

# ORIGINAL ARTICLE

## Özgün Araştırma

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## Evaluation of Musculoskeletal System Problems in Shipyard Workers

## Tersane Çalışanlarında Kas İskelet Sistemi Sorunlarının Değerlendirilmesi

### ABSTRACT

#### Objective:

In the research, it is aimed to evaluate the musculoskeletal system problems in shipyard employees.

#### Method:

The study is a cross-sectional study and was conducted in three shipyards in Kocaeli between October and December 2019. The survey form was used in the study. The second part of the questionnaire consisted of the Expanded Nordic Musculoskeletal System questionnaire. The study was conducted with 280 shipyard employees. Statistical significance level was taken as  $p < 0.05$  in the analysis.

#### Result:

31.1% of the participants are in the age group 30 and under, 30.7% are in the 31-40 age group; their average age is  $37.1 \pm 10.5$ . It was found that 6.8% of the participants in the study had a chronic disease; 49.3% of them were still smoking; 14.3% of them used alcohol; 14.3% of them exercised regularly. In the study, 22.1% of the shipyard workers had pain in their waist, 18.2% on their back, 17.9% on their neck, and 16.1% on their shoulders. It was determined that 7.9% of the participants used medication for low back pain and 4.6% for neck and knee pain.

#### Conclusions:

In the study, it was found that the most common pain was in the waist and then in the upper extremity musculoskeletal system. It is recommended to make working environments more ergonomic and to provide training on the posture positions of the employees during working.

#### Key Words:

Musculoskeletal disorders, Shipyard workers, Ergonomics

### ÖZ

#### Amaç:

Araştırmada, tersane çalışanlarında kas iskelet sistemi sorunlarının değerlendirilmesi amaçlanmaktadır.

#### Yöntem:

Araştırma kesitsel tipte bir çalışma olup, Ekim-Aralık 2019 tarihlerinde Kocaeli'de üç tersanede

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gerçekleştirilmiştir. Araştırmada anket formu kullanılmıştır. Anketin ikinci bölümü, Genişletilmiş Nordik Kas-İskelet Sistemi anketinden oluşmaktadır. Çalışma 280 tersane çalışanı ile yürütülmüştür. Analizde istatistiksel anlamlılık düzeyi  $p < 0.05$  alınmıştır.

### Bulgular:

Araştırmaya katılanların %31,1'i 30 yaş ve altında, %30,7'si 31-40 yaş grubunda olup; yaşları ortalaması  $37,1 \pm 10,5$  dir. Araştırmada katılımcıların %6,8'inin kronik hastalığı olduğu; %49,3'ünün halen sigara içtiği; %14,3'ünün alkol kullandığı; %14,3'ünün düzenli egzersiz yaptığı saptanmıştır. Araştırmada tersane çalışanlarının %22,1'inin belinde, %18,2'sinin sırtında, %17,9'unun boynunda, %16,1'inin omzunda son bir yılda ağrı saptanmıştır. Çalışmada katılımcıların %7,9'u bel ağrısı, %4,6'sı boyun ve diz ağrısı nedeniyle ilaç kullandığı tespit edilmiştir.

### Sonuç:

Çalışmada en sık bel, daha sonra üst ekstremitede kas iskelet sistemi ağrısı olduğu saptanmıştır. Çalışma ortamlarının daha ergonomik hale getirilmesi ve çalışanların çalışma sırasındaki duruş pozisyonlarıyla ilgili eğitim verilmesi önerilmektedir.

