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ORIGINAL ARTICLE

Investigation of widespread pain and other musculoskeletal symptoms among athletes registered to Havza Youth and Sports District Directorate

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Abstract

Objective

Youth centers are institutions that bring children from different age groups together and encourage sports. The prevalence of widespread pain is high in school-age children. It was aimed to examine widespread pain and other musculoskeletal symptoms in athletes registered with Havza Youth and Sports District Directorate and attending the Youth Center, and to evaluate their effects on school success and absenteeism. Aim of the study was expanded to evaluate short-term changes in terms of musculoskeletal problems after provided exercise training.

Methods

Participants' school success, absence periods in the last month, pain complaints, duration and intensity, presence of tender points, frequency of complaints other than pain, temporomandibular joint complaints, depression (Depression Scale developed for children) and quality of life (PEDsQL 4.0) scores were examined.

Results

29 athletes (12.1±1.4 years old) were included in the study. 11 athletes participated in the evaluation one month after the training. After the training, the frequency of complaints other than pain and the frequency of tender points were numerically lower. While there were 2 athletes who reported having chronic (>3 months) pain before training, there were no athletes who had chronic pain after training. The number of athletes with non-chronic pain decreased from 10 to 6. There was no significant difference between those with chronic pain, those with non-chronic pain, and those without pain in terms of self-evaluation of school success and success grade ($p=0.694$ and $p=0.094$, respectively). Discontinuation was significantly less in those without pain ($p=0.008$). No significant difference was detected between before and after training for depression and quality of life scores ($p>0.05$).

Conclusion

Widespread chronic pain is not common in athlete children, but non-chronic pain is more common. Training and exercise programs to cope with musculoskeletal problems may reduce the frequency of pain in the short term.

Keywords: Musculoskeletal system, Sports, Widespread pain

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Introduction

Sports are physical activities that people do within systematic and regular rules in order to win and be successful by using their determination to fight. It is clear that sports have positive effects on adults who will assume responsibility in society to acquire good habits and establish healthy relationships with individuals and society. For this reason, great importance is given to sports in developed countries and children are encouraged to participate in sports and physical education programs starting from an early age [1,2]. It is a conscious effort that maintains the strength and agility of the body and increases willpower, as well as the desire to break records, excel and win. Sports is a competition-based activity that is embodied in various branches by specializing physical education activities and requires physiological, psychological and aesthetic technical features when performed at a high level and is surrounded by a number of rules [3]. It is expected that the physical and mental health of children who do sports will be positively affected. Youth centers provide artistic, social, cultural, educational and sports activities, historical and cultural events in order to help young people spend their free time in a positive way, to contribute to the development of young people, to provide guidance and consultancy to young people, as well as to raise awareness of young people against harmful habits and keep them away from them. These are centers that organize trips and camps [4]. In this context, youth centers have an important place as institutions that bring together children from different age groups and encourage them to do sports, thus aiming to protect and improve the physical and mental health of children and young people. Considering this situation, the frequency of widespread chronic pain may be expected to be less in children attending youth centers, while the frequency of sports-related acute pain may be expected to be higher. Chronic widespread musculoskeletal pain is a common musculoskeletal disorder affecting 15% of the general population [5]. The prevalence of widespread pain is high in school-age children [6]. A part of musculoskeletal system, temporomandibular joint (TMJ) pain may be frequently seen in childhood and adolescents [7]. This can be due to parafunctional habits, bruxism and nail biting and may be aggravated by the emotional stress [7]. Depression may be associated with musculoskeletal pain. According to the definition of the World Health Organization (WHO), depression; It is a condition characterized by the inability to perform daily activities, a constant state of sadness, and loss of interest for at least two weeks [8]. Depression is associated with poor school performance and absenteeism. Since it is a common problem of childhood, early diagnosis and diagnosis of the disorder, appropriate psychological help and more comprehensive and successful treatment approaches can prevent more complex and serious problems in adulthood [6].

