

The Opinions of the Candidate Teachers of Art Education about Preparatory Body Exercises

Figen GİRGIN

Trakya University, Faculty of Education, Fine Arts Education Department, Edirne-Turkey
figengirgin@trakya.edu.tr,
ORCID: 0000-0002-5747-6769

Gül SAKARYA

Trakya University, Faculty of Education, Fine Arts Education Department, Edirne-Turkey
gulsakarya@trakya.edu.tr,
ORCID: 0000-0002-2377-176X

Onur ZAHAL

Inonu University, Faculty of Education, Fine Arts Education Department, Malatya-Turkey
onur.zahal@inonu.edu.tr,
ORCID: 0000-0003-0702-9159

Osman MUSAOĞLU

Trakya University, Faculty of Education, Fine Arts Education Department, Edirne-Turkey
osmanmusaoğlu@trakya.edu.tr,
ORCID: 0000-0002-1797-9206

ABSTRACT

Students in the field of painting work long hours and in inappropriate postures. In this qualitative study, it was aimed to evaluate the experience and awareness of art education teacher candidates about performance-based musculoskeletal disorders and their views on preparatory physical exercises. Semi-structured interviews were conducted with 22 senior students studying at Trakya University, Department of Art Education. As a result of the thematic analysis, twelve sub-themes emerged under five major themes (i.e. “Exercise experience”, “Physical pains”, “Effects of exercise”, “Breath awareness/ Breath hold, “Spent time”). Complaints of neck, low back pain, and then backache and holding breath are common among art education teacher candidates. More research is needed to raise awareness of musculoskeletal pain of students in the field of painting, as well as to prevent such disorders, and to plan and implement ergonomic processes.

Keywords: Posture, Musculoskeletal disorders, Art education students, Preparatory physical exercises, Breath awareness.

INTRODUCTION

The painting process starts with an idea and materials are organized according to the expression of that idea. Every touch left on the surface is serious work and requires long hours of work. Even though Picasso’s drawings, which consist of simple lines, seem to be made in a short time, they are actually the final result of long hours of practice. Artists are self-employed individuals who utilize the upper body’s mechanical movements to stimulate their passions (Getchell, 2019, p.3). Apart from working long hours, repetitive movements (brush strokes, pencil drawing, etc.) are quite common in painters. Intense and long-term painting in similar positions also causes some health problems that affect the physical, emotional states, performances of people in this field. Zaza et al. (1998) reached a consensus that PRMD (Performance-related musculoskeletal disorders) is a personal, chronic and obstructive health problem that affects the artist physically, emotionally, occupationally and socially (as cited in Ünal, 2016, p.6). In the notes of Baron Trasmondo, who is thought to be the first person to mention PRMD in a painter, it was stated that intense painting work caused visible deformation in Raphael’s right thumb bones (De Quincy, 1835 as cited in Ünal, 2016, p.3). “Repetitive motion injury” proposed by Matt Middlesworth as an alternative definition to musculoskeletal disorders (Middlesworth, 2015, p.7 as cited in Getchell, 2019, p.13) is quite common among painters, just like Raphael. “The repetition that causes the considerable breakdown and regeneration of sarcomeres within the overworked muscles. Consistent breakdown of muscle fibers can lead to deformities and flaws in regeneration, leading to debilitation or weakness” (Middlesworth, 2015, as cited in Getchell, 2019, p.14). Another example that can be given to the negative effects of the wrong posture or long hours of painting without breaks on the body is the fact that Michelangelo’s work constantly looking up while painting the ceiling of the Sistine Chapel caused his back to hunched, his head to stand back, and even the fact that he had to read the letters he received by leaning backwards because he couldn’t hold his head upright (Nardini, 2011).

Painting is a very intense occupation and requires focus. However, the more intensely a person works, the harder it can be to notice his body. Even his breathing becomes irregular while he is working, and he often holds his breath. Illustrator John Vernon Lord explained this process this way: “I find I am holding my breath for ages dreading the drawing going wrong. Sometimes I actually get dizzy from lack of oxygen. I also grit my teeth too tightly” (Lord, 2005, p.34).

Work-related musculoskeletal disorders such as repetitive movements, working in inappropriate postures, lifting weights, fixed body positions and long hours of uninterrupted work have been the subject of research in different job groups. Musculoskeletal disorders are a chronic and debilitating problem; these injuries can result in pain and disability that affects daily life and the ability to work in certain careers. In order to prevent these problems from affecting the individual, it is important to recognize the causal factors of these disorders (Buckle, 2005, p.164). In addition to work-related musculoskeletal disorders, there are many studies on performance-based musculoskeletal disorders and even prevention of these disorders in musicians and students studying music in the field of art. However, studies in the field of painting are quite limited. This may be because the general audience often sees the finished artwork, not the artists’ or art students’ performances in the painting process (working time, posture). In occupational musculoskeletal disorders, the risk levels of visual artists are not mentioned much or they are not included in the priority risk group. Despite working longer hours than many occupational groups, the vast majority still earn less. They have spent longer education and labor than other workers, but their earnings from artworks do not increase with educational time, age, experience factors. This shows that human capital theory is not valid in art labor markets (Towse, 1996, p.98). Getchell emphasized that visual artists are deprived of preventive research, management, education and evaluations for musculoskeletal disorders. The reason for this is also related to low income. Visual artists do not have the source of income to create a program for the prevention of workplace injuries (Getchell, 2019, p.5).

Aim

The aim of this study is to evaluate the experiences, awareness and opinions of candidate teachers of Art Education about performance-based musculoskeletal disorders and preparatory physical exercises.

METHOD

Study Design

In this study based on qualitative method, phenomenology design was used.

Participants

The participants consisted of 22 senior students (14 females and 8 males) studying at Trakya University, Department of Art Education.

Data Collection

The data which was used in this study were collected in 2022. The study was carried out with 22 senior students studying at Trakya University, Department of Art Education. The reason for this is that senior students have attended all art studio classes and it is predicted that performance-related musculoskeletal pain complaints will be more pronounced. In face-to-face interviews, a semi-structured qualitative interview form was used to collect information about the experiences, awareness and preparatory body exercises of the students. “Do you exercise (physical) in your daily life? (Pilates, yoga, fitness, cardio, etc.)”, “Do you exercise (warm-up/stretching/etc.) before you start painting?”, “What is your opinion about the preparatory physical exercises that can be done before you start painting? (Should these exercises be done or not? Why?)”, “What is your opinion about the effects (or possible effects) of doing preparatory physical exercises before you start painting?”, “Do you have breath awareness? Do you hold your breath in daily life? Do you hold your breath while painting? Do you do breathing exercises?”, “Do you experience discomfort such as pain, burning, stinging, stiffness in your neck, shoulder, back, low back, arm, elbow while painting or after painting?”, “How much time do you spend on average per a day at your computer, tablet, or phone? Do you pay attention to your body posture while using these technological devices?”, “What is your longest uninterrupted working time while painting?”, “Do you prefer to work standing or sitting while painting? When you change your sitting position or draw different points of the painting, do you adjust your painting according to your eye level?” questions were asked. All interviews lasted approximately 15-20 min. The answers were audio-recorded with the permission of the participants and then transcribed verbatim for data analysis. As there is limited research on this topic, this study was designed to collect baseline data on the topic. Prior to data collection, the study was approved by the Trakya University ethics committee. All participants were informed about the aim of the study, their names or identities would be concealed and that there were no risks or discomforts that could be associated with the study.

