

# GeriNotes

March 2020 • Vol. 27 No. 2



# GeriatricNotes

March 2020 · Vol. 27 No. 2

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**APTA Geriatrics.**  
An Academy of the American  
Physical Therapy Association

# From the President

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Greg Hartley  
President,  
APTA Geriatrics

APTA Geriatrics has spent more than a year developing a new brand. For those of you who were present at CSM 2020, I hope you had a chance to celebrate the official launch of the new brand there. Of course, we have a new logo. One that is aligned with an overall unified APTA brand, signifying that we are part of a singular, larger professional organization.

But a brand is not only a logo. A brand is not just the look and feel of a "product" or just the value proposi-

tion. A brand is all these things and the impact it can bring. Our brand is powerful.

APTA Geriatrics' vision is: *"Embracing aging and empowering adults to move, engage, and live well."* Our mission is *"Building a community that advances the profession of physical therapy to optimize the experience of aging."*

We know members like you are patient motivated. We value each patient as a person first. Our goal is to make movement achievable. To engage or re-engage in everyday life and to live well. To maximize independence. We are results inspired. Moving beyond unintentional ageism, we use the latest evidence-based research to provide personalized interventions acknowledging the complexities present in aging adults. We are never limited to the presenting conditions. We are change drivers. We ac-

knowledge the large and growing numbers of older adults as we embrace the opportunity to change perceptions of aging. Rejecting stereotypes, we value aging as it should be. Moving defaults from inevitable to desirable.

As physical therapists and physical therapist assistants, it's time we take our own advice – we need to get moving. Let's take on the medical conversation – the very way PT is delivered. Let's turn away from isolated systems and embrace the whole body, whole person picture. Let's shake the way we see aging. It should be an inevitable gift – of more time, more memories, more opportunities to thrive. Let's expect more of ourselves and our peers. Let's take on ageism, negligence, and stereotypes that hurt all of us. Let's wage war on mediocrity to elevate standards and expectations of care. Movement isn't about vanity or performance, but independence. Freedom. Choice. Life. Age on.



Greg recorded a video that takes us behind the motivation to rebrand APTA Geriatrics. [Watch now!](#)

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## APTA Geriatrics, An Academy of the American Physical Therapy Association

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### GeriNotes

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.

# From the Editor



Michele Stanley  
Editor,  
GeriNotes

Look at this! Sort of a proud momma moment here (with an apology to my own daughters – not about you this time). I think this new magazine format looks great: fun, fluid, engaging! The new template and publications schema is made possible by the Academy's decision to spare some trees and move to a digital-only format. A change. Movement further into the digital age. Many thanks to the consulting team

that helped with customizing our logo and brand and many thanks, in advance, to you readers for your patience as the editorial and publishing staff learns and adjusts to all the new formatting and rules.

I'm pretty obsessed with our new "Age on" trademark. There is a lot of . . . movement going on throughout the APTA and its components. As Ellen Strunk reminds us, change and movement are an opportunity for personal and professional growth. Carole Lewis gives a pertinent patient example of professional decision-making and suggestions to help therapists in any situation improve their evidence-based practice. [Disclaimer: this was not coordinated or planned by the editorial staff, just serendipity and a reflection of the deep passion for the profession that both of these leaders share.] Aging is the ultimate personal growth when it is done with intention. Physical therapy is ideally positioned to guide intentional aging (as well as to help get unplanned consequences of unintentional aging changes back on the tracks).

Celebrating some changes and helping Academy members sift through possible confusion, our lead story introduces the friendly new APTA Geriatrics administrative staff. Now you have a face to pair with a name with an email contact with an idea of who best to answer your questions or assist you with Academy business. Bookmark this issue for future reference.

APTA turns 100 in 2021. As a lead up to those celebrations, *GeriNotes* is recruiting therapists in all phases of their careers to talk about being a physical therapist, their



**APTA Geriatrics**<sup>™</sup>  
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education, and how things have changed. We would like distinct viewpoints and, for the most part, voices of the non-celebrated (non-celebrity) among us. We hope to get 2-3 graduates from each decade (1950, 1960, 1970, 1980, 1990, 2000, 2010) to volunteer to answer questions or be interviewed. Submit your name, email and text number, along with the year that you graduated with your entry level PT degree, to [gerinoteseditor@gmail.com](mailto:gerinoteseditor@gmail.com). Please suggest (probably retired and may no longer be members) therapists who graduated in the 50s or 60s who may be good sports about participating in this. The more experiences that we can chronicle, the more fun and reflective we can make the January 2021 issue. Please, let us hear from you.

*PICTURES! Send your favorite photos of active interesting older adults or therapy sessions for possible future use on the cover of GeriNotes. We'd love to feature the work of the photographers amongst us. You must own the copyright to the photo and be able to obtain a subject's release. Send to [gerinoteseditor@gmail.com](mailto:gerinoteseditor@gmail.com).*

## GeriNotes

### Editor

Michele Stanley, PT, DPT  
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### Authorized Organization's Name and Address

APTA Geriatrics, An Academy of the American  
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### Newsletter Deadlines:

February 10  
April 15  
July 10  
September 1  
November 15

### Statement of Frequency

5x/year:  
January  
March  
May  
August  
November

GeriNotes is the official magazine of the Academy of Geriatric Physical Therapy. It is not, however, a peer-reviewed publication. Opinions expressed by the authors are their own and do not necessarily reflect the views of the APTA Geriatrics. The Editor reserves the right to edit manuscripts as necessary for publication.

All advertisements that appear in or accompany GeriNotes are accepted on the basis of conformation to ethical physical therapy standards, but acceptance does not imply endorsement by the APTA Geriatrics.

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## APTA Geriatrics Rolls Out New Brand at 2020 Combined Sections Meeting in Denver, Colorado

With a strong turn-out of over 18,000 PTs, PTAs, and students, combined with exceptional programming and engagement, CSM 2020 in Denver, Colorado was certainly the place to be! APTA Geriatrics' programming commenced with two Tai Chi pre-conference courses, and continued with 17 educational sessions. Topics for the educational sessions spanned from *The Role of Physical Therapists in Addressing CDC Public Health Priorities for Aging* to *Sleep: A Key Ingredient to Well-Being with Aging*. Thank you to all of our speakers for sharing your expertise!

At the APTA Geriatrics Members' Meeting, the Academy's exciting new branding was rolled out. PTs were reminded to encourage older adults to Age On! The Carole B. Lewis Distinguished Lecture was an extraordinary event. The title was *We Can Do Better: Aging and the Value of Physical Therapy*. Dale Avers was remarkable and challenged our profession to reflect on current standards for the provision of geriatric physical therapy.

The deadline for CSM 2021 educational session proposals is March 18 and speakers will be notified if their submissions are accepted in July. The deadline for poster and platform presentations is July 13.

We hope to see you next year in Orlando, FL!

APTA Geriatrics Programming Co-Chairs  
Kathleen Walworth and Tiffany Adams

## Announcing the Recipients of the 2020 APTA Geriatrics Awards

Join us in congratulating these distinguished award-ees, honored at the APTA Geriatrics Membership Meeting, part of the APTA Combined Sections Meeting in Denver, Colorado.

The Awards Committee would like to thank all of the nominees and their supporters for the nominations for 2020. Please consider honoring someone who is doing extraordinary work in geriatric physical therapy by nominating them for 2021 awards.

### President's Award

The Academy of Geriatric Physical Therapy President's Award recognizes individuals who have provided outstanding service while fostering the mission of the Academy. The President relies on support, advice, dedication and enthusiasm from others committed to advancing the goals of the Academy and this year's winners of the President's Award have generously contributed their time and talent in many ways. This year, we have two winners.

**Haim Nesser, PT, DPT**, is Chair of the National Fall Prevention Awareness Day Toolkit Task Force of the Balance

and Falls Special Interest Group. The toolkit this group developed consists of an expansive amount of materials designed to assist clinicians in implementing a successful event. The materials are open access on [geriatricspt.org](http://geriatricspt.org). Other contributors included Dr. Deborah Constantine, Dr. Heidi Moyer, and Dr. Jennifer Vincenzo, Dr. Angela Onyekanne, Dr. Elizabeth Seymour, Holly Bennett, and Paula Graul. All the Task Force members deserve our thanks.

**Ellen Strunk, PT, MS**, has dedicated countless hours toward coordinating APTA Geriatrics' efforts related to the changes in post-acute care payment and policy. For nearly all of 2019, Ellen led a collaborative group that includes APTA Geriatrics, the Health Policy and Administration Section, the Home Health Section, and APTA staff in developing educational resources related to PDPM, PDGM, and the Fee Schedule. These resources were designed to be shared by all these components, and most are open access. Resources developed to-date have included no fewer than 12 interactive webinars, three podcasts, a variety of print materials including easy-to-use decision trees, multiple articles in trade magazines including *GeriNotes*, a myriad of online posts to discussion groups, and live sessions. Ellen's tireless work in coordinating these efforts has been nothing short of amazing.

### Joan M. Mills Award

The Joan M. Mills Award is the most significant recognition that the Academy gives to one of its members. This prestigious award was initiated in 1980 and named for the Academy's founder. Joan gave generously, unselfishly, and creatively of her service to the Academy; and through her innumerable contributions, she helped shape us into the dynamic organization we are today.

Joan's legacy lives on with the Academy's Joan M. Mills Award. The award recognizes a member who has demonstrated, over many years, a high level of competence in meeting the needs of the Academy. The recipient of the 2020 Joan M. Mills Award is **Susan Wenker, PT, PhD**.

Susan is Assistant Professor with the University of Wisconsin-Madison Doctor of Physical Therapy Program and the Department of Family Medicine and Community Health. Sue received a BS in PT from UW-La Crosse, an MS in Continuing vocational studies from UW-Madison, and a PhD with a distributive minor in aging, also from UW-Madison. Clinically, she has been a member of interprofessional teams in both community settings and hospital and skilled nursing facilities.

Susan currently serves on the Academy's Board of Directors as Director of Education. In that role she oversees all of the Academy's regional courses, including CEEAA, the Advanced CEEAA course, the new Balance and Falls Credentialing Course, the PTA Exercise for Aging Adults Course, all of the Academy-sponsored webinars, our Home Study Course monograph production, the Conference Programming Committee, and the Academic



*Susan Wenker, recipient of the Joan M. Mills Award, and APTA Geriatrics President, Greg Hartley.*

Education Committee. During her time in this role, she's been instrumental in getting three new regional courses up and running and re-igniting the academic educators committee.

Prior to her role as Director of Education, Susan served on the Board as Director of Practice where she oversaw the Practice Committee, evidence-based documents, and payment and policy. She has been a vital member of the Board, streamlining policy, budgeting, and operations related to all these offerings. She brings a level-headed tenacity to the Board that any organization would be proud to have.

While numerous individuals have contributed to the success of the projects mentioned, Susan has largely been responsible for keeping projects moving forward and seeing them through to completion.

Sue previously served as Conference Program Chair and has contributed to a variety of projects unrelated to her direct responsibilities. She is credentialed as an Advanced Exercise Expert for the Aging Adult where she also serves as faculty.

### Clinical Educator Award

**Sarah Smith, PT, DPT**, has had a passion for clinical education throughout her physical therapy career. Her nomination packet emphasized Sarah's commitment to her patients and her students in the clinic at the University of Delaware. She has pushed herself to continue to learn and to educate others. She is committed to the care of older adults; the creation of best evidence practice for her patients; and the education of her physical therapy colleagues, residents and entry-level students. She has demonstrated excellence in geriatric clinical education, care and advocacy and is well deserving of this honor by the Academy.

### Clinical Excellence in Geriatrics Award

As a “master clinician” at the Sava Senior Care Center in Fort worth, TX, **Pradeep Rapalli PT, MBA**, is a role model for excellence in physical therapy practice. Pradeep is the clinical coordinator and mentor in the geriatric residency program. He is also a geriatric clinical specialist and APTA credentialed clinical instructor. Pradeep demonstrates clinical excellence by applying the knowledge, skill, and techniques that he teaches and uses them with his own patients. He approaches each patient with respect, empathy, and compassion.