This study aimed to examine widespread pain and other musculoskeletal symptoms in athletes registered with Havza Youth and Sports District Directorate and attending the Youth Center, and to evaluate their effects on school success and absenteeism. In addition, the aim of the study was expanded to evaluate short-term changes in terms of musculoskeletal problems before and after training by providing exercise training and coping with musculoskeletal system problems.

Methods

After the necessary permissions for the project were obtained from the relevant institutions, a protocol was signed between the institutions and organizations supporting the project. Within the scope of the project, whose ethical compliance was approved by the Youth and Sports Directorate, a sample of 29 athletes, 22 boys and 7 girls, who were registered to the Havza Youth and Sports District Directorate and attending the Youth Center, who volunteered to participate in the study, were determined. The study was conducted in accordance with the principles of the Declaration of Helsinki and written consents of all participants were obtained. All participants were questioned and examined using structured questionnaires by the researchers. Musculoskeletal examination of the participants including posture, motor function, sensation, deep tendon reflexes, tender points and trigger points were done by the same physician and the abnormalities were recorded. TMJ examination were done by the dentists. Oral findings of bruxism, clicking and popping sounds, joint limitation, TMJ pain and masticatory muscle tenderness were examined and the findings were recorded. Training and exercises (posture, breathing, relaxation and strengthening) were given to cope with musculoskeletal system problems. Demographic information and examination findings of all participants were recorded. In addition to the demographic data of the participants, their school success (declared by the school administration), duration of absences in the last month (declared by the school administration), pain complaints, duration and severity (with visual pain scale: VAS), presence of tender points, complaints other than pain. Prevalence, depression (Depression Scale developed for children) and quality of life (PEDsQL 4.0) scores were examined. Volunteer students (N=11) were included in the re-evaluation one month after the training. The

data obtained was analyzed using descriptive statistics. Data that fit the normal distribution were given as mean± standard deviation, and data that did not fit were given as median (minimum-maximum). While the Chi-square test was used to compare frequencies between groups, T test or Mann-Whitney U test and Kruskal Wallis test were used to compare continuous variables between groups, depending on whether they fit into a normal distribution. Significance level was set $p<0.05$. SPSS 22 (IBM, USA) was used for statistical analysis.

Results

29 athletes were included in the study. 22 of the students were male (75.9%) and 7 were female (24.1%). The average age was 12.1±1.4 years. While the students' average height was 151.7±11.2 cm, their average weight was 43.7±11.6 kg and their average body mass index was 18.7±2.6 kg/m2. Some demographic data about the students' families are given in Table 1.

Table 1. Some demographic data of the participants regarding their families (N=29).

N= number of participants who answered the question		N (%)
Number of children in the family	1	3 (10.3)
	2	9 (31)
	3	14 (48.3)
	4	3 (10.3)
Birth order of the participant	1	9 (31)
	2	14 (48.3)
	3	6 (20.7)
Living in the same house with their family		27 (93.1)
Parents	Living together	28 (96.6)
	Divorced	1 (3.4)
Those with health insurance		27 (93.1)
Mothers' education	Literate	2 (6.9)
	Primary school	5 (17.2)
	Middle school	7 (24.1)
	High school	8 (27.6)
	College	7 (24.1)
Mothers' occupation	Housewife	22 (75.9)
	White collar employee	6 (20.7)
	Blue collar	1 (3.4)
Fathers' education	Literate	1 (3.4)
	Primary school	1 (3.4)
	Middle school	8 (27.6)
	High school	11 (37.9)
	College	8 (27.6)
Fathers' occupation	White collar employee	11 (37.9)
	Blue collar	6 (20.7)
	Farmer, tradesman	12(41.4)

29 people answered the question of the number of households. The average value of the number of households was 4.8±1.2.

While the average age of the mother was 39.5±5.6 years, the average age of the father was 42.5±6.3 years.