Data Analysis

Thematic analysis procedures defined by Yıldırım and Şimşek (2013) were used in data analysis. Transcripts were read from beginning to end without any prior coding. In the second step, the data was coded. The coding of the data was carried out according to the concepts extracted from the data from the coding formats that Strauss and Corbin (1990) (as cited in Yıldırım and Şimşek, 2013, p.261) divided into three. Later, these codes were grouped under sub-themes that make up the overarching themes.

Limitation of Study

This study has several limitations. The use of devices (e.g. laptops, tablets, mobile phones) and even the posture of studying from books were not taken into account. The question was asked only about the time they use technological devices and whether they pay attention to their posture while using them. The study group consisted of senior students studying at Trakya University, Department of Art Education and these students had mainly studied painting in their studio classes until their last year. Physical posture characteristics, activities, hobbies, weight, and health problems (although recorded in the interview) were not considered among students attending different art studio courses or students in different age and gender groups (although recorded in the interview).

RESULTS

Most of the study participants were women. As seen in Figure 1, five main themes and 12 sub-themes emerged as a result of the thematic analysis. The findings related to the themes and sub-themes are given below with the literal expressions of the participants.

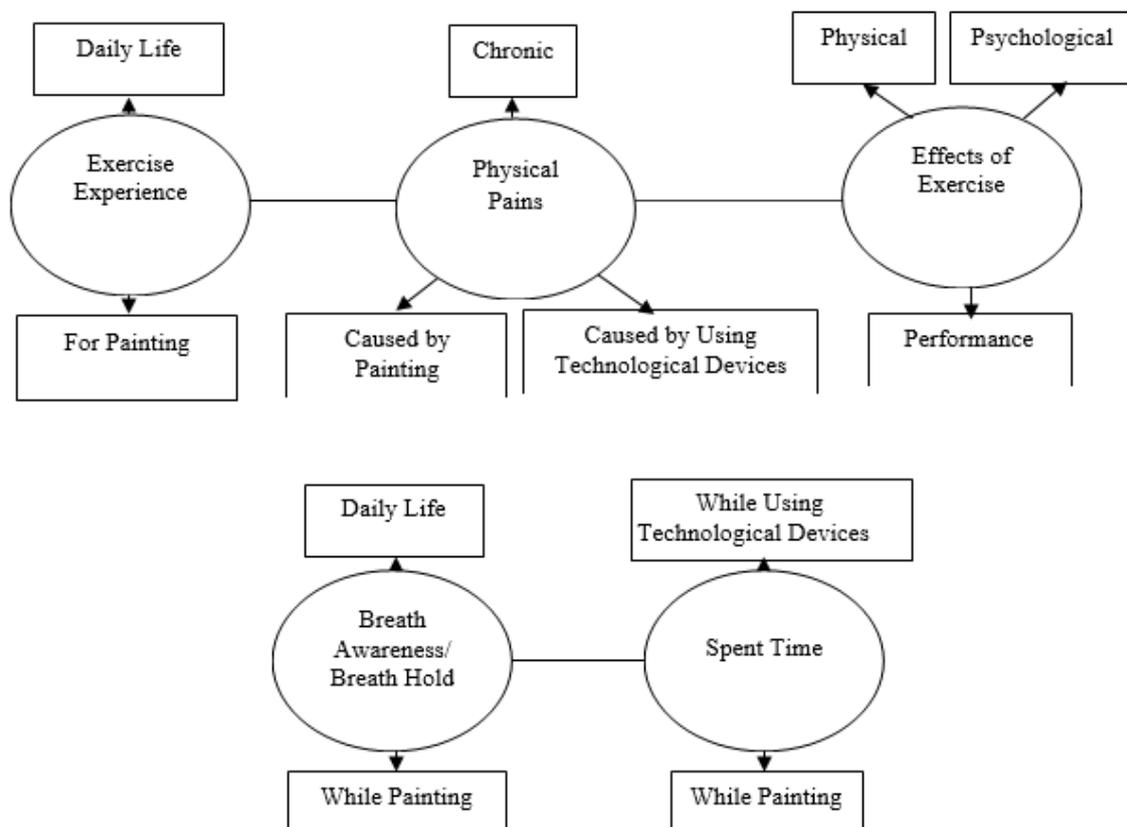


Figure 1: Main themes and sub-themes

Exercise Experience

This major theme, which identifies how the participants exercise experience, consisted of two sub-themes: “daily life” and “for painting”. The statements of the participants regarding these two sub-themes are given below.

Daily Life A total of five participants stated that they exercise regularly in their daily life. One of these participants does fitness and lifts weights. Another does walk as well as neck and shoulder exercises. The other three participants do fitness, swimming and neck exercises. One of the two participants who regularly performed neck exercises, P.1. (male) explained that he did this in order to minimize the problems arising from his professional work: “Because I have trouble painting, I do neck exercises, especially because I draw, because I

focus on the desk with my neck bent, and because I use a computer”. In the same way, P.2. (male) said that he started exercising with some diseases:

I walk for almost 1 hour a day regularly. Even though I can't do it every day, I do neck-shoulder exercises and culture-physical movements 4-5 times a week. I worked at a desk for many years, worked as a public officer and went to the doctor. I have had dizziness. I have a similar situation when painting and I go to the doctor. There are exercises he gave; I have applied them, and I have seen a lot of benefits. As neck and shoulder exercises.

Thirteen of the participants stated that they had experience of exercising or that they sometimes exercised but did not do it regularly. Among the reasons for not being able to exercise; There are expressions such as not being able to find time due to school intensity, not making it a habit, being lazy, having to take a break as a result of an accident outside of sports, and not being able to adapt afterwards. Many participants, such as P.3. (female), who said: “I try to do as much as possible. But not regularly. Sometimes I do, sometimes I don't, but it is not very regular”, stated that they could not make exercise a habit. P.4. (female), who connected the reason for not being able to exercise to the intensity of school, said:

I was doing it before my classes started, but because it is so busy, I can't spare a lot of time. I mostly do it in the summer and during breaks. I do yoga and meditation. It allows me to stay in the moment and get away from some stress, overthinking and getting stressed and getting away from them.

As P.5. (female) said, four of the participants: “No, I don't. I did not do any exercise” stated that they did not do any physical exercise in their daily life.

As can be understood from the participant statements, the majority of the participants do not exercise regularly in their daily life.

For Painting Fifteen of the participants were like P.4. (female): “No, I don't”, stated that they had never exercised before they started painting. Seven of the participants as physical exercise; They stated that they did stretching movements, neck exercises, leg stretching, arm and finger stretching exercises to relax their arms, hands and wrists. P.6. (female) explained her pre-painting exercises as follows: “I usually do. I'm trying to do more body stretching. I do it physically, such as opening legs, stretching arms and fingers, in order to relax and express it better”. Some participants, such as P.1. (male), who said, “I sometimes do neck exercises before I start painting and sometimes by taking a break when there is pain”, explained that they do this type of work when they feel the need to take a break while painting, as they did before they started painting.

