GeriNotes

May 2021 • Vol. 28 No. 3

APTA Geriatrics
An Academy of the American Physical Therapy Association
Age on.™

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In This Issue

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An Academy of the American Physical Therapy Association
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From the President

Cathy Ciolek
President,
APTA Geriatrics

What is advocacy? Where are the members of APTA Geriatrics looking for advocacy support? Data from the member survey conducted in the fall of 2020 showed that our members value advocacy in many different areas. Advocacy became a pillar in our Strategic Framework. Yet even the Board of Directors struggled to succinctly clarify advocacy priorities in our early discussions.

Merriam Webster defines advocacy as "the act or process of supporting a cause or proposal: the act or process of advocating something." The challenge is that this association does a great deal of advocacy in many different areas.

The Board of Directors appointed a Board task force to assess our advocacy priorities to share for a full board review. The members, Kate Brewer (chair), Ken Miller, Ellen Strunk, and myself met with Executive Director Christina McCoy over several weeks to outline the areas of established APTA Geriatrics advocacy efforts, review that against the member survey results, and to establish priorities for future efforts to align within the strategic framework. We developed a long list and then were able to identify **4 main themes of advocacy:** payment and practice, the experience of ageing, the profession of geriatric physical therapy, and the association. This priorities list will be used to direct the APTA Geriatrics Board, staff and member efforts, and the communications plan to share updates and advocacy opportunities with the membership. We welcome comments or questions via geriatrics@geriatricspt.org.

An early opportunity to share a wonderful resource came via the United Nations launch of the Decade of Health Ageing. On March 18, 2021, the **UN Global Report on Ageism** was made available with a launch event that included the report, educational materials and social media toolkit. The Global Report on Ageism addressed the current best available evidence on ageism and outlines 3 large scale strategies to address ageism: policy and law, educational activities, and intergenerational interventions. These areas match up well with APTA Geriatrics established advocacy priorities. We encourage you to utilize these materials to help build a movement to change the narrative around age and ageing in your practice and community.

If you're not sure where to start, consider using this document on initiating a conversation about ageism. It offers tips and questions to consider when addressing ageism at home, at work, in the classroom, and in policy-making. As the report notes, "conversations are like drops of water" and it takes each drop of water to form the large movements of rivers that hasten change.

APTA Geriatrics Advocacy Priorities

PAYMENT AND PRACTICE

Provide engagement opportunities to advocate for optimal payment for physical therapy for ageing adults. Provide information on strategies to influence burdensome regulations that may negatively impact physical therapy practice. Create, disseminate, and promote adoption of best practice geriatric physical therapy.

AGEING EXPERIENCE

Raise awareness of anti-ageist resources to promote a positive, active ageing experience. Provide resources on mitigating preventable factors impacting ageing adults' ability to live a fulfilling life at any age.

PROFESSION

Promote to the public, healthcare professionals, influential organizations in the ageing adult space and key decision makers, the value of geriatric physical therapy and our unique knowledge, skills, and training.

ASSOCIATION

Promote the value of APTA Geriatrics membership to both sustain and expand resources that have a positive impact upon physical therapy for ageing adults.

From the Editor

Michele Stanley
Editor,
GeriNotes

Spring! May! Think Fall! . . . Well, this issue we are urging you to think, at least, about the internationally recognized and evidence-based fall prevention program to reduce falls: The Otago Exercise Program (OEP). We teased at this in the last issue after a Journal Club discussion involving grip strength increase that was reported by doing the OEP. As a sequel, Tiffany Shubert, a colleague whose name is practically synonymous with fall risk and the OEP, gives an update on becoming a certified provider. Even more intriguing (sorry Tiffany), another group of colleagues present a first-rate mini-study of results from running the OEP as a group exercise program in a SNF setting. The idea is open for the steal for those of you wanting to beef up your own SNF programming. Providing resources to mitigate preventable factors impacting an ageing adult's ability to live a fulfilling and safe life is an important and primary way that every physical therapist acts as an advocate for our clients and our profession.

Journal Club, now an established 6x/year webinar lead by a different SIG each month, gets more popular with each offering. While it is an outstanding FREE member benefit and worth 1.5 contact hours, you do need to register in advance. Specific sign-up details are "blasted" out to your email in the month of the JClub (January, March, May, July, September, November) so watch for them. Live discussions and questions at the end of the formal presentations of both the research author/team and a clinical expert case presenter complete the knowledge translation initiative: read, discuss, take it to the clinic.

This month we feature 2 of the case presentations: May and July because *GeriNotes* is only published 5x/year. The case presentations are so interesting. Even though a patient being discussed isn't identified, you will know them instantly: as a TV show used to advertise, "The names and the faces have been changed to protect the innocent [faller – to take a little editorial liberty]." See what's coming up and register at https://geriatricspt.org/events/webinars/

As promised last month, one of the current FOX residents explains the history of FOX Rehab and his reasons for wanting to do an "additional" year of training right after graduation. This is not a paid advertisement; APTA-Geriatrics is not endorsing this organization. Several readers have asked questions about, "Why residency?" and "What is FOX?" – this is an articulated response from an "insider" for your information.

GeriNotes is happy to publish articles from any residency program in the "Resident's Corner." Coincidentally, the next issue features a collaborative article from newly minted Brooks Rehab residents that highlights their amazing poster presentation at CSM. Looking ahead, we have opportunities for residents to submit their articles for the November and January issues of GeriNotes. Of course, copy not submitted is never published, although submission isn't a guarantee of publication.

For all of you NOT in residency programs -- we want your input as well. Please tell us how you have modified your practice, developed a _____, or solved a patient puzzle. We want to hear from you.

New! *Register for the JClub discussions, now in a free webinar format and earn 1.5 contact hours. Questions for presenters may be emailed to gerinoteseditor@gmail.com before or on the day of the webinar. See what's coming up at https://geriatricspt.org/events/webinars/.*

GeriNotes

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Published in
January
March
May
August
November

Copy Deadlines
February 1
April 1
July 1
September 1
November 1

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.

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Mission: To provide engaging content that empowers the community of physical therapy clinicians to build expertise and expand the delivery of evidence-informed care that promotes health and wellness in ageing 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 ageing adults move, live, and age well.

What is Advocacy?

by Ellen R. Strunk PT, MS

Advocacy is generally defined as the act or process of supporting a cause or proposal. Advocacy is the process to get to a policy decision. The advocacy process is cyclical and continuous because it depends on the goal. The goal may be a particular policy decision or to raise awareness of a particular subject. Advocacy is often fluid because it links to shifting priorities for both the advocate and the decision maker. The desired outcome of the advocacy process for geriatric physical therapists is often to heighten awareness of the profession, awareness of the experience of ageing, and to influence policy decisions that determine how a health care professional is allowed to practice. Advocacy plays a key role in building strong health systems and/or strong organizations. It gives people a voice in decisions that affect their lives and/or the future of an organization's path.

To effectively advocate for changes that match a desired outcome, a systematic plan of action is required. One approach is outlined in the 6-step advocacy framework in Figure 1.

First the issue(s) is identified. This step is important because it defines the objective(s). The ability to clearly articulate the issue(s) is key to gaining support.

Next is gathering information to support the need for change. Gathering wide-spread information, Step 2, is also essential to understanding the scope and breadth of the issue(s). Research may be necessary to provide potential solutions to a problem or to increase support for a change from a current practice.

The third step is to establish priorities: What are the goals for an advocacy plan?

Strategies for achieving the goals of the advocacy plan become Step 4. Much like carefully selecting treatment interventions or appropriate dose of exercise in a physical therapy plan of care, strategies should be targeted and effective. Finding alliances with others who share a common interest and passion for a particular policy or issue can multiply the efforts of one person or organization.

Step five is to build support and engage others in the process to build momentum.

Assess and evaluate is the last step in this advocacy process. Even when a goal is achieved, advocacy is never "final" because there is always the need to evaluate whether the goal was truly met. The process of analyzing efficacy also helps to inform the next round of advocacy.

In its 2021-2023 Strategic Plan, APTA Geriatrics identified Advocacy as one of its 3 primary goals. The Board of Directors identified the key issue: there needs to be an increased awareness of geriatric physical therapy. A workgroup was assembled to gather information and explore which areas and issues APTA Geriatrics should be advocating in/for as well as where our collective voice could be most effective. Following on to the third step, priorities were established. These are illustrated in Figure 2.