Students were asked to self-evaluate their school success before and one month after the training. Post-training self-assessment results were numerically better (Table 2).

The average success score of the participants was 85.9±11 points (N=20). The duration of school absence in the last month was 0 (0-10) days. The duration of absenteeism after the training was 2.5 (0-7) days (N=10), similar to before the training. Since no success grade was given in the last month, a score that could objectively evaluate success could not be obtained.

Most of the students had a group of friends. To the question "Do you have a group of friends?", 28 (96.6%) students answered yes and 1 (3.4%) student answered no. To the question "Do you have a group of friends after the training?", 10 (90.9%) students answered yes and 1 (9.1%) student answered no. There were no health complaints before the training (N=29). One of the participants (9.1%) had a complaint after the training (N = 11). None of the students had a rheumatological disease and no one was taking medication.

Table 2. Students' self-evaluation of their own school success.

	Before training (N=29)	After training (N=11)
Good	16 (55.2)	7 (63.6)
Average	11 (37.9)	3 (27.3)
Bad	2 (6.9)	1 (9.1)
N= The number of participants		

Table 3. Comparison of athletes with widespread chronic pain, non-chronic pain, and no pain.

	School success (number of participants)			
	Good	Average	Bad	P value
Widespread chronic pain	2	0	0	0.694
Non-chronic pain	2	2	0	
No pain	12	9	2	
	Success grade, median (minimum-maximum)			
Widespread chronic pain	98 (98-98)			0.094
Non-chronic pain	77 (77-77)			
No pain	85 (58-99)			
	Absence, day, median (minimum-maximum)			
Widespread chronic pain	2 (1-3)			0.008*
Non-chronic pain	10 (1-10)			
No pain	0 (0-5)			
* Significance level p<0.05				

At the first evaluation, 2 (6.9%) students had chronic pain complaints lasting more than 3 months. The number of people with pain for less than three months was 10 (34.5%). VAS median value was 2 (0-6). After the training, 6 (54.5%) students had pain complaints. None of them were among those who stated that they had pain for more than 3 months before the training. In other words, while 3 students whose pain was not chronic continued to have pain after the training, 3 students had complaints of pain that developed in the last month after the training. The median VAS value after training was 2 (2-6).

There was no difference in terms of self-evaluation of school success and success grades between those with widespread chronic pain, those with chronic pain, and those without pain (p=0.694 and p=0.094, respectively) (Table 3). In terms of absenteeism, absenteeism was significantly less in those without pain (p=0.008) (Table 3).

Complaints other than widespread pain were numerically less in the post-training evaluation. The frequency of complaints other than widespread pain in the first evaluation and in the evaluation made one month after the training is shown in Table 4.

Table 4. Frequency of complaints other than widespread pain.

	Before training (N=29)	After training (N=11)
	N (%)	N (%)
Chronic anxiety or tension	2 (6.9)	0
Exhaustion	12 (41.3)	5 (45.5)
Sleeping disorder	6 (20.7)	4 (36.4)
Chronic headache	1 (3.4)	0
İrritable bowel disease	0	0
Subjective soft tissue swelling	0	0
Numbness	6 (20.7)	1 (9.1)
Change in pain with physical activity	0	0
Change in pain due to weather conditions	2 (6.9)	1 (9.1)
Change in pain due to anxiety/stress	0	0
TMJ complaint/disorder	0	0
N= The number of participants		

Table 5. Frequency of tender points.