Although fifteen of the participants didn't do physical exercises for painting, twenty-one of the same participants said that the exercise they would do before painting would have a positive effect in terms of physical and/or psychological and/or performance. Saying that one of the participants didn't exercise for painting, P.4. (female) explained the possible effect of the exercise she would do before painting on her posture as follows:

I think it will help. Sometimes I realize that when I paint for a long time, I slowly go forward and go into bad posture, my hump comes out, my shoulder hurts. When I'm done painting and trying to get my body straight, I can't straighten out. So before I start painting, it would be good for me to exercise. Or I think it would be better if I stood a little straighter and did it consciously. I think it would be beneficial to do preparatory body exercises.

P.7. (male) said that although he knew the cause of the pain, he did not know what to do:

I have been in this field for eight years, if we include high school. This is the first time I have expressed this pain. We talk to our friends all the time. We know why it hurts, but we never thought about what we should do to reduce the pain. Or we didn't have a solution for each other. The effect can be seen even if it is done for a long time, maybe even for 10 minutes before painting. We need to be in this awareness, on my own behalf.

As can be understood from the participant's statements, fifteen participants out of seven do not exercise before painting. Despite this, twenty-one participants are aware of the importance of physical exercise before painting.

Physical Pains

Three sub-themes related to the main theme of “Physical pains” emerged. These are expressed as “chronic” and “caused by painting” and “caused by using technological devices”. The statements of the participants regarding these three sub-themes are given below.

Chronic Two of the twenty-two participants in the study made statements about some discomforts caused by previous accidents and working at a desk for a long time professionally. It was understood that the pain caused by these disorders was related to the neck and shoulder, and although these pains existed before the painting process, it turned out that working in a similar position and for a long time was effective in increasing these pains. While P.2. (male) was painting, he stated that he suffered from pain like the pain he experienced while working at a desk:

I worked at a desk for many years, I also worked as a public officer and went to the doctor. I have had dizziness. That’s when I learned it was an occupational disease. I learned that it is due to inactivity in people who work at a desk for a long time. I am now retired. I have a similar situation when painting and I go to the doctor. There are exercises they give; I have applied them and I have seen a lot of benefits. As neck and shoulder exercises. I think that if people in similar professions do it, they will benefit.

Caused by Painting All of the participants in the study stated that they experienced physical pain while painting or after painting. These pains varied according to working positions (sitting or standing), painting times, and the size and style of the painting. Twelve of the participants worked sitting, five were standing, four were both sitting and standing, and one was crouching down (Table 1). Physical pain in the statements of the participants; low back, neck, back, shoulder, arm, wrist, knee, back of neck, shoulder to neck, leg, neck and shoulder joint. (Figure 2). As seen in Figure 2, the most common places of pain were neck, low back and back. P.8. (female) attributed her low back and leg pain to standing work: “I have a lot of low back pain. Since I do it standing up, it doubles, my legs hurt a lot. I’m always in front of the picture because I go and come. I don’t have any health problems either”. It was seen that such pains increased due to working in the same or wrong positions for a long time. The participants stated that they needed to sit or lie down if they were standing after the pain, to stand up or lie down if they were sitting, that is, to change their position or to take a break. P.2. (male):

It happens a lot on my shoulders and neck. Like pain. Hardness. If I have worked very hard, if I have worked 2 days in a row, if I have to finish my painting homework, maybe I will suffer from his discomfort for a week. My shoulders are stiff, and I can’t. I have to take a break for a few days. I think I’m contracting my body while painting. It is a little bit due to my desire to work in detail.

Participants stated that their pain decreased when they exercised or paid attention to their breaks. P.1. (male):

There is pain in the neck. I also prevent it with exercises. Apart from that, when we work with large canvases, there is pain in the arms, and when I use the brush in a wider area, there is pain in the arms. I somehow reduce it and prevent it by exercising, stretching, taking breaks.

Realizing that working in the same position for a long time causes increased pain, P.3. (female) stated:

My wrists and neck especially hurt a lot. Low back pain also occurs in the process of teaching and internship experience. When I sit or stand for a long time. So, I don’t have to do either one for a long time. I need to rest. I know that.

Some participants, like P.9. (Female) normalized this pain even though they experienced pain while painting: “Yes, I have a lot of pain... We paint, after all, we are painting something we stand still, our body will hurt, but I never thought about it. I took that as normal”.

Table 1: Distribution of pain regions by working positions

Position	Region of Pain	n
Sitting	Low back, neck, back, shoulder, arm, wrist, knee, back of neck	12
Standing	Low back, neck, shoulder to neck, leg, arm	5
Sitting down and standing	Neck and shoulder joint, back, wrist	4
Crouching down	Low back	1

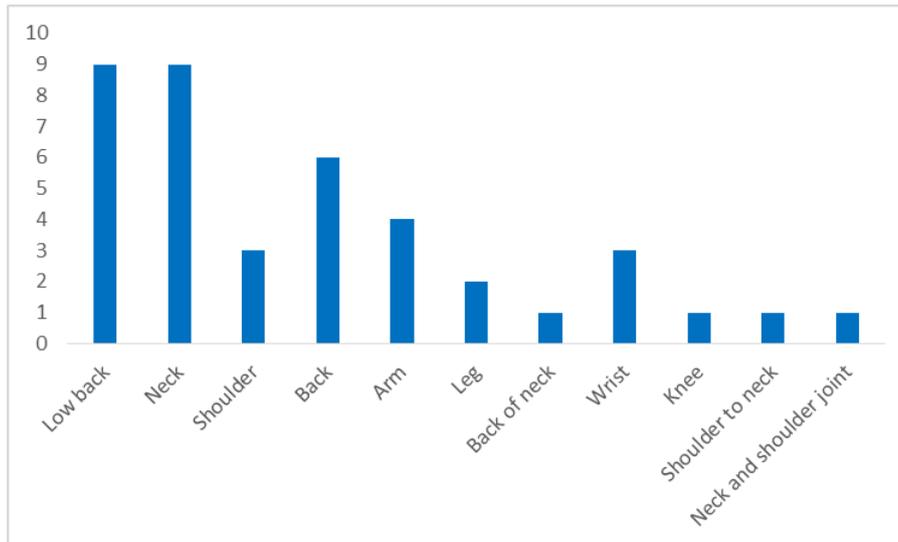


Figure 2: Distribution of the pain regions

Caused by Using Technological Devices All of the participants prefer the phone as a technological device in daily life, but the use and duration of phones, tablets, computers vary according to the purpose of work, school, and having fun. P.3. (female) said that she used a computer as long as she had homework:

I don't have a lot of work with the computer unless I have homework. I can't take my eyes off that much anyway. I take care of the phone as much as I do my job. Not a lot. I don't pay attention to my posture when I am with such devices. I can hump. I'm on my knees when I'm on the phone. At the same time, I start to move forward on the computer. My eyes start to ache too and that's when I quit. I'm getting very close because of my eyes. It reflects on my back too.

Effects of Exercises

Three sub-themes emerged as “physical”, “psychological” and “performance” related to the main theme of “effects of exercise” and participant statements regarding these sub-themes are given below.