The fourth step will be to outline strategies. For example, health policy and advocacy are interwoven because policy decisions determine how health care professionals practice. Potential strategies identified by the workgroup in the area of payment and practice include the following:

- Transfer information to members in every state so each has the information needed to advocate at the

Figure 1

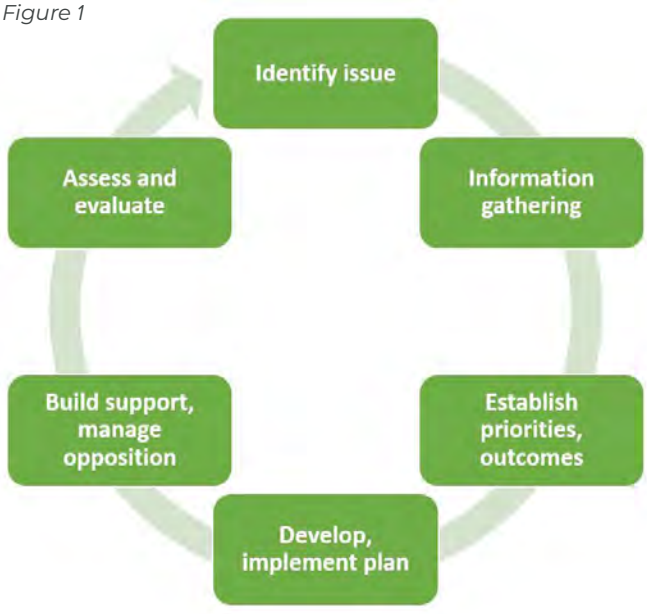

Figure 2

local level, including in their organizations, their community, their state government and at the federal level.
- Disseminate best practices to increase the value of physical therapy.
- Advocate with select committees, such as the positive role(s) physical therapists have in the nation's nursing homes to the Senate Finance committee; the impact physical therapy can have in preventing falls to the Senate Special Committee on Ageing.
- Advance the involvement of APTA Geriatrics members in policy development for the Unified Post-Acute Care (UPAC) Payment system.

This is certainly not an exhaustive list; the Academy is looking forward to getting additional ideas from the membership, not only in the area of payment and practice, but in all 4 advocacy areas (see below).

Policy and advocacy go hand in hand. To enact or change policy takes a concerted effort to influence the bodies that possess the power to make these changes. It is essential, regardless of practice setting, political perspective, or policy expertise, that physical therapists engage in the health policy and advocacy process. Advocacy is part of our professional responsibility to further the profession's ability to serve patients and help them reach their full potential.

Ellen R. Strunk is President and Owner of Rehab Resources & Consulting, Inc., a company providing consulting services and training to providers in postacute care settings with a focus on helping customers understand the CMS prospective payment systems. She also lectures nationally on the topics of pharmacology for rehabilitation professionals, exercise and wellness for older adults, and coding/ billing/ documentation to meet medical necessity guidelines and payer regulations.

APTA-Geriatrics advocates for the following:

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Fall Risk Assessment of Adults with Generalized Weakness in Acute Care

by Jennifer Gindoff, PT, DPT; Heidi Moyer, PT, DPT; Kimberlyn Skibbe, SPT; and Jennifer L. Vincenzo, PT, MPH, PhD

The Balance and Falls Special Interest Group (SIG) of the American Physical Therapy Association (APTA) Geriatrics consistently strives to meet the needs of our members. One such need is fielding questions received via email related to balance and falls management in the older adult population. Our research liaison, Jennifer Gindoff, is diving through the literature to answer questions posed to our SIG and providing a concise summary of her findings.

Recently we were asked the following questions:

1. Which outcome measure is recommended to identify fall risk among older adults with generalized weakness in acute care?
2. Is there any validity to the question "have you had any falls in the past 3 months"? Is this question on the Morse Fall Scale?

Following is Dr. Gindoff's reply.

Fall Risk Assessment Tools in Acute Care

There is limited research regarding fall assessments in acute care pertaining to the older adult population—almost none specific to hospitalized older adults with a diagnosis of generalized weakness. Unfortunately, while there are several assessments available, there is no current gold standard.

Research has tended to create new assessments, rather than improve the reliability and validity of the tools that are already available. Unfortunately, many of the currently utilized tools have low predictive validity. Screenings, rather than assessment tools, are more often used in this setting because of quick patient turn-over. This is especially true as nursing staff are often the ones to administer these screenings before therapy staff evaluates patients. Patients must be assessed quickly so that staff can provide proper fall prevention protocols for hospitalized older adults.

A screening tool is quickly administered to determine a patient's fall risk and can be performed by any member of the health care team in the hospital setting. Most commonly performed by intake nurses in the acute care setting, these tools determine further need for in-depth assessment by physical or occupational therapy, as they provide objective data as to whether or not a patient is at an elevated risk for falls. Assessments, most commonly known as outcome measures in the physical therapy world, are typically performed by physical or occupational therapy professionals and provide more insight into the reason for the increased fall risk.

Based on a review of the current literature, the most used fall risk screening tools in acute care for the hospitalized older adult population are the St. Thomas Assessment Tool in Falling Elderly Inpatients (STRATIFY), Timed Up and Go (TUG, which can be utilized as either a screening tool or assessment), Morse Fall Scale (MFS), and Hendrich II Fall Risk Model (HFRM).

Timed Up and Go (TUG) and St. Thomas Assessment Tool in Falling Elderly Inpatients (STRATIFY)

The TUG is an assessment of mobility and balance used to screen for fall risk in older adults. The TUG measures the amount of time it takes to complete the following task: rise from a chair, walk 3 meters, turn around, and return to a seated position in the original chair.[1] Cutoff scores for fall risk vary depending on the patient population, age, and specific diagnosis.[1] When used in acute care, the TUG had a sensitivity that ranged from 56-68% and a specificity that ranged from 74-80%.[1] More recently, Bassett et al.[2] reported a sensitivity and specificity both of 60%. A meta-analysis revealed the TUG has a pooled sensitivity of 76% with a 95% confidence interval of 0.68-0.83 and a pooled specificity of 49% with a 95% confidence interval of 0.43-0.54 for falls prediction.[3]

The STRATIFY assesses 5 risk factors: past history of falling, patient agitation, visual impairment, incontinence, and transfers, and mobility.[4] Each risk factor receives 1 point for a maximum score of 5. A score of 2 or more may indicate that the patient is at an elevated risk for falls.[4] The STRATIFY has better sensitivity (and perhaps also better specificity) than the TUG. According to Ruggieri et al.[4], the STRATIFY has a sensitivity ranging from 82-91.2% and a specificity ranging from 49.3-62%.[4] These results are similar to those cited by Bassett et al.[2], who reported a sensitivity of 84% and specificity of 66%2, and a meta-analysis by Bassett et al.[1], which found both a sensitivity and specificity of 71%. A systematic literature review and meta-analysis revealed the STRATIFY has a pooled sensitivity of 89% with a 95% confidence interval of 0.85-0.93 and a pooled specificity of 67% with a 95% confidence interval of 0.65-0.69 to predict falls.[3]

While some studies[1,3] caution against using the TUG in isolation, a more recent study[2] reported that the TUG may be useful in identifying individuals at risk who have a history of falls and can also be used to bolster the sensitivity of the STRATIFY. When the STRATIFY and TUG are used in combination with each other, fall prediction sensitivity increases to 100%, but specificity remains low at 60%.[2]

Hendrich II Fall Risk Model (HFRM) & Morse Fall Scale (MFS)

The HFRM assesses 8 potential fall risk factors: confusion/disorientation/impulsivity, symptomatic depression, incontinence, dizziness, gender, prescribed medications such as anti-epileptics or benzodiazepines, and the TUG.[5] The HFRM has a maximum score of 16 with a score of 5 or above indicative of high fall risk.[5] A meta-analysis[1] reported that the HFRM had a sensitivity of 92% and a specificity of 37%. Another study[3] found a pooled sensitivity of 76% with a 95% confidence interval of 0.68-0.83 and a pooled specificity of 60% with a 95% confidence interval of 0.57-0.62 for predicting falls. The HFRM has the best negative predictive value (the likelihood that someone who tested negative for fall risk will not fall) as well as the highest area under the curve (AUC) at 74.2%, when compared with the MFS and Johns Hopkins Fall Risk Assessment Tool (JHFRAT).[5] Additionally, the Youden index for the HFRM was higher than the MFS and JHFRAT indicating diagnostic accuracy.[5]

The MFS has a maximum total score of 125 and assesses 6 areas of a patient's history and current presentation: history of falling, secondary diagnosis, ambulatory aid, IV/saline lock, gait/transferring, and mental status.[6] A cutoff score for fall risk with the MFS has not yet been determined for hospitalized older adults (let alone hospitalized older adults with specific diagnoses). Cutoff scores utilized in the literature range from 25-55.[6] Research has recommended that a pilot study be conducted within the setting the tool will be utilized to determine the appropriate cut-off score for that particular setting/patient population.6 Watson et al.[6] reported that using a cutoff of 25 points led to high sensitivity (98%), but extremely low specificity (8%). This study[6] found an ideal cut off (based on an ROC curve in this specific study) would have been 55 points, which would have resulted in a sensitivity of 87% and a specificity of 34%. Additionally, based on an AUC of .65 with a 95% confidence interval of 0.575-0.719 for falls prediction; this study found the MFS to have low predictive validity (poor balance between sensitivity and specificity).[6] Cho et al.[5] noted that a cut-off score of 45 had a sensitivity of 59.28%, but a lower accuracy when compared to HFRM and JHFRAT. Jewell et al.[7] reported that using a cut off score of <25 for low risk and 45+ for high risk found that individuals in the high-risk group were 9.6 times more likely to fall than individuals in the low-risk group. It is unclear if the moderate risk group was assessed. Other significant fall risk factors in this study included a neurological diagnosis and an increased length of stay in the hospital (1 extra day = 8% increased risk of falls).[7]

The MFS can identify risk of falls in individuals with a history of falls but may not discriminate between faller and non-faller in individuals without a history of falls.[2]

To address the second question regarding the validity of "history of falls within 3 months," this time frame was used in a study[6] when scoring the MFS; however, it is unclear if there is validity to this question as a standalone item.

