

# GeriNotes

March 2023 • Vol. 30 No. 2



**APTA Geriatrics.**

An Academy of the American  
Physical Therapy Association

*Age on.™*

# Gerinotes

March 2023 · Vol. 30 No. 2

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# From the President



Cathy Ciolek  
President,  
APTA Geriatrics

I always appreciate that our editors extend the deadline for me to reflect on APTA Combined Sections Meeting (CSM). I wish more of you could be there in person, but I hope those who were not able to attend can share the experience a bit.

As I've said before, for me, the best part of any CSM is the people. The members who stop me between sessions or meetings, getting hugs from friends I haven't seen in years and may only have connections with because of CSM, reminiscing about those we have lost and to whom we raise a glass in remembrance. It is the people and connections that keep us coming back year after year.

And speaking of friends who have been mentors over the years, the 2023 Carole B. Lewis Lecture was presented by Dr. Michelle Lusardi, PT, DPT, PhD. Her talk discussed how PTs need to approach our work through the lens of both geriatrics and gerontology to keep both physical/medical issues balanced with the psychosocial experiences. She offered a challenge to the Academy, clinicians, and researchers to work toward adoption of an annual mobility check for all older adults. Testing 4 common measures such as Gait Speed, TUG and TUG Cognitive, 5 Times Sit to Stand and 4 Square Step Test and building a repository for that data to be used for early intervention, as well as for expanding our knowledge of who needs our intervention and when. The manuscript will be available in a future issue of the *Journal of Geriatric Physical Therapy*. Or [watch the video on our website](#). I encourage you to take the time to watch and learn from our esteemed colleague. Thank you, Michelle, for challenging us to help transform society and practice!

Educational sessions ranged from topics on dementia to high-intensity exercise. You can still sign up for the CSM

on-demand sessions that will be available through April 15. Geriatrics based topics include concussion in older adults, Parkinson's disease, connective tissue hypermobility, hospital mobility, using music, dementia, and heart failure, among many others.

Since the launch last year of free student membership, we have added well over 2,000 students! That offer will continue in 2023. CSM was an opportunity to meet many of them in person when they stopped by the booth and came to sit and chat with the exemplar PTs who manned the "Friendship Bench." We are grateful to Carole Lewis who coordinated volunteers, including Academy member FAPTAs and those serving on the Board of Directors. I also want to give a huge thank you to our staff who helped design the booth and obtained a larger space in a great location. It was packed with members stopping by to pick up their ticket to the Party With a Purpose, just say hello, and many others who wanted to learn more about the Academy.

Speaking of Party With a Purpose, we served as a primary sponsor of this first-time event. APTA Geriatrics was able to distribute 100 tickets to our members to enjoy a beverage, sample some great cuisine, and dance to amazing music from the 80's. The "purpose" part was to raise money for the Foundation for Physical Therapy Geriatrics Fund. While waiting for a few more expenses to be finalized, we believe we were able to raise over \$10,000 to support research in geriatric PT. And if you stayed until the end, you saw most of the Board of FDirectors dancing away on the dancefloor!

[Please submit abstracts](#) for pre-conference courses, educational sessions, platforms, and posters for Combined Sections Meeting next year in Boston, MA. I firmly believe the weather may be better than what we had in San Diego!

Since CSM is about the people, we want to invite each of you to attend in person, or virtually, next year.

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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

So much is going on in our physical therapy world – especially in our Academy! Just back from a gathering of 14,000+ fellow physical therapy “nerds” at CSM, it is easy to feel over-stimulated. The research and clinical findings presented were amazing! *GeriNotes* will be presenting articles summarizing some of the CSM presentations over the next few issues – stay tuned for that.

If you’ve never gone to CSM or it has been many years since you attended – especially if, like me, you regard yourself as just an ordinary clinician trying to do their best for their patients, clients, employers – mark the date: Feb 15-17, 2024 in Boston.

This issue, read Carole Lewis’ account of meeting with attendees at the Friendship Bench. How fun is that, to have readily available the leaders of our profession who want to schmooze with you?! And, if you need more incentives to go to Boston, I have one word: PENS! A renowned pen thief (as well as pen loser) in every clinical setting in which I have ever worked, the exhibit hall is a GOLD MINE of colorful and fun pens and I replenished my supply with glee! Plus, I tried out seriously fun and amazing equipment and technology.

Speaking of technology and applications as readily available as your own phone, Mary Milidonis will be presenting a series of articles on using apps, both as a clinical tool and as a patient teaching opportunity. What are your favorite apps? Why? [Send your thoughts to Mary](#) and we will all

learn some relative techno-geekiness. Not only is it agist to think that older folks do not want or use technology, but also simply not true. Many of the people I have worked with over the past several years (Hello, most of us aging people have SMART phones) have been excited to learn tricks and applications that make life easier and safer, especially if they are living independently. Share!

Inside this issue, besides all the CSM pictures and reports, take note of the feature article on cognition and a proprietary measurement tool that may work well in your setting. Although therapists are notorious for preferring public domain outcome measures (free!) bear in mind that even that very old and former gold standard (at least for general recognition) cognitive test, the Mini-Mental State Exam, is now proprietary. It is interesting to expand your toolbox when you can. In an upcoming issue, there will be more information on use of the recently released (and free) [Cognitive and Mental Health toolkit](#).

Cognitive/mental health presents a looming deficit within both the general population and, specifically, older adults. Several of the chosen articles for 2023 Journal Clubs (JClub) will touch on or address this topic as well. JClub participation continues to be a free membership benefit of the academy that is an easy way to stock up on CEUs. In addition, JClub case presenters and other authors to *GeriNotes*, earn CEUs, too – just ask! The chance provided by JClubs to directly relate to the researchers and learn their methodology and reasoning is a fascinating experience but it is the “real life” treating clinicians that bring the information home in their translation of the research into clinical outcomes. Contact your SIG leadership or me for more information about presenting a case study.



Cover photo credit: HOP-UP PT

Register for the free **Journal Club** discussion webinars and earn 1.5 contact hours. Questions for presenters may be emailed to [gerinoteseditor@gmail.com](mailto:gerinoteseditor@gmail.com) before or on the day of the webinar. See what's coming up at <https://geriatricspt.org/events/webinars/>.

## GeriNotes

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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.



# Conversations, Connections and Continuing Education at CSM2023

What a fantastic time we had in San Diego for the 2023 APTA Combined Section Meeting. From geriatric-centric sessions to an exciting new booth and the popular "Friendship Bench" conversation area. So many connections made. So many new tools and ideas shared. It really is the event of the year!

This year's outstanding presenter of the Carol B. Lewis Lecture, Michelle M. Lusardi, DPT, PhD, FAPTA, reviewed the challenges of population aging, encouraged us to "think like gerontologists" to better understand the needs of the older adults we care for, and asked us to define ourselves as professionals and masters of movement in a

*Believing that improvement is likely and that our patients can make progress is powerful!*

— Michelle M. Lusardi, DPT, PhD, FAPTA

caring vocation. She proposed we plan, initiate, and evaluate a yearly mobility wellness visit, similar to Medicare's required wellness screening visit, incorporating collection of "Big Data" to develop norms, not only by decade of age and gender, but also by setting and medical diagnosis.

**Tim Fox, PT, DPT** will present the Carole B. Lewis Lecture at CSM in 2024. We look forward to an engaging and inspiring Lewis Lecture by Dr. Fox next year.

We are especially pleased to congratulate the following award winners:



New Board Certified Geriatric Clinical Specialists



Several dozen PT students joined as new members onsite



APTA Geriatrics Board of Directors

### Clinical Impact in Geriatrics Award



The Clinical Impact in Geriatrics Award recognizes one APTA Geriatrics member for outstanding clinical practice in a geriatric health care setting. This year's award was given to **Jessica Kele Murdin, PT, GCS, CTCCS, CEEAA**. Murdin integrates evidence-based practice with her

extensive clinical knowledge and extraordinary communication skills and then packages it in an approachable and actionable way. This results in better patient outcomes, but also better adoption of these practices by her colleagues. Clinicians who work with Murdin are inspired to master the content and implement it in their own practice with older adult patients.

Murdin is a leader who seeks innovative ways to improve the lives of older adults in geriatric care settings. She single-handedly developed, and is providing leadership for, a group Otago exercise program. She found an innovative way of utilizing the unique skillset of a physical therapist for movement assessment to identify impairments, and appropriately prescribe exercises, in collaboration with other exercise specialists who teach the class. The group format makes it possible to reach more frail older adults with this evidence-based fall prevention program. The program has been successfully implemented in assisted living facilities and senior centers and is being replicated in other communities.

Murdin clearly demonstrates leadership in teamwork and program planning for older adults. She leads her team every day toward the most innovative evidence-based care and has presented on these topics, both locally and at CSM.

### Academic Impact in Geriatrics Award



The Academic Impact in Geriatrics Award recognizes one APTA Geriatrics member for excellence in an academic setting. This year's award is given to **Jennifer Bruursema, PT, DPT**.

Bruursema is a full-time physical therapist and rehab program coordinator with Innovate Rehab and Wellness and also serves as a guest lecturer and lab assistant in Creighton University's Doctor of Physical Therapy program. She is passionate about education and coordinates clinical affiliations for physical therapist and physical therapist assistant students for the Innovate clinics.

Bruursema exemplifies what it means to be a passionate, patient, and knowledgeable educator within the geriatric population. She educates clinicians and helps ensure students have the most comprehensive geriatric experiences possible. Under her leadership, one of the In-

novate facilities, Hillcrest Health and Rehab, was recently awarded Creighton University's Site of Clinical Excellence award for 2021. In 2020, she was recognized as Creighton University's Clinical Instructor of the year.

### Excellence in Geriatric Research Award

The Excellence in Geriatric Research Award recognizes an outstanding research contribution to science as shared in a research report published by a physical therapist member of APTA Geriatrics in a peer-reviewed journal in the field of geriatrics and gerontology. The research is recognized for the perceived impact of the published report on future research, education, clinical practice, or a combination of these areas. This year, the Excellence in Geriatric Research Award goes to the paper, *Impact of Hospital-Based Rehabilitation Services on Discharge to the Community by Value-Based Payment Programs After Joint Replacement Surgery*. The award was presented to **Amit Kumar, PhD, MPH**, Assistant Professor, Department of Physical Therapy, Northern Arizona University.

Kumar and his team published Impact of hospital-based rehabilitation services on discharge to the community by value-based payment programs after joint replacement surgery.

Dr. Kumar's research focused on evaluating the impact of multiple chronic conditions on health care access and health outcomes in older adults, particularly in patients receiving care in acute and post-acute care settings, such as inpatient rehabilitation facilities and skilled nursing facilities. Dr. Kumar has conducted health service research using "Big Data" to show the effectiveness of rehabilitation services in reducing hospital length of stay and hospital readmission, thus reducing the cost of care and improving patient outcomes.

### Joan M. Mills Award



The APTA Geriatrics Joan M. Mills award recognizes an APTA Geriatrics member who has given outstanding service to the Academy of Geriatric Physical Therapy. This award was established in 1980 in honor of Joan M. Mills, APTA Geriatrics' first President, whose vision,

determination, and dedication united physical therapists caring for geriatric patients in their commitment to excellence in the delivery of physical therapy to aging adults.

This year the award is given to **Michelle (Missy) Criss, PT, DPT, PhD**. Dr. Criss has been involved in the field of geriatrics her entire career; working in skilled facilities, home health, extended care and various locations in Pennsylvania and Washington. She currently works in academia and geriatric residency programs, helping advance the field of geriatrics to future clinicians.

Dr. Criss exemplifies excellence in the integration of

scholarship, service, and teaching in the field of geriatric physical therapy.

Dr. Chriss founded the Geriatric Physical Therapy Residency at University of Pittsburg Medical Center in 2011. Her list of service to Chatham University includes activities to the DPT program, the School of Health Sciences and to the University at large, representing commitment to smooth transitions for students entering health careers and specifically in advocacy for services to older adults. Dr. Criss does more than show-up, she is often the planner, designer, and facilitator of the initiative or project.

Dr. Criss' dedication and hunger to serve is evident as she has shown interest in all facets of service to the APTA and geriatrics as witnessed in her engagement with APTA Pennsylvania and APTA Washington. Her scholarship interests are even more impressive: she has a long list of refereed publications and presentations in geriatric physical therapy. Her history of service at the community and university levels also mirrors her desire to establish herself as a true role model for both students and practicing PTs in and out of the clinic.

### Outgoing leaders

A final thank you to these outgoing volunteers for their service to the academy.

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Board of Directors

**David Taylor, PT, DPT, FNAP**

Board of Directors

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Bone Health SIG Chair

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Global Health For Aging Adults SIG Chair

**Jennifer Howanitz, PT, DPT**

Residency & Fellowship SIG Chair

**Raegan Muller, PT**

State Advocate Coordinator, Western Region

**Beth Black, PT**

Awards Committee Chair

**Tiffany Hilton, PT, PhD**

We also express our appreciation to retiring State Advocates. Our academy is grateful to have most of our states represented and working at the local level to advocate for aging adults and the academy. Thank you for all you do to advance our profession.

### Members Meeting

President Cathy Ciolek shared an overview of all that

APTA Geriatrics accomplished in 2021. There were 4,858 participants in APTA Geriatrics educational programming. APTA Geriatrics gave 8,660 contact hours, 40% of which were free. There were 312 new Board-Certified Clinical Geriatric Specialists and 47 recertified. *JGPT* grew to a 3.381 impact factor. The board voted to offer free student dues in 2022 and we have already seen our student numbers increase from 1% to 14% of our membership! APTA Geriatrics launched a new website that is mobile-first. We are planning a standalone conference for 2023 and looking to offer hybrid options for the CEEAA course in 2023.

### Board Certified Geriatric Clinical Specialists

Paras Goel, PT, DPT, MEd, the Chair of the ABPTA Geriatric Specialty Council congratulated the 2022 new and renewed Board Certified Geriatric Clinical Specialists (see list starting on page 8).

### Conclusion

We hope to be in-person with you for next year's celebration, Feb. 22-25 in San Diego, CA. The call for abstracts and session proposals is now open through March 14 (sessions) and July 18 (platforms and abstracts). Thank you for the incredible work you have done over the last 2 years since we were last together in person.

## New APTA Geriatrics Leaders

The following individuals started office after the February 2023 APTA Geriatrics Member Meeting. Thank you for your service!

