantly predicted loneliness (UCLA, β = -0.273, t = -2.177, p = .035), indicating that greater engagement in health-promoting behaviors was associated with lower scores of UCLA Loneliness Scale. Similarly, social problems (β = -0.288, t = -2.318, p = .025), psychosocial difficulties (PedaQL -Psychosocial health total score; β = -0.282, t = -2.258, p = .029), and overall psychosocial well-being (PedaQL - total score; β = -0.273, t = -2.177, p = .035) were also significant negative predictors of loneliness. In contrast, total physical activity (BQHPA Total), occupational, sport, and leisure-time physical activity subscales, as well as BAQ and NYPA Total, did not significantly predict loneliness (all p >0 .05) (see table 4).

Two multiple linear regression analyses were conducted to examine the combined effects of selected psychological and behavioral variables. In the first model, UCLA (loneliness) was predicted by PedaQL -Psychosocial health total score and BQHPA total score. The model was statistically significant, F (2, 57) = 3.23, p = .047, and explained 10.2% of the variance in UCLA loneliness scores (Adjusted R^2 = .070). However, neither PedaQL -Psychosocial health total score (β = -0.224, p = .102) nor BQHPA total score (β = -0.161, p = .237) individually contributed significantly to the prediction. In the second model, BQHPA total score was predicted by PedaQL - total score and UCLA. The regression model was significant, F (2, 57) = 5.29, p = .008, accounting for 15.7% of the variance (Adjusted R^2 = .127). Among the predictors, only PedaQL - total score significantly predicted BQHPA total score (β = 0.326, p = .013), while UCLA did not (β = -0.153, p = .232).

DISCUSSION

This study examined the complex interplay between physical activity, posture, body awareness, loneliness, and quality of life among children attending regional boarding schools. One of the key findings was the statistically significant weak inverse correlation between loneliness and several quality-of-life domains, including physical health, social functioning,

psychosocial well-being, and overall life satisfaction. These findings align with prior research emphasizing that prolonged experiences of loneliness are linked to emotional distress, reduced academic engagement, and lower life satisfaction in children and adolescents (Hards et al., 2022; Loades et al., 2020; Orben, Tomova, & Blakemore, 2020).

In contrast, habitual physical activity—particularly in leisure and sport contexts—was found to be moderately and positively associated with various quality of life indicators. These findings are consistent with previous studies demonstrating that regular physical activity contributes not only to musculoskeletal health, but also to improved emotional regulation, cognitive performance, and peer interactions (Kahlmeier et al., 2023; Ngahu, 2021; Veldman, Mai, & Altenburg, 2021). According to WHO guidelines, children should participate in at least 60 minutes of moderate-to-vigorous activity daily to support optimal (Bull et al., 2020).

Surprisingly, postural assessment results (NYPA) showed no significant correlation with quality of life domains, despite the frequent presence of deviations such as shoulder droop and kyphotic posture. Similar findings have been reported in studies suggesting that postural changes in younger children may not yet translate into subjective well-being impairments, even though they carry biomechanical risks for future musculoskeletal issues (Le Warne, 2025; Sharma & Rawat, 2023). Nevertheless, the presence of such abnormalities—particularly when unaddressed—may lead to chronic pain, fatigue, and limitations in physical activity in adolescence and adulthood (Ahmed Ali Gadu, 2019b; Sharma & Rawat, 2023).

Regarding body awareness, the participants had a relatively high mean BAQ score ($M = 71.75 \pm 17.88$); however, this did not correlate significantly with loneliness or quality of life. Although somatic awareness is an important construct in neuromotor development and emotional regulation (Mehling et al., 2011), our findings suggest that without structured education or movement-based training, such awareness may remain underutilized. Previous studies have shown that somatic or mindfulness-based interventions can enhance functional body awareness and positively influence children's emotional and cognitive well-being (Cerdá, Boned-Gómez, & Baena-Morales, 2023; Neal, 2021).

These non-significant correlations between posture/BAQ and quality of life may also be attributed to several methodological limitations. First, the relatively small sample size ($n = 60$) may have limited statistical power. Second, the use of subjective scales for posture and body awareness may not fully capture functional impairments. Third, the cross-sectional design prohibits causal inferences. Although these limitations were briefly noted in the method section, they deserve greater emphasis in the discussion. Similar findings in the literature also emphasize the importance of longitudinal and mixed methods approaches for capturing these subtle yet important dimensions (Chen, Chen, & Zhao, 2020; Mustafaoğlu & Yıldız, 2020).

Moreover, the psychological mechanisms through which posture and body awareness might influence quality of life were not explored in detail in most existing studies. Some evidence suggests that poor posture may be associated with lower self-esteem and increased internalizing symptoms, while body awareness contributes to emotional self-regulation (Behnke & Plant, 2021; Mehling et al., 2011). However, these mechanisms likely require a more nuanced analysis than what can be provided by self-report questionnaires alone.

