

# GeriNotes

January 2024 • Vol. 31 No. 1



**APTA Geriatrics.**

An Academy of the American  
Physical Therapy Association

*Age on.™*

# Gerinotes

January 2024 • Vol. 31 No. 1

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# From the President

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Cathy Ciolek  
President,  
APTA Geriatrics

Happy New Year! As I write this, it is still 2023, but you will be reading it after the calendar has turned over. In December, the APTA Geriatrics board voted to make some changes to our strategic plan for 2024, and I want to share some of our plans.

First, a few highlights from 2023! Our membership continues to grow, with year-over-year totals ahead in each membership category.

Our usual peak point is in the late summer, and this year was no exception, reaching our highest membership level in APTA Geriatrics' history. Particularly after the last few years with COVID impacting so much of our world, we appreciate each of you for investing with us in your professional growth. For 2024, students are again free if they are APTA members. If you work with students in academic or clinical education, please continue to encourage them to join our Academy.

## A few more from 2023

- Our Journal Clubs continue to grow as a free resource to members.
- We added 3 cohorts of new CEEAA graduates.
- We now have 4,112 Board Certified Specialists in Geriatric Physical Therapy, making geriatrics the third largest specialist group within ABPTS.
- We launched a new online community for members to connect and learn with their colleagues in clinical practice and education.
- Our partnerships with the National Council on Aging and the National Senior Games helped to reach thousands of older adults with articles and screening events.

- The Movement Systems Task Force published in *PT Journal* an article making the case for developing a movement systems framework for older adults.
- Michelle Lusardi challenged the association to develop an annual mobility screen at CSM 2023; a task force was launched to make recommendations to the board on how to address this issue best.

## What to look for in 2024

- Movement System Task Force will share additional recommendations for addressing movement system dysfunctions in aging adults.
- More knowledge translation materials allow clinicians to apply evidence to patient care.
- Updated Essential Competencies in Geriatrics for entry-level physical therapist education are in the works.
- Webinars were presented to support the Economic Value of Physical Therapy Report.
- A new SIG may be just around the corner—look for an announcement early in the year.

And, of course, the APTA Combined Sections Meeting is right around the corner. Join us for the Carole B. Lewis Lecture, "Geriatric Physical Therapy: A New Season of Excitement, Clinical Skills Application, and Opportunities," by Tim Fox, PT, DPT, GCS-Emeritus, CCC, on Friday this year. Other topics for aging adults range from polypharmacy, total joint replacement, the Geriatric 5 M's framework for osteoporosis, and much more! Once again, there are several courses for APTA Geriatrics with the virtual option.

These are just a few of the things to look forward to in 2024 and beyond. Thank you for your membership in APTA Geriatrics and the care you provide to your patients, clients, and students daily.

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Questions for APTA Geriatrics leaders and staff can be submitted to [geriatrics@aptageriatrics.org](mailto:geriatrics@aptageriatrics.org).

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# From the Editor



Michele Stanley  
Editor,  
GeriNotes

Hello, New Year! I don't know your personal or professional resolutions – if any. But if you choose nothing else, I strongly urge you to read Ellen Strunk's Policy Talk article in this issue and then resolve that, at least one time in the next year that you will fight for at least one of your clients, friends, or relatives affected by a Medicare Advantage plan illegal denial. Will appealing denials change the horrible culture of business

practices and result in justice for "your" appellant? I would hope so. And I firmly believe that if we all cumulatively put forth the sacrifice of our own time and energy as professionals, we can change this unfortunate trend of denying Medicare recipients their rights. Of course, strongly discouraging everyone who is a Medicare beneficiary from choosing that kind of insurance coverage is good, too. Everything we have learned about the importance of intensity, duration, and frequency of exercise and therapy, especially for older adults, is of no use to clients, practices, or ourselves if we do not demand that insurers respect and pay for that science in action. Thank you, Ellen, for keeping our Academy abreast of the rules and regulations as they change and for acting as an interpreter as needed.

Big thanks to the many volunteers who give this magazine valuable content. Significantly, we recognize the Editorial Board corps, who work mainly behind the scenes but are invaluable in many ways by generating content, recruiting authors and topics, acting as a policy sounding board, as well as doing the drudge tasks of vetting

citations and references. If you see these folks at CSM, your state meetings, or at work, please also thank them:

Debra Barrett, PT  
Jennifer Bottomley, PT, MS, PhD  
Kathy Brewer, PT, DPT, MEd  
Chris Childers, PT, MS  
Jennifer Gindoff, PT, DPT, DhSc  
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Writing can be intimidating, but it doesn't have to be. I am personally available to coach you in clinical magazine writing or help you find resources. Do you have an idea for a *GeriNotes* article? Pitch it to me! We can Zoom, meet up at CSM, email or phone chat. Part of *GeriNotes*' and other APTA publications' mission is to foster authors and information exchange. Call me.



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### Published in

January  
March  
May  
August  
November

### Copy Deadlines

February 1  
April 1  
July 1  
September 1  
November 1

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**Mission:** To provide engaging content that empowers the community of physical therapy clinicians to build expertise and expand the delivery of evidence-informed care that promotes health and wellness in aging adults.

**Vision:** To create an evolving online community through which clinicians develop their knowledge and skills based in shared ideals that are person-centered; and promote a world where aging adults move, live, and age well.

# APTA Combined Sections Meeting

Feb. 15-17, 2024 / Boston



## APTA Geriatrics

An Academy of the American Physical Therapy Association

## Geriatrics Section Programming

### Wednesday, February 14, 2024

8:00 AM - 4:30 PM

#### **GR-17470 All Rise! Evidence-Based Floor Transfer Training Is Now in Session**

\*1-day Preconference Course

Anne M. Reilley, PT, DPT, MS and Heidi Moyer, PT, DPT

### Thursday, February 15, 2024

8:00 AM - 10:00 AM

#### **GR-18038 Deprescribing Polypharmacy, Identification of Medication-Induced Movement Disorders, and the Role of the PT**

Robin Lee Schroeder, PT

8:00 AM - 10:00 AM

#### **GR-18077 Making an Impact: A Framework to Returning to High-Level Activity Following Total Joint Arthroplasty**

Curtis Wu, PT, DPT, Ashleigh Catherine McAdam, PT, DPT, Michelle Cilenti, PT, DPT and Michael Ast, MD

8:00 AM - 10:00 AM

#### **GR-18250 The 5Ms of Geriatrics: The Missing Link in Movement System Framework**

Myla Claire Quiben, PT, DPT, MS, PhD, Susan Joy Leach, PT, DPT, PhD, Marni Larkin, Gregory W. Hartley, PT, DPT, FAPTA, Kenneth L. Miller, PT, DPT, Laura Z. Gras, PT, DPT, DSc and Michelle M. Lusardi, PT, DPT, PhD, FAPTA

11:00 AM - 1:00 PM

#### **GR-17247 A Call for Physical Therapy Action on Hearing Loss, Balance Problems, and Falls Risk**

Jennifer Lynn Kelly, PT and Anat Vilnai Lubetzky, PT, PhD

11:00 AM - 1:00 PM

#### **GR-17875 Applying a Geriatrics 5Ms Framework to Osteoporosis Management**

Kathlene Elizabeth Camp, PT, DPT, Keith G. Avin, PT, PhD, Kathryn K. Brewer, PT, DPT, MEd and Lisa Hamilton, PT, DPT

11:00 AM - 1:00 PM

#### **GR-18455 Technology Enabled Health Care: Improved Digital Literacy Leads to Better Health Equity and Quality of Life**

Aimee E. Perron, PT, DPT and Laura Caron-Parker

3:00 PM - 5:00 PM

#### **GR-17273 Vestibular Disorders and Falls: Recognizing, Examining, and Intervening in Older Adults**

Susan L. Whitney, PT, DPT, ATC, FAPTA, Pamela Marie Dunlap, PT, DPT, PhD and Brooke Nicole Klatt, PT, DPT, PhD

3:00 PM - 5:00 PM

#### **GR-17631 Competence and Confidence: Raising the Bar in Dementia Care**

Amie Marie Flores Jasper, PT, DPT, PhD, Rania Karim, PT, DPT, Carmina Lagarejos Rafael, PT, DPT, Jennifer CG Youssef, PT, DPT and Arvie C. Vitente, PT, DPT, MPH, PhD

3:00 PM - 5:00 PM

#### **GR-18421 Evaluation and Optimization of the Geriatric Surgery Patient: Applying Lessons Learned From an Interprofessional Team**

Carrie A. Frede, PT, DPT, Hannah Elyce Barrett, Shelley McDonald and Kathryn Starr

3:00 PM - 5:00 PM

#### **GR-19129 Geriatric Platform Session 1**

Elizabeth Marie Roddy, PT, DPT

6:30 PM - 8:30 PM

#### **GR-19150 APTA Geriatrics Members Meeting & Board-Certified Geriatric Clinical Specialist Recognition & Awards Ceremony**

### Thank You to Our Sponsors



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## Friday, February 16, 2024

8:00 AM - 10:00 AM

### **GR-17325 Raising the Bar in Heart Failure Management in Older Adults**

Keith G. Avin, PT, PhD, Konrad Joseph Dias, PT, DPT, PhD, Kenneth L. Miller, PT, DPT and Elizabeth Anne Staats, PT, DPT

8:00 AM - 10:00 AM

### **GR-17356 Join the (Deprescribing) Movement! Patient Advocacy Strategies for Pharmaceutical Management in PT Practice**

Heidi Moyer, PT, DPT and Veronica Riera-Gilley

8:00 AM - 10:00 AM

### **GR-17598 Healthy Places for All Ages: Physical Therapists' Role in Creating Active, Age-Friendly Communities**

Brendan R. Connor, PT, DPT and Katherine Baratta, PT, DPT

8:00 AM - 10:00 AM

### **GR-19130 Geriatric Platform Session 2**

Elizabeth Marie Roddy, PT, DPT

11:00 AM - 1:00 PM

### **GR-17490 Your Attention, Please: Advancing the Translation and Approachability of Dual Task in Rehabilitation**

Mike T. Studer, PT, DPT, MHS, FAPTA, Tanvi Bhatt, PT, PhD and Rebecca Bliss

11:00 AM - 1:00 PM

### **GR-17843 Neurodynamics in the Older Adult Population: Are You Missing Key Components of Pain and Dysfunction?**

Patricia Larkin-Upton, PT, DPT, MS and Jessica Anne Livermore, PT, DPT

11:00 AM - 1:00 PM

### **GR-18379 2024 Carole B. Lewis Lecture: A New Season of Excitement, Opportunities and Clinical Skill Application**

Timothy Adam Fox, PT, DPT

3:00 PM - 5:00 PM

### **GR-17327 PT With a Twist of Lyme: Differentiating the Neuromuscular and Cardiovascular Cocktail From Common Imitators**

Daniel Joseph Lee, PT, DPT, PhD, Christopher Howard Voltmer, PT and William Raymond VanWye, PT, DPT, PhD

3:00 PM - 5:00 PM

### **GR-17451 Challenging Balance Exercise Prescription: Optimizing Therapist Measurement/Older Adult Self-Rating Balance Exercise**

Marissa Francis Lyon, PT, DPT, PhD, Debbie Donnelly Espy, PT, PhD and Melanie K. Farlie, PT, PhD

3:00 PM - 5:00 PM

### **GR-18390 Aging in Place: Fad or Fantastic? A Primer for Physical Therapists**

Alison E. Starkey, PT

## Saturday, February 17, 2024

8:00 AM - 10:00 AM

### **GR-17353 Improving Geriatric Care by Integrating Physical Therapists Into Rural, Urban, and VA Emergency Departments**

Suzanne Valeria Ryer, PT, DPT, Steven Edward Fairbanks, PT, DPT and Kendall Senti

8:00 AM - 10:00 AM

### **GR-17604 Insurance Limiting Visits? Advocate for Patients' Needs, Communicate Well, and Maximize Outcomes Through Documentation**

Jaclyn Kay Warshauer, PT and Mary L. Saylor-Mumau, PT, MPT

8:00 AM - 10:00 AM

### **GR-18098 What Matters Most: Autonomy Versus Safety in Caring for Older Adults**

Jeffrey M. Hoder, PT, DPT, Kelly Braden Reynolds, PT, DPT, Allyson S. Sutkowi-Hemstreet, PT, DPT and Michele C. Lewis, PT, DPT, EdD

11:00 AM - 1:00 PM

### **GR-17801 Athletic Performance Matters: PT Guide to Keeping Senior Athletes at the Top of Their Game**

Wendy Kim Viviers, PT, DPT, BS, MPhil and Becca D. Jordre, PT, DPT

11:00 AM - 1:00 PM

### **GR-18419 Pelvic Health in Older Adults: The Missing Piece?**

Sarah Cooper, PT, DPT, Cynthia J. Gallo, PT and Jessica Lauren Cronk, PT

11:00 AM - 1:00 PM

### **GR-19131 Geriatric Platform Session 3**

Elizabeth Marie Roddy, PT, DPT

3:00 PM - 5:00 PM

### **GR-17853 A Tactical Approach to Implementing Physical Activity Within Clinical Practice**

Mariana Wingood, PT, DPT, MPH, Nola S. Peacock, PT, MPT, DSc and Daniel Pinto, PT, PhD

3:00 PM - 5:00 PM

### **GR-17866 Physical Therapists' Roles in Supporting Brain Health in Aging Adults**

Julie D. Ries, PT, PhD and Cathy H. Ciolek, PT, DPT, FAPTA

## See the CSM 2024 APTA Geriatrics Platform and Poster Abstracts

[PLATFORM ABSTRACTS](#) [POSTER ABSTRACTS](#)

Programming as of 12/22/2023. Please visit [www.apta.org/csm](http://www.apta.org/csm) for updates.