Secretary

**Mariana Wingood, PT, DPT, PhD, MPH**

Chief Delegate

**Elizabeth (Beth) Black, PT**

Director

**Annalisa Na, PT, DPT, PhD**

Member, Nomination Committee

**Laura Z Gras, PT, DPT, DSc**

Chair, Bone Health SIG

**Lisa Hamilton, PT, DPT**

Chair, Global Health for Aging Adults SIG

**Shweta Subramani, PT, MHS**

Chair, Residency and Fellowship SIG

**Michelle (Missy) Criss, PT, DPT, PhD**

Vice Chair, Cognitive and Mental Health SIG

**Rashelle Marie Hoffman, PT, DPT, PhD**

Vice Chair, Health Promotion and Wellness SIG

**Amy L Walters, PT, DPT**

## New Board Certified Geriatric Clinical Specialists - 2022

Claudia Acosta, PT  
Elizabeth B. Adams, PT  
Shannon Adkinson, PT, DPT  
Allison Adler, PT  
Victoria Agustin, PT, DPT  
Marlena Albanese, PT, DPT  
Imelda Alberto, PT, DPT  
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Angiela Marie Aurelio, PT, DPT  
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Alexandra Bader, PT, DPT  
Samantha Baldassarro, PT, DPT  
Jennifer Barden, PT, DPT  
William Benish, PT, DPT  
Alexander Bennett, PT  
Johanna Bergh, PT, DPT  
Richard Scott Bethune, PT, DPT  
Karen Bienenstock, PT, DPT  
Amanda Bietz, PT, DPT  
Angela Bilodeau, PT, MHA  
Robin Blount, PT  
Trisha Boldt, PT, DPT  
Martha Lucia Bonilla, PT, DPT  
Mary Breckel, PT, DPT  
Beckett Brees, PT, DPT  
Jacquelyn Brenner, PT, DPT  
Lilian Bunag, PT  
Dawn Burns, PT  
Lorena Corpuz Cabuslay, PT, DPT  
RL Robert Castronuevo, PT  
Angela Cavel, PT, MSPT  
Michael Chan, PT, DPT  
Jovanni Cifaloglio, PT, DPT  
Carlos Clardy, PT, DPT, MBA  
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Cynthia Coffin-Greenig, PT  
Autumn Cohen, PT, DPT  
Elaine Marga Coleman Prouty, PT  
Sandra Conran, PT  
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Caroline Copeland, PT, DPT  
Robyn Culbertson, PT, DPT  
Maxwell Cutty, PT, DPT  
Katherine Daniels, PT, DPT  
Ellie Dashiell, PT  
Meleen Daum, PT  
Najeeva Deacon, PT, DPT  
Derik Dickson, PT, DPT  
Kristina DiMartino Pschierer, PT, DPT  
Peter Drinkwine, PT, DPT  
Anna Dutra, PT, DPT  
Samirna Esteve, PT  
Melanie Montana Fain, PT, DPT  
Kara Fledderjohann, PT  
Melissa Flores, PT  
Deborah Gaddam, PT, DPT  
Jasmine Gard, PT, DPT  
Deanne Gatica, PT  
Kristin Gatliff, PT, DPT  
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Haley Gerken, PT, DPT  
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Robin Henrikson, PT  
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Elaine Horner, PT  
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John Hunn, PT  
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Emily Iuppa, PT, DPT  
ARUNMON JACOB, PT, DPT  
Joseph Jacquez, PT  
Christopher John, PT  
Tommie Johnson II, PT  
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Vasanthi Kalaisenthil, PT, DPT  
Geneva Kaplan-Smith PT, DPT, ATC  
Doctoral degree Health Sciences, PT, DPT, PhD  
Paul Kim, PT, DPT  
Jeong Yun Kim, PT  
Patricia Kimbell, PT, DPT  
Matthew Klein PT DPT FAAOMPT  
Katelyn Klein, PT, DPT  
Cade Kling, PT, DPT  
Liana Knight- Loe, PT, DPT  
Cherisha Koradia, PT, MS, DPT  
Kelsey Campbell Hopkinson, PT, DPT  
Sharry Lagarnia, PT  
Monica Leach, PT, DPT  
Justin Leslie, PT  
Marshall Mark Lieber, MPT  
Allison Macari, PT, DPT  
Mary Grace Maduro PT, DPT  
Nicole Maier, PT, DPT  
Kari Mann, PT, DPT  
Alexei Marquez, PT, DPT  
Marrion Martinez, PT, DPT  
Jessica Mathis, PT, DPT  
Irish Matienzo, PT, DPT  
Toni May, PT, DPT  
Allyson Mayer, PT, DPT  
Leanne McCarron, PT  
Claire McCormick, PT, DPT  
Tracey McKibben Kennedy, PT  
Simaco Mercado, PT, DPT  
Rebecca Lynn Merchant, PT, MSPT  
Maike Meyer, PT, DPT  
Joshua Middlecamp, PT  
Danielle Migdal, PT  
Jay Mizuta, PT  
Kelly Modaff, PT, DPT  
Jashashree Mohapatra, PT, DPT  
Minoo Mostafavifar, PT, DPT  
Elizabeth Mullins, PT  
Amy Newton, PT, DPT  
Angela Ntamere, PT

Penina Nussbaum, PT, DPT  
Miguel Ochoa, PT  
Meredith O'Hear, PT  
Nicole Olofson, PT, DPT  
Alicia E Orsini, PT, DPT  
Griflet Paler, PT, DPT  
Tara Pandiscia, PT, DPT  
Kyung-eun Park, PT  
Kalen Pascal, PT, DPT  
Taylor Hutchins, PT, DPT  
Luke Pedersen, PT, DPT  
Lori Elise Peek, PT  
Jennifer E Pillard, PT  
Anna M. Pitassi, PT  
Angela Planinz, PT, DPT  
Angela Player, MPT  
Shai Post, PT, DPT  
Francine Kier Quianzon, PT, DPT  
Matthew Reckinger, PT, DPT  
Patrick Reetz, PT, MPT  
Benjamin Ries, PT, DPT  
Joanne Rivard, PT, DPT, MS  
Ginnie Roa, PT, DPT  
Claire E Robbins, PT, DPT, MS  
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Samuel Sahhar, PT, DPT  
Matthew Sahhar, PT, DPT  
Kara Santana, PT, DPT  
Corina Santos, PT, DPT  
Christopher Satcher, PT, DPT  
Ana Schaff, PT, DPT  
Courtney Schopperth, PT, DPT  
Anne Sheehy, PT  
Julie Shock, PT  
Bram Sims, PT, DPT  
Vickie Single, PT  
Vernajoy Bianca L. Singson, PT

Justin Smith, PT, DPT  
Marissa Smyrski, PT, DPT  
Derek Stone, PT, DPT  
Justin Strause, PT, DPT  
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Theresa Vassell, PT, DPT  
Aileen Vazquez, PT, DPT  
Lauren Villalva, PT, DPT  
Matthew Wallent, PT  
Elizabeth Wang-Hsu, PT, PhD  
Jessica S Watson, PT, DPT  
Mark Watson, PT, DPT  
Allyson White, PT, MSPT  
Meaghan C. Williams, PT, DPT  
Megan Williard, PT  
Lauren Wilson, PT, DPT  
Holly Wooldridge, PT, DPT  
Jess Wright, PT, DPT  
Joyce Wu, PT, DPT  
Chrystal Yen, PT, DPT, MS  
Letha Zook, PT, EdD

## Renewed Board Certified Geriatric Clinical Specialists - 2022

Mauro Abreu, PT, DPT  
Victor D. Aguilar, PT, DPT  
Sandy Attanasio, PT, DPT  
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Karen Benesh, PT  
Jennifer Cabrera, PT, DPT  
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Heather Cronin, PT, DPT  
Eric Dacey, PT, DPT  
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Graduate Certificate  
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Penelope Elam, PT, DPT  
Daniel Elliott, PT, MPT  
Debbie Flint, PT, DPT  
Christine E. Fordyce, PT, DPT  
Janelle Gilmer, PT, DPT  
Lauren Grant, PT, DPT  
Connie Gutierrez, PT, tDPT  
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Gretchen Jackson, PT, DPT  
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Dennis Klima, PT, MS, PhD  
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Tara Maroney, PT, DPT  
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Lee Ann Rosine, PT, MHS  
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Kathryn Linsley Steucek, PT, MPT  
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Staci Whitson PT, DPT  
Tobin Paul Wingard, PT, DPT

# Stories from the "Friendship Bench"

by Carole Lewis, PT, DPT, FAPTA

APTA Geriatrics tested a new idea at CSM2023 – the Friendship Bench. The Friendship Bench began in Zimbabwe as a community-based approach to therapy that leverages the power, compassion, and accessibility of grandmothers, and has been replicated around the world.

Fourteen of us volunteered to sit in the Academy's booth and chat with members, to share our relevant experiences and accumulated knowledge, and to problem solve, one-on-one. The section did a great job setting up and scheduling the booth. It was a huge success!

Below is my takeaway from the 3 days. Remember, I was just one of the many who did this. I volunteered for 4 slots and had the wonderful opportunity to talk with many of you. So here goes.

My first visitor told me that she had just been hired to work in an acute rehab/outpatient area and she was looking for a way to do some new and different community screenings to give back to the community and to increase business. She was already using the STEADi, so I suggested adding a posture screening. She loved the idea! And we discussed how she could implement it and get credit for doing it at work.

Another therapist, who owns her own practice, wanted to brainstorm ways to get physicians to refer clients to her. I gave her my favorite marketing strategy. I send a cover letter with the front page of a current medically related rehabilitation research article and ask if they have seen it. Then I offer to bring them a copy of the full article when I meet with them. Often, they don't ask for a meeting, but I get a bunch of referrals. She was excited to try it.

One therapist I spoke with was hugely successful in setting up businesses. She has 7 PTs working for her in home care and she is planning to set up an outpatient clinic. We discussed her ideas, and I was very impressed. I gave her a big smile and encouraged her to keep going.

An incredibly energetic young man described a case study he had just written about a patient who was medically complex. He had designed a high intensity program from acute to chronic care in the VA and he saw tremendous results. The case was fascinating and after hearing more about it, I encouraged him to divide it into 2 papers. I suggested that he submit a manuscript to *GeriNotes* about how to use the handout he had developed and another one to a more technical journal. I hope he does!

I was humbled as I listened to 2 trailblazers in quality care explain their efforts to inspire their peers to give the best care by modeling it and by slow and constant encouragement and reinforcement. They were succeeding!

One of our board members and another incredible

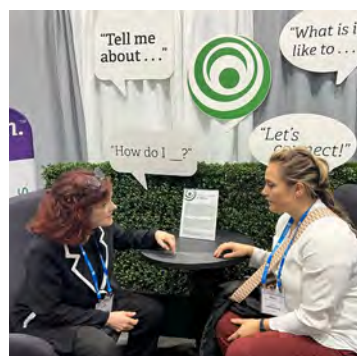
woman, both of whom are faculty at noted universities, shared their research and ideas for geriatrics. One was looking at velocity as the key variable in high intensity. The other wanted to move the Academy to be the pillar of evidence in all its undertakings. We discussed some innovative ways to do that!

Because of a mix up, I shared the Friendship Bench with Dr. Steve Tepper, which I think made the experience even more intense and much more fun. We had about 12 students come by in groups of 3; we were so impressed with their plans for the future. We recommended that they shop around for residencies. With a choice that important, we suggested that they look carefully at their options.

The 3 student representatives to the Academy stopped by – they were such hot tickets! We loved that they produce a quarterly newsletter, send personalized welcomes, and try to get students on committees. We also discussed, because some of them are leaving, the possibility of their staying on to mentor the next students.

We hope our listening, resonating, and encouraging helped and gave those who stopped by some benefit. I know, personally, I was humbled, delighted, and hopeful because of the wonderful people I met.

I hope this tradition continues.



*"Fourteen of us volunteered to sit in the Academy's booth and chat with members, to share our relevant experiences and accumulated knowledge, and to problem solve, one-on-one."*



# UPAC: Do You Remember?

by Ellen R. Strunk, PT, MS

Do you remember what you were doing in 2014? Belgium became the first country in the world to legalize euthanasia for terminally ill patients of any age.<sup>1</sup> The number of people in the U.S. using mobile devices to access the internet overtook those using desktop computers for the first time.<sup>2</sup> Barack Obama was the 42nd President of the United States. Guardians of the Galaxy was the number one movie, and everyone was singing “Happy” by Pharrel Williams.

Congress was reviewing the Post-Acute Care (PAC) Payment Reform Demonstration (PAC-PRD) final reports, which they had directed the Centers for Medicare and Medicaid Services (CMS) to deliver after seeing significant increase in PAC spending.<sup>3</sup> At the time, almost 40% of persons admitted to the hospital were discharged to a PAC setting.<sup>4</sup> Many of those used more than one PAC service during their episode of care, particularly those discharged to Skilled Nursing Facilities (SNFs) and Long-Term Care Hospitals (LTCHs). For example, 67% of those discharged to SNFs were admitted to a home health agency (HHA) or returned to the hospital. Almost 20% of those discharged to a HHA returned to the hospital.<sup>5</sup> The PAC-PRD sought to determine if and how the different PAC benefits were serving similar or unique patient populations, to ultimately reform and harmonize the disparate methods of paying for PAC services.

As a result of the PAC-PRD reports, President Obama signed into law the Improving Medicare Post-Acute Care Transformation (IMPACT) Act on Oct. 6, 2014, with overwhelming bipartisan support. The IMPACT Act would require the reporting of standardized patient assessment data about quality measures and standardized patient assessment data elements in each of the PAC settings. The Act also called for these data elements to be used in the development of a technical prototype for a unified PAC prospective payment system (PPS) that would set payment for PAC services based on beneficiary clinical characteristics rather than type of provider.