Conclusion

This (non-exhaustive) literature review revealed that although there are many fall-risk tools that can be used for older adults in acute care, there is no one test with good predictive validity. The consensus regarding fall risk assessment in hospitalized older adults is to use a combination of tests (at least one with high sensitivity and one with high specificity) to increase the predictive validity of the assessment. Additionally, when using the MFS (or any assessment), piloting the tool in the setting it will be utilized in and with the specific patient population being assessed will allow for the determination of a specific cut-off score for a more sensitive and specific test. The assessments reviewed herein are often used in acute care due to ease of use, time needed to complete, and little-to-no training required. However, keep in mind that there are a multitude of fall risk assessments to choose from when assessing risk of falls in the geriatric population.

Do you have a question regarding balance and falls that you would like answered? Contact APTA GeriatricsBalance and Falls SIG at 520-909-0403 or agptbalanceandfallssig@gmail.com.

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Dr. Jennifer Gindoff is a Board Certified Geriatric Clinical Specialist (GCS) and a Certified Dementia Practitioner (CDP). Dr. Gindoff is currently completing research to obtain a Doctorate of Health Science and is acting as the Research Liaison for APTA Geriatrics Balance and Falls Special Interest Group. She works in home health, skilled nursing, long-term care, and outpatient geriatrics in Columbus, Ohio

Dr. Heidi Moyer is a Board-Certified Clinical Specialist in Geriatric Physical Therapy (GSC) and a Certified Exercise Expert in Ageing Adults (CEEAA). She serves as an adjunct professional in the Governors State University Doctor and as secretary of the Balance and Falls Special Interest Group for APTA Geriatrics.

Kimberlyn Skibbe is a student physical therapist in her 3rd year of the Doctor of Physical Therapy program at Concordia University Wisconsin. She will graduate in May of 2021. Upon graduation, she will be relocating back to her home state of Indiana to begin her career as a physical therapist.

Dr. Jennifer L. Vincenzo is an Associate Professor in the Department of Physical Therapy at the University of Arkansas for Medical Sciences. She is the current chair of the APTA Geriatrics Balance and Falls Special Interest Group. Dr. Vincenzo also served on the APTA Geriatrics/National Council on Ageing Task Force and serves on the National Council for Falls Risk Awareness and Prevention.

Communication Strategies for Better Patient Outcomes

by Morgan Nolte PT, DPT

You are a salesperson— like it or not. You are selling your services (or not) with every patient interaction. If that doesn't sound exciting, consider these questions:

Do you want better outcomes for your patients?

Do you want a raise?

Do you want people to listen to you and value your opinion?

Do you want to be a better motivator?

Of course, you do! And to get it, you'll need to learn to sell your value and services.

If you're resistant to the idea of sales and marketing, that is normal. I was, too, until I realized that marketing and sales is nothing more than communication.

If you're struggling with patient follow-through, you're struggling with communication. We spend an incredible amount of time in physical therapy school learning what to do. Yet very little time learning how to communicate in a compelling way to get people to take action.

Take a moment and think of an excellent clinician, someone who consistently gets great outcomes, someone who is a leader, even if not by title. They have strong rapport with patients, team members, and bosses.

Chances are, it's not what they know that makes them excellent. It's how they communicate what they know. It's how they make others feel. It's leading by example.

You can cultivate better communication skills. When you do, your relationships and outcomes will improve.

To help get you started, here are 3 thoughts from me, 2 stories from others, and 1 question for you.

Three Thoughts From Me

1. The goal is not the goal. No one has a goal to improve range of motion in their knee following surgery. They have a goal to get up from the bench at the zoo when they take their grandkids. They have a goal to be an active grandparent that leaves a positive impact. Find out what makes them tick. What's motivating to them? Bring it up in every session. Keep their eye on their why.

2. Do you want instant authority and credibility? Facts tell, stories sell, and social proof sells best. Tell your patients stories of similar patients you've helped. They don't care what you know, they care how you're going to help them. Think about Amazon reviews and Netflix ratings. We all want 5 stars. Tell them about your 5 stars. Make them want to be your next 5 star.

3. Up to 90% of communication is non-verbal. With masks during COVID, communication has never been so challenging. Here are a few things to consider. Are you spending more time looking at your patient than your computer? Are you angling your body so the computer is not between you and your patient? Are you on time? Are you distracted during the session? These are all excellent examples of non-verbal forms of communication to optimize.

Two Stories From Others

I reached out to Dr. Alyssa Kuhn and Dr. Beth Templin, leaders in messaging and marketing. I asked them how they used communication strategies to improve patient outcomes.

Dr. Kuhn is the owner of Keep the Adventure Alive. She uses pre-framing for all her sessions. Pre-framing is a wildly effective communication strategy that deserves its own article. She highlights the small wins patients accomplish to keep people motivated. She also includes her own videos with all home exercise programs to improve adherence.

You say: "I don't know how to make a video," or "I can't because I'm not good with technology." Those are limiting thoughts. You can do anything you put your mind to. Ask Google. Get resourceful. If you can make it through PT or PTA school, you can make a video.

Putting exercises on a sheet of paper for older clientele is not recommended. If they don't remember how to do the exercises, they likely won't do them. If they don't do them, they won't get results.

Dr. Templin shared thoughts on the importance of messaging. Messaging is not to be confused with marketing. Marketing is the vehicle by which you deliver your message.

She reports most of her clients are not sent to her by their doctors; they find her. They find her because they resonate with the messaging of her company, HouseFit [*The HouseFit Story, September 2019 GeriNotes*].

Her messaging is that age is only a number. Clients can make positive changes and improvements in their health and fitness. No matter their age. No matter their medical issues. No matter if they have tried and failed in the past.

Dr. Templin wrote, "The mindset of the clients and of the providers must align for success." The HouseFit messaging is not, "We provide excellent physical therapy services." Sorry to break the news, but no one wakes up thinking, "I need physical therapy services today." They wake up wanting an outcome. They wake up with fears and objections holding them back from acting to reach that outcome. Make your message match your client's desires. Learn and address their objections.

Morgan Nolte, PT, DPT is the founder of Weight Loss for Health, LLC. She is a Board-Certified Clinical Specialist in Geriatric Physical Therapy. She graduated from the University of Nebraska Medical Center in 2014 and completed the Creighton University-Hillcrest Health Systems Geriatric Physical Therapy Residency Program in 2015. mnolte@weightlossforhealth com; www.weightlossforhealth.com

One Question for You:

When you listen to your client are you trying to understand—or design your reply?

Application of the OTAGO Exercise/Fall Prevention Program in the Long-Term Care Setting

by Andrea E. Ecsedy PT, DPT; Christine Depner MSPT; and Akshay N. Hudlikar MPT, DPT

The Nursing Home Abuse Center data collection agency reports that there are over 1.4 million individuals over the age of 65 who reside in Long Term Care (LTC) facilities [1] Of these LTC residents greater than 50% experience a fall annually,[1] many times resulting in severe injury and sometimes death. Fall reduction is of paramount concern in the LTC industry because 20% of the deaths reported in LTC are attributed to falls.[1] Falls also result in additional detrimental effects such as increased fear of falling, loss of function, serious injury, and concomitant medical complications, which can also lead to early mortality.[1] The prevention of falls in LTC is a difficult undertaking due to the multiple comorbidities and cognitive involvement experienced by the residents.