### Distinguished Educator Award

As a skilled educator, **Susan Wenker, PT, PhD**, effectively communicates the role geriatric physical therapy will play in the career of most physical therapists. Her method of teaching erodes stereotypes, helping students understand the positive benefits of physical therapy during aging and realize how physical therapy may help our patients fully participate in life at any age. Susan demonstrates commitment to the future of the field, conducting research to better understand factors anchoring a physical therapist’s decision to work with older adults. Her effective teaching and her passionate enthusiasm for geriatric physical therapy cultivates enjoyment in working with older adults. She has positively impacted the professional futures of many DPT students; and professional contribution as an educator positively effects physical therapists at all professional stages.

### Excellence in Research Award

#### **Kristin Lowry, PT, PhD**

Bland K, Lowry K, Krajek A, Woods T, VanSwearingen J. *Spatiotemporal variability underlying skill in curved-path walking*. *Gait Posture*, 2019; 67:137-141.

### Outstanding PT Student Award

**Hunter Madich, SPT**, has a passion for geriatric physical therapy that was evident throughout his nomination and support letters from both faculty and students. As a student, Hunter has dedicated his time through service, leadership and clinical activities. He is a founding member of the student board for AT Still University’s new pro bono clinic. He is a physical therapy student ambassador, a PALS tutor for first year students, an anatomy teaching assistant and the Arizona Physical Therapy Association student special interest group athletics chair.

### Outstanding Geriatric Physical Therapist Resident Award

**Jason DeCesari PT, DPT**, completed the FOX Rehabilitation Geriatric Residency Program. His aptitude, clinical knowledge base and decision making are unmatched

in our practice and rather unique within the profession. Jason is a deep thinker who is reflective and applies his clinical knowledge across the spectrum of geriatric patients. Most recently, he became a Board-Certified Clinical Specialist in Orthopedic Physical Therapy, in addition to Geriatric Physical Therapy. This unique perspective, his willingness to challenge the status quo, and his relentless dedication to life-long learning are primary reasons why he is a cornerstone of clinical excellence within our practice.

### Student Research Award

**Taylor Woods, SPT**, is a student in the DPT program at Des Moines University. His current research involves mobility, particularly motor skill and adaptability of walking in older adults and persons with neurological dysfunction.

### Adopt-A-Doc Award

**Valerie Shuman, DPT**, is a doctoral student at the University of Pittsburgh. Her major fields of study are mobility and older adults and distal health outcomes.

**Talina Corvus, PT, DPT, GCS** is a doctoral student at the Pacific University. Her major fields of study include education and leadership, aging, and physical activity as it relates to cultural minorities.

### Volunteers in Action Award

This year’s award was given to **Dulce Bhatt, PT, DPT**, for her volunteer work at the Coppell Senior Center where she started the Osteoarthritis Support Group and volunteers as a facilitator there. Individuals who work with Dulce describe her as dedicated, positive, hard-working and friendly. Dulce shows the residents that they can have a good quality of life at all ages.

### Student Brochure Winners

The APTA Geriatrics consumer brochure competition recognizes the top entries from PT and PTA students across the country. This year, 87 student groups submitted their brochure for consideration. The brochures selected as this years’ outstanding entries will be featured on [geriatricspt.org](http://geriatricspt.org) for public download. All students will also receive complimentary membership in APTA Geriatrics for the year.

The winning brochures this year are:

- First: **Stephani Habryl, Sidney Roudy, and Jamie Plummer** - University of North Florida
- Second: **Clarke Huntsman** - Idaho State University
- Third: **Lindsay Bishop, Amber Henson, and Amber Tyson**
- Runner-up: **Arika Taylor** - Idaho State University

Note, starting this year, the Consumer Brochure contest is now the Consumer Video Contest. Find out more at <https://geriatricspt.org/students/>.

# Meet the APTA Geriatrics Staff



**Christina McCoy, CAE**

*Executive Director*

[cmccoy@geriatricspt.org](mailto:cmccoy@geriatricspt.org)

Christina oversees the day-to-day implementation of APTA Geriatrics strategy. She is the staff liaison for the Board, helping manage board meetings, committees and elections.



**Jeanne Weiss**

*Marketing/Communications Manager*

[jweiss@geriatricspt.org](mailto:jweiss@geriatricspt.org)

Jeanne edits and designs APTA Geriatrics publications, including *GeriNotes*, the e-newsletter, membership collateral, eblasts, social media and the website.



**Kim Siebecker**

*Member Services Manager*

[ksiebecker@geriatricspt.org](mailto:ksiebecker@geriatricspt.org)

Kim supports many aspects of APTA Geriatrics membership, including the new member welcome process and production of member collateral and educational materials. She is also the main contact for State Advocates and coordinators.



**Kim Thompson**

*Meeting Logistics Manager*

[kthompson@geriatricspt.org](mailto:kthompson@geriatricspt.org)

Kim manages the logistical aspects of APTA Geriatrics meetings and trainings. She coordinates contracts for educational host sites and teaching faculty for CEEAA, ACEEAA, PTA and Balance and Falls courses.



**Rachel Connor**

*Program Manager*

[rconnor@geriatricspt.org](mailto:rconnor@geriatricspt.org)

Rachel supports all APTA Geriatrics educational programming and events, including CSM programming, webinars and the APTA Learning Center.



**Gina Staskal, CNAP**

*Finance Manager*

[gstaskal@geriatricspt.org](mailto:gstaskal@geriatricspt.org)

Gina manages the finances of the organization, coordinates outside financial audits and assists in the budgeting process.

## Age On: Optimizing the Experience of Aging

by Christina McCoy, CAE, APTA Geriatrics

I'm excited to have the opportunity to serve the Academy as incoming Executive Director and lead the staff that will additionally support the organization. Each of us has unique talents and expertise that we've aligned to position the Academy for future growth and support our mission of building a community that advances the profession of physical therapy to optimize the experience of aging. We love hearing from our members — please feel free to reach out directly to any individual staff member as needed.

A little about me. I've been working with associations for almost 12 years, three of which in the executive role. I've been a member of the American Society of Association Executives (ASAE) since 2012, and have previously served as the Chair for ASAE's Young Professionals Committee. I earned my Certified Association Executive (CAE) designation in 2017 and later that year was a recipient of the Forty Under 40® Award from Association Forum.

As a member of the Academy, each of you are integral to helping us achieve our vision of embracing aging and empowering adults to move, engage, and live well. I continue to be impressed by the amount of passion PT's in our profession exert to lead by example and change the culture and social image of aging. We truly are better by association. #AgeOn.



APTA Geriatrics staff excited to show off the new branding at CSM.



## Balance & Falls Prevention: Toolkit, Special Interest Group, Clinical Practice Guidelines, Credentials? What?

APTA Geriatrics will launch a new credential course series, Balance and Fall Prevention in Community Dwelling Older Adults, in May 2020. This interactive two-course series is designed for experienced physical therapists who work with community dwelling older adults or those who will be returning to community living and want to advance their expertise in balance and fall prevention.

### What's included in this new credential course series?

The series combines two weekend courses with independent learning activities for therapists to acquire advanced knowledge, skills and competence in the practice of balance and fall prevention in community dwelling older adults. The courses include extensive labs and active learning to enhance translation and application of available clinical guidelines and best practice recommendations. Attendees will be exposed to the use of technology, both in the clinic for assessment and intervention, and ways to use technology in the

#### Coming Up:

University of Wisconsin/Madison  
Course 1: May 15 -17, 2020  
Course 2: August 22 -23, 2020

home for adherence and monitoring. While much of the focus is on individualized preventative and rehabilitation strategies, the series also emphasizes population-based interventions and advocacy.

### What are the requirements to be credentialed?

Individuals who want to achieve the credential of Balance and Falls Professional will need to complete advance preparatory work, participate in the two courses (in sequence), complete portfolio assignments (including the Otago Exercise Program online training), and successfully complete two skills checks and an online exam. The course series is also open to those who do not want to seek the professional credential. Continuing education hours will be provided to everyone who completes the onsite courses.

### Why a credential focused on balance and fall prevention?

The purpose is to provide a national, uniform indicator that a physical therapist possesses specialized, advanced knowledge, and skills in the practice of balance and fall prevention in community dwelling older adults. The need was first identified by a group of physical therapy

visionaries who collaborated with the Centers for Disease Control and Prevention on implementation of fall prevention initiatives. As a result of this early work, Mindy Renfro headed the original course development team and collaborated with the AGPT Geriatrics Board of Directors to develop an advanced credential for specifically addressing balance and fall prevention.

The goal is for physical therapists to strengthen their roles as clinical and community fall prevention leaders. Some courses, or parts of courses, focus more on tools for screening, examination and balance interventions. But this series goes beyond that to achieve expertise in fall risk management from clinic to community. The course series brings a uniquely comprehensive and objective program to the clinician who has aspirations of being a well-rounded expert in both the science of balance and the avenues of fall prevention.

### How is this different from the CEEAA series?

The balance and fall prevention credential series is dedicated specifically to balance fall prevention, whereas CEEAA has a more comprehensive exercise focus and can only include limited content on these topics. The more in-depth focus of this credential, combined with the labs, interactive learning, and assignments allow individual application to build clinical programs, successful clinic-to-community transitions, and be stronger advocates. Individuals awarded the Balance and Falls Professional credential can be more accurately recognized as a leader in their community for fall prevention.

### What makes this credential series unique and how will it change my practice?

The design of the credential series is unique and promotes continued development of the experienced therapist who is ready to improve the health of society as it relates to balance and fall prevention. It provides opportunities to directly and immediately apply evidence-based principles in your practice, as well as guided support to utilize your local community programs and advocate for your specific regional needs. Learning activities are aimed at increasing each participant's self-efficacy for implementing the knowledge and skills acquired.

### How does this relate to the Clinical Practice Guidelines that are being developed?

APTA and APTA-Geriatrics have and continue to support the development of clinical practice guidelines (CPG) for the physical therapy management of falls in community-dwelling older adults. The *Clinical Guidance Statement* was published in 2015 and represents a current source for evidence-based decision making. The Geriatrics Academy is in the drafting stage of a formal clinical practice guideline titled: *Physical Therapy Management of Falls in Community-dwelling Older Adults: An Evidence-based*

*Clinical Practice Guideline from the American Physical Therapy Association Academy of Geriatric Physical Therapy.* Guideline recommendations are developed based on systematic methodology and high level of rigor and evidence, while considering benefit versus harm and economic implications. Such recommendations typically supersede recommendations based on lower levels of evidence such as expert opinion. This CPG should be published in early 2021 and will replace the Guidance Statement. The Guideline will include recommendations for screening and assessment based on the work of the GeriEDGE group and interventions such as multi-modal exercise, Tai Chi, and multifactorial interventions, to name a few.

### How does this credential relate to recent publications and the collaboration of APTA Geriatrics with the National Council on Aging?

APTA Geriatrics *Balance and Falls Outcome Measures Toolkit* provides psychometric data that can help guide clinical decisions when using recommended standardized measures. This credentialing course series expands on the Toolkit contents to include instruction on conducting screening and examination, as well as the clinical decision making and direct linking of screening, examination, and intervention for optimized outcomes.

The APTA Geriatrics Task Force with the National Council on Aging (NCOA) recently published a three-article series in *GeriNotes* about evidence-based programs and community partnerships. These articles are included as foundational pre-reading for the Balance and Fall Prevention course series to build individual knowledge and use of community programs for balance and fall prevention.

Several members of the Balance and Fall Prevention Credential development team were also part of the task force groups for the APTA Geriatrics Outcome Measures Toolkit and the NCOA.

