İçindekiler

DAVET YAZISI

Değerli Bilim İnsanları ve Sağlık Çalışanları

Günümüzde yaşlı nüfusun artmasıyla birlikte "Hareket bozuklukları ve Düşmeler" geriatri pratiği için oldukça önemli bir konu haline gelmiştir. Konunun kompleksliği nedeniyle bu yakınmaları olan bireyler yakınmalarına çare bulabilmek amacıyla birçok branştan uzman hekimi ziyaret etmektedirler.

Hareket bozuklukları bazen bir nörodejeneratif hastalığın ilk bulgusu olabilirken bazen de bir ilaç yan etkisi gibi oldukça geniş bir yelpazede etiyoloji ile karşımıza çıkabilmesi yönüyle geriatri pratiğinin oldukça renkli konularından birisidir. Düşmeler ve neden olduğu komplikasyonlarının geriatrik olguların ölüm nedenleri arasında ilk sıralarda yer aldığı göz önünde bulundurulursa, özellikle önlenebilir bir sağlık problemi ve geriatrik sendrom olmaları nedeniyle bu konuda alınacak önlemlerin toplum sağlığı açısından oldukça anlamlı sonuçlar doğuracağı açıkça ortadadır.

Bu nedenle, **3. Uluslararası ve 12. Ulusal Geriatri Günleri'nin** ana teması **"Geriatri Pratiğinde Hareket Bozuklukları ve Düşmeler"** olarak belirlenmiştir. Sempozyumumuzda, geriatrik olgularda hareket bozukluğuna ve düşmeye neden olabilen Parkinson Hastalığı, Lewy Cisimcikli Demans, Normal Basınçlı Hidrosefali, Parkinson Plus Sendromlar, Multiple Skleroz ve demiyelinizan hastalıklar gibi nörodejeneratif hastalıklar; demans, polifarmasi, malnutrisyon ve ortostatik hipotansiyon gibi Geriatrik Sendromlar; ve Hipertansiyon, Diyabet, Lökomotor Sistem Hastalıkları ve Osteoporoz gibi komorbid durumlar 2 gün boyunca detaylı bir şekilde ele alınacaktır.

3. Uluslararası ve 12. Geriatri Günleri 24-25 Ekim 2025 tarihleri arasında Dokuz Eylul Universitesi Sabancı Kültür Merkezi İzmir'de gerçekleştirilecektir. Sempozyumumuz için ülkemizde ve dünya çapında konusunda bilimselliğiyle ön plana çıkmış olan bilim insanlarını ağırlamaktan onur duyacağız. Bilim kurulumuzca uygun görülen sözlü bildiriler için kongre katılımcılarımızın tercihlerine göre hem yüz yüze hem de çevrimiçi (online) sunum imkanı mevcut olacaktır. Sempozyum sonrasında sözlü bildiriler bildiri kitapçığında yayımlanacaktır.

Konuya ilgi duyan Geriatri, Nöroloji, İç Hastalıkları ve Fizik Tedavi-Rehabilitasyon uzmanları başta olmak üzere tüm hekimleri, gerontolog, fizyoterapist, hemşire, psikolog, diyetisyen, sosyal hizmet uzmanı ve yaşlı sağlığı için hizmet veren herkesi İzmir'de, aramızda görmekten mutluluk duyacağımızı belirtmek isteriz.

Saygılarımla,

Geriatrik Bilimler Derneği ve Sempozyum Başkanı
Prof. Dr. Ahmet Turan IŞIK

KURULLAR

DÜZENLEME KURULU

SEMPOZYUM BAŞKANI
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BİLİMSEL SEKRETARYA
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Uzm. Dr. Açelya GÖKDENİZ, Osmaniye Devlet Hastanesi, Osmaniye, Türkiye

24 EKİM 2025 | 1. GÜN

09:00 - 09:20	Kayıt

09:20 - 09:30	Açılış Konuşması
	Prof. Dr. Ahmet Turan Işık

09:30 - 10:30	**1. Oturum:**
	Oturum Başkanları: *Fethi İDİMAN, Ayfer KARADAKOVAN*
	Denge ve Yürümenin Evrimi - *Hilmi UYSAL*
	Hareketin Nöral Kontrolü ve Yaşa Bağlı Değişimler - *Fethi İDİMAN*
	Denge ve Yürümenin Lökomotor Kontrolü ve Yaşa Bağlı Değişimler - *Nihal GELECEK*
10:30 - 10:40	Tartışma

10:40 - 10:55	**KAHVE ARASI**

10:55 - 11:55	**2. Oturum:**
	Oturum Başkanları: *Şükran KÖSE, Bilgin CÖMERT*
	Önlenebilir bir Geriatrik Sendrom: Düşme - *Esra ATEŞ BULUT*
	Hareket Bozukluğu Nedir? Sınıflandırma - *Halil GÜLLÜOĞLU*
	AGD de Düşme ve Hareket Bozukluklarının Değerlendirilmesi - *Süleyman Emre KOÇYİĞİT*
11:55 - 12:05	Tartışma

12:05 - 13:05	**ÖĞLE YEMEĞİ**

13:05 - 14:25	**3. Oturum:**
	Oturum Başkanları: *Hülya ELLİDOKUZ, Yasemin BAŞBINAR*
	Parkinson Hastalığı: Yürüme Bozukluğu Donmalar-Düşmeler - *Gülsen YILDIZ*
	Parkinson Hastalığı ve Motor Semptomların Tedavisi - *Ahmet EVLİCE*
	Parkinson Plus Sendromları - *Derya KAYA*
	Normal Basınçlı Hidrosefali - *Ahmet Turan IŞIK*
14:25 - 14:35	Tartışma

14:35 - 14:50	**KAHVE ARASI**

14:50 - 16:10	**4. Oturum:**
	Oturum Başkanları: *Selim NALBANT, Ahmet Turan IŞIK*
	Yaşlıda Parasomniler - *Barış BAKLAN*
	Approach to Dysautonomia In Older Patients with Movement - *Cristian FALUP-PECURARIU* 📶ONLINE
	Polifarmasi ve İlaca Bağlı Hareket Bozuklukluları - *Ali Ekrem AYDIN*
	Parkinson Hastalığında Disfaji ve Beslenme Bozukluğu - *Meltem HALİL*
16:10 - 16:20	Tartışma

16:20 - 16:35	**KAHVE ARASI**

16:35 - 17:35	**5. Oturum:**
	Oturum Başkanları: *Egemen İDİMAN, Orhun KANTARCI* 📶ONLINE
	Geç Başlangıçlı MS - *Derya KAYA*
	Falls in Patients with MS - *Samantha BANKS* 📶ONLINE
	Tremor - *Muhteşem GEDİZLİOĞLU*
17:35 - 17:45	Tartışma

25 EKİM 2025 | 2. GÜN

08:00 - 09:00
Sözel Bildiriler
Oturum Başkanları: *Fatma Sena DOST, Süleyman Emre KOÇYİĞİT*

09:00 - 10:20
1. Oturum:
Oturum Başkanları: *Derya KAYA*
Düşmelerin Önlenmesinde Komorbidite Yönetimi - *Kübra SEYDİ ALTUNKALEM*
Bir involusyonel Kemik Hastalığı: Osteoporoz-Düşme - *Fatma Sena DOST*
Sarkopeni ve Kırılganlık-Düşme - *Özge DOKUZLAR*
İnkontinans-Düşme - *Volkan ATMIŞ*
10:20 - 10:30 Tartışma

10:30 - 10:45 **KAHVE ARASI**

10:45 - 12:05
2. Oturum:
Oturum Başkanları: *Esra Ateş BULUT, Ali Ekrem AYDIN*
YAŞAM da Hareket Bozukluğu ve Düşmeler - *Bilal KATİPOĞLU*
Düşmelerin Önlenmesinde Mikronutrient Eksiklikleri - *Feyza MUTLAY*
Düşmelerin Önlenmesinde Hemşirelik Uygulamaları - *Merve Aliye AKYOL*
Düşmelerin Önlenmesinde Denge Egzersizleri - *Barış GÜRPINAR*
12:05 - 12:15 Tartışma

12:15 - 12:30 **KAHVE ARASI**

12:30 - 13:30
Sözel Bildiriler
Oturum Başkanları: *Fatma Sena DOST, Süleyman Emre KOÇYİĞİT*

13:30 **Kapanış**

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24-25 Ekim 2025 | Sabancı Kültür Merkezi, Konak *izmir*

Dalya

SÖZLÜ BİLDİRİLER

3. Uluslararası Katılımlı ve 12. Geriatri Günleri Sempozyumu 24-25 Ekim 2025					
25 EKİM 2025 Cumartesi **SÖZEL BİLDİRİ SUNUM LİSTESİ**					
08:00 - 09:00	**A SALONU** **MODERATÖRLER: Fatma Sena DOST, Süleyman Emre KOÇYİĞİT**				
Sunum Saati	**NO**	**ID**	**Başlık**	**Sunan Yazar**	**Yazarlar**
08:00 - 08:07	SB - 1	9901	GERIATRIK OLGULARDA DÜŞMENIN SAĞKALIM ÜZERINE ETKISI	Hatice DEMİRCİ	Hatice DEMİRCİ, Fatma Sena DOST
08:07- 08:14	SB - 2	5205	Huzurevinde Yaşayan Yaşlı Bireylerde Mandala Aktivitesinin Mutluluk ve İyilik Hali Düzeylerine Etkisi: Hayatı Renklendir	Asya Ece	Şeyma Demiralay Katırcıoğlu, Asya Ece, Abdüssamet Erol, İdil Samur, İlkay Keser
08:14 - 08:21	SB - 3	4727	Investigation of the Effects of Progressive Cognitive Load on Upper Extremity Reaction Time Performance in the Geriatric Population	Gülfidan TOKGÖZ	Gülfidan TOKGÖZ, Ebru TEKİN, Bilal KATİPOĞLU
08:21 - 08:28	SB - 4	1157	Investigation of the Relationship Between Frailty, Balance, and Falls in Older Adults	Gulfidan TOKGOZ	Gulfidan TOKGOZ, Ebru TEKİN, Bilal KATİPOĞLU
08:28 - 08:35	SB - 5	8045	YAŞLI BİREYLERDE UYKU İNANÇLARI ÖLÇEĞİ TÜRKÇE FORMUNUN GEÇERLİK VE GÜVENİRLİĞİ	Hande Sabandüzen	Hande Sabandüzen, Yeliz Çulha, Hülya Ceyhan
08:35- 08:42	SB - 6	4818	Türkiye'de 1990-2021 Yılları Arasında Yaşlılarda Düşme İnsidansının ve Düşmeye Bağlı Mortalite Eğilimlerinin Joinpoint Regresyon Yöntemi İle Analizi	SEMEN GÖKÇE TAN	FATİH TOLGA ERTÜRK, SEMEN GÖKÇE TAN, VELİYE ERTÜRK
08:42 - 08:49	SB - 7	8932	High FIB-4 Score is Independently Associated with Recurrent Falls in Older Adults	Kübra BAHAR BAYKAN	Kübra BAHAR BAYKAN, İlknur ŞEKER KAYA, Yılmaz ÖNAL, Süleyman Emre KOÇYİĞİT
TÜM SUNUMLAR 7 DAKİKA İÇERİSİNDE TAMAMLANACAK OLUP 5 DAKİKA SUNUM, 2 DAKİKA SORU-CEVAP OLACAKTIR.					
12:30 - 13:30	**A SALONU** **MODERATÖRLER: Fatma Sena DOST, Süleyman Emre KOÇYİĞİT**				
12:30 - 12:37	SB - 8	8205	Yaşlılarda Serotonin–Noradrenalin Geri Alım İnhibitörlerinin Yürüme ve Denge Fonksiyonlarına Etkisi: Ön Sonuçlar	Eral İdil	Eral İdil, Ahmet Turan Işık
12:37 - 12:44	SB - 9	9550	The Effect of Balneotherapy on Oxidative Stress Parameters in Elderly Individuals: A Secondary Analysis of a Randomized Controlled Trial	Pınar Ellergezen	Pınar Ellergezen, Alev Alp
12:44 - 12:51	SB - 10	1876	Essential Tremor in Older Adults: A Focus on Geriatric Syndromes Beyond Motor Symptoms	Zeynep Kemik	Zeynep Kemik, Dilara Dönmez Güler, Pelin Coşkun Tuncel, Esra Ateş Bulut
12:51 - 12:58	SB - 11	1782	A Multicomponent Workshop Model Cultivating Social Connection and Psychosocial Well-Being in Older Adults with Mild Cognitive Impairment: İleriyaşatölyesi	Gülfidan TOKGÖZ	Gülfidan TOKGÖZ, Ebru TEKİN, Nilay ARMAN, Bilal KATİPOĞLU, Selin IRMAK
12:58- 13:05	SB - 12	3289	Kognitif Eğitim ve Dirençli Egzersiz Eğitiminin Yaşlı Bireylerde Yürüyüş Parametreleri, Denge ve Düşme Korkusuna Etkileri	İLKE KARA ÖZ	İLKE KARA ÖZ, NİHAL GELECEK, EMRULLAH ALKAN, KÜBRA ALTUNKALEM SEYDİ, DERYA KAYA, AHMET TURAN IŞIK
13:05- 13:12	SB - 13	6753	PRİMER HİPERALDOSTERONİZM NORMOTANSİF DE OLABİLİR	ELA GÜVEN AVCI	ELA GÜVEN AVCI, HASRET DEMİREL, MUAMMER AVCI
13:12 - 13:19	SB - 14	2461	Sinükleopatisi Olan Hastalarda Düşmeyle İlişkili Parametrelerin Değerlendirilmesi	Tuğçe YÜKSEL KARSLI	Tuğçe YÜKSEL KARSLI, Mehmet Selman ÖNTAN
13:19- 13:26	SB - 15	7714	Yaşlı Bireylerde Düşme ile Osteoporoz Arasındaki İlişki ve Bağımsız Belirleyiciler: Tek Merkezli Retrospektif Çalışma	Elif ERSEN KURAL	Elif ERSEN KURAL, Fatma Sena DOST
TÜM SUNUMLAR 7 DAKİKA İÇERİSİNDE TAMAMLANACAK OLUP 5 DAKİKA SUNUM, 2 DAKİKA SORU-CEVAP OLACAKTIR.					

Geriatrik Olgularda Düşmenin Sağkalım Üzerine Etkisi

Hatice DEMİRCİ, Fatma Sena DOST

Özet: Yaşlı bireylerde düşmeler genellikle çoklu faktörlerin bir araya gelmesiyle ortaya çıkar; ancak farmakolojik etkenler, geriatrik popülasyonda en sık karşılaşılan ve aynı zamanda en kolay önlenebilir nedenlerden biridir. Yaşlanma süreciyle birlikte vücut kompozisyonunda, toplam vücut sıvısı ile yağ oranında, karaciğer ve böbrek fonksiyonlarında, ayrıca serum albümin düzeylerinde meydana gelen değişiklikler; ilaçlara bağlı yan etkilerin ve ilaç-etkileşimlerinin görülme olasılığını belirgin şekilde artırmaktadır. Düşmeler yalnızca morbiditeyi değil, aynı zamanda mortaliteyi de etkileyen önemli bir sağlık sorunudur. Düşme sonrası gelişen kırıklar, immobilite, enfeksiyon, beslenme bozukluğu ve kognitif gerileme gibi komplikasyonlar uzun dönem sağkalımı olumsuz yönde etkileyebilmektedir. Literatürde düşen yaşlı bireylerde hem kısa hem de uzun dönem mortalitenin, düşmeyen akranlarına kıyasla anlamlı derecede yüksek olduğu gösterilmiştir. Bu nedenle geriatrik olgularda düşme öyküsünün ayrıntılı olarak sorgulanması, riskli ilaçların gözden geçirilmesi ve farmakolojik yükün azaltılması, yalnızca düşme sıklığını değil, sağkalım süresini de iyileştirebilecek temel yaklaşımlar arasında yer almaktadır.

Giriş: Düşmeler, fonksiyonel kapasitede ve yaşam kalitesinde azalma; bakımevine yerleştirilme, sık hastane başvurusu ile mortalite ve morbiditede artış ile ilişkili olan geriatrik sendromlardan biridir. Yaşlılarda acil servise non-fatal yaralanmalar sebebiyle başvurunun en sık sebebi düşmedir. Düşme sonrası yaşanan travmaya bağlı ölümler 65 yaş üzerindeki en sık beşinci fatalite sebebidir.

Amaç: Dokuz Eylül Geriatri kliniğine başvurmuş olan hastalarda, düşme öyküsü olan hastaların, düşmeyen akranlarına kıyasla sağkalım süresinin karşılaştırılması amaçlanmıştır.

Yöntem: Bu retrospektif kohort çalışmasına, Dokuz Eylül Üniversitesi Tıp Fakültesi Geriatri Bilim Dalı'na başvurmuş ve değerlendirmesi tamamlanmış 2026 yaşlı birey dahil edilmiştir. Katılımcıların sosyodemografik özellikleri, komorbid durumları ile düşme öyküleri tıbbi kayıtlar üzerinden elde edilmiştir.

Çalışma grubunda yer alan bireyler, tekrarlayan düşme öyküsü bulunanlar ve düşme öyküsü bulunmayanlar olmak üzere iki gruba ayrılmıştır. Düşme öyküsü, son bir yıl içinde iki veya daha fazla düşme yaşanması olarak tanımlanmıştır. Sağkalım verileri, hastane kayıtları ve ulusal ölüm bildirim sistemi üzerinden doğrulanmış, tüm nedenlere bağlı mortalite temel sonuç ölçütü olarak kabul edilmiştir.

Her bir katılımcının sağkalım süresi, ilk değerlendirme tarihi ile ölüm tarihi veya son takip tarihi arasındaki süre (ay cinsinden) olarak hesaplanmıştır. Düşme öyküsü bulunan ve bulunmayan gruplar arasında sağkalım farkı Kaplan-Meier yöntemi ile analiz edilmiş, gruplar arası fark log-rank testi ile değerlendirilmiştir.

Tüm istatistiksel analizler SPSS 26.0 (IBM Corp., Armonk, NY, USA) programı kullanılarak gerçekleştirilmiş; $p<0.05$ değeri istatistiksel olarak anlamlı kabul edilmiştir.

Bulgular: Çalışmaya toplam 2026 geriatrik birey dahil edilmiştir. Katılımcıların %33,4'ünde (n=677) tekrarlayan düşme öyküsü bulunmaktaydı. Düşme öyküsü olmayan grupta 1349 kişi yer almış olup, 356'sında ölüm olayı gözlenmiş (%26,4 mortalite oranı); 993 birey (%73,6) takip sonunda sağ kalmıştır. Düşme öyküsü bulunan grupta ise 282 ölüm olayı (%41,7) saptanmış, 395 birey (%58,3) takip süresi sonunda yaşamını sürdürmekteydi.

Sağkalım analizinde, düşen bireylerin ortalama sağkalım süresi 2735,9 ± 77,6 gün (yaklaşık 90,0 ± 2,6 ay; 95% GA: 85,0–94,9), düşmeyen bireylerde 3318,5 ± 50,6 gün (yaklaşık 109,2 ± 1,7 ay; 95% GA: 105,8–112,3) olarak hesaplanmıştır.

Tüm kohortta ortalama sağkalım süresi 3148,8 ± 43,9 gün (yaklaşık 103,6 ± 1,4 ay; 95% GA: 100,7–106,4) idi.

Median sağkalım süresi düşenlerde 2658 gün (≈87,4 ay; 95% GA: 78,7–96,1) olarak saptanmış, düşmeyenlerde ise sensörlenme oranı yüksek olduğundan median değere ulaşılamamıştır. Düşmeyen gruptaki yüksek sensörleme oranı, bireylerin büyük kısmının takip süresi sonunda hayatta kaldığını ve bu grubun daha uzun sağkalıma sahip olduğunu göstermektedir.

Kaplan-Meier analizi sonucunda iki grup arasında sağkalım farkı istatistiksel olarak anlamlı bulunmuştur (Log-rank testi: $\chi^2=62.729$, sd=1, $p<0.001$). Bu bulgular, tekrarlayan düşme öyküsünün yaşlı bireylerde sağkalımı yaklaşık 19 ay (1,6 yıl) kısalttığını göstermektedir.

Düşme öyküsü bulunan bireylerde tüm nedenlere bağlı mortalite oranı %41,7, düşmeyenlerde %26,4 olarak saptanmıştır. Buna göre, düşen bireylerin ölüm riski düşmeyenlere kıyasla yaklaşık 1,6 kat daha yüksektir.

Sonuç: Bu çalışma, geriatrik bireylerde düşme öyküsünün yalnızca fonksiyonel kayıplarla değil, aynı zamanda uzun dönem sağkalım süresiyle de yakından ilişkili olduğunu göstermiştir. Tekrarlayan düşme öyküsü bulunan hastalarda mortalite oranı anlamlı şekilde yüksek olup, bu bireylerde sağkalım süresi yaklaşık 1,6 yıl daha kısadır. Düşme öyküsü, yaşlı popülasyonda mortalite riskini yaklaşık 1,6 kat artıran güçlü bir prognostik göstergedir.

Bu bulgular, geriatrik kliniklerde düşme öyküsünün rutin olarak sorgulanması, yüksek riskli ilaçların gözden geçirilmesi, denge ve kas gücü değerlendirmelerinin yapılması ve düşme önleme stratejilerinin kişiye özel planlanması gerekliliğini vurgulamaktadır. Erken tanımlanan riskli bireylerde farmakolojik yükün azaltılması, egzersiz ve çevresel düzenlemeler gibi müdahalelerle düşmelerin azaltılması, yalnızca morbiditeyi değil sağkalımı da iyileştirebilir.