### Anahtar Kelimeler:

Kas-iskelet sistemi rahatsızlıkları, Tersane çalışanları, Ergonomi

## INTRODUCTION

Shipyards are counted as heavy industries due to their equipment and complexity of production processes. The shipbuilding industry uses and produces a large number of products besides building materials. There are many production processes that cause accidents in terms of occupational health and safety. In shipbuilding, many different jobs need to be done together and at the same time (1). Employees in production are often found in harsh working environments. Low back pain caused by ergonomic problems in the workplace is an important cause of disability (2). Shipyard industry work environments include numerous risk factors for back pain and other musculoskeletal disorders. Shipyard workers often make problematic postures such as kneeling, bending, crouching or lying down during their working time. Musculoskeletal problems have been reported with a high frequency in people who work in problematic posture and with poor psychological and social conditions (3-5). It has been found that the frequency of low back pain is higher among shipyard workers (6). The presence of many risk factors in the shipyard working environment reveals the need for a lot of work and solutions in this field. In our study, it is aimed to evaluate the musculoskeletal system problems in shipyard employees.

## MATERIAL and METHODS

### Study design:

The research is a cross-sectional study. The research was carried out in October-December 2019 in three shipyards in Kocaeli. A total of 1500 people work in the shipyards.  $N=1500$ ;  $S=0,05$ ;  $p=0,50$ ;  $q=0,50$ ;  $t(1-\alpha)=1,96$  so  $n=(N * t(1-\alpha)^2 * p * q) / [S^2 * (N-1) + t(1-\alpha)^2 * p * q]$  formula used for calculation of sample size and then was found as  $n=306$ . All employees are listed. Systematic sampling method was used in the study. The research was conducted with 280 people who agreed to participate in the study (transportation percentage 91.5). Ethics committee approval of the study was obtained from the Clinical Research Ethics Committee of Kocaeli Training and Research Hospital (2019-84). The study was conducted in accordance with the Declaration of Helsinki.

### Outcome measures:

The survey form was used in the study. The questionnaires consist of 2 parts and the first part consists of 15 questions on socio-demographic characteristics, and the second part consists of the Expanded Nordic Musculoskeletal System questionnaire (NMQ) (7,8). The Turkish validity-reliability study of the Musculoskeletal System questionnaire was conducted (9). Purpose in NMQ; It is the evaluation of waist, neck, shoulder and general musculoskeletal complaints with standardized questions. In NMQ; Disturbances in the last 12 months, last one month and seven days in certain nine symptom regions (feet-ankles, knees, thighs-hips, wrists-hands, waist, elbows, back, shoulders, neck) marked by mapping of the body are questioned.

### Statistical analysis:

Research data was evaluated with SPSS 22.0. Descriptive statistics are presented as mean  $\pm$  standard deviation, frequency distribution and percentage. Binary logistic regression tests were used as statistical methods. Statistical significance level was taken as  $p < 0.05$  in the analysis.

## RESULTS

280 people were reached within the scope of the research. 31.1% ( $n=87$ ) of the participants were 30 years and younger, 30.7% ( $n=86$ ) were in the 31-40 age group; Their average age was  $37.1 \pm 10.5$ , median 37 (min: 18; max: 64). 97.1% ( $n=272$ ) of the participants are male; 71.4% ( $n=200$ ) were married; 33.6% ( $n=94$ ) were high school graduates, 28.9% ( $n=81$ ) were primary school graduates; Body mass index of 37.1% ( $n=104$ ) was between 25-29.9, and body mass index of 13.6% ( $n=38$ ) was 30 and above. It was determined that 5.7% ( $n=16$ ) of those examined were working in shifts; the average working time in this workplace is  $33.4 \pm 51.3$  months, the median is 12 (min: 1; max: 300) months; total working time mean  $110.8 \pm 115.7$  months, median 72 (min: 1; max: 552) months; weekly working hours mean  $46.6 \pm 4.6$  hours, median 45 (min: 35; max: 70) hours (Table I).