For further information, course dates, and registration please visit <https://geriatricspt.org/events/courses/Balance%20and%20Fall%20Prevention%20in%20Community%20Dwelling%20Older%20Adults/>

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*Editor's Note: This article is a compilation of thoughts and answers provided by the credentialing course faculty Leslie Allison, Judy Dewane Diane Huss, Jennifer Nash, Emma Phillips, Lori Schrodt, Mike Studer, and Mariana Wingood, as well as coordinator of the CPG Task Force, Tim Hanke.*

# Advance Your Knowledge and Improve the Lives of Aging Adults

*2020 courses open and filling up fast!*

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## Certified Exercise Experts for Aging Adults (CEEAA®)

### Cleveland, Ohio

#### Cleveland State University

Course 1: Cancelled (to be rescheduled)

Course 2: June 20-21

Course 3: July 18-19

### Fort Lauderdale, Florida

#### Nova Southeastern University

Course 1: May 2-3

Course 2: July 11-12

Course 3: September 12-13

### New Orleans, Louisiana

#### Touro Infirmary Hospital

Course 1: Cancelled (to be rescheduled)

Course 2: August 8-9

Course 3: October 3-4

Demonstrate expert clinical decision-making skills in designing and applying an effective examination and exercise prescription, and measuring the effectiveness and reflecting the current evidence of exercise for all aging adults.

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## Advanced Credentialed Exercise Experts for Aging Adults (ACEEAA®)

### New York City, NY

#### Columbia University

June 13-14, 2020

### Glendale, Arizona

#### Midwestern University

November 7-8, 2020

Develop advanced clinical decision making skills by integrating and analyzing data collected during the physical therapy examination: the history (including consideration of Social Determinants of Health (SDOH), Review of Systems, Systems Review, and Tests and Measures). Participants must have completed the entire CEEAA course series (all 3 courses) prior to attending the advanced course.

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## Balance and Fall Prevention in Community-Dwelling Older Adults: An APTA Geriatrics Credentialing Course Series

### University of Wisconsin-Madison

Course 1: May 15 - 17, 2020

Course 2: August 22 - 23, 2020

The Balance and Fall Prevention Professional credential will provide a national, uniform indicator that a physical therapist possesses specialized, advanced knowledge, skills and competence in the practice of balance and fall prevention in community dwelling older adults. This interactive credential course series is designed for experienced physical therapists pursuing advanced expertise.

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## Advances in Exercise for the Older Adult: A PTA Focus Course

### Fort Worth, Texas

June 27-28, 2020

### St. Louis, Missouri

September 19-20, 2020

This 2-day course will focus on the Physical Therapist Assistant's (PTA) use of exercise as an advanced rehabilitation intervention for the aging adult. The physical stress theory regarding proper exercise intensity will be presented and a variety of diagnoses commonly treated in aging adults will be reviewed and discussed.

**Register at [www.geriatricspt.org](http://www.geriatricspt.org)**

# Owning PDPM and PDGM: Get Moving

by Ellen R. Strunk, PT, MS

APTA's 2020 Combined Sections Meeting (CSM) ended with a record-setting attendance of more than 18,000 attendees. Amazing! 18,000 physical therapists (PT), physical therapist assistants (PTA), and PT and PTA students gathered in Denver, Colorado to celebrate our profession with learning and networking.

APTA leadership shared with attendees the plans for the Centennial Celebration in 2020<sup>1</sup> when the APTA officially turns 100 years old!

At the Component Leadership Meeting, we had the opportunity to hear from Dr. Kristy L. Weber, MD, who is the first female President in the history of the American Academy of Orthopedic Surgeons. She gave an intelligent and inspirational message to attendees about the need for diversity, equity and inclusion (DEI) in all health care professions. In speaking about DEI, she said, "What we tolerate, we condone." What a powerful thought that certainly does apply to all things related to DEI. But could it apply to more aspects of our profession?

## PDPM and PDGM

The Skilled Nursing Facility (SNF) Patient Driven Payment Model (PDPM) and the Home Health (HH) Patient Driven Grouper Model (PDGM) are in effect and operational. PDPM has been in place over four months now and the PDGM for six weeks. Many PTs and PTAs across the country have been affected in one way or another, either personally or through friends or colleagues. Change is never easy, and this one is no different. But this is not the first change our profession has endured and it will certainly not be the last.

The PDPM and PDGM models represent prospective payment systems that are determined by patient characteristics, not by what service or how much service is delivered. As a result, a lot of attention has been put on rehabilitation services delivered in these settings. We have all been saturated with media stories, both in print and online. SNFs and HH agencies are looking at how they deliver services. One downstream effect is that therapy services companies have to look at how they deliver services. And there is nothing wrong with that.

***"Change is your friend not your foe; change is a brilliant opportunity to grow." Simon T. Bailey<sup>3</sup>***

As responsible professionals, we must continually assess our methods and our practice to ensure we are practicing at the top of our license. Our profession is evolving, and there is no better example of that than this year's CSM, where there were hundreds of educational sessions on everything from Tai Chi to leveraging existing

abilities in dementia to the study of macrovascular and microvascular contributors to metabolism.

## Reducing Waste in Health Care Spending

In October 2019 the *Journal of the American Medical Association (JAMA)* published a report stating the United States spends more on health care than any other country – almost 18% of its gross domestic product (GDP).<sup>4</sup> The estimated cost of waste, however, is staggering: \$760 billion to \$935 billion, accounting for 25% of total health care spending. The highest levels of waste fell into three categories: failure of care delivery (\$102.4 billion to \$165.7 billion), failure of care coordination (\$27.2 billion to \$78.2 billion) and overtreatment or low-value care (\$75.7 billion to \$101.2 billion). Think of what could be done with \$760 billion to \$935 billion dollars more!

Might there be waste in some physical therapy practices? Of course, there is. Whenever a therapist is using 1 to 2-pound weights and calling it "strengthening" exercise, we have to call them on it. Is it really? Did the therapist objectively measure strength using one or five or eight repetition max?

Whenever a therapist is using ambulation distance or length of time standing and calling it "aerobic exercise," we have to call them on it. Is it really? We have all been taught how to measure target heart rate range, and if we aren't doing that, we have to own it.

Is there waste in your physical therapy practice? Only you know the answer. But are you honestly looking for it? Do you regularly evaluate the following aspects of your practice?<sup>5</sup>

- The appropriateness and/or method patients are referred to physical therapy
- The comprehensiveness of the evaluations performed
- The methods of determining frequency/duration of care
- The intensity of resistance exercise performed
- The intensity of aerobic exercise performed
- The quality of balance training
- The appropriateness of patient education
- The level of patient engagement we attain

## Improving the Delivery of Care

Skilled nursing facilities and home health agencies are evaluating their practices and the "usual and customary" way they have cared for residents/patients over the last 20 years. They have to in order to ensure they remain solvent. After all, as Sister Generose Gervais said "No money, no mission".<sup>6</sup>

Physical therapists can be an active part of this pro-

cess to improve the delivery of care to residents/patients across the post-acute care spectrum. It requires an honest look at what we are doing and when we are doing it.

The good news is that there is more and more evidence to support the value of physical therapy services in the treatment of the older adult (See Table 1). But good outcomes can only be achieved with excellent care practices. The bar for good outcomes is greater than ever: reducing hospitalizations, reducing falls, reducing the use of antipsychotics, increasing the durability of the response to treatment, keeping people out of the hospital for longer periods of time, and teaching patients how to manage their chronic disease.

We – **each and every physical therapist reading this** – are responsible for our care practices. Let’s take on the medical conversation. Let’s expect more of ourselves and our peers. Let’s wage war on mediocrity to elevate standards of care and expectations of care.

**“What we tolerate, we condone.”**

Let us all only tolerate the best. Our clients/residents/patients expect and deserve it. Age on.

**References**

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Table 1: Evidence to support the value of Physical Therapy

Research on the Value of PT and Physical Activity in Reducing the Risk of Falling	<a href="https://geriatricspt.org/pdfs/practice/ppa/Readiness%20Tool_combined.pdf?v=1">https://geriatricspt.org/pdfs/practice/ppa/Readiness%20Tool_combined.pdf?v=1</a>
Research on the Value of PT in Preventing Readmissions	<a href="https://www.apta.org/uploadedFiles/APTAorg/Payment/Medicare/Coding_and_Billing/Research-PT-Value-Readmissions.pdf">https://www.apta.org/uploadedFiles/APTAorg/Payment/Medicare/Coding_and_Billing/Research-PT-Value-Readmissions.pdf</a> <i>Falvey JR, Burke RE, Malone D, et al. Role of Physical Therapists in Reducing Hospital Readmission: Optimizing Outcomes for Older Adults During Care Transitions From Hospital to Community. Phy Ther. 96(8). August 2016.</i>
Research on the Value of Early Mobilization	<a href="https://www.apta.org/uploadedFiles/APTAorg/Payment/Medicare/Coding_and_Billing/Research-PT-Value-Early-Mobilization.pdf">https://www.apta.org/uploadedFiles/APTAorg/Payment/Medicare/Coding_and_Billing/Research-PT-Value-Early-Mobilization.pdf</a>
Research on the Value of Group Therapy	<a href="https://www.apta.org/uploadedFiles/APTAorg/Advocacy/Federal/Policy_Resources/APTA-ResearchBrief_TheEffectivenessOfGroupRehabilitation.pdf">https://www.apta.org/uploadedFiles/APTAorg/Advocacy/Federal/Policy_Resources/APTA-ResearchBrief_TheEffectivenessOfGroupRehabilitation.pdf</a>
Value of Optimal Strength Training in Maintaining Functional Performance with Age	<i>Unhjem R, van den Hoven LT, Nygard M, et al. J Ger Phy Ther. 42(3). July-September 2019</i>
Caring for Patients with Mental Health Conditions: A Toolkit	<a href="https://aptahhs.memberclicks.net/assets/docs/MentalHealthLK_092018.pdf">https://aptahhs.memberclicks.net/assets/docs/MentalHealthLK_092018.pdf</a> Home health section membership required
Medications and Physical Therapy Practice	<a href="https://aptahhs.memberclicks.net/assets/docs/Medications%20and%20Physical%20Therapy%20Practice%202019.pdf">https://aptahhs.memberclicks.net/assets/docs/Medications%20and%20Physical%20Therapy%20Practice%202019.pdf</a> Home health section membership required
Pain Management in Home Health Practice	<a href="https://aptahhs.memberclicks.net/assets/docs/PainMgmt_LK092018.pdf">https://aptahhs.memberclicks.net/assets/docs/PainMgmt_LK092018.pdf</a> Home health section membership required
A Therapy Toolkit for Treatment of Urinary Incontinence	<a href="https://aptahhs.memberclicks.net/assets/docs/IncontToolkitLnkd_11-17.pdf">https://aptahhs.memberclicks.net/assets/docs/IncontToolkitLnkd_11-17.pdf</a> Home health section membership required
Sleep Management in the Home	<a href="https://aptahhs.memberclicks.net/assets/docs/Sleep_Kit_3-2018.pdf">https://aptahhs.memberclicks.net/assets/docs/Sleep_Kit_3-2018.pdf</a> Home health section membership required

# It Takes Two to Tango: Knowledge Translation Depends on Both Authors and Readers, Part IV

by Leslie Allison, PT, PhD, Editor-in-Chief, Journal of Geriatric Physical Therapy

This is the fourth and final article in a series written to help clinicians conceptually understand clinical intervention research results in order to improve evidence-based clinical decision making. Previous articles in this series have covered several topics, including:

- the difference between statistical significance and clinical significance,
- the benefits of reporting, in addition to p values, metrics that represent clinical significance such as the minimal detectable change (MDC) and minimally important clinical difference (MCID), Part I.
- the importance of statistical power and four additional metrics that help readers understand the degree of clinical significance: effect size, relative risk or risk ratio (RR) and odds ratio (OR), and the number needed to treat (NNT), Part II.
- the value of reported confidence intervals (CI), including their relationship to, and value beyond, p values, Part III.

This article briefly summarizes what has been covered in Parts I-III, with examples included to demonstrate how such clinical research results might be used to make improved clinical decisions to better serve “the patient in front of you.” A quick quiz to check your understanding is available at the conclusion of this article. In this article, when the term “control” group is used, it refers to either a no-treatment group or a “usual care” group.

## Statistical Significance: Just luck?

Statistical significance is reported to tell the reader whether or not the post-intervention result may have occurred due to chance versus the intervention. The researcher decides how much chance they are willing to accept, typically a 5% probability that the result they obtain is due to chance alone. Statistical significance is usually represented by “p values”. For a single comparison, a p value of  $< 0.05$  indicates the result was probably not due to chance while a p value  $\geq 0.05$  indicate the result may have been due to chance.