The Otago Exercise Program (OEP) is an evidence-based fall prevention program proven to reduce falls and fall-related injuries in the community-dwelling elderly.[2] Dissemination of this internationally accepted program has been underway in the United States since 2015.[3] Despite the Centers for Disease Control's (CDC) endorsement, the OEP has been slow to take hold in the physical therapy profession in the United States.[3] The principle of the OEP is the provision of a prescriptive multi-component exercise program provided at a low frequency (3x/week) over a long duration (52 weeks.) The OEP requires that 3 main components be included in the program. These include prescriptive strengthening, balance exercises, and walking.[4]

Currently, the research on the OEP has been primarily conducted with elderly individuals living in a community setting. The best fall reduction outcomes have been reported in the 80-year-old and older age group. [2,5] The OEP has demonstrated an impressive 35% reduction in falls in this population.[3,5] Fall incidence in LTC is twice that of community-dwelling elderly[1] with resultant secondary severe complications which makes reduction of falls in this setting a priority. Traditionally, the OEP is conducted as a home-based program where the participants receive telephone support and updates from their physical therapist at regular intervals for 6 months to a year.[4] Kyrdalen (2014) demonstrated that delivery of the OEP in a group format was more effective in improving Berg Balance Test, 30-second sit to stand test, and perceived physical health scores compared to those performed individually.[6]

To date, no research has been published on the delivery of the OEP in the LTC setting. Residents living in LTC frequently have more comorbidities, cognitive deficits, and are more medically complex than their age-matched community cohort. The purpose of this pilot program was to assess the feasibility of delivering a modified version of the OEP conducted in a group format (3x /week) and the effect this might have on fall frequency in participants that were LTC residents.

Program design and participants

A within-subject repeated measure design was implemented. Data was collected on 63 individuals from 11 different LTC facilities. The participants served as their own controls. This was a sample set determined by a resident's ability and willingness to participate in the program. All participants were older than 60 years of age. The genders and specific ages of the participants were not recorded.

Participants consisted of long-term care residents who were ambulatory with or without a device, required no more than minimum assistance for ambulation, had experienced at least one fall in the previous year, or were at risk to fall based on standardized fall risk measures. Participants received individual physical therapy prior to joining the group Otago program. The duration of the initial therapy ranged from 2 to 8 weeks depending on a resident's individual needs and abilities. The amount of initial therapy time provided is congruent with the community based OEP program, during which patients were taught the Otago exercises and assessed for appropriateness for inclusion into the Otago program. Inclusion was considered if the resident was able to follow instructions and physically perform the tasks with no more than minimum assistance. Exclusion criteria were the inability to follow verbal instructions or the inability to perform return demonstration of exercises.

Compliance of the participants was a key concern secondary to the complex medical and occasional cognitive involvement of the participants. A slight modification of the OEP's original individual delivery design was necessary to maintain the program's prescriptive nature in the LTC setting. This modification was a provision of the program in a group format which was supervised by a licensed physical therapist or therapist assistant. The group was conducted, 3x/week, to address strengthening and balance exercise components of the program. The walking portion of the program was administered by restorative nursing aides or, in some cases, patients were encouraged to walk independently if this could be accomplished safely.

This decision to deliver the program in group format was based on Kyrdalen's research and the special needs of this population. This also allowed for socialization and camaraderie for the residents. This format appeared to be an effective delivery in this setting and resulted in improved compliance and progress while in the program.

Method/Testing

Participants underwent a standard physical therapy evaluation, including special tests specific to the Otago exercise program, including the Timed-Up and GO(TUG), Five times sit-to-stand (5TSTS), and the 4-position balance test. The complete baseline assessment included the following additional standardized tests which were used for data collection during the pilot: Gait velocity,[7,8] 2 or 6-minute walk test[8,9] and 30-second sit-to-stand test,[10] which were then reassessed at regular intervals. After 6 months, and again at the end of one year, scores were then compared to the initial score. The total number of falls for each individual and the entire cohort was compared 6 months before starting the program, 6 months after, and 1 year after participation in the program. If a subject did not complete the year-long program, the 6-month score was used.

The secondary outcome measures used in final data analysis were chosen based on a measure's ability to prognosticate fall risk across various domains. In addition, the 2 and 6-minute walk tests were analyzed out of clinical curiosity to see if this program improved overall conditioning and endurance. The 5TSTS was not included in the data analysis because this measure has not been validated in the geriatric population.[11] The 4-position balance test was not included in the final data analysis because of the lack of normative data and clinical cut scores for this measure.

Intervention

Modification to the delivery of the OEP was made to allow the residents to complete the exercises in a group setting with supervision and assistance as required. Each group was led by a physical therapist (PT) or a physical therapist assistant (PTA) who had completed the OEP training. Groups consisted of a maximum of 4 individuals and were conducted 3 times per week for 45 to 60-minute sessions. The intervention included 17 balance and strengthening exercises based on the patient's ability as per OEP criteria. Stair climbing was also included in the program when appropriate. The community-based Otago home program traditionally includes 10 minutes of walking 3 times/week; this also required modification in the long-term setting. Participants who were ambulatory without supervision in the facility were allowed to walk as desired. Others, who required assistance, walked 1-2 times per session to fatigue or were walked to meals by a restorative aide.

Results

Total participants (N= 63). Age range greater than 60 years of age. Not all measures were collected on all participants due to data collection preferences of different therapists. The primary outcome measure was the total number of falls for the entire cohort 6 months pre OEP to 6 months post OEP. Some residents accounted for more than one fall. The total number of falls experienced by participants in the program after 6 months (N=63) demonstrated a 46% reduction of total falls at p=0.036, and those participants that completed the full 52 weeks in the program (N=18) fall reduction was 76% at p=0.025. Secondary outcomes measures included the TUG, 30STS, GV, and 2 or 6 MWT. Results for these measures were as follows: TUG (N=58) 52% of subjects achieved MDC for this measure; 30-second sit-to-stand test (total N=58) 47% of the participants improved in their overall scores (MDC not available for this population), gait velocity (N=35) 23% of participants met MDC, [9] and 2 or 6 MWT (n=29) 66% of subjects met an MDC. [8-11] *P* values were not reported for the secondary measures because the authors' opinion was that the number of subjects that met an MDC was more clinically meaningful and relevant to a front-line therapist.

Additional clinically significant findings included: The number of individuals who had experienced a fall before implementation of the OEP was 41 (65% of total participants) compared to the number who had experienced a fall after 6 months of the OEP was 25 (40% of total). Based on a TUG a cut score recommended for frail elderly of 32 seconds,[12] 23 participants (40% of total) were fall risk before the program, and 12 participants (21% of total) were fall risk after the program.

Based on a the 30-second sit-to-stand test cut score of completion of at least 12 repetitions [10] the number of participants that demonstrated fall risk before initiation of the program was 48 (83%) compared to 39 (67% of total) after the intervention.

Discussion

The findings from this pilot program are very promising. It was encouraging to observe that the reduction in falls in this group of participants closely approximated those reported in community-dwelling elderly in response to the OEP.

The purpose of this feasibility pilot was to assess application of the OEP in LTC residents in group format for 6-12 months and assess its effect on a participant's fall frequency pre and post OEP implementation. The OEP is a prescriptive program designed to address patient-specific impairments. It follows a standardized exercise delivery protocol to ensure the appropriate dosage of exercise as a patient progresses. Providing the OEP in group format ensured consistent participation and compliance with the program. The OEP group, was promoted as a high-level

balance and strengthening class to potential participants, this appeared to be more attractive and motivating than simply attending other group activities such as a chair exercise group.

To the best of our knowledge, this is the first organized pilot program to assess the full implementation of the Otago exercise program (OEP) in the long-term care setting in the United States. The participants in this pilot program were similar to those reported in the literature, with the majority of subjects being at least 60 years old with a history of falls or a self-reported fear of falling.[13,14] This pilot examined outcome measures collected over one year from providers implementing the program at multiple facilities. Although in the community setting the OEP has been proven to be a highly effective home or group exercise program,[5,6,13,14,15,16,17] the impact the OEP on the reduction in falls in the institutionalized older adult has not been studied.

Conclusion

This pilot demonstrated that LTC residents of varying ages and multiple comorbidities with a history of falls benefited from a modified version of the OEP. Additional subjective improvements were reported by most participants in function and balance confidence.

The results of this pilot justify the need for more formalized study of this delivery method of the OEP in the LTC setting. Future study should include specific gender and age as well as comorbidities of all participants. Standardized outcome measures that have been chosen for the study should be collected on all participants and not based on therapist preference.

Limitations

Weaknesses of the pilot included multiple data collection sites by several therapists, which introduced the possibility of reporting error. There was no formal control. Instead, each patient served as their own control utilizing fall rates for each pre and post OEP implementation. Results were not analyzed according to gender or age. The participants were chosen by their appropriateness for group activity not chosen randomly. Adding a standardized subjective measure to objectify the reported improvements in balance confidence would strengthen future studies.

Acknowledgments

The authors would like to thank the staff at the facilities of SavaSeniorCare who participated in the delivery of the intervention and data collection for this program.

Key points:

- The Otago exercise program appears to significantly reduce falls in older adults in the long-term care setting when delivered in a group format.
- Group participation ensured compliance with the program 3 times per week.