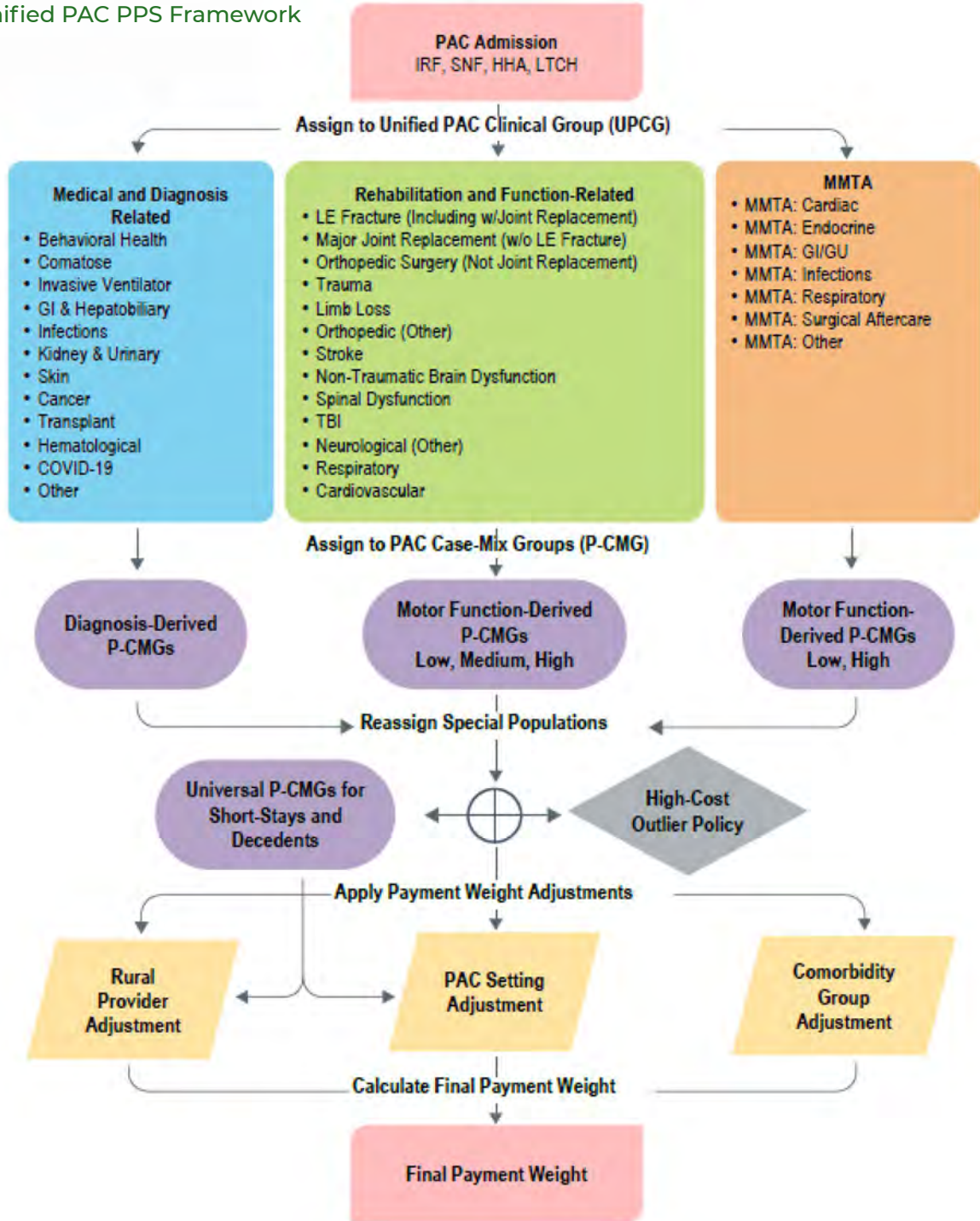
Do you remember UPAC (Unified Payment for Medicare-Covered Post-Acute Care) mandated in the IMPACT Act? Even though we may have forgotten about it, it is still around. This article is going to review the most recent Report To Congress about the prototype for a unified PAC prospective payment system (PPS) model and then discuss what it means for physical therapists.

Figure 1 is a visual picture of the framework described in the Report to Congress:<sup>6</sup> 32 Unified PAC Clinical Groups (UPCGs), described as distinct clinical condition groups representing the patient’s primary reason for PAC. These

UPCGs were found to be associated with different types of clinical and cost of care beneficiary needs. They are subdivided into 3 general categories: (1) Rehabilitation and Therapy-Focused (Rehabilitation), (2) Medical and Diagnosis-Focused (Medical), and (3) Medication Management, Teaching, and Assessment (MMTA). The 3 general categories of UPCGs are further grouped into PAC Case-Mix Groups (P-CMGs) These are intended to differentiate patients’ needs on the basis of clinical characteristics and relative costliness. The Rehabilitation UPCGs use motor function to create subgroups calculated from self-care and mobility items<sup>7</sup> where a higher score indicates a higher functional ability. The Medical UPCG uses the primary reason for the PAC services and diagnoses and procedures reported during a prior acute care stay to create subgroups. Finally, the MMTA UPCG uses all of these characteristics to create subgroups: (1) motor function, (2) primary reason for PAC stay, and (3) diagnoses and procedures reported during a prior acute care stay.

Once the P-CMG is assigned, there are several other “adjustments” that could be made to the payment. For example, payments would be adjusted if a patient had a short stay, died while under the care of the PAC provider, and/or the cost of taking care of the patient was extreme. Other adjustments are made if the provider is located in a rural area, or the patient has a number of comorbidities that make them more complicated to manage. Finally, an adjustment is made based on the type and geographical location of provider; that is, if the PAC provider is an IRF, a SNF, and LTCH or a HHA in a rural or urban area. Some may wonder why a “unified” PAC PPS model would differentiate payment by the type of setting the patient goes to. The primary reason is because there are significant statutory and regulatory differences governing the different PAC settings. For example, an IRF must have a physician present or on call for 24 hours a day and the physician must perform a minimum of 3 face-to-face visits/ week.<sup>8</sup> A SNF must have a nurse present for 8 consecutive hours/day and complete comprehensive resident assessments and care plans for any patient staying  $\geq$  14 days.<sup>9</sup> Differences such as these can have implications for costs of care above and beyond individual patient needs. It is important to consider these differences to ensure equitable payment to providers, access to care for beneficiaries, and fair and reasonable payment for PAC across settings. The final payment “weight” would be multiplied by a base amount determined by Congress. An example is provided in Figure 2. This patient was admitted to a SNF for rehabilitation following a cardiovascular event. Her motor score was 10,

Figure 1. Unified PAC PPS Framework



Key:

- MMTA: Medication Management, Teaching and Assessment
- GI: Gastrointestinal
- GU: Genitourinary
- LE: Lower extremity
- TBI: Traumatic Brain Injury
- “Decedents” refers to PAC stays where the beneficiary is recorded as having been discharged dead on the claim.
- “Short stays” refers to IRF, SNF, and LTCH stays lasting  $\leq 3$  calendar days or HHA episodes lasting  $\leq 4$  visits and qualifying for Low-Utilization Payment Adjustment.
- High-cost outliers: claim cost  $> 3$  standard deviations from the mean within UPCG, P-CMG, and PAC provider type.

Source: Report to Congress: Unified Payment for Medicare-Covered Post-Acute Care.

placing her in the low functional category, and first P-CMG. Her base payment rate is 1.75 indicating that patients in this group are, on average, 75% more costly than the average PAC stay. Because she is treated in a SNF in a rural area, there are additional adjustment factors of 0.87 and 1.16, respectively. Finally, the patient is assigned into Comorbidity Group 3, which in this UPGC has an adjustment factor of 1.14. The adjustment factors are multiplied giving a final payment weight of 1.83 which would then be multiplied by the UPAC base payment rate.

What's Next?

That is the big question, and one we should be actively seeking to answer and to influence. First, however, there are things we do know:

Are we certain a UPAC PPS system will be implemented? No, we are not. The IMPACT Act didn't mandate the system be implemented, only modeled. Before any UPAC PPS system was implemented, Congress would need to take additional action.

If it is implemented, would it be this model? It is unlikely that it would be. While this model performed well when they used it to predict costs in 2020 during the COVID-19 public health emergency (PHE), it would still have to be updated to current costs, utilization, and be subject to rulemaking.

Here are some questions that are even more interesting to ponder:

- Is a UPAC PPS system still needed?
- Does a UPAC PPS system improve the health system, or does it just "rearrange" it?
- Does a UPAC PPS 'fit' in the current healthcare environment of patient-centered care, delivering value, and improving the patient experience?

A lot has happened in the 8 years since IMPACT was passed, including the implementation of 2 brand new prospective payment models for HHA and SNFs. These two settings alone accounted for 80% of total Medicare spending on PAC in 2020.<sup>10</sup> The Patient Driven Payment Model (PDPM) for SNFs and the Patient Driven Grouper Model (PDGM) for HHAs were designed to specifically address the potential overutilization of therapy services in these settings incentivized by the previous payment models. The PDPM and PDGM have characteristics eerily like the UPAC framework, including calculating payment using clinical groupings, comorbidity adjustments, and

Figure 2. Example of UPAC Model

Example	UPAC Model			
Patient assigned a UPGC of "Rehab: Cardiovascular" <u>and</u> has a motor function score of 10 (out of 27)	Low (<11) 1.75	Medium (>= 11 & <14) 1.44	High (>= 14) 1.18	
Setting	LTCH 2.34	SNF 0.79	IRF 1.0	HHA 0.26
Comorbidity Group	Group 1 1.00	Group 2 1.10	Group 3 1.14	Group 4 1.16
Location	Rural 1.16		Urban 1.0	
Payment Calculation				
Step 1	1.75 x 0.79 x 1.14 x 1.16 = 1.83			
Step 2	1.83 x \$ UPAC base payment rate\$			

Numbers are adapted from the Report to Congress: Unifying Payment for Medicare-Covered PAC Tables 2-22, 2-23, 2-24, and 2-25.

the patient's self-care and mobility admission status. Perhaps letting these 2 payment models mature before making wholesale changes again would be a prudent decision?

The report is an interesting read; it is something that, as a Congressional mandate, had to be done. However, one can't help but wonder if it is 'too late'. The healthcare system has endured challenges no one imagined during the past 3 years. While healthcare seems to be coming out on the other side now, it is weak, and has had all its flaws revealed. In many ways, however, patients are even more aware of what they need and what they want from a healthcare provider. During the pandemic, physical therapists and physical therapist assistants were forced to rethink how they practiced physical therapy, including: ensuring patient/practitioner safety, considering how clinical goals could be managed through telehealth, moving 'out of' the clinic and into the patient's environment when applicable, and understanding the health disparities that do exist within our communities. One of the most positive things that came out of the COVID-19 PHE, however, was that we were forced to think and act differently. Maybe it is time for policymakers to think differently about PAC too. Instead of focusing so much time and effort on how services are paid for, maybe we should all be looking for opportunities to advance value and improve the patient experience.

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# Meet the First Cohort of Credentialed Balance and Falls Professionals

by Lori Schrodt, PT, PhD

Congratulations to the first cohort of 22 PTs who achieved their credential as Balance and Falls Professionals through APTA Geriatrics. After a COVID delay, APTA Geriatrics resumed regional courses and offered the first Balance and Fall Prevention in Community-Dwelling Older Adults Professional Credential Series in Madison, Wis. in 2021-22. This interactive two-course series is designed for experienced physical therapists who want to advance their expertise in balance and fall prevention in a targeted population of community-dwelling older adults or those who will be returning to community living.

### 2022 APTA Geriatrics Credentialed Balance and Falls Professionals

- |                      |                    |
|----------------------|--------------------|
| Jennifer Bazan-Wigle | Milissa Havard     |
| Amy Bruno            | Krista Keck        |
| Joy Cochran          | Casey Mathews      |
| Deborah Constantine  | Ally Muench        |
| Georgia Corner       | Stephen O'Brien    |
| Shane Devlin         | Archana Patil      |
| John Patrick Diaz    | Anandbabu Ramadass |
| Deborah Doerfler     | Mark Vance         |
| Lorna Garcia         | Elizabeth Wang-Hsu |
| Laura Guse           | Miranda White      |
| Shelly Hampton       | Kristina Wolfe     |

*“This training has help me justify and provide appropriate PT interventions for people that fall. I feel like an advocate. I am now involved with multiple aspects of falls prevention in my state and community. I use the information I received from the training several times daily.”*

*“I really appreciated the emphasis on creating bridges to community resources, and the project we all did around that between the course sessions. The other REALLY great thing was being in a course with other PTs who could share relevant experience--learning from each other was amazing!”*

*“While performing the gap analysis in my community during my credential work, I discovered a need for more advocacy. I dove in by becoming part of the steering committees of both the state and local falls prevention coalitions. In doing so, I’ve been able to connect the healthcare and health promotion needs for falls prevention by connecting with professionals working in community health, injury prevention and health promotion. I have been working with a team to develop tools and processes to educate and effectively transition older adults at risk for falls from healthcare settings to community programs. This work is important, and I am excited to be a part of it.”*

APTA Geriatrics is excited to offer this professional opportunity for PTs to advance their knowledge and skills across individual patient care, advocacy, and community collaborations. The series includes extensive labs and active learning, as well as individual assignments to apply information to clinical practice and foster knowledge translation. There are also opportunities to test out some of the available technology to assist with interventions and at-home adherence and monitoring.

Since completing the course series, participants have found direct application to their practice and outreach efforts while also developing a supportive network of physical therapy colleagues.

Credential faculty include

- Leslie Allison PT, PhD
- Judy Dewane PT, DSc
- Diane Huss PT, DPT
- Jennifer Nash PT, DPT
- Emma Phillips PT, DPT
- Lori Schrodtt PT, PhD
- Mike Studer PT, DPT, MHS, FAPTA
- Mariana Wingood PT, DPT, PhD, MPH

**We look forward to a second cohort completing their credential in Anville, Penn., March 2023.**

For further credential and faculty information, course dates/locations, and registration please visit <https://aptageriatrics.org/events/courses/balance-fall-prevention-course/>.



## APTA Geriatrics Journal Club

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### **Meet the Authors: Be Part of the Discussion in the Journal Club**

The APTA Geriatrics Journal Club is a free, facilitated webinar-based discussion about a Journal article where you interact directly with the author and a clinician with a relevant case study that demonstrates how that information could be used. It's a fun way to move yourself in the direction of life learning and beef up your evidence-based practice.

The next APTA Geriatrics Journal Club will be held **March 21, 2023** at 8 pm ET.

We will discuss **Effects of a 16-week Multimodal Exercise Program on Physical Performance in Individuals with Dementia: A Multicenter Randomized Controlled Trial.**  
*J Geriatr Phys Ther.* 2022 Jan-Mar; 45 (1): 3-24

Case Study: **Am I Making a Difference for My Patient?** by Devayani K Kurlekar, PT, DPT, MS and Jennifer Howanitz, PT, DPT

**Free to members. Registration is required.**  
[www.aptageriatrics.org/journal-club](http://www.aptageriatrics.org/journal-club)

## Join the Discussion!

The APTA Geriatrics Discussion Group is a Facebook-based forum for intellectual exchange on clinical, regulatory, and other professional topics related to geriatric physical therapy.

**See you there!** 



[www.facebook.com/groups/geriatricspt](http://www.facebook.com/groups/geriatricspt)



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Physical Therapy Association



## The Importance of Cognitive Screening

by Michael McGregor, PT, DPT and Lynn Young, MA CCC-SLP

Cognitive screening is an essential tool for identifying new onset cognitive impairment or quantifying the degree of impairment in those experiencing cognitive decline. Performing a cognitive screen enables the clinician to obtain objective measures to establish a baseline, to monitor cognitive changes over time, and informs best practices for educating clients with the right type and amount of information. Screening for the presence of a cognitive impairment provides immediate and actionable information that can be used to customize treatment planning and inform clinical decision-making.

