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Original Article *Özgün Araştırma*

SCREENING FOR SARCOPENIA IN OLDER ADULTS LIVING IN KIRIKKALE PROVINCE: A PILOT STUDY

Kırıkkale İlinde Yaşayan Yaşlı Bireylerde Sarkopeni Taraması: Pilot Çalışma

Şeyma AKDAĞLI[1] **Meral SERTEL**[1]

[1] *Kırıkkale University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, KIRIKKALE, TÜRKİYE*

ABSTRACT

Objective: The aim of this study is to determine the prevalence of sarcopenia in individuals aged 65 and older residing in Kırıkkale province.

Material and Methods: The study involved the assessment of 572 older adults registered at the Kırıkkale Hürriyet Family Health Center. Demographic data was collected through a case form. Cognitive status was assessed using the standardized mini-mental test, physical performance was assessed with the short physical performance battery, sarcopenia screening was conducted using the sarcopenia screening test, physical activities were measured using the physical activity scale for the elderly, handgrip strength was measured with the baseline digital hand dynamometer, and muscle masses were evaluated with the inbody120 bioimpedance analysis device.

Results: The study revealed that out of 572 older adults, 31 (5.4%) had sarcopenia, with 19 (3.3%) of them having severe sarcopenia. The prevalence of sarcopenia was found to be 5.4%. When the symptomatic risk and sarcopenia status were examined according to the gender of the individuals, it was seen that 94.4% (186 people) of male individuals were healthy, and 5.6% (11 people) were at symptomatic risk. In terms of sarcopenia status, it was determined that 94.9% (187 individuals) of male individuals were not at risk of sarcopenia, 3.6% (7 individuals) had sarcopenia, and 1.5% (3 individuals) had severe sarcopenia. Among female individuals, 89.9% (337) were healthy, and 10.1% (38) were at symptomatic risk. In terms of sarcopenia status, 94.4% (354 people) of females were found to be at no risk of sarcopenia, 1.3% (5 people) had sarcopenia, and 4.3% (16 people) had severe sarcopenia.

Conclusion: The existence of sarcopenia in older adults should not be overlooked, and necessary preventive measures should be taken. Additionally, older adults at risk of sarcopenia should be encouraged to participate in suitable exercise programs.

Keywords: *Older adults, sarcopenia, muscle mass, muscle strength*

ÖZ

Amaç: Bu çalışmanın amacı Kırıkkale ilinde yaşayan 65 yaş ve üzeri yaşlı bireylerde sarkopeni sıklığını belirlemektir.

Gereç ve Yöntemler: Çalışmaya Kırıkkale Hürriyet Aile Sağlığı Merkezine kayıtlı 572 yaşlı birey dahil edildi. Demografik veriler oldu formu kaydedildi. Yaşlı bireylerin, kognitif durumları Standardize mini-mental testle, fiziksel performans kısa fiziksel performans bataryasıyla, fiziksel aktiviteleri yaşlılar için fiziksel aktivite ölçeği ile, sarkopeni taraması sarkopeni tarama testiyle değerlendirildi, el kavrama gücü baseline dijital el dinamometresiyle ve kas kütleleri inbody120 biyoimpedans analiz cihazı ile ölçüldü.

Bulgular: Çalışmada 572 yaşlı bireyden 31'inde (%5,4) sarkopeni olduğu, 19'unda (%3,3) ise şiddetli sarkopeni olduğu ortaya çıktı. Sarkopeni prevalansı %5,4 olarak bulundu. Semptomatik risk ve sarkopeni durumu bireylerin cinsiyetlerine göre incelendiğinde erkek bireylerin %94,4'ünün (186 kişi) sağlıklı, %5,6'sının (11 kişi) semptomatik risk durumunda olduğu görüldü. Sarkopeni durumu erkekler açısından değerlendirildiğinde %94,9'unun (187 kişi) sarkopeni riski taşımadığı, %3,6'sının (7 kişi) sarkopeni, %1,5'inin (3 kişi) şiddetli sarkopeni olduğu saptandı. Kadın bireylerde %89,9'unun (337 kişi) sağlıklı, %10,1'inin (38 kişi) semptomatik risk durumunda olduğu görüldü. Sarkopeni durumu kadınlar açısından değerlendirildiğinde ise, %94,4'ünün (354 kişi) sarkopeni riski taşımadığı, %1,3'ünün (5 kişi) sarkopeni, %4,3'ünün (16 kişi) şiddetli sarkopeni olduğu saptandı.