SavaSeniorCare Administrative and Consulting, LLC is a consulting company that provides support and consulting to 169 skilled facilities in the following states: Texas, Colorado, California, Nevada, Wyoming, Kansas, New Mexico, Mississippi, South Carolina, North Carolina, Georgia, Maryland, Connecticut, New Hampshire, Illinois, Wisconsin, Michigan, Tennessee, Pennsylvania, and West Virginia.

This paper was a collaborative effort by the authors who live and work in 3 different parts of the country. Data was collected from several facilities that operate in the Sava system.

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Integrating Evidence-based Fall Prevention in Your Practice: *The Otago Exercise Program*

by Tiffany Shubert PT, PhD

[Editor's Note: Many questions about the Otago Exercise Program were generated by the March 2021 JClub discussion. Tiffany Shubert, internationally recognized for her research relating to the OEP, provides this invited feature article and related resources.]

The Otago Exercise Program (OEP) is an evidence-based fall prevention program developed, evaluated, and disseminated in New Zealand in the mid-'90s. The initial results from the implementation of the OEP were robust, with a 30% reduction in falls in high-risk, community dwelling older adults.[1,2] Over the past 25 years, the effectiveness of the program has been studied in various populations,[3-5] in various settings,[6] as a group exercise,[7,8] and as delivered either virtually,[9,10] through a mobile application, or DVD.[11]

In over 40 studies, the OEP has proven to significantly decrease the risk and rate of falls. Most importantly, the program appears to have the greatest protective effect in older adults who are frailer and more likely to experience a fall-related injury.[12] The OEP has proven to be so effective that it was recognized as a fall prevention program by the CDC in 2010 as part of a nationwide public health effort to call attention to falls in older adults.[13]

What is the secret sauce?

Ingredient 1: The OEP is grounded in the principles of exercise science. It is a structured and progressive strength and balance program that consists of 17 exercises and a walking program. Of the 17 exercises, only one is done in sitting. The client is expected to do the strength and balance exercises 3 times a week for approximately 30 minutes and to walk 3 times a week for approximately 30 minutes. Even though the program was created before the CDC guidelines for older adult physical activity, it aligns with the recommendations of 150 minutes of moderate activity and the inclusion of strength and balance training at least twice a week.

Ingredient 2: The OEP facilitates self-efficacy and ownership of health. The client will only benefit from the exercises if outside of their therapy sessions. The client and therapist will have 5 sessions together during the first 8 weeks of the program. The cadence of these sessions creates a situation where it will immediately become clear to the client that this is "their" program, and the role of the PT is to assess and progress, but not "do" — that is the client's job. Due to the extended time between visits (2 weeks), the client has the time to realize their improvements. For example, a client can do 3 sit-to-stands at the initial exercise prescription but after 2 weeks can do 10 sit to stands. The client has time to improve and to see that it is easier to get in and out of a car. This creates a situation where they realize the benefit and have more buy-in to do their exercise.

Ingredient 3: The OEP is an "evidence-based fall prevention program" which means that the key components of the program are delivered with fidelity. For the OEP, it is critical that the exercise prescription is implemented with fidelity[14] to:

- *Frequency:* 6 sessions a week (3-strength/balance, 3 walking)
- *Intensity:* Selected exercises challenge the client's strength and balance
- *Time:* 30 minutes/session
- *Type:* Limited to the 17 OEP exercises and walking.

Progress

1995 – 1997: In the initial research, the program was delivered in the home by physical therapists (PTs). The PT would select the appropriate exercises from the 17 options. The initial prescription was designed to introduce the exercises to the client and to challenge the client's strength and balance at a moderate intensity. The PT would complete a follow up visit the next week to assess adherence and compliance and then progress the exercise program if appropriate. The PT would then see the client 3 more times, at a cadence of every other week,

to check in and progress. A follow-up visit was scheduled at 6 months for the researchers to assess adherence, compliance, functional performance, and falls history. The results at 6 months were so compelling that the researchers decided to extend the study for another 6 months to assess additional impact.

2021: Translating a research intervention into clinical practice can be a messy process. Many questions and challenges arise such as:

- Does a PT have to deliver the OEP?
- Does it have to be done in the home?
- I can't keep my client on caseload for 6 months.
- I don't think my client will be able to do the exercises independently.
- I started the OEP in home health, but when my client transitioned to outpatient they stopped.

And the list goes on.[15]

We have learned the best practices for the OEP are:

1. the client does the exercises as intended (in other words, the PT does not modify a standing exercise into a sitting exercise);
2. the client is challenged doing the exercises; and
3. the client is able to do the exercises and walking program at the appropriate frequency and duration.

In other words, if you prescribe a set of OEP exercises, and, instead of doing them on their own, they do their exercises as part of an online zoom class, or as part of a group exercise class, they will still receive the similar benefits.

These best practices have opened up many opportunities for physical therapists to expand their role in health and wellness. The OEP has been recognized by the Administration of Community Living as an evidence-based fall prevention program. This creates opportunities for PTs to collaborate with community-based organizations to deliver the OEP. There are several different resources you can access to support your client on their fall risk management journey including YouTube videos, mobile applications, online classes, and in-person group programs.

Training

Start with the foundation. Any PT or PTA can complete the Otago Exercise Program: Falls Prevention Training, hosted by the University of North Carolina at Chapel Hill. The concept behind this online training was to provide physical therapists with an easily accessible, standardized training to support the dissemination and implementation of the OEP as an evidence-based fall prevention program with fidelity. Unlike many other evidence-based programs (Matter of Balance, Stepping On, etc.) the OEP does not have a single entity responsible for training and monitoring. The online training was created to be the equivalent of a certification program and it is a best practice to complete the online training before offering the program to your clients or community.

Initially developed, piloted, revised and launched in 2013, and updated and revised in 2016, the online training has had over 10,000 completions from therapists representing 27 countries. Access the online training here. You will have to register with Greensboro AHEC, UNC's hosting partner. Once registered, you can access the approximately 2½-hour online training, download the course materials, and submit them for CEUs to your state board. Total cost is $50.

In addition to the online training, the UNC website hosts several resources including the original OEP manual, videos demonstrating each exercise that you can download as teaching tools, and marketing brochures.

Once you have your foundation knowledge of the OEP, there are several resources and trainings available online and in real time that you can access to deepen your understanding of how to implement the program effectively. The National Council on Ageing has a fantastic promotional video and several additional resources you can access.

A number of publications on the efficacy of the OEP are available for your reference. We have included several with this article but please note this is not an exhaustive list. There are free resources available online:

- Research
- Implementation Updates: Evidence-Based Fall Risk Management – the Otago Exercise Program. This is a free 1-hour audio course available at Relias Learning (note, scroll down page to locate recording)

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Dr. Tiffany Shubert has been one of the leaders in dissemination of the Otago Exercise Program. She has received funding from the CDC and NIH to study OEP implementation models and is passionate about translating research into practical clinical interventions. She has over 25 publications in peer-reviewed journals and has presented on topics from community-based to clinical management of falls at national and international meetings. As a founding member and leader of the AGPT/NCOA task force she has lead the development of content and resources to support clinical-community connections. In her current role as a Senior Product Manager of Therapy at Relias she is able to purse her passion to provide excellent clinical education for PTs and PTAs practicing in the post-acute care space to make the world a better place for older adults. She has a B.A. in Communication from UC San Diego, a Master's in Physical Therapy from UC San Francisco, and a Ph.D. in Movement Science from UNC Chapel Hill.

Step 2 It: Improving Tolerance to Activity, Balance, and Strength

by Cella Bernier, PT, DPT

Editor's Note: This clinical case commentary is part of content for the May 2021 Journal Club and accompanies the article: Bohannon RW, Crouch RH. Two-Minute Step Test of Exercise Capacity: Systematic Review of Procedures, Performance, and Clinimetric Properties. J Geriatr PhysTher April/June 2019. These case studies are intended to demystify the more formal statistics and format of a peer-reviewed article and translate key concepts into clinically usable information. Join us for Journal Club on the third Tuesdays of January, March, May, July, September and November at 8 pm ET to discuss current concepts with a wide range of peers.

Mr. Sussex is an 86-year-old male receiving home health physical therapy services following a 12-week stay at a rehabilitation center due to complications related to pneumonia. His primary health condition is Chronic Obstructive Pulmonary Disease (COPD). He lives alone in a single story apartment. Mr. Sussex states he is always short of breath and cannot walk even short distances without stopping to catch his breath. He would like to improve his tolerance to activity, balance, and his strength. Mr. Sussex's PT goal: he would like to walk up and down his street when possible and go to the grocery store without feeling weak or short of breath.

Past medical history is significant for recurrent pneumonia, chronic respiratory failure, dysphagia, dementia, hypertension, polyneuropathy, abdominal aortic aneurysm, osteoarthritis and frequent falls. Mr. Sussex is a previous 25 year smoker but has not smoked for more than 8 years.