Register at

[www.apta.org/csm](http://www.apta.org/csm)

# New Year, New Rules – 2024 Version

by Ellen R. Strunk, PT, MS

The new year is here! And that can only mean one thing – it is time for GeriNotes’ annual round-up of policies for this year. Members of APTA Geriatrics work across the spectrum of healthcare. As a result, there is a lot to monitor and plan for. This article will discuss the major policy decisions for 2024 for physical therapy.

Facility-based health care providers follow a fiscal year (FY) that begins October 1st and ends September 30th of the following year, while non-facility-based providers, including home health agencies, follow a calendar year (CY). The FY 2024 Inpatient Rehabilitation Facility (IRF) Prospective Payment System (PPS) Final Rule (88 FR 50956),<sup>1</sup> the FY 2024 Skilled Nursing Facility (SNF) PPS Final Rule (88 FR 53200)<sup>2</sup> and the FY 2024 Inpatient

Prospective Payment System (IPPS)/Long-Term Care Hospital (LTCH) PPS Final Rule (88 FR 58640)<sup>3</sup> were published in late July/early August (see Table 1). Three months later, the CY 2024 Home Health (HH) PPS Final Rule (88 FR 77676)<sup>4</sup> (see Table 2) and the CY 2024 Payment Policies under the Physician Fee Schedule Final Rule (88 FR 78818)<sup>5</sup> were released (see Table 3). If you practice in one or more of these practice settings, it is encouraged that you read the final rule yourself and become accustomed to understanding the organization and language.

The proposed and final rules are extremely important policy-making vehicles for the Centers for Medicare & Medicaid Services (CMS). In addition to providing annual

**Table 1. Themes from the FY 2024 IRF (88 FR 50956)<sup>1</sup>, SNF (88 FR 53200)<sup>2</sup> and LTCH PPS (88 FR 58640)<sup>3-4</sup> Final Rules**

	Inpatient Rehabilitation Facility	Skilled Nursing Facility	Long-Term Care Hospital
<b>Payment Updates</b>	Estimated increase in aggregate payments of 4% or \$355 million.	Estimated increase in aggregate payments of 4% or \$1.4 billion.	Estimated increase in aggregate payments of 0.2% or \$6 million.
<b>Quality Reporting Program (QRP)</b>	CMS finalized the removal of three measures from the IRF QRP: (1) the <b>Application of Percent of Long-Term Care Hospital (LTCH) Patients with an Admission and Discharge Functional Assessment and a Care Plan That Addresses Function (Application of Functional Assessment/Care Plan) measure</b> ; (2) the <b>IRF Functional Outcome Measure: Change in Self-Care Score for Medical Rehabilitation Patients</b> ; and (3) the <b>IRF Functional Outcome Measure: Change in Mobility Score for Medical Rehabilitation Patients</b> . CMS also finalized the adoption of the <b>Discharge Function (DC Function) measure</b> . This assessment-based outcome measure assesses functional status by assessing the percentage of IRF patients who meet or exceed an expected discharge function score and uses mobility and self-care items already collected on the assessment tool. The adoption of this measure replaces the topped-out process measure, Application of Functional Assessment and Care Plan. Finally, CMS finalized the adoption of the <b>COVID-19 Vaccine: Percent of Patients/Residents Who Are Up to Date (Patient/Resident level COVID-19 Vaccine) measure</b> . The measure will report the percentage of stays in which patients in an IRF are up to date with their COVID-19 vaccinations per the latest guidance of the CDC. Data will be collected using a <b>new</b> standardized item on the IRF – Patient Assessment Instrument (PAI) and collection will begin October 1, 2024.	CMS finalized the removal of three measures from the SNF QRP: (1) the <b>Application of Percent of Long-Term Care Hospital (LTCH) Patients with an Admission and Discharge Functional Assessment and a Care Plan That Addresses Function (Application of Functional Assessment/Care Plan) measure</b> ; (2) the <b>Application of IRF Functional Outcome Measure: Change in Self-Care Score for Medical Rehabilitation Patients</b> ; and (3) the <b>Application of IRF Functional Outcome Measure: Change in Mobility Score for Medical Rehabilitation Patients</b> . CMS also finalized the adoption of the <b>Discharge Function (DC Function) measure</b> . This assessment-based outcome measure assesses functional status by assessing the percentage of SNF patients who meet or exceed an expected discharge function score and uses mobility and self-care items already collected on the assessment tool. The adoption of this measure replaces the topped-out process measure, Application of Functional Assessment and Care Plan. Finally, CMS finalized the adoption of the <b>COVID-19 Vaccine: Percent of Patients/Residents Who Are Up to Date (Patient/Resident level COVID-19 Vaccine) measure</b> . The measure will report the percentage of stays in which patients in a SNF are up to date with their COVID-19 vaccinations per the latest guidance of the CDC. Data will be collected using a <b>new</b> standardized item on the Minimum Data Set (MDS) and collection will begin October 1, 2024.	CMS finalized the removal of the <b>Application of Percent of Long-Term Care Hospital (LTCH) Patients with an Admission and Discharge Functional Assessment and a Care Plan That Addresses Function (Application of Functional Assessment/Care Plan) measure</b> . CMS also finalized the adoption of the <b>Discharge Function (DC Function) measure</b> . This assessment-based outcome measure assesses functional status by assessing the percentage of LTCH patients who meet or exceed an expected discharge function score and uses mobility and self-care items already collected on the assessment tool. The adoption of this measure replaces the topped-out process measure, Application of Functional Assessment and Care Plan. Finally, CMS finalized the adoption of the <b>COVID-19 Vaccine: Percent of Patients/Residents Who Are Up to Date (Patient/Resident level COVID-19 Vaccine) measure</b> . The measure will report the percentage of stays in which patients in an LTCH are up to date with their COVID-19 vaccinations per the latest guidance of the CDC. Data will be collected using a <b>new</b> standardized item on the LTCH Continuity Assessment Record and Evaluation (CARE) Data Set (LCDS) and collection will begin October 1, 2024.
<b>Value Based Purchasing (VBP) Program</b>	NA	CMS made several updates to the SNF VBP this year, including adding new measures and finalizing a Health Equity Adjustment (HEA) bonus. One measure, the <b>SNF Potentially Preventable Readmission (PPR) Measure</b> was refined to further align the measure specifications with other programs’ PPR measures. Four new measures were added to the SNF VBP Program, bringing the total number of measures in the SNF VBP to nine: <ol style="list-style-type: none"> <li><b>Total Nursing Staff Turnover (Nursing Staff Turnover) Measure</b> for the FY 2026 program year.</li> <li><b>Percent of Residents Experiencing One of More Falls with Major Injury (Long-Stay) measure</b> for the FY 2027 program year.</li> <li><b>Discharge Function Score Measure</b> for the FY 2027 program year.</li> <li><b>Number of Hospitalizations per 1,000 Long-Stay Resident Days Measure</b> for the FY 2027 program year.</li> </ol>	NA

payment updates, they are also the mechanism by which CMS implements new programs or changes requirements which providers must adhere to. That is why there is a significant amount of advocacy effort that goes into responding to the proposed rules, including writing comment letters that either support a proposed policy or explain why the proposed policy would be harmful to the physical therapy practice. This issue of Policy Talk will provide an overview of the major changes for FY and CY 2024, but readers are encouraged to visit the final rule links in the endnotes for additional information.

As discussed in GeriNotes last January (Vol 30 No. 1),<sup>6</sup> several of the measures on the CMS 2022 Measures Under Consideration (MUC) list made it into the post-acute care (PAC) Quality Reporting Programs (QRPs), as well as the HH and SNF Value-Based Purchasing (VBP) Programs. One significant policy adopted for the SNF VBP program was a Health Equity Adjustment (HEA) bonus. The goal of CMS' HEA is to not only appropriately reward SNFs that overcome the challenges of caring for higher proportions of SNF residents with dual eligible status (DES),<sup>7</sup> but also to incentivize those who have not achieved such high-quality care to work towards improvement. CMS chose to start with residents with DES since they believe this is an underserved population that is clinically complex, has significant social needs and is more frequently admitted to SNFs that have larger populations of Medicaid residents and fewer resources than SNFs that do not care for individuals with DES. The

HEA will be calculated using a methodology that considers both the SNF's performance on the SNF VBP Program measures, and the proportion of residents with DES out of the total resident population in a given program year at each SNF. To be eligible to receive HEA bonus points: a SNF's performance will need to meet or exceed a certain threshold and its resident population during the applicable performance period for the program year will have to include at least 20 percent of residents with DES.

There are also new Current Procedural Terminology (CPTs) codes representing services rehabilitation therapists can provide and bill for as well as clarifications on other policies in the CY 2024 Physician Fee Schedule Final Rule. The CY 2024 HH PPS Final Rule included information about the new Medicare Benefit for Lymphedema Compression treatment items (see Table 2). The Medicare Part B program has not included coverage for lymphedema compression treatment items other than compression pumps and accessories that meet the definition of DME covered under the DME benefit. However, section 4133 of the Consolidated Appropriations Act (CAA), 2023 amended the Social Security Act to establish a new Part B benefit category for lymphedema compression treatment items. That means effective for items furnished on or after January 1, 2024, there will be coverage under a new benefit category under Medicare Part B for lymphedema compression treatment items as defined in the HH final rule and described further in Table 2.

**Table 2. Themes from the CY 2023 HH PPS Final Rule (88 FR 77676)**

<b>Payment Updates</b>	This rule finalized statutorily required updates to the HH payment rates for CY 2024. CMS estimates that Medicare payments to HHAs in CY 2024 will increase in the aggregate by 0.8 percent or \$140 million compared to CY 2023, based on the finalized policies. This increase reflects the effects of the 3.0 percent home health payment update percentage, an estimated 2.6 percent decrease that reflects the net effects of the finalized prospective permanent behavior assumption adjustment across all payments (which is half of the required full adjustment), but the latter adjustment does not impact Low-Utilization Payment Adjustments (LUPAs).		
<b>Quality Reporting Program (QRP)</b>	CMS finalized the removal of the <b>Application of Percent of Long-Term Care Hospital (LTCH) Patients with an Admission and Discharge Functional Assessment and a Care Plan That Addresses Function (Application of Functional Assessment/Care Plan) measure</b> . CMS also finalized the adoption of the <b>Discharge Function (DC Function) measure</b> . This assessment-based outcome measure assesses functional status by assessing the percentage of HH patients who meet or exceed an expected discharge function score and uses mobility and self-care items already collected on the assessment tool. The adoption of this measure replaces the topped-out process measure, Application of Functional Assessment and Care Plan. Finally, CMS finalized the adoption of the <b>COVID-19 Vaccine: Percent of Patients/Residents Who Are Up to Date (Patient/Resident level COVID-19 Vaccine) measure</b> . The measure will report the percentage of stays in which patients served by a HHA are up to date with their COVID-19 vaccinations per the latest guidance of the CDC. Data will be collected using a <b>new</b> standardized item on the Outcome and Assessment Instrument Set (OASIS) and collection will begin January 1, 2025.		
<b>Value Based Purchasing (VBP) Program</b>	In this year's final rule, CMS is replacing several of the measures that have been used in the HH VBP since it expanded. CMS finalized their proposal to replace the OASIS-based Discharge to Community (DTC) measure with a <b>claims-based DTC measure</b> beginning with CY 2025. CMS will also replace the OASIS-based Total Normalized Change (TNC) Self-Care and TNC Mobility measures with the OASIS-based <b>Discharge Function Score measure</b> beginning with CY 2025. Additionally, CMS replaced the Acute Care Hospitalization During the First 60 Days of HH and Emergency Department Use Without Hospitalization During the First 60 Days of HH measures with the Within-Stay Potentially Preventable Hospitalization (PPH) measure beginning with the CY 2025. Finally, CMS revised the weighting methodology for scoring. The Discharge Function Score measure will count for 50% of score for the OASIS-based measures which contributes 35% of the points to the total score. This is an important point for therapists and provides an opportunity to demonstrate the value of rehabilitation services within their HHAs.		
<b>Other Updates</b>	In addition to adjustments to the LUPA thresholds, Functional Impairment levels and Comorbidity subgroups, CMS also updated the Patient Drive Grouper Model (PDGM) case-mix weights.		
<b>*NEW* Lymphedema Benefit</b>	<b>Who is Eligible?</b>	<b>What is Covered?</b>	<b>How Often?</b>
	<ul style="list-style-type: none"> <li>• Patient has Medicare Part B coverage</li> <li>• Patient has diagnosis of lymphedema &amp; will use item to primarily &amp; customarily treat it</li> <li>• An authorized practitioner prescribes the item</li> </ul>	<ul style="list-style-type: none"> <li>• Gradient compression garments</li> <li>• Ready-to-wear, non-elastic, gradient compression wraps with adjustable straps</li> <li>• Accessories necessary for effective use of the garments</li> <li>• Compression bandaging systems applied in a clinical setting; not limited to Phase 1 therapy</li> </ul>	<ul style="list-style-type: none"> <li>• Daytime: 3 garments per affected body part every 6 months</li> <li>• Nighttime: 2 garments per affected body part every 2 years</li> <li>• Items as needed:                             <ul style="list-style-type: none"> <li>• To replace lost, stolen, irreparably damaged items</li> <li>• If a patient's condition changes (i.e., change in limb size)</li> </ul> </li> </ul>
<b>What is Not Covered?</b> The CAA, 2023 requires providers to become enrolled and accredited DMEPOS suppliers in order to bill for these items as lymphedema compression treatment items. Therefore, if a therapist wants to furnish these items, they should be enrolled. However, therapists working with patients with a diagnosis of lymphedema should be aware of the new benefit in order to ensure their patients have access to a DMEPOS supplier. CMS also clarified that CPT codes 29581 and 29584 cannot be billed and paid for on the same date of service that the new HCPCS A-codes (i.e., for lymphedema garments and bandaging systems) are billed. Finally, items provided to patients <u>without</u> a diagnosis of lymphedema are not covered.			