**Table I:** Distribution of the Socio-Demographic Characteristics of Shipyard Employees.

	n (%)*
<b>Age</b>	
30 and under	87 (31.1)
31-40	86 (30.7)
41-50	75 (26.8)
51 and above	32 (11.4)
<b>Gender</b>	
Male	272 (97.1)
Female	8 (2.9)
<b>Marital status</b>	
Married	200 (71.4)
Single	80 (28.6)
<b>Educational status</b>	
Primary school graduate	81 (28.9)
Secondary school graduate	68 (24.3)
High school graduate	94 (33.6)
College/University graduate	37 (13.2)
<b>Body Mass Index</b>	
<18.5	3 (1.1)
18.5-24.9	135 (48.2)
25-29.9	104 (37.1)
≥ 30	38 (13.6)
<b>Working in shifts</b>	
Yes	16 (5.7)
No	264 (94.3)
<b>Working time in this workplace (month)</b>	
Mean±Standard Deviation	33.4 ± 51.3
Median (min; max)	12 (1; 300)
<b>Total working time (Month)</b>	
Mean±Standard Deviation	110.8 ± 115.7
Median (min; max)	72 (1; 552)
<b>Weekly working time (hours)</b>	
Mean±Standard Deviation	46.6 ± 4.6
Median (min; max)	45 (35; 70)

\*column percentage

It was determined that 6.8% (n = 19) of the participants in the study had a chronic disease; 5.4% (n = 15) of them regularly use medication; 30.7% (n = 86) never smoked, 20.0% (n = 56) smoked and quit, 49.3% (n = 138) still smoked; 14.3% (n = 40) of them used alcohol; It was found that 14.3% (n = 39) exercised regularly, 55.9% (n = 152) occasionally and 22.9% (n = 81) did not exercise.

In the study, 17.9% (50) of the shipyard workers had pain on their necks, 16.1% on their shoulders (n = 45), 18.2% (n = 51) on their backs, 7.5% (n = 21) on their elbows, 12.1% (n = 34) in the hand/wrist, 22.1% (n = 62) in the waist, 8.2% (n = 23) in the hip / thigh, 15.4% (n = 43) in the knee, 11.4% (n = 32), in the foot/ankle in the last year (Table II).

**Table II:** Distribution of Pain Situations in Body Areas of Shipyard Employees.

	State of Pain		
	n (%)	over the last one month n (%)	over the last year n (%)
Neck	36 (12.9)	47 (16.8)	50 (17.9)
Shoulder	36 (12.9)	43 (15.4)	45 (16.1)
Back	47 (16.8)	51 (18.2)	51 (18.2)
Elbow	12 (4.3)	17 (6.1)	21 (7.5)
Hand/Wrist	30 (10.7)	32 (11.4)	34 (12.1)
Waist	51 (18.2)	60 (21.4)	62 (22.1)
Hip / Thigh	20 (7.1)	23 (8.2)	23 (8.2)
Knee	36 (12.9)	39 (13.9)	43 (15.4)
Foot / Ankle	28 (10.0)	30 (10.7)	32 (11.4)

It was determined that 5.0% (n=14) of the participants had neck pain, 2.5% (n=7) of them had shoulder pain, 3.2% (n=9) had back ache, 1.8% (n=5) had elbow pain, 3.9% (n=11) had hand/wrist pain, 10.7% (n=30) had waist ache, 2.9% (n=8) had pain on their hips/thighs, 6.4% (n=18) had knee pain and 4.3% had pain on their foot/ankle that affected their home/work life (Table III).

It was determined that 4.6% (n=13) of the participants went to see a doctor for their neck pain, 2.9% (n=8) for their shoulder pain, 3.6% (n=10) for their back pain, 1.4% (n=4) for their elbow pain, 4.6% (n=13) for the pain in their hand/wrist, 11.4% (n=32) for their waist ache, 3.2% (n=9) for the pain on their hips/thighs, 5.7% (n=16) for their knee pain, 4.6% (n=13) for the pain on their foot/ankle (Table III).