When multiple comparisons are made, for example, the effect of an intervention on several outcome measures (eg, strength, balance, gait and physical activity level scores), the likelihood that chance has affected at least one or more of the results increases. To counteract this increased influence of chance, the researcher should adjust the acceptable level of chance for each indi-

vidual comparison downward, depending on how many comparisons are made. This ensures that, for all of the results, the overall total probability that the results were due to chance isn't greater than 5%. Readers may see this reported as a “post-hoc correction”, eg, Bonferroni, Sidak, Holm's, Benjamini-Hochberg, Tukey's, Dunnett's, etc.

Unfortunately, p values are negatively influenced by conditions that occur often in rehabilitation research: small group sizes, high variability in scores, and small differences between the treatment and control groups (effect size). That is one reason why results reporting using p values alone are insufficient for informed clinical decision making.

## Statistical Power: How big is your magnifying glass?

Statistical power is the ability of a study to find a statistically significant difference, if it actually exists. Statistical power is reported as a number between 0 and 1, or a percentage between 0% - 100%. Higher numbers/percentages indicate a greater chance of finding a true difference. The ability to detect a true difference should be at a minimum of 0.80 (80%), although higher is better. Researchers can and should determine ahead of time (“a priori”) how many participants they will need in their study to achieve adequate statistical power of 0.80 or higher.

Results reporting that includes observed (“post hoc”) statistical power helps readers know how confident they can be that a finding of “no statistically significant difference” is correct or not. This is especially important if study results include *non*-significant findings. If the statistical power of the study for that variable is high (0.80 or higher), and the p value is  $\geq 0.05$ , readers can be confident that there probably isn't a significant difference for that variable. If the statistical power of the study for that variable is low ( $< 0.80$ ), and the p value is  $\geq 0.05$ , readers don't know if there is no significant difference, or if there is a significant difference that could not be detected.

The number of participants (sample size) and the degree of variability in outcome scores (standard deviation [SD] and standard error [SE]) both affect statistical power. A study with a small sample size in which the scores are quite variable will have lower statistical power, while a study with a large sample size in which the scores are more consistent will have higher statistical power. As mentioned above, small sample sizes and high variability

in scores are frequently seen in rehabilitation research. Critically thinking readers should be alert for under-powered studies and view conclusions about non-significant results cautiously.

### Clinical Significance: Will this intervention provide real benefit to the patient in front of me?

In addition to statistical significance, it is important for readers to know if clinical intervention results are clinically significant. Several additional analytical measures are available to help clinicians decide if study results warrant a change in their practice.

The **Minimal Detectable Change (MDC)** value indicates how much change in a score can be expected from measurement error alone, versus from the intervention. For each post-intervention score reported, readers should compare the pre- to post-test difference (or between-group difference) in the score with the MDC value for that test in that population. If the difference in scores meets or exceeds the MDC value, the reader can be more confident that that reported difference was real, not due to measurement error.

The **Minimally Clinically Important Difference (MCID)** value indicates whether or not the achieved post-intervention difference in a test score will be perceived as valuable and important by a stakeholder group such as providers, patients, or caregivers. To determine the MCID for a test score, the researcher must survey members of one or more stakeholder groups to ask about their perceptions of the relative importance and value of the post-intervention change. For each post-intervention score reported, readers should compare the pre- to post-test difference (or between-group difference) in the score with the MCID value for that test in that population. If the difference in scores meets or exceeds a MCID value, the reader can be more confident that that reported difference will be perceived as important by that stakeholder group.

Patients with the same condition, but at different levels of severity, may differ in their perceptions about how much change is important. Perceptions regarding the extent of change that is important may also differ between providers, patients, and caregivers. Knowing the MCID for a given test in a specific population can help clinicians predict whether or not the expected change in that test score will be considered an important gain by the patient and/or caregiver.

**Effect Size** values indicate how large the difference was between the treatment and control group, and whether the treatment was beneficial or harmful, for each studied variable. This information helps readers understand how much change (benefit or harm) an intervention may be expected to produce. Effect size values range from -1 to +1, with an effect size of 0 indicating no effect (no between-group difference in that variable), and effect sizes further from zero in either direction indicating a

larger effect. Negative numbers indicate the intervention had a negative effect, and positive numbers, a positive effect. Generally, positive or negative effect sizes of  $> .8$  are considered large,  $.5$  to  $.8$  medium or moderate,  $.2$  to  $.5$  small, and  $< .2$  trivial.

Reporting of effect sizes can support clinical decision making. Imagine that you are trying to decide which of two intervention approaches to try with a patient, one of which requires more resources to deliver than the other. If the two interventions have the same predicted effect, you might choose the less resource-intensive option for practical reasons. But if the “faster, cheaper” option study reports an effect size of  $.35$ , and the more resource-intensive option study reports an effect size of  $.85$ , you might choose the latter in order to obtain the best chance of achieving a positive outcome. Of course, this is just one of many factors to consider when choosing intervention options.

When the outcome variables being measured are categorical (eg, non-ambulatory, household ambulator, or community ambulator) or dichotomous (no falls vs. 1 or more falls), differences between groups are reported through **Risk Ratios (RR) or Odds Ratios (OR)**. The RR is a ratio of the *probability* that a certain desirable outcome will occur in the treatment group to the *probability* that that outcome will occur in the control group. The OR is a ratio of the *proportion* of people in the treatment group who achieve a certain desirable outcome to the *proportion* of people in the control group who achieve that outcome.

Because both metrics are ratios, if the ratio is equal to 1, then no difference was found between the treatment and control groups. Interpretation of RRs and ORs depends on whether or not the desired outcome is an increase of some sort (eg, increased gait speed or number of minutes of daily physical activity) or a decrease of some sort (eg, decrease in depression or number of fall-related injuries). When the desired outcome is an increase in a score or measure, ratios greater than 1 indicate that the treatment group did better than the control group, while ratios less than 1 indicate that the control group did better than the treatment group. When the desired outcome is a decrease in a score or measure, ratios less than 1 indicate that the treatment group did better than the control group, while ratios greater than 1 indicate that the control group did better than the treatment group. The further from 1 the ratio value is, in either direction, the greater the difference between the two groups.

Other factors must be considered when interpreting RR and OR values. First, what is the *baseline* risk or odds in the population being studied? Post-intervention increases or decreases in the risk (or odds) have to be understood relative to the baseline. For example, in the US in 2010, the population risk for hip fracture for women age 85 years and older was about 26/1000 or 2.6%.<sup>1</sup> If the outcome of a hypothetical multifactorial intervention

program to reduce hip fractures results in a  $RR = 0.60$ , that represents a 40% reduction in relative risk of hip fracture in the treatment group compared to the control group. Using the original baseline risk of 2.6%, 40% of 2.6 = 1.04, and the reduction in actual hip fracture risk after the intervention is 1.04%.

Second, the RR or OR value may be the same whether the number of people in each group is very large or very small, but the perceived value of the intervention would not be the same. Let's consider two identical fall prevention studies, one with 50 participants in each group, and the other with 500 participants in each group. In the first study, 15 control group participants fall compared to 10 treatment group participants, yielding a  $RR = 10/15$  or .66. In the second study, 450 control group participants fall compared to 300 treatment group participants, yielding an equivalent  $RR = 300/450$  or .66. In the first study, 40/50 people (80% of treatment participants) avoided a fall in the year after the intervention. In the second study, this improved outcome was realized by only 200/500 people (44% of treatment participants).

To determine whether or not an intervention approach should be widely adopted, researchers should report the **Number Needed to Treat (NNT)**. The NNT represent the number of clients that would need to be treated before one treated client improves who would otherwise not have improved (without the treatment). For example: "How many clients would I have to treat to prevent one person from falling who otherwise would have fallen? In the first study example above, 50 people received the intervention and 5 people who otherwise would have fallen did not. If we divide 50 by 5, that equals 10; we needed to treat 10 people for every one for whom we were able to improve the outcome. In the second study example above, 500 people received the intervention and 150 people who otherwise would have fallen did not. If we divide 500 by 150, that equals 3.33; we needed to treat 3-4 people for every one for whom the outcome was improved. In both study examples the RR value was 0.66, but if we also consider the NNT value, we have a much better understanding of the impact of the intervention on the client population as a whole. A high NNT indicates that the intervention was less effective and more costly; a low NNT indicates the reverse.

A **Confidence Interval (CI)** is an estimate of the range within which the [unknowable] true result for a whole large population would fall if the study is conducted many times with many different samples from that population of interest. Confidence intervals are calculated at researcher-selected confidence levels (90%, 95%, 99%) that represent the degree of confidence (i.e., certainty) we can have that the true value of interest for the whole population [to which your client belongs] lies within the CI range. Conceptually, we can visualize that 'near certainty' resides within the CI range, and 'uncertainty' remains outside the range, on both sides. If we calculate three

CIs at 90%, 95%, 99% for the same variable in a single study sample, the 90% CI will be narrower than the 99% CI because it contains a smaller range of certainty and has a larger residual amount of uncertainty outside. If instead we calculate a 95% CI for an outcome measure reported in three different studies [of the same population] with varied sample sizes and different outcome measure standard deviations (variability), it is likely that the 95% CI from the study with the smallest sample and most outcome measure variability will be wider (relatively less accurate estimation) than the 95% CI from the study with the largest sample and least outcome measure variability (relatively more accurate estimation). The degree of certainty remains the same for all three 95% CIs, but the accuracy with which the estimated CI range "zeros in" on the unknown true population value is different.

Like p values, CIs can inform the reader about statistical significance. When the CI point estimates for the treatment and control groups are the mean outcome variable scores, if the lines overlap there is no statistically significant difference, and if the lines do not overlap, there is a statistically significant difference. When the CI point estimates represent the between-group difference in scores (eg, mean difference, effect size, RR or OR, etc.), statistical significance is determined by considering the CI range in relation to 'the line of no difference'. This line will rest a "0" for mean difference and effect size point estimates, and will rest at "1" for RR and OR (ratio) point estimates. Either way, if the CI range crosses the line of no difference, there is no statistically significant difference, and if the CI range does not cross the line of no difference, there is a statistically significant difference.

Unlike p values, CIs can also inform the reader about clinical significance. When the CI point estimate and range are considered in relation to the line of no difference, the reader can learn about the between-group difference in two ways. First, the further the CI is from the line of no difference, the greater the magnitude of the between-group difference. Second, the direction in which the CI moves away from the line of no difference can indicate whether the intervention outcome benefitted or harmed the treatment group. When the CI point estimate and range are considered in relation to the MCD and MCID values, the reader may better predict whether the expected intervention outcome for their client will or will not represent real change (versus measurement error), and/or will or will not represent meaningful and important change to the client and/or caregiver.

## Examples from published studies

### Example 1: Mean difference, confidence interval, statistical significance, statistical power, & clinical significance

In the table below are two items from a table in a research study investigating the effects of animal-assisted therapy on depression, anxiety, and illness perception in institutionalized older adults.<sup>2</sup>

There were 17 participants in the treatment group (TG) and 11 in the control group (CG); note this very small sample size relative to the number of institutionalized older adults nationwide. For both the Geriatric Depression Scale (GDS) and Generalized Anxiety Disorder scale (GAD-7), lower scores are better, indicating less depression or less anxiety.

Let's consider the effect of this intervention on depression as measured by the GDS. The mean post-intervention difference in GDS scores in the TG was just over 3 points, a 33.5% change for the better. The mean post-intervention difference in GDS scores in the CG was only a quarter of a point, a 3% change for the better. Relative to the mean GDS score changes, the SD is high for the TG and very high for the CG, indicating high variability in scores. The mean difference in scores between the TG and the CG is just over 3 points; the 95% CI does *not* cross the line of no difference (at 0), so this *is* a statistically significant difference. Statistical significance is confirmed by the p value = 0.0011. The effect size for the between-group difference in GDS scores was beneficial for the TG, and quite large, at -1.42; the 95% CI does *not* cross the line of no difference, so this *is* a clinically significant difference. It would be reasonable for you to decide that this intervention might reduce depression in your patients.