	Before training (N=29)	After training (N=11)
	N (%)	N (%)
Suboccipital	5 (17.2)	1 (9.1)
Trapezius	5 (17.2)	1 (9.1)
Supraspinatus	2 (6.9)	0
Gluteal	1 (3.4)	1 (9.1)
Trochanter major	1 (3.4)	2 (18.2)
Lower cervical	2 (6.9)	0
2. costa	1 (3.4)	0
Lateral epicondyle	3 (10.3)	1 (9.1)
Knee medial	5 (17.2)	3 (27.3)
N= The number of participants		

Table 6. Participants' depression and quality of life scores				
		Before training (N=29)	After training (N=11)	P value
Depression scale developed for children		23.3±5.7	24.8±3.7	0.177
PEDsQL 4.0	Physical function	67.9±15.3	69.9±13.4	0.725
	Emotional function	62.3±22.1	65±30	0.820
	Social function	80.5±22.6	82.7±18.8	0.654
	School function	60.9±19	63.6±28.8	0.790
	Psychological score	67.9±16.6	70.5±20.4	0.742
	Physical score	67.9±15.3	69.9±13.4	0.725
Significance level p<0.05, PEDsQL 4.0: pediatric quality of life inventory version 4.0				

The median time for morning stiffness before training was 6 (0-15) minutes (N=7). The median time for morning stiffness after training was 2 (1-30) minutes (N=6), similar to before training.

In the evaluation made one month later, the number of tender points detected by examination was numerically less (Table 5).

No significant difference was detected between the depression score, quality of life scores and all subgroups evaluated before and one month after the training (p>0.05) (Table 6).

Discussion

This study aimed to examine the widespread pain and other musculoskeletal symptoms of athlete children attending the youth center, to evaluate their impact on school success and absenteeism, and to also provide exercise training and coping with musculoskeletal system problems before and after the training. We aimed to evaluate the changes in the short term.

As a result of the study, in the evaluation one month after the training, the number of athletes with chronic pain, the number of athletes with non-chronic pain, the frequency of complaints other than pain, and the frequency of tender points were numerically lower.

In the study of Bilgiç and Duymaz [9], in which they investigated the effect of posture correcting exercises on pain, a decrease in pain scores was observed in the group in which posture exercises were applied, and in this respect, similar results were obtained with our study. It can be thought that low participation in the post-training evaluation affected the results. However, all students with chronic pain complaints participated in the second evaluation.

There was no difference between the groups in terms of self-evaluation of school success according to pain status. Many studies have found that participation in physical activity has positive effects on academic success. On the other hand, there are also studies indicating that participation in these activities has a negative effect on academic success [10]. Singh et al. [11] examined how physical activity affects students' school success, in the results obtained from long-term studies of 12,000 children and young people between the ages of 6-18, most of which were conducted in America. As a result of the research, students who were more physically active also had higher academic success [11].

Physical activity provides more blood and oxygen to the brain; It has been emphasized that it reduces stress and balances emotions by increasing endorphins, thus improving the person's cognitive system. Howe et al. [12] investigated how regular physical activity and sports participation affects academic performance on children aged 6-11. As a result of the research, they found that although an increase in academic performance was observed, the cognitive functions of children participating in physical activity also improved [12].

Although it is expected that those with widespread chronic pain will have worse school success, in our study there was no significant difference between the groups in terms of school success scores. This may not reflect real population data due to the small number of samples. However, as expected, absenteeism was significantly less in those without pain. In a study investigating depression and social support in 5530 university students from different countries, Steptoe et al. [13] found that the susceptibility to depression increased with lack of physical activity. In the same

study, the prevalence of depression symptoms in students in Eastern European countries was 43.2% and in students in Western European countries it was 23.5% [13]. There was no difference in depression and quality of life scores between the evaluations made before the training and one month after the training. This may be attributed to the short follow-up period or the fact that the athletes' psychological and physical scores are already good and it is easier to maintain this state of well-being.

Non -homogeneous small sample size restricted to a local area, short follow-up period and unsupervised exercise program are the main limitations of this study.

Conclusion

As a result, widespread chronic pain is not common in athlete children, but non-chronic pain is more common. In addition, the results we obtained with short-term exercise in this study showed that regular exercises will have a significant effect on pain and a minimal effect on depression score. Training and exercise programs to cope with musculoskeletal problems may reduce the frequency of pain in the short term. Studies with larger samples and longer follow-up are needed.

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