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Comparison of physical activity levels and musculoskeletal disorders among academicians with different chronotypes

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Original article

Abstract

Chronotype is one of the factors affecting individuals' health behaviors. This descriptive and comparative study aimed to identify the chronotype of academicians and determine their physical activity levels and musculoskeletal disorders according to chronotype. Of the academicians, 23.9% (n = 47) were morning type, 58.4% (n = 115) were intermediate type, and 17.7% (n = 35) were evening type. Academicians with morning chronotype were more likely to have a moderate physical activity level ($p < 0.05$). Academicians frequently experience pain, aches and discomfort in the upper back, neck and lower back areas. However, there was no statistically significant difference between musculoskeletal disorders of academicians in terms of chronotype ($p > 0.05$). It is recommended that physical activity be increased in academics with evening chronotype, precautions be taken for common musculoskeletal disorders, and the effects of chronotype on the musculoskeletal system be examined in a larger sample group.

Data availability statement

The data that support the findings of this study are available from the corresponding author, FTY, upon reasonable request.

Keywords

- academician
- chronotype
- physical activity
- musculoskeletal disorders

Contribution

A – Preparation of the research project
B – Assembly of data
C – Conducting of statistical analysis
D – Interpretation of results
E – Manuscript preparation
F – Literature review
G – Revising the manuscript

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Introduction

Chronotype is the expression of one's circadian rhythm.[1] In other words, chronotype is a characteristic that reflects one's preferences for rest and activity times over the course of a day and shows continuity from morning to evening.[2] Individuals have different chronotypes such as morning, evening, or intermediate types in terms of differences in biological and behavioral rhythms, including the sleep-wake cycle, body temperature, and the time of cortisol and melatonin secretion.[3] Individuals with morning chronotype go to bed early in the evening, wake up early in the morning, and reach their peak mental and physical performance in the early hours of the day. Evening types, on the other hand, go to bed late at night, experience difficulty waking up in the morning, have the highest levels of arousal in the afternoon hours, and thus perform better in the afternoon and evening hours.[4] Individuals without a clear circadian preference are classified as intermediate type as they show intermediate characteristics.[5] In the literature, it has been reported that approximately 40% of the adult population is either morning or evening type and that 60% is intermediate type.[6]

Chronotypes can affect the health behaviors of individuals. In multiple studies, it has been determined that chronotype is associated with various lifestyle factors such as meal timing, smoking, alcohol consumption, obesity, sleep disturbance, and physical activity.[2,3,7] In a systematic review, it was found that individuals with evening chronotype had low physical activity levels and were more likely to adopt a sedentary lifestyle.[8] Differences in individuals with different chronotypes should be taken into account to reduce the negative effects on health.[5]

Physical activity is of great importance in a healthy and productive life and is a changeable lifestyle factor that contributes to the prevention and treatment of many chronic diseases.[9] In this respect, it helps to improve the quality of life by positively impacting both individuals' physical and mental health.[8] Nonetheless, according to the World Health Organization data, lack of physical activity has been recognized as the fourth most important risk factor among the global causes of death.[10] One of the actions that can be taken to reduce both morbidity and mortality rates is to increase the physical activity levels of academicians, who are considered by society to be role models. However, as in all social segments, academicians have difficulties in allocating time for physical activity and exercise. In a study conducted in Türkiye, it was determined that 34.1% of academicians were engaged in low physical activity levels and 52.8% were engaged in moderate physical activity levels.[11] In this respect, it may be important to determine the factors that negatively affect academicians' physical activity levels and clarify their relationship with chronotype.

Academicians may face professional difficulties in their working lives such as standing for a long time due to constant lectures and spending inactive time in front of books, journals, or computers to pursue academic studies during non-lecture time.[12] This leads to reduced physical activity and musculoskeletal disorders among academicians.[13] In one study, it was found that the most common musculoskeletal problems reported by academicians were present in the upper back and neck regions and that this was associated with a low physical activity level.[12] Considering that chronotype is a factor that may affect daily life, it is important to determine its relationship with musculoskeletal disorders.[14]

In recent years, studies have been conducted examining health problems in individuals from different occupational groups according to chronotype characteristics; however, there is only one study conducted with academics,and there is a lack of scientific reports on this topic among academic staff.[15] Therefore, the authors aimed to address this research gap. This study aimed to determine the chronotypes of academicians and determine their physical activity level and musculoskeletal disorders according to chronotype. It is thought that this study may contribute to the literature in determining the chronotype status of academicians, identifying musculoskeletal disorders according to chronotype characteristics, and reducing problems regarding productivity, employee safety, and ergonomics.