Now let's consider the effect of this intervention on anxiety as measured by the GAD-7. The mean post-intervention difference in GAD-7 scores in the TG was close to -1 point, an 8.6% change for the better. The mean post-intervention difference in GAD-7 scores in the CG was -2.25 points, an 18.4% change for the better. Relative

to the mean GAD-7 score changes, the SD is very high for the TG and high for the CG, indicating high variability in scores. The mean difference in scores between the TG and the CG is 1.43 points; the 95% CI *does* cross the line of no difference (at 0), so this is *not* a statistically significant difference. Statistical *non*-significance is confirmed by the p value = 0.40. The effect size for the between-group difference in GAD-7 scores favored the CG, and was small, at 0.31; the 95% CI *does* cross the line of no difference, so this is *not* a clinically significant difference.

Can we be confident that there is actually no difference between the TG and CG in GAD-7 scores? The authors did not publish their observed statistical power for each variable, so we are unable to say for sure. Note however, that the sample size was small, the variability in scores was high to very high, and the effect size for GAD-7 was small. Readers should therefore be cautious about accepting the non-significant GAD-7 result in a straightforward way. It is likely that the statistical power to detect a difference if it truly existed was low. The most reasonable conclusion a clinician could draw from these results is that it is not possible to tell from this study if the intervention would or would not have a significant effect on anxiety.

### Example 2: Odds ratio, confidence interval and statistical significance

Below (next page) is one item from a table in a research study investigating the effects of a geriatric intensive home rehabilitation program compared to an in-hospital geriatric rehabilitation program, on independence in activities of daily living following hip fracture.<sup>3</sup> There were 107 participants in the treatment group and 98 in the control group.

Before the fracture, about 43% of the home intervention group and 50% of the in-hospital control group were independent in bathing. After the intervention, at the 3-month follow up, about 30% of the intervention group and 29% of the control group were independent in bathing. The odds of being independent in bathing at 3 months were almost 3.5 times greater for those who received the intervention than those who did not. The

CI does *not* cross the line of no difference (at 1; 1 < 1.09, lower bound), so this between-group difference *is* statistically significant. However, the CI is very wide; if you were to try this intervention with your patients, you might expect that at 3 months some patients aren't likely to do much better than if they did not receive the home intervention, most patients will likely do somewhat better, while others will likely do

	Geriatric Depression Scale (lower scores are better)	Generalized Anxiety Disorder – 7 (lower scores are better)
% change TG	-33.5	-8.6
% change CG	-3.2	-18.4
TG Mean (SD)	-3.35 (2.12)	-0.82 (4.81)
CG Mean (SD)	-0.25 (2.26)	-2.25 (4.20)
Mean difference TG vs. CG (95% CI)	-3.10; (-4.79 to -1.42)	1.43 (-2.11 to 4.96)
P value	0.0011	0.40
Effect size; 95% CI	-1.42 (-2.24 to -0.58)	0.31 (-0.43 to 1.05)

Item	Intervention, n=107	Control, n=98	Adjusted OR	95% CI
Independent in bathing, n (%)				
Before fracture, (n=204)	46 (43.4)	49 (50.0)		
At 3-mo follow-up, (n=181)	28 (30.1)	26 (29.2)	3.39	1.09-10.59
At 12-mo follow-up, (n=158)	31 (38.8)	29 (36.7)	2.87	0.98-8.43

dramatically better. Unfortunately, a secondary analysis of differences between responders and non-responders was not reported; this would help clinical readers decide if their patient was likely to respond to this home intervention or not.

At the 12-month follow up, about 40% of the intervention group and 37% of the control group were independent in bathing. The odds of being independent in bathing at 12 months were nearly three times greater for those who received the intervention than those who did not. However, the CI *does* cross the line of no difference (at 1; 0.98, lower bound < 1 < 8.43, upper bound), so this between-group difference is *not* statistically significant. Again, the CI range is very wide, making it difficult for you to predict how your own individual patient might fare 12 months after the intervention.

### Check your understanding with this quick quiz!

- Which one of the following metrics provides information about **both** statistical and clinical significance?
  - p value
  - effect size
  - confidence interval
  - minimal detectable change
- Statistical power is typically considered adequate if it is at or above:
  - 0.50
  - 0.80
  - 0.95
  - 1.0
- A critical problem with interpretation of results from an under-powered study is that the reader cannot be confident that:
  - p values < 0.05 are truly significant
  - p values < 0.05 are truly non-significant
  - p values > 0.05 are truly significant
  - p values > 0.05 are truly non-significant
- Which of the following statements about effect size is correct?
  - Negative effect size values mean there was no effect.
  - If the mean between-group difference = 0, the effect size will = 1.
  - Effect size values between 0.50 and 0.80 are considered medium/moderate.
  - The variability in scores for a study outcome variable will not affect the effect size.
- Correct interpretation of study results reported as risk ratios (RR) and/or odds ratios (OR) depends on knowing:
  - the population-level risk or odds at baseline
  - whether the outcome variable is categorical or dichotomous
  - that at least 50% of the treatment group achieved the desired outcome
  - the probability or proportion of treatment group participants achieving the desired outcome
- For a given outcome variable, the point estimate in a confidence interval always represents:
  - the degree of certainty of the estimate.
  - the effect size of the between-group difference in scores.
  - the adjusted mean score of the sample treatment or control group.
  - the value that would probably be found in the whole larger population.
- When the point estimate represents the between-group difference, correct interpretation of the confidence interval depends on knowing:
  - where the value at which the line of no difference lies.
  - that group allocation was randomized and group sizes were equal.
  - whether or not the p value for that variable is below or above 0.05.
  - that the treatment group outcome was superior to the control group outcome.

8. For a study which reported results as odds ratios (OR), which of the following confidence intervals indicates statistical significance **and** offers the greatest certainty and accuracy?

- 95% CI (-0.50 to 0.50)
- 95% CI (0.50 to 1.50)
- 99% CI (0.15 to 0.50)
- 99% CI (-1.50 to 1.50)

9. For a test of habitual gait speed in older adults with hip fracture, the minimal detectable change is 0.08 m/s, and the minimally clinically important difference is 0.10 m/s.<sup>4</sup> Results from a hypothetical intervention study in to improve balance and gait in older adults post hip fracture report the mean pre- to post-test difference in habitual gait speed for the treatment group as 0.09 m/s with a 95% CI of (0.083 to 0.097). What is the most reasonable interpretation of this finding? "After the intervention, \_\_\_."

- there was a statistically significant difference, but the difference may have been due to measurement error.
- there was a statistically significant difference that was not due to measurement error, but the difference would not be considered clinically important.
- there was a statistically significant difference that was not due to measurement error, and the difference would be considered clinically important.
- there was no statistically significant difference.

10. For the Sitting Balance Scale (SBS) in older adults post-stroke receiving rehabilitation in a skilled nursing facility, the minimal detectable change is 2.32 points, and the minimally clinically important difference is 4.5 points.<sup>5</sup> Results from a hypothetical intervention study in to improve sitting balance in this population report the mean pre- to post-test difference in SBS scores for the treatment group as 6 points with a 95% CI of (-1 to 12 points). What is the most reasonable interpretation of this finding? "After the intervention, \_\_\_."

- there was no statistically or clinically significant difference.
- there were both statistically and clinically significant differences.
- there was a statistically significant difference, but not a clinically significant difference.
- there was a clinically significant difference, but not a statistically significant difference

**Answers to quiz may be found on page 28.**

*The aim of this article series has been to help you feel competent and confident as you read, interpret, and apply research findings to your clinical practice. I hope that this objective was accomplished. Thank you for striving to advance your ability to serve your patients through evidence-based practice.*

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

After reading a journal article, do you ever think, "That's so interesting, but how do I apply this information?"

Leslie Allison, Editor in Chief of the JGPT, and Michele Stanley, GeriNotes Editor hope that we have the answer for you. During the next year, we will be coordinating the **APTA Geriatrics Journal Club**: a free, facilitated webinar-based discussion about a Journal article that permits you to interact directly with the author and a clinician with a relevant case study demonstrating how that information could be used. It will be a fun way to move yourself in the direction of life learning and fulfilling that New Year's resolution to beef up your evidence-based practice.

The first APTA Geriatrics Journal Club in 2020 is Tuesday, March 24, at 8 pm ET, featuring University of Nebraska researcher Dawn Venema PT, PhD [see her separate article in his issue on page 29]. She'll talk about her article "Minimal Detectable Change in Dual-Task Cost for Older Adults With and Without Cognitive Impairment." *Journal of Geriatric Physical Therapy.* 2019. 42(4):E32-E38. DOI: 10.1519/JPT.000000000000194.

Read the article and [join us for the webinar!](#)

Second Journal Club Meeting: May 19, 2020  
 "Earlier Physical Therapy Input Is Associated With a Reduced Length of Hospital Stay and Reduced Care Needs on Discharge in Frail Older Inpatients: An Observational Study." Hartley PJ, Keevil VL, Alushi L, Charles RL, et. al. *Journal of Geriatric Physical Therapy: April/June 2019 - Volume 42 - Issue 2 - p E7-E14*

# Healthy Lifestyles Among Cancer Survivors in Aging Populations

by Mihirkumar Trivedi, PT, DPT and Harold Merriman, PT, PhD

A cancer survivor is often described as anyone who has been diagnosed with cancer from the time of the diagnosis through the rest of their life<sup>1</sup>. Therefore, the course of the survivorship may be described in three phases: 1) active treatment and recovery; 2) life after recovery, which also includes those survivors who are free from the disease or have stable disease; and 3) advanced cancer and end of life<sup>2</sup>. With the many advancements in the medical field including early detection and novel cancer treatments the number of cancer survivors has increased each year<sup>3</sup>. There were almost 16 million U.S. cancer survivors reported in 2017 and many of them will live 10 or more years beyond their cancer diagnosis<sup>4</sup>. 62% of all cancer survivors are older than 65 years<sup>5</sup>. Overall cancer death rates are declining as evidenced by a continuous reduction of a total of 27% from 1991 to 2016<sup>6</sup>. Bleuthmann et al. stated, "Finding ways to serve the needs of cancer survivors in primary care and community settings is also essential in achieving healthy living across the life span"<sup>5</sup>. Therefore, the expected increased number of cancer survivors throughout their three phases of cancer survivorship brings the concerns about their health-related quality of life (HRQOL) to the forefront.

Cancer treatment, in general, can cause a wide range of symptoms such as loss of physical performance due to sarcopenia, anemia, myopathy, cardio-toxicity, and lung fibrosis<sup>7</sup>. More specifically, various cancer treatments such as surgery, radiation, chemotherapy, immunotherapy, hormonal therapy, and use of steroids can demonstrate a wide variety of physiological changes such as decreases in pulmonary function, cardiac function, muscle mass, muscle strength, immune function, bone health as well as increases in fat mass, body mass index (BMI), inflammation, lymphedema, and trauma and scarring. These treatments can also cause psychological and behavioral changes that result in increased pain and decreased physical activity, cognitive function and overall HRQOL<sup>8</sup>. Additionally, these cancer treatments may cause inability to eat due to loss of appetite, dry mouth, sore throat, dental and gum problems, nausea, vomiting, changes in taste or smell, diarrhea, cancer related fatigue (CRF), constipation, and depression. Special considerations apply to older cancer patients who are at the higher risk of falls due to aggravating factors such as anemia, fatigue, weakness, and often malaise<sup>9</sup>. Hence, physical activity and good nutrition play a vital role

in improving HRQOL among aging survivors of cancer, which is the focus of the rest of this article.