Sonuç olarak, geriatrik bireylerde düşme öyküsü, uzun dönem mortalite açısından bağımsız ve klinik olarak anlamlı bir risk faktörüdür. Düşme önleme yaklaşımlarının multidisipliner ekipler tarafından sistematik biçimde uygulanması, yaşlı bireylerin yaşam süresi ve yaşam kalitesinin korunmasında temel bir strateji olarak değerlendirilmelidir.

Tablo 1: Hastaların Özellikleri

	Değişkenler	n: hasta	Düşme Öyküsü Var	n: hasta	Düşme Öyküsü Yok
Demografik Özellikler	Cinsiyet Kadın Erkek	677	465(%68.7)) 212(%31.3)	1349	843(%62.5) 506(%37.5)
	Yaş (ortalama ± SS)	677	76,1 ± 7,2	1349	73,8 ± 7,0
Komorbid Hastalıklar	Hipertansiyon	677	463 (%68,4)	1349	880 (%65,1)
	Koroner Arter Hastalığı	677	283 (%41,7*)	1349	208 (%15,4)
	Kalp Yetmezliği	677	69 (%10,2)	1349	79 (%5,8)
	Kronik Obstruktif Akciğer Hastalığı	677	58 (%8,6)	1349	97 (%7,2)
	Serebrovasküler Hastalık	677	49 (%7)	1349	64 (%4)
	Demans	677	228 (%33,6)	1349	362 (%26,9)
	Diyabetes Mellitus	677	228 (%33,6)	1349	362 (%26,8)
	Osteoporoz	677	166 (%27,3)	1349	282 (%22,7)

Şekil 1. Düşme öyküsüne göre Kaplan–Meier sağkalım eğrileri
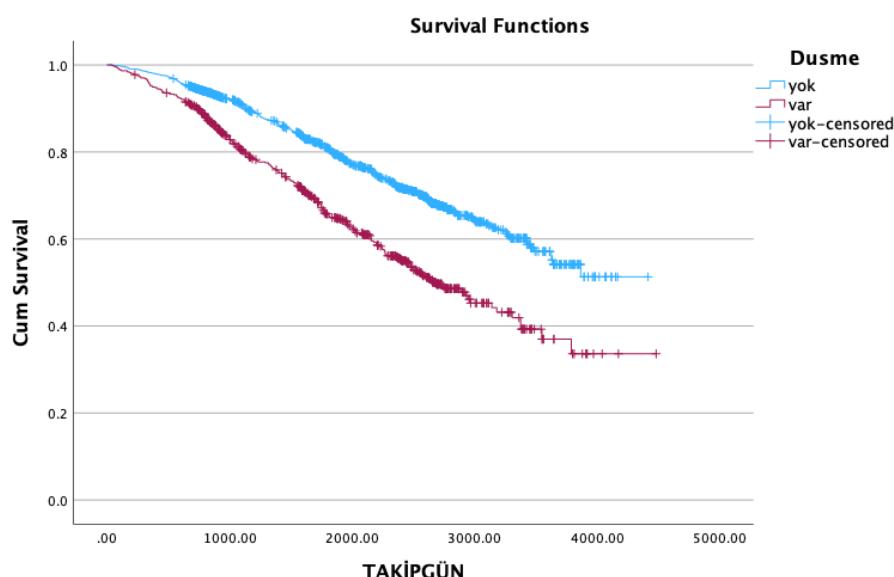
Survival Functions

13

Huzurevinde Yaşayan Yaşlı Bireylerde Mandala Aktivitesinin Mutluluk ve İyilik Hali Düzeylerine Etkisi: Hayatı Renklendir

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Giriş ve Amaç: Giriş ve Amaç: Dünyada ve ülkemizde yaşlı nüfus gün geçtikçe artmaktadır. Yaşlılıkla birlikte meydana gelen biyolojik değişimler beraberinde biyopsikosyal değişimleri de beraberinde getirmektedir. Psikososyal gelişim kuramının son evresi olan yaşlılık döneminde bireyler benlik bütünlüğüne karşı umutsuzluk da yaşayabilmektedir. Yaşlık bireyin benlik bütünlüğü olumsuz ise umutsuzluk, tatminsizlik, mutsuzluk, ruhsal iyilik halinde bozulma ve bunlara bağlı olarak da anksiyete ve depresyon gibi psikiyatrik bozukluklar gelişebilmektedir. Bu bağlamda yaşlı bireyin ruh sağlığını koruma ve geliştirme kapsamında çeşitli psikososyal müdahaleler önerilmektedir. Bunlardan biri de mandala uygulamasıdır. Bu çalışmanın amacı, huzurevinde yaşayan yaşlı bireylerde mandala aktivitesinin mutluluk ve iyilik hali düzeylerine etkisini belirlemektir.

Gereç ve Yöntemler: Gereç ve Yöntem: Çalışma, tek grup, ön test-son test tasarımına sahip yarı deneysel bir çalışmadır. Çalışmanın Klinik Araştırma Kayıt Numarası NCT05724147'dir. Çalışmanın verileri Darülaceze'de kalan, Eylül-Ekim 2023 tarihleri arasında, dahil etme-dışlama kriterlerini karşılayan 23 yaşlı bireyden elde edilmiştir. Veriler Kişisel Bilgi Formu, Mutluluk Ölçeği ve İyilik Hali Ölçeği kullanılarak yüz yüze görüşmeler yoluyla toplanmıştır. Katılımcılar 5-7 kişiden oluşan gruplara bölünmüştür. Her grupla beş hafta boyunca haftada bir kez, 60-90 dakikalık çalışmalar şeklinde mandala aktivitesi uygulanmıştır. Veriler SPSS 23.0 yazılımında Wilcoxon testi ve tanımlayıcı istatistikler kullanılarak analiz edilmiştir. Analizler için %95 (α=0,05) anlamlılık düzeyi kullanılmıştır.

Bulgular: Bulgular: Yaşlı bireyllerın %56,5'isinin erkek, %43,5'i kadındı. %60,9'u da kronik hastalığa sahipti. Katılımcıların %65,2'si de bir yıldır huzurevinde yaşadığını belirtti. Katılımcıların %60,9'u kurumun işleyişi için yapılandırdığı aktivitelerde (kantin, bahçe vb) aktif olarak görev aldığını ve %82,6'sı da sanatsal aktivitelere katılmayı tercih ettiğini belirtti. Bir sorunla karşılaştığında baş etme yöntemleri değerlendirildiğinde %43,5'inin sessiz kaldığı, %65,2'sinin ise sorunlarını kimseyle paylaşmadığı saptandı. Beş haftalık uygulama sonrası yapılan değerlendirmede katılımcıların iyilik hali ve mutluluk düzeylerinde anlamlı düzeyde bir artış olduğu saptanmıştır (p<0,05).

Sonuç: Sonuç: Çalışmanın sonuçları mandala aktivitesinin yaşlı bireylerin mutluluğunu ve iyilik halini artırmada etkili bir yöntem olabileceğini ortaya koymaktadır. Mandala aktivitesi mutluluk ve iyilik halini olumlu düzeyde artırdığı için depresyon ve anksiyete gibi ruhsal bozuklukların önlemede etkili olabileceği düşünülmektedir. Yaşlı bireylere verilecek psikososyal müdahale programları kapsamında mandala aktivitesine yer verilmesi önerilmektedir.

Anahtar Kelimeler: Yaşlı, Huzurevi, Mandala, Mutluluk, İyilik hali

Investigation of the Effects of Progressive Cognitive Load on Upper Extremity Reaction Time Performance in the Geriatric Population

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Introduction and Aim: Reaction time is the duration between a stimulus and the initiation of a motor response and serves as an important indicator of cognitive and motor functions. Changes in the nervous system due to aging affect reaction time. Reaction time is used to assess cognitive abilities such as attention, decision-making, and motor coordination in older adults. The aim of this study is to examine changes in upper extremity reaction time performance under progressive cognitive load in elderly individuals.

Materials and Methods: In this study, reaction time of elderly participants was measured using the Reaction X device. Tests were conducted in three stages: dominant hand test (DET), free hand test (SET), and colored light test (RIT). DET involved the use of only the dominant hand, while SET involved the use of both hands including executive functions such as reasoning and decision-making. In the RIT, the task required participants to extinguish the device's light using the right hand for blue light and the left hand for red light, targeting attention and decision-making functions. Average reaction times and total test durations were recorded. Data were analyzed using the open-source statistical software JASP (Jeffreys's Amazing Statistics Program; JASP Team, Amsterdam, The Netherlands). Differences between the three tests were evaluated using the Wilcoxon signed-rank test.

Findings: A total of 42 elderly individuals participated in the study; mean age was 78.33 ± 8.08 years, including 22 males and 20 females. Forty participants were right-hand dominant and two were left-hand dominant. Significant differences in reaction times were found between SET-DET ($p=0.007$) and SET-RIT ($p=0.001$), while the difference between DET-RIT ($p=0.059$) was not significant. For test durations, significant differences were observed between DET-RIT ($p=0.024$) and SET-RIT ($p=0.001$), whereas the difference between SET-DET ($p=0.062$) was not significant.

Conclusion: The findings demonstrate that reaction performance in elderly individuals varies under cognitive load in different ways. Notably, the colored light test increased cognitive load and significantly prolonged reaction and test times. Additionally, reaction time was found to vary depending on hand use and cognitive load level, with tests involving complex cognitive processes leading to increased reaction times.
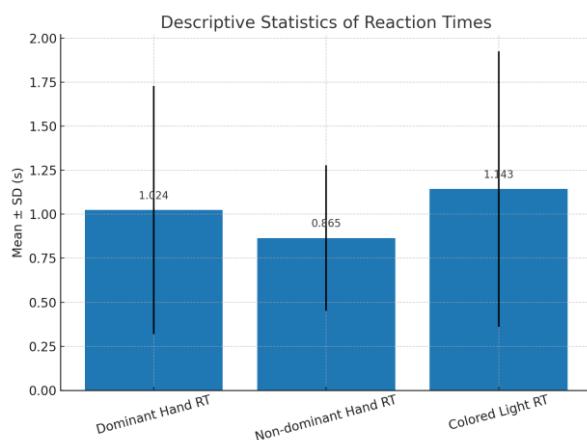
Figure 1. Reaction Times
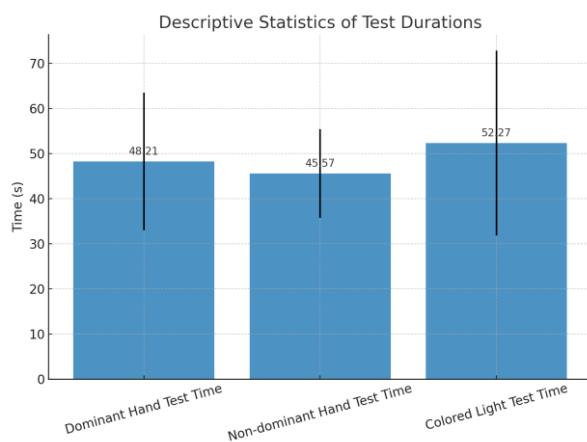
Figure 2. Test Durations

Figure 3. Boxplot of Test Durations
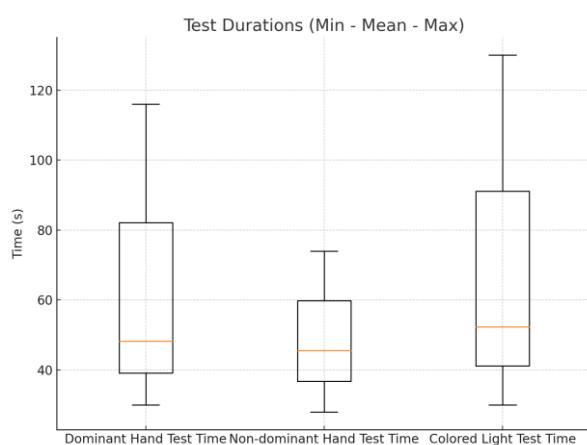
Keywords: reaction time, cognitive load, executive function, elderly health

Investigation of the Relationship Between Frailty, Balance, and Falls in Older Adults

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Introduction and Aim: Frailty is a multidimensional clinical syndrome that increases vulnerability to adverse health outcomes in the geriatric population. It is characterized by a decline in physiological reserves across systems. This study aimed to investigate the relationship between frailty and physical fitness parameters, specifically balance and falls, in older adults.

Materials and Methods: Seventy-two elderly individuals followed up at the Geriatrics Outpatient Clinic of the Aging Center were included in the study. Frailty was assessed using the Frail Questionnaire (FQ), and balance was evaluated by the right and left single-leg stance tests. Fall history and number of falls within the past year were recorded to assess falls. Statistical analyses were performed using JASP (JASP Team, Amsterdam, The Netherlands) software and nonparametric Spearman correlation tests were applied.

Findings: The male-to-female ratio of participants was 1:1. The mean age, height, and weight of participants were 77.62 ± 7.94 years, 158.05 ± 21.04 cm, and 72.22 ± 14.00 kg, respectively. Correlation analysis revealed that the FQ score was negatively correlated with left single-leg stance balance ($r = -0.411$, $p = 0.022$) and not significantly correlated with right single-leg stance balance ($r = -0.24$, $p = 0.166$). Positive significant correlations were found between FQ and fall history in the past year ($r = 0.393$, $p = 0.009$) as well as the number of falls ($r = 0.360$, $p = 0.018$).

Conclusion: Frailty in geriatric individuals is a multifactorial concept that includes fatigue, endurance, ambulation, presence of diseases, and weight loss as subparameters measured by the FQ. In this study, a significant negative correlation was observed between frailty and left single-leg balance, while positive correlations were found with fall history and fall frequency. Since frailty is closely related to balance ability and fall history, rehabilitation programs for frail elderly individuals should consider balance improvement and fall prevention strategies as key treatment goals.

Keywords: frail elderly, single-leg balance, fall history

Yaşlı Bireylerde Uyku İnançları Ölçeği Türkçe Formunun Geçerlik Ve Güvenirliği

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Giriş ve Amaç: Bu çalışma, Uyku İnançları Ölçeğinin Türkçe versiyonunun geçerliliğini ve güvenilirliğini incelemek amacıyla planlandı.

Gereç ve Yöntemler: Metodolojik tipte planlanan bu araştırmanın örneklemini, Haziran–Ağustos 2025 tarihleri arasında bir vakıf üniversitesi hastanesinin iç hastalıkları, cerrahi, aile hekimliği ve diğer polikliniklerine başvuran 100 yaşlı birey oluşturdu. Veriler, Katılımcı Bilgi Formu, Uyku İnançları Ölçeği (Türkçe versiyonu) ve Uyku ile İlgili İşlevsiz İnanç ve Tutum Ölçeği – Kısa Versiyonu kullanılarak toplandı. Ölçeğin dil eşdeğerliği, çeviri–geri çeviri tekniği ile sağlandı. Kapsam geçerliği, uzman görüşlerine dayalı Kapsam Geçerlik İndeksi (KGİ) ile değerlendirildi. İki form arasındaki korelasyon, paralel form yöntemiyle değerlendirildi; ölçeğin güvenirliği Cronbach alfa katsayısı ve madde analizi ile incelendi. Yapı geçerliliği, varimaks rotasyonu uygulanarak gerçekleştirilen faktör analizi ile belirlendi.

Bulgular: Ölçeğin Türkçe formunun kapsam geçerliği, KGİ değeri 0,96 olarak bulundu. Ölçeğin iç tutarlılığı incelendiğinde, Cronbach alfa katsayısı 0,763 ve madde-toplam puan korelasyonlarının 0,761–0,726 arasında değiştiği belirlendi. Eşdeğer (Paralel) Formlar Yöntemi analizleri, ölçek puan ortalaması ile Uyku ile İlgili İşlevsiz İnanç ve Tutumlar Ölçeği alt boyutları arasında pozitif yönde bir ilişki olduğunu gösterdi ($p<0,05$). Yapı geçerliği analizinde, KMO değeri 0,719 ve Bartlett's Testi Ki-Kare değeri 446,623 ($p<0,001$) olarak bulundu; varimaks rotasyonu ile yapılan açıklayıcı faktör analizi sonucunda maddelerin tek faktör altında toplandığı, faktör yük değerlerinin 0,617–0,783 arasında değiştiği ve toplam varyansın %74,93'ünü açıkladığı gözlendi.

Sonuç: Uyku İnançları Ölçeği'nin Türkçe toplumuna uyarlanmasına yönelik yapılan analizler, ölçeğin yaşlı bireylerde uykuya ilişkin inançları değerlendirmede güvenilir ve geçerli bir araç olduğunu gösterdi.

Anahtar Kelimeler: geçerlik, güvenirlik, yaşlı, uyku, inanç

Türkiye'de 1990-2021 Yılları Arasında Yaşlılarda Düşme İnsidansının ve Düşmeye Bağlı Mortalite Eğilimlerinin Joinpoint Regresyon Yöntemi İle Analizi

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Giriş ve Amaç: Türkiye'de demografik yaşlanma sürecinin hızla ilerlemesi düşme riskini de beraberinde getirmektedir. Ancak ulusal düzeyde yaşlılarda düşmelere ilişkin uzun dönemli eğilim analizleri sınırlı düzeydedir. Bu bağlamda, Türkiye'de yaşlılarda düşme insidansı ve mortalite eğilimlerini Joinpoint Regresyon Analizi (JRA) ile inceleyen herhangi bir çalışmaya rastlanmamış olması bu çalışmayı alandaki önemli bir boşluğu dolduracak özgün bir katkı haline getirmektedir. Çalışmanın amacı da Türkiye'de yaşlılarda düşmelere ilişkin dönemsel değişimleri belirlemek ve eğilim analizinden çıkan sonuçları tartışmaya açmaktır.

Gereç ve Yöntemler: Veriler; Sağlık Ölçümleri ve Değerlendirme Enstitüsü (IHME) tarafından yürütülen mortalite, morbidite, risk faktörleri ve hastalık yükü verilerini içeren Küresel Hastalık Yükü (GBD) çalışması 2021'den elde edilmiştir. Düşmelere ilişkin veriler Uluslararası Hastalık Sınıflandırması'na göre ICD-9 (E880-E886, E888) ve ICD-10 (W00-W19.9) ile belirlenmiştir. Araştırmanın bağımsız değişkeni 1990'dan 2021'e kadar olan yıllar olup yaş ve cinsiyet değişkenlerine göre tabakalama uygulanmıştır. Buna göre oranlar, cinsiyete ve on yıl aralıklı yaş gruplarına göre (65-74, 75-84, 85 yaş üstü) ayrılarak yüz bin kişi için incelenmiştir. Anlamlı olan değişim noktalarının ve ölüm oranlarındaki ortalama yıllık yüzdelik değişimin belirlenmesi için Joinpoint Regression Software 5.4.0 programı kullanılarak JRA yapılmıştır. Bu analiz ile anlamlı olan değişim noktalarının sayısı ve tespiti için permütasyon testleri gerçekleştirilmiş, değişim noktaları arasındaki yıllık yüzdesel değişimler (APC) ve ortalama yıllık yüzdesel değişimler (AAPC) p değerleri ve güven aralıkları ile belirlenmiştir.

Bulgular: Düşme insidansında iki cinsiyette de tüm yaş gruplarında anlamlı artışlar saptandı (p<0,001). Kadınlarda artış daha yüksekti. Özellikle 75–84 yaş grubunda (AAPC: %3,8) ve 85 yaş üzeri grupta (AAPC: %3,7) en yüksek artış oranları görüldü. Erkeklerde ise mortalite oranları yıllar içinde belirgin azalmaktaydı (p<0,001). Kadınlarda düşmeye bağlı ölüm oranlarında tüm yaş gruplarında anlamlı bir değişim yoktu ama genel olarak daha hızlı dalgalanmalar görüldü. Özellikle 75-84 yaş kadınlarda 2006-2009 yılları arasında %11,41'lik hızlı bir artış dikkat çekti.

Sonuç: Bulgular, kadınların ileri yaşlarda düşmeler açısından daha kırılgan olduğunu göstermiş olup; müdahalelerin ve koruyucu politikaların belirli ölçüde etkili olduğunu,

toplumsal cinsiyet boyutunun yaşlı sağlığı politikalarında göz ardı edilmemesi gerektiğini de göstermektedir.

Anahtar Kelimeler: düşme, joinpoint regresyon, ölüm, Türkiye, yaşlılar

High FIB-4 Score is Independently Associated with Recurrent Falls in Older Adults

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Introduction and Aim: Falls are the fifth leading cause of mortality and a major contributor to disability and reduced quality of life in older adults. Therefore, modifiable risk factors should be carefully addressed. Metabolic dysfunction-associated steatotic liver disease (MASLD) is the most common cause of chronic liver disease. Patients with liver cirrhosis have a higher risk of falls. It remains unclear that the non-invasive predictive tools including fibrosis-4 (FIB-4) score for advanced liver fibrosis are indicator for falls elderly. This study aimed to examine the association between recurrent falls in a year and high FIB-4 score in older adults.

Materials and Methods: 691 patients aged >65 who attended the Geriatrics Outpatient Clinic of Balıkesir University between November 2022 and August 2025 was included to this study. Comprehensive Geriatric Assessment was performed to all participants. It was designed as cross-sectional observational study. The patient were divided into two groups in terms of fibrosis risk status. High fibrosis risk was defined as FIB-4 >2 and recurrent falls as ≥2 in the last 12 months.