Materials and methods

Study design and participants

This study was carried out as descriptive and comparative type. The study population consisted of 617 academic staff (professors, associate professors, doctoral lecturers, teaching assistants, and research assistants) who were actively employed at XXX between January and May 2024. The sample size was calculated using the G*Power program. Based on the study conducted by Oncu et al[13] on the prevalence of musculoskeletal disorders in academicians, the sample size was calculated as 182. Considering possible losses during the data collection process, the study was completed with 197 academicians. The inclusion criteria of the study were actively working at the time of the study and volunteering to participate in the study. The exclusion criteria were as follows: having a chronic disease that might affect

sleep patterns and physical activity level, being pregnant, having a psychiatric disease diagnosed by a physician, using drugs such as antipsychotics, anxiolytics, working in another job in leisure hours, not wanting to participate in the study.

Data collection forms

In the study, the data were collected using a personal information form, the Morningness–Eveningness Questionnaire (MEQ), the International Physical Activity Questionnaire (IPAQ), and the Cornell Musculoskeletal Discomfort Questionnaire.

Personal information form consists of 25 questions regarding the sociodemographic (age, sex, marital status, etc.) and occupational (length of time working as an academic, daily desk working hours, title etc.) characteristics of the academicians.

Morningness–Eveningness Questionnaire was adapted into Turkish by Punduk et al.[16] This self-report assessment tool consists of 19 questions regarding individuals' lifestyles, sleep-wake patterns, and performance. Chronotype characteristics are determined according to the total score on the questionnaire. A total score of 16–41 is classified as 'evening-type', 42–58 as 'intermediate-type', and 59–86 as 'morning-type'. In the Turkish validity and reliability study of the questionnaire, the Cronbach alpha coefficient was found to be 0.81.[16] In this study, the Cronbach alpha coefficient was found as 0.82.

International Physical Activity Questionnaire consists of seven questions. It provides information on time allocated to walking, sitting, time spent in moderate to intense activity, and time spent sitting. The validity and reliability study of the questionnaire was carried out by Saglam et al.[17] The questionnaire includes questions regarding how much physical activity was performed daily and within the previous week. The questionnaire is scored by summing the duration (minutes) and frequency (days) of walking, sitting, moderate activity, and intense activity. The duration in minutes, the number of days, and the MET value corresponding to the basal metabolic rate (multiples of resting oxygen consumption) are multiplied to obtain a score in 'MET-min/week'. An individual consumes 3.5 ml of oxygen (1 MET) per kg per minute at rest. According to the IPAQ data, intense physical activity corresponds to 8.0 MET; moderate physical activity corresponds to 4.0 MET, walking corresponds to 3.3 MET; sitting corresponds to 1.5 MET. Accordingly, the physical activity level of the participants according to the total physical activity score was classified as follows:

- <600 MET min/week indicates a low physical activity level;
- 600–3000 MET min/week indicates a moderate physical activity level;
- >3000 MET min/week indicates a high physical activity level.[17]

Cornell Musculoskeletal Discomfort Questionnaire was developed at the Cornell University Human Factors and Ergonomics Laboratory to assess musculoskeletal symptoms. It shows the frequency and intensity of musculoskeletal conditions (pain, ache, discomfort) in 20 body parts (neck, right-left shoulder, upper back, right-left upper arm, lower back, right-left forearm, right-left wrist, hip, right-left thigh, right-left knee, right-left lower leg, right-left foot) in employees who work in standing position during the previous week of work and interference with work. Participants are asked to indicate the different pain region(s) shown on the scale on the body. A score of 0 to 90 is obtained for each region. A high score indicates an increase in musculoskeletal disorders in the relevant region. The Turkish validity and reliability study of the questionnaire was carried out by Erdinc et al.[25] The Cronbach alpha values of the questionnaire for frequency, intensity, and work interference of pain, ache, or discomfort were found to be 0.87, 0.89, and 0.87, respectively.[18] In this study, the Cronbach alpha values for frequency, intensity, and interference were found as 0.78, 0.81, and 0.79, respectively.

The data forms, which were hand-delivered to the academicians by the researchers, were filled in, and returned on the same day. Height and weight of the participants were also measured and body mass index (BMI) was calculated according to the data obtained. According to BMI, the participants were categorized as underweight, normal weight, overweight, and obese. Filling in the data forms and measurements took approximately 20–25 minutes.