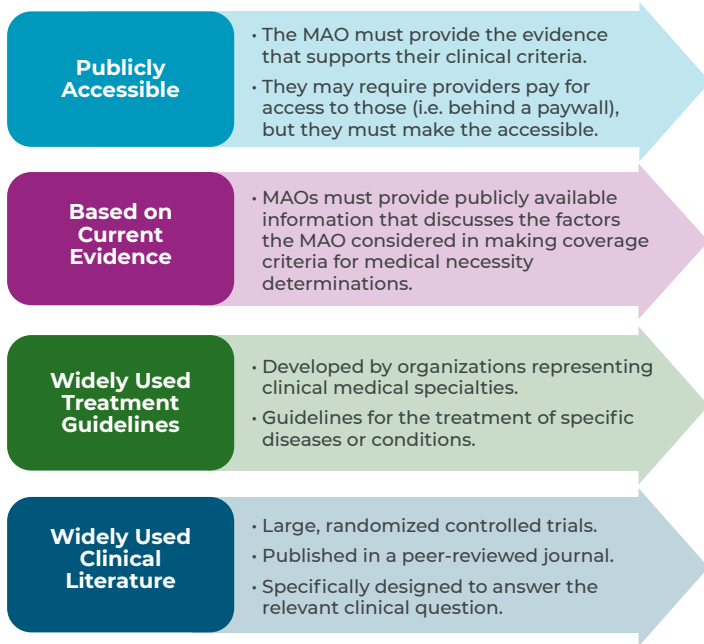
**Table 3. Themes from the CY 2023 Medicare Physician Fee Schedule Final Rule (88 FR 78818)**

<b>Conversion Factor (CF)</b>	<p>Reduction: of ~3.37%</p> <p>In 2023, the conversion factor was \$33.0607. For services delivered on/after January 1, 2024, CMS finalized the conversion factor of \$32.7442. As a reminder, Congress passed a 2023 end-of-year spending package, which provided a 2.5% increase for CY 2023, and also included a 1.25% increase in CY 2024. This helped to partially offset the reduction to the CF for CY 2024</p>		
<b>Effect on Therapy Codes</b>	<p>In the aggregate, CMS estimated that relative value unit (RVU) changes associated with physical therapy will decrease by 3% percent for CY 2024. This is largely due to the impact on therapy and other specialties of the redistributive effects of implementing separate payment for the new office/outpatient (O/O) G2211 add-on code, Year 3 updates to clinical labor pricing, and CMS' adjustments to certain behavioral services. Electrical stimulation therapy services (codes G0329, G0283, and 97033) and mechanical traction therapy (97012) received a decrease in RVUs relative to last year. Therapeutic activities (code 97530) also experienced an overall RVU reduction of 0.9 percent for CY 2024. Therefore, depending on the mix of CPT codes routinely used, a practice's percent decrease will vary.</p> <p>The APTA and American Occupational Therapy Association (AOTA) have been advocating to CMS to review practice expense calculations made for 19 therapy codes that were valued in 2017. In this request, APTA and AOTA noted that in 2017, the AMA RUC panel had already reduced clinical labor inputs for these codes based on a CMS multiple procedure payment reduction (MPPR) payment formula. CMS responded in the Physician Fee Schedule final rule and did recommend the nomination of 19 therapy codes as potentially misvalued for CY 2024. CMS made a strong statement that it believes that MPPR should not be applied to the valuation of clinical labor time, and therefore recommends a re-review of the American Medical Association's RVS Utilization Committee (AMA RUC) recommendations. APTA is hopeful that the RUC review will be conducted in time to respond to CMS and its timing for the 2025 Physician Fee Schedule.</p>		
<b>KX Modifier Threshold</b>	<ul style="list-style-type: none"> <li>For 2024, the therapy threshold is \$2330 for PT/SLP, and \$2330 for OT.</li> <li>The Manual Medical Review threshold remains at \$3000.</li> </ul>		
<b>Telehealth</b>	<p>The omnibus spending bill signed into law on December 29, 2022 provided a two-year extension of telehealth services under Medicare, including those provided by PTs and PTAs. Rather than being tied to the end of the PHE, the provisions will continue through December 31, 2024. CMS modified its policies in this year's final rule to be consistent with the law passed by Congress. Additionally, they clarified that therapists in all practice settings should continue to append the 95-modifier on claims for services delivered via telehealth through the end of CY 2024.<sup>8</sup></p>		
<b>Direct Supervision</b>	<p>CMS will continue to permit direct supervision requirements to be met by the presence and immediate availability of the supervision practitioner through real-time audio/video interactive telecommunications through 12/31/24.</p>		
<b>Remote Therapeutic Monitoring (RTM)</b>	<p>In the CY 2022 Final Rule, CMS adopted RTM codes and provided that physical therapists are approved providers of these codes. In the Final Rule, CMS finalized that PTAs can provide RTM services under the general supervision of physical therapists in private practices (PTPPs) enrolled in Medicare starting January 1, 2024. PTPPs not enrolled in Medicare must continue to conduct direct supervision of their therapy assistants. CMS also noted that RPM services can only be administered to established patients, but patients who received initial remote monitoring services during the PHE are considered established patients. Additionally:</p> <ul style="list-style-type: none"> <li>RTM data must be collected for at least 16 days in 30-day period in order to bill the codes.</li> <li>The codes are "sometimes therapy" codes which means the MPPR does not apply, but the therapy threshold and KX modifier do apply when the services are delivered under a therapy plan of care.</li> </ul>		
	<b>CPT Code</b>	<b>Abbreviated Definition</b>	<b>Are 16 days of data collection required to bill the code?</b>
	98975	Remote therapeutic monitoring; initial set-up & pt education on use of equipment	Yes
	98976	Remote therapeutic monitoring device(s)...to monitor respiratory system, each 30 days	Yes
	98977	Remote therapeutic monitoring device(s)...to monitor musculoskeletal system, each 30 days	Yes
	98978	Remote therapeutic monitoring device(s)...to monitor cognitive behavioral therapy, each 30 days	Yes
	98980	Remote therapeutic monitoring treatment management ...professional time...requiring at least one interactive communication...during the calendar month; first 20 min	No
98981	Remote therapeutic monitoring treatment management ...during the calendar month; each add'l 20 min	No	
<b>Caregiver Training Services</b>	<p>Historically, CMS has taken the position that services provided to other individuals without the patient being present are not covered under Medicare. However, CMS has observed that in certain situations, patient caregivers can play a valuable role in carrying out a patient's treatment plan. CMS now believes that Caregiver Training Services (CTS) can be reasonable and necessary to treat a patient's illness or injury. CMS finalized the following two definitions of a caregiver for the purpose of providing CTS.</p> <ul style="list-style-type: none"> <li>"An adult family member or other individual who has a significant relationship with, and who provides a broad range of assistance to, an individual with a chronic or other health condition, disability, or functional limitation;" and</li> <li>"A family member, friend, or neighbor who provides unpaid assistance to a person with a chronic illness or disabling condition."</li> </ul> <p>CMS also finalized that the volume and frequency of CTS sessions furnished to caregivers by the treating practitioner for the same patient may be based on the treatment plan, as well as changes in patient condition, the treatment plan, the patient's diagnosis, or the patient's caregivers.</p> <p>Therefore CMS will now provide payment for CTS services when the treating practitioner identifies a need to involve and train a caregiver in the development and execution of a beneficiary's treatment plan. In these situations, consent must be obtained from the patient or representative prior to providing CTS. This consent and the patient's identified need must be clearly documented in the medical record.</p> <p>Additionally:</p> <ul style="list-style-type: none"> <li>CTS codes are "sometimes therapy" codes which means the MPPR does not apply, but the therapy threshold and KX modifier do apply when the services are delivered under a therapy plan of care.</li> <li>CTS codes are not included on the provisional telehealth services list for CY 2024.</li> </ul>		
	<b>CPT Code</b>	<b>Abbreviated Definition</b>	
	97550	Caregiver training in strategies and techniques to facilitate the patient's functional performance in the home or community (e.g., activities of daily living [ADLs], instrumental ADLs [IADLs], transfers, mobility, communication, swallowing, feeding, problem solving, safety practices) (without the patient present), face-to-face; initial 30 minutes.	
	97551	Caregiver training...(without the patient present), face-to-face; each additional 15 minutes. (List separately in addition to code for primary service) (Use 97551 in conjunction with 97550)	
97552	Group caregiver training...(without the patient present), face-to-face with multiple sets of caregivers.		

Finally, on April 5, 2023, CMS released a final rule for the Contract Year 2024 Medicare Advantage Organizations (MAOs) (88 FR 22120).<sup>8-9</sup> This rule was in response to an OIG report released in 2022 that found MAOs used clinical criteria that are not contained in Medicare coverage rules, and they overturned about 75% of their own prior authorization denials and payment denials. *However, very few patients and providers actually appealed these decisions.* CMS stated in this final rule that *"When Traditional Medicare has fully established coverage criteria, an MA(Medicare Advantage) plan cannot deny coverage of the item or service on the basis of internal,*

*proprietary, or external clinical criteria that are not found in Traditional Medicare coverage policies."* In other words, MAOs cannot use utilization management process that are not specified under a local or national coverage decision. Figure 1 illustrates the criteria MAOs must use when developing their internal coverage criteria. Finally, the rule was very clear about the fact that when MAOs have approved a service using prior authorization, they cannot deny coverage later on the basis of lack of medical necessity. Other examples of when MAOs can and cannot use prior authorization are found in Figure 2.

**Figure 1. Limitations on Medicare Advantage Plan Internal Coverage Criteria**



**Figure 2. MAO Prior Authorization**

May Be Used For:	May Not Be Used For:
<ul style="list-style-type: none"> <li>To confirm the presence of a diagnosis or other medical criteria</li> <li>To ensure an item is medically necessary</li> </ul>	<ul style="list-style-type: none"> <li>Treatment of emergency medical conditions</li> <li>To deny a procedure included on the CMS inpatient only list</li> <li>To discriminate or direct enrollees away from certain services</li> </ul>

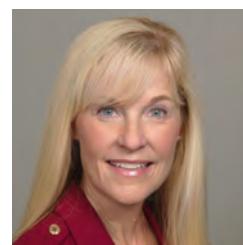
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**[Ed Note:** It is important to confirm with commercial/private payers whether they will continue to pay for telehealth services delivered by physical therapists, and if so, how those should be billed.]



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## Continuing Education: Is it a Business for You?

by Carole Lewis, PT, DPT, PhD, GTCSS, GCS, FAPTA

The seeds for GREAT Seminars and Books (GSB) were planted in 1958 when I was 5 years old and went to Miami Beach with my grandparents. I loved being with older adults and hoped one day to make a difference in their lives. A moment came in 1978 when I was working on my Master's Degree in Gerontology at the University of Southern California. I had to deliver a 3-minute talk to my class. After the presentation, a nurse in the audience who owned a seminar company specializing in geriatrics offered to pay me to deliver one-day talks in 10 cities on geriatrics for rehabilitation professionals. Off I went. I began in Flint, Michigan with 6 slides and 7 class participants and ended in NYC with 40 slides and 150 participants. I continued to lecture for various companies; years later I realized that I had a different vision from the people who owned these companies.

My vision was to have an educational company that was owned by physical therapists and presented current, research-based information on what clinicians could do every day to increase their effectiveness in working with older people. GREAT (Geriatric Rehabilitation, Education and Training) Seminars was born. With the help of the world's greatest executive director, my sister Neila Waugh,

we created the Great Seminars and Books company.

Eventually, teaching 10-20 times a year all over the country and running 3 PT clinics became almost impossible. I decided to find talented therapists who shared my vision, were engaging presenters, and offered specializations that could increase the impact GREAT could have on geriatric rehabilitation.

My first "find" is still vivid in my mind. I was teaching a Documentation and Functional Assessment course and I couldn't help but notice that one participant was incredibly bright and insightful. Her name was Sandy Shelton. I cornered her in the lady's room at the Peabody Hotel and asked if she would like to assist me in my courses. She enthusiastically accepted without any knowledge that I was hoping she would one day have her own course. A few years later, Sandy started her own successful course on Intensive Orthopedics. Sandy is still a full time acute care therapist on the orthopedic wing at Vanderbilt Hospital. She no longer teaches this course live, but we recorded major parts of it for our online division, Great Seminars Online ([www.greatseminarsonline.com](http://www.greatseminarsonline.com).)