Finally, while the current study suggests implementing physical activity and posture education programs, these suggestions must be more specific and context-adapted to be actionable. For instance, ergonomic interventions might include posture workshops, adjustable seating in dormitories, and scheduled movement breaks during school hours. Physical activity recommendations should outline structured programs, such as "60-minute aerobic or strength-based sessions three times a week," supervised by trained professionals. These tailored strategies are especially critical for

boarding schools, where spatial, emotional, and social limitations are more pronounced (Çitil Akyol & Kutlu, 2023; Yavuz, 2023).

CONCLUSION

This study demonstrated that loneliness negatively influences multiple domains of quality of life in children attending regional boarding schools, whereas higher levels of physical activity were positively associated with psychosocial and general well-being. However, body awareness and posture—despite being functionally important—did not show statistically significant associations with well-being indicators in this population. Given the frequent presence of postural deviations such as shoulder droop and kyphotic posture, routine postural screenings and preventive ergonomics should be prioritized, even if immediate subjective complaints are absent. Moreover, the integration of structured physical activity programs and psychosocial support systems within boarding schools could mitigate the adverse effects of isolation and sedentary behavior.

Future interventions should move beyond general health promotion, offering evidence-based, context-sensitive programs such as weekly posture training sessions with visual biofeedback, peer-supported physical activity clubs meeting 3 times a week for 60 minutes, and somatic education programs aimed at improving body awareness and self-regulation.

In conclusion, a multidisciplinary and holistic approach is essential to improving the quality of life of boarding school children. This includes addressing the physical, emotional, ergonomic, and environmental determinants of health through scientifically grounded and child-centered interventions.

Ethics Committee Approval: Ethical approval was obtained from the ethics committee of Sakarya University of Applied Sciences (Document Date and Number: 15.12.2023-E.109042).

Informed Consent: Written consent was obtained from the children's legal guardians, and verbal information was provided to the children, as appropriate for their age group.

Peer-review: Externally peer-reviewed.

Acknowledgements: We would like to thank TUBITAK for supporting our study.

Conflict of Interest: The authors have no conflict of interest to declare.

Financial Disclosure: The study was supported by TUBITAK under the 2209-A programme.

REFERENCES

Ahmed Ali Gadu, H. (2019a). Performance Evaluation in Posture Positions (Standing-Sitting-walking) For Elementary School pupils. *Assiut Journal of Sport Science and Arts, 2019*(2), 329-364.

Ahmed Ali Gadu, H. (2019b). Performance Evaluation in Posture Positions (Standing - Sitting- walking) For Elementary School pupils. *Assiut Journal of Sport Science and Arts, 2019*(2), 329-364. doi:10.21608/ajssa.2019.135380

Behnke, R. S., & Plant, J. (2021). *Kinetic anatomy*: Human Kinetics.

Bull, F. C., Al-Ansari, S. S., Biddle, S., Borodulin, K., Buman, M. P., Cardon, G., Willumsen, J. F. (2020). World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *Br J Sports Med, 54*(24), 1451-1462. doi:10.1136/bjsports-2020-102955

Cerdá, A., Boned-Gómez, S., & Baena-Morales, S. (2023). Exploring the Mind-Body Connection: Yoga, Mindfulness, and Mental Well-Being in Adolescent Physical Education. *Education Sciences, 13*(11), 1104. Retrieved from https://www.mdpi.com/2227-7102/13/11/1104

Chen, Q., Chen, Y., & Zhao, Q. (2020). Impacts of boarding on primary school students' mental health outcomes - Instrumental-Variable evidence from rural northwestern China. *Econ Hum Biol, 39*, 100920. doi:10.1016/j.ehb.2020.100920

Çitil Akyol, C., & Kutlu, M. (2023). Adaptation Problems at Regional Boarding Schools from the Perspective of the School Counselors. [Yatili bölge okulu öğrencilerinin uyum sorunlarinin psikolojik danişman gözüyle değerlendirilmesi]. *Turkish Psychological Counseling and Guidance Journal, 13*(70), 388-406. doi:10.17066/tpdrd.1323307.9

Demir, A. G. (1989). UCLA yalnızlık ölçeğinin geçerlik ve güvenirliği.

Hards, E., Loades, M. E., Higson-Sweeney, N., Shafran, R., Serafimova, T., Brigden, A., Linney, C. (2022). Loneliness and mental health in children and adolescents with pre-existing mental health problems: A rapid systematic review. *British Journal of Clinical Psychology, 61*(2), 313-334.