Data analysis

The SPSS 29.0 program was used for the evaluation of the data obtained in the study. In addition to descriptive statistical methods (mean, standard deviation), fitness for normal distribution was tested with the Kolmogorov-Smirnov test. Accordingly, the Student's *t*-test and One-Way ANOVA test were used to compare the physical activity level, musculoskeletal disorders, and some characteristics of the academicians according to their chronotype characteristics, which were quantitative data that showed normal distribution. In One-Way ANOVA analysis, Tukey Test was used as a post-hoc test to determine the difference between the groups. The

Chi-Square test was used in the comparison of categorical data, and Fisher's Exact Test was used when any of the theoretical frequencies were less than 5. In statistical analyses, significance was set at $p < 0.05$.

Ethical considerations

Before data collection, written approval was taken from the ethics committee of the university (Decision date and number: 06/09/2023-32) and the institution where the study was conducted. The research was carried out in accordance with the Declaration of Helsinki. The purpose of the study, methods, and benefits were explained to the academicians participating in the study, they were asked whether they were willing to participate in the study and their consent was taken. Since individual rights should be protected when the human phenomenon is used in research, the requirement of 'Informed Consent' was fulfilled in line with the principle of 'Willingness and Volunteerism'.

Results

The mean age of the academicians participating in the study was 37.97 ± 8.74. Of the participants, 52.8% were male; 72.1% were married; 23.9% were smokers; 18.3% had at least one chronic disease. According to BMI value, 39.1% of the academicians were normal weight and 58.3% were overweight and obese. The occupational and ergonomic characteristics of the academicians are presented in Table 1.

Table 1. Professional and ergonomic characteristics of academics

Characteristics	n	%
Length of time working as an academic (M ± SD) (year)	9.45 ± 7.55	
Daily desk working hours (M ± SD)	6.31 ± 2.15	
Title		
Professor	10	5.1
Associate Professor	31	15.7
Assistant Professor	50	25.4
Lecturer	58	29.4
Research Assistant	48	24.4
Professional Field		
Health sciences	80	40.6
Social sciences	76	36.6
Natural sciences	41	20.8
Weekly class hours		
0–12	69	35.0
13–24	102	51.8
25 and above	26	13.2
Presence of a management position		
Yes	63	32.0
No	134	68.0
Giving a break during work		
Yes	169	85.8
No	28	14.2
Staying in the same position while working		
Yes	173	87.8
No	24	12.2
Ability to keep the body in the appropriate position during work		
Yes	69	35.0
No	128	65.0
Job satisfaction status		
Very satisfied	123	62.4
Somewhat satisfied	70	35.5
Not satisfied	4	2.0
Status of receiving training regarding ergonomic risks		
Yes	40	20.3
No	157	79.7
General health assessment		
Good	119	60.4
Moderate	66	33.5
Bad	12	6.1

The mean score of the participants on the Morningness-Eveningness Questionnaire was 51.45 ± 9.66. Of them, 23.9% were morning type, 58.4% were intermediate type and 17.7% were evening type.

Regarding the physical activity status of the academicians, physical activity scores were calculated according to UFAA, the highest MET score was determined in walking (495.63 ± 502.45) and the lowest MET score was determined in moderate physical activity (95.43 ± 297.56). However, 69% of the participants had moderate physical activity levels. In the comparison of physical activity status according to chronotype characteristics, academicians with morning chronotype had statistically higher levels of moderate physical activity than those with intermediate and evening chronotypes ($p < 0.05$). However, the MET score of the participants with the evening chronotype was higher in terms of sitting; the MET score of the academicians with the morning chronotype was higher in terms of walking and intense physical activity, but the difference was

Table 2. Comparison of physical activity levels of academics with different chronotypes

The International Physical Activity Questionnaire	Total MET	[a]Morning type MET	[b]Evening type MET	[c]Intermediate type MET	*F*	*p*-value[1]	Post-hoc test
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD			
Sitting	442.13 ± 312.29 (Min = 2; Max = 1.170)	437.52 ± 309.56	536.14 ± 312.17	415.40 ± 310.54	2.033	0.134	
Walking	495.63 ± 502.45 (Min=0; Max = 2.772)	625.80 ± 661.03	405.90 ± 424.33	669.74 ± 440.33	2.319	0.101	
Moderate activity	95.43 ± 297.56 (Min = 0; Max = 2,880)	188.93 ± 485.50	59.13 ± 204.89	89.14 ± 184.85	3.257	**0.041**	a > c = b
Intense activity	143.95 ± 375.05 (Min = 0; Max = 2.800)	240.85 ± 534.41	128.00 ± 305.67	109.21 ± 305.88	2.117	0.123	
Physical activity level	n = 197 (%)	n = 47 (%)	n = 35 (%)	n = 115 (%)	χ2	p-value2	
Low	53 (26.9)	11 (20.8)	34 (64.2)	8 (15.1)	6.408	0.081	
Moderate	136 (69.0)	31 (22.8)	78 (57.4)	27 (19.9)			
High	8 (4.1)	5 (62.5)	3 (37.5)	0 (0.0)			