As the faculty grew, I began to look for ways to demonstrate advanced knowledge. I realized that people were taking more than one GREAT course and were becoming experts in care for older persons. In 2003 I introduced the Geriatric Training Certification (GTCCS). I modeled it after other certifications and it can be used to fulfill credits for advanced degrees (DPT and DSc) at several universities, Great Seminars and Books, as well as help to prepare for the GCS. We call it an alternative residency. We have a 100% pass rate. [www.GreatSeminarsandBooks.com](http://www.GreatSeminarsandBooks.com).

Finally, I teamed up with Dr. Molly Laflin in 2009 to create Great Seminars Online (GSO). That brainchild occurred when Molly and I met in Chicago to see a play. She could not wait to show me the class she was working on at Bowling Green State University (BGSU). In the hotel room, she pulled out her laptop to show me the course, and I thought to myself...hey we're in Chicago, why are you wasting my time showing me something I could see another time. But Molly persisted and I was blown away. Molly is such a technophile and her course exploded with exciting, creative and brilliant course materials. Right then and there I said to Molly, "We need to start an online company using your course design skills and technical savvy and my geriatric background." And we did it.

Great Seminars Online (GSO) is a labor of love. We decided from the get go that we would not just present talking slides; we would use real patient videos. For our first course, I insisted on not meeting any of the patients until we met on camera. Silly me. All worked out well, but I had a few surprises on camera, like when I was examining this 88-year-old woman supine on the mat table and brought her knee toward her chest. She chose at that point, on camera, to tell me her hips chronically dislocate! I carefully lowered her leg, and nothing happened. Each subsequent course got better and better. Our courses strive for PBS (Public Broadcasting Service) documentary style quality, meaningful interaction, and sound material. It has been such fun interviewing some of the world's greatest educators, physical, speech, and occupational therapy clinicians, as well as world-renowned orthopedic surgeons and geriatricians.

What a ride! But in all honesty, it has been and continues to be a struggle. Too few therapists feel the need to continue to learn beyond what they studied in school. States now mandate continuing education, more people are taking courses, but now there are many more companies that provide con ed. Some are good and some...not so much. Our hope is that word of mouth by the GREAT community will encourage people to come to our classes.

We provide the rehab community with solid, evidence-based information that can be used in the clinical setting immediately. I personally work intensely with all GSB instructors prior to their first course; I attend and critique their first course. If a course is not the quality that I, and you, expect, it does not continue.

Today, I am 30+ years in. I have witnessed 2 major economic crashes, horrific terrorist attacks, a worldwide pandemic, major changes in the competitive landscape of continuing education, and massive technological growth that are all rapidly changing our industry and producing incredible changes in how health care is consumed and practiced. I have seen rehabilitation blossom, my children grow up strong and healthy, and I have met brilliant rehabilitation professionals.

My advice to someone who wants to start a seminar business is to start small and part time. To quote my children when they hear me sing: "Don't give up your day job." The competition now is fierce. There are many large companies that are not therapist owned, have large infusions of cash for marketing, and are taking a huge part of the market share. However, if your website is small to begin, and you have a niche and a novel way of sharing good information I think therapists will find you and support you. You must be patient, it may take years before your company takes off, but it will if you keep the quality high.

So much has changed, but many challenges still exist. I have been privileged to work around the world and meet thousands of interested and passionate therapists who really want to improve the health care for older adults and make this world a better place. I am thankful for the support and patronage of therapists that have taken our courses. I am very grateful for my 30+years in this business and I hope for many more ahead of me. I continue to find great joy in my career and I look forward to meeting and working with you and many others all over the country in the years to come.



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# There is No Age Limit for Falling

## Management of Balance and Falls in Medically Complex and Frail Populations

by Heidi Moyer, PT, DPT; Rachel Lee, PT, DPT; and Debbie Espy, PT, PhD

Medical complexity is defined using a combination of criteria including multisystem organ involvement from chronic health conditions, functional limitations, ongoing use of medical technology, and high healthcare resource needs.<sup>1,2</sup> While typically associated with older adults, medical complexity can actually occur both acutely and chronically at any age. Medical complexity can affect the 2-year-old child with cancer, the 25-year-old in the intensive care unit following a severe traumatic brain injury, as well as an octogenarian following a hip fracture. Despite the frequency at which medical complexity occurs in the general population, there is limited research on this group with unique needs. Definition of medical complexity has lacked precision, objective classification, and consistence historically across countries, physicians, and practice groups; medical complexity isn't well studied within the research and literate base. Without a clear standard, it is tough to objectively classify individuals into a "medically complex status" to allow for rigid inclusion criteria and homogenous research groups.

A construct that typically occurs closely with medical complexity is frailty. Frailty is the phenotypic expression of functional decline including lack of strength, poor activity tolerance, low physical activity rates, unintentional weight loss, and slow walking speed.<sup>3</sup> Medical complexity and frailty are not synonymous but do present concurrently

in many individuals. It is also easier to know when frailty has resolved. As a result, there is a dearth of research surrounding medical complexity, but a larger information base for frailty.

Frailty has a set of 5 diagnostic criteria that aid in the categorization of patients into this phenotype including those mentioned in Table 1. Clinically, frailty is better assessed by the physical therapy professional using the FRAIL Scale (Table 2),<sup>4,5</sup> which includes a series of questions related to Fried's frailty phenotype, but is more applicable to the plan of care and goal setting associated with physical therapy professionals. Both are scored similarly with 0 criteria labeled as "not frail/robust", 1-2 criteria as "pre-frail" and 3 or more criteria as "frail."<sup>3-5</sup> It is important to know that *neither of these tools mention age as a qualifier for the diagnosis of frailty, despite frailty often being misconstrued as "age-related."*

The Tilburg Frailty Indicator (TFI) is a more expansive assessment of frailty including a 15-question self-report measure encompassing the social, psychological, and physical impacts of frailty on an individual with a cut-off of 5 points for increased disability, hospitalization, and falls.<sup>6</sup> A follow-up study found that the physical and psychological subcomponents of the TFI are most closely associated with falls occurrence.<sup>7</sup>

**Table 1. Fried’s Frailty Phenotype<sup>3</sup>**

1. Unintentional weight loss (10 pounds in last year)
2. Self-reported exhaustion
3. Weakness (<20th percentile in grip strength)
4. Slow walking speed (<0.8m/s)
5. Low physical activity (<45-60 minutes of moderate physical activity per week)

**Table 2. FRAIL Scale<sup>5</sup>**

<b>Fatigue:</b> Are you fatigued?
<b>Resistance:</b> Cannot walk up 1 flight of stairs?
<b>Aerobic:</b> Cannot walk 1 block?
<b>Illnesses:</b> Do you have more than 5 illnesses?
<b>Loss of weight:</b> Have you lost more than 5% of your weight in the past 6 months?
<b>Scoring:</b> Robust (score = 0), Prefrail (score = 1-2), and Frail (score = 3-5)

**Medical complexity and frailty in older adults**

Balance and frailty are known to be connected. In community dwelling older adults with frailty, 76.9% will experience their first fall following a frailty diagnosis and 56.7% of those were recurrent fallers.<sup>7</sup> Balance performance is markedly worse in older adults with frailty.<sup>9</sup> Reduced physical functioning, the phenotypic physical presentation for frailty and medically complex, results in markers such as reduced gait speed, lower aerobic capacity, and poorer scores in grip and lower body strength.<sup>10</sup> Not only are people who are frail less active, but it is also harder for them to become more active due to this loss of physical resilience; skilled clinicians, such as physical therapy professionals, are vital to addressing this issue. As a result of this lost physical capacity and performance, it is important for physical therapy professionals to focus on the assessment of these items. A recommended assessment is the Short Performance Physical Battery (SPPB). While there is not a cut-off for balance and falls for frail populations, a cut-off of <10 points for fall risk can be used in community dwelling older adults with frailty to predict falls.<sup>11</sup> The SPPB is the main outcome measure used in the Brazilian Vivi Frail Program and is used to help stratify individuals into exercise groups for multicomponent exercise.<sup>12</sup> The Frail’BESTest is a newer option that seeks to quantify balance performance specifically in frail individuals. The Frail’BESTest assesses 5 of the 6 balance systems (excluding limits of stability) and has been found to be valid and responsive in frail populations, but is better at predicting physical function and not falls at this time.<sup>13,14</sup>

More research should be done to validate this tool to further determine its clinical utility.

As frailty is a physical phenotype, it can be addressed through proper exercise intervention. Multi-component exercise is recommended to address frailty. A combination of strength, balance, and endurance training is recommended to address the physical deficits in frailty.<sup>15-17</sup> It is recommended to begin with balance and task-specific training followed by strengthening, then cardiopulmonary endurance training to prioritize metabolic demands for exercise recovery.<sup>4</sup> Initial intensity at 40-60% 1RM or HRR with progression to >60% is recommended for sedentary frail older individuals to ensure safety and exercise tolerance.<sup>4</sup>

It is essential to acknowledge that communication with the interdisciplinary team is essential for proper physical therapy management of older adults experiencing frailty as polypharmacy, nutrition, medical prognosis, self-efficacy, and environmental management must be integrated into care to promote best possible outcomes.

**Medical complexity in pediatric populations**

Fragility and medical complexity do not escape those individuals under age 18 and are important factors to consider when these patients become adults that present to a physical therapy setting. The impact of medical complexity and fragility in the setting of developing body systems can lead to potential prolonged and accelerated deficits throughout the lifespan. During an evaluation and assessment of balance and falls in an adult patient with a past medical history starting in childhood, one has to factor in the overlay of developing balance systems. Steindl et al found the somatosensory system matures in toddlerhood whereas the visual and somatosensory do not fully mature until the teenage years.<sup>18</sup> Although the capacity for recovery is generally greater in the pediatric population, early insults to the neurologic and musculoskeletal system during development may result in a regression, loss, or lack of balance skill acquisition. These children are at high risk for accelerated frailty compared to their typically developing peers. The prevalence of frailty had more than doubled in a group of adult survivors of pediatric cancer at a 5-year follow-up.<sup>19</sup> Possible factors of this accelerated frailty include various medical treatment exposures, but also include decreased physical activity and strength<sup>19</sup> –which physical therapists have a role in helping people mitigate.

It is crucial to build physiologic reserve and capacity to minimize these impacts and how they may compound over the lifespan. The need for longer term follow-up is especially important in a pediatric patient with medical complexity and frailty or risk of frailty. A physical therapist can play a key role in helping a young person look beyond survival when it comes to balance in the setting of medical complexity.

## Medical complexity in oncologic populations

From diagnosis to beyond survival, a person with a cancer diagnosis can encounter various factors that result in medical complexity that affects balance and falls. Sixty percent of all cases with cancer and 70% of all cancer-related deaths occur in people aged 65 and older.<sup>20</sup> Reports identify over half of elderly people with cancer as either prefrail or frail.<sup>21</sup> These patients are at particular risk of adverse effects of various oncologic diagnoses and treatments to include complications of surgery, chemotherapy, radiation, and disease progression. There is evidence to show that physical rehabilitation intervention to improve and increase activity and exercise will improve function and reduce the impact of cancer and its treatment sequelae.<sup>22</sup> However, physical rehabilitation has been underutilized despite recommendations and evidence to support its use in this population.<sup>23</sup>

Separate from diagnosis of the original malignancy, the sequelae of oncologic treatment frequently present as balance impairments. This includes, but is not limited to, chemotherapy-induced peripheral neuropathy (CIPN), cancer related fatigue (CRF), and cancer related cognitive impairment (CRCI).

CIPN is common in older patients undergoing neurotoxic chemotherapies (primarily vinka alkaloids, platinum, and taxanes) can experience symmetrical distal to proximal neuropathy.<sup>24</sup> This frequently presents primarily as a sensory neuropathy, but can have a motor impact particularly with fatigue and with vincristine-induced neuropathy.<sup>25,26</sup> Fall risk was found to be 2 to 3 times greater for those with a history of receiving neurotoxic chemotherapeutic agents.<sup>27</sup>

CRF is defined as physical, emotional, or cognitive tiredness related to cancer or cancer treatment that is not proportional to the level of activity, interferes with function, and may not be relieved with rest.<sup>28</sup> Up to 70% of older adults experience CRF.<sup>29</sup> Breast cancer survivors with CRF reported twice as many falls and decreased muscle force and power as those without persistent fatigue.<sup>30</sup> Another side effect experienced by patients living with and beyond cancer is CRCI, particularly with high dosage chemotherapy. Cognition may also be impaired with radiation, hormonal treatments, and even prior to treatment initiation.<sup>31</sup> The cognitive domains impacted resulting in greater falls in older cancer survivors are the same as requirements in mobility and gait, including processing your body schema and the environment around you, memory, recall, orientation, and executive function.<sup>32</sup> A clinical practice guideline has been published with recommendations for both screening and assessment measures for CRF.<sup>33</sup> There are various self-report measures, including PROMIS Measures Perceived Cognitive Concerns (Impairment) Perceived Cognitive Ability to assess CRCI.<sup>31</sup> It is also important to interview family members and caregivers about any noticeable

changes in a patient's cognition. This is also an area to advocate for a more comprehensive evaluation and intervention by speech language pathology and occupational therapy.