Findings: Of 691 patients, the mean age was 77.4 ± 6.3 years and 67.9 % were female. Age was found to be higher in patients with high FIB-4 scores ($p<0.001$). The frequency of female patients ($p=0.007$) and body mass index ($p<0.001$) were found to be lower. Parkinson's disease was more frequent in the high FIB-4 group ($p=0.049$). Recurrent falls were more frequent in the high FIB-4 group (Figure 1). The rates of dementia, malnutrition, and probable sarcopenia were statistically significant within high FIB-4 scores group ($p<0.05$). In logistic univariate regression analysis, a high FIB-4 score was identified as an independent risk factor for falls (OR:1.52; 95% CI:1.07–2.15; $p=0.017$). In multivariable regression analysis, high FIB-4 score was significantly affected by BMI, type 2 diabetes mellitus, and recurrent falls (OR:2.02; $p<0.05$)(Figure 2).

Figure 1

Figure 1. Comparison for recurrent falls in a year (≥2) in terms of FIB-4 status
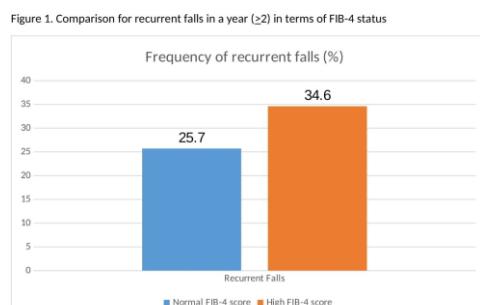
Figure 2

Figure 2- Multivariable regression analysis for determination the relationship between the risk factors including recurrrent falls and high FIB-4 score

Forest Plot of Multivariate Analysis

	Odds Ratio (95% CI)
Gender (female)	1.29 (0.78-2.14)
BMI	0.92 (0.87-0.97)
Diabetes Mellitus	0.50 (0.30-0.83)
Parkinson's Disease	0.92 (0.40-2.10)
Recurrent Falls	2.02 (1.20-3.39)
Dementia	0.86 (0.50-1.45)
Malnutrition	0.99 (0.59-1.64)
Probable Sarcopenia	1.16 (0.64-2.12)

Odds Ratio (log scale)
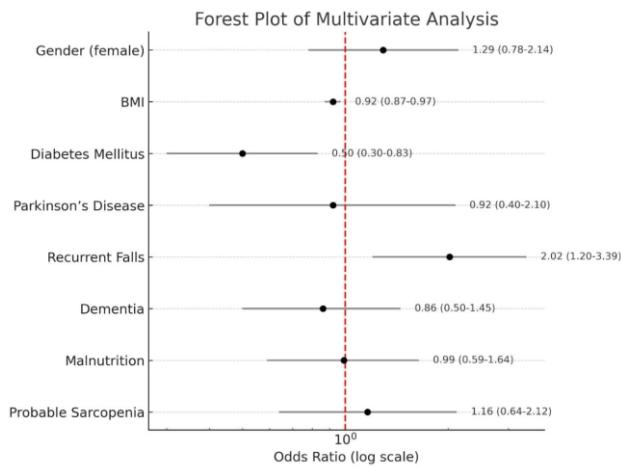
Conclusion: A recurrent falls was identified as an independent risk factor for high fibrosis risk. Therefore, the patients with high FIB-4 scores, careful attention should be given to fall risk, and appropriate preventive measures should be implemented in geriatric practice.

Keywords: comprehensive geriatric assessment, falls, geriatric syndromes, FIB-4 score

Yaşlılarda Serotonin–Noradrenalin Geri Alım İnhibitörlerinin Yürüme ve Denge Fonksiyonlarına Etkisi: Ön Sonuçlar

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Giriş ve Amaç: Yaşlıların yaklaşık üçte birinde depresyon görülmekte ve bu durum antidepresan kullanımını yaygınlaştırmaktadır. Ancak antidepresanlar, özellikle ileri yaşta, denge bozukluğu, düşme ve yürüme hızında azalma gibi yan etkilerle ilişkilidir. Yaşa bağlı artan komorbidite yükü, sarkopeni ve polifarmasi gibi etkenlerin de yürüme-denge fonksiyonlarını olumsuz etkileyebildiği göz önünde bulundurulduğunda, bu açıdan daha güvenli antidepresan alt gruplarının belirlenmesi klinik açıdan önem taşımaktadır. Bu çalışmanın amacı, antidepresan kullanmayan hastalar ile Seratonin–Noradrenalin Geri Alım İnhibitörü (SNRI) kullanan hastaların yürüme ve denge fonksiyonlarını karşılaştırmaktır.

Gereç ve Yöntemler: Ocak 2016–Aralık 2024 tarihleri arasında Dokuz Eylül Üniversitesi Hastanesi Geriatri Bilim Dalı'na ilk kez başvuran ve Ayrıntılı Geriatrik Değerlendirme (AGD) yapılmış hastaların dosyaları retrospektif olarak incelendi. Demans ya da Parkinson hastalığı olanlar dışlandı. AGD kapsamında depresyon varlığı Yesavage Geriatrik Depresyon Ölçeği kısa formu ile, yürüme-denge fonksiyonları Tinetti denge ve yürüme testi ve 4 metre yürüme testi ile değerlendirildi. Yaş, cinsiyet, hipertansiyon, koroner arter hastalığı, konjestif kalp yetmezliği, serebrovasküler hastalık ve diyabetes mellitüs değişkenlerine göre propensity score matching (1:1) uygulandı; SNRI kullananlar, antidepresan almayanlarla eşleştirildi. İki grubun yürüme-denge fonksiyonları, ortostatik hipotansiyon sıklıkları ve laboratuvar parametreleri karşılaştırıldı.

Bulgular: Çalışmaya dahil edilen 1675 hastanın %35,0'ında depresyon saptandı; antidepresan kullanan 273 hastanın %16,8'i SNRI kullanıyordu. Eşleştirme sonrası iki grupta 64 hasta (32'şer kişi) kaldı. Ortalama yaş 70,16 ± 6,89 yıl olup hastaların %84,4'ü kadındı; laboratuvar parametreleri ve ortostatik hipotansiyon sıklıkları gruplar arasında benzerdi. Tinetti toplam skoru SNRI grubunda 26,46 ± 2,35, antidepresan almayanlarda 26,59 ± 2,99 olup fark anlamlı değildi (p = 0,283). Düşük yürüme hızı varlığı SNRI grubunda 7/32 (%21,9), antidepresan almayanlarda 8/32 (%25,0) idi; fark istatistiksel olarak anlamlı bulunmadı (p = 0,768).

Sonuç: Yürüme-denge bozukluğu ve düşmenin yaşlılarda sıklıkla görüldüğü ve sağlık sistemine önemli bir maddi yük getirdiği göz önüne bulundurulduğunda; depresyonu olan yaşlılarda SNRI'lar uygun bir seçenek olabilir. Farklı antidepresan alt gruplarının yürüme-denge fonksiyonlarına etkisinin karşılaştırıldığı, ilaç kullanım dozu, süresi ve endikasyonlarının da değerlendirildiği geniş ölçekli prospektif çalışmaların yapılması oldukça önemlidir.

Anahtar Kelimeler: antidepresan, Seratonin-Noradrenalin Geri Alım İnhibitörü (SNRI), yürüme hızı, denge bozukluğu

The Effect of Balneotherapy on Oxidative Stress Parameters in Elderly Individuals: A Secondary Analysis of a Randomized Controlled Trial

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Introduction and Aim: Aging is characterized not only by immunological changes but also by increased oxidative stress and impaired antioxidant defense. This study aimed to evaluate the effects of balneotherapy (BT) on oxidative stress/antioxidant balance in elderly individuals and to investigate the relationship between these biomarkers and functional parameters.

Materials and Methods: Forty individuals aged ≥65 years, diagnosed with osteoarthritis and meeting the criteria for inflammaging, were randomized into BT (n=20) and control (n=20) groups. The BT group underwent 10 sessions of full-body immersion in 38°C thermomineral water over 2 weeks (5 sessions/week), while the control group continued a home-based exercise program. Serum levels of reactive oxygen species (ROS), superoxide dismutase (SOD), glutathione (GSH), and nitric oxide (NO) were assessed at baseline and post-intervention. In addition, blood samples collected before and after the treatment period were analyzed for the mentioned markers using the ELISA method. Handgrip strength, gait speed, and waist circumference were also measured.

Findings: In the BT group, ROS levels significantly decreased ($p < 0.05$) and SOD activity increased ($p < 0.05$). GSH levels showed a non-significant upward trend, whereas NO levels remained unchanged. No significant differences were observed in the control group. Correlation analyses revealed that ROS reduction was more pronounced in individuals with lower gait speed, while SOD increase was positively correlated with higher handgrip strength.

Figure 1
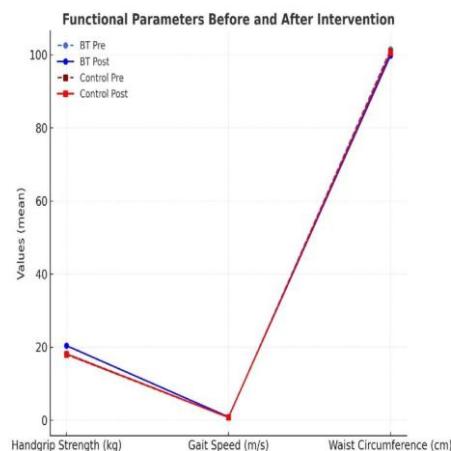
Figure 2
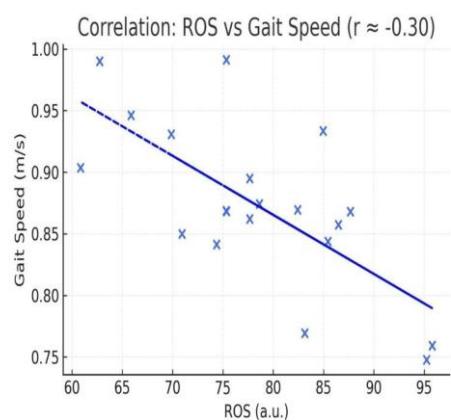
Figure 3
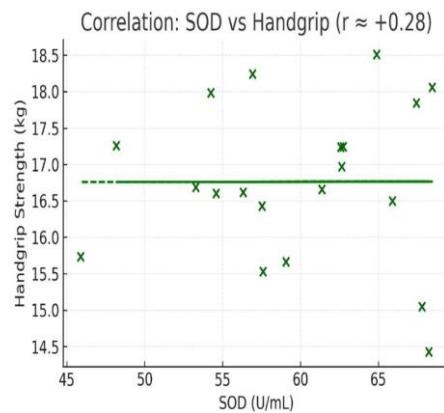
Figure 4
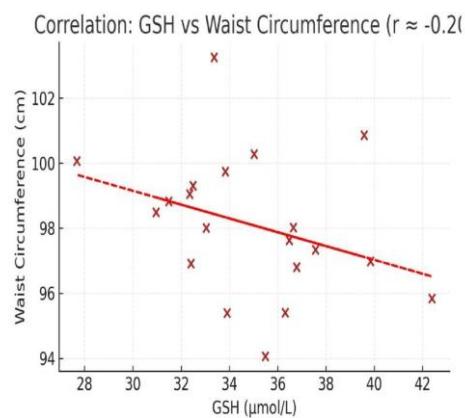
Figure 5
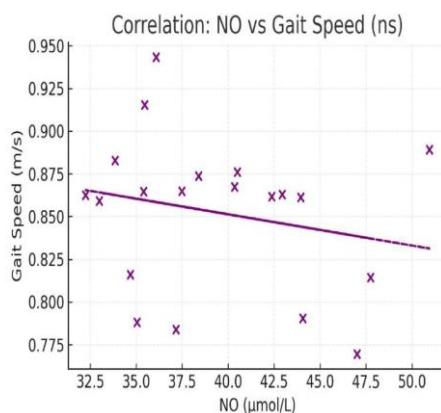
Table 1. Functional Parameters Assessed Before and After Intervention

	Parameter	BT Pre	BT Post	Control Pre	Control Post
1	Handgrip strength (kg)	18.2	20.4	18.0	18.1
2	Gait speed (m/s)	0.78	0.89	0.77	0.78
3	Waist circumference (cm)	101.5	99.8	100.9	100.7

Conclusion: Balneotherapy may improve oxidative stress/antioxidant balance in elderly individuals by reducing ROS and enhancing SOD activity. These findings suggest that BT could serve as a supportive, non-pharmacological strategy for healthy aging. This work represents a secondary analysis of our previously published trial focusing on SASP markers, now providing novel insights into oxidative stress parameters.

Keywords: Aging, antioxidant, balneotherapy, oxidative stress

Essential Tremor in Older Adults: A Focus on Geriatric Syndromes Beyond Motor Symptoms

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Introduction and Aim: Introduction: Essential tremor (ET) is the most common movement disorder in older adults, yet its relationship with geriatric syndromes remains less explored. This study aimed to investigate the prevalence of geriatric syndromes in older adults with ET.

Materials and Methods: Materials and Methods: A cross-sectional study was conducted with 411 older adults, 47 of whom had ET. The demographic characteristics and comprehensive geriatric assessment (CGA) parameters—including handgrip strength, Basic and Instrumental Activities of Daily Living (BADL, IADL) scores, and nutritional status (MNA-SF)—were recorded. The presence of various geriatric syndromes, including falls, urinary incontinence, frailty, sarcopenia, and polypharmacy, was evaluated.

Findings: Results: Patients in the ET group were significantly older ($p<0.01$). The CGA showed that the ET group had significantly lower handgrip strength, BADL and IADL scores, and higher GDS scores (all $p<0.05$). The prevalence of geriatric syndromes such as falls, urinary incontinence, probable sarcopenia, physical frailty, malnutrition, polypharmacy, and diastolic orthostatic hypotension was significantly higher in the ET group. After multivariate analysis adjusting for age, ET was still significantly associated with urinary incontinence (OR: 2.132, 95% CI: 1.141-3.987), malnutrition (OR: 4.135, 95% CI: 1.708-10.014), frailty (OR: 2.502, 95% CI: 1.185-5.282), and diastolic orthostatic hypotension (OR: 5.540, 95% CI: 1.539-19.937).

Conclusion: Conclusion: Older adults with ET have a higher burden of geriatric syndromes compared to those without ET. These findings highlight the importance of a holistic approach in managing ET to address functional impairments.

Keywords: Tremor, Geriatric Assessment, Geriatric Syndromes

A Multicomponent Workshop Model Cultivating Social Connection and Psychosocial Well-Being in Older Adults with Mild Cognitive Impairment: İleriyaşatölyesi

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Introduction and Aim: Older adults with mild cognitive impairment (MCI) often face reduced social interaction, loneliness, and loss of engagement in meaningful activities. While physical exercise, creative activities, and psychoeducation have shown individual benefits, few programs integrate these components in a single, community-based structure. Most interventions focus on cognitive or physical outcomes, often overlooking the social dimension. To address this, we developed the "İleriyaşatölyesi" program—a multicomponent workshop model including physical activity, art-based sessions, and educational modules. This study focuses on its short-term social outcomes, including enjoyment, satisfaction, quality of life, and connectedness.

Materials and Methods: A single-group, pre–post intervention design was used to evaluate the psychosocial effects of the eight-week "İleriyaşatölyesi" program. Twenty-nine older adults with MCI participated voluntarily. Sessions, held once or twice weekly (≈5 hours), were delivered by a multidisciplinary team. The intervention included group-based physical activities (e.g., music-assisted exercise, exergaming, Pilates), creative workshops (e.g., calligraphy, candle making, culinary arts), and educational sessions (e.g., fall prevention, caregiving support). Psychosocial outcomes were assessed using CASP-19 (quality of life), PACES-S (enjoyment), a semi-structured satisfaction questionnaire, and brief post-session interviews. Qualitative data were analyzed thematically and lexically using CATMA.

Findings: Participants reported high enjoyment across all sessions (PACES-S: 52.37–54.89). CASP-19 showed a positive trend in quality of life, though not statistically significant ($p = .208$). All participants expressed willingness to rejoin, and most reported trying new activities and forming new social connections. Qualitative analysis revealed five key themes: emotional well-being, social engagement, perceived health benefits, lifelong learning, and sustainability. Lexical analysis highlighted frequently used words such as "life," "health," "communication," and "students."

Figure 1. Results of the participant satisfaction survey
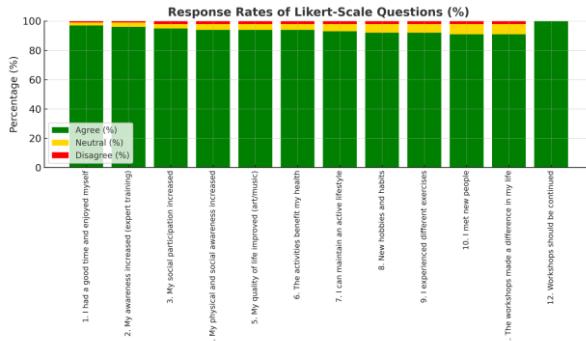
Figure 2. The most commonly expressed words by participants during the interviews
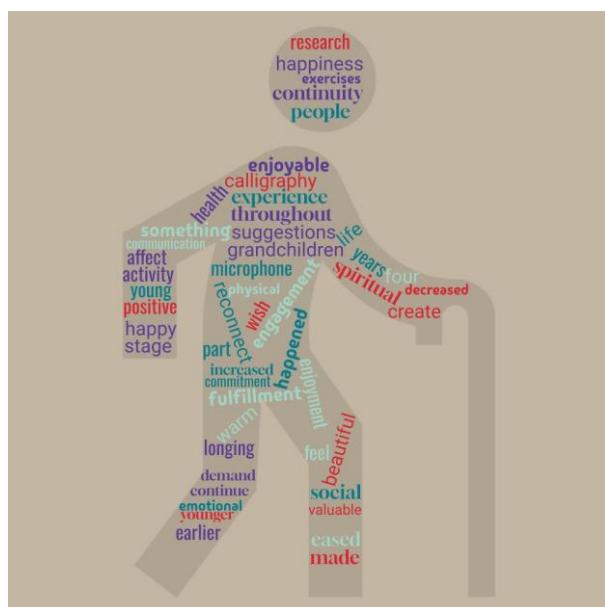
Conclusion: The "İleriyaşatölyesi" program, a multicomponent community-based intervention, demonstrated positive short-term effects on social connection, enjoyment, and perceived psychosocial well-being in older adults with mild cognitive impairment. High levels of participation, satisfaction, and engagement across physical, creative, and educational sessions suggest that holistic, group-based approaches can foster meaningful interaction, emotional expression, and a sense of belonging. These findings highlight the importance of integrating social dimensions into community programs aimed at promoting healthy aging and cognitive resilience.

Keywords: Mild Cognitive Impairment, Dementia, Exercise, Art, Geriatrics

Kognitif Eğitim ve Dirençli Egzersiz Eğitiminin Yaşlı Bireylerde Yürüyüş Parametreleri, Denge ve Düşme Korkusuna Etkileri

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Giriş ve Amaç: Yaşlanmayla gelişen kognitif ve fiziksel işlevlerdeki bozulma, yürüme ve ayakta durma dengesi gibi yüksek düzeyde kognitif kontrol gerektiren fonksiyonel aktivitelerin performansında düşüşe yol açarak düşmeler, yaralanmalar ve hastaneye yatışa ilerleyebilecek sağlık sorunlarına sebebiyet verebilir. Bu nedenle yaşlı bireylerde hem kognitif hem de fiziksel işlevleri hedefleyen bütüncül yaklaşımlara ihtiyaç duyulmaktadır. Bu çalışmanın amacı, 12 haftalık kognitif eğitim ve dirençli egzersiz eğitiminin huzurevinde yaşayan yaşlı bireylerde yürüyüş parametreleri, denge, mobilite ve düşme korkusu üzerine etkilerini incelemektedir.

Gereç ve Yöntemler: Çalışmaya huzurevinde yaşayan 36 yaşlı birey (ortalama yaş 77.5±6.0 yıl) dahil edildi. Katılımcılar 12 hafta boyunca yalnızca kognitif eğitim alan (n=18) ve kognitif eğitimle kombine olarak dirençli egzersiz eğitimi alan (n=18) iki gruba ayrıldı. Kognitif durum Mini Mental Durum Testi (MMSE) ile; yürüyüş parametreleri (yürüme hızı (m/s), kadans ve adım uzunluğu) ile; denge durumu Zamanlı Kalk ve Yürü Testi (ZKYT) ve Tinetti Testi (POMA) ile; düşme durumu ise son bir yıldaki düşme sayısı ve Düşme Etkinlik Ölçeği (DEÖ) ile çalışmanın başlangıcında ve 12. haftalık eğitimden sonra değerlendirildi.

Bulgular: Çalışmaya katılan 36 yaşlı bireyin %61.1'i kadındı ve gruplar demografik özellikler ile düşme sayısı açısından benzerdi (p>0.05). On iki haftanın sonunda her iki grupta da yürüme hızı ve kadans artarken, bu gelişmeler kognitif eğitim grubunda sınırlı (0.07 m/sn ve 3.5 adım/dk; p=0.041-0.072; d=0.31-0.42), kombine grupta ise daha belirgin ve anlamlıydı (0.15 m/sn ve 6.9 adım/dk; p=0.004–0.019; d=0.46–0.65). DEÖ skorları kognitif eğitim grubunda 1.5 puan (p=0.049; r=0.30), kombine eğitim grubunda 3.1 puan (p=0.012; r=0.42) azaldı. ZKYT'de azalma eğilimi görülürken (p=0.055), POMA ve MMSE skorlarında değişiklik olmadı (p>0.05). Gruplar arası analizde kombine grupta yürüme hızı artışı (p=0.050; r=0.33) ve DEÖ skorlarındaki azalma (p=0.039; r=0.34) daha belirgindi.