Sonuç: Yaşlı bireylerde sarkopeni varlığı göz ardı edilmemeli ve gerekli önleyici tedbirler alınmalıdır. Ek olarak, sarkopeni riski taşıyan yaşlı yetişkinlerin uygun egzersiz programlarına katılmaları teşvik edilmelidir.

Anahtar Kelimeler: *Yaşlı erişkinler, sarkopeni, kas kütlesi, kas gücü*

Correspondence / Yazışma Adresi: **Dr. Meral SERTEL**
Kırıkkale University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, KIRIKKALE, TÜRKİYE
Phone / Tel: +905355286059 **E-mail** / E-posta: fzt_meralaksehir@hotmail.com
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INTRODUCTION

The World Health Organization defines old age as 65 and above, marking a period where both mental and physical functions significantly decline, transitioning from an independent state to dependency on others.[1] Miller, on the other hand, characterizes aging as a process where a physiologically and cognitively sound adult transforms into less resilient individuals prone to disability, illness, and death.[2] In Türkiye, the elderly population, defined as 65 and above according to the Turkish Statistical Institute data, increased from 8.5% in 2017 to 9.9% in 2022. Projections estimate this ratio to be 10.2% in 2023 and 16.3% in 2040.[3,4] With the growing elderly population, geriatric syndromes have become significant in the field of health.[5] Geriatric syndromes are defined as common disorders in elderly individuals that can lead to mortality and morbidity.[6] Conditions such as sarcopenia, frailty, falls, urinary incontinence, malnutrition are among these syndromes. Among these syndromes, sarcopenia, characterized by progressive and generalized skeletal muscle mass and strength loss, is associated with adverse outcomes such as physical disability, poor quality of life, and increased risk of mortality.[7,8]

Sarcopenia is commonly observed in the elderly but can also affect young adults. While some individuals have a clear and singular cause of sarcopenia, in other cases, no isolated cause is evident. Therefore, distinguishing between primary and secondary sarcopenia in clinical practice can be beneficial; primary when there is no cause other than aging, and secondary when one or more other causes are present.[9]

EWGSOP suggested a staging system in 2010, dividing sarcopenia into presarcopenia, sarcopenia, and severe sarcopenia. Presarcopenia is characterized by low muscle mass, sarcopenia by low muscle mass accompanied by low muscle strength or decreased.[9]

EWGSOP2 further categorized sarcopenia into acute and chronic forms. Sarcopenia lasting less than 6 months is considered acute, while sarcopenia lasting more than 6 months is considered chronic. EWGSOP2 emphasizes the need for periodic assessments of sarcopenia in individuals at risk to determine how rapidly the condition progresses or worsens.[10]

The term "EWGSOP2" refers to the European Working Group on Sarcopenia in Older People's second set of guidelines, which recommends a sequence for sarcopenia screening, translated into Turkish as 'Vakaları bul, Değerlendir, Onayla, Şiddeti belirle.' In the screening process, they recommend using the SARC-F questionnaire for case identification, handgrip strength and sit-to-stand test for evaluation, and bioelectrical impedance analysis (BIA), dual-energy X-ray absorptiometry (DEXA), magnetic resonance imaging (MRI), and computerized tomography (CT) for confirming sarcopenia. For determining severity, they suggest using the short physical performance battery, walking speed, timed up-and-go test, and 400 m walking tests.[10]