## Physical Activity

Physical activity may be described as, "any bodily movement produced by skeletal muscles that results in energy expenditure"<sup>10</sup>. The recommendations of American Cancer Guidelines are well known regarding regular physical activity to avoid inactivity and return to normal daily activities as soon as possible following diagnosis, including muscle strength training and exercises at least two days per week, aiming to perform exercises at least 150 minutes per week of moderate-intensity activity or 75 min/wk of vigorous-intensity activity or an equivalent combination<sup>2</sup>. The U.S. Department of Health and Human Services differentiates moderate activities from vigorous activities and moderate activities. Moderate activities include general gardening (raking and trimming shrubs), canoeing, ballroom and line dancing, using manual wheelchair, biking on level ground or with few hills, walking briskly, tennis (doubles), using ergometers, and water aerobics while vigorous activities include aerobic dance, biking faster than 10 miles per hour, hiking uphill, heavy gardening (digging and hoeing), jumping rope, race walking, swimming laps, and tennis (singles)<sup>11</sup>. Multiple observational studies demonstrated that physical activity after cancer diagnosis showed a reduced risk of cancer recurrence and improved overall mortality among multiple cancer survivor groups which includes breast, prostate, colorectal, and ovarian cancer in older adults<sup>2</sup>. A combination of physical exercises and counseling often produces better outcomes in older colorectal cancer survivors<sup>3</sup>.

Physical activity is often seen as a special challenge in older survivors and many of them have difficulty including physical activity into their daily lives due to the impact of chronic health conditions, limited access to parks and recreation areas to accommodate the needs of older users, poor transportation options, and lack of guidance for overcoming barriers such as multi-morbidity to exercise<sup>5</sup>. Upper-limb muscle strength and percentage of body fat has been shown to improve to a greater extent when resistance training was of moderate intensity (greater than 70% of one repetition maximum)<sup>12</sup>. In a six-month follow-up study, Courneya et al. noted that the combination of aerobic and resistance exercise programs after breast cancer chemotherapy further improved patient-rated

outcomes [13]. A three-week physical activity program can be very effective in reducing cancer-related fatigue and improving cardiovascular and muscular function<sup>7</sup>. Multiple studies have found that physical activity reduces the effect of fatigue in older cancer survivors by improving muscle strength, fitness, HRQOL, functional capacity, and psychological factors such as depression, anxiety, self-esteem, happiness, and body image<sup>14-18</sup>.

## Nutrition

Nutritional problems in aging adults with cancer are a common but often overlooked issue, in part due to the complex interplay between the natural aging process and the course of cancer and its treatment. Malnutrition can be defined as "inadequate nutritional intake and/or increased nutritional requirements that result in negative clinical outcomes"<sup>19</sup>. Many individuals with cancer have malnutrition, however, sensory, physical or psychosocial changes place aging adults with cancer at an especially high risk for malnutrition. One study of hospitalized older adults with advanced cancer showed that 71% had lost more than 10% of their weight with 44% having a BMI <20<sup>20</sup>. This can be caused by the tumor itself as well as the cancer treatment. However, malnutrition not only encompasses undernutrition but also over-nutrition which can be problematic. For example, if an older adult is obese, then weight loss due to cancer may at first appear to be desirable, when it is actually detrimental.

In attempting to understand the nutritional status of the cancer patient, one must consider the complex relationship between malnutrition, cancer cachexia and sarcopenia. Cancer cachexia may be defined as "a multifactorial syndrome characterized by severe and progressive weight loss due to a complex interplay between adverse effects related to cytotoxic therapies, cancer-related metabolic alterations, and diminished nutrient availability due to reduced intake, impaired absorption, and increased losses"<sup>21</sup>. Malnutrition (which can be reversed by conventional nutritional support and treatment) will develop into cachexia, if it is not managed and controlled well. Sarcopenia may simply be described as a loss of muscle mass, strength and performance. In summary, an aging adult may be sarcopenic but not have cancer cachexia, however older adults with cancer cachexia are considered to be sarcopenic. All cachectic patients suffer from malnutrition, while cachexia is not always present in all malnourished patients<sup>22</sup>. Clearly, the nutritional status of an aging adult with cancer is complicated and not easy to describe and is a topic warranting further research.

Preventing malnutrition is crucial to the well-being and successful treatment of an individual with cancer. There are three types of malnutrition prevention in aging adults with cancer; primary, secondary, and tertiary. Primary prevention attempts to reduce the incidence of malnutrition and the prevalence of malnutrition risk factors; secondary

prevention involves early diagnosis and treatment of malnutrition; and tertiary prevention aims to improve the quality of life and overall survival<sup>22</sup>. It is important to recognize that cancer treatments can cause malnutrition by acute and chronic effects such as anorexia/weight loss, weight gain, dysphagia, xerostomia, mucositis, taste changes, early satiety, nausea/vomiting, diarrhea and constipation. A comprehensive description of these three types of malnutrition prevention is beyond the scope of this article; however, the interested reader is encouraged to consult excellent reviews on this subject<sup>22, 23</sup>.

Thus, it is very important to accurately assess the nutritional status of an individual with cancer at the earliest stages especially if that individual is an aging adult. Traditionally, BMI, weight loss, and low serum albumin levels have been used in the aging adult to identify malnutrition. Fortunately, there are a number of assessment tools available to the clinician to identify malnutrition risk for older adults with cancer. The most common malnutrition assessment tools are the Mini Nutrition Assessment (MNA), the Malnutrition Universal Screening Tool (MUST), and the Patient-Generated Subjective Global Assessment (PG-SGA). Each tool shows good to excellent validity in aging adults with cancer<sup>22</sup>. The MNA can detect the malnutrition risk before significant changes occur in serum protein levels or weight. The MUST is commonly used in the UK and is based on current BMI and weight loss in three to six months. The Oncology Nutrition Dietetic Practice Group of the American Dietetic Association recommends the use of the PG-SGA since it is especially designed for cancer patients.

So what can physical therapists do in the area of nutrition to assist our aging patients with cancer? We can encourage these patients to either start or to continue adhering to a healthy diet. In general, the Mediterranean, low-fat and low-carbohydrate diets have been shown to be effective for weight loss and had some beneficial metabolic benefits over the period of two years in moderately obese patients<sup>24</sup>. More specifically, the American Cancer Society (ACS) recommends that cancer survivors obtain and maintain a healthy weight by limiting consumption of high-calorie foods and beverages to promote weight loss, limit the amount of processed meat and red meat, and obtain a dietary pattern which is high in vegetables, fruits and whole grains<sup>2</sup>. Research studies support these recommendations. For example, The Women's Intervention Nutrition Study (WINS) found that a low-fat diet over the course of five years resulted in a loss of six pounds of body weight and also reduced the risk of breast cancer recurrence among post-menopausal breast cancer survivors<sup>25</sup>. Another study found that non-smoking women with breast cancer who gained more than 2 BMI units had a 53% greater chance of breast cancer recurrence compared to those who didn't gain more than 0.5 BMI unit<sup>26</sup>. Physical therapists have an important role in recognizing the nutritional needs of our patients with

cancer and making the appropriate referrals, while at the same time encouraging these patients to follow the nutritional recommendations already provided.

## Conclusion

Cancer survivors in an aging population encounter multiple health issues due to multiple co-morbidities, side-effects from cancer treatments and the aging process resulting in poorer functional status and higher mortality risk. Multiple studies indicate that the diverse co-morbidities and symptoms experienced by older cancer survivors can be effectively treated and prevented by practicing healthy lifestyles in terms of optimizing physical activity and also by implementing the best nutrition guidelines.

In aging adults with cancer, physical activity is safe and has many benefits while unfortunately malnutrition is an all too common and under-diagnosed condition. A multi-disciplinary effort including physical therapists is needed to promote physical activity and to prevent malnutrition resulting in improved HRQOL in these individuals.

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# Knee Pain Post Total Hip Arthroplasty: A Case Report on the Role of Regional Interdependence in a Patient with Dementia

by Jessica Reichl PT, DPT; Colleen Bowman PT, DPT; and Kelly Danks PT, DPT

Knee pain affects approximately 25% of adults, making it one of the greatest causes of disability in the United States due to its effects on reduced function, mobility, and quality of life.<sup>1</sup> Research shows that knee pain is a complex medical issue, with an extensive differential diagnosis.<sup>2</sup> A detailed history and examination are required to best understand the underlying pathology in those experiencing knee pain.<sup>2</sup>

Anterior knee pain can be referred from different parts of the body. Pain at or below the knee is typically recognized as referring from the lumbar spine.<sup>3</sup> However, in a study done by Khan, et al, 70% of people with hip osteoarthritis reported anterior knee pain, while only 50% of those with spinal stenosis reported the same symptoms.<sup>3</sup> This brings about the question of hip pathology as a potential source of knee pain, emphasizing the role of regional interdependence: the idea that impairments that may seem unrelated actually contribute to the client's primary complaint.<sup>4</sup> In a case report by Vaughn, a young female runner with medial knee pain had full resolution of her symptoms after one session of manual therapy to the sacroiliac joint.<sup>5</sup> There is limited evidence on regional interdependence in the geriatric population.

Research supports movement based therapy as an effective method of pain management in the older adult population.<sup>6</sup> However, there is little research on physical therapy pain management in people with dementia. In fact, most of the evidence looking at pain management strategies in these individuals solely addresses opioid pain management.<sup>7</sup> It is apparent that pain assessment in people with dementia can be difficult, and requires careful and thorough administration in order to ensure accuracy of pain level reports.<sup>7</sup> There is scant evidence relating timing of pain level measurement to assessment of pain in persons with dementia.

This case report examines the effectiveness of physical therapy intervention of the hip in a patient with a chief complaint of anterior knee pain, emphasizing the role of regional interdependence model when addressing the lower extremity in an older adult. This case report also examines timing as a component of pain management assessment in a person of advanced age with dementia.

## Case Description

An 84-year-old woman, Mrs M, was referred with a diagnosis of difficulty walking secondary to increased left knee pain. She reported a fall eight months prior that resulted in left hip fracture, with L THA repair. During a stay at a post-surgery rehab facility, her husband passed away. After rehab, Mrs. M moved into an assisted living facility (ALF). She now reports that she is fearful of falling. Other significant past medical history includes hypertension, unspecified dementia, stage 3 chronic kidney disease, and major depression.

The patient's cardiovascular system was reviewed. Her blood pressure was 132/58 mmHg at rest. Current cardiac medications included metoprolol, amlodipine, and isosorbide dinitrate, suggesting a more complex cardiac history than what was shared in the patient's past medical history. Metoprolol is a beta blocker, which blunts the heart rate response to physical activity.<sup>8</sup> This implies that the level of exertion cannot be assessed by taking the patient's heart rate, indicating use of the Modified Borg Scale to assess

and guide exercise intensity. It is a reliable method of correlating reported level of exertion with percent effort and percent of heart rate maximum in healthy adults (see Table 1).<sup>8,9</sup> The musculoskeletal examination found impairments in lower extremity strength. Neurological testing was performed using the Global Deterioration Scale (GDS), as the patient has a

	Rate of Perceived Exertion	Percent Effort
0	<u>None at All</u>	
1	Very Light	50%
2		
3	Fairly Light	60%
4	Somewhat Hard	
5	Hard	70%
6		
7	Very Hard	80%
8		
9	Very, Very Hard	90%
10		100%

a. From Avers D, Brown M<sup>8</sup>

Table 1. Clinical Interpretation of Modified Borg Scale and Percent Heart Rate Maximum<sup>a</sup>

	Initial Evaluation	4 weeks	Re-evaluation 10 weeks	13 weeks	Discharge 17 weeks
Hip Flexion	R 4-/5, L 4-/5	R 4-/5, L 4-/5	R 4/5, L 4-/5	R 4/5, L 4/5	R 4+/5, L 4/5
Hip Abduction	R 4-/5, L 3/5	R 4-/5, L 3+/5	R 4-/5, L 3+/5	R 4/5, L 3+/5	R 4/5, L 4-/5
Hip Extension	R 3/5, L 2/5	R 3/5, L 2/5	R 3/5, L 3/5	R 4/5, L 3/5	R 4/5, L 4/5
Knee Extension	Bilateral 4/5	R 4+/5, L 4/5	Bilateral 4+/5	Bilateral 4+/5	R 5/5, L 4+/5

Table 2. Lower Extremity Manual Muscle Testing

history of unspecified dementia. The GDS is a valid and reliable tool that is used to assess primary degenerative dementia and is broken down into seven stages based on specific clinical characteristics.<sup>10</sup> The patient's GDS score was five; someone with a grade of five or above is no longer able to survive without the assistance of others.<sup>10</sup> The integumentary system was not assessed as she was recently discharged from home health services with a healed left buttock wound.