Sonuç: Araştırmanın sonuçları, yaşlı bireylerde 12 haftalık kognitif eğitim yürüyüş parametreleri ve düşme korkusunda olumlu değişimlere yol açtığını, dirençli egzersiz eğitimi ile birleştirildiğinde ise ilgili parametrelerdeki değişimler daha belirgin ve klinik açıdan anlamlı hale geldiğini göstermiştir. Geriatrik rehabilitasyonda kombine eğitimlerin kullanılması hem fiziksel hem psikososyal çıktıları geliştirmede daha etkili bir yaklaşım sunabilir.

Anahtar Kelimeler: Yaşlı, Egzersiz, Yürüyüş, Denge, Düşme

Primer Hiperaldosteronizm Normotansif De Olabilir

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Giriş ve Amaç: Primer hiperaldosteronizm; hipertansiyon, hipokalemi, metabolik alkalozla karakterizedir. Yüksek kan basıncına artmış aldosteron, baskılanmış renin ve yüksek plazma aldosteron/renin oranı eşlik eder. Normotansif, normokalemik primer aldosteronizm formu nadir olarak bildirilmiştir. Burada normotansif seyreden primer hiperaldosterinizm olgusu bildirilmiştir.

Gereç ve Yöntemler: .

Bulgular: 94 yaşında kadın hasta, 3 gündür oral alımda azalma, yorgunluk ve kabızlık şikayetiyle başvurdu. Özgçmişinde Tip 2 diyabetes mellitusu olup düzenli ilaç kullanımı yoktu. Kan basıncı 100/60 mmHg, nabız: 68 atım/dk, akciğer sesleri olağan, batın distandü ve barsak sesleri azalmıştı. Laboratuvarında Na: 161 mmol/L, K: 2,9 mmol/L, Mg: 1,99 mg/dl, BUN: 63 mg/dl, Kr: 1,1 mg/dl. Hipovolemik hipernatremi ve prerenal akut böbrek yetmezliği ön tanısı ile kliniğine yatırıldı. İzotonik NaCl % 0.9 + dekstroz % 5 + % 0.45 Nacl ve iv K replasmanı sonrasında Na: 140 mmol/L, BUN: 11 mg/dl, Kr: 0,4 mg/dl geriledi. Kan gazı Ph: 7,46 Hco3: 26,5 mmol/mL pCO2: 38 idi. Potasyum replasmanına rağmen K: 3,4 mmol/L'den fazla yükselmemesi nedeniyle spot idrarda bakılan potasyum/kreatinin oranı 106 mmol/gram olarak sonuçlandı. Renal potasyum kaybı olarak değerlendirilen hastaya agresif potasyum replasmanı sonrası potasyum 4.2 mmol/L plazma renin aktivitesi, aldosteron ACTH ve kortizol kan düzeyi 2 defa çalışıldı. Sırasıyla Renin: < 0,1 ng/ml/h, Aldosteron: 30 pg/ml, PAR oranı: 300, ACTH:22 ng/L, kortizol: 17 µ/dl ve Renin: 0,29 ng/ml/h, Aldosteron: 20 pg/ml, PAR oranı: 68,9, ACTH: 24 ng/L, kortizol: 19 µ/dl olarak sonuçlandı. Değerlerin primer hiperaldosteronizmi desteklemesi üzerine üst batın MR çekildi. Sağ sürrenal bez normal olup sol sürrenal bezde 37x22 mm adrenal adenomla uyumlu lezyon vardı. Endokrinoloji ve metabolizma kliniği ile değerlendirilerek primer hiperaldosterinizm kabul edilen hastaya spirinolakton 1*100 mg başlandı. Replasmana ara verilmesi sonrası 3,7 mmol/L gerileyen potasyum düzeyi, spironolakton sonrası tekrar normal aralığa döndü. Hastanın tedaviye dirençli kabızlığı düzeldi.

Sonuç: Primer hiperaldosterinizme genellikle hipertansiyon, hipokalemi ve metabolik alkaloz eşlik etmektedir. Bu olguda hastanın hipokalemi ve metabolik alkalozuna normotansiyon eşlik etmektedir. Sıvı replasmanı sonrası övolemik hale gelen hastada diüretik ve antihipertansif kullanımı yoktu. İki defa çalışılan reninin aktivitesinin baskılı, Aldosteron/renin oranının yüksek gelmesi ilk akla gelen sekonder hiperaldosteronizmi dışlamaktadır. Literatürde normotansif primer hiperaldosteronizm bildirilmiş olup genelde olgu düzeyindedir. Burada normotansif primer hiperaldosteronizm farkındalığını arttırmak amacıyla bu olgu bildiriminde bulunduk.

Anahtar Kelimeler: Hipokalemi, Metabolik Alkaloz, Normotansif Primer Hiperaldosteronizm, Primer Aldosteronizm

Sinükleopatisi Olan Hastalarda Düşmeyle İlişkili Parametrelerin Değerlendirilmesi

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Giriş ve Amaç: Sinükleopatilerde düşme sık görülür ve hastanın bağımsızlığını kaybetmesine yol açabilir. Bu çalışmanın amacı, sinükleopati ile izlenen hastalarda düşme ile ilişkili klinik parametreleri değerlendirmektir.

Gereç ve Yöntemler: Bu retrospektif kesitsel çalışma, geriatri polikliniğinde sinükleopati tanısı ile izlenen 153 hastayı içermektedir. Hastaların demografik verileri, ayrıntılı geriatrik değerlendirme parametreleri kaydedilmiştir. Düşme öyküsü "düşme var" ve "düşme yok" olarak iki grupta incelenmiştir. . Değişkenler, normal dağılım gösterip göstermediklerini belirlemek için Kolmogorov-Smirnov testi kullanılarak incelenmiştir. Tanımlayıcı analiz, ortalamalar ve standart sapmalar kullanılarak sunulmuştur. Normal dağılım gösteren sürekli değişkenler bağımsız örnekler t-testi ile, normal dağılım göstermeyenler ise Mann-Whitney U testi ile analiz edilmiştir. Kategorik değişkenler arasındaki farklar Pearson ki-kare testi değerlendirilmiştir. Düşmeyi etkileyebilecek faktörler için lojistik regresyon analizi yapılmış; yaş, RUDB (Rem Uyku Davranış Bozukluğu), sarkopeniye göre düzeltilmiş model oluşturulmuştur. $P<0.05$ anlamlı kabul edilmiştir.

Bulgular: Çalışmaya alınan 153 hastanın yaş ortalaması 78.1±6.9 yıl olup, %56.9'si kadındı. Katılımcıların %54.9'unda düşme öyküsü mevcuttu. Düşme öyküsü olan hastalarda üriner inkontinans (%65.1 vs. %40.6, p=0.003), RUDB (%73.8 vs. %57.4, p=0.033) sarkopeni (%23.2 vs. %9.3, p=0.048) sıklığı daha yüksekti.(Tablo 1.) Yaş, RUDB ve sarkopeniye göre düzeltilme yapıldığında üriner inkontinans ile düşme ilişkili bulundu. (p=0.019) (Tablo 2.)

Tablo 1. Sinükleopati hastalarında düşme öyküsü olan ve olmayan grupların demografik, klinik ve kognitif özelliklerinin karşılaştırılması

	Düşme Yok n:69	Düşme Var n:84	p	
Demografik Veriler				
Yaş (yıl)*	**76.6 ± 7.4**	**79.4 ± 6.3**	**0.014 †**	
Eğitim yılı *	6.7 ± 4.8	5.8 ± 4.0	0.200	
Kadın cinsiyet %	52.2	60.7	0.289	
Kognitif ve Fonksiyonel Ölçümler				
0 %	6.9	10.1		0.053

CDR	0.5 %	25.9	7.6	
	1 %	29.3	41.8	
	2 %	29.3	29.1	
	3 %	8.6	11.4	
POMA *		22.2 ± 5.7	20.0 ± 7.5	0.068
UPGO *		17.3 ± 8.2	21.6 ± 15.6	0.082
Ayrıntılı Geriatrik Değerlendirme Parametreleri				
Üriner inkontinans %	**40.6**	**65.1**	**0.003 †**	
RUDB %	**57.4**	**73.8**	**0.033 †**	
Noktüri %	72.7	80.5	0.265	
Ağrı %	31.3	46.3	0.063	
Konstipasyon %	31.3	41.5	0.203	
Hipertansiyon %	68.1	58.3	0.213	
Koroner arter hastalığı %	17.4	26.2	0.193	
Kalp yetmezliği %	4.3	8.3	0.657	
Tiroid hastalığı %	11.6	14.3	0.623	
SVO öyküsü %	4.3	9.5	0.217	
Diabetes mellitus %	27.5	33.3	0.439	
Hiperlipidemi %	17.6	19.0	0.825	
Depresyon %	43.1	45.2	0.792	

Supin Hipertansiyon %	42.0	50.0	0.325
OH %	39.1	44	0.540
Gecikmiş OH %	7.1	18.6	0.062
Polifarmasi %	67.6	76.8	0.209
Frailty (kırılganlık) %	54.2	62.1	0.411
Sarkopeni %	**9.3**	**23.2**	**0.048 †**

* Ort ± SS; †: p<0.05 CDR: Klinik Demans Derecelendirme Ölçeği; OH: Ortostatik Hipotansiyon; POMA: Denge ve Yürüyüş Performans Testi (Tinetti); REM Uyku Davranış Bozukluğu; UPGO: Zamanlı Kalk ve Yürü Testi; SVO: Serebrovasküler Olay; UI: Üriner İnkontinans

Tablo 2. Sinükleopati hastalarında düşme ile ilişkili bağımsız değişkenlerin lojistik regresyon analizi

	OR	CI	p
Üriner İnkontinans	**2.636**	**1.172-5.933**	**0.019**

Düzeltilen değişkenler: RUDB, Sarkopeni, Yaş. CI: Confidence Interval; OR: Odds Ratio

Sonuç: Çalışmamızda sinükleopatisi olan hastalarda düşmenin, üriner inkontinans ile ilişkili olduğu gösterilmiştir. Bu nedenle sinükleopatisi olan hastaların değerlendirilmesinde üriner inkontinans sorgulanmalıdır. Üriner inkontinansın sıklığının azaltılması ve ortadan kaldırılmasına yönelik düzenlemeler yapılmalı, düşme ile ilişkili olduğu akılda bulundurulmalıdır.Sinükleopatilerde parkinsonizmin, otonomik disfonksiyonun sonucu olarak yürüme ve denge bozukluklarının sıklığı artmaktadır. Yürüme ve denge bozukluklarının sonucu olarak görülebilecek düşmeler ise ciddi yaralanmalara ve hastanın günlük yaşam aktivitelerinde bağımsızlığını kaybetmesine sebep olabilir. Küratif tedavisi olmayan Lewy Cisimcikli Demans ve Parkinson Hastalığı gibi sinükleopatilerde hastanın bağımsızlığını sürdürmesine yönelik yaklaşımlar oldukça önemlidir. Yürüyüş ve denge bozukluğu gibi aksiyel özellikler dopaminerjik tedaviye daha az yanıt verebilir. Bu nedenle düşme ile ilişkili faktörlerin gösterilmesi ve önleyici yaklaşımların geliştirilmesi gereklidir. Üriner inkontinans, sinükleopati hastalarında düşme ile ilişkili bir durum olarak karşımıza çıkmaktadır

Anahtar Kelimeler: düşme, üriner inkontinans, sinükleopati

Yaşlı Bireylerde Düşme ile Osteoporoz Arasındaki İlişki ve Bağımsız Belirleyiciler: Tek Merkezli Retrospektif Çalışma

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Giriş ve Amaç: Yaşlı bireylerde düşme, önemli bir morbidite ve mortalite nedenidir. Düşme riskinin çok faktörlü doğası bilinmekle birlikte; osteoporoz, kırılganlık ve diğer geriatrik sendromları bütüncül bir yaklaşımla ele alan çalışmalar kısıtlıdır. Bu çalışma, geriatri hastalarında düşme riskini etkileyen faktörleri incelemeyi ve femoral kemik kaybının bu risk üzerindeki rolünü değerlendirmeyi amaçlamıştır.

Gereç ve Yöntemler: Ocak 2013–Aralık 2022 tarihleri arasında Geriatri Polikliniği'ne ayaktan başvuran, düşme öyküsü sorgulanan ve DEXA tetkiki bulunan hastalar retrospektif olarak değerlendirildi. Hastalar düşme öyküsünün varlığına göre iki gruba ayrıldı. Demografik özellikler, osteoporoz varlığı, DEXA sonuçları, osteoporotik kırık öyküsü, komorbiditeler, ilaç kullanımı, laboratuvar parametreleri ve ayrıntılı geriatrik değerlendirme sonuçları hasta dosyalarından kaydedildi. Gruplar arası farklar bağımsız örneklem t testi, Mann–Whitney U ve ki-kare testiyle değerlendirildi. Düşme ile ilişkili bağımsız değişkenler, stepwise backward (LR) lojistik regresyonla belirlendi.

Bulgular: Düşme öyküsü bulunan bireylerde, demans prevalansı (%45,1 vs. %32,6; p=0,019) ve ortalama ilaç sayısı (6,05 vs. 5,34; p=0,039) düşmeyenlere kıyasla anlamlı derecede yüksekti. Bu grupta Lawton IADL (p=0,001), Barthel ADL (p<0,001) ve POMA denge-yürüme (p<0,001) skorları daha düşüktü. Düşme öyküsü olan grupta kırılganlık prevalansı daha yüksekti (%59,8 vs. %37,4; p<0,001). Aynı şekilde malnütrisyon ve malnütrisyon riski de daha sık izlendi (%35,5 vs. %24,1; p=0,030). Düşme öyküsü olan grupta osteoporotik kırık prevalansı anlamlı olarak daha yüksekti (%37,3 vs. %24,9; p=0,014). Özellikle izole femur osteoporozu düşen grupta daha sık görülürken (%12,4 vs. %6,1; p=0,043), lomber osteoporoz sıklığı açısından gruplar arasında anlamlı farklılık saptanmadı. Çok değişkenli analizde ise, kırılganlık (OR=2,63; %95 GA: 1,60–4,33; p<0,01), geçirilmiş kırık öyküsü (OR=2,25; %95 GA: 1,27–3,98; p=0,005), izole femur osteoporozu (OR=2,93; %95 GA: 1,11–7,76; p=0,030) ve femur total T-skoru (OR=1,39; %95 GA: 1,05–1,84; p=0,021) düşme ile ilişkili bulundu.

Tablo 1. Düşme varlığına göre grupların karşılaştırılması

Değişken		Kontrol	Düşme	p
Demografik bilgiler				
Kadın cinsiyet, n (%)		134 (74,0)	120 (78,4)	0,348
Yaş (yıl), ort. ± SS		76,0 ± 6,6	77,1 ± 7,3	0,137
Eğitim süresi (yıl), ort. ± SS		7,16 ± 4,53	6,66 ± 4,42	0,336
Charlson Komorbidite İndeksi, ort. ± SS		1,70 ± 1,44	1,95 ± 1,51	0,111
Beden kitle indeksi (kg/m²)		27,4 ± 4,67	28,4 ± 4,78	0,100
Obezite, n (%)		37 (31,1)	36 (34,6)	0,576
Komorbid Durumlar ve İlaç Kullanımı				
Diabetes mellitus, n (%)		43 (23,8)	46 (30,1)	0,194
Osteoartrit, n (%)		59 (34,1)	41 (29,5)	0,386
Serebrovasküler olay öyküsü, n (%)		12 (6,6)	9 (5,9)	0,779
Demans, n (%)		59 (32,6)	69 (45,1)	**0,019**
İlaç sayısı, ort. ± SS		5,34 ± 3,02	6,05 ± 3,22	**0,039**
Antipsikotik kullanımı, n (%)		22 (12,2)	22 (14,4)	0,549
Antidepresan kullanımı, n (%)		79 (43,6)	73 (47,7)	0,457
Laboratuvar				
Hemoglobin (g/dL)		12,62 ± 1,43	12,37 ± 1,45	0,106
Glukoz (mg/dL)		115,2 ± 48,1	116,1 ± 52,9	0,864
TSH (μIU/mL)		1,93 ± 1,86	2,06 ± 3,96	0,697
Vitamin D (ng/mL)		21,8 ± 9,35	22,2 ± 10,99	0,714
MDRD-eGFR (mL/dk/1.73 m²)		71,5 ± 18,8	69,2 ± 20,6	0,283
Vitamin B12 (pg/mL)		361 ± 218,8	403 ± 246,1	0,105
Düzeltilmiş kalsiyum (mg/dL)		9,26 ± 1,18	9,37 ± 0,90	0,368
Ayrıntılı Geriatrik Değerlendirme				
Ortostatik hipotansiyon, n (%)		27 (15,0)	25 (16,3)	0,882
LAWTON (IADL) skoru		16,1 ± 6,47	13,3 ± 7,76	**0,001**
Barthel (ADL)		95 (85–100)	85 (65–95)	**0,001**[1]
POMA (denge + yürüme) skoru		24,5 ± 5,17	21,5 ± 6,90	**<0,001**
CDR , n (%):	0	35 (28,2)	32 (27,4)	0,768
	0.5	29 (23,4)	23 (19,7)	
	1	38 (30,6)	35 (29,9)	
	2	15 (12,1)	21 (17,9)	
	3	7 (5,6)	6 (5,1)	
Frailty, n (%)		61 (37,4)	79 (59,8)	**<0,001**
Malnütrisyon ve malnütrisyon riski, n (%)		39 (24,1)	50 (35,5)	**0,030**
Düşük yürüme hızı, n (%)		34 (32,4)	51 (55,4)	**0,001**
Düşük kas gücü, n (%)		40 (22,1)	50 (32,7)	**0,027**

[1] Mann–Whitney U testi. Diğer sürekli değişkenler bağımsız örneklem t testiyle analiz edilmiştir. Kalın p değerleri istatistiksel olarak anlamlıdır (p < 0,05).

Tablo 2. Düşme Durumuna göre osteoporoz varlığının karşılaştırılması

	Düşme Öyküsü Olmayan (n=181)	Düşme Öyküsü Olan (n=153)	p
Lomber L2-L4 T-skoru	−1,56 ± 1,55	−1,41 ± 1,49	0,383
Femur total T-skoru	−1,59 ± 1,06	−1,58 ± 1,08	0,962
Osteoporotik fraktür Öyküsü, n, (%)	45 (24,9)	57 (37,3)	**0,014**
Osteoporoz, (%)	47	58,8	**0,031**
İzole femur osteoporozu, (%)	6,1	12,4	**0,043**
İzole lomber osteoporoz, n (%)	18,8	16,3	0,569
Lomber L2-L4 + femur osteoporozu	13,3	9,8	0,327

Tablo 3. Düşme ile ilişkili Faktörler

		Düşme		
		OR	CI	p
Kırılganlık	Referans (kontrol)	2,626	1,595-4,326	**<0,01**
İzole femur osteoporozu		2,934	1,108-7,764	**0,030**
Kırık öyküsü		2,253	1,274-3,984	**0,005**
Femur T-skoru		1,392	1,052-1,841	**0,021**

Backward stepwise analysis; demans, frailty, malnütrisyon ve malnütrisyon riski, ilaç sayısı, izole femur osteoporozu, lomber ve femur osteoporozu, izole lomber osteoporoz, kırık öyküsü, T-skor femur, T-skor lomber

Sonuç: Bu çalışma, yaşlı bireylerde düşmenin çok boyutlu belirleyicilerini ortaya koymuştur. Düşme; demans, ilaç sayısı, fonksiyonel bağımlılık, kırılganlık ve malnütrisyonla ilişkili bulunmuş; ancak analizler arasında kırılganlık, geçirilmiş kırık öyküsü, izole femur osteoporozu ve düşük femur total T-skoru bağımsız risk faktörleri olarak tanımlanmıştır. Bu ilişkinin doğrulanması ve nedenselliğin ortaya konması için ileriye dönük çalışmalara ihtiyaç vardır.

Anahtar Kelimeler: Düşme, Osteoporoz, Kırılganlık, Geriatrik Sendromlar

KONUŞMA ÖZETLERİ

Analysis of Fall Incidence and Fall-Related Mortality Trends in the Elderly in Türkiye Between 1990 and 2021 Using Joinpoint Regression Method

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Introduction and Aim: The rapid progression of demographic aging in Turkey brings with it a risk of falls. However, long-term trend analyses on falls in the elderly at the national level are limited. In this context, the lack of any study examining fall incidence and mortality trends in the elderly in Turkey using Joinpoint Regression Analysis (JRA), makes this study an original contribution that fills a significant gap in the field. The aim of the study is to determine seasonal changes in falls in the elderly in Turkey and to discuss the results of the trend analysis.

Material and Methods: Data were obtained from the 2021 Global Burden of Disease (GBD) study, which includes mortality, morbidity, risk factors, and disease burden data conducted by the Institute for Health Metrics and Evaluation (IHME). Falls data were determined using ICD-9 (E880-E886, E888) and ICD-10 (W00-W19.9) according to the International Classification of Diseases. The independent variable of the study was the years from 1990 to 2021, and stratification was applied according to age and sex variables. Accordingly, rates were examined for one hundred thousand people, separated by sex and ten-year age groups (65-74, 75-84, and over 85). JRA was performed using Joinpoint Regression Software 5.4.0 to determine significant change points and average annual percentage change. Permutation tests were performed to determine the number and identification of significant change points in this analysis, and annual percentage change (APC) and average annual percentage change (AAPC) between change points were determined using p values and confidence intervals.

Results: Significant increases were found in the incidence of falls across all age groups in both genders (p<0.001). The increase was higher in women. The highest increases were observed in the 75-84 age group (AAPC: 3.8%) and the over 85 age group (AAPC: 3.7%). Mortality rates in men decreased significantly over the years (p<0.001). There was no significant change in fall-related death rates in women across all age groups, but faster fluctuations were observed overall. A significant annual increase of 11.41% between 2006 and 2009 was particularly notable among women aged 75-84.