The literature has demonstrated safety with physical therapy intervention in patients with an oncologic diagnosis including outlined parameters to consider change in blood counts and bone health.<sup>34</sup> These parameters move away from strict activity limitations and towards monitoring symptoms and grading intervention appropriately. In addressing CIPN, CRF, and CRCI, a multimodal approach is emphasized, including its benefits in cognition and reduction of inflammatory markers.<sup>31</sup> Sensorimotor training, whole body vibration, endurance training, and balance training demonstrate improvements for patients with CIPN in the areas of pain, functional mobility, and postural stability.<sup>35</sup> Although specific types of exercise and parameters are not defined, there is strong evidence supporting exercise and physical activity to mitigate CRF.<sup>36</sup>

## Medical complexity in neurologic populations

Neurological conditions can occur at any time in the lifespan. Many occur more commonly later in life. Those who develop a neuro condition earlier in life still age into the long-term consequences of the condition and/or into the later stages of progression of the condition. Stroke is one of the most common neurological conditions among the elderly with a prevalence of 7.4% among those 65 years or older; this increases with age.<sup>37</sup> Parkinson's Disease (PD) can begin before or after age 50 with the later onset much more common. It is the second most common age-related neurodegenerative disease in North America with 90,000 new cases diagnosed per year among those over 65 years.<sup>38</sup> The onset of Multiple Sclerosis (MS) is most often in a person's 20's or 40's, but the prevalence of adults over 65 who have aged with MS is increasing as disease modifying agents become more effective.<sup>39</sup> This has led to challenges as aging and disease related impairments occur together.

Movement system disorders, impairments caused by the neurological condition, and secondary impairments all may impact a person's balance, mobility, and gait stability directly and in ways that are often characteristic to that condition, e.g., the rigidity and impaired postural control of PD, fatigue in MS, or the fractionated movement disorders and sensory detection or processing disorders in stroke. Balance interventions need to target these in alignment with the exercise guidelines and treatment evidence specific to the condition and its presentation in each individual, regardless of medical complexity.

Neurological interventions are preventative, restorative, or compensatory.<sup>40</sup> In the realm of balance, prevention includes identifying and addressing fall risks, such as hazards or polypharmacy; restoration targets improvement to balance and its underlying systems for improved

mobility, safety and fall resistance; compensations may include devices, orthotics, and modified environments or activities. In the early stages of degenerative diseases such as Parkinson's disease (PD) or multiple sclerosis (MS), when symptoms are mildest, interventions include fall-prevention components, but are largely restorative, e.g., exercise for disease modification or to increase system capacities, including the body systems necessary for balance. As the person moves into the middle and late stages of a degenerative disease, as the symptoms become more severe, the focus shifts to compensations (devices, assistance, activity limitations.) In non-progressive conditions such as stroke, in which the most severe symptoms are in the early/acute stage, the early focus is prevention, especially for falls, and compensations to assure safety and function. Into the middle and late stages, the focus becomes more restorative, including building capacity of the systems involved in balance and targeted balance training. There is a tension among these categories: falls prevention may demand the person be up and about less or in less challenging environments, or use compensations such as a walker to decrease fall risk. Both are counter to the restorative goals of greater activity for muscle function, improved mobility, and improving overall balance.

Fall prevention includes reducing the person's encounters with hazards through safer environments and, potentially, modifications or restrictions to their mobility. However, falls are also prevented by improved balance ability for safer and more independent mobility, as well as better fall resistance. There is emerging research about intensity of training and reactive balance training specific to older adults with neurological conditions and their impact on balance ability and, to a lesser extent, fall resistance.

Fall resistance is the ability of a person to respond effectively to avoid falling when a perturbation is encountered. Reactive or perturbation-based training is effective among many groups at improving stability and fall-resistance. It is effective and feasible among those with MS, PD, and stroke specifically.<sup>41,42</sup> Reactive training is not used in the clinic as widely; more work is needed to define dosages and clinical translation. Those who are more frail may require external, mechanically induced perturbations during reactive training to allow control of many of the perturbation parameters to fit the needs and abilities of each person; a harness support can provide safety and confidence for more intense (more difficult, more destabilizing) training.

The recent push for high intensity interventions refers primarily to cardiovascular (CV) intensity, in this case, 75 to 88% age predicted maximum heart rate or a rate of perceived (RPE) score of > 14 (6 to 20 Borg Scale).<sup>43</sup> For those who are more than 6 months past acute-onset neurological injury, including stroke, the clinical practice guidelines (CPG) emphasize large amounts of walking/

stepping, but only at high CV intensity or with augmented feedback.<sup>44</sup> The outcome of interest for the CPG was gait speed. Faster walking is likely more stable, but the CPG did not address balance. Further, the intensity recommendations are centered on people in the later, more restorative stage of their condition, not the more medically complex, acute stage. There is, for acute and sub-acute stroke, some evidence for improved balance with high intensity CV training.<sup>45</sup> In the study by Moore et al 2020 the mean age of participants was 73 and 74 years for the two groups; all had experienced their stroke within 2 months.<sup>43</sup> The participants in the study by Hol-laran were younger (both groups mean age in the 50's).<sup>45</sup> There is a great deal of space for future research to clarify the interactions of age, acuity, medical complexity, and frailty, as well as outcomes, in high intensity interventions.

The guidelines for those with very early stroke (within 24 - 48 hours) are not clearcut.<sup>46</sup> Some advocate very early mobilization. However, less favorable outcomes were found at 3 months for a higher dose group than a usual care group.<sup>47</sup> Subsequent reviews have emphasized the need for evidence-based recommendations for dosing interventions immediately after stroke and that shorter, more frequent bouts of lower intensity in the very early stage was favorable.<sup>48</sup> These recommendations do not focus on balance specifically.

Reviews in degenerative conditions reveal that high intensity exercises were feasible and effective for improved mobility and various measures of function, but without consensus balance outcomes. In PD, these were limited to those with H&Y (Hoehn and Yahr) stages 1 - 3, not those in later stages who are more frail or medically complex.<sup>49-52</sup> In MS, the recommendation was for higher intensity in the earlier phases, but for adapted exercise and consult with a specialist in the later stages.<sup>53-55</sup> Again, the potentially more frail or medically complex groups are largely not included in the recommendations.

Cardiovascular intensity is not the same as the challenge or difficulty of the task to the performer. The CV systems may be challenged in balance training; this is distinct from the challenge to the balance systems to meet the task demands. Just as underdosed CV training is less effective than properly dosed training, balance training that is not challenging enough is less than effective. Balance task difficulty can be assessed, set, and modulated through a self-perception rating scale such as the Rate of Perceived Stability (RPS) to facilitate optimal dosing of balance training.<sup>56-57</sup>

### Common themes across populations

The older adult population has the unique possibility of requiring management for multiple stages of frailty; whether that is working to prevent progression from a pre-frail to full frailty state, managing the complications of long-term chronic frailty, or prioritizing the needs of an acute on chronic frailty state. As such, it is important

for physical therapy professionals to have an appropriate level of health literacy to be able to manage the complex needs of the physiologic and pathologic consequences of each patient's individual health profile and phenotypic presentation.

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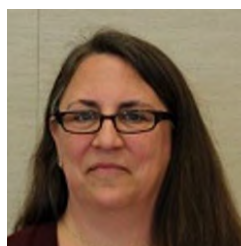
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# Looking at the Big Picture

## Considerations for Older Adults Post Lumbar Spine Surgery

by Lori Leineke, PT, DPT, EdD and Alessandra N Garcia (Treppe), PhD

Phil Geldart, a recognized authority in transforming organizational culture and leadership development, once compared the “big picture” concept to a mountain top.<sup>1</sup> He stated that when we climb to the top of the mountain, we gain a new perspective, which potentially might help us to solve common problems or challenges. This analogy translates well to clinical practice. Very often, we need to get a big-picture perspective, see broadly, and emphasize multidimensional components to gain a better understanding of how patients’ conditions affect diverse aspects of life. We pose the question: “Are we seeing the big picture when it comes to identifying aging adults who respond better to lumbar spine surgery?” To provide insights into this question, we will discuss the clinical applications of findings from an observational cohort study previously collaboratively written by one of the authors.<sup>2</sup>

### A quick overview of the cohort study

The study conducted by Garcia et al<sup>2</sup> classified 10,283 aging adults who underwent lumbar surgery based on pre-operative biopsychosocial factors and quantified the association between pre-operative biopsychosocial classifications and 3- and 12-month postoperative improvement outcomes (i.e., back and leg pain, disability and quality of life). After conducting sophisticated statistical analyses, the authors identified 3 groups based on 19 pre-operative biopsychosocial factors. These groups were characterized as “high-risk” (15%) [poor overall biopsychosocial health], “physical/social health-risk” (44%) [good psychological health and poor physical/biological and social health], and “low-risk” (41%) [good overall biopsychosocial health]. The high-risk group demonstrated increased odds of failing to recover post-operatively compared to the other classes. Similarly, the physical-/social-risk group demonstrated increased odds of failing to recover in all outcomes and time points compared to the low-risk class.

### How can we translate the study’s findings into clinical practice?

Findings from this study support the idea that people aged 60 years and older undergoing lumbar surgery include multiple subgroups and that post-operative lumbar recovery is a multidimensional construct. In addition, the results suggest that each person may progress through recovery at a unique rate. Patients with the same medical condition and/or same surgical

procedure present with varying recovery rates based on biopsychosocial factors. For example, in the Garcia et al study, biopsychosocial factors with higher prevalence in the high versus low-risk class were depression (92.5% vs. 10.6%), multiple morbidities (55.3% vs. 25.7%), and obesity (59.5% vs. 37.2%). These factors were determined to lead to an unsatisfactory recovery in patients with chronic low back pain who underwent the same surgical procedure.

Knowing an older person’s risk of postoperative non-recovery can assist in caring for the person in several ways, including need for interprofessional pre-operative care in those in the high-risk group (e.g., education and exercise to manage obesity, depression, and other comorbidities, as well as referral to a dietician/nutritionist/psychologist); plan for additional post-op visits in cases with multiple morbidities; and perform treatments to improve modifiable morbidities.

In order to effectively address what aging adults need pre and post-operatively, it is also important to identify the care and support needs from the perspective of patients as well as understand the wider context in which they live and interact.<sup>3</sup> Utilizing the International Classification of Function (ICF) model allows clinicians to take into consideration multiple factors related to the patient, including the patient’s health conditions and contextual factors.<sup>4</sup> Contextual factors can be grouped into personal factors (fear-avoidance, motivation, temperament, etc.) and environmental (e.g., home design, work setting, etc.). While the use of the ICF model is standard practice in physical therapy care, many of the clinical resources that physical therapists use to develop a plan of care may not integrate these known biopsychosocial factors into the recommendations for rehabilitation.

### Are we seeing the big picture?

We encourage physical therapists to employ the ‘big picture’ of the patient to create a care plan for rehabilitation and recovery. Post-operative protocols are often provided from the surgeons to the physical therapists to guide rehabilitation. Following a post-operative protocol may allow a management path for the typical patient, but most protocols do not provide a pathway for older adults with multiple morbidities. Additionally, insurance constraints are based on visit limits that were created for standard patient care. It has been shown that those with multiple morbidities are at higher risk of complications necessitating additional

rehabilitation care. Creating a realistic plan of care that matches the likely rehabilitation path allows for open communication between the therapist and the payor source. Having data, such as the information found in the Garcia et al<sup>2</sup> article provides evidence to support physical therapists' clinical plan.

Ideally, people could seek advice from physical therapy providers for care prior to having spine surgery. Pre-operative care could help to address any modifiable morbidities to minimize their affect following surgery. Knowing what risk factors predispose a patient to a prolonged post-operative rehabilitation course allows the patient and the physical therapist to work together to develop a realistic plan. Utilizing the Annual Physical Therapy Visit for Aging Adults<sup>5</sup> can benefit the patient in multiple ways. A person's risk factors can be identified early, allowing for them to be taught ways to cope, reverse, or minimize morbidity. The screening process provided in the Annual Physical Therapy Visit<sup>5</sup> provides a comprehensive assessment of the patient, therefore allowing the physical therapist to create a plan to optimize health and function. Older adults who participate in annual screening may have an opportunity to address impairments when they begin, limiting a loss of function and therefore decreasing the development of multiple morbidities.

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# Sustained Athlete Fitness Exam Scores Big at National Senior Games

by Susan Patel, PT, DPT

“We don’t stop playing because we grow old; we grow old because we stop playing”— George Bernard Shaw

Skeeter is a 76 year old participant at the Cincinnati VA Medical Center in the Gerofit program, a national, evidence-based supervised group exercise program. All veterans complete a physical function test in areas of strength, balance, and aerobic capacity. Upon completion of their functional testing, veterans receive an outcome data sheet with their results based on age-matched norms. Based on the results and personal goals veterans are given a personalized exercise prescription and guidance in carrying out the exercise program. He’s been enrolled in the Gerofit program for 4 years, is very competitive, and likes to stay motivated. Skeeter used to be a runner; after separating from the service, he frequently would fall when attempting to return to his running hobby. A neurology consult determined that the service-related traumatic brain injury that he sustained was the cause of the falls. An ankle foot orthosis was prescribed that allows him to go on long walks without stumbling or falling but he missed the rush of a good run.