Kahlmeier, S., Frei, A., Kriemler, S., Nigg, C. R., Radtke, T., Manike, K., & Endes, S. (2023). Updating national physical activity guidelines based on the global WHO guidelines: experiences and challenges from Switzerland. *Current Issues in Sport Science (CISS), 8*(1), 014. doi:10.36950/2023.1ciss014

Karaca, S., & Bayar, B. (2021). Turkish Version of Body Awareness Questionnaire: Validity and Reliability Study. *Türk Fizyoterapi ve Rehabilitasyon Dergisi/Turkish Journal of Physiotherapy and Rehabilitation, 32*, 44-50. doi:10.21653/tjpr.660186

Le Warne, M. (2025). *Development and implementation of a school-based exercise intervention programme designed to improve physical well-being and physical function in children with overweight and obesity.* St Mary's University,

Loades, M. E., Chatburn, E., Higson-Sweeney, N., Reynolds, S., Shafran, R., Brigden, A., Crawley, E. (2020). Rapid Systematic Review: The Impact of Social Isolation and Loneliness on the Mental Health of Children and Adolescents in the Context of COVID-19. *J Am Acad Child Adolesc Psychiatry, 59*(11), 1218-1239.e1213. doi:10.1016/j.jaac.2020.05.009

Marcen, C., Piedrafita, E., Oliván, R., & Irela, A. (2022). Physical Activity Participation in Rural Areas: A Case Study. *International Journal of Environmental Research and Public Health, 19*, 1161. doi:10.3390/ijerph19031161

Mehling, W. E., Wrubel, J., Daubenmier, J. J., Price, C. J., Kerr, C. E., Silow, T., Stewart, A. L. (2011). Body Awareness: a phenomenological inquiry into the common ground of mind-body therapies. *Philosophy, Ethics, and Humanities in Medicine, 6*(1), 6. doi:10.1186/1747-5341-6-6

Memik, N., Ağaoğlu, B., Coskun, A., Uneri, O., & Karakaya, I. (2007). The validity and reliability of the Turkish Pediatric Quality of Life Inventory for children 13-18 years old. *Türk psikiyatri dergisi = Turkish journal of psychiatry, 18*, 353-363.

Moksnes, U. K., & Espnes, G. A. (2013). Self-esteem and life satisfaction in adolescents-gender and age as potential moderators. *Qual Life Res, 22*(10), 2921-2928. doi:10.1007/s11136-013-0427-4

Mustafaoğlu, R., & Yıldız, A. (2020). Sağlıklı Bireylerde Depresyona Yatkınlık Durumunun Postüre Etkisinin İncelenmesi. [Investigation of the Effect of Depression Tendency Status on Posture in Healthy Individuals]. *OPUS International*

Journal of Society Researches, 15(24), 2746-2763. doi:10.26466/opus.614496

Neal, A. M. (2021). Somatic interventions to improve self-regulation in children and adolescents. *Journal of Child and Adolescent Psychiatric Nursing, 34*(3), 171-180. doi:https://doi.org/10.1111/jcap.12315

Ngahu, L. N. (2021). *Levels and determinants of physical activity among students in public boarding secondary schools in nairobi city county, Kenya.* Kenyatta university,

Orben, A., Tomova, L., & Blakemore, S. J. (2020). The effects of social deprivation on adolescent development and mental health. *Lancet Child Adolesc Health, 4*(8), 634-640. doi:10.1016/s2352-4642(20)30186-3

Rudrum, M. (2020). Loneliness and mental health among adolescent females in boarding schools.

Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA Loneliness Scale: concurrent and discriminant validity evidence. *Journal of personality and social psychology, 39*(3), 472.

Sharma, S., & Rawat, V. (2023). The Importance of Body Posture in Adolescence and its Relationship with Overall Well-being. *Indian Journal of Medical Specialities, 14*(4). Retrieved from https://journals.lww.com/imsp/fulltext/2023/14040/the_importance_of_body_posture_in_adolescence_and.3.aspx

Veldman, S. L. C., Mai, J. M. C. A. P., & Altenburg, T. M. (2021). Physical activity and prospective associations with indicators of health and development in children aged <5 years: a systematic review. *International Journal of Behavioral Nutrition and Physical Activity, 18*, 1-11. doi:https://doi.org/10.1186/s12966-020-01072-w

WHO. (2023). *Promoting physical activity for older people: a toolkit for action*: World Health Organization.

Yavuz, K. (2023). Psychological Resilience in Children and Adolescents: The Power of Self-Recovery. [Çocuklar ve Ergenlerde Psikolojik Sağlamlık: Kendini Toparlama Gücü]. *Psikiyatride Güncel Yaklaşımlar, 15*(1), 112-131. doi:10.18863/pgy.1054060

Yazici, G., Volkan Yazici, M., Ozkul, C., Varol, F., & Bayraktar, D. (2021). Reliability and Validity of the Turkish Version of Baecke Habitual Physical Activity Questionnaire in Healthy Adults. *Turkiye Klinikleri Journal of Health Sciences, 6*, 476-482. doi:10.5336/healthsci.2020-76783