### Clinical Impression #1

Once the patient's history was obtained and a systems review was performed, the primary body structure and function impairments were identified. Impairments included left anterior knee pain and bilateral lower extremity weakness (see Table 2); both contributed to the patient's decreased tolerance to standing activities. Range of motion (ROM) testing was not indicated, as the patient demonstrated active hip and knee ROM within functional limitations. A history of cardiac disease and sedentary lifestyle indicated further testing was warranted to establish baseline cardiovascular stamina; a six minute walk test (6MWT) was completed. Further functional assessments completed were 30 second sit to stand testing and Berg Balance testing (see Table 3).

### Body Structure and Function Impairments

The FACES pain rating scale was used in order to understand the severity of the patient's pain, and its effects on her functional mobility. Evidence supports use of the FACES pain scale rating as an accurate and reliable measure of pain levels in people with cognitive impairment.<sup>11</sup> The patient reported a resting pain level of 3/10 in her left knee and described it as a "dull ache". She was unable to report her left knee pain levels with activity or to identify which activities exacerbated her pain.

Manual muscle testing indicated decreased strength in bilateral lower extremities (see Table 2). Results of manual muscle testing were accepted as general muscle weakness due to deconditioning after her surgery. Results of hip extension strength were graded using the Supine Hip Extensor Test.<sup>12</sup> Palpation of the left knee was unremarkable.

### Activity Limitations and Participation Restrictions

Mrs. M was independent with wheelchair propulsion within the ALF but required moderate verbal instruction and tactile facilitation to safely ambulate 140 feet, using a rolling walker. While ambulating, it was noted that she relied heavily on upper extremity support; required frequent standing rest breaks due to reports of fatigue and bilateral upper extremity discomfort. Moderate verbal cueing was required to safely performing sit to stand transfers. Mrs. M's stated goal was to be able to walk to meals and other activities within the ALF; 320 feet was the measured distance from her room to the dining room.

### Outcome Measures

Thirty-second sit to stand testing was done to assess the patient's quadriceps strength and ability to rise from a chair, which has been proven to have excellent reliability and validity in the older adult population.<sup>13</sup> Mrs. M was able to complete three repetitions in 30 seconds, with use of bilateral upper extremities. Age related cut off scores indicate that the patient should be able to complete 12 repetitions without use of upper extremities, as the strength standard of maintaining physical independence.<sup>13</sup> This indicates that she had decreased quadriceps strength and increased risk for loss of functional independence. Mrs. M reported left knee pain with testing. Using the FACES pain scale rating, the patient determined a 5/10 pain level with this activity.

The six-minute walk test was done to assess the

	Initial Evaluation	4 weeks	Re-Evaluation 10 weeks	13 weeks	Discharge 17 weeks
6 Minute Walk Test	43 meters	88 meters	79 meters	85 meters	96 meters
Gait Speed	Not assessed	Not assessed	0.45 m/s	0.47 m/s	0.58 m/s
30 second sit to stand test	3 transfers, with UE use	5 transfers, with UE use	5 transfers, with UE use	5 transfers, no UE use	7 transfers, no UE use
Berg Balance Test	30/56	35/56	35/56	41/56	44/56

Table 3. Functional Outcome Measures

patient's cardiovascular endurance with ambulation. This tool was selected due to its optimal reliability and adequate validity in older adults.<sup>14</sup> Mrs. M was able to ambulate 43 meters. When asked to rate her perceived exertion using the Modified Borg Scale by describing the difficulty of the task, she reported that the test was "hard" to complete, indicating a 5/10 on the Modified Borg Scale, and 70% of heart rate maximum as seen in Table 1. Adults within the patient's age range should be able to ambulate 152-605 meters within six minutes, indicating impaired ambulation distance in this patient.<sup>14</sup> Mrs. M also reported 5/10 left knee pain with this activity using the FACES scale.

The Berg Balance Scale was selected due to its excellent reliability and good validity in detecting fall risk in the older adult population.<sup>15</sup> Normative range for females within the patient's age group is 44-56/56.<sup>15</sup> The cut off score suggests that results below 48 indicate an increased risk of falling.<sup>15</sup> Mrs. M scored 30/56. She experienced left knee pain, rated as a 5/10 using the FACES scale, with alternating step on stool while standing unsupported, single leg stance, standing unsupported one foot in front, and turning 360 degrees. Results indicate that the patient has difficulty with, and experienced left knee pain during, activities that require left single leg stance.

## Clinical Impression #2

She did not demonstrate significant improvement in left knee symptoms or performance on functional outcome measures during the initial treatment period. A re-evaluation was performed at week 10, with findings as described below:

Thorough examination of the hips indicated pelvic asymmetry, resulting in the appearance of a leg length discrepancy. Therapist evaluated sacroiliac joints using the Supine to Long Sit Test, an accurate method of

assessing iliosacral dysfunction.<sup>16</sup> Testing indicated that the patient had a left innominate anterior rotation.<sup>16</sup>

It was evident throughout Mrs. M's first ten weeks of therapy that she had decreased ability to bear weight through her left lower extremity; this did not improve as anticipated and continued decreased stance time on left lower extremity and heavy upper extremity support during ambulation was noted. Weight bearing through each lower extremity in narrow stance, without upper extremity support, was assessed (see Table 4).

Gait Speed was added to the list of functional outcome measures as a reliable, and valid measure of a person's functional capacity and general health status.<sup>17</sup> Those who ambulate a self selected speed less than 0.8 m/s are at increased risk of functional dependence, mortality and hospitalization.<sup>17</sup> The patient ambulated at a rate of 0.45 m/s, putting her at increased risk of the consequences outlined above.

## Diagnosis and Prognosis

The patient was referred to physical therapy due to onset of left knee pain and difficulty walking post chronic left THA. The key body function and structure impairments discovered on initial evaluation included left knee pain and decreased lower extremity strength; both affected her function. Despite measured level of impairment, Mrs. M was given a good prognosis, supported by research. Evidence supports that people who are at least four months post THA are still able to make significant improvements in lower extremity strength, postural stability, pain, function, gait speed and 6MWT with a home based physical therapy program.<sup>18,19</sup>

## Interventions

Mrs. M attended 39 physical therapy visits, each lasting 53 to 55 minutes. Initial interventions focused on general lower extremity strengthening, manual therapy to the left knee for pain control, and static balance

Current Weight	Week of Plan of Care	Right Lower Extremity Weight Bearing (lbs)	Left Lower Extremity Weight Bearing (lbs)	Percent Weight Bearing Right Lower Extremity	Percent Weight Bearing Left Lower Extremity
145#	Week 10	93#	52#	64.1%	35.9%
145#	Week 13	87#	58#	60%	40%
144#	Week 17	76#	68#	52.8%	47.2%

Table 4. Lower Extremity Weight Bearing per Lower Extremity

activities with upper extremity support on the patient's rolling walker (see Table 5). Strengthening exercises were dosed using Avers and Brown's method of using rate of perceived exertion in order to create an adequate strengthening stimulus in the muscle groups addressed.<sup>9</sup> After re-evaluation (visit 19), treatment focus shifted to addressing the patient's innominate rotation, and specifically strengthening hip and knee extensors. Over time, it was evident that the muscle energy technique (MET) used to correct her left innominate anterior rotation was not creating lasting improvements in pelvic alignment, and was discharged from the plan of care at visit 31. Mrs. M also progressed to static and dynamic balance activities in left single leg stance, with reduced upper extremity support (see Table 5).

### Outcomes

Data was obtained at initial evaluation, re-evaluation, discharge, and two progress reports throughout plan of care. Results of all impairment testing and functional outcome measures are listed in Tables 2-4.

**Pain.** Mrs. M was asked to rate pain at rest and with activity, using the FACES pain rating scale, on each treatment session. On her last physical therapy session, she reported a resting pain level of 0/10 in her left knee, and 3/10 pain level in her left knee with activity. This indicates a 3 point reduction in resting pain level, and a two point reduction in pain level with activity. Though there is no MDC for the FACES scale, those who experience at least a three point reduction in pain levels report adequate pain control.<sup>20</sup> Activities that continued to exacerbate her left knee pain included transfers, ambulation, and activities that require left single leg stance.

**Strength.** Mrs. M demonstrated a generalized weakness in both lower extremities during initial testing. Table 2 illustrates consistent strength gains, which contributed to improved ability to transfer and walk with less assistance. As outlined in Table 4, Mrs. M improved weight bearing through her left lower extremity and was able to decrease the amount of weight bearing through her right lower extremity.

**Functional Outcome Measures.** Discharge outcome measure testing results are outlined in Table 3. Mrs. M increased her gait speed by over 0.1m/s, indicative of improved well being, and decreased fall risk.<sup>17</sup> Results of Berg Balance, 6MWT and 30 second sit to stand testing at discharge indicate that she had made a significant change in balance, cardiovascular endurance, and functional lower extremity strength, also contributing to an overall decrease in fall risk.<sup>13,14,15</sup> At discharge, Mrs. M now described the 6MWT as "somewhat hard" indicating a 4/10 on the Modified Borg Scale, with about 65% of heart rate maximum as seen in Table 1. At PT discharge, Mrs. M was independent in all transfers. She was able to ambulate 320 feet with standby assistance, with noted improvements in left single leg stance time, decreased upper extremity support, and reduced number of standing rest breaks, suggesting improved tolerance to ambulation, increased cardiovascular endurance, and left single leg stance ability.

### Discussion

The purpose of this study was to examine the effectiveness of the regional interdependence model in treating an older adult with dementia with a chief complaint of knee pain post chronic THA. The treatment interventions focused on functional hip strengthening and balance activities that promoted left single leg stance. At discharge, the patient experienced a reduction in left knee pain, and improvement in strength and functional abilities, as indicated on outcome measure testing and gait and transfer ability (Tables 2-4). The patient's results are similar to that of a young woman in a case report by Wainner, et al, in that treatment of the hip was effective in reducing the patient's ipsilateral knee pain,<sup>4</sup> indicating use of the regional interdependence model as an appropriate treatment model for older adults.

Another focus of this study was examining the timing of pain level reports in a client with dementia. It was noted that Mrs. M was unable to identify and report her pain levels with activity during her history taking. However,

	Manual Therapy	Strengthening Exercises	Balance Exercises
Sessions 1-18	<ul style="list-style-type: none"> <li>• Joint mobilization to left patella and tibiofemoral joint</li> </ul>	<ul style="list-style-type: none"> <li>• Heel Raises</li> <li>• Toe Raises</li> <li>• Long arc quad</li> <li>• Hamstring curls</li> <li>• Sit to stands with upper extremity support</li> <li>• Dynamic Reversals of left knee flexion/extension</li> <li>• Bridges</li> </ul>	<ul style="list-style-type: none"> <li>• Lateral weight shifting with progression to contralateral heel lift, and lifting entire contralateral foot</li> <li>• Alternating foot on step/stool</li> <li>• Prolonged left single leg stance</li> </ul> <p>*All activities performed with bilateral upper extremity support on rolling walker</p>
Sessions 19-39	<ul style="list-style-type: none"> <li>• Muscle Energy Technique to Correct left innominate anterior rotation (discharged visit 31)</li> </ul>	<ul style="list-style-type: none"> <li>• Isometric hip abduction/adduction in hooklying</li> <li>• Bridges with hip abduction/adduction</li> <li>• Step Ups</li> <li>• Clamshells</li> <li>• Sit to stands without upper extremity support</li> <li>• Sit to Stands with feet staggered, right foot anterior to left</li> </ul>	<ul style="list-style-type: none"> <li>• Lateral weight shifting with progression to contralateral heel lift, lifting entire contralateral foot</li> <li>• Alternating foot on step/stool</li> <li>• Cone tap with right foot</li> <li>• Right sidestepping over beanbags</li> <li>• Multidirectional step to target with both feet</li> <li>• Backwards Walking</li> <li>• Sidestepping</li> </ul> <p>*All activities performed with 1-2 handheld assistance from therapist</p>

Table 5. Interventions Performed

er, she was able to identify and quantify pain levels while participating in activities that caused her pain. Based on these findings, it is suggested that assessment of pain levels be performed while persons with dementia are experiencing pain, in order to ensure accuracy of reports.