[1]Chi-square tests; [2]One-Way ANOVA test. Significant results are indicated in **bold**.

Table 3. Comparison of musculoskeletal disorders in academics with different chronotypes

Body parts according to Cornell Musculoskeletal Discomfort Questionnaire	General	Morning type	Evening type	Intermediate type	*F*	*p*-value[1]
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD		
Neck	7.46 ± 13.84	6.56 ± 12.23	9.61 ± 22.10	7.17 ± 11.03	0.544	0.581
Right shoulder	4.93 ± 12.35	3.52 ± 8.14	7.24 ± 21.25	4.81 ± 9.91	0.923	0.399
Left shoulder	3.92 ± 10.69	3.69 ± 8.55	3.91 ± 15.59	4.03 ± 9.72	0.017	0.984
Upper back	7.49 ± 14.02	5.21 ± 7.90	8.54 ± 17.54	8.10 ± 14.76	0.828	0.439
Right upper arm	1.78 ± 5.99	1.58 ± 6.50	1.65 ± 4.78	1.90 ± 6.15	0.056	0.945
Left upper arm	1.31 ± 5.00	1.91 ± 6.74	1.46 ± 4.90	0.04 ± 0.25	1.526	0.220
Lower back	5.71 ± 11.45	5.30 ± 10.24	4.15 ± 10.72	6.36 ± 12.13	0.534	0.587
Right forearm	1.24 ± 4.55	1.18 ± 4.14	1.59 ± 5.31	0.17 ± 0.48	1.311	0.272
Left forearm	0.69 ± 3.05	0.98 ± 4.09	0.76 ± 3.01	0.04 ± 0.25	1.049	0.352
Right wrist	1.87 ± 5.19	0.95 ± 2.41	2.37 ± 6.32	1.44 ± 3.40	1.398	0.249
Left wrist	0.68 ± 2.51	0.45 ± 1.28	0.99 ± 3.16	0.12 ± 1.31	2.368	0.096
Hip	2.37 ± 8.50	2.06 ± 7.34	3.16 ± 10.02	0.17 ± 0.48	1.719	0.182
Right thigh	1.32 ± 3.96	0.31 ± 1.08	0.98 ± 3.72	1.83 ± 4.66	2.631	0.075
Left thigh	1.36 ± 4.11	0.22 ± 0.69	0.90 ± 3.73	1.67 ± 4.87	2.793	0.068
Right knee	1.36 ± 4.32	1.17 ± 3.17	0.52 ± 2.38	1.70 ± 5.09	1.058	0.349
Left knee	1.13 ± 4.23	0.62 ± 2.28	0.18 ± 0.67	1.63 ± 5.28	2.024	0.135
Right lower leg	1.57 ± 8.26	0.67 ± 4.37	1.98 ± 10.16	1.81 ± 8.85	0.370	0.691
Left lower leg	1.05 ± 5.09	0.03 ± 0.21	1.19 ± 3.61	1.98 ± 10.16	1.584	0.208
Right foot	2.73 ± 10.94	0.53 ± 1.77	1.91 ± 7.51	3.88 ± 13.57	1.695	0.186
Left foot	1.62 ± 7.21	0.47 ± 1.68	0.20 ± 1.18	2.52 ± 9.27	2.198	*0.114*

[1]One-Way ANOVA test.

statistically insignificant ($p > 0.05$). In addition, there was no statistical difference between the physical activity levels of the participants with different chronotypes ($p > 0.05$) (Table 2).The academicians frequently experienced aches, pain, and discomfort in the upper back (7.49 ± 14.02), neck (7.46 ± 13.84), and lower back (5.71 ± 11.45) regions. According to chronotype, there was no statistically significant difference between the musculoskeletal system disorders of academicians ($p > 0.05$) (Table 3).