Conclusion: The findings demonstrate that women are more vulnerable to falls in older ages. They also demonstrate that interventions and preventive policies are somewhat effective and that gender should not be overlooked in elderly health policies.

Keywords: Falls, Joinpoint regression, death, Turkey, elderly.

NEURAL CONTROL OF MOVEMENT AND AGE-RELATED CHANGES

Prof. Dr. Fethi İDİMAN

ABSTRACT

Movement can be defined as "an action that occurs when signals originating in the brain are transmitted through the nervous system and reach the muscles in a goal-directed manner." The muscles that generate movement create forces and displacements in our environment. As a result of the changes produced in the environment, sensory feedback is transmitted back to the nervous system, allowing the brain to accumulate information related to movement. This information is processed and stored in different brain structures associated with various functions. A new movement or sequence of movements occurs through the communication among different regions of the brain in the light of previously experienced information. The connections that ensure communication among different brain regions are known as **"MOTOR CONTROL LOOPS."** These include six major loops: **1**. Selection, initiation, and inhibition of movement **2-** Timing, coordination, learning, and corrective feedback, **3-** Integration of motor commands with somatosensory feedback, **4-** Control of posture, tonus, and automatic motor patterns, **5-** Frontoparietal motor planning processes, **6-** Influence of motivational and emotional factors on motor behavior. In addition, a seventh supervisory loop has been defined: **"The interaction loop of high-level networks."** Among intracranial structures, the final decision belongs to the cortical motor areas. The signals that take their final form in the motor cortical areas reach the corresponding lower motor neurons in the spinal cord through descending motor pathways, particularly those located anterolaterally. However, motor signals do not influence the common final pathway exactly as they arrive at the spinal cord. They are shaped by sensory inputs (exteroceptive and proprioceptive) that arrive via dorsal-root ganglia. The structures that mediate communication at the segmental and intersegmental levels are **interneurons** and **Central Pattern Generators (CPGs)**. Ultimately, the signals that take their final shape in the common final pathway lead to muscle fiber contraction through the conversion of electrical signals into chemical and then back into electrical signals at the neuromuscular junction—thus producing **MOVEMENT**. The movement of the muscle stimulates intrafusal fibers and Golgi tendon organ receptors, which then send feedback back to the spinal cord through segmental and ascending pathways (especially the dorsal columns and spinothalamic tracts), influencing the loops and movement organization. Communication within this system is widely accepted to operate through the **closed-loop control system** described by Magill in 1989. In a healthy adult, such an organization enables balanced, coordinated, powerful, and goal-directed movement. In older

adults, however, several changes occur: loss of muscle mass (sarcopenia), loss of fast-twitch fibers (Type II) and motor neurons (large motor units), neuromuscular junction transmission deficits, and slowing of reaction time and reflexes. As a result, movements in the elderly become more difficult, slower, and more easily fatigued, recovery takes longer, coordination declines, reflexes diminish, reaction time is prolonged, movement becomes tremulous, and balance and gait deteriorate. With the extension of life expectancy today, these age-related changes have become not only an individual concern but also a societal issue. Beyond physical therapy and rehabilitation approaches aimed at improving the quality of life of older adults, it is also necessary to develop autonomous devices, robots, and prosthetics that elderly individuals may require. This necessitates rapid advancement in research related to computer science and biomedical engineering. Moreover, there is an urgent need for clinical and experimental studies to elucidate the unknown aspects of movement that will form the basis of such developments.

Nursing Practices in Fall Prevention

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Falls are one of the most common and significant safety issues among older adults, and represent a geriatric syndrome that frequently results in high morbidity and mortality. It is defined by the American Nurses Association as a patient fall as an unplanned descent to the floor that may or may not result in injury. It is also used as a key indicator of nursing care quality, as fall rates are closely associated with the effectiveness of patient safety practices, the adequacy of clinical monitoring, and the overall quality of the care environment. Monitoring and reducing falls therefore constitute an essential component of quality improvement initiatives within nursing practice.[1,2] Beyond serving as an indicator of care quality, falls may also give rise to legal processes. In many healthcare settings, patient falls are considered preventable adverse events; therefore, institutions and healthcare professionals may face legal scrutiny when a fall is perceived to have resulted from inadequate supervision, insufficient risk assessment, or failure to implement appropriate safety measures. Consequently, fall-related incidents not only affect patient outcomes but also have significant ethical, legal, and organizational implications for healthcare systems.

Among adults aged 65 years and older, one in three experiences a fall each year. Among those aged 80 years and above, one in two experiences at least one fall annually. Two-thirds of older adults who experience a fall will fall again within the following six months.[3] In a study examining 57,302 patients who experienced a fall, the outcomes were as follows: the mortality rate was 4.4%, head trauma occurred in 11% of cases, and 78% of patients lost their functional independence.[4] In another study, a total of 1,622 fall reports were analyzed, and 69.2% of serious falls occurred in individuals aged 60 years and older. Serious fall incidents were associated with an additional hospital stay of 14.61 days and an increased hospitalization cost of $3,302.60 . These findings underscore both the clinical and economic burden of falls among older adults, highlighting the importance of effective fall prevention measures in healthcare settings.[5] Falls among older adults most commonly occur in specific locations, with the home environment being the primary setting, followed by healthcare facilities and public spaces. There is no single cause of falls among older adults. Falls typically result from a complex interplay of multiple factors, including age-related physiological changes, chronic medical conditions, medication side effects, impaired balance or gait, environmental hazards, and behavioral factors. This multifactorial nature underscores the need for comprehensive risk assessments and individualized prevention strategies to effectively reduce fall incidence. After experiencing a fall, older adults often begin to live under the shadow of fear, a phenomenon known as fear of falling. This fear can lead to activity restriction, reduced social participation, and a decline in physical function, further increasing the risk of subsequent falls. Among older adults with a history of falls, certain groups are at higher risk for adverse outcomes, including

women, those with reduced physical capacity, individuals living alone or with limited social support, and those with a history of anxiety or depression. In these populations, falls are associated with increased limitations in activities of daily living, social isolation, physical and cognitive decline, depression, anxiety, and a higher prevalence of obesity. Possible indicators of fear of falling include the presence of facial expressions of fear or anxiety during movement or ambulation, the need to hold onto an object or another person for support while moving, closely watching one's own steps while walking, restricted movements following a fall, difficulty maintaining balance or stumbling, reluctance to change positions, and general hesitancy or unwillingness to engage in physical activity.[6,7]

Falls in older adults are multifactorial events that require comprehensive preventive strategies encompassing patient assessment, environmental modifications, continuous monitoring, and the use of assistive technologies. Key nursing interventions include: *Assessment of Fall History and Risk Factors:* Thorough evaluation of fall history is essential, including questions such as, "Have you experienced any falls in the past year?" Comprehensive risk assessment should consider physical limitations, sensory impairments, medication use, chronic health conditions, and the presence of orthostatic hypotension, which significantly increases fall risk. *Environmental Safety Measures:* Ensuring a safe care environment is crucial for fall prevention. This includes the use of visual indicators (e.g., warning signs) for high-risk patients, maintaining bed rails in an elevated position while keeping the bed at its lowest level, and locking the wheels of beds, wheelchairs, and stretchers. Equipment should be regularly inspected, and any malfunctioning items repaired or clearly labeled as "Out of Order." Adequate lighting should be provided in patient rooms both during daytime and nighttime, and furniture should be arranged within easy reach. Non-slip footwear should be used in bathrooms and other potentially slippery areas, and movable furniture should be secured to prevent accidents. *Patient Monitoring and Support:* Patients at high risk for falls should be frequently observed and, if possible, assigned to rooms closer to the nursing station. Nurses should encourage patients to seek assistance before standing or walking, assist with gradual mobilization, and, when appropriate, provide range-of-motion exercises to maintain mobility and strength. *Use of Assistive Devices and Technology:* The implementation of sensor-based monitoring systems, such as alert belts, can enhance fall prevention efforts. These devices continuously track patient movement, detecting sudden imbalance, slipping, or loss of stability, and promptly alert healthcare staff to enable immediate intervention before a fall occurs or its consequences are minimized. *Medication and Health Status Considerations:* Nurses should be aware of medications that increase fall risk, monitor sensory deficits, and consider the presence of medical equipment such as intravenous lines, urinary catheters, and drains that may impede safe mobility. *Post-Fall Management and Documentation:* In the event of a fall, patients should be instructed to remain in their current position until assistance arrives. All fall incidents should be documented in a fall assessment form to inform subsequent preventive measures and quality improvement initiatives. *Education for Fall Prevention in Older Adults:* Education of older adults and their families plays a critical role in fall prevention. Older adults should be instructed to move slowly, avoid hasty or impulsive

actions, wear well-fitting shoes that provide adequate support, and use assistive devices as needed. Compliance with these recommendations should be actively encouraged. To prevent falls related to visual impairments, adequate lighting should be provided on stairs both day and night, and easily accessible illuminated switches can enhance safety during nighttime movement. Handrails should be installed along corridors and stairways to support safe ambulation, and motion-sensitive lighting systems can further reduce fall risk. Living areas should be kept free of obstacles such as old newspapers, trash bins, and unused footwear, which could contribute to falls. Steps should not exceed 15 cm in height, and handrails should be cylindrical with inward-turned ends to ensure a secure grip. Beds should be equipped with support handles, and cabinets or shelves should be positioned at easily reachable heights to avoid the need for climbing or bending. Drawers and cabinets should always be closed, and electrical cords should be safely positioned away from walking areas. The use of non-slip rugs or mats with flat edges is recommended, and stable chairs with armrests should replace swivel chairs to enhance safety. Rooms should be free of thresholds, bathrooms should have handrails, toilets should have elevated seats, and non-slip bath mats or stools should be provided. In addition, smart technologies, such as medical alert watches (e.g., Medical Guardian mini), can improve safety by automatically alerting emergency contacts in the event of a fall or if the wearer remains immobile for a specified period, typically one minute. These devices provide timely assistance and enhance overall fall safety in older adults. [8-14] Falls are largely preventable through targeted interventions. Promoting awareness and encouraging active participation from both older adults and caregivers are essential components of effective fall prevention strategies.

Evaluation of Fall-Related Parameters in Patients with Synucleinopathy

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Aim

Falls are common in synucleinopathies and may lead to loss of patient independence. The aim of this study is to evaluate the clinical parameters associated with falls in patients being followed up with a diagnosis of synucleinopathy.

Materials and Methods

This retrospective cross-sectional study included 153 patients who were being followed in a geriatrics outpatient clinic with a diagnosis of synucleinopathy. Demographic data and detailed comprehensive geriatric assessment parameters of the patients were recorded. History of falls was evaluated in two groups as "falls present" and "no falls". Variables were examined using the Kolmogorov–Smirnov test to determine whether they showed a normal distribution. Descriptive analyses were presented as means and standard deviations. Continuous variables with normal distribution were analyzed using the independent samples t-test, whereas non-normally distributed variables were analyzed using the Mann–Whitney U test. Differences between categorical variables were evaluated using Pearson's chi-square test. Logistic regression analysis was performed to identify factors that may affect falls, and a model adjusted for age, RBD (REM sleep behavior disorder), and sarcopenia was constructed. A p-value of <0.05 was considered statistically significant.

Results

The mean age of the 153 patients included in the study was 78.1 ± 6.9 years, and 56.9% were female. A history of falls was present in 54.9% of the participants. In patients with a history of falls, the frequencies of urinary incontinence (65.1% vs. 40.6%, p=0.003), REM sleep behavior disorder (RBD; 73.8% vs. 57.4%, p=0.033), and sarcopenia (23.2% vs. 9.3%, p=0.048) were higher (Table 1). After adjustment for age, RBD, and sarcopenia, urinary incontinence was found to be associated with falls (p=0.019) (Table 2).

Conclusion

In our study, falls in patients with synucleinopathy were shown to be associated with urinary incontinence. Therefore, urinary incontinence should be specifically inquired about in the evaluation of patients with synucleinopathy. Measures should be taken to reduce and eliminate the frequency of urinary incontinence, and its association with falls should be kept in mind.

In synucleinopathies, the frequency of gait and balance disorders increases as a result of parkinsonism and autonomic dysfunction. Falls, which may occur as a consequence of gait and balance impairments, can lead to serious injuries and loss of independence in activities of

daily living. In synucleinopathies such as Dementia with Lewy Bodies and Parkinson's disease, for which no curative treatment exists, approaches aimed at maintaining the patient's independence are of great importance. Axial features such as gait and balance disturbances may respond less favorably to dopaminergic therapy. Therefore, it is necessary to identify factors associated with falls and to develop preventive strategies. Urinary incontinence emerges as a condition associated with falls in patients with synucleinopathy.

Table 1. Comparison of demographic, clinical, and cognitive characteristics between synucleinopathy patients with and without a history of falls

		No Falls n:69	Falls Present n:84	p
Demographic Data				
Age (years)*		**76.6 ± 7.4**	**79.4 ± 6.3**	**0.014 †**
Years of education*		6.7 ± 4.8	5.8 ± 4.0	0.200
Female sex %		52.2	60.7	0.289
Cognitive and Functional Assessments				
CDR	0 %	6.9	10.1	0.053
	0.5 %	25.9	7.6	
	1 %	29.3	41.8	
	2 %	29.3	29.1	
	3 %	8.6	11.4	
POMA *		22.2 ± 5.7	20.0 ± 7.5	0.068
TUG *		17.3 ± 8.2	21.6 ± 15.6	0.082
Detailed Geriatric Assessment Parameters				
Urinary incontinence(UI) %		**40.6**	**65.1**	**0.003 †**
RBD %		**57.4**	**73.8**	**0.033 †**

	No Falls n:69	Falls Present n:84	p
Nocturia %	72.7	80.5	0.265
Pain %	31.3	46.3	0.063
Constipation%	31.3	41.5	0.203
Hypertension%	68.1	58.3	0.213
Coronary artery disease %	17.4	26.2	0.193
Heart failure %	4.3	8.3	0.657
Thyroid disease %	11.6	14.3	0.623
Stroke %	4.3	9.5	0.217
Diabetes mellitus %	27.5	33.3	0.439
Hyperlipidemia %	17.6	19.0	0.825
Depression %	43.1	45.2	0.792
Supine hypertension %	42.0	50.0	0.325
Orthostatic hypotension (OH) %	39.1	44	0.540
Delayed orthostatic hypotension %	7.1	18.6	0.062
Polypharmacy %	67.6	76.8	0.209
Frailty %	54.2	62.1	0.411
Sarcopenia %	**9.3**	**23.2**	**0.048 †**

* Mean ± SD; † $p < 0.05$

CDR: Clinical Dementia Rating Scale; OH: Orthostatic Hypotension; POMA: Performance-Oriented Mobility Assessment (Tinetti); RBD: REM Sleep Behavior Disorder; TUG: Timed Up and Go Test; stroke: Cerebrovascular Event; UI: Urinary Incontinence

Table 2. Logistic regression analysis of independent variables associated with falls in patients with synucleinopathy

	OR	CI	p
Urinary incontinence(UI)	2.636	1.172-5.933	0.019

Adjusted variables: RBD, sarcopenia, age.

CI: Confidence Interval; OR: Odds Ratio

TREMOR

Assoc.Prof, Neurologist <u>Muhtesem Gedizlioğlu</u>

Tremor is a very common movement disorder in daily practice. It may be a syndrome by itself or a leading or subtle manifestation of a movement disorder. Recently a new classification is proposed for tremor syndromes with two axes: First is according to clinical features, and characteristics of tremor. The second one is according to the etiology of tremor.

By definition, tremor is an involuntary, rhythmic and oscillatory movement. It may be seen in one or more body parts, like hands and/or head. It can be classified based on anatomical distribution, position, frequency, amplitude, and etiology. During clinical examination any tremor should be first evaluated for its pattern of activity. Tremors can be differentiated as kinetic, postural or resting.

The most common type of postural action tremors is "Essential Tremor" and "Essential Tremor plus" The updated diagnostic criteria (2018, the Movement Disorder Society) are (1) isolated tremor syndrome of bilateral upper limb action tremor, (2) at least 3 years' duration, (3) with or without tremor in other locations (e.g. head, voice, or lower limbs), and (4) absence of other neurological signs, such as dystonia, ataxia, or parkinsonism. If neurological examination reveals subtle neurologic signs, not leading to another diagnosis, then it's called ET plus. When such subtle findings exist, the patient should be followed for appearance of parkinsonien disorders. There may be positive family history, or alcohol responsiveness. The severity and also the prevalence of tremor increases with aging. Hence, it's more prevalent in the elderly.

The exact pathogenesis of ET is still obscure, however, generally an abnormality in the cerebello-thalamo-cortical circuit is blamed. Inferior olive also has an important impact on this circuit.

Although highly prevalent, the treatment of ET is still insufficient. Many patients may respond to beta blockers or pirimidone, at least in the early phase. If tremor is very severe, surgical treatments may be offered.

Isometric tremor and enhanced physiologic tremor are also accepted among kinetic tremors.

Resting tremor is the second important type of tremor. The most important disease with this type of tremor is Parkinson's disease (PD). It's distal, asymmetric, occurring during rest, aggravating with mental co-activation, and with 4–7Hz frequency. It's described as "pill rolling" tremor. The tremor of PD is a combined tremor, and should be together with other findings of PD such as rigidity, postural abnormalities, bradikinezia. Tremor in PD responds levodopa and parkinsonian medications including surgical interventions.

One of other combined tremor types is intention tremor which becomes overt when reaching a target. It is seen in cerebellar diseases such as multiple sclerosis or spinocerebellar ataxias. In

neurological examination usually findings pointing to the involvement of posterior fossa structures or other parts of central nervous system are found.

Dystonic tremor is quite frequent in primary dystonia. In this situation there must be dystonic posture in the same extremity with the tremor, such as head tremor in a patient with cervical dystonia. This type of tremor is not responsive to levodopa.

Peripheral neuropathies, mostly inflammatory chronic ones may be together with tremor.

There may also be focal tremors which involve only one part of the body such as voice, head or soft palate.

A unique form of tremor is Holmes's tremor. Albeit very rare, it has distinctive characteristics. It is a 3–4 Hz tremor which is usually of high amplitude, irregular, present at rest, worsens with posture, and additionally intensifies with action. It's always symptomatic with an abnormality in brain stem or diencephalon.

Tremor may also be functional. Lack of any family history, a short time of duration, variability in frequency and amplitude, occurrence in different parts of the body, and distractibility are important clues. It may accompany somatoform disorder, factitious disorder or malingering.

A structured approach to the patient with tremor should begin with the examination for details of tremor after finishing the anamnesis, history and general neurological examination. Tremor should be tested first at rest and later with cognitive and motor co-activation at rest. Then, postural and kinetic features should be observed.

Usually, no laboratory, genetic or imaging modality is needed for investigating tremor alone other than routine. Rarely electrophysiological methods may be used for evaluating the characteristics of tremor, mostly for academic purposes.

The treatment depends on the underlying cause. Medications causing tremor are a long list. Psychotropic medications and substances like caffeine and alcohol should be particularly asked. In case of a causative disease, it should be treated in its own way. Essential tremor may respond to either beta blocking agents, pirimidone or topiramate. Parkinson's tremor and Holmes's tremor may be treated with dopaminergic medications. Botulinum toxin may be beneficial for dystonic tremor. Surgical intervention can be tried for many types of tremor with varying results.

Sarcopenia and Frailty – Falls

Doç.Dr. Özge DOKUZLAR

Bursa Yüksek İhtisas Eğitim ve Araştırma Hastanesi

Falls, sarcopenia, and frailty represent three interrelated geriatric syndromes that critically compromise functional independence in older adults and substantially contribute to increased morbidity and mortality. Sarcopenia, characterized by a progressive decline in skeletal muscle mass, strength, and function, leads to impairments in postural stability, proprioceptive feedback, and balance control, thereby substantially elevating the risk of falls. Frailty, on the other hand, is a complex geriatric phenotype arising from diminished physiological reserves, multisystem dysregulation, and reduced capacity to respond to stressors. Clinical features such as unintentional weight loss, slowness, weakness, low physical activity and exhaustion frequently overlap with sarcopenia and further increase fall risk. These syndromes share common biological pathways, including inflammaging, mitochondrial dysfunction, endocrine alterations, nutritional deficiencies, and multiple comorbidities, which collectively amplify their bidirectional interaction. Their management requires multifactorial assessment, objective evaluation of physical performance, and targeted interventions. Structured exercise programs focusing on balance and resistance training, adequate protein intake, vitamin D optimization, effective control of chronic diseases, and reduction of polypharmacy constitute the core components of treatment. Employing this integrated approach is essential for slowing the progression of these interrelated syndromes, reducing fall risk, and preserving functional capacity in older adults.

Parkinson Plus Syndromes (Atypical Parkinsonian Syndromes)

Derya KAYA, MD

Dokuz Eylul University School of Medicine

Atypical Parkinsonian Syndromes (APS) are progressive neurodegenerative disorders characterized by bradykinesia with rigidity, tremor, or postural instability. Multiple system atrophy (MSA), progressive supranuclear palsy (PSP), and corticobasal syndrome (CBS) are those syndromes, and they are clinically heterogeneous and show significant phenotypic overlap. These syndromes are synucleinopathy (MSA) and tauopathies (PSP, CBS), with the abnormal deposition of the proteins a-synuclein and tau, respectively. In this presentation, clinical, imaging, and neuropathological features of all the mentioned Parkinsonian syndromes are reviewed.

One of the most critical points in the diagnosis of APS is to differentiate it from idiopathic Parkinson's disease (PD). Thus, examinations that help to differentiate PD vs. APS in clinical routine are also underscored. Dementia with Lewy bodies, another type of APS, will be discussed in another panel of this symposium.