While cognitive screening is often performed by health-care professionals such as geriatricians, neurologists, and geriatric psychiatrists, not all physical therapists (PTs) work in interprofessional settings that allow them to readily access these results. Empowering PTs with the knowledge and tools to perform evidence-based cognitive screening as part of their *own assessment* process is critical. Further, the "Principles of Physical Therapist Patient and Client Management from the Guide to PT Practice" states *"the systems review is a brief or limited examination of (1) the anatomical and physiological status of the cardiovascular/pulmonary, integumentary, musculoskeletal, and neuromuscular systems and (2) the communication ability, affect, cognition, language, and learning style of the individual. The physical therapist especially notes how each of these last 5 components affects the ability to initiate, sustain, and modify purposeful movement for performance of an action, task, or activity that is pertinent to function."*<sup>1</sup>

Identification of severity and type of cognitive impairments that may impact physical function, response to treatment, and overall outcomes is an important focus for designing and implementing a meaningful Physical Therapy (PT) plan of care. Additionally, each client's ability to make needs known, to generate emotional/behavioral responses, and to have their learning preferences considered (e.g., learning barriers, education needs) are also important assessment considerations.

When selecting cognitive screening tools, PTs should seek instruments that are quick, easy-to-administer, and evidence-based. Having a reliable screening tool with immediate results that highlights underlying cognitive abilities such as memory and executive functions is critical to overall success. Examples of commonly used cognitive screening tools include the Mini-Mental State Exam (MMSE),<sup>2</sup> Montreal Cognitive Assessment (MoCA),<sup>3</sup> and the Brief Cognitive Assessment Tool-Short Form<sup>4</sup> (BCAT®-SF). Each of these tools asks the client to complete a series of simple tasks that indicate abilities related to key cognitive domains such as attention, memory, language, and visuospatial abilities. Not all screening tools are alike; some offer predictive information related to function or (IADL) performance.

The Brief Cognitive Assessment Tool-Short Form (BCAT®-SF) is frequently used within an inter-professional model as a screening tool to identify the presence of a cognitive impairment; it provides data which supports making a referral as to whom should receive broader testing and subsequent interventions. The BCAT®-Short

Form can be administered in 3 minutes or less. It can differentiate between persons with and without dementia and the online test report feature also provides a Contextual Memory Factor Score (CMF). The CMF indicates the status of current verbal memory skills and is highly predictive of both cognitive diagnosis (MCI versus dementia) and instrumental activities of daily living (IADL). The BCAT®- SF has strong reliability, construct validity, and predictive validity. It is also one of 6 unique instruments that comprises The BCAT® Test System.<sup>5</sup>

### Case Study

Mrs. Smith is a 72-year-old woman referred to physical therapy by her primary care physician. She has a history of falls and a diagnosis of Mild Cognitive Impairment (MCI), Hypertension, Arthritis, and coronary artery disease. She lives alone and recently lost her husband of 40 years. Her family reports she has difficulty with adhering to her medication management routine and has compromised decision-making skills and forgetfulness. Her primary goals for PT include being able to remain in her home, care for her garden, and continue to take care of her dog, Skittles.

Upon initial evaluation, the physical therapist notes that Mrs. Smith has limited range of motion in her hips and knees, in addition to gait, strength, and balance impairments. Objective tests and measures from evaluation included TUG – 18 seconds, 30-Second Chair Rise – 12, 4 Stage Balance Test – unable to hold tandem stance greater than 10 seconds. She also has difficulty following lengthy and complex verbal instructions and remembering all the exercises she was asked to complete.

The BCAT®-SF was administered to Mrs. Smith and the results indicated a score of 17 / 21, consistent with MCI. The BCAT®-SF online test report includes additional

information to inform the plan of care.

“A score in the 16-18 range often indicates some cognitive impairment, but not dementia. For individuals with scores in this range, especially if there is a subjective memory complaint or questions about safety, independent living, or treatment planning, administration of the full BCAT® may be helpful. Persons with scores in this range may have a syndrome called Mild Cognitive Impairment (MCI), which is a risk factor for dementia”<sup>5</sup>

Consider how her underlying cognitive impairments may play a role in the development of the PT evaluation. Being able to identify and quantify a person’s cognitive abilities is an important element for comprehensive assessment and successful delivery of a person-centered treatment program. So how does this help us as PT’s?

### Role of Cognition for the Physical Therapist

Understanding a client’s current cognitive level will inform the PT on how to optimally achieve the physical therapy outcomes for their client. Cognition is the foundation for all skills and has a direct impact on a client’s ability to learn new information and routines, solve problems, make decisions, attend to directions, etc.

Persons with MCI, for example, may present with memory impairments that impact their ability to understand critical findings as identified throughout the evaluation. In the case study of Mrs. Smith, the client presented with several risk factors that will increase her risk of a future fall. PTs may need to spend more time educating these patients about their diagnosis and provide them with alternative strategies to reach their goals and to ensure a home exercise program is executed properly. The PT may need to consider the use of memory aids, such as written instructions or videos, repetition of the education, and return demonstration to help execute some of the fall

### Crosswalk: BCAT® Scores and MMSE

Cognitive Stage	BCAT®-SF Range	BCAT® Range	MMSE	Description
Normal	19 – 21	44 – 50	28 – 30	No functional deficit; independent living; may be subjective memory complaints, but little to no functional deficit.
Mild Cognitive Impairment	16 – 18	34 – 43	24 – 27	Generally, functionally normal, but early specific functional declines (IADL); subjective and objective memory deficits. Individuals at lower range more likely to have more significant cognitive deficits. Lower scores more suggestive of residential support needs.
Mild Dementia	0 – 15	25 – 33	19 – 23	IADL deficits; typically requires residential support services; clear objective evidence of memory and other cognitive declines.
Moderate – Severe	0 – 15	0 – 24	0 – 18	Moderate (upper end of the range) – Pervasive functional deficits (IADLs), but ADLs generally intact; marked deficits in memory and executive functions; behavioral and psychological symptoms are common; requires significant residential support.  Severe (lower end of the range) – Pervasive functional and cognitive impairments

prevention strategies identified from the assessment.

The PT may need to alter the approach to selecting the right tests and measures for balance, strength, and gait as the therapist has a better understanding of her cognitive level. When looking at the balance assessments selected, the therapist may need to consider the following in the interpretation of the results for Mrs. Smith:

**Attention:** A client's level of attention and focus can impact their ability to perform selective tests and measures, especially if the test requires complex movements or coordination.

**Perception:** A client's ability to accurately perceive and respond to sensory information, such as proprioception, can affect the validity of balance test results.

**Memory:** Memory and recall can also play a role in balance assessment, as the client may need to remember instructions or recall previous balance test results.

**Executive function:** Higher-level cognitive processes, such as planning and decision-making, can impact balance assessments as well, particularly adapting to new tasks or adjusting movements in response to feedback.

**Anxiety and fear of falling:** a client's psychological state can also affect her balance, as anxiety and fear of falling can impact the ability to perform balance tests and her overall sense of stability.

In summary, completing a cognitive screen is a great first step, but understanding its score and how this will support better assessment and treatment design is the goal.

### What is Working Memory and How Does it Impact the Physical Therapy Assessment?

"Working Memory" (WM) consists of 2 primary components, attentional capacity and task manipulation. In other words, these skills combine and serve as "cognitive workspace" where people temporarily store information heard, seen, or felt to do something with it.

Working memory is often measured in time and the amount of information processed. In healthy adults, working memory typically lasts 15-30 seconds. For persons living with MCI and dementia, the time dedicated to attending and acting upon information is often much shorter. Working memory is more accurately understood as the starting point for making new memories, as it is ability to mentally hold, and manipulate information over a short period of time. Understanding each client's working memory skills is key to delivering treatment-related information in the right amount, speed, and complexity level that aligns with each client's ability level.

Although PTs may not directly address Working Memory Exercises (WME's), referrals to Speech Language Pathology and/or Occupational Therapy services may be indicated to address these underlying impairments. After all, attention and memory impairment often directly impact functional task completion. At times, more comprehensive assessment is needed, and moving from

a screening tool to a multi-factorial assessment may be warranted. The Brief Cognitive Assessment Tool or BCAT® test can be administered to meet this need.

The BCAT® test is sensitive to the full spectrum of cognitive functioning (normal, MCI, and dementia), produces separate Contextual Memory Factor, Executive Control Functions Factor, and Complex Attention Factor scores, and can predict basic and instrumental activities of daily living (ADL, IADL). The BCAT® has also been shown to help predict discharge dispositions, identify those most likely to be readmitted to hospitals shortly after discharge, facilitate level of care determinations, aid in fall prevention programs, and help with non-pharmacological behavior management.

The Executive Control Functions Factor Score, or ECFF, indicates current executive control functions abilities. This is an important clinical indicator, as there is a strong correlation between ECFF and predicting everyday activities of daily living, especially the higher order skills involving judgment, problem-solving. Complex attention is also an essential cognitive domain. It includes immediate, selective, and divided attention skills. It is highly associated with the ability to perform basic and complex activities of daily living. The Complex Attention Factor score (CAF), the third factor score provided on the BCAT® test report, predicts ADL and IADL abilities and empirically measures the attentional skills necessary for independent functioning.

Consider how each of these deficit areas might impact Mrs. Smith's ability to adhere to her medication management routine to appropriately manage her chronic conditions. When taking Mrs. Smith's history, the therapist identified she was taking oxybutynin (Ditropan) which is used to treat an overactive bladder and can contribute overall to her fall risk. Deficits may present in several ways from difficulty understanding the instructions, remembering to take her medication, or remembering the correct dosage. She may also have difficulty identifying and reporting side effects. Organizing her own medication, keeping track of multiple pill bottles, and distinguishing between different pills can also be part of the challenge.

Impairments in practical judgment and lack of insight can also play a role. Difficulty understanding the importance of taking her medication as prescribed and cessation of a medication without consulting a healthcare provider can lead to poor treatment outcomes and an increased risk of complications for Mrs. Smith.

It's important to note that caregivers and family members can play an important role in medication management for clients with cognitive impairment; they should be educated on how to assist the client in refilling, organizing, and taking their medication properly. In Mrs. Smith's case, having a pill box or reminder system in place might be advantageous to organize her medication management routine, and can promote adherence to her medication schedule as she lives alone. A referral

to an Occupational Therapist for a more comprehensive assessment should be discussed. In the immediate, communication with the client's pharmacist and/or primary care physician should be completed as polypharmacy and certain medications will impact Mrs. Smith's likelihood of staying independent and achieving her goal to age in place.

### Creating Safe and Sustainable Discharges

Transitions in care, or discharge planning, is the process of preparing a client for discharge, and anticipating the needs when the client moves from one locus of care to the next setting in the care continuum. Although creating a discharge plan is an interdisciplinary process, PTs are in a unique position to assess and determine the discharge needs of every patient. This is well described within the scope of practice in the *Guide to Physical Therapist Practice*: "The plan of care identifies anticipated goals and expected outcomes, taking into consideration the expectations of the patient/client and appropriate others. Furthermore, it states "the plan of care includes the anticipated discharge plans."<sup>1</sup>

When preparing to discharge a person with known cognitive impairments, such as Mrs. Smith, the PT should consider how to leverage her existing strengths and how to compensate for her deficits. Here is a sample of what to consider:

**Safety:** Is the home a safe place for her recovery? What is her current fall risk? Potential home hazards? Is she aware of her deficits, her limitations? Can she recognize safety issues and problem-solve safe solutions?

**Transportation:** Can she safely drive? Does she have community support? Does she have any upcoming appointments? How can she stay engaged with her community?

**Nutrition:** Any dietary concerns that will impact her recovery and health? Ability to make meals? What resources are available?

**Medical appointments:** Does she have a follow-up plan with her primary physician? Are there other physicians or providers involved in her care?

**Equipment:** Does she need any medical equipment ordered? Is she able to complete her ADLs? What is her mobility in her home? In and out of her car? In the community?

**Daily routines:** What changes or adjustments will she need to make? What are her routines? Does she require support?

**Household chores:** What are the critical items required? Are there financial resources to help with this? Does she have family or community help?

### Possible Goals and Considerations

What we now know about Mrs. Smith due to the incorporation of cognitive screening is a better understanding

of her cognitive abilities (attention, memory, and executive control functioning) and how this may impact her goal of staying independent in her home. This will allow the therapist to design and implement a more efficient and effective plan of care as her cognitive capacity is taken into consideration.

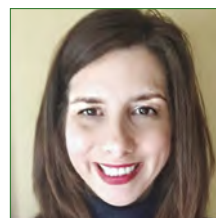
In the second part of this series, in the May issue, focus will transition to the role of working memory in treatment, as it impacts the PT plan of care execution, the role of interprofessional collaboration (PT, OT, SLP, etc.) for optimal success, and how to focus on reducing her risk for re-hospitalization, future falls, and achieving sustainable gains long after discharge.

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# Safe Landing Strategies: Should We Teach Patients How to Fall?

by Jennifer Gindoff, PT, DPT, DHSc; Heather Timothy, PT, MSPT; Heidi Moyer, PT, DPT; and Deborah Constantine, PT, DPT

Falls and fall-related injuries continue to plague older adults. With more than 3 million older people treated in the emergency room each year,<sup>1</sup> falls cost the healthcare system more than \$50 billion annually.<sup>2</sup> Agencies across the world, including the Centers for Disease Control, National Council on Aging, and the World Health Organization, have all mobilized to address this issue but are still a long way from solving this problem. Efforts to address falls within the older adult population can be divided into two categories: falls prevention and falls preparedness.

Falls prevention includes actions taken to prevent a fall from occurring by adapting the environment or the individual. Environmental adaptations are compensatory mechanisms that have an immediate, although transient, effect on fall risk. Examples include providing an assistive device, contrast flooring, or strict mobility policies to prevent unsupervised activity. Adapting the individual provides a more permanent solution but requires more time, effort, and resources. Both are required for a successful fall prevention plan, but not all falls are preventable. Falls preparedness addresses factors to reduce injury if a fall should occur. Examples include building bone density, maintaining proper nutrition, preserving the ability to perform a floor transfer, and potentially, instruction in safe fall techniques.

The question is, can older adults safely be taught how to fall? And does learning how to fall safely reduce the risk of injury to older adults at risk of falls? In this article, we explore the martial art of Judo as it is frequently used as the basis for safe fall landing training (SFLT) programs, review the current research on SFLT programs, and address the clinical relevance.