In the comparison of some characteristics of academicians with their chronotypes, there was a difference between chronotypes and the variables of age, duration of employment as an academician, marital status, title, and field ($p < 0.01$). Accordingly, the mean age of the participants with evening chronotype was lower (33.54 ± 8.38). Academicians with morning chronotype had a longer duration of employment as an academician (12.06 ± 8.65). The rate of married academicians (26.8%) with morning chronotype and single academicians (32.7%) with evening chronotype was higher. The rate of academicians with a professor-associate professor title (39.0%) with morning chronotype and those with a research assistant title (31.3%) with evening chronotype was higher. The rate of academicians working in the field of science (41.5%) was higher in the morning chronotype and the rate of academicians working in the field of health (22.5%) was higher in the evening chronotype ($p < 0.01$) (Table 4).

Table 4. Comparison of some sociodemographic and professional characteristics of academicians according to their chronotype

Characteristics	General	Morning type	Evening type	*t*	*p*-value[1]
	Mean ± SD	Mean ± SD	Mean ± SD		
Age (year)	41.78 ± 8.37	33.54 ± 8.38	37.76 ± 8.37	9.798	<0.001
Length of time working as an academic (year)	12.06 ± 8.65	5.97 ± 6.11	9.45 ± 7.09	6.912	0.001
Daily desk working hours	5.72 ± 2.25	6.57 ± 1.78	6.48 ± 2.19	2.412	0.092
	n = 47 (%)	n = 35 (%)	n = 115 (%)	χ2	*p*-value[2]
Gender					
Female	18 (19.4)	16 (17.2)	59 (63.4)	2.303	0.316
Male	29 (27.9)	19 (18.3)	56 (53.8)		
Marital status					
Married	36 (26.8)	17 (12.0)	87 (61.3)	12.138	**0.002**
Single	9 (16.4)	18 (32.7)	28 (50.9)		
Smoking status					
Smoker	9 (19.1)	11 (23.4)	27 (57.4)	1.821	0.769
Never smoked	27 (26.0)	17 (16.3)	60 (57.7)		
Quit smoking	11(23.9)	7 (15.2)	28 (60.9)		
Body structure according to body mass index					
Normal weight	19 (23.2)	17 (20.7)	46 (56.1)	3.881	0.437
Overweight	21 (25.0)	16 (19.0)	47 (56.0)		
Obese	7 (22.5)	2 (6.5)	22 (71.0)		
Title					
Professor – Associate Professor	16 (39.0)	4 (9.8)	21. (51.2)	27.269	**<0.001**
Assistant Professor	14 (28.0)	3 (6.0)	33 (66.0)		
Lecturer	15 (25.9)	13 (22.4)	30 (51.7)		
Research Assistant	2 (4.2)	15 (31.3)	31 (64.6)		
Professional Field					
Health sciences	19 (23.8)	18 (22.5)	43 (53.8)	14.446	0.005
Social sciences	11 (14.5)	15 (19.7)	50 (65.8)		
Natural Sciences	17 (41.5)	2 (4.9)	22 (53.7)		

Characteristics	General	Morning type	Evening type	*t*	*p*-value[1]
	Mean ± SD	Mean ± SD	Mean ± SD		
Job satisfaction status					
Very satisfied	29 (23.6)	24 (19.5)	70 (56.9)	0.693	0.725
Somewhat satisfied / Not satisfied	28 (24.3)	11 (14.9)	45 (60.8)		
General health assessment					
Good	30 (25.2)	25 (21.0)	64 (53.8)	3.095	0.215
Moderate – bad	17 (21.8)	10 (12.8)	51 (65.4)		

[1]One-Way ANOVA test; [2]Chi-square tests, Significant results are indicated in bold.

Discussion

In the study which was carried out to determine the chronotypes of academicians and identify physical activity levels and musculoskeletal disorders according to chronotype, it was determined that the rate of participants with morning and evening chronotypes was 40.6%. In the literature, there is no information on the chronotype characteristics of academicians. In a study conducted with 1.130 adults in Türkiye, it was reported that the rate of individuals with morning-evening chronotypes was 18.6%.[19] In studies conducted with adults in Poland, the United Kingdom, and Saudi Arabia, the rate of participants with morning and evening chronotypes has been found to range between 35–45%.[20-22] Despite these studies, in a study conducted in China, it was found that the rate of individuals with only morning chronotype was 69.2%. The relevant finding of the present study is similar to those in the literature.[23] However, it is observed that further studies are required to determine the chronotype of academicians.