APTA Geriatrics, championed by researcher and physical therapist Dr Becca Jordre from the University of South Dakota, is a partner of the National Senior Games (NSGA). NSGA is a component of the United States Olympic Committee with a stated goal of “promoting healthy and active lifestyles for athletes aged 50 and over.”<sup>1</sup> Every year thousands of adults aged 50 and older, participating in their own state’s game, aim to qualify for the National Senior Games Association’s (NSGA) biennial competition. A battery of tests known as the Sustained Athlete Fitness Exam (SAFE) has been collecting data on athletes at the National Senior Games for several years.<sup>2-4</sup>

The SAFE is a free fitness screen provided to athletes by volunteers from the physical therapy community (PTs, PTAs, and students of each) and is part of an ongoing research study. SAFE includes standard measures that screen 4 basic areas of fitness: (1) Cardiovascular health, (2) Muscle, (3) Flexibility, and Balance. This screen is

designed to be challenging. Average scores are 9-10 out of a total possible 20 points. Scoring is based on past scores of NSGA athletes. The SAFE is not a typical “older adult” health screen but a tool to address the needs of older athletes and provide them education to keep them in their chosen sport/game. Standardized education at the end of the screen includes a focus on sport performance and injury prevention.

I became familiar with SAFE and the National Games in 2022, when I volunteered through APTA Geriatrics to conduct the Sustained Athlete Fitness Exam (SAFE) in the Florida State Games with 21 sports and 12,065 athletes.

The SAFE is challenging but doesn’t exclude those who have limitations, so I decided to discuss potential participation in the National Senior Games with Skeeter, as I felt he had the potential to compete in power walking. He is the top performer in the Gerofit physical function test in his age group scoring 80% for agility/dynamic balance, >95% in lower/upper body strength, and >95%<sup>7</sup> and his Usual Gait speed measured above average, 1.25m/s when compared to community dwelling older adults.

I informed him about power walking as an alternative to running. Power walking is classified as an open event so athletes do not need to qualify at state level. He immediately started training and we started exchanging ideas, rules, techniques of power

walking. In Gerofit, we included exercises that focused on power, balance, and strength that would improve his performance on his SAFE and power walking technique.

When the 2023 National Senior Games were hosted in Pittsburgh, I volunteered to conduct the SAFE again and to watch Skeeter compete. Skeeter scored 16/20 on the SAFE. He participated in the 1500-meter Power Walk (finishing in 12th place out of 22) and in the 5K Power Walking (scoring 10th place out of 16 in his age group.)

Skeeter states “I got bumped some at the beginning of the races but learned a lot from watching the other power walkers race ahead of me, the fellow competitors were fun to be around. The SAFE after the race was excellent. I learned some tips to improve my health plus exercises



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and stretches which can improve my performance. The folks working on the exams were excellent and fun.”

It was amazing to see him find a new love for power walking while keeping him safe. He plans to continue to compete every 2 years. He is now looking into other competitions such as the National Disabled Veterans Golf Clinic and National Veterans Golden Age Games. His wife was skeptical at first and was worried about injuries but once she experienced the event and observed all those older adults participating, she was inspired and amazed as well. He will continue to incorporate exercises and education provided to him at an athlete level to continue to improve his power walking.

Dr Jordre’s research with the SAFE and Senior Games has revealed several insights into older athletes. For example, senior athletes exhibit significantly lower levels of cardiovascular disease, diabetes, depression, and anxiety compared to the general population of adults in their age group.<sup>2,5</sup>

- They also demonstrate greater levels of fitness across the board compared to non-athletes.<sup>6-8</sup>
- Grip strength in older athletes is more similar to those in the general population who are one to two decades younger<sup>7</sup>
- Only 10% of athletes report having a fall annually compared to 30% of community dwellers.<sup>4</sup>
- Senior athletes exhibit similar gait speed as adults in their thirties.<sup>8</sup>
- Shoulder flexibility is significantly greater in senior athletes and declines at a much slower rate compared to non-athletes.<sup>6-8</sup>

Volunteering for SAFE is an activity that teaches us first-hand about successful aging. I am constantly inspired by athletes like Skeeter who demonstrate the wonderful outcomes that can come from staying active.

Whether an older adult is a beginner or advanced, SAFE gives them a challenge, a new personal goal to work towards, and ways to improve performance in their sport while keeping them educated and in their best health. Both SAFE and Gerofit are excellent ways to promote physical therapy, wellness, socialization, competition, and injury prevention for continued health and successful aging to aging adults.

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# Resistance Training: Put the Physical into PT for Older Adults

by Joanna Ye, PT, DPT; John Morgan, PT, DPT, DMA2; and Michael Zarro, PT, DPT

One of the most profound ways the physical therapy profession can reduce mortality and disability risk is by preventing loss of skeletal muscle mass and associated losses of function among older adults. The World Health Organization (WHO) recognizes that physical activity is paramount in improving health of the aging population.<sup>1</sup> Specifically, the WHO strongly recommends the inclusion of strength training as part of a comprehensive physical activity routine.<sup>1</sup> Strength training is defined as exercise training with the intent to increase the ability of muscles to generate force by challenging them with systematic increases in loading. This is particularly important for older adults as it is estimated that the strength of people in their 80s is about 40% less than that of people in their 20s.<sup>2</sup> There is strong evidence suggesting that progressive resistance training is safe and effective in increasing muscular strength, mobility, and quality of life among older adults.<sup>3,4</sup> Despite the potential benefits of strength training, it is estimated that only approximately 30% of adults strength train 2 or more times per week while approximately 60% of adults do not participate in any strength training at all.<sup>5</sup>

Resistance training can prevent leading age-related causes of disability and mortality including falls, cardiovascular disease, and dementia. It is paramount for health professionals specializing in geriatric medicine to consider ways to involve clients in resistance training in order to maximize quality of life and prevent functional decline.<sup>6</sup> The physical therapy profession is particularly well positioned to prescribe strength training as an intervention to reduce disability and improve population health. However, a recent survey of physical therapists and physical therapy students found that 68% of responding therapists felt that strength training was inadequately applied by the profession.<sup>7</sup> The same study found that nearly half of responding therapists believe that their professional educations did not prepare them to apply strength training. More than half of responding therapists and students performed poorly on a strength training knowledge check. Physical therapists collectively have a professional responsibility to equip themselves and clients with the latest knowledge and evidence-based strategies for mitigating age-related skeletal muscle decline and associated pathology. The purpose of this article is to highlight the benefits of progressive resistance training for aging adults and offer practical advice for implementing resistance training interventions in this population for physical therapy practice.

## Benefits of Progressive Resistance Training (PRT)

A prominent health concern among older adults is the loss of skeletal muscle mass, strength, and function which occur even in the absence of chronic disease or pathology.<sup>8</sup> Sarcopenia or frailty are pathologic conditions where concurrent losses of strength and function or physiological reserve are present. Low muscle performance resulting in sarcopenia or frailty has dire implications, as it is associated with comorbidities including increased risk of fractures, falls, hospitalizations, cognitive decline, and mortality.<sup>6</sup> However, research has shown that progressive resistance training can attenuate losses of muscle function and mobility to reduce these risks.<sup>9</sup> Even among the very old (people over age 75) progressive resistance training produces significant effects on strength and mobility.<sup>10</sup>

A recent meta-analysis of randomized controlled trials suggests that older adults participating in regular PRT for 1 to 3 days a week for 8 to 18 weeks can restore strength lost from several years of inactivity.<sup>10</sup> Resistance training is known to improve functional mobility among seniors, as assessed clinically by functional outcome measures including: Timed Up and Go, Functional Reach Test, gait speed, chair rise tests, and balance tests.<sup>9</sup> Additionally, engaging in progressive resistance training has shown to reduce disability and improve quality of life among people with osteoarthritis, a common cause of pain and immobility.<sup>3</sup>

Patients, clients, and even clinicians may express concerns about potential adverse effects of progressive resistance training for someone who is age 60 or more. Progressive resistance training may result in transient joint discomfort or muscular soreness; serious adverse events during PRT are rare and usually not related to the intervention itself.<sup>3</sup> The benefits of strength training outweigh the health risks associated with low physical activity levels by reducing the risk of chronic diseases including diabetes, cardiovascular disease, cancer, dementia, and all-cause mortality.<sup>11</sup>

## Designing programs

Current research does not support a one size fits all approach to resistance training. Individually tailored programs and modalities have been shown to maximize adherence and response.<sup>7</sup> Principles of frequency, intensity, duration, and rest should be adjusted based on participant response in order to progress resistance without aggravating symptoms. It is recommended that PRT for older adults should be monitored and adjusted to

address the individual's changing physical, medical, and psychological needs over time.<sup>8</sup>

A properly-designed program is challenging but safe, includes both fast and slowly-executed exercises which are tailored to the intended outcome of the person performing them, and observes evidence-based dosage recommendations.<sup>11,12</sup> Muscular strength, endurance, and power can be assessed to gain information on a baseline physical fitness level, as well as to set targets in a resistance training program.<sup>13</sup> Muscular hypertrophy, an increase in muscle fiber cross-sectional area, can also be achieved through appropriately dosed resistance training. Progressive overload is the principle that increasing the intensity of exercise will result in improvements to muscular strength, power, endurance, and hypertrophy.

Table 1 presents an example of a balanced PRT. Each day should be followed by a rest day or days per patient tolerance and the prescription should be integrated into a multimodal program incorporating aerobic, balance, and flexibility training. Repetitions, resistance, and rest periods should be adjusted to maximize patient tolerance/adherence, and to facilitate progression.

### Parameters for resistance training

Progressive resistance training programs should be individualized and periodized. Specific parameters for optimizing outcomes of PRT are recommended. Studies on dose response to resistance training in older adults have shown resistance training will substantially improve strength; the largest effect size is measured when

individuals are lifting weights heavier than 70% of their respective one-repetition maximum (1RM), two-to-three sets per exercise with 60-second rests, twice per week each.<sup>14</sup> General parameters recommended by the National Strength and Conditioning Association (NSCA) are include: 1-3 sets/per exercise/per muscle group (eight-to-ten different exercises total); 8-12 repetitions to improve strength and power, or 15-20 repetitions to improve muscular endurance. A frequency of two-to-three days/per week/per muscle group is optimal.

Compound exercises, which involve multiple joints and muscle groups, and may enhance overall strength gains are highly recommended.<sup>13</sup> Exercises including chest press, leg press, and shoulder press are familiar examples of a compound exercise. These can be particularly functional when they mimic tasks of daily living such as deadlifts, squats, and suitcase carry or farmer's carry. Single joint exercises can also be included to target major muscle groups in a more isolated fashion and include exercises such as bicep curls, triceps extensions, quadriceps extensions, hamstring curls, and calf raises. Overall reductions in muscular strength may be part of the overall aging experience; the extent to which reductions in strength occur can vary dependent on type of muscular contraction.<sup>15</sup> Muscular strength during eccentric contractions is relatively well-preserved among seniors in comparison to isometric or concentric strength.<sup>15</sup> Physical therapists may be able to take advantage of this preservation of eccentric strength when initiating PRT with older adults. However, it is not recommended to extensively

**Table 1.** Example progressive resistance exercise prescription consisting of 8 total exercises: 2 compound exercises per major muscle group balanced between slow concentric and explosive movements.

DAY 1	
Slow concentric posterior chain movement (dead lift, glute bridge, hip extension)	1-3 sets of 8-12 reps at >70% 1RM with 2-3 minute rests between sets
Explosive pressing movement (push-up, pressing machine, barbell/dumbbell pressing)	1-3 sets of 8-12 reps at 40-60% 1RM with 3-5 minute rests between sets
DAY 2	
Slow concentric upper-body pulling movement (chin-up, row, pull-down machine)	1-3 sets of 8-12 reps at >70% 1RM with 2-3 minute rests between sets
Explosive squatting/jumping movement (goblet squats, machine leg press, lunges)	1-3 sets of 8-12 reps at 40-60% 1RM with 3-5 minute rests between sets
DAY 3	
Slow concentric pressing movement (machine or dumbbell/barbell horizontal or overhead press)	1-3 sets of 8-12 reps at >70% 1RM with 2-3 minute rests between sets
Explosive posterior chain movement (kettlebell swings, power cleans)	1-3 sets of 8-12 reps at 40-60% 1RM with 3-5 minute rests between sets
DAY 4	
Slow concentric squatting movement (barbell back/front squats, machine leg press)	1-3 sets of 8-12 reps at >70% 1RM with 2-3 minute rests between sets
Explosive upper-body pulling movement (dumbbell or machine row, Australian pull-ups)	1-3 sets of 8-12 reps at 40-60% 1RM with 3-5 minute rests between sets

prescribe exercises with very high-intensity eccentric contractions due to increased risk of muscle soreness or more serious complications such as rhabdomyolysis.<sup>13</sup>

Equipment for resistance training, depending on setting and clinic resources, may be available. Exercise machines, such as a leg press machine or cable column, have a fixed range of motion which could be beneficial in some situations. For example, if an exercise is intended to target a specific muscle in isolation, movement of other regions is contraindicated, or to facilitate motor learning. Free weights may confer different benefits such as providing resistance across a greater range of motion, challenging trunk control or dynamic balance, and recruitment of stabilizing musculature. Axial loading with free weights may translate to functional improvement as it challenges the individual to resist the effect of gravity while providing load to long bones. When designing a home exercise program, the mode of resistance should be chosen with patient preference and accessibility in mind to maximize lasting adherence.