Physical As seen in Fig. 3, the physical effects of exercising were expressed by the participants as relaxation, prevention or reduction of pain, reduction of fatigue, prevention of injuries, elimination of posture disorders, and breath control.

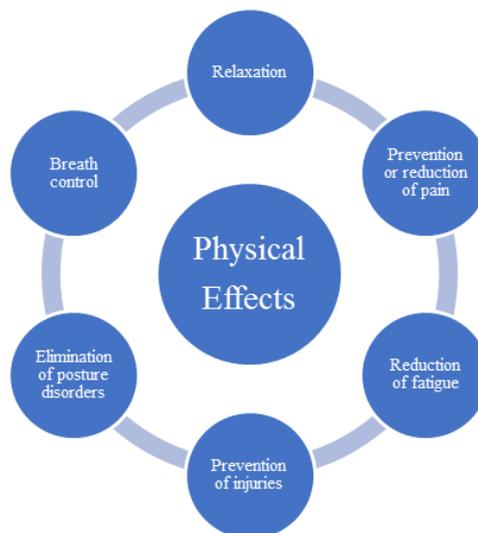


Figure 3: The physical effects of exercise

One of the participants P.10. (female) stated that exercise would count her bodily comfort as follows:

I thought it might improve my posture. Since I am not always rigid, rigidity can go away because I make a move. Maybe it will be better if done later. I don't know how much it affects my painting actually. It's more of a physical effect. It affects my physical comfort rather than my painting. It can probably be reflected in the painting as well.

P.2. (male) similarly stated that exercise would provide comfort to him as follows:

I think it will affect positively. I gain comfort. My breath will open. I think that if I do breathe exercises, hand-arm, neck and shoulder exercises beforehand, I can work more efficiently in painting. Because I get tired quickly. I think those exercises will prevent you from getting tired quickly. I've experienced it in other things as well. I think the warm-up will be beneficial.

Psychological As seen in Fig. 4, the psychological effects of exercising were expressed by the participants as motivation, feeling energetic, calming the mind and focusing.

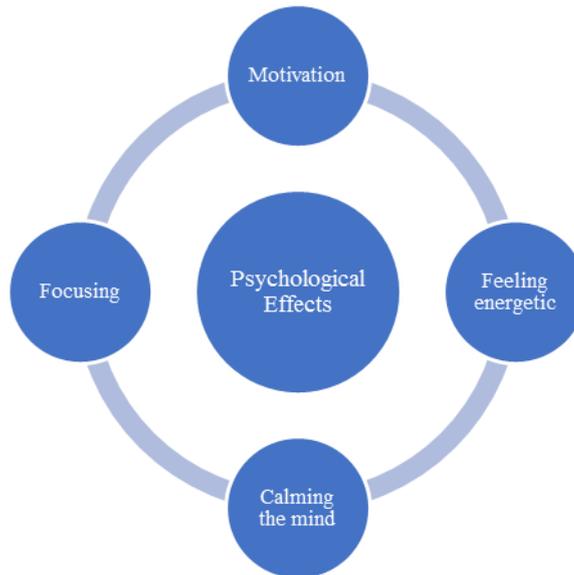


Figure 4: Psychological effects of exercise

One of the participants, P.11. (male) expressed the positive effects of exercise on focused as follows:

It has positive effects. It allows us to focus more. It makes you think against that subject. When we have pain, we think about it more. We get up from the painting and go to rest. It inevitably affects our work in a negative way.

P.6. (female) also stated that exercise helped her control her emotions:

Controlled turmoil always produces better results. Because what we call painting is to express something, and we are the mediator of it, the better we take care of the car, the farther the car can take us. Something like this. I think it's important. When I paint without doing sports or stretching, without doing a body exercise, I cannot express it fully. Because it comes out without getting it under control.

Performance As seen in Fig. 5, the effects of exercise on performance were expressed by the participants as motivation, creative ty, working time, successful/efficient work, successful ideas and focus.

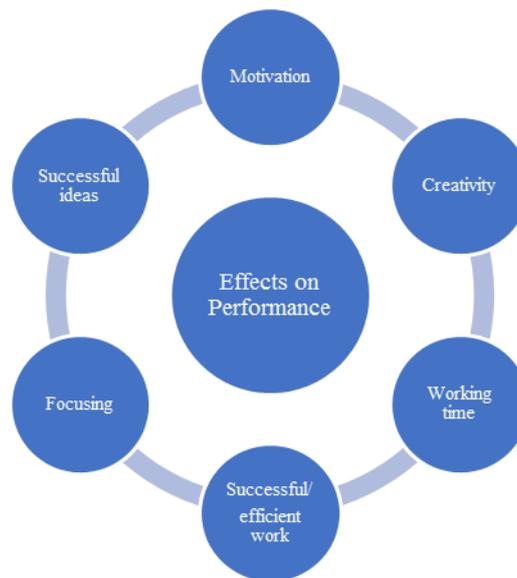


Figure 5: Effects of exercise on performance

P.8. (female) stated that doing exercises was associated with finishing her paintings in a shorter time:

I can paint my paintings in a shorter time. If I exercise, I will sleep and I think I can perform better. Because it takes long, I leave time in between so that my back pain will pass. But this time, the finishing time of the painting is getting longer, the paintings do not dry. I have such problems.

P.12. (female) emphasized that the exercise would affect the performance positively:

It would be mentally positive. I think it will improve performance. Because it contributes to the formation of their ideas by thinking about what they will do before they start. I think that the performance will be effective in the motivation part.

Breath Awareness/Breath Hold

Two sub-themes related to the main theme of “breath awareness/breath holding” emerged as “daily life” and “while painting”, and the statements of the participants regarding these sub-themes are given below.

Daily Life Nine of the participants stated that they did not hold their breath in daily life, four of them stated that they had breath awareness in daily life and they did breathing exercises and meditation, and nine of them stated that they held their breath during stress, troubled times, lying down, tattooing (working), playing games and doing sports. In the participants who realized that they were holding their breath, the thought that it might be dangerous and fear, the need to provide breath control, trying to calm down and wonder emerge. P.1. (male) stated that he held his breath when he was very focused on something, and when he realized it, he found it scary:

When I focus on something very intensely, I sometimes notice that my breathing becomes irregular. Sometimes it happens when I’m playing, sometimes when I’m drawing, when I’m in a very focused state, I find that I’m holding my breath. Other than that, I don’t know. I only know this from my experience. When I realize that I am holding my breath, it seems a little scary that it may be dangerous, that I can continue this at other points, that it may cause problems in the future unintentionally, that there may be breathing irregularities even during sleep. I’m trying to pay attention. I’m trying to stay calm. When I go into detail and thin lines in painting, I unconsciously hold my breath.

P.13. (female) stated that she used to do breathing exercises for a while:

I did exercises like blowing balls. I used it especially during my surgery. Then I tried again several times. Other than that, I do it to rest myself, but not very often. In daily life, I unconsciously hold my breath. I hold it in times of stress. I never hold my breath while painting. I am very comfortable with it.