## Why Judo?

The concept of learning falling strategies is often rooted in martial arts techniques such as Judo. Judo, a Japanese wrestling sport involves throwing one's opponent to the ground,<sup>3</sup> and requires practitioners to protect themselves when thrown. Safe falling techniques are one of the first skills taught<sup>4</sup> and include techniques to protect the head, create a larger surface area when impacting the floor, and fall in a controlled manner to minimize the risk of injury.<sup>5</sup> Before participating in a match, individuals learn forward, sideways, and backward breakfall techniques,<sup>6</sup> beginning with simpler moves that become progressively more difficult, such as starting from low positions and

moving to higher positions.<sup>7</sup> Learning and mastering safe fall techniques is not simple. The knowledge, experience, and overall qualifications of the instructor are extremely important in preventing injuries during training in proper falling techniques.<sup>8</sup>

Judo incorporates fast, powerful movements and typically relies on strength, balance, speed, and endurance.<sup>9</sup> Research has shown that practicing judo has physiological benefits, including improved body composition,<sup>10,11</sup> cardiopulmonary fitness,<sup>11</sup> balance,<sup>9</sup> strength,<sup>9,11</sup> bone mineral density,<sup>10</sup> and cognitive performance.<sup>9,11</sup> However, there is mixed evidence for the safety of judo due to the potential for injuries. A literature review found the head and neck to be the most common injury location.<sup>12</sup> Most injuries sustained included sprains, strains, dislocations, and fractures.<sup>12</sup> Athletes sustain injuries while being thrown, particularly if they land incorrectly during the fall,<sup>13</sup> which is why it is so important to learn safe fall techniques for this sport.

## Judo-Inspired Programs

As SFLT is used to prevent injuries in judo, the concept has been considered to reduce fall-related injuries in the general population. The primary feature of martial arts fall strategies is rolling to reduce impact forces. Judo4Balance is a judo-inspired exercise program developed by a group of judo experts including 3 physiotherapists, an occupational therapist, a medical doctor, and a medical science professor. Developed in 2017, the program has 3 focus areas: fall skills for children, workplace safety, and fall safety in older adults. Judo4Balance addresses both fall prevention and fall preparedness.<sup>14</sup>

Judo4Balance effectiveness in reducing fall risk factors among working-aged adults has been examined in 2 recent studies.<sup>14,15</sup> Both studies looked at a ten-week supervised judo-inspired exercise program which consisted of learning breakfall techniques, progressive strength training, and coordination and balance exercises. Significant improvement in strength, balance, and safe falling techniques occurred for those who completed the program. Across both studies, results indicated a significant change in forward and backward falling techniques as well as improvements in Short Performance Physical Battery (SPPB).<sup>14,15</sup>

Arkkukungas and colleagues<sup>16,17</sup> have also examined the feasibility of a Judo4Balance program for fall man-

agement in community-dwelling older adults. One study was a small-scale study that included 28 participants (60-88 years old) who completed the program across 3 different settings including a judo club (15-week program), individuals' workplace (10-week program), and a local healthcare facility (16-week program).<sup>16</sup> Participants demonstrated significant improvement on the SPPB and with both forward and backward fall techniques at follow-up. While the Falls Efficacy Scale also improved, it was not significant.<sup>16</sup>

A follow-up randomized controlled trial (RCT) of community-dwelling older adults (n=200) was completed.<sup>17</sup> Participants were randomly assigned to either the Judo4Balance program (n=100; 1 hour/week x 12 weeks of progressive falling techniques, strength training, and balance and coordination exercises) or the control group (n= 100, no intervention). The RCT began in January 2020 and was halted due to the COVID-19 pandemic in March 2020. Follow-up assessments were completed when the study was restarted in September 2021 and found that the intervention group had significant improvement in falling techniques in all 3 directions. An additional 12-week intervention of the Judo4Balance program was offered to all participants (n=79). Following this, participants showed a significant improvement in lower extremity function and balance, indicated by improvements on the SPPB and Mini-BESTest, and improved falling techniques in all 3 directions.<sup>17</sup>

Based on the improvements in physical performance and balance demonstrated by older adults participating in a Judo program, other areas have been studied to ascertain if Judo can have a positive impact. Research has shown mixed results in the reduction of fear of falling with learned Judo techniques from no significant improvement<sup>14,15,19</sup> to significant improvement.<sup>20</sup> A study on gait performance in older adults participating in an adapted 4-month judo program found significant improvements in various temporal-spatial gait parameters, including step length, gait cycle time, speed, and cadence; the control group demonstrated worsening step length.<sup>18</sup> While adapted Judo programs for older adults have been shown to demonstrate improvements in physical performance, balance, gait, and potentially fear of falling, not all studies agree with these findings.<sup>21</sup> Additionally, it is not clear if learning fall techniques in a controlled setting will reduce the risk of injury if a fall occurs in a real-life situation.

### The Purpose of Safe Fall Landing Training

Safe fall landing is defined as a method to control the body during a loss of balance for effective shock absorption during impact with the ground to reduce the risk of injury.<sup>22</sup> Research has been conducted since the 1970s<sup>23</sup> with techniques that include elbow flexion, squatting, rolling, forward rotation, stepping, and relaxing.<sup>24,25</sup> To understand the theory behind Safe Fall Landing Training (SFLT), one must understand the mechanics of a fall. A

fall occurs in 3 phases:

1. Destabilization, one's center of mass moves outside of one's base of support (unintentionally), resulting in a loss of balance
2. Descent, the body begins to descend toward the ground because of gravity
3. Impact, the moment when the body impacts the ground.<sup>24</sup>

Research has focused on phase one, examining how an individual can recover from destabilization. Yet, despite decades of fall research and effective evidence-informed interventions, older adults continue to fall and sustain injuries, and no formal recommendations have been made for or against SFLT. Existing programs have the potential to reduce fall rates but do not address secondary issues such as hospital admissions, quality of life, and fractures.<sup>26</sup> Forty percent of community-dwelling older adults fall annually, with 15% falling more than once a year.<sup>25</sup> Forty<sup>26</sup> to 60%<sup>25</sup> of falls result in injury, with 90% of hip fractures<sup>27,28</sup> and 60%<sup>27</sup> to 80%<sup>29</sup> of head injuries resulting from falls. Eliminating falls in totality is impossible due to the laws of gravity.<sup>23</sup> It is vital that the medical community address how to reduce injurious falls, as fall prevention alone is not the solution. SFLT is meant to target phases 2 and 3 of a fall. The question remains, is it possible to reduce the severity of an injury in the event of an unpreventable fall? If so, can we safely and effectively train older adults, the population most affected by injurious falls?

### Safe Landing Strategies and Force Reduction

Research conducted to assess the effects of SFLT on kinetic energy as it relates to falls frequently focuses on impact force and impact velocity. Impact force is the initial peak force at impact; impact velocity is the speed of the body just prior to impact.<sup>25</sup> An RCT found a 33% reduction in hip impact force following 90 minutes of training utilizing the tuck and roll strategy.<sup>29</sup> This is compared to a 16% reduction in the control group, which was exposed to the same number of fall trials but without training.

Fall landing techniques have been reported to decrease hip impact forces by up to 30% and reduce impact velocity by up to 15%.<sup>28</sup> Techniques that decrease hip impact velocity and force include adopting knee and hip flexion and trunk rotation during a lateral fall;<sup>30</sup> forward rotation, which involves landing on knees, hands, and pelvis at the same time, increasing body area contacting the ground; and squatting during a posterior fall.<sup>25</sup> Rolling was the only technique that significantly reduced hip impact force during a lateral fall (25%).<sup>25</sup> Techniques with the largest effect sizes on decreasing hip impact velocity were forward rotation, stepping, rolling, and relaxing.

Whether a fall leads to injury is dependent on multiple factors, such as the area of the body that contacts the ground on impact, direction of the fall, fall duration, and

external load versus the load required to result in harm.<sup>25,27</sup> These factors differ in young adults compared to older adults and between manufactured falls and real-life falls. Studies analyzing real-life falls in older adults found both lower<sup>27</sup> and higher<sup>31</sup> impact velocities compared to manufactured falls. While studies have found a reduction in impact velocity with SFLT, hip impact force does not seem to be a direct function of velocity. A study examining fall techniques in older adults found a significant reduction in hip impact force that could not be completely explained by a change in velocity, confirming that there are other factors at play<sup>30</sup>. The clinical relevance of reducing impact force remains unknown.

### Is There Time to React?

A study examining fall duration in manufactured falls in young, healthy adults found it takes approximately 300ms to attempt to recover from the destabilization phase with impact at 700ms, leaving only 400ms to mobilize the body in preparation for impact.<sup>32</sup> Interestingly, according to a study examining video footage of real-life falls in older adults residing in long-term care, fall durations averaged 1271ms for the hip, 1730ms for the head, and 1188ms for the hand<sup>27</sup>. These values are longer than those found in manufactured falls, indicating more time to allow individuals protection against a fall.

### Can older adults learn to fall safely?

Knowing the average fall duration informs how much time an individual has to protect themselves, but is this possible to perform in reality? A systematic review concluded that there are 6 strategies that significantly reduce impact: squatting, elbow flexion, forward rotation, rolling, relaxing, and stepping.<sup>25</sup> Another study looking at SFLT in young adults found decreased injury rates.<sup>33</sup> However, generalizability to older adults is limited based on the age of participants in these studies.<sup>25,33</sup> There is support for SFLT in physically active older adults. Research in older adults at risk of falls, however, has been restricted by the risk associated with SFLT due to the number of comorbidities such as fracture risk, skin fragility, medication side effects, reduced strength, reaction time, physical and cognitive impairments, and other factors that increase injury risk and negatively influence the effectiveness of training. Adequate range of motion, strength, reaction time, motor control, power, and balance are required to control a fall safely and effectively, all of which may be reduced in older adults already at risk of falls.<sup>25,34</sup> While research is clear that older adults have a decline in motor skills, they maintain the ability to learn<sup>29</sup>, albeit more slowly.<sup>26</sup>

An RCT assessed healthy older adults' ability to learn the tuck and roll technique and found retention of improved skill after 1 week.<sup>29</sup> Results have limited generalizability due to the population studied and awareness of the pending fall. Another study, examining older adults able to ambulate without an assistive device for

15 minutes, found improved fall technique following five, 45-minute sessions in forward, sideways, and backward SFLT progressing from kneeling to sitting to standing.<sup>30</sup> Results have limited generalizability as falls were self-initiated; these results are only generalizable to healthy older adults. A case report on one healthy older adult who had not fallen in the previous year reported increased ability to perform a controlled fall from standing following a traditional plan of care plus SFLT.<sup>34</sup> The authors also reported improved static balance, floor-to-waist lifting, and single-leg stance; it is unclear which of the many interventions resulted in these improvements. An RCT assessing the effect of an exercise program based on SFLT in older adults with sarcopenia found a significant reduction in falls and fall-related injuries in the exercise group compared with the control group.<sup>35</sup> Interestingly, confidence improved at 12 weeks, but the TUG did not improve significantly until 24-week follow-up, indicating that confidence improved prior to balance.

### Could Safe Fall Landing Training Be Initiated Earlier?

Based on current neuroplasticity principles, one school of thought is to teach people how to fall at a younger age and maintain the skill throughout the lifespan.<sup>23</sup> There is current research on SFLT for children<sup>36-38</sup> that suggested that these programs lessen the risk of fall-related injury in children.<sup>37</sup> While there is early evidence to suggest that this task can be retained over a short period of time in children,<sup>38</sup> there is currently no evidence regarding retention from childhood to adulthood. Although SFLT has been addressed in children and young adults, and research has been done on middle-aged and healthy older adults, research tends to be siloed, and carryover across the lifespan has yet to be addressed. Research regarding the benefits of perturbation training on balance and fall risk has found that effects wane after 3 months.<sup>39</sup> Booster sessions aid retention,<sup>39</sup> indicating that training at regular intervals may help individuals retain a learned motor skill throughout the lifespan. Providing fall education prior to age 64 could mitigate the development of fall-risk factors. However, the ideal age for falls prevention and preparedness training has not been identified.

### Limitations and Concerns

Many SFLT studies have been conducted in young adults via manufactured falls, usually self-initiated, and frequently from a kneeling position. Studies in both young and older adults have demonstrated a reduction in impact velocity and impact force following SFLT.<sup>25,27-29,30,31</sup> The clinical relevance remains unclear as the force required to injure is dependent on a multitude of factors. Even if the clinical relevance of force reduction was known, there is limited information on how to perform SFLT safely and effectively in older adults at risk of falls, as much of the research has been conducted in active older adults at low risk of falls, with few, if any comorbidities. To safely

provide this training, a PT would have to consider medical history, risk of injury, medication side effects, system deficits, cognitive ability, range of motion, strength, balance, activity tolerance, power, motor control, reaction times, presence of fear of falling, risk of falls, and many other factors that differ between individuals. There is also concern that these techniques could increase injury risk as manufactured falls are not comparable to real-life falls. For example, squatting may reduce impact velocity but also decrease fall duration; elbow flexion may protect the arm but may increase the risk of the head impacting the ground; protective arm placement may protect the hip but injure the wrist, elbow, or shoulder.<sup>25</sup> Even if the clinical relevance of force reduction was known and there was a protocol for use of SFLT in older adults, there would need to be training for PTs to learn how to safely implement SFLT to mitigate the risk of injury in an already at-risk population as the qualifications of an instructor is vital to prevent injuries when teaching these techniques.<sup>8</sup> There is currently not enough information to inform a uniform approach to SFLT for older adults at risk of falls. However, for healthy older adults at low risk of falls, especially individuals with fear of falling or with deficits in only a few areas, Safe Fall Landing Training may be appropriate for select individuals. It is incumbent upon the clinician to obtain training in SFLT implementation and perform individualized assessment prior to initiation of an SLFT program, and to apply SFLT interventions based on patient goals, clinical findings, response to treatment, and other factors. As the majority of falls research has focused on fall prevention, further research should be expanded to include fall preparedness to address the other phases of a fall and reduce the risk of fall-related injuries.

## Conclusion

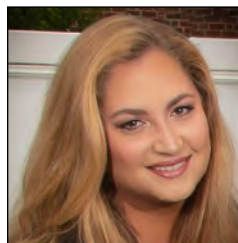
SFLT has led to improved balance, strength, and falling technique,<sup>14,15,17</sup> improved confidence and reduced fall risk,<sup>35</sup> and improved gait performance in older adults,<sup>18</sup> although not all studies corroborate these findings.<sup>21</sup> Reduced impact force and velocity have been found following SFLT,<sup>25,27,28</sup> although the clinical relevance of this is unclear. SFLT may be an appropriate adjunct intervention for select, active older adults at low risk of falls to mitigate the risk of fall-related injury, although prescription remains unclear.