Prior Level of Function

Prior to his hospitalization, Mr. Sussex ambulated up to 300 feet with use of a single point cane (SPC) and supervision for safety concerns as related to cognitive impairment. He experienced moderate shortness of breath with community ambulation. In his home, he walked 50 feet at a time with use of a cane and reported minimal shortness of breath. Prior to hospitalization, he also prepared light meals for himself in the microwave without difficulty.

Physical Examination

Body Functions and Structures

Mr. Sussex presents with increased thoracic kyphosis, rounded shoulders and forward head posture. Knee extension range of motion is limited by 8 degrees on his left, 10 degrees on his right. Strength of lower extremities is as follows: Hip abduction: 2/5 bilaterally, hip extension: 3/5 bilaterally, hip flexion: 4/5 bilaterally, knee flexion: 4/5 bilaterally, knee extension: 4/5 bilaterally, plantarflexion: 2/5 bilaterally, dorsiflexion: 4/5 bilaterally. The patient has no complaint of pain at the time of the examination. He has a history of 4 falls in the week prior to his most recent hospitalization and rehab stay but has not fallen since his return home, 3 days prior to his first home PT visit.

Activity Limitations/Participation Restrictions

Sit to stand transitions are performed with use of

bilateral upper extremities and contact guard assist (CGA) due to anterior loss of balance. Stand pivot transfers are performed with use of a SPC and CGA. The patient ambulates up to 50 feet with his cane, CGA and moderate complaint of shortness of breath with a rate of perceived exertion (RPE) of 8/10. He demonstrates fair step height with poor heel strike. Mr. Sussex is unable to safely move about his kitchen to prepare meals in the microwave due to unsteadiness and shortness of breath.

Environmental Factors

Mr. Sussex's fall risk is increased due to clutter in the home and his poor understanding of the fall risk it presents. He feels he can safely navigate around boxes and cords and does not like change in his home. Caregiver support in the home is variable. He is dependent on his granddaughter for instrumental activities of daily living. She visits several times a week. He is widowed and estranged from his 6 children. A family friend visits 3 days a week to help with meal preparation and light house cleaning. A home health aide visits once a week to assist with showers. Twenty-four hour supervision has been recommended due to cognitive impairment and safety concerns. However, Mr. Sussex refuses to move in with his granddaughter, live in an assisted living, or hire caregivers to assist him further with daily activities.

Personal Factors

Mr. Sussex is unaware of his cognitive impairment and resentful of living in an apartment rather than his house. He is often anxious about personal medications, schedule changes, or slight changes in his routine each day.

Outcome Measures

Functional mobility and standing balance was assessed with the Timed Up and Go (TUG) Test and Berg Balance Scale (BBS). He performed the TUG in 23 seconds with use of a SPC and one loss of balance while turning. He used a nearby wall to steady himself. He scored 28/56 on the BBS.

The Five Times Sit-to-Stand Test was performed to assess functional lower extremity strength. The test was modified with use of his left upper extremity on a table to his left. He required 21 seconds to complete the task.

Aerobic exercise capacity was assessed with the Two-Minute Step Test (TMST). Vitals signs at rest in sitting prior to the test are as follows: blood pressure (BP) = 118/64mmHg, heart rate (HR) = 70 bpm, oxygen saturation on room air = 94%, respiratory rate = 20 breaths/minute. He required a chair on his left side for stability and one standing rest break during the assessment. He was able to lift his right lower extremity to the measured height (midway between his iliac crest and patella) 18 times. Vitals signs following the TMST were: BP = 130/65mmHg, HR = 72 bpm, oxygen saturation on room air = 94%, respiratory rate = 28 breaths/minute. His rate of perceived exertion (RPE) following the TMST was 6/10. Mr. Sussex required verbal encouragement to complete the test, in part due to limited understanding that he was to step continuously for 2 minutes.

Due Mr. Sussex's lack of understanding during the first TMST the clinician wanted to administer the test again for a more accurate measure of aerobic capacity. However, Mr. Sussex was short of breath and complained of lower extremity fatigue following the test; the test was not administered again in the same session. During the following physical therapy session the TMST was explained again and Mr. Sussex was encouraged to step for the entire 2 minutes with the understanding that if he took a break the timer would continue. Again he used a chair on his left side for stability. Vitals prior to this TMST were as follows: BP: 132/70mmHg, HR: 60 bpm, oxygen saturation on room air: 94%, respiratory rate: 15 breaths/minute. Mr. Sussex did not stop to rest during the test and he was able to keep his feet separated to avoid tripping. He was able to raise his right knee to the measured height 47 times. Vitals following the TMST were: BP: 160/60 mmHg, HR: 66bpm, oxygen saturation on room air: 97%, respiratory rate: 28 breaths/minute. His RPE was 6/10.

Assessment/Discussion

Mr. Sussex has limited safety and independence performing sit to stand transitions, stand pivot transfers, and ambulation despite his use of a single point cane. He is also at high risk for falls based on his history of falls and increased time to complete the TUG. An increased time to complete the Five Times Sit-to-Stand Test demonstrates his limited functional lower extremity strength and increased fall risk. Limited standing balance and fall risk is apparent with his lowered BBS. Polypharmacy, cluttered home, and cognitive impairment also increase his fall risk. Impairments affecting function include kyphotic, forward head posture, decreased knee extension range of motion, limited bilateral lower extremity strength, and decreased aerobic capacity.

Mr. Sussex's lowered score on the TMST indicates a decreased aerobic capacity. Due to posterior loss of balance, Mr. Sussex required left sided support during the test, which is a permitted modification according to Rikli and Jones.[1] During his first attempt of the TMST he required a 35-second standing rest break due to shortness of breath and stating that his feet were beginning to "trip on each other". His first score of 18 steps in two minutes is significantly below the normative value of 59-91 steps in two minutes.[1]

When the test instructions were fully understood during the second attempt of the TMST Mr. Sussex improved his score by 29 steps. His score of 47 steps in two minutes was much closer to normative values of 59-91 steps in 2 minutes. While his second score still supports his limited aerobic capacity there is more confidence in the results due to his improved understanding of the instructions.

Administering the test twice in one day would not have

provided the same results due to muscle fatigue and shortness of breath. Following both performances of the TMST Mr. Sussex complained more of lower extremity muscle fatigue than shortness of breath with an RPE of 6/10 after each TMST. Based on these results it would benefit a patient with cognitive impairment to have a session to practice and learn the test prior to the test being scored.

Since the test was administered over 2 sessions it was a challenge for the physical therapist to document the score in the initial examination. Charting requirements are that documentation must be submitted within 24 hours of a visit. To overcome this obstacle the physical therapist stated her intent to administer the TMST during the next session after learning occurred. The scored TMST with goals was added to the examination as an addendum.

Using the TMST in the home care setting was useful due to the limited space for other aerobic capacity assessments such as the 2-minute or 6-minute walk tests. Unfortunately, Mr. Sussex's limited understanding to perform continuous stepping during the test affected his score. Cognitive impairment could be a limiting factor for using this test. It may be helpful to allow for a practice test during one session followed by the actual test during the next visit.

Writing goals for aerobic capacity based on the TMST can be a challenge since minimal detectable change (MDC) data is unavailable. Instead, the therapist is left to use her best judgement for the patient's progression in order to form short and long-term goals. Taking into account his functional lower extremity strength and his RPE following the TMST, it appeared realistic for Mr. Sussex to improve his TMST by 5 steps in four weeks and 10 steps in eight weeks. The long-term goal for Mr. Sussex was written as follows: "By 8 weeks Mr. Sussex will demonstrate improved aerobic capacity with a TMST score of 57 steps in order to safely navigate to and from his bathroom as well as to attend MD appointments."

The TMST is a useful tool to assess aerobic capacity especially when space is limited such as in the home setting. It also allows for modifications to include more stability or standing rest periods due to shortness of breath. Based on the experience with this patient, the TMST is a viable option to assess aerobic capacity once learning is accounted for in persons with cognitive impairment. Future research to establish MDC and minimal clinically important difference (MCID) would allow clinicians to confidently establish goals for improved aerobic capacity. A better understanding of the predictive validity of the TMST would allow clinicians to link functional performance with aerobic capacity in order to improve functional mobility in daily life. The TMST has provided an objective assessment of aerobic capacity for Mr. Sussex and helped to guide physical therapy interventions and goals in the home care setting.

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The Ups and Downs of Floor Transfers

by Cindy Lane Moore PT, DPT

Editor's Note: This case study is published in advance of the July 20, 2021 Journal Club webinar and accompanies the article: Ardali G, States RA, Brody LT, Godwin EM, Characteristics of older adults who are unable to perform a floor transfer: Considerations for clinical decision-making. J Geriatr Phys Ther 2020; 43(2):62-70.