While Painting Sixteen of the participants stated that they held their breath while painting, one of them stated that they used to hold it but not now. P.7. (male) said:

I hold my breath during work. Consciously. I keep it in fine lines, single lines, where there is no margin of error. I am also engaged in tattooing. There, too, I always hold my breath in single lines and fine lines. I even hold it when I sleep. I’m used to it now. As soon as I realize that I am holding it, I release it slowly and hold it consciously. Even while you’re doing it, I say you have to hold your breath here, I will now. I’m getting ready for it and keeping it that way. I don’t leave it until it’s finished. I think my hand will tremble if I don’t hold my breath. In my daily life, there are no moments when I hold my breath.

Most of the participants, like P.7. (male), stated that they consciously held their breath to prevent hand tremors. Some participants, such as P.14. (female), said that they did this unconsciously:

I don’t pay much attention to it. If I paint in a hurry, yes, if I try to catch up, if I have a problem with time, I do it involuntarily. If I’m stuck in a part of the painting and I don’t like it, then it can happen.



Figure 6: Breath-holding situations while painting

As can be seen in Fig. 6, the breath holding situations while painting was described by the participants as “fine lines, fast work, undesirable parts, color changes, figure and portrait, fabric folds, working with a fine brush, details, difficult points, important points, focusing, points where mistakes should not be made”.

Four of the participants stated that they never held their breath while painting, and one stated that he did not notice. P.11. (male): “In my daily life, there are no moments when I hold my breath. I never noticed it while painting”. P.13. (female) stated that he did not hold his breath while painting, although there were moments when he held his breath in daily life:

I’ve done the kind of work where we blow balls. I used it especially during my surgery. Then I tried again several times. Other than that, I do it to rest myself, but not very often. In daily life, I unconsciously hold my breath. I hold it in times of stress. I never hold my breath while painting. I am very comfortable with it.

Spent Time

Two sub-themes, “while using technological devices”, “while painting”, emerged regarding the main theme of “spent time”, and the statements of the participants regarding these sub-themes are given below.

While Using Technological Devices As seen in Fig. 7, the daily use of technological devices by the majority of the participants was between 4-5 hours and 5-6 hours. Those who used technological devices for more than 7

hours constitute 4% of the participants. Some of the participants such as P.4. (female), stated that while they did not pay attention to their bodily posture while painting, they were aware of using technological devices:

A breakout screen time on my phone was 12 hours. Since I thought I was spending too much time, I opened the screen time app and reduced it from 12 hours to 6 hours. I pay attention to my body posture with these devices, I realize it right away, but I can't picture it.

Some participants, such as P.10. (female), stated that they noticed their postural disorders later:

I spend a lot of time. When I'm at home, I do my drawings on the tablet now. I am working from a tablet. I spend most of my time there as I do everything from phone and tablet. There are at least 4-5 hours a day. I usually work in a lying down or semi-sitting position. I don't think about my posture when working with such devices, but then I understand, now I understand, I think that it spoils my posture, because it is a long-term thing, it has a long-term effect. I'm a bit offended right now.

It was observed that the participants who used technological devices complained of shoulder pain, back pain, eye pain, and a feeling of contraction in the hand. P.2. (male) noticed with a feeling of pain and stopped using it:

I use it between 1-2 hours. Especially the phone. Every now and then I become aware of my body. Pain informs me. I'm being held. When I look at it for a long time, both my eyes and my shoulder hurt, and I feel that I am tensing up whichever hand I hold, and when I realize it, I immediately try to let it go.

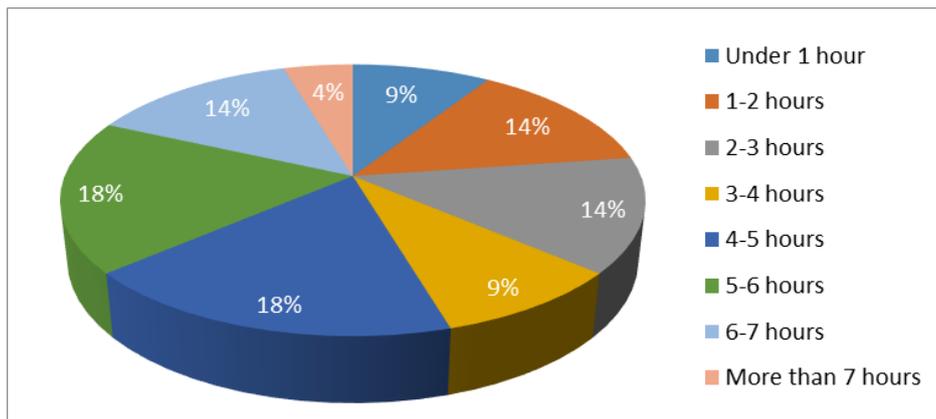


Figure 7: Technological device usage period

While Painting As seen in Fig. 8, most of the participants' painting time without breaks was between 3-4 and 4-5 hours. The number of participants working 5-6 and 7-8 hours is the same. Working hours increase during exam times, and working hours were extended with short breaks. P.3. (female) stated that she more than doubled her working time with short breaks: "The longest is 2 hours straight. But if I need to grow something, it can take 5-6 hours. With intervals of 5-10 minutes, of course". Habits such as the need for physical movement, physical pain, faltering, smoking led the participants to take a break. P.10. (female) stated that the pain caused by working without a break for a long time forced her to take a break: "It's been 4 hours nonstop. Afterwards, I must lie down because my back and neck hurt. But then I continue again".