The home care setting may pose challenges in procuring equipment for resistance training compared to therapists treating in clinics or gyms with access to free weights and/or machines. Resistance bands and ankle weights are easily portable and can offer modest amounts of resistance for initial training. However, resistance bands and ankle weights may not be adequate in the long term for progressive overload. If patients do not have access to equipment at home, physical therapists may need to assist patients in utilizing community resources. For example, some Medicare plans include the SilverSneakers program, which gives patients access to local fitness facilities and can greatly expand options for resistance training equipment.<sup>16</sup> Physical therapists may be able to accompany their patients to these facilities and provide patient education on equipment use so that patients can build a long-term habit of resistance training even following discharge from therapy. Depending on individual preference, convenience, and tolerance, alternatives to traditional resistance training may be utilized. Manual resistance could be used when equipment is not available or appropriate. Manual resisted eccentric exercise has been shown to improve quadriceps muscle thickness, knee extensor strength, gait speed, sit to stand performance, and balance compared to concentric exercise in healthy older adults.<sup>17</sup> Plyometric training has been shown to improve jumping and stair climbing performance compared to resistance training and walking in healthy, older males.<sup>18</sup> Flywheel training seems to promote symptom-free progression and improves knee extensor peak isokinetic power compared to traditional resistance training.<sup>8,17</sup> Blood flow restriction (BFR) training is an emerging topic in rehabilitation following musculoskeletal injury, as it can facilitate strength and hypertrophy gains when higher loads are not tolerated.<sup>19</sup> BFR training has been found to significantly improve

performance in Timed Up and Go, modified Romberg, sit and reach test, and knee extension and chest press strength in older adult men.<sup>20</sup>

### Considerations for sarcopenia and frailty

Older adults exhibiting signs of frailty (shrinking, slowness, exhaustion, low physical activity, and weakness) may be especially challenged when participating in a progressive resistance training program due to decreased functional reserve and physiological decline across multiple systems.<sup>21</sup> However, multi-component exercise programs including resistance training have been found to promote better global functional capacity in frail older adults.<sup>18</sup> Benefits of resistance training as part of multi-component exercise programs for frail elders include reduced incidence of falls and improved performance of Timed Up and Go, chair rise test, balance measures, improved functional mobility, independence, muscle power, strength, and cross-sectional area.<sup>22</sup> However, due to increased fall risk at baseline compared to non-frail adults, it is especially important to design resistance training programs for frail older adults with safety and supervision needs in mind.<sup>23</sup> Figure 1 contains a summary of the overall recommendations for implementing resistance training outlined in this paper.

### Conclusion

Physical therapy plans of care can play a unique and vital role in the prevention of skeletal muscle mass loss among older adults, thereby helping to reduce concomitant losses in mobility, function, and quality of life in this population. Physical therapists should educate themselves on prescribing progressive resistance training in safe, effective doses and through a variety of modalities which conform to evidence-based guidelines and patient

**Figure 1.** A quick reference guide to the Top 5 recommendations for clinicians to implement resistance training in the older adult population.



preferences. Researchers and educators should explore the existing literature for strength training in the geriatric population and provide additional resources and guidance to students and prospective clinicians to address loss of skeletal muscle in this group.

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# PT Leads the Way: Making Virtual Community-Based Exercise Classes a Reality

by Susan Musicant, PT, DPT; As told to: Carole Lewis, PT, DPT, PhD, FAPTA

Do you believe that communities and our health care system need community-based exercise programs? Are you uncertain of how to start or execute such a program? Would you like information on how to conduct a community-based exercise program in your area? If you answered “Yes!” to any of these questions, please read on.

Let me introduce you to Susan; a 72-year-old PT who got her masters in PT from Stanford University when she was 35. She reached out to me (Carole) through a letter in PT Magazine and invited me to watch one of her Zoom classes. I was enthralled by what I saw. I watched a meaningful, engaging, and wonderful community-based exercise program that she conducts regularly on Zoom. After the class, I asked if she had written about this. She said she had and even had a submission that had been rejected. I asked her to send it to me; we re-worked it and what follows is the result. The goal is to get the word out that *physical therapists need to be conducting community based exercise program and it is very doable*. Susan currently works remotely, from Hawaii, for a California Bay area non-profit called Daybreak. Inspired by the necessity to do impactful fall prevention work during the Covid 19 pandemic, Susan created a virtual program called “Get our Zoom On”: A group, physical therapist-lead exercise and fall prevention program for community dwelling older adults (aka “GYZO”).

Skilled PT group work can effectively address issues of risk for falls related to chronic pain, social isolation, and lack of knowledge about the benefits of exercise.<sup>1</sup> Evidenced based studies show that exercising in a group is often more successful for long term exercise adherence for older adults.<sup>2</sup> Even virtually!<sup>3</sup> Physical therapists are uniquely trained and skilled to address issues related to exercise tolerance, safety, and adherence coaching.

A description of the “Get Your Zoom on Program” follows, an example that other therapists are encouraged to use to start their own physical therapy led group programs.

## Community-based exercise course description

**Introductory time.** Sign in 5 minutes early and welcome participants as they arrive. During this time ask participants about how they felt after the last session and anything that they may want to share with the group.

**Mindfulness time.** Guiding with words into a relaxed but alert state with focus on breathing posture and awareness of body sensations. Meditative music is

recommended for this 10-minute segment.

**General structure.** Ask everyone to sit comfortably in the chair and begin your favorite breathing techniques. Encourage deep diaphragmatic breaths. You may also want to do a body scan from head to toe to note any areas of relaxation or tightness.

**Posture and stretching (10 minutes).** Provide a background of relaxed, flowing music. Use verbal cues for scapular retraction, upper thoracic spine extension. Try cues like – “Upright, open chest.” You may want to teach that re-training of posture requires some unlearning of the postures that result from daily desk work or television watching habits for most people Try several of your favorite techniques to get participants to stand straight. For example, “Bring your shoulder blades into your back pocket and feel as if a string is attached to your head and lifting your head straight. Check your back hips and knees to stand straight and tall like a tree.” If they are sitting only, work on upper body posture.

Once they are standing or sitting taller, have them stretch. Flowing movements that get those in the class to stretch is more engaging than just a static stretch. You can begin with neck motions in all directions. Susan has great arm stretches that are fluid and done in all directions from shoulder flexion to elbow extension. For example, making a wave with your arms straight or a chicken dance with elbows bent. Sit and reach and a figure 4 stretch for the lower extremities is always beneficial. An example of how to teach the sit and reach stretch: Sitting at edge of seat, knees extended with heels resting on floor—encouraging maximum upright posture, hinge at hips lowering the upper body over the lower body—cue 3 deep slow breaths.

**Aerobic exercise to music using hand weights.** Susan provides upbeat music with a different theme for each session. Luckily, I was in the disco session, my favorite. As the leader, she demonstrates continuous movement to raise and sustain an aerobic level heart rate, both sitting and standing. Simple easy exercises can help to raise the heart rate: marching or running in place, reaching up, out, diagonally, side stepping forward and backward stepping. This segment is 12 minutes.

**Strength training with resistance bands (15 minutes).** DayBreak sends participants a 5-foot-long piece of latex free resistance band (light or medium weight). However, bands can be purchased for as little as \$7 online. Emphasize good posture throughout the strength segment. Here are some suggestions for upper extremity strengthening: Using the resistance band in sitting: elbow

curls; shoulder press; shoulder external rotation. Example suggestions for the lower extremity:

- Resistance band is wrapped around distal femur—start with knees together—abduct hips.
- Repeated sit to stand—standing on resistance band and holding in both hands.
- Standing with chair support—Up on toes, back on heels, ankle dorsiflexion.

Generally, she leads through 3 sets of 10-12 repetitions. Do one set then repeat 2 more times. Susan has a small gong that she hits that sounds like the gong at a boxing match for rounds 2, and 3.

**Moving for the fun of it – the last “exercise”:** Using music (of course) that is somewhat fast and upbeat, or slower and more flowing will work. In this final phase, encourage relaxation, flow, posture, and connection with the music as a cool down. One fun thing that Susan does is she asks each participant to show their move. This is very fun. Everyone takes a turn and I saw some smooth disco to boxing moves. This segment takes 5 minutes.

**Conclusion:** A 1-minute short check in that everyone is Ok and a goodbye

### What are the secret ingredients?

- **Creativity and responsiveness** to participants are key.
- **Coaching:** Give participants what they want, use a person-centered approach. Speak directly to individuals while making a point for everyone: Emphasize praise and possibility!
- Teach: **“Tiny Habits”** as a road map for change.
- **Re-Educate:** Teach older adults that exercise is NOT dangerous: Exercise is not hard, exhausting, painful and will not make things worse if done correctly.
- **Progression:** “Rome was not built in a day.”
- **Goldilocks rule:** “Not too much, not too little, just right.”
- **Fun and something we do together,** in community with rhythm, music, expanding skills and trying new things, together.
- **Creating community:** With informality. Use participants names during class.
- **Communication is Key:** Speak directly to participants at times. Address individual concerns as issues for all to learn from. Ask for feedback.

### Nuts and bolts

1. Participants need access to virtual devices such as smart phone, tablet, or computer.
2. Participants need about 5' length of resistance band and 2 hand weights (homemade works).
3. Consider getting an assistant to help with technical issues, especially at first. Millennial or younger relatives can be quite useful.
4. Enrollment process: Initial telephone contact with physical therapist: Get emergency contact and

general health information as well as phone number and email address. Send a waiver-of-liability form and tell participants they must fill this out before joining the group.

5. Send reminders the day before and day of with time and the link; You might want to include reminders of all the great reasons to exercise.

### A call to action

Let’s start a conversation, a movement (pun intended). Let’s bring our skills, passion, playfulness, and make a difference for older adults in our community. We can support on-going safe physical activity for discharged older adult patients and other interested older adults. We need this now more than ever!

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# Let's Get Physical with Bone Loss

by Megan O'Connor, PT, DPT

*Osteoporosis(OP) and osteopenia are prevalent in people aged 50 years and older but frequently undiagnosed until the first fracture.<sup>1</sup> OP fractures result in high medical costs, health issues, and decreased independence for patients.<sup>2</sup> Given that current preventative care recommendations do not assess bone density until over the age of 65 for the majority of the population, risk assessment for OP screening is warranted. With early intervention, OP fractures may be prevented.<sup>3</sup> This case presentation is based on Wingood M, Criss M, Irwin K, et al. Screening for Osteoporosis Risk Among Community-Dwelling Older Adults: A Scoping Review. J Geriatr Phys Ther. 2023;46(4):E137-E147<sup>4</sup> and was presented at the January 16, 2024 Journal Club.*

## Case presentation

Ms. J is a retired, community-dwelling 86-year-old female referred to outpatient physical therapy for assessment 2 weeks after a fall resulting in coccyx pain. She slipped off a rolling stool while reaching to shred documents in her home office, landing on her coccyx and sacrum. At the time of the visit, she had limitations in her regular exercise program, vacuuming, sitting, tucking sheets on the mattress, and transitioning from sitting to standing. She also reported bouts of left hip pain intermittently over the last few years; no mechanism of injury or current pain reported. She typically visited the gym 3 times a week to use the treadmill, elliptical, bike, rower, and leg press. She reported a lifelong history of being an avid exerciser since her youth in a variety of sports and activities. Her pain significantly improved within a week before seeing her primary care provider, her provider recommended no activity until cleared by PT. Her pain was mild at her physical therapy evaluation, rating at 1/10 at worst in her coccyx region, and none currently in her hip. She reported good relationships with her spouse and her nearby daughters. Ms. J does not use alcohol or tobacco. Ms. J is a good historian, reports adherence to recommendations from providers for safety, self-care and medical management. She has no cognitive deficits and was motivated to continue maximizing her independence.

Her past medical history was significant for osteopenia with no history of fracture. One distant fall

with a strike to her head was reported while moving through a dark room; since then utilizes a flashlight for nocturnal bathroom trips. No other falls or near falls reported. She denied any patient education or recommendations other than starting a walking program for weight bearing exercise upon her initial diagnosis and was amenable to interventions to prevent risk of future fractures.

Radiographs demonstrated no displaced fractures, but a slight cortical irregularity in her first coccygeal vertebral body which may have been a nondisplaced fracture or overlapping osseous structures. She also demonstrated multilevel degenerative disc disease in the lower lumbar spine, moderate left hip osteoarthritis, mild left osteoarthritis.

Ms. J was diagnosed with osteoporosis in 1999, but her original bone mineral density scores were unavailable. The oldest records available were from August 2017, with a lumbar spine T-score of -.02, left femoral neck -2.2, right femoral neck -1.7, resulting in a FRAX score of 17% major fracture risk, hip fracture risk of 5.2%. Her most recent bone mineral density in October 2022 indicated a left femoral head T score of -1.7, right femoral neck score of -1.4, resulting in a FRAX score of 13% major fracture risk, and 4% hip fracture risk.

Her medications included levothyroxine, atorvastatin, and estradiol. Her supplements included vitamin C, calcium, vitamin D, vitamin B12, B6, fish oil, and a daily multivitamin.