Sarcopenia affects older adults at a rate ranging from 9% to 40.4%.[11] In a study conducted in Türkiye to identify sarcopenia prevalence in individuals aged 65 and above, the prevalence was found to be 5.2%, with rates of 4.1% in females and 6.7% in males.[12] In Japan, a prevalence study based on EWGSOP criteria found that 22.9% of women and 21.8% of men aged 65 to 89 were sarcopenic.[13]

The aim of this study is to determine the prevalence of sarcopenia in individuals aged 65 and above in Kırıkkale, using the updated EWGSOP criteria from 2018. Additionally, the study aims to assess conditions such as falls, balance problems, decreased physical activity, and performance associated with sarcopenia.

MATERIALS AND METHODS

Participant

Between May 2023 and August 2023, a sarcopenia screening was conducted on 572 individuals aged 65 and above living in Kirikkale province, Türkiye, according to the EWGSOP2 criteria.

The ethical permission was obtained from the Kırıkkale University Non-Interventional Research Ethics Committee for the collection of the data. (Date: 21.12.2022, decision number: 2022.12.10)

Analyses for the study were conducted on the sample of 572 individuals. Cohen's effect sizes for PASE's "Work-Related Activities" sub-factor were calculated as r=0.324, with a test power of 99.9%. For the "free time activities" sub-factor, the effect size was r=0.828, with a test power of 100%, and for the total PASE, the effect size was r=0.240, with a test power of 98.2%. Post Hoc power analysis results utilizing effect sizes are presented in Table 1. R v3.6.1 (R Core Team, Vienna, Austria) program was used for power analysis.[14]

Table 1: Post hoc power analysis results

	Gender	± *SS*	p	Cohen's Effect Size	Post Hoc Power Analysis
Work-related activities	Male Female	97.18±27.42 88.51±26.15	**<0.001*** **	0.324	99.9%
Free-time activities	Male Female	32.64±23.53 49.91±17.77	**<0.001*** **	0.828	100%
Total PASE	Male Female	130.14±37.15 138.41±31.62	**<0.001*** **	0.240	98.2%

PASE: Physical Activity Scale for the Elderly

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Individuals aged 65 and above who were willing to participate in the study and scored 24 or higher on the mini-mental state examination (MMSE) were included.[15] Individuals under the age of 65, those with impaired communication, those unable to walk independently (using a wheelchair), those unwilling to participate in the study, and those not suitable for bioimpedance analysis (wearing a pacemaker) were not included in the study. In total, 572 individuals aged 65 and above were evaluated. Additionally, 70 individuals who expressed unwillingness to participate in the study, mentioned that they did not have time to participate, did not want to descend stairs, carried a pacemaker, were not mobile, or were not of suitable age were excluded from the study (Figure 1).