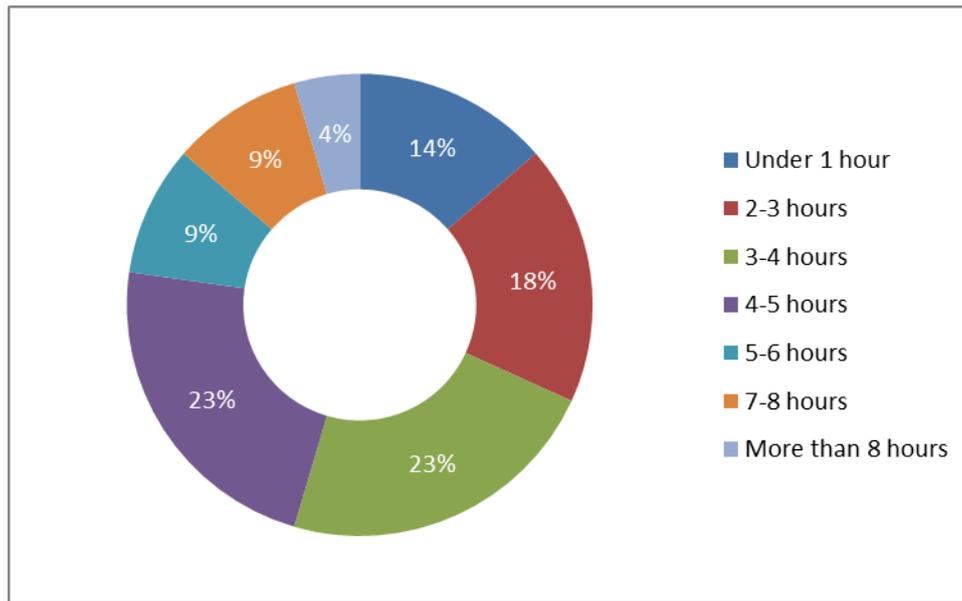


Figure 8: Longest non-stop painting time

DISCUSSION AND CONCLUSION

The aim of this study is to evaluate the experiences, awareness and views of candidate teachers of Art Education on performance-based musculoskeletal disorders and preparatory physical exercises. When the findings were evaluated, it was seen that although the majority of the participants had exercise experience, they did not exercise regularly in daily life and before they started painting. Despite this, the vast majority of the participants were of the opinion that the exercise to be done before the painting would provide benefits for their physical, psychological and performance. Pekçetin and Özgü (2018) also mentioned the positive effects of regular physical exercise on university students, not only on their physical well-being, but also on their well-being in different areas such as making sense of life and being goal-oriented. Aydın (2014) concluded that the posture and breathing exercise program applied to office workers had positive effects on reducing pain levels, musculoskeletal system complaints, and increasing the quality of life, activity and functional fitness level. According to Trieger (2005: 26), yoga works all parts of the body, protecting it from injury and stress as the body stays relaxed as you lengthen, bend and stretch muscles and joints. Postures also improve blood flow to every cell in the body, invigorate and strengthen the nervous system, and increase the body's capacity to withstand stress. As Halprin emphasized, the purpose of good structure from skeletal to muscle and muscle to bone is to allow greater stability and flexibility by expanding our ability to respond to the abilities and opportunities of the moment with spontaneity, intelligence and imagination (Halprin, 2003, pp.103-104). Professional painting is also a stressful process that manifests itself in different stages of painting, in which the body contracts from time to time until the process of finding an idea, transferring it to the surface (color selection, size, technique, etc.), training on time, believing that the work is finished and signing. This was also included in the statements of some participants. When we feel anxious and stressed, we tend to tense up our muscles. This can cause headaches, tight shoulders, neck pain (one of the most common in participant statements), and even a tight jaw. According to Trieger (2005: 19), if we do nothing to release this daily tension, this tension causes muscle imbalances. Since there are no natural outlets for our tensions, it causes our muscles to weaken, become tense and lose contact with our physical nature and the energies of life (Anderson, 2000, p.8). Bernardino Ramazzini, who is defined as the father of occupational diseases, visited the workers at the workplaces, observed the activities and working conditions of the workers and examined the stress that their work caused on the body. At the end of his studies in which he examined the relationship between certain disorders and postural attitudes, repetition of movements and lifting weights, he mentioned the importance of taking breaks between workouts, exercising and changing posture (Franco, 2014).

Musculoskeletal disorders are a chronic and debilitating problem; these injuries can result in pain and disability that affects daily life and the ability to work in certain careers (Getchell, 2019). Painters, on the other hand, use the shoulder girdle muscles with active and frequently repetitive movements. These non-ergonomic working conditions generally trigger musculoskeletal diseases (Hansen, 1991 as cited in Das et al., 2020, p.318). All of the participants stated that they experienced bodily pain while painting or after painting. These pains varied according to working positions (sitting or standing), painting times, and the dimensions and styles of the painting. Poor posture and movements during work, the load on the muscles, the speed, duration and repetition of the work, the force used in the movement, vibration and heat are important physical factors in musculoskeletal

diseases (Yılmaz et al., 2006, p.16). Das et al. (2020) concluded that factors such as working posture, daily working time, repetitive and compulsive movements, work experience, age, gender, and working under stressful conditions are associated with the occurrence of WMSDs. There is evidence of a causal relationship between highly repetitive work and neck and neck/shoulder MSDs. Most of the epidemiological studies reviewed have defined the neck as “repetitive work” as work activities that involve sustained arm or hand movements that affect the neck/shoulder muscles and place a load on the neck/shoulder region (Bernard, 1997). Chang et al. (1987) as a result of the survey they applied to 75 artists, 92% of which were painters, and the video analysis they applied to 14 students, it was found that the artists had the most complaints of low back pain, followed by shoulder and neck pain. Milerad and Ekenvall (1990) compared the neck and neck/shoulder symptoms reported by dentists and pharmacists; they accepted dentists as a high-risk group due to awkward postures and repetitive use of small hand tools, and defined dentistry as a profession “with arms pulled and without support” (Bernard, 1997). It can be said that painting students, who work in detail and use thin brushes, are similar to dentists in the bending of their bodies during the study. The findings of Kısa et al. (2021), Das et al. (2020) students of the Painting Department, Ünal (2016) academicians and students in the Painting and Sculpture Departments, Panhale et al. (2020) embroidery workers, Ariens et al. (2001) Dutch workers, are similar to the findings of Chang et al. (1987). The findings obtained from the participants in the study are similar to the literature and the area where pain was most common was the low back and neck. Hanvold et al. (2010) concluded that participants who reported neck, shoulder, and back pain at school had more than three times the risk of reporting pain at 3-year follow-up.

Half of the participants stated that they painted while sitting and that they felt pain in the low back and neck region. This is similar to the findings obtained by Getchell (2019) in a survey of ETSU visual arts students and academics. The survey revealed that most artists experienced low back pain. Sitting painting not only affects the hips and legs of the individual, but also the low back. Sitting for a long time causes serious health problems in adults. As Getchell stated, further studies should be conducted to see whether there is a relationship between sitting positions and musculoskeletal disorders among visual artists (Getchell, 2019, p.15). Alexander attributes the prevalence of many anxiety and skeletal problems to sitting for long periods of time (Drake, 2001, p.106 as cited in Özmenay, 2018, p.74). Grimmer et al. (2006) found in their study on adolescents that adolescents had a high rate of medically verifiable back pain. The results showed that the sitting position had an effect not only on the shape of the anterior-posterior curves, but also on the increasing scoliosis and asymmetries of the trunk, which is one of the first symptoms of scoliosis (Grimmer et al., 2006 as cited in Drzał-Grabiec et al., 2015, p.855).

The other area where the majority of the participants complained about pain was the neck. According to the results of research by Côté et al. (2008), working in a static position for long periods of time, above shoulder level or in awkward positions (frequent bending or twisting of the trunk or working in uncomfortable positions), increased neck pain. Sahu et al. (2013) found that although they had similar sitting times and body movements, sculptors and potters had complaints of discomfort/pain in different parts of their bodies; Kısa et al. (2021) found a significant difference between the right side pectoralis major and minor muscles and the subscapularis muscle strength values of both sides of the painting department students who had a higher rate of neck pain, and the values of the sculpture department students. Studies showed that there was a high prevalence of musculoskeletal symptoms in the neck and upper extremities, ranging from 48-78% among undergraduate students (Kanchanomai et al., 2011). Ferreira et al. (2019) attributed the increasing use of computers and other information and communication technologies to the complaints of neck pain, which has increased in recent years among university students. Colgar (2014: 24) considered it possible that those who worked in the office five days a week or students suffered from neck disorders, and attributed to poor posture or lack of physical activity or aging. Gheysvandi et al. (2019) investigated the prevalence of neck and shoulder pain in students aged 7-12, and concluded that one-third of the students had at least one of the shoulder and neck pain problems. In addition to physical factors such as school atmosphere, too much homework, difficulty in seeing the board, and posture, they associated neck pain, excessive desk height, forward and backward sitting inclination, and shoulder pain with low desk height, which causes abnormal postures. Non-specific neck pain can be caused by stress as well as posture disorders. Because the exact cause and underlying pathology of neck disorders are often unclear, treatments focus on relieving pain and stiffness. Stretching movements are a common way to reduce the discomfort caused by pain in the neck and shoulder muscles. Stretching movements provide benefits in strengthening the neck and shoulder muscles, increase the flexibility and movement of the neck muscles, increase blood flow to the muscles, increase production energy, reduce pain, are relatively easy to do, do not require special time and space (Purwata et al., 2019, pp.31-32). Some previous studies have recommended yoga as a complementary therapy for the relief of neck-related pain. Kim (2018) concluded that there was a significant decrease in neck pain intensity in a study that aimed to test the effectiveness of yoga exercise to alleviate

nonspecific neck pain in university students who frequently used computers and complained of computer-related neck pain.