A longitudinal study may be the most appropriate next step. Training middle-aged adults at low risk of falls and offering practice sessions at specified intervals to examine how SLFT can reduce the risk of falls with age may offer clinically relevant information. More information would be needed regarding the frequency, duration, intensity, practice interval, and practice type.

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# A Student's Perspective of Interprofessional Clinical Experience in a Senior Living Community

by Julia Schiller, SPT; Susan Wenker, PT, PhD

Falls are the main culprit of injury among individuals 65 and older, and result in 32,000 deaths in the United States in 2018 alone, with mortality expected to increase as the population ages more<sup>1</sup>. There are a variety of intrinsic and extrinsic factors that lead to an increased risk of falls, including but not limited to muscle weakness, poor proprioception, depression, dementia, polypharmacy, and heart disease.<sup>2</sup> Given that the residents in senior living facilities often have a more complex medical history than those living independently, this population may be at higher risk for falls. However, despite senior living individuals having an increased risk of falls, they have the distinct advantage of having access to an interprofessional team who is skilled in not only identifying falls risks but preventing falls from happening. This team includes, but is not limited to, doctors, nursing staff, physical therapists, occupational therapists, and social workers. Much research has been dedicated to studying the effectiveness of interdisciplinary interventions regarding falls prevention in acute care, emergency, and nursing home settings. In a 2010 systematic review regarding interventions for preventing falls in hospitals and nursing homes, multifactorial treatment alone was not sufficient to significantly reduce risk and rates of fall in elderly patients.<sup>3</sup> However, when multifactorial treatment was delivered by an interprofessional team, researchers noted a significant decline in fall risk and rates in these facilities.<sup>3</sup> Similar conclusions have been drawn in systematic reviews regarding elderly adults in the community, emphasizing the importance of interprofessional and multifactorial interventions throughout the aging spectrum.<sup>4</sup>

As a second year DPT student, I am in my final year of didactic coursework and preparing for clinical internships starting in 2023. The University of Wisconsin-Madison Doctor of Physical Therapy program has 42 weeks of clinical rotations, with 2 occurring during the first year, allowing its students to begin early application of what they learn in the classroom in the clinical setting. Throughout my studies, it has become clear that interprofessional collaboration should be the standard when evaluating and treating any patient to promote the best health and facility outcomes. I was recently able to observe and participate in interprofessional clinical experience with guidance from my DPT program and Center of Interprofessional Practice Path of Distinction (CIPE PoD) program

This path of distinction is open to all graduate students. My specific cohort medical, physical therapy, oc-

cupational therapy, pharmacy, and public health students who engage in interprofessional learning activities to supplement their program. At the time of my experience, the PoD's aim was to provide students learning and engagement opportunities to promote the Quadruple Aim: using interprofessional collaboration to provide better health, care, value, and work experience in the medical field. For this article, 'interprofessional' is defined as "when multiple health care workers from different professional backgrounds work together with patients, families, other careers, and communities to deliver the highest quality of care."<sup>5</sup> This is different from multidisciplinary, for while both include multiple professions, it is the way the professionals engage with each other that differ.

Figure 1



## TABOR Snap, Crackle and Pop

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Timed Balance Test		Home Safety	
<b>Task</b>	<b>Score</b>	<b>Uses an AD</b>	<b>Yes/No</b>
1. Sitting balance:	_____	<b>Falls in the Past year</b>	<b>Yes/No</b>
2. Arises:	_____	<b>Able to dress independently</b>	<b>Yes/No</b>
3. Attempts to rise:	_____	<b>Spilling food at meals</b>	<b>Yes/No</b>
4. Immediate standing balance:	_____	<b>Coughing when eating/drinking</b>	<b>Yes/No</b>
5. Standing balance:	_____	<b>HIMS</b>	
6. Nudged:	_____	Number of words repeated after first attempt:	
7. Eyes closed:	_____	0    1    2    3	
8. 360 turn:	_____	<b>What year is it right now?</b>	
9. Sitting down:	_____	0 = Missed by > 5 years or no answer 1 = Missed by 2-5 years 2 = Missed by 1 year 3 = Correct	
<b>Balance Score:</b>	_____/16	<b>What month are we in right now?</b>	
10. Initiation of gait:	_____	0 = Missed by > 1 month 1 = Missed by 6 days to one month 2 = Accurate within 5 days	
11. Step length/height:	_____	<b>What day of the week is it today?</b>	
Right foot:	_____	0 = Incorrect or no answer 1 = Correct	
Left foot:	_____	<b>Recall of 3 words</b>	
12. Step symmetry:	_____	<b>Sock</b> 0 = not recall 1 = after cue 2 = yes no cue	
13. Step continuity:	_____	<b>Blue</b> 0 = not recall 1 = after cue 2 = yes no cue	
14. Path:	_____	<b>Bed</b> 0 = not recall 1 = after cue 2 = yes no cue	
15. Trunk:	_____	<b>Total score</b> _____/15	
16. Walking time/heel:	_____	13 - 15 = Cognitively intact	
<b>Gait Score:</b>	_____/12	08 - 12 = Moderately Impaired	
<b>Balance + Gait:</b>	_____/28	00 - 07 = Severely Impaired	
< 19 = High Fall Risk 19 - 24 = Medium Fall Risk 25 - 28 = Low Fall Risk			
<b>NOTES:</b>			

Interprofessional care emphasizes the collaboration with other professionals with joint assessment and/or treatment. Multidisciplinary emphasizes the individual's specific realm and plan of care. Oakwood has a progressive, interprofessional model regarding their facility, and given the high quantity of Medicare patients, collaboration is vital to maximize allotted visits.

One of the components of the IPE PoD is an IPE Scholarly Project. This project entails incorporating interprofessional work to advance the Quadruple Aim in healthcare. For my project, I knew I wanted to complete it during one of my clinical rotations, where I knew I would have the opportunity to both observe and partake in interprofessional care. After learning about the environment at Oakwood Village, I recognized an excellent opportunity to implement my project.

Oakwood Village is a senior living facility and has residents across the aging spectrum. The rehabilitation team treats residents who live independently in senior living apartments, assisted living apartments, memory care units, and skilled nursing facility units. As in any healthcare facility, interprofessional collaboration is key to helping people thrive at Oakwood. However, the teamwork extends just beyond the medical teams into the other Oakwood employees as well. For example, Oakwood has "Continuum" meetings when residents begin to transition from one part of the campus to another. If a person were to be moving to assisted living from independent living, Oakwood has an interprofessional meeting of nursing, finance, social work, administration, and rehabilitation teams to ensure a smooth transition for the resident and

their family. Additionally, physical therapists and occupational therapists work closely with the personal trainers at Oakwood. The rehabilitation team will often encourage patients to take the free group fitness classes offered by the personal trainers and refer them for 1:1 training when they are finished with therapy to help with maintenance of HEPs, strength, and endurance. These interactions, combined with Medicare meetings and care conferences, gave me an inside look into the interprofessional relationships in senior living facilities. During this clinical experience, I was able to participate in an interprofessional experience that set Oakwood apart from other senior living facilities: a falls clinic provided free of charge to the residents, involving speech therapy, occupational therapy, and physical therapy clinicians.

Oakwood's first fall risk clinic was a collaborative project among multiple Oakwood living communities that began in the fall of 2021. The goal of the first clinic was to provide a free check-up to identify folks in independent living who may benefit from medical or rehabilitation services. The first clinic encompassed a more holistic screening, with questions asking about general safety, administration of blood pressure tests, and medication reviews. There were 19 residents who came to the first clinic; nine total were identified as at risk for falls according to their screening (Figure 1), although none followed up with a therapy consult.

The second fall risk clinic was held 6-months later, with an updated screening document (Figure 2). This clinic had a much larger turnout, as 51 total residents showed up for the screening; 25 people identified as a fall risk. Out of those 25, 12 people followed up with therapy consults and received rehabilitation services.

Figure 2

Figure 3

I had the opportunity to participate in Oakwood's third free falls risk assessment during my 4-week clinical rotation. This assessment of fall risk consisted of physical functional measures and did not include blood pressure and medication checks. (Figure 3). Eliminating these components of previous screenings allowed therapists time to see more people during the clinic; and nursing staff had begun to independently offer free blood pressure screening checks to residents. Iterations of the falls screen is just another example of the exemplary interprofessional communication demonstrated at Oakwood Senior Living Facilities, as collectively, nursing and rehabilitation teams hope to mitigate hypotension related events, increase holistic health monitoring, and maintain residents' quality of life and wellbeing.

The third fall risk clinic began with a therapist and resident collaboratively preparing the intake form. The person was asked about assistive device (AD) use, falls in the past year, and independence in activities in daily living (ADL). The resident then filled out the "Stay Independent" brochure created by the STEADI program (Figure 4). After the risk of falling checklist score was calculated, the resident performed the 30 Second Chair Stand Test, the 4 Stage Balance Test, the Functional Reach Test, and Short

Blessed Test, each performed by a designated PT, OT, SLP. The last therapist would then go over all results with the person, explain the meaning of their overall scores, and make recommendations on whether they would benefit from therapy. The entire process took about 15 minutes for the person; each resident had the option of a therapists adjusting their AD if needed.

Oakwood received very positive feedback from residents regarding the rehabilitation falls risk clinic. Residents shared they feel more confident talking to their primary care provider with their concerns about falls when they can refer to their results of the fall prevention clinic. Participants have the option of taking their intake form with them after the assessment. This provides them with an objective measurement that they can present to their physician and insurance regarding covering physical therapy services for fall prevention.

Oakwood residents are also encouraged to attend more than one clinic to track their fall risk status. For example, one patient had come to every fall risk clinic the Oakwood Rehabilitation team has offered. She had a steady decline in her results, leading her to make a follow-up appointment with physical therapy. Furthermore, a resident can be referred to Oakwood's durable medical

Figure 4

### Check Your Risk for Falling

Circle "Yes" or "No" for each statement below			Why it matters
Yes (2)	No (0)	I have fallen in the past year.	People who have fallen once are likely to fall again.
Yes (2)	No (0)	I use or have been advised to use a cane or walker to get around safely.	People who have been advised to use a cane or walker may already be more likely to fall.
Yes (1)	No (0)	Sometimes I feel unsteady when I am walking.	Unsteadiness or needing support while walking are signs of poor balance.
Yes (1)	No (0)	I steady myself by holding onto furniture when walking at home.	This is also a sign of poor balance.
Yes (1)	No (0)	I am worried about falling.	People who are worried about falling are more likely to fall.
Yes (1)	No (0)	I need to push with my hands to stand up from a chair.	This is a sign of weak leg muscles, a major reason for falling.
Yes (1)	No (0)	I have some trouble stepping up onto a curb.	This is also a sign of weak leg muscles.
Yes (1)	No (0)	I often have to rush to the toilet.	Rushing to the bathroom, especially at night, increases your chance of falling.
Yes (1)	No (0)	I have lost some feeling in my feet.	Numbness in your feet can cause stumbles and lead to falls.
Yes (1)	No (0)	I take medicine that sometimes makes me feel light-headed or more tired than usual.	Side effects from medicines can sometimes increase your chance of falling.
Yes (1)	No (0)	I take medicine to help me sleep or improve my mood.	These medicines can sometimes increase your chance of falling.
Yes (1)	No (0)	I often feel sad or depressed.	Symptoms of depression, such as not feeling well or feeling slowed down, are linked to falls.
<b>Total</b>		Add up the number of points for each "yes" answer. If you scored 4 points or more, you may be at risk for falling.	

This checklist was developed by the Greater Los Angeles VA Geriatric Research Education Clinical Center and affiliates and is a validated fall risk self-assessment tool (Rubenstein et al. J Safety Res; 2011; 42(6):493-499). Adapted with permission of the authors.

equipment (DME) loan closet if the clinicians in the fall risk screening believe a resident would benefit from an AD. Another benefit of attending multiple clinics is the ability to monitor a change over time of the resident's abilities. This monitoring can trigger a physician referral, promoting a preventative model of medicine for Oakwood residents.

Residents are not the only benefactors from these interprofessional falls risk clinics. Rehabilitation team members reports that their involvement in clinics helps them become better clinicians. Working collaboratively during the Falls Risk Clinic allows them to analyze falls from different perspectives, whether it be anatomical, situational, or environmental. This clinic also offers a sense of community within Oakwood. The rehab team understands the mixed emotions some residents may experience regarding discussing their falls risk; fear of losing independence could be reason older persons don't disclose past falls to primary care providers.<sup>7</sup> Rehab professionals, hosting Oakwood's Fall Prevention Clinic, hope to offer services that encourage people to actively participate in preventative health and wellness measures without stigma.

Some challenges exist with interprofessional care even though multiple positive outcomes occurred. I had the opportunity to talk to my clinical instructor, Nathaniel Hope, and the director of the rehabilitation staff, Janet Steinhoff, regarding some flaws of interprofessional care. It may not be as efficient or cost effective for multiple clinicians to be analyzing a patient's impairment. Health care professionals are providing input through multiple lenses; however, it may lead to overutilization of valuable time and resources in an already strained health care system.

Another potential weakness of interprofessional care is the possibility of members having a limited understanding their own role and that of others.<sup>8</sup> Beginning to adapt an interprofessional healthcare model may lead to further education and training to solidify the principles of the using interprofessional collaboration to provide better health, care, value, and work experience in the medical field. Regardless of these considerations, interprofessional healthcare strives to result in better patient outcomes, better professional practice, and more efficient use of medical resources. More research is indicated in interprofessional collaboration in all healthcare settings.

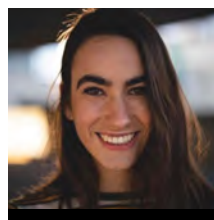
Overall, my four-week clinical rotation at Oakwood Senior Living gave me the incredible opportunity to take what I learned inside the classroom and be able to apply it in a clinical setting. Through my observations and interactions with patients, clinicians, and staff at Oakwood, I recognize that interprofessional collaboration isn't just beneficial, but necessary to properly support the aging population. DPT programs should consider integrating more interdisciplinary opportunities for students.