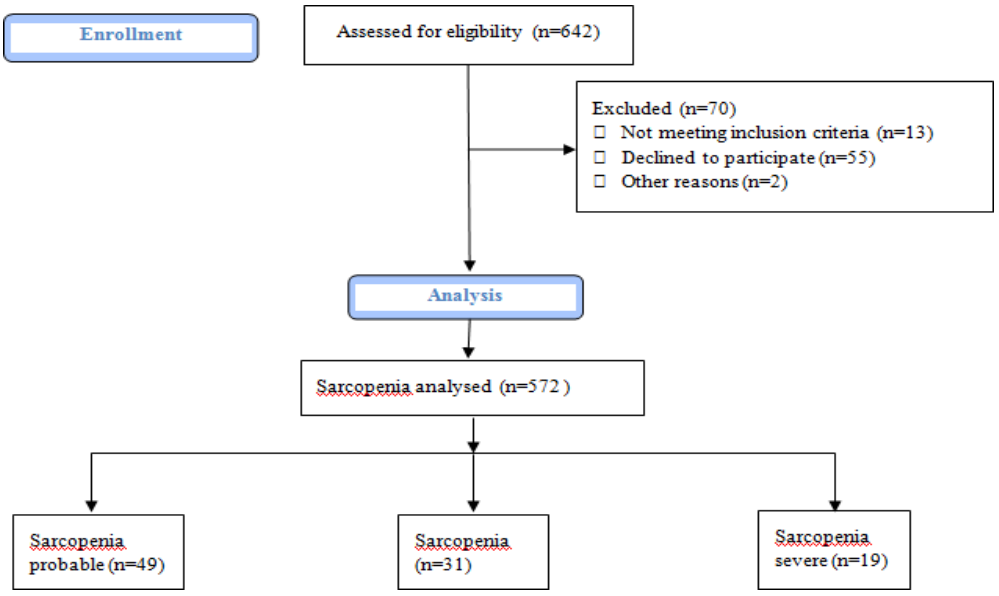

Figure 1: Flow diagram

Data Collection Tools

The demographic data of older adults, chronic diseases, medications used, smoking and alcohol habits, and the use of assistive devices were recorded using a case form.

Visual Analog Scale: A horizontal line was explained to the patient with "0 'no pain at all', 10 'very severe, unbearable pain' positioned on it, and the patient was asked to score their pain on this line by answering the question "On this line from 0 to 10, how many points would you give to your current pain?"[16]

Anthropometric Measurements

The functionality of anthropometric measurements such as mid-arm circumference and calf circumference has been reported to predict overall health, nutritional adequacy, and survival in the elderly.[17,18] It has been shown that calf circumference below 31 cm for both genders, arm circumference below 23 cm for women, and below 24 cm for men are associated with sarcopenia.[19-21]

Grip Strength Measurement

Grip strength measurement is a good and simple method to assess muscle strength.[9] Low grip strength is better correlated with impaired mobility and undesirable clinical outcomes relative to low muscle mass.[22] Grip strength measurement was performed in the sitting position, shoulder adduction, elbow flexion at 90 degrees, forearm in a mid-position, supported, and wrist in a neutral position, as recommended by the American Occupational Therapy Association. During the test, a one-minute break was given between each measurement, and 3 measurements were taken to record the average value.[23] Baseline Digital Hand Dynamometer was used for grip strength measurement.

Muscle Mass Assessment

Bioimpedance analysis predicts fat and lean body mass, is inexpensive, and easy to use. It has been used for more than 10 years, and under standard conditions, BIA predictions have been shown to correlate with MRI results.[24] The Inbody 120 Body Analysis Device was used for muscle mass assessment in this study.

Mini-Mental State Examination (MMSE)

It is a test that evaluates individuals' cognitive status on a scale of 30 points.[25]

Short Physical Performance Battery (SPPB): The balance tests include tandem, semi-tandem, and feet side-by-side standing tests. Each test is explained and demonstrated, support is provided until the patient assumes the correct position, and when the patient indicates readiness, support is withdrawn, and the stopwatch is started. The stopwatch is stopped when the patient moves their feet, attempts to seek support, or completes 10 seconds. The test begins with the semi-tandem position, where one heel is placed next to the other foot's big toe. If the individual cannot maintain the

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semi-tandem position for 10 seconds, they move on to the feet side-by-side standing test. If they can maintain the semi-tandem position for 10 seconds, they proceed to the tandem test, where one heel is placed in front of the toes of the other foot. For the walking speed test, the patient is instructed to walk a distance of 2.44 meters at a normal walking pace. If the individual uses an assistive walking device in their daily life, they are allowed to use it during the test. The time it takes for the patient to walk this distance is recorded. A straight-backed chair is placed near a wall in the chair stand test. The patient is asked to tie their hands in front of their chest and rise from the chair once. If they can do this, they are then asked to rise and sit down quickly five times with their hands tied to their chest. The time taken is recorded. The timer is started when the patient begins to rise, and it is stopped when they complete sitting down five times in an upright position. Each of the three physical performance measurements is scored between 0 and 4 based on the time it takes to perform the activity. The scores of the three tests are then added up to obtain a total score between 0 (poor) and 12 (very good).[26]