Many of the participants underestimated musculoskeletal pain and think that it was a normal condition, or they had a low awareness of musculoskeletal pain. The data obtained are similar to the results obtained by Getchell (2019) from ETSU visual art students and academics, and Ünal (2016) from students and academicians from different departments at the Faculty of Fine Arts.

One of the results encountered in the research is that the majority of the participants have breathing-holding problems while painting. We mentioned that illustrator John Vernon Lord was holding his breath because he was afraid the drawing would go wrong. It was seen that some of the participants hold their breath for a similar reason, and those who did yoga, breathing exercises or meditate were more conscious about controlling their breathing. Yoga increases the flexibility, strength and endurance of the muscles. Physical postures, breathing exercises, meditation: reduce stress and tension (Dündar, 2008, p.32). In yoga, it is possible to feel the whole body, strengthen bones and muscles, correct posture, improve breathing capacity and increase energy by using one's own body weight, posing and rhythmic breathing (Trieger, 2005, p.26). Focus is also included in participant statements as one of the reasons for holding their breath. Focusing inevitably produces muscle reactions in different parts of the body; however, there is also the possibility of causing problems. In their study, Gellrich and Parncutt (1991) attributed the common areas for tension knots or blocks in music practice to the back of the neck, wrists and hands, and that the reasons were excessive concentration, emotional involvement in music, fear of making mistakes in difficult passages, and not being studied enough. This is similar to the expressions of some participants, who put a strain on their body to prevent hand tremor.

In addition to painting, it is thought that the use of technological tools in long-term and incorrect positions will also be effective in musculoskeletal pain. According to the statements of the participants, the phone was in the first place in the use of technological devices. The majority of the participants stated that they used technological devices between 4-6 hours a day and that they experienced posture disorders from time to time. According to Al-Hadidi et al. (2019) examined the relationship between neck pain and the duration of mobile phone use, and found a significant positive relationship between the duration of mobile phone use and the duration and severity of neck pain. They attributed this pain to the static muscle load caused by long-term neck flexion, to the lack of support of the arms and to the repetitive movements of the fingers, especially when one hand was used. Kanchanomai et al. (2011) found that upper extremity symptoms were more common in undergraduate students who were engaged in computer work and used computers for a long time. They also concluded that 46% of them complained of neck pain during the 1-year follow-up, and 33% of them had permanent neck pain. In the study of Bhardwaj and Mahajan (2017), in which they mentioned the relationship between neck pain and computer use, they mentioned that computer used for four to five hours a day was an important risk factor for neck pain. Sitting with an incorrect neck posture disrupts the normal lordotic curve of the neck, leading to muscle imbalance and thus neck pain. Bhardwaj and Mahajan (2017) also stated that although long-term computer use increased the incidence of neck pain, the incidence of disability was not very high; Pacheco et al. (2018) concluded that university students' spending time in activities that required computer use and concentration could be associated with more FHP (forward head posture).

The study focused on the pain felt during and after painting and the students' views on preparatory physical exercises. Activities not recorded in the interview, hobbies, age, gender (although recorded in the interview), weight, health problems (although recorded in the interview), etc. can contribute to pain and discomfort. A convenient and small sample size was used in this study. Therefore, the results cannot be generalized to other art education teacher candidates. The research can be used in future studies to raise awareness about musculoskeletal disorders in art education students, to prevent such disorders and to train them on preparatory physical exercises, to include a lesson in art education and training programs, to plan and implement ergonomic processes.

REFERENCES

- Al-Hadidi, F., Bsisu, I., AlRyalat, S.A., Al-Zu'bi, B., Bsisu, R., Hamdan, M., Kanaan, T., Yasin, M., & Samarah, O. (2019). Association between mobile phone use and neck pain in university students: A cross-sectional study using numeric rating scale for evaluation of neck pain. *Plos One*, 14(5), 1-10. <https://doi.org/10.1371/journal.pone.0217231>
- Anderson, B. (2000). *Stretching*. Shelter Publications.
- Ariens, G.A., Bongers, P., Hoogendoorn, W., Houtman, I.L., van der Wall, G., & van Mechelen, W. (2001). High quantitative job demands and low coworker support as risk factors for neck pain: results of a prospective cohort study. *Spine*, 26(17), 1896-1901. DOI:10.1097/00007632-200109010-00016