In the study, it was determined that 4.6% (n=13) of the participants used medication for their neck pain, 3.2% (n=9) for their shoulder pain, 2.9% (n=8) for their back ache, 1.1% (n=3) for their elbow pain, 2.9% (n=8) for the pain on their hand/wrist, 7.9% (n=22) for their waist pain, 2.5% (n=7) for the pain on their hips/thighs, 4.6% (n=13) for their knee pain, 3.2% (n=9) for the pain on their foot/ ankle (Table III).

In the study, it was determined that 2.9% (n=8) of the shipyard workers received a report due to their neck pain, 1.8% (n=5) due to their shoulder pain, 1.4% (n=4) due to their back ache, 1.1% (3) due to their elbow pain, 1.4% (n=4) due to the pain on their hand/wrist, 1.4% (n=4) due to the pain on their hips/thighs, 3.9% (n=11) due to their knee pain, 3.6% (10) due to the pain on their foot/ ankle (Table III).

**Table III:** Distribution of the Traits of Shipyard Workers Related to Pain in Body Areas in the Last One Year.

	Affecting Home / Business Life	Going to the doctor's	Drug use	Getting a report
	n (%)	n (%)	n (%)	n (%)
Neck	14 (5.0)	13 (4.6)	13 (4.6)	8 (2.9)
Shoulder	7 (2.5)	8 (2.9)	9 (3.2)	5 (1.8)
Back	9 (3.2)	10 (3.6)	8 (2.9)	4 (1.4)
Elbow	5 (1.8)	4 (1.4)	3 (1.1)	3 (1.1)
Hand/Wrist	11 (3.9)	13 (4.6)	8 (2.9)	4 (1.4)
Waist	30 (10.7)	32 (11.4)	22 (7.9)	17 (6.1)
Hip / Thigh	8 (2.9)	9 (3.2)	7 (2.5)	4 (1.4)
Knee	18 (6.4)	16 (5.7)	13 (4.6)	11 (3.9)
Foot / Ankle	12 (4.3)	13 (4.6)	9 (3.2)	10 (3.6)

It was determined that age increases the frequency of waist pain by 0.940 times (GA: 0.901-0.981), being married increases it by 3.745 times (GA: 1.470-9.542), being graduated from high school increases it by 4.552 times (GA: 1.636-12.664), being graduated from college/university increases it by 9.443 times (GA: 2.833-31.469), working with shifts increases it by 5.855 times (GA: 1.485-23.080). It was determined that being married increases the frequency of neck pain by 3.476 times (GA: 1.304-9.261), being graduated from high school increases it by 7.991 times (GA: 2.454-26.022), being graduated from college/university increases it by 11.164 times (GA: 2.878-43.307), not doing any exercises increases it by 5.753 times (GA: 1.155-28.658) (Table IV).

**Table IV:** Distribution of Pain Conditions in Waist and Neck Region in the Last One Year According to Socio-Demographic Characteristics of Shipyard Employees.

	Waist			Neck		
	p	OR	95% CI	p	OR	95% CI
<b>Age</b>	<b>0.004</b>	0.940	0.901-0.981	0.169	0.971	0.930-1.013
<b>Marital status</b>						
Married	<b>0.006</b>	3.745	1.470-9.542	<b>0.013</b>	3.476	1.304-9.261
Single		1			1	
<b>Educational status</b>						
Primary school graduate		1			1	
Secondary school graduate	0.225	1.982	0.656-5.990	0.132	2.773	0.736-10.447
High school graduate	<b>0.004</b>	4.552	1.636-12.664	<b>0.001</b>	7.991	2.454-26.022
College/University graduate	<b>&lt;0.001</b>	9.443	2.833-31.469	<b>&lt;0.001</b>	11.164	2.878-43.307
<b>Body Mass Index</b>	0.672	0.981	0.898-1.072	0.729	0.984	0.897-1.079
<b>Working in shifts</b>						
Yes	<b>0.012</b>	5.855	1.485-23.080	0.299	2.508	0.443-14.208
No		1			1	
<b>Working time in this workplace (month)</b>	0.139	1.005	0.998-1.011	0.425	0.997	0.989-1.005
<b>Weekly working time (hours)</b>	0.969	0.999	0.932-1.070	0.445	0.967	0.887-1.054
<b>Exercise status</b>						
Does it regularly		1			1	
Does it occasionally	0.707	1.211	0.446-3.289	0.097	3.682	0.791-17.149
Does not exercise	0.639	1.304	0.431-3.945	<b>0.033</b>	5.753	1.155-28.658
<b>Constant</b>	0.626	0.368		0.387	0.117	