**Table 1. Tests and Measures**

Measure	Initial patient score	Final patient score
Functional Gait Assessment	22/30	Not assessed
Single Leg Stance	RLE >30 sec, LLE 8 sec	RLE >30 sec, LLE 10 sec
Gait speed	Self-selected: 0.85 m/s Fast gait speed: 1.14 m/s	Self-selected: 0.90 m/s Fast gait speed: 1.15 m/s
5 Time Sit to Stand	12.09 sec	Not assessed
Tragus to wall	Relaxed posture: 21 cm Best posture: 17 cm	Relaxed posture: 15 cm Best posture: 13 cm
Kyphotic Index	10	10
Iliocostal distance	4 cm left, 5 cm right	4 cm left, 5 cm right

**Table 2. Initial Lower Extremity Strength**

Hip	Right	Left
Flexion	4-/5	4-/5
Extension (supine)	4/5	3/5
Abduction	5/5	5/5
Adduction	5/5	5/5
External rotation	4/5	4-/5
Internal rotation	5/5	5/5

Knee	Right	Left
Flexion	5/5	5/5
Extension	5/5	5/5

Ankle	Right	Left
Dorsiflexion	4+/5	4+/5
Plantarflexion	4/5	4/5

**Examination**

Ms. J presented alert and oriented. She bore no signs of ecchymosis over trunk or hips; skin was intact and unblemished. She presented with tenderness to palpation over her coccyx and surrounding the superior and posterior region of her greater trochanter and left gluteals and piriformis. Vital signs were unremarkable. Ms. J stood with a forward head, rounded shoulders, decreased lumbar lordosis, and mild thoracic kyphosis. Tragus to wall testing revealed 21 centimeters in her relaxed posture and 17 centimeters in her best posture. Her kyphotic index (KI) was within normal limits at 10. Left iliocostal distance was one centimeter smaller than right at 4 centimeters and 5 centimeters respectively. Her left lower extremity was weaker than her right in proximal hip musculature (Table 2). Her self-selected gait speed was 0.85 meters/second(m/s), and fast gait speed was 1.14 m/s, both independent but with decreased hip extension and decreased pelvic and trunk rotation. Her five-time sit to stand took 12.09 seconds. She was able to maintain a left single leg stance for 8 seconds, and right single leg stance greater than 30 seconds. She scored 22/30 points on a Functional Gait Analysis (FGA) with mild impairments of gait with eyes closed and stairs, moderate impairments

in horizontal head turns, ambulating backwards, and severe impairments in gait with a narrow base of support.

**Assessment**

A comprehensive assessment was performed after a subjective history with Ms. J. Her examination revealed limitations in her exercise regimen, household chores, sitting, transitional mobility, balance, and strength. While below the standard 1.0 m/s cut-off classically used for ambulatory goals, when matched for gender and age, gait speed indicated no deficits.<sup>5,6</sup> Her FGA score, while at the generic cut-off, was above average for her peers.<sup>7</sup> Her single leg stance on her left lower extremity was not only markedly different between limbs, but below average stance time compared to peers by Bohannon in 2018, failing to hit the 14.75 second average.<sup>8</sup> Her left lower extremity proximal weakness most likely contributed to poorer performance in single leg stance testing. Her five time sit to stand was below risk for falls. Tragus to wall results were notable for increased spinal fracture risk, as well as balance and postural deficits.<sup>9</sup> Overall, Ms. J scored frequently close to balance deficit and fall risk cutoffs, had minimal contributing fall risks in her history, no history of fracture, and low FRAX scores, making her an ideal candidate for preventative intervention.

**Table 3. Treatment**

Initial Evaluation Treatment	Follow up visit 1	Follow up visit 2
<ul style="list-style-type: none"> <li>• 10x reverse lunges for gluteal strengthening</li> <li>• 20 ft lateral ankle banded sidestepping, green TB for lateral hip strengthening</li> <li>• SLS with decreasing upper extremity support</li> <li>• Walking with horizontal head turns for dynamic balance</li> <li>• Tandem walking with intermittent UE support for dynamic balance</li> <li>• 10x STS with 10#, instruction in body mechanics for LE strengthening, resistance training</li> </ul>	<ul style="list-style-type: none"> <li>• 10x5 sec chin tucks in supine with towel roll under thoracic spine, palms up toward ceiling</li> <li>• 10x5 sec posterior pelvic tilt bridge with black theraband hip abduction</li> <li>• 8x4 sec anti-rotation presses in normal base of support, 3#, visual input for posture and form in mirror</li> <li>• Postural correction at wall with walk aways</li> </ul>	<ul style="list-style-type: none"> <li>• 10x5 sec supine pectoral stretch with scapular retraction</li> <li>• 8x wall angels to 90 degrees with chin tuck</li> <li>• 10x tabletop plank bird dogs for posterior chain strengthening</li> <li>• 10x supine bridges with posterior pelvic tilt with black resisted hip abduction</li> <li>• 3x45 sec each LE SLS with postural cues for hip activation, visual input</li> <li>• 2x60 ft tandem walking</li> <li>• 4x60 ft walking with horizontal head turns</li> </ul>

## Interventions

Ms. J was encouraged to return to her usual exercise regimen immediately, provided the activity did not cause increased pain. She was educated extensively about multi-method approach for OP management including balance for fall prevention, resistance training to promote an osteogenic effect, body mechanics for fracture prevention, and general recommendations for nutrition to support bone health. Visits included progressions on spinal mobility, anterior opening, and posterior chain strengthening. See Table 3 for details. Her final visit included a handout breaking down her home exercise program (HEP) into a sample weekly plan for endurance, upper and lower body strength, balance, and flexibility. See Figure 1 for details.<sup>10</sup>

## Results

Ms. J was seen for a total of 3 visits before she felt she could continue her home exercise program on her own. When asked her confidence in implementing new exercises on a daily basis on a scale of 0-10, 0 being

no confidence and 10 being completely confident, she reported 10/10. She also verbalized sharing the information with her daughters who had also been diagnosed with OP. While the majority of her measures remained similar to the initial examination, her tragus to wall measure changed significantly, and her pain was becoming more intermittent. Given successful management of her HEP within the course of a month and minimal fracture or fall risks, Ms. J was appropriate to continue her HEP independently.

## Discussion

Ms. J's FRAX scores did appear to screen her appropriately. She was initially treated per current recommendations,<sup>11,12</sup> based on FRAX scores and began pharmacological intervention to address her OP upon initial imaging. Given her FRAX score indicating 13% major fracture and 4% hip fracture, mild deficits in balance, and eagerness to round out her exercise regimen, she was an excellent candidate for physical therapy interventions to help prevent fractures.

Figure 1.

# WEEKLY EXERCISE AND PHYSICAL ACTIVITY PLAN

Use this form to make your own exercise and physical activity plan — one you think you really can manage. Update your plan as you progress.

Week of \_\_\_\_\_

Aim for moderate-intensity endurance activities on most or all days of the week.

Try to do strength exercises for all of your major muscle groups on 2 or more days a week, but don't exercise the same muscle group 2 days in a row.

For example, do upper-body strength exercises on Monday, Wednesday and Friday and lower-body strength exercises on Tuesday, Thursday and Saturday. Or, you can do strength exercises of all your muscle groups every other day. Don't forget to include balance and flexibility exercises.

Activity Type	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
<b>Endurance</b>		Walking 30 min at moderate intensity	Walking 30 min at moderate intensity	Walking 30 min at moderate intensity	Walking 30 min at moderate intensity	Walking 30 min at moderate intensity	
<b>Upper-Body Strength</b>		Chin tucks	Chin tucks	Anti rotation press Bird dogs	Chin tucks	Chin tucks	Chin tucks Anti rotation press Bird dogs
<b>Lower-Body Strength</b>		Reverse lunge Side steps Bridge			Reverse lunge Side steps Bridge		
<b>Balance</b>	Single leg stance Tandem walk Horizontal head turns	Single leg stance Tandem walk Horizontal head turns		Single leg stance Tandem walk Horizontal head turns		Single leg stance Tandem walk Horizontal head turns	Single leg stance Tandem walk Horizontal head turns
<b>Flexibility</b>	Chest stretch	Chest stretch	Chest stretch	Chest stretch	Chest stretch	Chest stretch	Chest stretch

Based on her kyphotic index, Ms. J may have already been at lower risk for fracture due to minimal irregularities in posture and body mechanics. However, her tragus to wall scores may demonstrate risk for upper thoracic fractures as a score greater than 15 cm can note a risk for spinal fracture<sup>9</sup> On the positive side, her kyphotic index contributes to a better fracture prognosis, and her psychosocial factors support enthusiastic participation in therapeutic exercise, as well as minimal balance and gait deficits to prevent a future fracture.

Her course of care was divided by the need for immediate needs of her coccyx and hip pain, versus her preventative care of chronic osteopenia. Maintaining as many of her exercises in weight bearing as possible is ideal. The greatest challenge for Ms. J is motor control for cervical retraction in standing. She was most successful in supine. Each supine exercise was paired with an anterior opening position, cervical retraction, or transversus abdominus activation for postural improvements for patient benefit.

There is some concern for a provider recommending inactivity until seen by therapy despite no bony damage on imaging and the functional decline that can take place in a brief period of inactivity and potential for fear avoidance behavior which would further limit healthy and safe activity. Given how well Ms. J had responded to a basic walking and limited resistance program over the course of the last 5 years, physical therapists might recommend the use of OP screening tools to prevent inactivity. Maintaining her level of activity is crucial for not only bone health but also maintaining her current level of function and independence. There is potential for a primary care provider to utilize the FRAX and other screening tools to demonstrate the patient's low fracture risk and encourage healthy behaviors to prevent a fracture, all the while empowering patients to manage a chronic diagnosis.

The FRAX tool appeared to work well for this patient when utilized early, even demonstrating improved bone mineral density (T scores) over the course of 4 years with pharmacological treatment alone. As physical therapists, we can offer a non-pharmacological addition to the fight against OP and should be emphasizing our role in keeping our patients moving safely and independently. Considerations for clinical application may include an automatic referral to physical therapy with a diagnosis of osteoporosis or osteopenia, and provision of general balance and postural strengthening exercises for those individuals diagnosed with osteoporosis. Clearly, Ms. J is a shining example of improvements made with medication, but could she have excelled earlier with the addition of a consultation with a physical therapist? The evidence would say yes.

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# The Eyes DON'T Have It

## People with Parkinson's Disease and the King Devick Test

by Valerie Carter, PT, DPT; Carole Lewis, PT, DPT, PhD, FAPTA; and Linda McAlister, PT, DPT

Those of us who have worked with older adults know the serious impact that falls can present for this population. We focus our efforts on mitigating this risk as much as possible. This requires complex skill for the general older population but has even greater intricacy in people with idiopathic Parkinson's disease (IPD). The high incidence of injury in people with IPD, when compared to the general population, makes assessing the overall risk and cause for falls crucial to understanding disease severity and can help develop effective intervention strategies.<sup>1-5</sup> In this column and in the next, we will highlight some recent research specific to people with IPD and contributing factors to risk of falling. Here, we will highlight findings regarding vision and balance in this group.

Balance is comprised of the visual, vestibular, and somatosensory systems. Current research suggests that postural instability, gait, saccades, and cognitive decline each play a significant role in their contribution to overall severity including disease presentation, disability, and mortality.<sup>2-8</sup>

A recent cohort study completed in 2021 explored the relationship of visual acuity and balance in an older healthy population matched with individuals with IPD, by evaluating scores of the King-Devick test in healthy adults matched with individuals with Parkinson's disease. The King-Devick (K-D) test is based on measurement of the speed of rapid number naming (reading aloud single-digit numbers from 3 test cards), and captures impairment of eye movements, attention, language, and other correlates of suboptimal brain function. Its rapid administration time and simplicity make the K-D test a potentially useful diagnostic tool.<sup>9</sup>

In the study, healthy older adults (19) and persons with IPD (21) participated in the K-D test while sitting in a chair with adequate lighting to be able to read the cards. Participants who usually wore glasses or contacts were encouraged to wear them. Participants were provided with a practice trial before being timed. The K-D test took about 2 minutes to complete.

What were the results? Persons with IPD were significantly slower when completing the K-D Test. What about the clinical significance of these findings? The decreased performance in persons with IPD as compared to healthy older adults indicates impairment of eye movements, attention, language, and other correlates of suboptimal brain function. The impairment of oculomotor performance is attributed to dopamine depletion.<sup>2</sup>

Studies on of the effect of dopaminergic treatment on eye tracking have yielded inconsistent results. Saccadic eye movements have been studied in patients with IPD to obtain objective information on which cognitive processes influence eye movement and examine the relationship between saccadic impairment and disease severity.<sup>2,6</sup>

Current research supports volitional anti-saccades models as the best indicators of cognitive impairment and correlation to disease severity because of the role that the basal ganglia have on inhibiting unwarranted movements. If the subject is unable to direct their gaze in the opposite direction of the stimulus, then basal ganglia impairment may be suspected.<sup>2,7</sup>

Cognitive decline is a common characteristic trait throughout the progression of IPD.<sup>7</sup> Currently, there is not sufficient evidence in the literature to be able to correlate specific cognitive decline associated with IPD and saccades testing. While impaired oculomotor performance is attributed to dopamine depletion, studies on of the effect of dopaminergic treatment on eye tracking have yielded inconsistent results.<sup>7,10-12</sup> The literature does suggest that increased latency during volitional eye movement in IPD has been correlated with postural instability and warrants further investigation.<sup>11,13-16</sup>

While more study is needed on the baseline characteristics and what constitutes an abnormal score, the K-D test has potential as a measure of patient's visual function and a useful diagnostic tool in people with IPD. Considering vision is an important piece of the puzzle when we analyze fall risk for people with IPD. In our next article, we will consider dual tasking and visual – verbal processing and motor performance for people with IPD.

*Special thanks acknowledgment: Dr. Tarang Jain PT, PhD and Dr. John Heick PT, PhD.*

[Editor's Note: This is an article in a series synthesized from lectures in the Great Seminars and Books courses]

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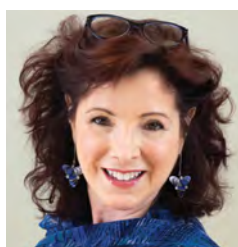
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