Mr. Plank is an 84-year-old male who was referred by his primary care physician to home care physical and occupational therapy to address limited ambulation, transfers, and ADLs. Mr. Plank meets the eligibility requirements for Medicare Part A services. His stated goal is to improve his walking distance, steadiness, and engage in more active play with his adolescent-aged grandchildren.

Mr. Plank lives in a one-story home with his wife who performs all the household IADLs and assists him with ADLs as needed. Mrs. Plank reports that her husband fell 5 days ago in the living room while she was in the kitchen preparing dinner. She states that even though he had no pain and did not appear injured, she was "not able to pick him up" and so she called 911. The EMTs assessed him. Mr. and Mrs. Plank thought he was ok; he declined transport to the ED and followed up with his primary care physician the next day. Mrs. Plank reports that her husband also fell several months ago, and, at that time, her nephew was able to come and help him get up. She is hoping he does not fall again, but in case he does, she would like a safe way that she could assist him. They are planning to move to an elevatored senior high rise apartment building in the near future.

PMH: Parkinson's disease, mild cognitive impairment, hypertension, urge incontinence, sleep apnea.

Medications: Carbidopa 25 mg – Levodopa 100 mg tablet 3x/day. All other medications are 1x/day: Lisinopril 20 mg; Hydrochlorothiazide 12.5 mg; Aspirin 81mg; Prevastatin 40 mg; Melatonin 5 mg (chewable); Sertraline 50 mg.

Examination

Resting Vitals: Radial pulse 74 bpm; BP 130/80 mmHg seated, 122/80 standing; SpO2 97%; RR 15 breaths/min

Cognitive Screen: Patient reports forgetfulness and is A+O x3. Patient had 4 errors on the Short Portable Mental Status Questionnaire (SPMSQ), indicating mild cognitive impairment. Patient Health Questionnaire (PHQ-2) was positive for depression; he did not present with suicidal ideations. Mr. Plank underestimates his safety and mobility limitations; and his safety awareness is impaired.

Pain: Patient denies pain.

Transfers: Independent supine-to-sit. Supervision for bed-to-chair and sit-to-stand. Patient indicates exertion (grunting) with those transfers, and supine-to-sit body mechanics appear inefficient. Shower transfers with verbal cues for grab bar use.

Ambulation: Supervised ambulation in home levels 50 feet without device. Gait deviations include short step length, inadequate swing phase hip and knee flexion and ankle dorsiflexion. Shows forward head and kyphotic posture. Supervised on 5 exterior steps with left (ascending) handrail and no device.

Strength and Flexibility: Active range of motion bilateral upper and lower extremities is grossly within functional limits (WFL). Strength of BUEs grossly WFL. 4/5 bilateral hip flexors, knee extensors and dorsiflexors. 3/5 bilateral hip extensors, hip abductors, knee flexors and plantar flexors.

Outcome Measures: Timed Up and Go (TUG) is 20 seconds, no device. TUG-Cognitive (counting back by fives) is 33 seconds, no device. Modified 30-Second Sit-to-Stand is 8 repetitions. Single Leg Stance is 3 seconds on right, 2 on left. Dependent in the 3-point Floor Transfer Test.

Outcome Measures

3-point Floor Transfer Test	Dependent	Assisted (uses chair)
Modified 30-Second Sit-to-Stand (reps)	8	12
Single Leg Stance (sec)	3 on right, 2 on left	7 on Right, 6 on Left
TUG (sec)	20, no device	15
TUG-Cognitive (sec)	33, no device	28, no device
Bed-to-Chair transfer	Supervision	Independent
Sit-to-Stand transfer	Supervision	Independent
Gait Speed (m/sec)	0.50	0.67

Assessment

Mr. Plank presents with generalized lower body weakness with resultant effortful and inefficient transitional movements and limited community mobility. He has a history of recent falls (2 in past 6 months) and Missouri Alliance Home Care (MAHC-10) score of 8/10 (age 65+, 3+ diagnoses, falls history, urinary incontinence, impaired functional mobility, environmental hazards, polypharmacy, and cognitive impairment) indicates high falls risk.

Intervention

Physical therapy plan of care included:

1. Exaggerated amplitude activities in sitting (large reaches from floor to ceiling), standing (high steps forward and backward by kitchen counter, step and reach forward/sideways/backward), and during ambulation (large arm swings, high stepping, "mud walking") with tactile and verbal cueing.
2. Gait training with cueing on levels and non-levels without an assistive device while incorporating multi-task talking and scanning environment.
3. Balance and core training including sit-to-stands with feet in challenging (semi-tandem) positions, backwards walking and side stepping.
4. Transfer training included getting down onto and up from floor using chair support, progressing from also having therapist or wife assistance to no human assistance.
5. Home exercise program expanded to include 3 Tai Chi movements; he was provided contact information for a local Tai Chi group for older adults.

Status After Four Weeks of Physical Therapy

Transfers: Independent with bed-to-chair and sit-to-stand transfers. Mr. Plant's body mechanics for these and for supine-to-sit transfers improved. He is independent with shower transfers with grab bar.

Ambulation: Independent ambulation in home and on driveway/sidewalk without device 200 feet. Improved step length, swing, and head/trunk posture. Independent on 5 exterior steps with left (ascending) handrail and no device.

Discussion

Floor transfers may be an important but unaddressed functional limitation in older adult patient populations. Difficulty getting up after falling is common. Even when a fall does not cause injury, prolonged time spent on the floor puts older adults at risk for other medical problems. Inability to get down and up from the floor has been found to be a marker of failing health and function[1] and predictor of serious fall injuries[1] and death.[2] Timed supine-to-stand correlated with gait speed, grip strength, and Timed Up and Go.[3]

The three-point Floor Transfer (FT) Test offers a simple, reliable, and valid way of measuring and documenting floor transfer task performance.[4] Patients are scored independent, assisted (use of chair), or dependent. Even when patients cannot successfully perform floor transfers, the FT Test can be used to document that inability and serve as a baseline from which later progress may be captured. A dependent FT score may prompt the development of a fall recovery plan, patient education about ways to call for help, and caregiver instruction in how to assist the patient or keep them comfortable until help arrives.

Although a practice settings' federally mandated data sets may not require physical therapists to assess and address floor transfers, patient and caregiver needs may call for it.

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Providing Clinicians the Tools They Need to Succeed

by Joshua Middlecamp, PT, DPT

As physical therapy and the healthcare system evolve, it has become increasingly clear that advanced clinical competency is necessary to thrive. When I graduated from PT school, I knew I needed more to really take my clinical care to the next level. I looked at options for residency and the FOX Geriatric Residency in Physical Therapy (FGRPT) ticked all of the right boxes.

FOX Rehabilitation pioneered an innovative model—delivering care to medically complex older adults whose rehabilitative needs fall somewhere between the typical designation of home health and outpatient physical therapy. Founder Tim Fox, in 1998, set up shop in his basement to utilize Medicare Part B benefits to cover physical therapy services for older people in their home with less bureaucracy and more convenience to clients than a typical outpatient clinic. It has now expanded to 19 states as a primarily clinician-operated, professional private practice of full-time physical, occupational, and speech therapists serving clients whose average age is 83. The FOX premise is an understanding that clinical competency doesn't start and end with clinically excellent care. We understand that clinicians need more to thrive in this complex environment.

What makes the FOX Geriatric Residency in Physical Therapy different?

The FGRPT was built to deliver on-the-job training that falls outside of the typical paradigm of patient treatment and management. For that reason, the program also focuses on domains that are not typically considered in a residency program such as leadership and practice economics. The program is designed to create well-rounded clinicians, who understand not only the importance of delivering high-quality care to efficiently rehabilitate older adults, but also the ins and outs of the system that make this care possible. And so far, it's a success! As one of 20 geriatric physical therapy residency programs in the country, and the first residency housed in a private practice, the FGRPT has graduated more geriatric residents than anybody else in the country—all of whom have gone on to pass the Geriatric Clinical Specialist Examination.

The ins and outs

Whether you're a newly graduated professional, like myself have recently completed the FOX Emerging Professionals Mentor Program, or are a more seasoned clinician with several years of treating under your belt, this program is designed with you in mind. The FGRPT spans just over a year and is highlighted by one-on-one mentoring—100% of which is completed alongside Board Certified Geriatric Clinical Specialists and high-level didactic education from experts internal and external to the practice. What's especially helpful is that the program does not break the bank. With minimal effect to your salary, the FGRPT proves that its focus is on investing in both the clinician and the profession.

Over the past 6 months, I've been attending lectures, working one-on-one with my network of GCS mentors, and working on the FGRPT Capstone Project, a program-specific project focused on quality assurance and improving the lives of both FOX clinicians and patients. Through this project I've had the opportunity to design useful modifications to the practice's EMR system, collaborating with leadership from all departments of the practice to facilitate efficiency and success with implementation on a practice-wide level. I've gained great insight on the importance of not only the provision of clinically excellent care; I've also trained in the business and fiscal responsibilities that need to be considered to successfully run a practice.