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# Am I Making a Difference for My Patient?

by Devayani K Kurlekar, PT, DPT, MS and Jennifer Howanitz, PT, DPT

*Editor's Note: This clinical case commentary was part of content for the March 2023 Journal Club. These case studies are intended to demystify the more formal statistics and format of a peer-reviewed article and translate key concepts into clinically usable information. Join us for Journal Club on the third Tuesdays of January, March, May, July, September, and November at 8 pm ET to discuss current concepts with a wide range of peers.*

*Case study presentation based on the research article from Journal of Geriatric Physical Therapy: Barisch-Fritz B, Trautwein S, Scharpf A, Krell-Roesch J, Woll A. Effects of a 16-Week Multimodal Exercise Program on Physical Performance in Individuals with Dementia: A Multicenter Randomized Controlled Trial. J Geriatr Phys Ther. 2022;45(1):3-24.1*

We start with the age-old question for many therapists, are my interventions making a difference for my patient? There have been great strides made in the profession to improve the dosage of exercise to improve outcomes, especially for older people. However, for patients living with dementia, there is still limited consensus on a program, inclusive of its dosage, that is most efficacious. While Barisch-Fritz et al.'s research does not answer this question for therapists, it does provide several key points for therapists to consider in their practice: are we using appropriate assessment tools for individuals with dementia (IWD) to identify not only lower physical performance but also document progress and are we structuring interventions (dosage and delivery) effectively. This case presentation will outline an individual with dementia that presents in the acute care environment and illustrate how to translate Barisch-Fritz et al.'s work into their physical therapy care.

## Case Presentation

Mr. E, a 75-year-old male, was admitted to the hospital with pneumonia and leukocytosis. Chief complaints were feeling fatigued, shortness of breath, generalized weakness, and decreased mobility. His wife reported recent cognitive changes and difficulty performing ADLs because of his forgetfulness. Physical therapy consultation was requested to assess mobility and discharge plan. Occupational therapy was also consulted for ADL assessment. Lab results were unremarkable except for hemoglobin of 11 gm/dL. AM Blood glucose 120 mg/dL.

Medical History and current medications: His history is significant for diabetes, hypertension, osteoarthritis, hypercholesterolemia, transient ischemic attack, depression, and dementia. His medications are outlined in Table 1.

## Prior level of Function/Social History

A retired math professor at a local community college, Mr. E lives with his wife in a 1 story home. There is one small step to navigate in both the front and back of the house. He ambulates using a rollator walker inside his home without assistance. He sometimes needs assis-

tance to ambulate in the community when ambulating on uneven surfaces and to navigate steps. He did have a fall last year when he attempted to navigate a curb and has told her he is afraid of more falls. He requires his wife to lay out his clothes but he is able to don and doff them independently. He denies smoking or drug use but does "enjoy my nightly glass of white wine." He has no regular exercise routine and considers himself inactive. He lives a sedentary lifestyle. His hobbies include bingo and card games with his friends. He used to be an avid reader and was part of a book club. He and his wife have a good circle of longtime friends and they participate in outings once every two weeks. His wife has recently noticed his lack of interest in getting together with friends. She completes food preparation and medication management. They have a housekeeper that comes in to assist with cleaning and light household chores. He stopped driving as his vision is impaired; his hearing is intact.

## Examination

He presented in bed but awake, and alert. He was able to identify himself and where he was but was unable to accurately report the year or why he was in the hospital. He stated that he was eager to get OOB and wanted to improve his walking. Cardiac telemetry monitoring equipment was attached but he was on room air without supplemental oxygen. He did not appear pale, diaphoretic, and did not show signs of cyanosis. Use of accessory muscles for breathing not observed. He denied cough or secretions. Upon auscultation, had both normal breath sounds and chest wall excursion. He denied chest pain.

Gross movements of BUE/BLE were symmetrical. Active and passive movements of both upper and lower extremities revealed normal tone and no abnormal movement patterns. Mr. E stood with a forward head posture and mild thoracic kyphosis. He had mild grade 1 edema proximal to both ankles. He had no open skin areas. Sensation was intact to light touch. He performed 1- and 2-step directions with extra time. Vitals were assessed pre and post activity and were stable with a normal response.

Mr. E needed cues for sequencing and minimal trunk assistance to complete transfer. He ambulated 200 feet with minimum assistance of one using a rollator walker for object avoidance and management of monitoring equipment. Gait Speed was measured at 0.5 m/sec.

The STEADI assessment<sup>2</sup> was attempted but only timed up-and-go test and 30-second chair stand portions were performed due to Mr. E’s tiredness (Table 2). The four-stage balance test was deferred as the patient needed a walker to maintain standing balance. His AMPAC mobility score was 19/24<sup>3</sup> and his Mini Mental State Exam (MMSE) score was 19. A score of 19 indicates mild dementia.<sup>4</sup>

**Assessment**

A comprehensive examination was conducted after gathering pertinent information from the chart and an interview with Mr. E and his wife. Mr. E presented with generalized weakness, impaired functional mobility, impaired gait, impaired balance, as well as limited community mobility. Increased time to complete the TUG test and slow gait speed scores indicated high risk for falls. His score on the 30-second chair stand test demonstrated his limited functional lower extremity strength and increased fall risk. His score of 60 on the 2-minute step test indicated decreased aerobic capacity. Mr. E’s AMPAC score was 19 which supported his discharge home with home health physical therapy services. He and his wife were also given information about a local church which offers group exercise programs for IWD.

**Intervention**

Mr. E remained in the hospital for 5 more days and received two 20-minute treatment sessions by physical therapy consisting of exercise and walking. The sitting and standing lower extremity exercises were without resistance (standing marching, mini squats, long arc quads, ankle pumps, isometric hip adduction), 15 reps x 2 sets. The standing exercises were completed with a

rolling walker for support. The additional recommended activity during the 5 days was out of bed for all meals, out of bed for voiding, ambulating in the hall with staff 3 or more times/day, and family assisting with exercises prescribed by the therapy team daily. Compliance with the activities outside of therapy depended on staff and family availability which was variable.

**Discussion**

Over 75% of inpatient admissions to hospitals are over the age of 65. It is challenging to care for acutely unwell older adults, moreover, those with a diagnosis of dementia. Individuals with dementia are at risk for higher functional dependence and higher risk for falls. Exercise has shown multiple benefits for people living with dementia, including improvements in mood and mobility, in activities of daily living, as well as reduction of behavioral problems and risk of falls.<sup>5</sup> Physical therapists in the acute care environment are on the front lines to make a difference for IWD. Utilizing research like that completed by Barisch-Fritz et al can aid therapists’ decision-making to reach the goal of improving functional outcomes for patients.

**First Application: Selection of Appropriate Assessment Tools**

The tool kit to complete assessments for older adults is robust. Some of the tools regularly used in the acute care environment are the Timed-up-and-Go, Gait Speed, Tinetti Performance Oriented Mobility Assessment, Berg Balance Test, Dynamic Gait Index, 6 Minute Walk Test, 5x Sit to Stand; 30 second Sit to Stand, and the Short Physical Performance Battery. There can be many challenges to incorporating these assessments into the therapy eval, two identified by Barisch-Fritz et al. are mood/motivation and the ability to follow the parameters of the test. For Mr. E, fatigue and cognition were limiting factors to the use of multiple tools. Selection of only the tools most critical to discharge planning may improve the assessment of function and limit the effect of physical and cognitive fatigue. A tool such as Gait Speed,<sup>6</sup> found reliable for individuals with mild to moderate dementia, would have been sufficient to identify fall risk. Utilization of one additional test, such as the modified 30-Second Sit-to-Stand,<sup>7</sup> also reliable for IWD, could have corroborated fall risk and clarified lower extremity strength. Therapists should be aware of functional tests that are appropriate for the IWD’s level of cognitive impairment to ensure the test is assessing the desired impairment.

**Table 1**

Lipitor (hyperlipidemia)
Lisinopril (hypertension)
Metoprolol (hypertension)
Metformin (diabetes)
Namzaric (dementia)
Baby aspirin (anti-platelet)
Cetirizine (prn allergies)
Tylenol prn for pain
Multivitamin
Vitamin D

**Table 2**

Cognitive and functional outcome measures	Result	Psychometrics
Timed up and go test	15s	MDC 4.09s
30 second chair stand test	9	MDC 0.70
2-minute step test	60 steps	MDC not available

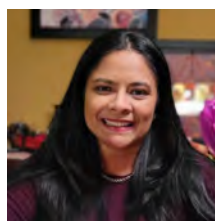
## Second Application: Exercise Recommendation/ Structuring the Intervention

There is an abundance of research available that tells us that exercise is an incredibly effective medication, but just like medication, exercise is only effective if it is prescribed correctly to an individual. The prescription must incorporate the person's condition to deliver the intervention at an effective dosage and be monitored and adjusted as needed by skilled personnel. Barisch-Fritz et al.'s 16-week community exercise intervention offered a generic exercise program twice weekly for an hour. They found that this dosage enhanced function in lower-level patients and maintained function in patients that were functionally at a higher level. In the acute care setting, the length of stay is short, in addition to the medical challenges of the patient, limiting the opportunities to engage patients in an extensive exercise program, which was the case for Mr. E with only two 20-minute sessions. Providing patients with engaging and challenging treatment sessions, with specific functional goals driving these interventions, can benefit patients like Mr. E. The article by Barisch-Fritz recommends that including individualized exercise prescriptions with exercise intensity tailored to the patient's baseline scores on outcome measures is beneficial to IWD. In the presented case, while the activities in the intervention supported the function that Mr. E needed to return home, the intervention could be improved by assessing intensity using vital sign response and repetition max. In the United States, the reimbursement for post-acute rehabilitation services at home and in the community is limited. Conducting an objective baseline assessment of patients in acute care and creating a program for the post-acute period based on such assessment could be beneficial for individuals with dementia in the long term. The step-by-step progression of exercises could be beneficial to a patient admitted to acute care and could be carried on at home with a home health therapist, who would educate the family to continue with the progression until the patient was ready to join a community-based program. This would have benefited Mr. E.

Mr. E's case demonstrates how applying practice suggestions from the literature can benefit our patients and confirm that we are practicing in a manner that is making a difference.

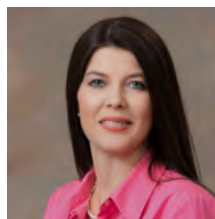
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# Structuring Exercise Strategies to Enhance Aerobic Capacity of Community-Dwelling Older Adults with Interstitial Lung Disease: A Case Study

by John Huller, PT, DPT, CSCS

Interstitial lung disease (ILD) consists of various pulmonary pathologies that share a hallmark sign of shortness of breath (SOB) as the overarching disabling symptom.<sup>1</sup> Exercise intolerance and limitation of activities of daily living (ADLs) are commonly seen among those with ILD.<sup>1</sup> Contributing factors include skeletal muscle dysfunction, persistent inflammatory processes, formation of fibrotic issue, abnormal respiratory patterns and reduced static and dynamic lung volumes.<sup>1</sup> Skilled physical rehabilitation benefits those with ILD by increasing function capacity, decreasing SOB, and enhancing health-related quality of life (HRQoL).<sup>1</sup> Many research studies utilize aerobic and strength training to address many of the deficits common in people with ILD, although few studies are designed specific to subjects with this pathology.<sup>1,2</sup> Studies indicate that a focus on stair climbing, peripheral muscle training, and patient education with home-exercise programs (HEP) result in optimizing outcomes.<sup>1,2</sup>

Formal pulmonary rehabilitation results in those with ILD reporting improved maximum exercise capacity and HRQoL. Home-based programs can also be an effective and simple option for those with ILD to enable interventions that propel changes in patients' daily lifestyle routines.<sup>1</sup> Mr. "Jack" was an older adult being treated in PT for chronic SOB secondary to lung fibrosis. The purpose of this case study is to demonstrate using a home-based physical therapy program, structured like formal pulmonary rehabilitation, in order to assess functional capacity in a community-dwelling older adult with ILD.

## Case Description

Mr. Jack is an 84-year-old male referred to physical therapy for severe deconditioning secondary to increased SOB, with a primary medical diagnosis of lung fibrosis. He lives with his spouse in a multi-level home with 6 steps to enter and 14 steps inside to reach the second floor; he is the primary caregiver due to her significant mobility deficits. Despite a multi-year history of SOB; in the last 3 months there has been a significant increase in symptoms and subsequent decline in overall function with accompanying sedentary behavior. He requires rest breaks after taking the groceries into his home from the car; it was not uncommon for him to nap several times throughout the day. He also reported an inability to perform various home maintenance tasks both in and

out of his home that in previous years he not only enjoyed but also kept him active. Mr. Jack reported he struggled to complete his basic ADLs and was able to negotiate the stairs in his home only with significant SOB and fatigue. Prior to this exacerbation, he reported being independent with all mobility, ADLs, and hobbies/maintenance work around the home with minimal rest breaks. Prior to starting therapy services, he had followed up with both his cardiologist and pulmonologist without any major pathology noted.

Mr. Jack reported a significant past medical history (PMH) that included ILD and a near-fatal MVA that has resulted in total reconstruction of his R pelvic girdle with resulting impaired sensation on his R side from the waist down. Other notable PMH included liver disease, hypothyroidism, and hyperlipidemia. His goals included: regaining his energy levels to complete ADLs without as much SOB and improve his balance to reduce his risk of falling when performing home maintenance outside.

## Clinical Impression at Initial Evaluation (IE):

After completing the subjective portion of the examination, Mr. Jack's exacerbation of SOB is suspected to be a result of the progression of ILD with subsequent decreased tolerance to overall activity and suspected specific diagnosis of idiopathic pulmonary fibrosis. This contributed to his reduced endurance/aerobic capacity. His overall balance ability was likely impacted from both chronic fatigue and sensory deficits resulting in energy inefficiency. The combination of current comorbidities such as recent inactivity, ILD, and liver disease all impacted SOB negatively and now greatly hindered ADL performance.

## Objective Examination

Cognition: no apparent cognitive deficits

Resting Vital Signs: blood pressure (BP) 135/65, SpO<sub>2</sub> 95%, regular heart rate (HR) 88 beats/min; respirations 18/min

Sensory: denies pain or burning sensation in his LEs; denies any sudden loss in strength or dexterity; noted sensation deficits through R LE with distal > proximal. Proprioception was intact when testing bilaterally using foot position as indicator of deficit.

Integumentary system: intact throughout.

Transfers: Sit to stand (STS) independent with minimal

use of upper extremities; independent bed mobility by report.

**Ambulation:** Independent for all distances in home and community without device. Observed with occasional scissoring, inconsistent foot positioning, and B lateral sway. During stair negotiation with single railing, HR 92, BP 148/68, RR 24, SpO2 99% on room air, modified Borg RPE (rate of perceived exertion) of 8/10. Continual DOE (dyspnea on exertion) with all mobility observed

**Functional Outcome Measures:** ( See Table 1) During the 2MWT he reported RPE of 5/10 but had significant hyperventilation with RR 54/min. Respiratory training provided given to ensure safety and alleviate severe SOB. HR, SpO2 and BP remained WFL as seen with stair negotiation after addressing the increase in RR.