It was determined that being graduated from high school increases back pain by 10.865 times (GA: 2.898-40.726), being graduated from college/university increases it by 21.543 times (GA: 4.893-94.848), not doing any exercises increases it by 7.755 (GA: 1.534-39.207). It was determined that being married increases shoulder pain by 3.453 times (GA: 1.154-10.334), being graduated from college/university increases it by 7.108 (GA: 2.077-24.331), weekly working hours increases it by 0.823 (GA: 0.686-0.987) (Table V).

**Table V:** Distribution of Pain Conditions in Back and Shoulder Region in the Last One Year According to Socio-Demographic Characteristics of Shipyard Employees.

	Back			Shoulder		
	p	OR	95% CI	p	OR	95% CI
<b>Age</b>	0.088	0.963	0.922-1.006	0.106	0.963	0.920-1.008
<b>Marital status</b>						
Married	0.057	2.579	0.974-6.829	<b>0.027</b>	3.453	1.154-10.334
Single		1			1	
<b>Educational status</b>						
Primary school graduate		1			1	
Secondary school graduate	0.062	3.935	0.934-16.571	0.781	1.190	0.349-4.064
High school graduate	<b>&lt;0.001</b>	10.865	2.898-40.726	0.064	2.620	0.946-7.253
College/University graduate	<b>&lt;0.001</b>	21.543	4.893-94.848	<b>0.002</b>	7.108	2.077-24.331
<b>Body Mass Index</b>	0.772	1.014	0.925-1.111	0.693	1.019	0.929-1.117
<b>Working in shifts</b>						
Yes	0.243	2.891	0.486-17.204	0.925	0.891	0.082-9.638
No		1			1	
<b>Working time in this workplace (month)</b>	0.687	1.002	0.994-1.009	0.432	1.003	0.996-1.010
<b>Weekly working time (hours)</b>	0.183	0.938	0.853-1.031	<b>0.036</b>	0.823	0.686-0.987
<b>Exercise status</b>						
Does it regularly		1			1	
Does it occasionally	0.097	3.720	0.788-17.555	0.293	2.318	0.484-11.099
Does not exercise	<b>0.013</b>	7.755	1.534-39.207	0.066	4.562	0.902-23.077
<b>Constant</b>	0.553	0.208		0.226	216.222	

## DISCUSSION

31% of the shipyard employees participating in the study were 30 years and younger, 30% were in the 31-40 age group, 11% were 51 years old and above, and their average age was found to be 37 (min: 18; max: 64). In the study conducted by Park et al. on the male shipyard workers on the southeastern coast of Korea, it has been stated that 52.5% of the participants were in the 40-49 age group, 22.9% were in the age group 50 and over, 19.4% were 30-39 years old and 5.1% were in the 20-29 age group (10). In the work done by Alexopoulos et al. at the shipyard industry, the average age of white-collar workers was  $36.8 \pm 9.1$ , and  $38.7 \pm 9.5$  for blue-collar workers (11). Studies show that the majority of shipyard employees are in the middle age group.

In the research, the average working time of the shipyard employees in this workplace was 33 months, and the total of average working time was 110 months. In the study conducted by Park et al., it was stated that the working period of 57.5% of the participants was 10-19 years, 27.9% of them was 20 years and more, and 14.7% of them worked for 1-9 years (10). In the study by Alexopoulos et al., the average working time of white-collar workers was  $9.5 \pm 8.8$  years, and that of blue-collar workers was  $16.0 \pm 10.0$  years (11).