Late-Onset Multiple Sclerosis

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Multiple sclerosis (MS) is a chronic autoimmune neurodegenerative condition characterized by inflammation, demyelination, and axonal degeneration. Classically, MS is more prevalent in young adults, of which the first symptom is revealed between the ages of 20 and 40. The first clinical demyelinating event may also occur after 50, referred to as late-onset MS, and after 60, referred to as very late-onset MS. The McDonald's criteria 2024 for diagnosing MS have been announced. It includes stricter criteria for older adults. Worldwide, the prevalence of older adults with MS and late-onset MS cases is increasing considerably. Therefore, the influence of age-related physiological, immunological, and pathological changes on the disease should be considered in managing older adults with MS.

Late-onset MS has its own unique traits, and there are specific considerations for older patients with MS. Older patients with MS have a higher prevalence of gray matter lesions and

spinal cord lesions, faster brain volume loss during follow-up, and reduced neuron density pathologically. Randomized controlled trials exclude patients with MS over 55 years, and relevant data are derived from observational, real-life studies.

The impact of age on the immune system and disease progression remains largely unknown and warrants further understanding. This understanding is crucial for providing effective therapeutic opportunities to target the aging-driven mechanisms associated with the immune system, including immunosenescence that occurs prematurely in MS, age-associated low-grade chronic inflammation, and inflammaging, thereby addressing the unique challenges of older patients with MS.

COMORBIDITY MANAGEMENT IN FALL PREVENTION

Dr Kübra ALTUNKALEM SEYDİ

Globally, more than 36 million older adults experience at least one fall each year, and a considerable proportion require long-term care following recurrent events. As over half of older adults live with multimorbidity, comorbidity management plays a crucial role in understanding and preventing falls. Evidence consistently shows that diabetes mellitus (DM), orthostatic hypotension (OH), Parkinson's disease (PD), cognitive impairment, arthritis, depression, cardiovascular autonomic dysfunction, chronic kidney disease (CKD), urinary incontinence, and chronic obstructive pulmonary disease (COPD) are among the strongest contributors to fall risk.

In DM, both hypoglycemia risk and peripheral neuropathy contribute substantially to falls. Prevention the falls should emphasize individualized glycemic targets, avoidance of overtreatment, neuropathy screening, and structured balance and strength training. In cognitive impairment, impaired attention, executive dysfunction, and slowed switching between balance strategies deteriorate postural control. Interventions combining exercise, cognitive stimulation, and dual-task training demonstrate promise, particularly in mild cognitive impairment. For patients with Alzheimer's disease, simplified environmental modifications, caregiver education, medication review, and exercise + cognitive training are central to fall-prevention efforts. PD introduces gait freezing, OH, postural instability, and difficulty adapting motor strategies. Evidence-based prevention includes multidoimain interventions, physiotherapy focused on postural reflexes, balance and resistance exercises, medication timing adjustments, and home safety modifications. CKD contributes through muscle weakness, hypotension, metabolic disturbances, and polypharmacy. Recommendations include vitamin D optimization, careful volume management, deprescribing, exercises to prevent orthostasis, simplified environmental modifications. Cardiovascular disorders, particularly carotid sinus syndrome and arrhythmias, may precipitate unexplained recurrent falls; diagnostic evaluation, interventions for OH and interventions such as pacemaker therapy can reduce fall rates. Depression increases fall risk both through psychomotor slowing, sleep and attention disorders, medication effects; management involves treating depressive symptoms, cautious antidepressant selection, and a

treatment approach based on the risk–benefit ratio. In In COPD, pulmonary rehabilitation programs integrating balance-focused exercise significantly improve outcomes.

Overall, fall prevention in multimorbid older adults requires a multifactorial and disease-specific approach combining exercise, medication optimization, environmental modifications, and targeted management of each comorbid condition's unique risk pathways.

PRIMARY HYPERALDOSTERONISM CAN ALSO BE NORMOTENSIVE

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Introduction: Primary hyperaldosteronism is characterized by hypertension, hypokalemia, and metabolic alkalosis. Elevated blood pressure is accompanied by increased aldosterone, suppressed renin, and an elevated plasma aldosterone/renin ratio. Normotensive, normokalemic forms of primary aldosteronism have been reported rarely. Here, we want to report a case of primary hyperaldosteronism with a normotensive course.

Case: A 94-year-old female presented with complaints of decreased oral intake, fatigue, and constipation for 3 days. She has history of type 2 diabetes mellitus and has any medication use. Her blood pressure was 100/60 mmHg, pulse: 68 beats/min, lung sounds were normal, the abdomen was distended, and bowel sounds were decreased. Laboratory results showed Na: 161 mmol/L, K: 2,9 mmol/L, Mg: 1,99 mg/dL, BUN: 63 mg/dL, and Cr: 1,1 mg/dL. She was admitted to the nephrology clinic with a preliminary diagnosis of hypovolemic hypernatremia and prerenal acute renal failure. Isotonic NaCl 0.9% + dextrose 5% + 0.45% NaCl were prescribed and intravenous potassium replacement placed. After these interventions sodium, BUN and kreatinin were return the normal ranges respectly Na: 140 mmol/L, BUN: 11 mg/dL, and Cr: 0,4 mg/dL decreased. Blood gas was pH: 7.46, HCO3: 26.5 mmol/mL, pCO2: 38. Despite potassium replacement, potassium did not increase by more than 3,4 mmol/L, so the potassium/creatinine ratio measured in spot urine was 106 mmol/gram. The patient was evaluated to have renal potassium loss and underwent aggressive potassium replacement. After potassium was 4,2 mmol/L, plasma renin activity, aldosterone, ACTH, and cortisol blood levels were measured twicely. The results were as follows Renin: <0.1 ng/ml/h, Aldosterone: 30 pg/ml, aldosterone/renin ratio: 300, ACTH: 22 ng/L, Cortisol:

17 μ/dl, and Renin: 0,29 ng/ml/h, Aldosterone: 20 pg/ml, aldosterone/renin ratio: 68.9, ACTH: 24 ng/L, Cortisol: 19 μ/dl, respectively. Because the values encourage primary hyperaldosteronism, then an upper abdominal MRI was performed. The right adrenal gland was normal, and there was a 37x22 mm lesion compatible with an adrenal adenoma in the left adrenal gland. The patient was evaluated by the endocrinology and metabolism clinics and diagnosed with primary hyperaldosterinism was prescribed spirinolactone 1 x 100 mg. After the replacement therapy was discontinued, the potassium level decreased to 3,7 mmol/L and potassium level returned to the normal range after spironolactone. On the other hand, the patient's treatment-resistant constipation also resolved after potassium level returned to the normal range,

Conclusion: Primary hyperaldosteronism is often accompanied by hypertension, hypokalemia, and metabolic alkalosis. This patient who had no medications like diuretic or antihypertensive drugs was euvolemic and normotension. Supressed renin and elevated high aldosterone and aldosterone-renin activity ratio support primary hyperaldosteronism. Here we want to emphasize that primer hyperaldosteronizm can be present with normotension. Normotensive primary hyperaldosternoizm has been reported in the literature but they are all at the case reports level. Therefore, well-designed, large studies are needed.

Keywords: Hypokalemia, Metabolic Alkalosis, Normotensive Primary Hyperaldosteronism, Primary Aldosteronism

A Degenerative Bone Disease: Osteoporosis- Falls

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As global life expectancy continues to rise, osteoporosis (OP) and fall-related fractures have emerged as major public health concerns. Hip fractures, in particular, are associated with mortality rates of up to 20% among older individuals and with costly long-term care requirements for most survivors. Preventing falls is vital to reducing the risk of osteoporotic fractures and improving the quality of life for older patients. A fall is defined as an event in which an individual suddenly and unintentionally changes their posture and lands on the ground or a lower level. Falls are one of the leading causes of injury-related morbidity and mortality in older adults. It is estimated that approximately one-third of community-dwelling older adults fall each year.

Osteoporosis is a chronic, progressive skeletal disease characterized by a decrease in bone mass and deterioration in the microarchitecture of bone tissue. This condition leads to increased bone fragility and an increased susceptibility to fractures resulting from low-energy trauma (fragility fractures). Osteoporosis is diagnosed when the bone mineral density (BMD) T-score measured by Dual Energy X-ray Absorptiometry (DXA) is ≤ -2.5 standard deviations (SD), according to World Health Organization criteria.

Falls are the most common cause of fractures in older adults. The most serious complications of osteoporosis are fractures, which are usually caused by falls. The hip, spine, and wrist are the most common sites of osteoporosis-related fractures. Approximately 90% of hip fractures in older patients are caused by falls.

Aging is associated with a decrease in bone mass and a decline in bone quality, both of which increase the risk of fracture even in individuals with the same bone mass. Recovery rates after hip fractures are low in older adults; only 25% of patients can return to their previous functional levels. Factors such as cognitive impairment and dementia can delay recovery after a fracture and significantly increase mortality rates.

Older patients with osteoporosis are considered a high-risk population because they are at increased risk of falls and fractures. This risk usually stems not only from osteoporosis but also from other accompanying geriatric syndromes:

1. Sarco-osteoporosis (SOP) / Osteosarcopenic Obesity (OSO):

SOP or OSO refers to the coexistence of sarcopenia and osteoporosis/osteopenia. This condition is considered a subset of frailty and is thought to be associated with an increased risk of falls and fractures.

OSO patients face a significantly increased risk of falls and spinal fractures compared to those with obesity, sarcopenia, or osteoporosis alone. One study found that individuals with OSO had a 3.12-fold higher risk of falls and a 3.36-fold higher risk of spinal fractures. Osteosarcopenia also predicts falls, fractures, reduced life satisfaction, and deterioration in Activities of Daily Living (ADL).

2. Dementia and Cognitive Impairment:

Cognitive impairment (including dementia) and fragility fractures are chronic conditions that frequently coexist in older adults. Individuals with dementia have a higher susceptibility to hip fractures and a greater tendency to fall compared to their healthy peers. In individuals with dementia, osteoporotic fractures are associated with a six-fold increase in 30-day mortality and a two-fold increase in 90-day mortality compared with those without dementia who sustain osteoporotic fractures. In this patient group, osteoporosis risk is often underdiagnosed and undertreated.

Fall Risk Factors in Older Adults with Osteoporosis

Various factors that increase or decrease the risk of falls in older adults with osteoporosis have been identified:

Risk Factor	

Previous History of Falls	Older adults with osteoporosis and a history of falls are at greater risk of future falls. At 6- and 12-month follow-ups, a history of falls is a significant predictor of recurrent falls.
Impaired Balance and Postural Stability	Impaired postural control is considered the primary factor leading to falls in patients with osteoporosis. Women with osteoporosis exhibit greater postural sway and reduced muscle strength compared with their peers with normal bone mass. Osteoporosis patients who fall exhibit higher sway velocity and area than those who do not fall.
Impairment in Activities of Daily Living (ADL/IADL)	Patients with dependence or impairment in activities of daily living (ADL/IADL) have a higher risk of falling. Osteoporotic older adults with impairments in ADL and IADL have a 4.5-fold higher risk of falling.
Polypharmacy (Multiple Medication Use)	Polypharmacy in older adults is a significant factor that increases the risk of falling. The risk of falling among older adults with osteoporosis taking five or more medications is approximately three times higher than among those taking fewer medications. The use of sedatives and hypnotics also increases the risk of recurrent falls in women.
Fear of Falling (FoF) and Depression	Osteoporosis itself is associated with fear of falling (FoF), and this fear leads to limitations in daily life. Fear of falling is among the risk factors for falls in older adults with osteoporosis. Depression has been observed to increase the risk of falls 3.5-fold.
Gender and Age	The prevalence of osteoporosis increases with age and is higher in women. Age is strongly associated with an increased risk of falling. Women with osteoporosis have a higher risk of falling than men with osteoporosis.
Nutritional Status and Biochemical Factors	Malnutrition, low body mass index (BMI < 25), low hemoglobin levels, and folate deficiency are common among SOP patients. High serum calcium levels have been associated with a lower risk of falling in hospitalized older patients with osteoporosis. Calcium deficiency increases the risk of falls by causing muscle cramps and sensory disturbances.

Some studies suggest that osteoporosis itself may not directly increase the risk of falling, but it increases the risk of fracture in the event of a fall. However, osteoporosis has been significantly associated with recurrent falls, especially in older women. Higher BMD in patients with osteoporosis (especially in the total hip (TH) and femoral neck (FN) regions) is associated with a lower risk of falls. Meta-regression analysis has shown that low BMD at the hip and femoral neck in patients with osteoporosis is strongly associated with increased fall risk.

Preventive and Treatment Strategies

A comprehensive approach should be adopted to prevent falls and related fractures. Fracture prevention requires both pharmacological and non-pharmacological strategies. Optimizing nutritional status is a key strategy for preventing falls and fractures. Adequate calcium intake (1,000–1,200 mg/day) and vitamin D supplementation are important. Vitamin D deficiency leads to atrophy of type II (fast-twitch) muscle fibers, which are essential for preventing falls. Exercise can reduce the risk of falls when designed to improve balance and increase lower extremity strength. Moderate-intensity, multi-component physical activity (aerobic, balance, and strength training) has been reported to reduce the risk of falls by 22%.

Patients with a history of falls and a high risk of falling due to osteoporosis are classified in the very-high-risk-for-fracture group and therefore require a specialized and aggressive treatment approach to prevent fractures. These individuals are generally considered a subgroup of frail older adults who exhibit the SOP or OSO phenotype, characterized by the coexistence of osteoporosis, sarcopenia, and/or obesity. Sources indicate that individuals with OSO have a significantly higher prevalence of falls and vertebral fractures than those with osteoporosis, sarcopenia, or obesity alone. A history of falls is a critical predictor of future falls. In treating this high-risk population, bone anabolic agents (bone builders) should be preferred, as these agents reduce clinical and vertebral fractures regardless of patients' age and baseline bone mineral density (BMD). Teriparatide, a recombinant form of parathyroid hormone (PTH), increases bone formation, raises BMD, and may be particularly effective in rapidly restoring the microarchitecture and strength of the vertebral skeleton. Romosozumab is a novel therapeutic option that blocks sclerostin, thereby increasing bone formation and inhibiting bone resorption, resulting in a dual effect.

As a treatment strategy, it is recommended to initiate therapy with an anabolic agent and then switch to antiresorptive agents to maintain the bone gains achieved and provide long-term protection. For example, a bisphosphonate is typically recommended to preserve the skeletal response achieved following teriparatide treatment. Similarly, in very high-risk patients, use of an antiresorptive agent such as alendronate after romosozumab treatment is supported, particularly to prevent hip fractures. Bisphosphonates (e.g., zoledronic acid) have improved BMD even in the oldest, most comorbid, and frail individuals. Furthermore, some antiresorptive drugs may directly reduce the risk of falls; for example, denosumab has been observed to significantly reduce this risk compared with placebo. In addition to pharmacological treatment, non-pharmacological strategies to reduce the risk of falls are vital in the management of these patients; in this context, adequate calcium (1000 mg/day for postmenopausal women) and vitamin D supplementation, along with regular physical activity (exercise) programs to improve balance and lower extremity strength, are recommended.

Older patients should be assessed for fall and fracture risk, and appropriate measures should be taken. As part of a comprehensive geriatric assessment, conditions contributing to falls, including OSO, should be identified and managed.

In this high-risk population, implementing protocols to reduce the risk of falls is essential to lower morbidity and mortality rates. This is a fundamental step in the chain of measures to reduce the risk of fractures in patients with osteoporosis.

Investigation of the Effects of Progressive Cognitive Load on Upper Extremity Reaction Time Performance in the Geriatric Population

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Introduction:
Reaction time is the duration between a stimulus and the initiation of a motor response and serves as an important indicator of cognitive and motor functions. Changes in the nervous system due to aging affect reaction time. Reaction time is used to assess cognitive abilities such as attention, decision-making, and motor coordination in older adults. The aim of this study is to examine changes in upper extremity reaction time performance under progressive cognitive load in elderly individuals.

Methods:
In this study, reaction time of elderly participants was measured using the Reaction X device. Tests were conducted in three stages: dominant hand test (DET), free hand test (SET), and colored light test (RIT). DET involved the use of only the dominant hand, while SET involved the use of both hands including executive functions such as reasoning and decision-making. In the RIT, the task required participants to extinguish the device's light using the right hand for blue light and the left hand for red light, targeting attention and decision-making functions. Average reaction times and total test durations were recorded. Data were analyzed using the open-source statistical software JASP (Jeffreys's Amazing Statistics Program; JASP Team, Amsterdam, The Netherlands). Differences between the three tests were evaluated using the Wilcoxon signed-rank test.

Results:
A total of 42 elderly individuals participated in the study; mean age was 78.33 ± 8.08 years, including 22 males and 20 females. Forty participants were right-hand dominant and two were left-hand dominant. Significant differences in reaction times were found between SET-DET ($p=0.007$) and SET-RIT ($p=0.001$), while the difference between DET-RIT ($p=0.059$) was not significant. For test durations, significant differences were observed between DET-RIT ($p=0.024$) and SET-RIT ($p=0.001$), whereas the difference between SET-DET ($p=0.062$) was not significant.

Conclusion:
The findings demonstrate that reaction performance in elderly individuals varies under cognitive load in different ways. Notably, the colored light test increased cognitive load and significantly prolonged reaction and test times. Additionally, reaction time was found to vary depending on hand use and cognitive load level, with tests involving complex cognitive processes leading to increased reaction times.

Investigation of the Relationship Between Frailty, Balance, and Falls in Older Adults

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Introduction:

Frailty is a multidimensional clinical syndrome that increases vulnerability to adverse health outcomes in the geriatric population. It is characterized by a decline in physiological reserves across systems. This study aimed to investigate the relationship between frailty and physical fitness parameters, specifically balance and falls, in older adults.

Methods:

Seventy-two elderly individuals followed up at the Geriatrics Outpatient Clinic of the Aging Center were included in the study. Frailty was assessed using the Frail Questionnaire (FQ), and balance was evaluated by the right and left single-leg stance tests. Fall history and number of falls within the past year were recorded to assess falls. Statistical analyses were performed using JASP (JASP Team, Amsterdam, The Netherlands) software and nonparametric Spearman correlation tests were applied.

Results:

The male-to-female ratio of participants was 1:1. The mean age, height, and weight of participants were 77.62 ± 7.94 years, 158.05 ± 21.04 cm, and 72.22 ± 14.00 kg, respectively. Correlation analysis revealed that the FQ score was negatively correlated with left single-leg stance balance ($r = -0.411$, $p = 0.022$) and not significantly correlated with right single-leg stance balance ($r = -0.24$, $p = 0.166$). Positive significant correlations were found between FQ and fall history in the past year ($r = 0.393$, $p = 0.009$) as well as the number of falls ($r = 0.360$, $p = 0.018$).

Conclusion:

Frailty in geriatric individuals is a multifactorial concept that includes fatigue, endurance, ambulation, presence of diseases, and weight loss as subparameters measured by the FQ. In this study, a significant negative correlation was observed between frailty and left single-leg balance, while positive correlations were found with fall history and fall frequency. Since frailty is closely related to balance ability and fall history, rehabilitation programs for frail elderly individuals should consider balance improvement and fall prevention strategies as key treatment goals.

A Multicomponent Workshop Model Cultivating Social Connection and Psychosocial Well-Being in Older Adults with Mild Cognitive Impairment: İleriyaşatölyesi

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Introduction

Older adults with mild cognitive impairment (MCI) often face reduced social interaction, loneliness, and loss of engagement in meaningful activities. While physical exercise, creative activities, and psychoeducation have shown individual benefits, few programs integrate these components in a single, community-based structure. Most interventions focus on cognitive or physical outcomes, often overlooking the social dimension. To address this, we developed the "İleriyaşatölyesi" program—a multicomponent workshop model including physical activity, art-based sessions, and educational modules. This study focuses on its short-term social outcomes, including enjoyment, satisfaction, quality of life, and connectedness.

Methods

A single-group, pre–post intervention design was used to evaluate the psychosocial effects of the eight-week "İleriyaşatölyesi" program. Twenty-nine older adults with MCI participated voluntarily. Sessions, held once or twice weekly ($\approx$5 hours), were delivered by a multidisciplinary team. The intervention included group-based physical activities (e.g., music-assisted exercise, exergaming, Pilates), creative workshops (e.g., calligraphy, candle making, culinary arts), and educational sessions (e.g., fall prevention, caregiving support). Psychosocial outcomes were assessed using CASP-19 (quality of life), PACES-S (enjoyment), a semi-structured satisfaction questionnaire, and brief post-session interviews. Qualitative data were analyzed thematically and lexically using CATMA.

Results

Participants reported high enjoyment across all sessions (PACES-S: 52.37–54.89). CASP-19 showed a positive trend in quality of life, though not statistically significant ($p = .208$). All participants expressed willingness to rejoin, and most reported trying new activities and forming new social connections. Qualitative analysis revealed five key themes: emotional well-being, social engagement, perceived health benefits, lifelong learning, and sustainability.

Lexical analysis highlighted frequently used words such as "life," "health," "communication," and "students."

Conclusion

The "İleriyaşatölyesi" program, a multicomponent community-based intervention, demonstrated positive short-term effects on social connection, enjoyment, and perceived psychosocial well-being in older adults with mild cognitive impairment. High levels of participation, satisfaction, and engagement across physical, creative, and educational sessions suggest that holistic, group-based approaches can foster meaningful interaction, emotional expression, and a sense of belonging. These findings highlight the importance of integrating social dimensions into community programs aimed at promoting healthy aging and cognitive resilience.