During this course of treatment, Mrs. M was able to increase weight bearing through her left lower extremity in narrow stance. We can accept that this carried over to ambulation, as she demonstrated increased left lower extremity stance time with less upper extremity reliance. Her increase in left lower extremity weight bearing may also be partially attributed to her decrease in left knee pain<sup>21</sup> and as a result of improved left lower extremity strength. Other benefits of increased left weight bearing include decreased risk of developing osteoarthritis and pain in her right knee, due to the decrease in load through that joint.<sup>21</sup>

The amount of upper extremity reliance may have impacted the patient’s endurance with ambulation. In a study by Baird, it was found that upper extremity exercise poses a greater cardiovascular demand, as it promotes higher heart rate and blood pressure response, compared to lower body exercise.<sup>22</sup> This suggests that the patient’s endurance may have been limited at initial evaluation due to increased upper extremity reliance with gait. It also suggests that improvements in gait distance and endurance can be attributed to the decrease in upper extremity reliance, as we would expect a resultant decrease in cardiovascular demand.

Limitations of this study include that Mrs. M was not screened for depression which may have been a factor as she was recently widowed and moved into an ALF by herself. These two events may have had a role in Mrs. M’s

psychosocial status, potentially affecting her outcomes.

Future studies should further examine the use of the regional interdependence model in the older adult, and use of timing as a factor when assessing pain levels in patients with dementia.

## Conclusion

In conclusion, this case study suggests the regional interdependence model as an effective model for reducing pain and improving function in an older adult with dementia. It also highlights the importance of performing self-reported pain measures when a patient with dementia is experiencing their reported pain.

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## Answers to Knowledge Translation Quiz from pages 17-18.

1. C
2. B
3. D
4. C
5. A
6. D
7. A
8. C
9. B
10. D

# Putting It to Use: Journal Club Today, Clinic Tomorrow

by Dawn Venema, PT, PhD

## Subjective examination

**Patient primary complaint:** Mr. Campbell is a 73-year-old male referred to outpatient physical therapy for balance rehabilitation. Mr. Campbell reports several instances of feeling unsteady over the past month while attending his grandson's baseball games. The path from the parking lot to the baseball diamond requires Mr. Campbell to walk over grass and gravel surfaces. He is usually chatting with his daughter and carrying a folded lawn chair when these near losses of balance occur. While he hasn't actually fallen, he describes using a stepping strategy to maintain an upright position in these situations.

**Medical history and current medications:** Mr. Campbell's medical history includes hypertension, benign prostatic hyperplasia, lumbar spinal stenosis, and sleep apnea. His vision is corrected with glasses, and he has had cataract surgery within the last year. He sleeps at night with a CPAP machine. Medications include: Bisoprolol 5 mg 1x/day, Tamsulosin 0.4 mg 1x/day, and ibuprofen as needed.

**Home environment and current level of function:** Mr. Campbell lives in a multi-story home with his wife. He is able to climb stairs in their home with the use of a railing. The home has two bathrooms, one with a walk-in shower and the other with a tub/shower combination. There are grab bars in each bathroom and a shower chair in the walk-in shower.

Mr. Campbell is a retired insurance adjuster. He is sedentary, with his only physical activity coming from daily ambulation around his home and limited distances in the community, generally no more than ½ block. He does not otherwise engage in exercise. He does not use an assistive device for gait. He is able to drive. On a daily basis, he joins friends for coffee and pastries at the bakery a few miles from home. He attends his grandchildren's sporting and music events approximately every other week. From spring through fall, he assists his wife with yard work by using the riding lawn mower in their yard.

**Patient goals:** Mr. Campbell reports that he would like to feel steady on his feet, especially in community environments. He does not want to have to use a walker or a cane.

## Objective examination

- **Cognitive screen:** 26/30 on the Montreal Cognitive Assessment
- **Fear of Falling:** 53% on the Activities-Specific Balance Confidence Scale
- **Vital signs at rest:** HR 72 bpm, BP 128/86, orthostatic BP 122/82, RR 14 breaths/min
- **Pain:** Mr. Campbell reports a mild ache in his low back at rest, rated at 1 on a 0-10 scale. He reports the pain can increase up to 6 if he has to walk long distances.
- **Posture:** Mr. Campbell stands with a posterior pelvic tilt, mild thoracic kyphosis, and forward head posture.
- **Flexibility:** Mr. Campbell presents with tightness in hamstring and gastrocnemius muscles bilaterally.
- **Strength:** 3-/5 bilateral hip extensors, 3/5 bilateral hip abductors and plantarflexors, 4/5 bilateral quadriceps and dorsiflexors
- **Gait:** Mr. Campbell walks with a shortened step length and decreased foot clearance during swing through. He has mild compensated Trendelenburg gait bilaterally. His self-selected walking speed (SSWS) is 1.1 m/s. SSWS while counting backwards by 3s (SSWS3) is 0.6 m/s.
- **30-second Chair Stand Test:** 6 reps
- **Timed up and Go:** 15.6 seconds. TUG while counting backwards by 3s (TUG3) is 21.5 seconds.
- **Dynamic Gait Index:** 15/24
- **Dual Task Performance:** Dual-task cost (DTC) for SSWS3 and TUG3 is calculated as follows:

$$DTC\ TUG3 = \left( \frac{ST\ TUG - DT\ TUG}{ST\ TUG} \right) \times 100\%$$

$$DTC\ TUG3 = \left( \frac{11.2 - 14.1}{11.2} \right) \times 100\%$$

$$DTC\ TUG3 = -26\%$$

Mr. Campbell walks 45% slower under dual-task vs. single-task conditions.

$$DTC\ SSWS3 = \left( \frac{DT\ SSWS - ST\ SSWS}{ST\ SSWS} \right) \times 100\%$$

$$DTC\ SSWS3 = \left( \frac{0.6 - 1.1}{1.1} \right) \times 100\%$$

$$DTC\ SSWS3 = -45\%$$

Mr. Campbell takes 38% longer to complete the TUG under dual-task vs. single-task conditions.

**Assessment:** Mr. Campbell presents with a history of near falls in situations that require him to dual task, particularly in community environments. This subjective history coincides with difficulties in dual tasking found during objective examination. Mr. Campbell has fear of falling, is at risk for falling per standardized tests, presents with gait deviations typical of those at risk for falling, and has weakness and flexibility deficits in his lower extremities that are likely contributing to his gait deviations and difficulty with sit-to-stand transfers. Mr. Campbell would benefit from skilled physical therapy to prescribe and progress an exercise program for strength, flexibility, and gait under single and dual task situations.

**Plan:** Mr. Campbell will be seen in the outpatient clinic two times/week for six weeks and then be reassessed. A home exercise program will be prescribed that will focus on strengthening and flexibility exercises for the lower extremities. In the clinic, we will focus on gait training under single and dual-task conditions and with varied surfaces and environments. Dual-task training will include the addition of secondary motor and cognitive tasks to gait. Examples of secondary cognitive tasks include answering questions posed by the PT, spelling words out loud, and reciting the alphabet backwards. Examples of secondary motor tasks include bouncing a ball during gait and carrying objects.

**Six weeks later**

Mr. Campbell's SSWS is 1.25 m/s, and SSWS3 is 1.0 m/s. He completes the TUG in 11.2 seconds, and the TUG3 in 14.1 seconds. DTC for each motor task is calculated as follows:

$$DTC\ SSWS3 = \left( \frac{DT\ SSWS - ST\ SSWS}{ST\ SSWS} \right) \times 100\%$$

$$DTC\ SSWS3 = \left( \frac{1.0 - 1.25}{1.25} \right) \times 100\%$$

$$DTC\ SSWS3 = -20\%$$

Mr. Campbell walks 20% slower under dual-task vs. single-task conditions. This is an improvement of 25% compared to his initial visit. The change of 25% exceeds the minimal detectable change (MDC95) of 22.0% for SSWS3. Mr. Campbell is beyond the threshold of measurement error for an improvement in dual-task gait velocity for this combination of motor and cognitive tasks. In other words, this change is likely to be real.

$$DTC\ TUG3 = \left( \frac{DT\ TUG - ST\ TUG}{ST\ TUG} \right) \times 100\%$$

$$DTC\ TUG3 = \left( \frac{15.6 - 21.5}{21.5} \right) \times 100\%$$

$$DTC\ TUG3 = -27\%$$

Mr. Campbell takes 26% longer to complete the TUG under dual-task vs. single-task conditions. This is an improvement of 12% compared to his initial visit. The change of 12% does not exceed the MDC95 of 41.4% for TUG3, so we cannot be confident that the change we have seen in this combination of motor and cognitive tasks is real. It is within the range of measurement error.



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# Moving Forward with Evidence

by Carole Lewis, PT, DPT, PhD, FAPTA and Linda McAllister, PT, DPT

Over a year has passed since we started the GET-LITerature column and we hope you have found it beneficial. We both have a huge investment in our profession's sustainability, respectability and viability. We believe we can achieve that through evidence and that is why all of our writing or teaching is strongly backed by published research. Here is a review of why that is so important going forward and what you can do to be sure you are practicing with evidence.

## Practicing with Evidence

Let us begin with an example. Recently, Carole referred a patient to a large company that does home care under part B after initially sending this same patient to another therapist who was practicing in a clinic. The setting was not important, but the care given was. The patient was a 90-year-old gentleman who had lower back pain (lumbar stenosis), leg weakness, and falls.

The first therapist in the clinic prescribed primarily range of motion exercises, general balance exercises, and exercises from the BIG program (the patient did not have a diagnosis of Parkinson's Disease). After four weeks of this same program three times a week, the patient stopped and was no better.

The referral to the home agency yielded completely different results. First, unlike the previous therapist, the therapist shared a comprehensive examination and a targeted intervention plan for the three deficient areas with Carole. The interventions began with soft tissue work to the lumbar spine, as well as specific stretching and a stabilization program for the lower back.<sup>1,2</sup> Balance exercises were initiated following the Otago exercise program.<sup>3</sup> Finally, progressive resistive exercises were given for the lower extremities targeting important muscle groups.<sup>4</sup> The therapist constantly monitored the patient's response using the Borg Scale to ensure the correct intensity.

In less than two months, this patient had no back pain and was walking more safely.

## What factors contribute to the difference?

In our example, the home-based company stresses evidence in their culture. Therapists receive education in evidence-based interventions not just because they need CEUs, but because this company recognizes that to show their value as an organization they must get good outcomes which will only come from integrating evidence

into practice. In this company, therapists are encouraged to contact their supervisors for evidence-based treatment suggestions as often as needed.

Now, what can you do if you don't work for a company like this? Commit today to evidence-based interventions. You may ask: How will we find the time to do this? Most therapists report barely have enough time to treat their patients, let alone seek out new interventions. Here are some ideas to streamline the process.

Let us suggest to stop following podcasts, webinars, tweets and blogs that say they are evidence-based, but don't really use robust research, or misrepresent it. That will save you time to then go to courses that really provide evidence that you can use.

See if you can find or organize a support group/ journal club that can meet regularly to share usable clinical research. Feel free to use our column for your meetings.

Seek out your local or state Geriatric Special Interest Group that provides a platform for discussion of pertinent evidence.

Ask your boss if you can spearhead evidence infusion into your company's practice.

Then, do what we do. When we see patients, we look at the problem and even take out our own class handouts to get ideas for evidence-based examination and interventions we can use. We come prepared with several options for interventions and see how the visit goes. Often, we may just use one or two depending on how the person is that day, but we have options.

## Be bold, don't be timid.

When you learn something new that has been shown to be effective, try it out as soon as you can. That means you may have to practice on family or friends, but it can be fun.

We all make mistakes and trying new interventions can be scary, but not as scary as providing care that is not efficacious.

We are in a crucial time right now. Our worth is being judged. We are being asked to get better outcomes in increasingly shorter periods of time. We cannot afford to follow gurus who are not backing up their interventions with evidence.

Join us in really committing to giving our patients the best care to-date and use the evidence!

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