General Walking Speed Assessment

The individual is asked to walk a distance of 4 meters at their normal pace in daily life, and the time taken to cover the 4-meter distance is recorded in seconds.[27]

The Physical Activity Scale for the Elderly (PASE)

Its Turkish validity and reliability were conducted by Ayvat and colleagues.[28] The survey assesses the physical activities of older adults in the past week, covering components related to leisure, household, and occupational physical activities. Participation in out-of-home walking activities, mild to vigorous sports and recreational activities, and muscle-strengthening exercises in leisure time is recorded as never, rarely, sometimes, and often, while the duration of activities is classified as less than 1 hour, 1-2 hours, 2-4 hours, and more than 4 hours.[29]

Sarcopenia Screening Test (SARC-F)

The SARC-F questionnaire, developed in 2018 for the rapid diagnosis of sarcopenia, was recommended in the 2019 EWGSOP2 guidelines for identifying patients suspected of having sarcopenia.[10] The questionnaire includes information about strength, unsupported walking, getting up from a chair/stool, climbing stairs, and the number of falls in the past year.[30] A score of 4 or higher on the SARC-F questionnaire is considered significant for sarcopenia.[31,32]

Statistical Analysis

Descriptive statistics, including frequency and percentage, were presented for categorical variables (demographic characteristics). The normal distribution of numerical variables was checked using the Shapiro-Wilk test. Descriptive statistics for numerical variables were provided as mean ± standard deviation ($X \pm SS$) for data showing a normal distribution and as median (min-max) values for data not showing a normal distribution. Independent two-group comparisons with normal distribution were conducted using the "Independent Samples T-Test," and for independent two-group comparisons without a normal distribution, the "Mann-Whitney U Test" was employed. In all calculations and interpretations throughout the study, a significance level of "$p<0.05$, $p<0.01$, $p<0.001$" was considered, and hypotheses were formulated as two-tailed. The statistical analysis of the data was conducted using the SPSS v26 (IBM Inc., Chicago, IL, USA) software package.

RESULTS

Socio-demographic information according to gender is shown in Table 2. Individuals' health outcomes were examined based on gender, and descriptive statistics revealed that 72.6% of male individuals (143 people) had chronic diseases. Concerning sleep problems, 23.9% (47 people) reported having sleep problems; regarding urinary incontinence, 20.8% (41 people) experienced it. Pain areas, according to the Visual Analog Scale (VAS), showed that 44.4% (28 people) had pain in the knee, 27% (17 people) had pain in the lower back, 3.2% (2 people) had pain in the neck, and 25.4% (16 people) had pain in other areas. Of the female participants included in the study, 79.5% (298 people) had chronic diseases. In terms of sleep problems, 31.7% (119 people) reported having sleep problems while concerning urinary incontinence, 30.9% (116 people) experienced it, and 69.1% (259 people) did not. Pain areas, according to the Visual Analog Scale (VAS), showed that 45% (100 people) had pain in the knee, 23.4% (52 people) had pain in the lower back, 5% (11 people) had pain in the neck, and 26.6% (59 people) had pain in other areas (Table 3). In addition, the use of medications, glasses, and assistive devices according to gender is given in Table 3.

Individuals' anthropometric measurement results, including BMI, muscle quantity, muscle mass index, lean body mass index, right/left arm measurements, left arm measurement, right/left calf measurements, and right/left-hand grip strength values, are presented in Table 4. The descriptive statistics of symptomatic risk status and sarcopenia status were examined according to individuals' genders and presented in Table 5.