In the study, 22% of the participants had pain on their waist, 18% on their back, 17.9% on their neck, 16% on their shoulder, 15% on their knee, 12% on their hand/wrist and 11% on their foot/ankle in the last year. In the study conducted by Park et al. on the shipyard employees, 37.2% of the employees had shoulder symptoms, 27.5% had arm/elbow symptoms, 23.9% had neck symptoms, and 22.5% had hand/wrist symptoms (10). In the study conducted by Alexopoulos et al. at the shipyard industry, it was determined that the frequency of waist pain in the last 12 months of white-collar workers was 39.3%, of metal workers was 33%, of welders was 39.8% and of other blue-collar workers was 37.9%; the frequency of shoulder/neck pain in the last 12 months of white-collar workers was 27.9%, of metal workers was 14.6%, of welders was 18.3% and of other blue-collar workers was 25.2%; the frequency of hand/wrist pain in the last 12 months of white-collar workers was 17.0%, of metal workers was 15.3%, of welders was 10.8% and of other blue-collar workers was 13.4% (11). In the study conducted by Akter et al. on metal workers it was determined that 65% of them had musculoskeletal symptoms on their back and waist, 33.3% on their neck, shoulders and knees, and 40% on their wrists in the last one year (12). In the study conducted by Soe et al. on migrant workers in the seafood industries, it was determined that 29.3% of the participants had musculoskeletal symptoms on their waist, 20.4% on their hand/wrist, 19.3% on their shoulder, 18.8% on their neck, 18.2% on their foot/ankle, 15.5% on their back in the last 7 days (13). In the study conducted by Widanarko et al. on the occupational/industrial group it was determined that 54% of the participants had musculoskeletal symptoms on their waist, 43% on their neck, 42% on their shoulder, 31% on their knee, and 30% on their hand/wrist in the last year (14). In the study conducted by Aghilinejad et al. on steel industry workers it was determined

that 64% of the participants had a musculoskeletal illness on their waist, 47% on their knee, 44% on their neck, 35% on their back, 29% on their shoulder, 25% on their hand/wrist in the last 12 months (15). In addition to our study, it is seen that the most common complaint is waist pain in other studies. Later, upper extremity problems come. This situation may be caused by the ergonomic problems in the working environment and the problems in the working positions of the employees.

In the study, it was found that age increases the frequency of low back pain by 0.940 times, being married increases it by 3.745 times, being graduate from high school increases it by 4.552 times, being graduated from college/university increases it by 9.443 times, working in shifts increases it by 5.855 times. Being married increases the frequency of neck pain by 3.476, being graduated from high school increases it by 7.991 times, being graduated from college/university increases it by 11.164, not doing any exercises increases it by 5.753 times. It was found that being a high school graduate increases the frequency of back pain 10.865 times, being a college/university graduate increases it by 21,543 times, and not doing any exercises increases it by 7.755 times. It was found that being married increases the frequency of shoulder pain by 3.453 times, being graduated from college/university increases it by 7.108 times, and weekly working hours increases it by 0.823 times. In the study conducted by Park et al. on male shipyard employees, the frequency of hand/wrist, arm/elbow, shoulder and neck symptoms was found to be lower in the 20-29 age group. The frequency of hand/wrist symptoms was lower in non-smokers. The frequency of arm/elbow and shoulder symptoms was found to be lower in those with a working period of 1-9 years (10). In the study conducted by Soe et al. it was found that the frequency of musculoskeletal symptoms was 1.979 times higher in married and 1.655 times higher in those who worked 8.5 hours and more. It was found that the frequency of waist pain in those who had health problems in the last 3 months was 1.843 times higher. No difference was found between musculoskeletal symptoms according to age, gender and body mass index (13). In the study conducted by Widanarko et al. on occupational/industrial group it was found that the frequency of neck, shoulder, hand/wrist symptoms was higher in women. Waist and knee musculoskeletal symptoms are higher in men (14).