In the study, it was observed that academicians with morning chronotype had higher levels of moderate physical activity. However, it was determined that the low, moderate, and high physical activity levels of academicians with morning, evening, and intermediate chronotypes did not differ. In a study conducted with teaching assistants working at a university, it was reported that the participants with morning chronotype had higher levels of physical exercise.[15] In addition, in many studies, it has been stated that individuals with evening chronotype engage in less physical activity, spend more time in sedentary activities, that is, sedentary period is longer.[2,8,24] In a study conducted with young adults, it was emphasized that chronotype directed the relationship between the timing of exercise and bedtime and that each one-minute delay in the timing of exercise caused a 6.1-minute delay in bedtime in morning chronotypes and a 3.6-minute delay in evening chronotypes.[7] Despite these studies, the finding obtained in our study demonstrates that physical activity level is not associated with chronotype in academicians. This may have been due to the versatility of academicians' working styles (lecturing, practicing, and conducting scientific research).

Chronotypes can influence individuals' cognitive and psychological health.[5,15] Musculoskeletal disorders also occur as a result of the interaction between physiological, emotional, cognitive, behavioral, and sociocultural factors.[25] Nevertheless, the relationship between chronotypes and musculoskeletal disorders has not been explored sufficiently.[26] In the literature, it has been stated that academicians are in the risky group in terms of musculoskeletal disorders.[13] In our study, it was determined that musculoskeletal disorders did not differ according to the chronotype of academicians. In contrast to our study finding, in a study conducted with nurses, it was determined that evening chronotype increased work-related musculoskeletal disorders.[27] In a cohort study conducted in Finland, it was determined that evening and intermediate chronotypes were more likely to suffer from disabling pain than morning chronotypes.[26] In a study conducted in Finland involving 6.089 individuals aged 25–74 years, it was demonstrated that the risk of joint and spine diseases was higher in evening chronotypes than in morning chronotypes and that this risk was particularly high for spine disease and back pain.[28] In a study in which only individuals with morning and intermediate chronotypes working in an automobile factory were included, it was determined that the rate of musculoskeletal pain was lower in morning chronotypes compared to intermediate chronotypes.[14] In our study, no relationship was detected between chronotype and musculoskeletal disorders in academicians. This may have been due to the low rate of musculoskeletal disorders despite the risk in academicians constituting our research group.

Different factors such as sex, age, genetic structure, and race affect the chronotype.[6] In particular, it has been reported that chronotype can change with age and that morning-chronotype is generally dominant in childhood, shifts towards evening-type in adulthood, and turns back to morning-chronotype as age advances.[29] In our study, it was observed that the mean

age of the participants with evening chronotype was lower. In other studies, it has been reported that the mean age of the participants with morning chronotype was higher and that the mean age of the participants with evening chronotype was lower.[30] The finding of the current study is consistent with the literature. This finding may have been due to the fact that the academicians included in the sample were in adulthood and that working as an academician does not require a certain period of time.

In the study, it was determined that academicians with morning chronotype had a longer duration of employment as an academician and that academicians with morning chronotype were mostly professors-associate professors. In the literature, there is no study in which the relationship between the chronotypes of academicians according to their professional characteristics has been identified. The finding obtained in this study may have resulted from the fact that academicians are more likely to work in managerial positions as the duration of service increases and the title progresses. Moreover, in the study, it was determined that the number of morning type academicians was higher in the field of science, while the number of evening-type academicians was higher in the field of health. This may have been due to the differences in academicians' field of study. Further studies are needed to clarify the relationship between chronotype and occupational variables in academicians.

This study has some limitations. To begin with, the study was conducted with academicians working at a public university located in western Türkiye within a certain period. Therefore, the results cannot be generalized to all academicians. Furthermore, the chronotype characteristics, physical activity status, and musculoskeletal disorders of the academicians were determined based on self-reported data. Our study lacks an evaluation of the relationship with physical activity level in individuals reporting musculoskeletal dysfunction. More research are needed on this subject. However, this is the first study to examine chronotype in academicians and reveal its relationship with physical activity.

Conclusion

In line with the findings of this study, while physical activity was higher in morning types, the level of musculoskeletal disorders was similar in different chronotypes. . It is essential to take chronotype into consideration while planning programs to increase the physical activity levels and prevent musculoskeletal disorders in academicians. In-service training on topics such as the effects of different chronotypes on health, the importance of physical activity, and ergonomics can be provided to academicians with an evening chronotype, which has risky characteristics in terms of physical activity such as long sitting periods. Moreover, it is recommended that future longitudinal studies be conducted on the effects of chronotype on health in academicians.

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