The anthropometric measurement results, BMI, muscle quantity, muscle mass index, lean body mass index, right/left arm measurement value, left arm measurement value, right/left calf measurement value, and right/left handgrip strength value averages for individuals with sarcopenia are presented in Table 6 according to their genders (Table 6).

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Table 2: Demographic and income level results according to individu als' genders

	Male (n=197)		Female (n=375)		Total (n=572)	
	n	%	n	%	n	%
Age (year) (±*SS*)	69.70±5.38		68.38±4.47		68.84±4.84	
Occupation						
Housewife	0	0.0	342	91.2	342	59.8
Retired	197	100.0	33	8.8	230	40.2
Marital status						
Married	180	91.4	235	62.7	415	72.6
Single	17	8.6	140	37.3	157	27.4
Educational level						
Elementary school	72	36.5	284	75.7	356	62.2
Middle school	34	17.3	35	9.3	69	12.1
High school	66	33.5	33	8.8	99	17.3
University	25	12.7	10	2.7	35	6.1
Other	0	0.0	13	3.5	13	2.3

Table 3: Health outcomes according to individuals' genders

	Male (n= 197)		Fen ale (n=375)		Total (n=572)	
Chronic illness condition	**n**	**%**	**n**	**%**	**n**	**%**
Present	143	72.6	298	79.5	441	77.1
Absent	54	27.4	77	20.5	131	22.9
Type of chronic illness *						
Hypertension	79	55.2	226	75.8	305	69.2
Diabetes	53	37.1	151	50.7	204	46.3
Rheumatism	3	2.1	29	9.7	32	7.3
COPD	8	5.6	4	1.3	12	2.7
Other	94	65.7	185	62.1	279	63.3
Continuous medication use status						
Present	144	73.1	294	78.4	438	76.6
Absent	53	26.9	81	21.6	134	23.4
Number of medications used (±*SS*)	2.48±1.65		2.84±1.88		2.7 ±1.81	
Daily medication usage frequency						
Once a day	64	44.1	118	40.0	182	41.4
Twice a day	66	45.5	138	46.8	204	46.4
Three times a day	9	6.2	33	11.2	42	9.5
Four or more times a day	6	4.1	6	2.0	12	2.7
Sleep disorder condition						
Present	47	23.9	119	31.7	166	29.0
Absent	150	76.1	256	68.3	406	71.0
Urinary incontinence condition						
Present	41	20.8	116	30.9	157	27.4
Absent	156	79.2	259	69.1	415	72.6
Area of pain						
Knee	28	44.4	100	45.0	128	44.9
Lower back	17	27.0	52	23.4	69	24.2
Neck	2	3.2	11	5.0	13	4.6
Other	16	25.4	59	26.6	75	26.3
Vision problems						
Present	172	87.3	330	88.0	502	87.8
Absent	25	12.7	45	12.0	70	12.2
Use of eyeglasses						
Yes	172	87.3	330	88.0	502	87.8
No	25	12.7	45	12.0	70	12.2
Use of assistive devices status						
Present	3	1.5	13	3.5	16	2.8
Absent	194	98.5	362	96.5	556	97.2
Type of assistive device						
Cane	3	100.0	13	100.0	16	100.0

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Table 4: Anthropometric measurements by gender