In the study, it was determined that 7.9% of the shipyard workers used medication for waist pain, 4.6% for neck and knee pain, 3.2% for shoulder and foot/ankle pain, 2.9% for back and hand/wrist pain. In the study conducted by Alexopoulos et al. it was found that 17.9% of white-collar workers, 17% of metal workers, 20.4% of welders and 21.4% of other blue-collar workers received health care due to their back pain; 11.8% of white-collar workers, 7.5% of metal workers, 8.6% of welders, 8.0% of other blue-collar workers received health care due to their shoulder/neck pain; 6.6% of white-collar workers, 7.1% of metal workers, 5.4% of welders, 8.4% of other blue-collar workers received health care due to their hand/wrist pain (11). In studies, it is seen that they

receive treatment for musculoskeletal complaints in significant rates, although they are less than complaints. It is thought that reviewing working environments and employee positions and providing necessary precautions and training will make a significant contribution.

It was determined that 6.1% of the shipyard employees participating in the study were reported for low back pain, 3.9% for knee pain, 3.6% for foot/ankle pain, and 2.9% for neck pain. It was found in the study conducted by Alexopoulos et al. that 14.8% of white collars, 12.2% of metal workers, 17.2% of welders, and 18.9% of other blue collars took sick leave due to low back pain; that 4.4% of white collars, 4.4% of metal workers, 7.5% of welders, 5% of other blue collars took sick leave due to shoulder/neck pain; that 2.6% of white-collar workers, 4.1% of metal workers, 2.2% of welders, and 2.9% of other blue-collars took sick leave due to hand/wrist pain (11). In the study conducted by Choobineh et al. on employees of sugar production plants it was found that 23.3% of the participants received sick leave due to musculoskeletal disorders in the waist and knee, 20.7% on the back, 18.1% on the shoulder, and 15.5% in the hand/wrist in the last 12 months (16). Studies show that shipyard employees receive reports due to musculoskeletal complaints at a considerable rate. This issue is examined in detail and it is seen that it is important for both the health of the employees and the continuity of the production process.

## CONCLUSION

In the study, it was found that 22% of the shipyard employees had pain on their waist, 18% on their back, 17% on their neck, 16% on their shoulders and 15% on the knee in the last year. In the study, it was determined that the home/work life was affected of 10% of the participants in the last year due to low back pain, 11% went to a doctor, 7% used medication and 6% received a report. It was determined that shipyard employees who participated in the study had a significant musculoskeletal system problem and that their home/work life was affected due to this problem, that they went to a doctor and used medication. It is recommended that working environments are made ergonomic, that employees should be trained about inappropriate working positions and physical exercise.

**Ethics Committee Approval**

This research complies with all the relevant national regulations, institutional policies and is in accordance with the tenets of the Helsinki Declaration, and has been approved by the Clinical Research Ethics Committee of Kocaeli Training and Research Hospital (approval number:2019-84).

**Informed Consent:**

All the participants' rights were protected and written informed consents were obtained before the procedures according to the Helsinki Declaration.

**Author Contributions:**

Concept – M.Ç.; Design – M.Ç.; Supervision -; Resources -; Materials ; Data Collection and/or Processing – M.Ç., E.A., F.D., S.Y., A.A.; Analysis and/ or Interpretation - M.Ç., E.A., F.D., S.Y., A.A.; Literature Search - M.Ç., E.A., F.D., S.Y., A.A.; Writing Manuscript - M.Ç., E.A., F.D., S.Y., A.A.; Critical Review - M.Ç., E.A., F.D., S.Y., A.A.

**Conflict of Interest:**

The authors have no conflict of interest to declare.

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