**Assessment:** Mr. Jack was referred to physical therapy due to severe deconditioning secondary to a recent exacerbation of SOB with all mobility. This had resulted in a greater inactivity and functional decline. Key impairments included impaired ability to control RR during bouts of prolonged activity (leading to significant SOB) and diminished sensation throughout R LE. Reductions in balance ability, most notably across sensory, anticipatory, and dynamic gait domains of the Mini-BESTest were remarkable. His scores indicated increased falls risk based on age/data normative values. Prolonged ambulation required an extensive rest break and breathing interventions due to an uncontrolled RR. The patient's HRQoL and risk of hospitalization was elevated as seen on the PSFS. He was unable to participate in community outings such as shopping and other home maintenance tasks (i.e., yard work, home repairs) without significant undue stress and prolonged time commitment. Despite the chronicity and progressive nature of the patient's ILD, Mr. Jack is very motivated to get functionally well. His prognosis is good for functional wellness as noted with his prior level of function.

**Plan:** Skilled therapy services of 3x/week with a plan to taper down to 1x/week, for 6 weeks. Regular reassessments at 10 visit intervals; as well as, as needed (PRN) based on his progression with services. Treatment sessions included initial focus on neuromuscular reeducation of breathing techniques, disease management education, and implementation of a home exercise program (HEP). Safe progression of interventions also included a combination of dynamic balance elements with an eventual shift in focus towards improving muscular/aerobic endurance.

## Interventions

**Education:** Initial treatments focused heavily on deep breathing techniques to prevent production of activity limiting symptoms. Pursed lip and paced breathing were initiated with additional focus on diaphragmatic techniques. Instruction in hand over belly and chest technique was used to elicit proper use of primary breathing muscles vs

reliance on accessory contractions. A heavy emphasis was also placed on coordination with UE overhead movement to enhance chest expansion. Pt began techniques in supine to assist in maximizing neuromuscular control. Following observations of adequate technique/performance, he expanded use throughout general LE strengthening exercises, use of stepping strategies on/off foam surfaces and finally dual task balance activities. As he progressed, Mr. Jack was instructed to exaggerate proper breathing techniques during interventions and activities to maximize carryover. Implementation of a postural control HEP was distributed on IE to enhance chest expansion during both recovery time and active mobility.

**Strengthening:** General hip strengthening open kinetic chain exercises with an emphasis on timing and sequencing of movements with breathing techniques. These included hip flexion, abduction, extension, and knee flexion. Tactile assist was required while also performing proper breathing techniques during both concentric and eccentric phases of movement. All interventions utilized no UE support; however, when exacerbation of SOB and/or RPE level was noted, unilateral UE assist was given at times to optimize performance. Dosage of exercises included 2-3 sets of 8-15 repetitions to remain within hypertrophy and muscular endurance spectrums. Initial repetitions focused on hypertrophy range of 8-12; while the end of his POC ranged closer to endurance-based 12-15 repetitions.

**Neuromuscular Reeducation:** Dynamic balance interventions including use of foam surfaces while performing various trunk mobility continued to emphasize proper breathing techniques with flexion/extension and rotation. Progressively more dynamic and upright interventions with increasing complexity of tasks including BOS, eyes open eyes closed, multi-tasking and uneven surfaces. Mr. Jack required physical assistance to maintain balance 25% of the time to maintain proper intensity. Static balance interventions were introduced to work on gluteal activation and proprioceptive strategies using ankle/hip and squatting techniques. Visual, somatosensory, and vestibular input were varied when appropriate to further challenge balance ability; as well as challenge cognitive demand to continue appropriate breathing patterns. Additional dynamic balance interventions focused on lateral and retro stepping patterns. Dual tasks included interventions like measures seen in the Mini-BESTest; as well as card sorting tasks with functional reaching on unstable surfaces. Reactionary and anticipatory activities to reduce risk of falls were also introduced when appropriate.

**Aerobic Endurance:** Aerobic intensity was progressively increased based on RPE levels and the distance traveled between both trials and sessions. Initial aerobic exercise (AE) was performed at low-moderate intensities; however, RPE levels of 8/10 were recorded initially, despite vitals remaining WFL. He quickly progressed to multiple trials of greater ambulation distances as well

as pyramid stepping programs with his in-home staircase despite requiring minimal cueing;. Maximal steps negotiated by end of POC included 55 consecutive steps ascended/descended with an RPE of only 6/10. Interventions were performed consecutively without rest breaks until RPE of 7-8/10 was reported to allow for gradual improvement in tolerance to functional tasks. Addition of obstacles, dual tasks (i.e., walking and talking) and change of direction were implemented when appropriate.

### Outcomes

16 sessions were completed over the course of 8 weeks with each lasting between 40-60 minutes. Discharge outcome measure results are summarized in Table 1. Initially, Mr. Jack was able to ambulate 150' without an AD with only minimal assistance secondary to instability, poor stepping mechanics, and SOB. At discharge, he was able to ambulate Ind for 650'. At IE, he completed the 2-MWT with 93m completed and an RPE of 7/10; at discharge completed 130m with an RPE of only 2/10. Mr. Jack had been able to partially achieve age and gender normative values for his 2-MWT by only missing it by 3m. Mr. Jack scored 16/28 on his Mini-BESTest at IE; however, increased his scores to 22/28 at his 8th session and subsequently increased to 25/28 at his 10th session. Mr. Jack additionally self-reported his PSFS as an average of 5.8/10 on IE. Measures were across his ambulation ability, stair negotiation, light yard work (gardening), heavy yard work (hedging/digging). At discharge he had improved his self-report to 7.8/10. Mr. Jack demonstrated significant MDC and MCID improvements within his Mini-BESTest and 2-MWT. Although he did not achieve MDC ratings within PSFS, he was able to improve his score to decrease risk of future hospitalizations. Modified Borg RPE across all measures were reduced from a high of very severe breathlessness (7/10) to slight breathlessness (2/10). See Tables 1 and 2.

### Discussion

Initial clinical hypothesis focused on Mr. Jack's diagnosis of lung scarring, chronic fatigue, and SOB which resulted in severe deconditioning, subsequent weakness, and overall functional decline. His additional comorbidities such as R LE sensation deficits and deviations in proprioception noted during IE resulted in energy inefficiencies and further increase in SOB. Interventions were focused on maximizing self-efficacy with appropriate ventilatory sequencing during mobility and chronic disease management. Dynamic balance training with multisensory integration and dual tasking was performed in conjunction with neuromuscular reeducation of breathing techniques to allow for greater control of SOB symptoms with more complex activities (i.e., yard work and home maintenance). Mr. Jack's original goals were to decrease his SOB and improve his balance with ADLs. Although

**Table 1. Outcome Measure Data**

	IE	10th Session	16th Session
Gait	1x 150' Min Assist	2x 350' SBA	1x 650" Ind
PSFS <sup>6</sup>	Avg 5.8/10	N/A*	Avg 7.8/10
2-MWT <sup>7</sup>	93m	93m	130m
Mini-BESTest <sup>8</sup>	16/28	25/28	25/28

*Community-Dwelling Elderly<sup>6</sup>: MDC = 2.8, Excellent test-retest reliability (ICC=.82) unable to achieve 7.2 in <14 visits or 6.9 >14 visits = increased risk of hospitalization*

*Older Adults<sup>7</sup>: MDC = 12.2 meters or 40 feet (90% confidence), Excellent test-retest reliability (ICC=0.95), Males 80-85 = 133-156 meters, mean 144*

*Adults with self-reported balance problems<sup>8</sup>: MDC = 4, MCID = 2, SEM 1.4, Excellent test-retest reliability (ICC=0.84),*

*\*Not available secondary to not being assessed by therapist or covering therapist treating at that time*

**Table 2. Modified Borg Ratings**

	IE	10th Session	16th Session (Discharge)
Gait	5/10	3/10	3/10
2-MWT <sup>7</sup>	7/10	3/10	2/10

Mr. Jack struggled initially with reeducation techniques, he was able to steadily improve and continually reported lower RPE levels despite more complex and dynamic movement patterns performed. Although the 6-minute walk test (6MWT) is considered the "gold-standard" amongst determining exercise capacity.<sup>1-3</sup> Amongst relatively healthy community-dwelling individuals, completion rates, distances walked, reliability and high correlation rates indicate the 2-minute walk test (2MWT) can be considered to be a legitimate alternative to the 6MWT for indicating functional endurance.<sup>4</sup> Other vital measurements including HR, RR, and RPE were also comparable in the 2MWT vs the 6MWT.<sup>5</sup> This is consistent with how most pulmonary rehabilitation programs are structured around 8-12 weeks with promotion of functional capacity, HRQoL and reduced SOB.<sup>1</sup> He reported a notable improvement in SOB symptoms, but more specifically had an enhanced ability to recover between activities compared to having to take frequent naps.. Mr. Jack also reported maintaining consistency with his prescribed HEP to promote control of ventilation. At discharge, Mr. Jack was able to perform most activities and interventions with RPE levels of 2-3/10 and a maximum of 6/10. Limitations of this study include the lack of other standardized aerobic endurance measures such as the incremental shuttle walk test and/or endurance shuttle walk test.<sup>9,10</sup> Additional limitations include lacking a more specific and comprehensive quality of life assessment (i.e., Chronic Respiratory Disease

Questionnaire).<sup>11</sup> Future studies should use these in greater consistencies to allow for patient self-report of difficulty of tasks.

## Conclusion

This case study looked to reduce symptoms associated with ILD, improve aerobic capacity utilizing the 2MWT and enhance dynamic balance mobility in an 84-year-old man with chief complaints of SOB and a history of chronic pulmonary disease and reduced quality of life. He presented significant RPE levels during functional mobility such as general ambulation and stair negotiation, reduced aerobic capacity based on age/data related norms and decreased dynamic balance ability across anticipatory, reactionary, postural sway, and dual task activities. At discharge he was able to demonstrate a significant improvement in dynamic balance, reduce his risk of future falls and hospitalizations and improve aerobic capacity above MDC levels. Mr. Jack was able to report significantly reduced RPE levels with general

mobility, most notably during stair negotiation. In conclusion, this case study demonstrates the impact of how a structured home-based program, like that seen in pulmonary rehabilitation, can greatly reduce symptoms of ILD in a community dwelling older adult.

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# Eyes are the Window to . . . GAIT?

## Part One: The Role of the Oculomotor System in Safe Ambulation

by Carole Lewis, PT, DPT, PhD, FAPTA; Linda McAlister, PT, DPT; and Janene Barber, PT

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

Most therapists think to examine muscle performance, range of motion, posture, and balance when doing a gait evaluation.... But how often does a physical therapist think to examine the eyes? Vision plays an integral role in balance and gait in the aging adult and should be included in a comprehensive examination. In a 2018 article reviewing vision in the setting of neurologic disease, De Groef and Cordero described the eye as a “window to the brain.”<sup>1</sup> In this two-part article series, we will review research highlighting the importance of vision and gait for the aging adult.

Significant research demonstrates the importance of vision on gait performance. Patla and Vickers stated that the ability to control eye movements is directly related to safe ambulation.<sup>2</sup> Where we focus our gaze directly affects where we step and the path we take. Holland et al found that prior to changing direction while walking, adults use a saccade eye movement to align their gaze. This gaze realignment was coupled with a reorientation of the head, giving a stable frame of reference for both the visual and vestibular system and highlighting the importance of coordinated eye and head movement.<sup>3-5</sup> Older adults at high risk for falling generated fewer saccades than older adults with lower risk of falls during stepping activities over obstacles and stairs.<sup>6</sup> These are just a few of the articles establishing the importance of vision, along with changes associated with aging, for safe ambulation.

Therapists need to identify deficiencies in the oculomotor system to determine if therapeutic interventions can decrease fall risk in older adults. How should we examine vision within our clinical setting? The oculomotor system has 2 main functions:

- To bring an object onto the fovea to identify.
- To maintain an object on the fovea.

Humans have a total of 6 eye movements to achieve those 2 functions: Pursuit, Saccades, Vergence, Vestibulo-Ocular Reflex, Gaze Fixation, and Optokinetics. Oculomotor testing can be performed with instrumentation Electro-nystagmography (ENG) or Videonystagmography (VNG) or with bedside examination. A quick bedside screen can be utilized by looking at the following items: Gaze Fixation, Spontaneous Nystagmus, Gaze-Evoked Nystagmus, 9-point Ocular Range of Motion, Saccades, and Vergence.

Testing the Vestibulo-Ocular Reflex (VOR) can be accomplished with the Head Impulse Test or the Dynamic Visual Acuity (DVA) Test. Deficits in any of the 6 eye

movements can affect gaze stability. Being able to identify exactly which areas in the oculomotor system have a dysfunction will allow the clinician to design a treatment strategy specific to the client's impairment.

Impairments in the vestibulo-ocular system are often found in concussed individuals manifesting as symptoms of dizziness, visual instability, and disrupted balance. Oculomotor/vestibular screens are used to assist in identifying concussions in young and older adults, such as the VOMS (Vestibular/Ocular-Motor Screening for Concussion)<sup>7</sup> and the OculoMotor Assessment Tool (OMAT).<sup>8</sup>

Numerous studies show the efficacy of gaze stability exercises in the older adult population.<sup>9-10</sup> Hall et al (2010) showed evidence that older adults with symptoms of dizziness (and no documented vestibular deficits), who performed gaze stability exercises along with balance rehabilitation showed a greater reduction in fall risk, 90% reduction compared to 50% in the control group.<sup>9</sup> The gaze stability exercise progression in the Hall article consisted of a 4-week program, 3x/day for no more than 30 minutes per day of adaptation (VOR x 1) viewing distant and near targets in horizontal and vertical planes. Substitution exercises began after week 1 for eye-head movements between near targets in the vertical and horizontal planes.

Bhardwaj and Vats looked at a specific therapeutic approach utilizing the application of gaze stability exercises that resulted in improved balance and subjective confidence of balance in healthy older adult population.<sup>10</sup> Their protocol was a six-week program of 3x/day for no more than 30 minutes per day, X1 (VOR x1) with near and far targets starting in sitting and progressing to standing. They also progressed from X1 to X2 (VOR x2) and added busy visual backgrounds.

These are a few examples of how vision impacts gait and what we can do to help when there is an issue. In Part Two (May 2023 GeriNotes), we will discuss several pathologies with special considerations specific to vision and gait, along with interventions we might utilize as physical therapists.

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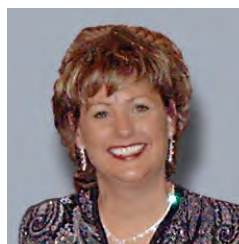
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“ As a student, I use the Journal, practice resources, and newsletters that link to new research articles to continue to improve my knowledge of a population I plan to work with heavily. ”



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