	Male		Female		Total			
	± ***SS***	**Median(min-max)**	± ***SS***	**Median(min-max)**	± ***SS***	**Median(min-max)**	**U**	**p**
BMI (kg/m²)	28.31±4.68	28 (15-46.1)	32.08±5.59	31.6 (19.2-52.7)	30.78±5.59	30.3 (15-52.7)	**22394**	**<0.001*** **
Muscle mass (kg)	30.40±4.29	30.7 (18.5-42.5)	23.16±3.24	22.7 (16.6-38.4)	25.66±5.00	24.6 (16.6-42.5)	**6897**	**<0.001*** **
Muscle mass index (kg/m²)	10.79±1.58	10.8 (1.5-22.3)	9.80±1.23	9.7 (1.9-21.1)	10.14±1.44	10 (1.5-22.3)	**18467.5**	**<0.001*** **
Lean body mass index (kg/m²)	19.33±3.00	19.6 (7.5-45.6)	18.05±1.93	17.9 (11.3-30.7)	18.49±2.43	18.4 (7.5-45.6)	**22215**	**<0.001*** **
Right arm measurement value (cm)	28.87±3.34	29 (20-45)	30.22±3.89	30 (21-41)	29.75±3.76	30 (20-45)	**29462.5**	**<0.001*** **
Left arm measurement value (cm)	28.87±3.40	28 (20-45)	30.25±3.87	30 (21-42)	29.78±3.77	30 (20-45)	**29294**	**<0.001*** **
Measurement value of the right calf (cm)	36.00±3.55	36 (27-47)	36.06±4.31	36 (24-52)	36.04±4.06	36 (24-52)	36689	0.894
Measurement value of the left calf (cm)	35.96±3.55	36 (27-47)	36.13±4.21	36 (25-50)	36.07±3.99	36 (25-50)	36370	0.762
Right hand grip strength (kg)	27.80±5.67	27.9 (15.2-45.8)	20.05±3.80	20.4 (10-39.4)	22.72±5.84	21.3 (10-45.8)	**8977**	**<0.001*** **
Left hand grip strength (kg)	26.48±6.00	26.3 (14.3-46.6)	18.84±3.91	18.9 (6.6-36.9)	21.47±5.96	20.2 (6.6-46.6)	**9647.5**	**<0.001*** **

U: Mann-Whitney U Test, BMI: Body Mass Index ***p<0.001

Table 5: Results of symptomatic risk and sarcopenia status according to individuals' genders

	Male (n=197)		Female (n=375)		Total (n=572)	
	n	**%**	**n**	**%**	**n**	**%**
Symptomatic risk condition						
Healthy	186	94.4	337	89.9	523	91.4
Symptomatic	11	5.6	38	10.1	49	8.6
Sarcopenia condition						
No risk of sarcopenia	187	94.9	354	94.4	541	94.6
Sarcopenia	7	3.6	5	1.3	12	2.1
Severe Sarcopenia	3	1.5	16	4.3	19	3.3

Table 6: Anthropometric measurement results and comparison according to the gender of individuals with sarcopenia.

	Male		Female		Total			
	± ***SS***	**Median(min-max)**	± ***SS***	**Median(min-max)**	± ***SS***	**Median(min-max)**	**t-U**	**p**
BMI (kg/m²)	27.36±3.06	27.7 (22.3-31.3)	36.24±5.79	35.8 (28.1-52.7)	33.38±6.55	31.9 (22.3-52.7)	**t=-4.534**	**<0.001*** **
Muscle mass (kg)	31.24±3.24	30.6 (26.4-36.5)	23.06±4.04	22.1 (17.9-34.6)	25.70±5.40	24.2 (17.9-36.5)	**t=5.585**	**<0.001*** **
Muscle mass index (kg/m²)	10.71±0.87	10.9 (9.2-11.7)	10.08±1.17	9.8 (8.5-13.1)	10.28±1.11	10.2 (8.5-13.1)	t=1.502	0.144
Lean body mass index (kg/m²)	19.16±1.84	19.5 (16-21.6)	18.50±2.14	18.2 (14.6-23.7)	18.71±2.04	18.8 (14.6-23.7)	t=0.833	0.412
Right arm measurement value (cm)	28.20±2.74	27.5 (24-33)	32.90±3.32	33 (27-40)	31.39±3.82	31 (24-40)	**t=-3.890**	**<0.001*** **
Left arm measurement value (cm)	27.90±2.47	27.5 (24-31)	33.05±3.49	33 (27-42)	31.39±3.99	31 (24-42)	**t=-4.181**	**<0.001*** **
Measurement value of the right calf (cm)	37.30±2.67	38 (33-41)	39.57±5.84	39 (24-52)	38.84±5.10	38 (24-52)	U=75.5	0.209
Measurement value of the left calf (cm)	37.20±2.74	38 (33-41)	39.29±5.08	38 (27-49)	38.61±4.52	38 (27-49)	U=82	0.327
Right hand grip strength (kg)	23.72±4.70	24.8 (15.2-29.6)	19.24±3.54	20.5 (11.6-25.5)	20.69±4.42	20.8 (11.6-29.6)	**t=2.959**	**0.006****
Left hand grip strength (kg)	21.73±4.14	22.2 (15-26.4)	17.58±4.18	18.6 (10.2-29.4)	18.92±4.55	18,8 (10,2-29,4)	**t=2,591**	**0,015***