- Aydın, C. (2014). *Ofis çalışanlarında postür ve solunum egzersizlerinin ağrı ve yaşam kalitesine etkisi* (Yüksek lisans tezi, Haliç Üniversitesi Sağlık Bilimleri Enstitüsü).
https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=2hghC_Gf7ro79Co5PJMx3g&no=9s8wxWWveSW9ZsheTAPENA
- Bernard, B.P. (Ed.). (1997). Neck musculoskeletal disorders: evidence for work-relatedness. *Musculoskeletal disorders and workplace factors: A critical review of epidemiologic evidence for work-related musculoskeletal disorders of the neck, upper extremity, and low back* (pp.2-24). National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 97-141.
- Bhardwaj, Y., & Mahajan, R. (2017). Prevalence of neck pain and disability in computer users. *International Journal of Science and Research (IJSR)*, 6(8), 1288-1290. DOI:[10.13140/RG.2.2.19924.50565](https://doi.org/10.13140/RG.2.2.19924.50565)
- Buckle, P. (2005). Ergonomics and musculoskeletal disorders: Overview. *Occupational Medicine*, 55(3), 164-167. <https://doi.org/10.1093/occmed/kqi081>
- Chang, W. S., Bejjani, F. J., Chyan, D., & Bellegarde, M. (1987). Occupational musculoskeletal disorders of visual artists A questionnaire and video analysis. *Ergonomics*, 30(1), 33-46.
<https://doi.org/10.1080/00140138708969675>
- Colgar, M. (2014). *Stop headache neck pain and bad posture: For adults, online gamers, teenagers, students*. Vivid Publishing.
- Côté, P., van der Velde, G., Cassidy, J.D., et al. (2008). The burden and determinants of neck pain in workers: Results of the bone and joint decade 2000-2010 task force on neck pain and its associated disorders. *Spine*, 33 (4), 60-74. DOI: [10.1097/BRS.0b013e3181643ee4](https://doi.org/10.1097/BRS.0b013e3181643ee4)
- Das, D., Kumar, A., & Sharma, M. (2020). A systematic review of work-related musculoskeletal disorders among handicraft workers. *International Journal of Occupational Safety and Ergonomics*, 26(1), 55-70. <https://doi.org/10.1080/10803548.2018.1458487>
- Drzał-Grabiec, J., Snela, S., Rykała, J., Podgórska, J., & Rachwał, M. (2015). Effects of the sitting position on the body posture of children aged 11 to 13 years. *Work*, 51(4), 855-862. DOI: [10.3233/WOR-141901](https://doi.org/10.3233/WOR-141901)
- Dündar, G.E. (2008). Keman ve viyola çalan öğrencilerde ortaya çıkan fiziksel sağlık problemleri ve çözüm önerileri. (Yüksek lisans tezi, Marmara Üniversitesi Eğitim Bilimleri Enstitüsü Güzel Sanatlar Eğitimi Ana Bilim Dalı Müzik Öğretmenliği Bilim Dalı).
https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=hWhiz1V_SwQaRTSgCHnggA&no=BiNLM2x9lzOA7HXainKpPg
- Ferreira, J., Matias, B., & Silva, A.G. (2019). Pressure pain thresholds in university students with undertreated neck pain: comparison with asymptomatic individuals, reliability and measurement error. *European Journal of Physiotherapy*, 22(5), 284-289. <https://doi.org/10.1080/21679169.2019.1614666>
- Franco, G. (2014). A tribute to Bernardino Ramazzini (1633–1714) on the tercentenary of his death. *Occupational Medicine*, 64(1), 2-4. <https://doi.org/10.1093/occmed/kqt110>
- Gellrich, M. & Parncutt, R. (1991). Concentration and tension. *British Journal of Music Education*, 8(2), 167-179. DOI: <https://doi.org/10.1017/S0265051700008275>
- Getchell, C. (2019). *Experience and awareness of musculoskeletal disorders among ETSU student and faculty visual artists* (Undergraduate honors theses, East Tennessee State University).
<https://dc.etsu.edu/honors/506>
- Gheysvandi, E., Dianat, I., Heidarimoghadam, R., Tapak, L., Karimi-Shahanjarini, A., & Rezapur-Shahkolai, F. (2019). Neck and shoulder pain among elementary school students: prevalence and its risk factors. *BMC Public Health*, 19(1), 1299. <https://doi.org/10.1186/s12889-019-7706-0>
- Grimmer, K., Nyland, L., Milanese, S. (2006). Longitudinal investigation of low back pain in Australian adolescents: A five-year study. *Physiother Res Int*, 11(3), 161-72. <https://doi.org/10.1002/pri.340>
- Halprin, D. (2003). *The expressive body in life, art, and therapy: Working with movement, metaphor and meaning*. Jessica Kingsley Publishers.
- Hanvold, T.N., Veiersted, K.B., & Wærsted, M. (2010). A prospective study of neck, shoulder, and upper back pain among technical school students entering working life. *Journal of Adolescent Health*, 46 (5), 488-494. <https://doi.org/10.1016/j.jadohealth.2009.11.200>
- Kanchanomai, S., Janwantanakul, P., Pensri, P., & Jiamjarasrangsi, W. (2011). Risk factors for the onset and persistence of neck pain in undergraduate students: 1-year prospective cohort study. *BMC Public Health*, 11: 566. doi:[10.1186/1471-2458-11-566](https://doi.org/10.1186/1471-2458-11-566)
- Kısa, E.P., Hüsrevoğlu, S., Kalpar, E., Özkan, İ., Çelikaş, E., Uzuner, H., Palabıyık, S., & Kalpar, B.N. (2021). Resim ve heykel bölümü öğrencilerinin postüral değerlendirmelerinin karşılaştırılması. *H.Ü. Sağlık Bilimleri Fakültesi Dergisi*, 8(2), 314-330. doi:[10.21020/husbfd.894223](https://doi.org/10.21020/husbfd.894223)
- Kim, S.D. (2018). Effects of yogic exercise on nonspecific neck pain in university students. *Complementary Therapies in Clinical Practice*, 31, 338-342. <https://doi.org/10.1016/j.ctcp.2017.10.003>
- Lord, J.V. (2005). A journey of drawing an illustration of a fable. J.Davies and L.Duff (Eds.), *Drawing: The process* (pp. 29-37). Intellect Books Ltd.

- Nardini, B. (2011). *Michelangelo: Bir dâhinin yaşamöyküsü*. Can Sanat Yayınları.
- Özmenay, P.T. (2018). Alexander Tekniği'nin temel uygulama ilkeleri ve çalışma yöntemleri. *Afyon Kocatepe Üniversitesi Akademik Müzik Araştırmaları Dergisi*, 4 (7) , 65-80. <https://doi.org/10.5578/amrj.66461>
- Pacheco, J., Raimundo, J., Santos, F., Ferreira, M., Lopes, T., Ramos, L., & Silva, A.G. (2018). Forward head posture is associated with pressure pain threshold and neck pain duration in university students with subclinical neck pain. *Somatosensory & Motor Research*, 35(2), 103-108. <https://doi.org/10.1080/08990220.2018.1475352>
- Panhale V.P., Walankar P.P., Doshi D., & Desai, D. (2020). Evaluation of musculoskeletal pain and posture in embroidery workers of Mumbai - a cross sectional study. *International Journal of Health Sciences and Research*, 10(1), 121-126.
- Pekçetin, S., & Özgü, İ. (2018). Düzenli fiziksel egzersizin üniversite öğrencilerinin iyilik haline etkisi. *Hacettepe University Faculty of Health Sciences Journal*, 5(2), 31-39. <https://doi.org/10.21020/husbfd.421254>
- Purwata, T.E., Putra, I.K.S.M., Putra, I. G. N. P., & Widyadharma, I.P.E. (2019). Isometric was better than isotonic neck stretching to reduce pain and creatinine kinase in non-specific neck pain in caring students of Swadhyaseni Middle High School, Badung, Bali. *Journal of Ecophysiology and Occupational Health*, 19(1&2). DOI 10.18311/jeoh/2019/23070, 31-36.
- Sahu, S., Moitra, S., Maity, S., Pandit, A.K., & Roy, B. (2013). A comparative ergonomics postural assessment of potters and sculptors in the unorganized sector in West Bengal, India". *International Journal of Occupational Safety and Ergonomics (JOSE)*, 19(3), 455-462. <https://doi.org/10.1080/10803548.2013.11077001>
- Towse, R. (1996). Market value and artists earnings. A. Klamer (Ed.), *The value of culture on the relationship between economics and art* (pp. 96-107). Amsterdam University Press.
- Trieger, R. (2005). *Yoga heals your back: 10 minute routines that end back and neck pain. fair gloucester*. Winds Press.
- Ünal, Ü.S. (2016). *Güzel Sanatlar Fakültesi öğrencileri ve akademisyenlerinde performansla ilgili kas-iskelet sistemi rahatsızlıklarının prevalansı* (Uzmanlık tezi, Marmara Üniversitesi Tıp Fakültesi Aile Hekimliği Anabilim Dalı). <https://acikbilim.yok.gov.tr/handle/20.500.12812/208137>
- Yıldırım, A., & Şimşek, H. (2013). *Sosyal bilimlerde nitel araştırma yöntemleri*. Seçkin Yayıncılık.