Denge ve Yürümenin Evrimi

Hilmi Uysal

İnsanın temel ayırt edici özelliklerinden belki en başta geleni iki ayaklı yürüyen bir canlı olmasıdır. İki ayaklı yürüyebilme özelliğimizin anlaşılası düşme ve yürüme bozuklukları gibi sık karşılaşılan sağlık sorunların çözümü açısından çok önemlidir. İki ayaklı yürümenin iyi anlaşılabilmesi içinde onun evrimsel sürecinin bilinmesi gereklidir. Evrimsel biyoloji ve Evrimsel Tıp bilgileri bu konuda bir hekime aydınlatıcı ve konunun derinliğini anlamasını sağlayacak bilgiler vermektedir. İki ayaklı yürüme olarak tanımlasak ta yürüme döngüsünün önemli bir parçası tek ayak üzerinde yükü aktarmaya dayanır. Bunun ters sarkaç modeli olarak tanımlayabiliriz. Yükün ileri aktarılması bir tür düşmeye benzer ve ters sarkaç gibi salınım ile gövdemizi ileriye taşırız. Bizler aynı zamanda koşabilen bir türüz. Koşma tamamen tek ayak basışa dayanan bir hareket biçimidir. Bu da yay kitle aktarımı olarak modellenir. Sonuçta insan hem iki ayaklı yürüyebilen ve tek ayağa dayanan biçimde koşan bir türdür. Öncelikle yaklaşık 3-4 milyon yıl gibi çok eski zamandan beri iki ayaklı yürüme özelliği taşıyan atalarımıza rastlıyoruz. Bunun çok iyi belirlenmiş ve kanıtlanmış bulgularına sahibiz; Leatoli buluntusunun tarihlenmesi 3.7 milyon yıl öncesine Australopithecu afarensis'e aittir. Homo sapiens sapiens ise yaklaşık 70.000 yıl önce Afrika'dan göç ettikten sonra geri kalan 50.000 yıl içinde Dünya üzerinde adım atmadığı yer kalmamıştır, hem de iki ayaklı olarak. Yürüme hareket biçiminin dayandığı mekanik başarılardan birisi de dengedir. 1.6-1.8 m yüksekliğindeki bir gövdenin ayak tanabına dayanacak şekilde vertikal tutulabilmesi ileri denge poblemi çözümünü gerektirir. İşte bunu başaran öncelikli sinir sistemi parçası da Serebellumdur. Serebellemun olmadığı genetik mutasyonlu Üner Tan olgularında serebeller patolojinin olduğu gösterilmiştir. Serebellumun evrimi de en az yürümenin tarihi kadar eskiye dayanır ve ilk serebelleuma bundan yaklaşık 400.000 milyon yıl önceki çeneli balıklarda rastlıyoruz ve ne mutlu ki onlara ait de fosil bulgularımız bulunmakta. Literatürde en eski beyinciğin gösterildiği fosil çok yakınlarda tanımlandı ve 319 milyon yıl öncesine ait bir canlıya, 'Coccocephalus wildi' ye ait olduğu gösterildi. (Nature, Volum 614, 16 February 2923). Konuşmada böylece bir özet ardından şu sonuçlara ulaşılacaktır; Homo sapiensin iki ayaklı yürümesi ile sonuçlanan bir seçilim baskısı altında olduğunu, İkiayaklı yürüme ile bağıntılı olarak çok sayıda adaptasyonlar geçirdiğini, Serebellumun evriminin yürümeden bağımsız bir yol izlediğini ve su içindeki dengeli ince hareketlerin başarılmasındaki evrimsel bir basmak olduğunu, İki ayaklı yürümenin ileri denge probleminin çözülmesini içerdiğini, DengeninHomo sapiens sapiens için iki ayaklı yürümedeki becerinin temel parçası haline geldiğini, Evrimsel öyküsünü bilerek ayaklarımız ve dengemizin değerini attığımız her adımda bir kez daha anımsayalım ve günlük egzersizlerimizi eksik etmeyelim. Çünkü geriatrinin en sık ve en zor sorunları, yürüme, denge ve düşme ile bağıntılıdır, Beyincik diğer tüm beyin bölümleri içinde en geç yaşlanan yapıdır!

Essential Tremor in Older Adults: A Focus on Geriatric Syndromes Beyond Motor Symptoms

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Falls are one of the most common and preventable geriatric syndromes in older adults, representing a significant global public health concern. They are the second leading cause of unintentional injury-related deaths worldwide and are a major factor in emergency admissions, hospital stays, fractures, functional decline, and institutionalization among seniors. Falls result from a complex interaction of intrinsic factors—including age-related declines in balance, gait, vision, proprioception, cognition, and muscle strength; chronic health conditions; multiple medications; and orthostatic hypotension—and extrinsic factors such as environmental obstacles, inadequate lighting, unsafe footwear, and inappropriate home design. The impact of falls extend beyond physical injuries, causing fear of falling, decreased mobility, social isolation, and reduced quality of life. Evidence-based approaches focus on comprehensive geriatric assessment and multi-component interventions that include strength and balance training, medication optimization, vitamin D supplementation, treatment of comorbidities, environmental modifications, footwear assessment, and fracture risk reduction. Emerging digital technologies, including wearable sensors and machine-learning–based fall detection systems, offer additional support for prevention and monitoring. Adopting a multidisciplinary approach is essential to reduce fall risk, preventing recurrent falls, and enhancing health outcomes in high-risk older adults.

Phenomenological Approach to Movement Disorders
HALİL GÜLLÜOĞLU

Movement disorders are neurological conditions defined fundamentally as abnormalities of voluntary and automatic movements that occur without primary muscle weakness or spasticity, and that manifest with either decreased or excessive movements. Decreased movement is often described interchangeably as hypokinesia (reduced amplitude of movement), bradykinesia (slowness of movement), or akinesia (loss of movement); increased movement is expressed as hyperkinesia (excessive movements) and dyskinesia (abnormal movements) or "abnormal involuntary movements." For diagnosis and differential diagnosis, the clinical picture must be evaluated thoroughly, identifying the characteristic features of present normal and abnormal movements to determine the most appropriate classification.

HYPOKINETIC MOVEMENT DISORDERS

Akinesia/Bradykinesia

The terms akinesia, bradykinesia, and hypokinesia respectively describe absence of movement, slowness of movement, and decreased amplitude of movement. These three are generally expressed under the umbrella term *bradykinesia*. Bradykinesia is the most important component of parkinsonism and is considered essential for diagnosis.

Although akinesia literally means absence of movement, it is sometimes used to mean a severe form of bradykinesia. Bradykinesia manifests as generalized slowness of movement and impaired fine motor skills requiring dexterity. Features include hypomimia (masked facies) in the face, hypophonia, monotonous and reduced-prosody speech (aprosody), drooling due to reduced spontaneous swallowing; slowed or reduced blinking. In the trunk, bradykinesia presents with difficulty rising from chairs, turning in bed, getting in or out of a car, and reduced/slow shoulder elevation on examination. In the extremities, it manifests as slowing of all voluntary limb movements, reduced spontaneous gestures, micrographia, impaired fine motor tasks, and foot movement abnormalities reflected in gait. Bradykinesia is best demonstrated during gait: reduced arm swing, decreased step length and height, shuffling gait.

In idiopathic Parkinson's disease (PD), like all other motor features, it begins asymmetrically on one side of the body and always progresses asymmetrically. Symmetric findings, in contrast, often suggest secondary causes of parkinsonism and aid differential diagnosis. A key characteristic of bradykinesia is that both movement amplitude and speed progressively decline with repetitive movements, regardless of parkinsonism etiology.

Rigidity

Rigidity is increased muscle tone detected during passive movement across any joint and is one of the cardinal diagnostic findings of parkinsonism. It is distinguished from spasticity by being equal during both flexion and extension and lacking the clasp-knife phenomenon. Rigidity generally causes restricted joint mobility and is more marked distally. Because it is equally present in all directions, it is referred to as "lead-pipe rigidity." Proximal rigidity can be detected by reduced shoulder swing (Wartenberg sign) or diminished hip rotation. Rigidity may be aggravated by contralateral voluntary movement (Froment's sign). Cogwheel rigidity occurs when rigidity is interrupted by rhythmic oscillations at the frequency of the rest tremor.

Postural Instability

Loss of postural reflexes is, along with freezing of gait, one of the most frequent causes of falls in parkinsonism. Clinically it is assessed with the "pull test," where taking multiple steps or failing to take corrective steps after a pull indicates postural instability. Care must be taken to avoid falls during the test. Since postural instability is a late feature of PD, its early presence supports atypical parkinsonism or vascular parkinsonism.

When combined with a flexed posture, the forward shift of the center of gravity leads to *festination*—progressively accelerating forward gait—especially downhill. Severe festination, together with freezing, greatly increases fall risk.

Freezing

Freezing is a transient cessation of movement, especially gait, and is considered a form of akinesia. Movement halts due to simultaneous isometric contraction of agonist and antagonist muscles. It is most common in PD, vascular parkinsonism, and Parkinson-plus syndromes. Although typically affecting the legs during gait initiation, turns, narrow spaces, or approaching targets, it can also affect upper limbs or speech. Patients often develop tricks such as stepping over cues, using rhythm, rocking in place, or stepping with verbal cues to

overcome freezing. In PD, freezing occurs in advanced disease, whereas in atypical parkinsonism it occurs earlier.

Blocking Tics

Blocking tics are motor phenomena that interrupt ongoing movement or speech. The patient remains conscious and aware but cannot continue speaking. Called "negative tics," the patient momentarily halts an ongoing action while maintaining awareness. This feature differentiates it from absence seizures. Blocking may accompany prolonged tics (prolonged dystonic tics) or appear as a distinct tic.

Cataplexy and Drop Attacks

Drop attacks are sudden falls with or without loss of consciousness due to collapse of postural tone or abnormal leg contractions. Two-thirds are idiopathic. Neurological causes include leg weakness, PD freezing, transient ischemic attack, epilepsy, myoclonus, startle responses, paroxysmal dyskinesias, structural CNS lesions, and hydrocephalus; non-neurological causes include syncope and cardiovascular disease. Cataplexy—a component of narcolepsy—consists of sudden loss of muscle tone triggered by emotions or occurring spontaneously, without loss of consciousness.

Catatonia – Psychomotor Depression – Obsessional Slowness

Catatonia describes patients who, while awake, are immobile, rigid, mute, expressionless, and staring. They do not respond to stimuli or show willingness to act. However, some spontaneous actions such as scratching may be rapid. Cogwheel rigidity, freezing, and loss of postural reflexes are absent. Seen in schizophrenia, bipolar disorder, PTSD, depression, and substance use. Depression often leads to psychomotor slowing. Catatonia and depressive slowing lack rigidity, postural instability, or persistent glabellar reflex (Myerson sign), helping distinguish them from parkinsonism. Severe OCD can cause profound slowness ("obsessional slowness") but lacks tremor, freezing, or postural instability.

Hypothyroid Slowness

Severe hypothyroidism causes reduced metabolic rate, low body temperature, bradycardia, myxedema, hair loss, myotonia, motor slowing, weakness, and lethargy. Associated systemic signs and absence of rigidity and postural instability distinguish it from bradykinesia.

Cautious Gait

Seen mostly in older adults, characterized by wide-based, small-step gait due to fear of falling and perceived instability. It improves with support and lacks other signs of parkinsonism. Also seen in psychogenic gait disorders and frontal gait disorders. Frontal gait disorders show initiation difficulty, freezing on turns, small-step gait, symmetric slowness, and exaggerated arm swing.

Stiff Muscles

Stiff muscles occur due to continuous muscle activation unrelated to spasticity, rigidity, or myopathy. "Stiff person spectrum disorders" include neuromyotonia, stiff-limb syndrome, stiff-person syndrome, and progressive encephalomyelitis with rigidity. Neuromyotonia features continuous muscle activity leading to stiffness and cramps. Stiff-person syndrome involves painful, fixed contractions of axial and proximal muscles.

HYPERKINETIC MOVEMENT DISORDERS

Tremor

Tremor is a rhythmic, oscillatory involuntary movement of a body part due to alternating or synchronous activation of antagonist muscles. It is classified broadly into rest tremor and action tremor. Action tremor may be postural or kinetic; intentional tremor increases as the target is approached.

Tremors are classified by frequency: low (<4 Hz), medium (4–7 Hz), and high (>7 Hz). Amplitude ≥4 cm is considered high-amplitude.

Physiological tremor is a high-frequency (10–12 Hz), low-amplitude tremor present in all healthy individuals but normally invisible. It becomes prominent with sympathetic activation, anxiety, fatigue, hypoglycemia, withdrawal states, thyrotoxicosis, fever, pheochromocytoma, and certain drugs.

Essential Tremor (ET)

ET presents most commonly with bilateral, largely symmetric postural or kinetic tremor of the hands/forearms but may vary. It increases at the end of goal-directed actions. Tremor may affect hands (97%), voice (62%), head/neck (48%), jaw, tongue, trunk, or legs. Isolated head

tremor may occur but requires differentiation from dystonic tremor. Head tremor favors ET; jaw/lip tremor favors PD; ataxia/dysmetria or proximal tremor suggests cerebellar disease. Voice tremor must be distinguished from spasmodic dysphonia. ET usually improves with small amounts of alcohol and does not worsen with caffeine.

Primary writing tremor is a task-specific pronation–supination tremor (5–6 Hz) occurring during writing or pronated hand posture.

Dystonic Tremor

Arises from dystonic contractions, is irregular, jerky, and position-dependent. Often associated with focal dystonias (blepharospasm, cervical dystonia, spasmodic dysphonia). May be task-specific.

Orthostatic Tremor

Occurs when standing, affecting legs and trunk. Classic OT is a 13–18 Hz tremor with unsteadiness; slow OT (<12 Hz) occurs in PD and cerebellar lesions.

Cerebellar Tremor

A low-frequency (3–4 Hz) postural, action, or intentional tremor with ataxia and dysmetria.

Neuropathic Tremor

Occurs in large-fiber neuropathies (CIDP, hereditary neuropathies, GBS recovery).

Intention Tremor

Increases as a target is approached, often due to MS, midbrain lesions, stroke, Wilson's disease, cerebellar degeneration, or mercury toxicity.

Rest Tremor

Most common in PD and other parkinsonian syndromes. Appears at rest and is suppressed by voluntary movement. PD tremor is unilateral initially, 4–6 Hz, "pill-rolling," worsened by contralateral movement or mental distraction. Lip, face, or jaw tremor occurs, but head tremor is rare in PD. Tremor may re-emerge after adopting a posture ("re-emergent tremor").

Holmes Tremor

A combination of rest, postural, and intention tremor at ~4.5 Hz due to midbrain lesions involving cerebellothalamic pathways.

Palatal Tremor

Essential form produces ear-clicking; symptomatic form is associated with inferior olivary nucleus hypertrophy and may include ocular movements.

Psychogenic Tremor

Characterized by abrupt onset, variability, inconsistency, distractibility, and entrainment with voluntary rhythmic movements.

Athetosis

Slow, writhing, twisting, continuous movements often seen in athetotic cerebral palsy due to basal ganglia injury. Usually affects distal extremities and tongue but may involve trunk, neck, and face. Movements are non-rhythmic and distinguishable from tremor, stereotypy, chorea, and myoclonus. "Pseudoathetosis" occurs with proprioceptive loss, usually indicating spinal lesions.

Chorea

Irregular, purposeless, non-rhythmic, rapid involuntary movements involving face, limbs, or trunk, with random timing and distribution. Distinguished from tics, dystonia, myoclonus, and tremor by unpredictability and variability. Prototypically seen in Huntington's disease. Motor impersistence is characteristic (inability to sustain a posture).

Ballismus

High-amplitude, flinging movements affecting proximal limbs, usually unilateral (*hemiballismus*), often due to contralateral subthalamic nucleus lesions or hyperglycemia.

Dystonia

A movement disorder characterized by sustained or intermittent muscle contractions causing abnormal postures or repetitive twisting movements. Contractions have a consistent directional pattern due to co-contraction of agonist and antagonist muscles. Movements may be fast (myoclonic dystonia) or slow (athetoid dystonia). Dystonia worsens with action and

decreases with rest, sleep, or relaxation. Sensory tricks (*geste antagoniste*) can improve symptoms. Can be focal, segmental, multifocal, hemidystonic, or generalized. Task-specific dystonia includes writer's cramp and musician's dystonia.

Hemifacial Spasm

Unilateral, repetitive, brief or sustained facial muscle contractions, usually involving both upper and lower facial muscles. Differentiated from blepharospasm and oromandibular dystonia by distribution and eyebrow elevation patterns.

Hyperekplexia

Exaggerated startle response to unexpected auditory or tactile stimuli, familial or sporadic. Distinguished from psychogenic responses by immediate reaction without delay.

Painful Legs–Moving Toes Syndrome

Characterized by burning limb pain with slow, irregular, involuntary toe movements (1–2 Hz). Movements may persist during light sleep. Distinguishable from restless legs syndrome.

Myoclonus

Sudden, brief, shock-like jerks due to muscle contraction (positive) or inhibition (negative). Asterixis is a classic negative myoclonus. Myoclonus can be rest-related or action-induced. Action myoclonus is often cortical (e.g., Lance–Adams syndrome). May be rhythmic (segmental or spinal myoclonus) or arrhythmic. Can be drug-induced (e.g., gabapentin, pregabalin).

Myokymia and Synkinesis

Myokymia: continuous undulating muscle contractions ("worm-like"), often due to pontine demyelination or tumors.
Synkinesis: involuntary movement in one facial region during voluntary movement of another, typically after aberrant facial nerve regeneration.

Paroxysmal Dyskinesias

Episodic dystonic or choreoathetoid movements lasting seconds to hours. Main types include:

- **PKD (Paroxysmal Kinesigenic Dyskinesia):** brief (<1 min), frequent, triggered by sudden movement; often genetic.
- **PNKD (Paroxysmal Non-Kinesigenic Dyskinesia):** longer (10–60 min), triggered by alcohol, caffeine, fatigue.
- **PED (Paroxysmal Exercise-Induced Dyskinesia):** triggered after prolonged activity.
- Formerly paroxysmal hypnogenic dyskinesia, now considered familial nocturnal frontal lobe epilepsy.

Restless Legs Syndrome (RLS)

Characterized by sensory discomfort in the legs at rest, worse in the evening/night, relieved by movement. Motor restlessness includes rubbing legs, stretching, tapping. Periodic limb movements during sleep (PLMS) support diagnosis.

Stereotypy

Repetitive, patterned, purposeless movements that can last seconds to minutes, often suppressible by distraction. Occur physiologically in young children or secondary to autism, intellectual disability, or sensory deprivation. Can resemble tics or compulsions. Continuous stereotypies include tardive dyskinesia (oro-bucco-lingual movements).

Tics

Sudden, repetitive, stereotyped motor movements or vocalizations, often preceded by an urge and temporarily suppressible. Simple motor tics include eye blinking, shoulder shrugging; complex tics include patterned sequences such as touching or elaborate gestures. Vocal tics range from throat clearing to coprolalia. Differentiated from chorea, dystonia, and myoclonus by suppressibility, premonitory urges, and stereotyped patterns.

Micronutrient deficiencies in preventing falls

Feyza Mutluay

According to the World Health Organization, malnutrition includes micronutrient deficiencies or inadequacies, as well as undernourishment and obesity. While the prevalence of malnutrition is 5% among older adult individuals in the community, this rate increases to 20% in nursing homes and up to 40% in hospitals. Malnutrition in seniors typically presents as unintentional weight loss or a low body mass index. However, micronutrient deficiencies are harder to detect and are often missed in community-dwelling older adult individuals. Micronutrients such as vitamins B12 and B1 (thiamine), folic acid, vitamin D, vitamin A, vitamin C, iron, magnesium, and zinc help maintain biological functions and overall health throughout life. They support mineral and fluid balance, regulate pH levels, and help maintain homeostasis by serving as cofactors for many enzymes. Studies support the link between vitamin D deficiency and issues like balance problems, falls, reduced functional capacity, sarcopenia, bone pain, muscle weakness, higher fracture risk, and frailty. The World Falls Guidelines for Prevention and Management of Falls in Older Adults recommend evaluating nutritional status—including vitamin D intake—as part of a comprehensive fall risk assessment, and suggest supplementation when necessary (GRADE: E). These guidelines also strongly advise optimizing nutrition with calcium- and protein-rich foods and vitamin D supplements as part of a multidisciplinary approach to prevent falls in nursing home residents (GRADE: 1B).

Vitamin B12 deficiency anemia is believed to be linked to a higher risk of falls and hospitalizations. More extensive studies are needed to clarify the connection between micronutrients like folate, vitamin C, vitamin A, ir

on, magnesium, and zinc and falls.

AGE-RELATED CHANGES IN LOCOMOTOR CONTROL OF BALANCE AND GAIT

Nihal Gelecek

Balance and gait constitute the most fundamental functions of daily life. The locomotor system components associated with balance and gait include the central and peripheral nervous systems, sensory systems (proprioceptive, vestibular, and visual), and the musculoskeletal system. The nervous system is responsible for planning, coordinating, and controlling movements related to balance and gait. Sensory systems provide the sensory inputs necessary for maintaining balance and gait. The musculoskeletal system enables joint movements, joint stabilization, postural control, and environmental adaptation.

Balance is defined as the maintenance of the body's center of gravity and line of gravity within the boundaries of the base of support. Moreover, balance is a complex motor skill that enables maintaining the spatial orientation of body segments during static postures and modifying and re-establishing this orientation during dynamic movements. Three types of balance have been identified: static, reactive (dynamic), and proactive. To maintain balance, the center and line of gravity must remain within the base of support. When changes occur in these physical conditions, the body utilizes three primary strategies: the ankle strategy, the hip strategy, and the stepping strategy.