*p<0.05; **p<0.01; ***p<0.001 t: Independent Samples T-Test; U: Mann-Whitney U Test, BMI: Body Mass Index

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DISCUSSION

Our study, which screened for sarcopenia based on the EWGSOP2 criteria in 572 older adults aged 65 and above, including 197 males and 375 females, living in Kırıkkale province, Türkiye, revealed that a total of 49 older adults (8.6%) had symptomatic sarcopenia, with SARC-F scores of 4 and above. All individuals meeting the possible sarcopenia criteria also met the sarcopenia criteria, and a total of 31 older adults (5.4%) were identified as sarcopenic, with 19 of them (3.3%) having severe sarcopenia. In research involving older adults in Germany, the prevalence of sarcopenia was determined to be 6.8%.[33] Another study based on EWGSOP2 criteria in individuals aged 60 and above reported a sarcopenia prevalence of 4.6%.[34] The prevalence of sarcopenia can vary depending on the definitions used to diagnose the condition.[35,36] Therefore, factors such as the region where the study was conducted, sample size, characteristics of the individuals, education levels, activity levels, consciousness levels, and the assessment criteria for sarcopenia screening used by the researcher, as well as differences in the methods employed, can contribute to variations in sarcopenia prevalence. However, the results regarding the frequency of sarcopenia obtained from our study align with the literature.

In our study, the average body mass index (BMI) values and upper mid-arm circumference measurements of elderly female individuals with sarcopenia were found to be higher than those of males. In a study, the BMI values of female individuals were higher than those of male individuals.[37] It has been reported that the transition of fats between muscles occurs with aging, converting lean muscle mass to fatty muscle mass. This transformation leads to changes in muscle function. Additionally, it has been noted that females have lower muscle mass compared to males, making them more susceptible to sarcopenia.[38,39] In a study emphasizing sarcopenia's significant role in reducing lean body mass and developing physical limitations with aging, hand grip strength was assessed. It was determined that hand grip strength was significantly lower in females compared to males.[40] Similarly to the literature, our study found that elderly males with sarcopenia had higher muscle mass and hand grip strength values compared to females.

In older individuals, it is observed that sarcopenia, associated with the loss of muscle strength and mass, can affect various factors such as balance, walking, functional independence, physical performance, physical activity, and pain. This can lead to negative outcomes. At this point, it is recognized that exercise is necessary for the elderly due to its role in strengthening muscles, improving balance and performance, and increasing functional independence. Physiotherapists, in the assessment and treatment phases of the geriatric patient population, should not forget that the decreased muscle mass, strength, and performance in the elderly may be related to sarcopenia. They should evaluate individuals for sarcopenia, incorporate exercise variety accordingly when creating a treatment program, and add exercises such as resistance, aerobic, balance, and strengthening to the exercise prescription based on the patient's condition.

Our study is a prevalence study in which sarcopenia screening was performed in elderly individuals living in Kırıkkale. In this respect, in addition to being a sample study based on a single province, we believe it is essential to investigate sarcopenia, which has an undeniable social benefit of being known and treated now and in the future, with studies covering more regions with larger sample sizes.

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