Gait is defined as the cycle that begins with the heel strike of one foot and ends with the subsequent heel strike of the same foot, consisting of two fundamental phases: the stance phase (approximately 60%) and the swing phase (approximately 40%). While the spatial characteristics of normal gait show minor differences between adult women and men, step length typically ranges from 65–75 cm, step width from 8–10 cm, and the base of support from 5–10 cm. Studies indicate the following temporal characteristics: walking speed of 1.2–1.4 m/s, cadence of 100–120 steps/min, single support time of 38–40%, and double support time of 20–24%.

With aging, particularly in advanced age, significant alterations occur in many aspects of balance and gait. Sarcopenia leads to a decline in strength and endurance, especially in antigravity muscles, resulting in a kyphotic posture and flexed lower extremity alignment.

Consequently, the center of gravity shifts anteriorly, increasing the forward flexion moment and energy expenditure. Maintaining balance becomes more difficult, and fall risk increases in older adults. Although the base of support may widen with aging, impaired proprioception in the ankles, plantar surface, and toes makes it difficult to regulate pressure distribution within the support base. Age-related sensory deterioration in proprioceptive, visual, and vestibular systems heightens postural sway and causes delays in balance strategies.

Sarcopenia, osteoporosis, and increased connective tissue stiffness alter both the spatial and temporal characteristics of gait with aging. In older adults, step length, cadence, and walking speed decrease, whereas step width, double support time, and total gait cycle duration increase. These combined deteriorations in the central nervous system, sensory systems, and musculoskeletal system reduce energy efficiency, increase fatigue, impair balance, and ultimately contribute to a more sedentary lifestyle in older adults. Frailty increases, along with morbidity and mortality.

Evaluation of Falls and Movement Disorders in Comprehensive Geriatric Assessment (CGA)

Süleyman Emre Koçyiğit

Falls and balance disorders constitute a major domain of the Comprehensive Geriatric Assessment (CGA) and represent multifactorial geriatric syndromes with substantial impact on morbidity, functional decline, institutionalization, and mortality in older adults. Contemporary evidence on the epidemiology, pathophysiology, and diagnostic evaluation of fall risk highlights the complex interplay of neuromuscular degeneration, sensory deterioration, cognitive impairment, and cardiovascular instability. Mechanistic pathways—including age-related sarcopenia, impaired proprioception and vestibular function, executive dysfunction, autonomic dysregulation, orthostatic hypotension, visual impairment, and polypharmacy-related gait destabilization—are examined within an integrated framework linking physiological decline to changes in gait variability, postural sway parameters, dual-task performance, and reactive balance responses. Advanced assessment modalities such as instrumented gait analysis, spatiotemporal gait metrics, wearable inertial sensor–based quantification, computerized posturography, and cognitive-motor interference paradigms contribute to precision phenotyping and high-resolution stratification of fall risk in older adults.

A further emphasis is placed on the translation of diagnostic findings into individualized, evidence-based management approaches. Multicomponent interventions—including targeted resistance and balance training, perturbation-based rehabilitation, vestibular therapy, cognitive-motor dual-task exercises, vision optimization, vitamin D supplementation when indicated, and structured medication deprescribing—are evaluated for their efficacy and feasibility in various clinical settings. The influence of frailty severity, multimorbidity burden, inflammatory profiles, and neurocognitive status on treatment responsiveness is also discussed. Additionally, the roles of environmental risk modification, assistive technologies, and continuous remote monitoring systems are highlighted for reducing recurrent fall risk and enhancing long-term functional stability. This abstract underscores the importance of a multidimensional, mechanism-oriented approach to falls and balance disorders within CGA, emphasizing early detection of high-risk phenotypes and sustained interdisciplinary management to optimize mobility trajectories in older adults.

Falls and Movement Disorders at YAŞAM (Healthy Aging Center)

Bilal Katipoğlu

The rapid demographic transition toward an aging society has brought renewed attention to the importance of maintaining functional ability, autonomy, and quality of life in advanced age. Falls, gait disturbances, and movement disorders constitute a major public health challenge in this context, as they are closely associated with frailty, multimorbidity, cognitive vulnerability, and nutritional decline. Evidence from recent international studies consistently shows that community-based, integrated, and person-centered care models are essential to address these multifactorial risks. The YAŞAM (Healthy Aging) Centers represent a significant step in this direction by offering accessible health services, structured home-based medical care, telemedicine options, and coordinated support systems for individuals aged 65 and older—particularly those above 80. Built on comprehensive geriatric assessment, multidisciplinary teamwork, individualized care planning, and continuity of care, this model seeks not only to detect and manage geriatric syndromes early but also to prevent functional decline before it becomes irreversible. Through routine evaluation of cognition, mood, balance, nutrition, and daily functioning—with tools such as the Katz Index, Lawton scale, frailty measures, Mini-Cog, MNA, and performance-based mobility tests—the system enables high-resolution clinical profiling that can guide timely and targeted interventions.

Falls and mobility problems, in particular, require a structured clinical response, as they predict emergency admissions, hospitalization, institutionalization, and increased short-term mortality. Within YAŞAM Centers, preventive strategies are supported through standardized educational materials, aerobic and balance-focused exercise programs, nutritional supplementation when indicated, and psychosocial interventions tailored to cognitive and mood status. This proactive, algorithm-driven approach operationalizes the concept of "aging in place," ensuring that older adults can remain safely within their communities with the highest level of functional capacity possible. Current evidence, including classic work by Robertson and Gillespie, demonstrates that multicomponent fall-prevention programs can lead to substantial reductions in fall incidence among community-dwelling older adults. The YAŞAM model aligns with this global scientific framework and provides a scalable, data-driven infrastructure capable of reshaping geriatric care in Turkey. By integrating home-based

services with community resources and emphasizing function-preserving strategies, it offers a roadmap for healthier, safer, and more dignified aging in the decades ahead.

Falls in patients with MS

Samantha Banks

Introduction and purpose
Falls are common among people with multiple sclerosis and are under-reported in clinician notes, and associated with greater morbidity in people with MS than healthy controls and are associated with a great cost. In this talk we review the causes for falls among people with MS, as well as strategies for identifying fall risk and intervention. The reasons for falls in people with MS are heterogenous and related to focal demyelination and typical aging. Clinical assessment of fall risk may be done with questionnaire or functional testing. History of falls in the last year are strongly associated with future falls.

Methods and Results
This talk focused on a recently published fall risk model (PMID: 40292035) based on survey and gait testing. We identified patients who fell in the last year were typically older, had progressive multiple sclerosis, higher disability scores, and more frequently used a gait aid. Where we will gait testing identified those who had fallen had slower gait speed, more time and double support and larger sway area. A fall risk model was created based on the use of a gait aid and time 25 ft walk for assessment of fall risk.

Findings and future steps
This study demonstrated a clinically useful model to identify patients at risk of falls. Studies suggest exercise may reduce future fall risk in people with multiple sclerosis but there is otherwise limited evidence to guide intervention in his population. Therefore, an individualized approach should be taken to reducing fall risk in people with MS, focusing on individual patient factors.

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Movement Disorders and Falls in Geriatric Practice

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One of the most essential yet complicated geriatric syndromes, falls contribute significantly to a large global burden of morbidity, mortality, functional decline and health service use. Older adults aged 65 and over living in the community experience at least one fall a year (1, 2). This is true for 1 in 3 older adults. Nearly half or 1 in 2 older adults aged 80 and over falls a year. According to recent retrospective data from İzmir, Türkiye, 2037 older adults presented to an emergency department due to falling in a year; however, very few had fall-risk documentation or structured discharge counselling (3). The systematic lack of preventive care highlights a gap while showcasing the need for evidence-based individualised interventions. Falls require a clinical multifactorial assessment since they occur as a result of a complex interaction of physiological, psychological, environmental and pharmacological factors. The older adult individuals who present to emergency departments are, however, rarely given comprehensive assessments, counselling or referrals for preventive services at any time. This is a missed opportunity to identify modifiable risk factors. Moreover, it could also prevent any early intervention (3, 4).

Improving our understanding of fall prevention strategies will help us address the gap. According to the level of individualization used, fall-prevention interventions are generally categorized under single, multiple and multifactorial interventions (5, 6). Single interventions focus on addressing just one risk factor. In contrast, multiple interventions employs a fixed combination of components that will be applied to all participants. In contrast, multifactorial interventions select their components based on an individualized fall-risk assessment (7). By integrating these stratified models into routine emergency and primary care, patients could be given strategies tailored to their specific risk profiles, which could help close the gap from current practice.

To be effective, these interventions must be informed by a multidisciplinary team geriatric assessment. Risk factors associated with falls are classified as "intrinsic" or "extrinsic". As for the intrinsic causes, they may be further classified depending on whether there was loss of consciousness associated or not. Older adults who faint and fall are typically unaware of the event, making diagnosis and treatment difficult (8). High-level fall risk factors that can lead to falls can occur for a variety of reasons. Native contributors include polypharmacy, anemia, reduced physical activity, fear of falling, frailty and CNS disorders i.e. stroke, cognitive impairment, epilepsy, Parkinsonism, and hydrocephalus. The presence of vestibular

dysfunction, depressive symptoms, and an underlying structural spinal disorder like stenosis or compression fracture also plays a role. Visual impairments and cardiopulmonary problems, which raise the propensity to fall, are issues with bladder and bowels, inappropriate or dangerous use of assistive devices. The risk of falling is significantly influenced by factors such as renal electrolyte disturbance, dehydration, musculoskeletal conditions including sarcopenia, osteoporosis and arthritis, and peripheral nervous system disorders which include neuropathy, sensory loss, diabetic foot pathology, reduced nerve conduction and impaired proprioception. Footwear selection along with edema or weakness of the tibialis anterior can worsen gait instability. As one can see, it is not enough to just do balance exercises. Having a multifactorial cause means one will need a specific treatment for the condition(8-10).

For instance, an older adult who takes analgesics for chronic pain, a hypoglycaemic agent for diabetes and a mucolytic for airway clearance may have drug-drug interactions that lead to a fall. This risk would not be reduced by restricting therapy to balancing training. Incorporation of pain management, aerobic and strengthening exercises for glycemic control, and pulmonary rehabilitation may be more effective. Since lot of older adults don't report their falls or seek care after falling, opportunistic case-finding is essential. It is also important to engage people in discussions about their beliefs, worries and priorities regarding falls and ensure that interventions are compatible with local facilities and cultures (11-14).

Physical inactivity is a well-established risk factor of many non-communicable diseases. When you exercise regularly, it is good for your body. It can help one to prevent diseases like type 2 diabetes, obesity and hypertension. Also, regular physical activity can help manage related cardiovascular risks. Studies have shown that multi-faceted intervention programs can reduce the risk of falling, however, the evidence is less clear as to which forms of exercise should be recommended. Given the emerging evidence, it is now important to review this topic. It is essential to assess preventive interventions in healthy older adults, as doing so helps reveal the true potential of these interventions (1, 8, 15, 16).

Research supports exercise as a primary intervention to prevent falls, but there is uncertainty about the best exercise type and mix. The variability observed illustrates the differences in how falls occur and that exercise should be person-specific (1, 7, 9). Many large fall-prevention trials have safe, low-intensity exercises which do not challenge enough nor address individual impairments. Although aerobic exercise has the potential to alter the risk factors for falling, its influence on cardiovascular health and muscle-skeletal health is yet to be understood. According to the meta-analysis, exercise is associated with a 23% reduction in fall rates, which translates to an approximate risk prevention of about 195 falls per 1000 falls expected. It is also associated with a 15% reduction in the number of fallers, which means the prevention of about 72 fallers per 1000 people (17).

Subsequent analyzes show that exercise, while preventing more falls among high-risk groups, is similarly effective across risk groups. The effectiveness of the intervention is not significantly

influenced by age or delivery format. Interventions that are led by a professional are associated with a greater reduction compared to those of trained non-professionals (18). Programs that focus on balance and functional training are consistently effective, but the multicomponent programs that involve balance, functional and resistance training are well proven. However, there is limited evidence for interventions restricted to walking, isolated resistance training or dance (17, 18).

Exercise-based fall prevention programs should be progressive, continuous, and delivered at an adequate intensity to achieve maximal effectiveness. Individuals at high risk, such as those with a history of falls or gait impairments, require close monitoring and may benefit from additional supportive services (19). Simply performing balance and strength training alone may be insufficient for optimal fall prevention. Effective programs should also include advanced neuromotor components—such as automatic postural adjustments, responses to internal and external perturbations, motor learning principles, reaction-time training, and strategies for safe falling and rising— to enhance functional stability and real-world mobility. Safety and balance are significantly improved which enhances the ability to be mobile in real-world settings(20).

Most fall prevention programs either utilize static balance exercises or external-perturbation protocols according to the literature (21). However, older adults fall frequently while walking and without external perturbation. The discrepancy suggests the conventional programs do not correlate with real life fall mechanisms. Static balance exercises may not produce muscular response needed for effective fall prevention (22). Training methods that induce internal disruptions, such as VR environments that require continuous sensory reweighting, could mitigate this impact and enhance a person's ability to respond to unexpected perturbations. Exercises involving a controlled loss of balance are often limited by safety issues. Suspension systems and aquatic therapy are safe training environments that allow participants to challenge their stability limits. This allows people to develop confidence as well as learning movement (23, 24).

Physical inactivity increases the risk of falling; in turn, a heightened risk of falls reinforces inactivity and fear of falling, creating a self-perpetuating cycle. When individuals believe they can protect themselves from falls through learned safe-fall techniques or improved protective responses, they are less likely to avoid physical activity. Therefore, fall-prevention programs should incorporate not only balance and strengthening exercises but also safe-fall and floor-rise training to enhance mobility, reduce psychological barriers, and promote functional independence.

Yaşlılarda Parasomni

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Parasomnia in Ageing People (Abstract)

Parasomnia is a clinical phenomenon which due to pathologic activation of autonomic nerve system and skeletal muscle system. Its contain complex/elementer movements, behaviours, emotions, dreams, or autonomic activities. The patients do not awake or aware during episode, but their action seems as a aware. The genetic predispotions, environmental factors, psychosocial stress and comorbidities, medicines, sleep related respiratory disorders, alcohol or substance usage may lead to episodes of parasomnia.

NREM parasomnias

- **Confusional arousal**
- **Somnambulism**
- **Sleep terrors**
- **Sleep related eating disorders**

REM parasomnias

- **REM behaviours disorders (RBD)**
- **Somnambulism**
- **Sleep terrors**
- **Sleep related eating disorders**

Other parasomnias
- **Exploring Head Syndrome**
- **Sleep related halusinations**
- **Enürezis nokturna**
- **Parasomnias due to medical disease**
- **Parasomnias due to alcohol and substance**
- **Unspecify parasomnia**

İzole semptom ve normal varyantlar
- **Catathrenia**

Parasomnia can be appeared during either non-REM sleep stage or REM sleep stage. Parasomnias appear in childhood more than adults. REM parasomnias appear frequently in elderly patients. The most important one is REM sleep behaviour disorders due to neurodegenerative disease. The prevalence of parasomnia vary between 4-67% in adults.

Somnambulism, sleep terrors, or confusional arousal are not differ among sex. Unless, nightmares appear in women more than men, and sexsomnia appear in men more than women. REM sleep behaviour disorders (RBD) appear frequently in men who are older than 50 years. On the other hand, It should be remember, RBD has a relation to alpha synucleinopathies such as Parkinson's disease, Lewy-body dementia, and multiple system atrophy. Parasomnias can also be seen higher frequency in psychiatric conditions like as, nightmares are 38.9%, sleep paralysis are 22.3%, sleep related eating disorders are 9.9%, somnambulism is 8.5%, RBD is

3.8%. First line approach for parasomnias is identify the comorbidities (such as, sleep apnea, or restless legs syndromes…etc.) and treat it. In addition, predisposing medicines (benzodiazepine receptors agonists, antidepressants, and antipsychotics, …etc.).

The most important issue in adult parasomnia is education for security of environmental and individual for patients and their bed-partners. Objects which may be harmful like as guns, sharp objects and sharp edge furniture should not put the available areas. The windows and doors should be locked, and the alarms should be set to warn when it is opened. Security of environmental is important for patients with RBD either patients or their bed partners. Extra pillows or soft silicon may put the sharp corner furniture and around the bed. In addition, separated bed may be better.

Psychotherapy may be helpful for treatment on most of parasomnias. The main pharmacological treatment is benzodiazepine. Clonazepam is useful in 0.25-1 mg/day dosage for arousals and REM sleep dissociations. Clonazepam and melatonin are very effective for RBD. Imipramine, levodopa, carbamazepine, and pramipexol are used to use but their effects were limited.

Uyku sırasında santral sinir sisteminde meydana gelen **patolojik bir aktivasyonun, otonom sinir sistemini** ve **iskelet kaslarını** etkilemesi ile ortaya çıkan klinik bir tablodur. Kompleks/elementer hareketler, davranışlar, duygular, algılar, rüyalar veya otonom aktiviteleri içerirler. Parasomnia epizodu sırasında, bireyler ne uyanıktır ne de bilinçlidir, ancak hareketleri bilinçli gibi görünür. Bu tabloların ortaya çıkmasında; Genetik yatkınlık, Çevresel faktörler, Uyku devamlılığını ve bütünlüğünü bozan faktörler,Psikososyal stres, Komorbid durumlar,   Ateşli hastalıklar,İlaçlar, Uykuda solunum bozuklukları, Alkol yada madde kullanım/yoksunlukları rol. oynar

Uyku Bozuklukları sınıflamasında parasomnilerin yeri

NREM ile ilişkili parasomniler
- **Konfüzyonel uyanma**
- **Uykuda yürüme (Somnambulizm)**
- **Uyku terörü**
- **Uyku ilişkili yeme bozukluğu**

REM ile ilişkili parasomniler
- **REM davranış bozukluğu (RDB)**
- **Tekrarlayan izole uyku paralizisi**
- **Kabus bozukluğu**

Diğer parasomniler
- **Patlayan Baş sendromu**
- **Uyku ile ilişkili hallusinasyonlar**
- **Enürezis nokturna**
- **Tıbbi hastalıklara bağlı Parasomniler**
- **İlaç ya da Madde kullanımına bağlı Parasomniler**
- **Parasomniler, özelleşmemiş**

İzole semptom ve normal varyantlar
- ### Uykuda Konuşma

Parasomniler hem nonREM ve hem de REM uyku dönemlerinde görülür ve çocuklarda erişkin yaş grubuna göre daha yaygın olarak rastlanır. NREM parasomnilerin çoğunluğu çocukluk ve ergenlik çağına özgüdür. Yaşlılarda parasomnia ise özellikle REM parasomnileri ön plana geçer. En önemli olan da nörodejeneratif hastalıkların öncüsü Rem Uyku davranış bozukluğudur. Erişkinlerde muhtelif parasomnilerin prevalansı **% 4** ile **67** arasında değişmektedir.

Uykuda yürüme, uyku terörü, veya konfüzyonel uyanmalarda cinsiyet farkı görülmemektedir. Ancak "kabuslar" kadınlarda, "seksomnia" lar da erkeklerde daha fazla görülmektedir.. REM uyku davranış bozukluğu da (RBD) 50 yaş üstü erkeklerde daha fazla görülür. Diğer yandan RBD nun *alfa sinnükleopatiler* (Parkinson, Lewy body demans ve multipl sistem atrofi) gibi nörodejeneratif hastalıklarla ilişkisi de unutulmamalıdır. Ayni zamanda parasomniler, psikiyatrik tablolarda da; kabuslar **% 38.9**, uyku paralizisi **% 22.3**, uyku ile ilişkili yeme bozukluğu **% 9.9**, uykuda yürüme **% 8.5** Rem Uyku Davranış Bozukluğu **% 3.8** gibi yüksek oranlarda bulunmaktadır. İlk basamak olası komorbid medikal durumun saptanıp , (uyku apnesi, huzursuz bacak sendromu gibi) önce onun tedavi edilmesidir. Tetikleyici olabilecek ilaçların (benzodiazepin reseptor agonistleri, antidepresanlar ve antipsikotikler) sonlandırılması gerekir.

Yetişkin parasomnilerinde en önemli konu; hastaların ve yatak partnerlerinin, çevre güvenliği ve bireyin güvenliği konusunda eğitimidir. Yatak alanının yakınındaki ateşli silahların, keskin nesnelerin veya mobilyaların kaldırmanız tavsiye edilir.Pencerelerin kilitlenmesi ve yatak odası kapı alarmı uyurgezerlerin korunmasında önemli önlemlerdir. RBD'li hastalarda kendisi veya yatak partnerleri için çevre güvenliği tekniklerini sağlamak, yaralanma olasılığının daha yüksek olması nedeniyle çok önemlidir. Hastalar için yatak kenarlarına ekstra yastık ve dolgu maddeleri,düşme olasılığına karşık yine yatak etrafına koltuk ve yumuşak korkuluk görevi sağlayacak kenarlıklar şiddet davranışından hastayı korumada işe yarar ve hatta yatakları ayırmak da faydalı olacaktır.

Çoğu NREM parasomnilerinde psikoterapi oldukça yardımcıdır. Süregelen parasomnilerin ana tedavisinde benzodiyazepinler yer alır. Klonazepam 0.25 ile 1 mg lık dozlarda arousalleri ve REM uyku dissosiasyonunu engellemekte çok işe yarar. REM uyku davranış bozukluğu için klonazepam ve melatonin çok etkili bulunmuştur. İmipramin, levodopa, karbamazepin ve pramipeksol de önceleri kullanılmıştır fakat sınırlı etkinlik sağlamaktadır.

3.ULUSLARARASI KATILIMLI 12.ULUSAL

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