What's next?

The work is challenging for sure, but I would do it all again if given the opportunity. Seeing the growth in my clinical skills has me truly excited for the future. The program has been incredibly rewarding and has introduced me to a network of like-minded individuals and life- long mentors whom I can really see as friends one day.

Josh Middlecamp graduated from Rutgers University in 2019 with a Doctorate in Physical Therapy. He graduated from the FOX Emerging Professionals Mentor Program in 2020 and is currently enrolled in the FOX Geriatric Residency in Physical Therapy. Josh currently practices in King of Prussia, Pennsylvania.

Addressing Mobility Before Stability

by Megan Mitchell PT, DPT

Falls are the leading cause of fatal and non-fatal injuries in the older adult population in the United States. Falls are prevalent, dangerous, and can have long-lasting impacts on an older adult. Falls in older adults are often associated with multiple risk factors, such as decreased strength, restricted ankle mobility, reduced balance control, gait disorders, medications, and environmental factors.[1] Many of these factors were true for "Mr. Pete," a client I encountered during my residency program.

Different therapeutic interventions have been utilized to address balance deficits and reduce risk of falls. Sherrington found that combining functional training and balance training reduced risk of falls by 24%.[2] Most of the research on balance interventions has addressed global deficits in strength, static balance, and functional mobility. There is a lack of research that looks at addressing mobility deficits first and then incorporating stability and dynamic interventions to improve functional balance. The impact of incorporating manual therapy and ankle mobility exercises in people with both ankle range of motion deficits and a history of falls needs to be further investigated. The purpose of this case study is to determine the impact of ordering interventions to restore mobility and stability before dynamic drills to reduce risk of falls in a community dwelling older adult.

Mr. Pete is a 92-year-old man diagnosed with peripheral neuropathy. His main complaints are frequent falls in home and chronic low back pain. Significant medical history includes atrial flutter, cardiovascular disease, peripheral neuropathy, osteoporosis, pneumothorax, sleep apnea utilizing a CPAP at night, and urinary incontinence resulting in nightly self-catheterization. He lives with his wife in a third-floor apartment with zero steps to enter but would require stairs to get to the first floor in a fire or if elevators were disabled.

Another physical therapist initially evaluated Mr. Pete. At the time of case transfer, Pete was independent in sit-to-stand transfers with moderate use of upper extremities. Getting out of bed was difficult and reported with increased pain. He routinely ambulated with a four wheeled walker. He demonstrated loss of balance within 2 steps when attempting ambulation with use of a single point cane (SPC). Mr. Pete has had greater than 10 falls in his home in the last 6 months. His falls occur when walking in the house at night or from room to room without his walker. Pete reports walker is bulky and difficult to navigate in small spaces and prefers his cane.

Mr. Pete's goals: independently ambulate with SPC in home, stand at sink for personal hygiene without loss of balance, and overall increase level of safety navigating throughout home.

Examination

Posture: Kyphosis in thoracic spine, forward head posture, posterior pelvic tilt, and decreased lumbar lordosis in standing position.

Upper Extremity (UE): AROM and strength are within functional range, no pain in movements.

Lower Extremity (LE): limited ankle mobility, unable to raise heels in standing position but strong PF in sitting with knees extended, painful and limited hip extension.

Cardiopulmonary: no dyspnea when walking outside, able to walk one mile in 60 minutes. He reports shortness of breath when bending over to tie shoes or pick something up. Sleeps with a CPAP at night.

Integument: diagnosed with peripheral neuropathy. Pain in right heel in weight-bearing without shoes, skin intact. Red spot on first metatarsal head plantar surface with skin intact, denying pain. Diminished sensation L4-S1 bilaterally to light touch and sharp/dull.

Neurological: denies burning sensation, sudden loss in strength, or loss of dexterity.

Transitions: performs sit to stand from recliner with moderate use of UE for push-off, bracing posterior aspect of LE for support when coming to a complete upright position, using walker for postural stability at the top. Posterior loss of balance in 2/5 trials but was able to successfully right his position with use of walker.

Ambulation: with walker is demonstrated with foot flat at initial contact, decreased pelvic rotation and hip extension. He is able to turn smoothly in large circumference but with difficulty in the narrower hallway. Patient was able to change speed smoothly, perform vertical and horizontal head turns with minimal deviation. When walking backwards, he lost balance in posterior direction but able to catch himself 75% of the time with rollator to prevent fall.

Outcome measures

30-second Chair Rise, Berg Balance Test (BBS) and Modified CTSIB were completed throughout the treatment period. See Table 1.

30 s Chair Rise: 2 with use of UE. Patient reporting pain and guarded in movement. Test was performed by initial therapist, believed to have been chosen secondary to painful transfers unable to complete 5 repetitions.

BBS: Performed at initial evaluation, patient scored 5/56. Patient required moderate assistance to stand

Table 1. Outcome measure data

Outcome Measure	Initial Evaluation Score	Tenth session	20th session	Discharge Score
30s Chair Rise Test	2 with UE (pain in SI joint)	7 with UE	15 with UE 5 without UE	10 without UE
Berg Balance Scale	5/56	22/56	25/56	32/56
Modified CTSIB	Not Tested	41/120	52/120	75/120

secondary to pain, lacked control with descent in stand to sit, unable to stand without support and with eyes closed as well as tandem and on one leg, had difficulty turning with SPC and required assistance, and difficulty weight shifting to perform alternating foot on stool.

Modified CTSIB: Condition 1: both eyes open, firm surface: 30 sec. Condition 2: eyes closed, firm surface: 4 sec. Condition 3: eyes open, foam surface 5 sec. Condition 4: eyes closed, foam surface 2 sec. Test chosen to perform at re-certification secondary to working hypothesis that sensory components of balance are contributing to patient's history of falls. This confirmed that patient is highly vision dependent.

Assessment

Patient was referred to physical therapy due to frequent falls in home and in community. Key impairments discovered on initial evaluation included restricted bilateral ankle passive and active range of motion, impaired sensation on plantar aspect of feet, vision dependency for balance, and impaired reactionary balance strategies all contributing to patient's history of non-injurious and injurious falls. Dosage for balance interventions to reduce risk of falls is variable in the literature. Sherrington et al suggests that a minimum of 50 hours is needed to reduce risk of falls by 31%.[3] Targeted balance interventions at a high enough intensity for 25% failure rate in balance exercises during therapeutic session has been shown to reduce risk of falls.[8] Despite consideration of the chronicity of patient's joint immobility, history of Meniere's disease, and diagnosis of peripheral neuropathy with diminished sensation on plantar surfaces of feet, Mr. Pete appears to be very motivated to participate in physical therapy, has a strong support system, and high health literacy. His prognosis for functional improvement is good.

Interventions

Ankle mobility - Manual therapy techniques and active range of motion exercises were introduced immediately to increase ankle mobility. Grade IV mobilizations were applied to the talocrural joint in open kinetic chain (OKC) and closed kinetic chain (CKC) to increase both dorsiflexion and plantarflexion. Subtalar medial and lateral glides were performed to increase inversion and eversion. After manual therapy techniques administered, patient then performed active-resisted ROM exercises in OKC, progressing to CKC for neuromuscular carry-over. Initially Pete was highly reliant on visual feedback for ankle movements, unable to perform coordinated ankle circles or inversion/eversion without visual feedback. Ankle AROM exercises home exercise program was initiated. After 6 sessions with manual techniques, Mr. Pete was able to perform ankle circles, dorsi/plantarflexion and inversion/eversion eyes open with smooth control and eyes closed with moderate coordination. Approximately 30-35 minutes of the first 10 sessions were focused on ankle mobility and coordination exercises. Subsequently this was reduced to 20 minutes, continuing to perform manual therapy techniques but progressing to standing closed and open chain ankle mobility exercises during the remaining 10 visits.

Static balance - After manual therapy and ankle mobility exercises, static standing balance drills were added to each visit. However, after 4 sessions minimal change was detected. Pete was unable to demonstrate ankle, hip or stepping strategy to recover balance, requiring max physical assistance to prevent posterior loss of balance. He predominantly had weight in his heels and was unable to bring toes to the ground for foot flat. Additionally, he reported shortness of breath and back pain after performing static balance exercises. Pure static balance was replaced with incorporating Tai Chi and ankle mobility exercises. Tai chi has been shown to increase LE range of motion, strength, and proprioception as well as improve ankle strategy in response to perturbations.[4] Tai Chi emphasizes postural alignment, diaphragmatic breathing, active relaxation, weight separation, and coordination in functional movements.[5] Four basic moves were incorporated into therapy sessions: Horse Stance, Bear Roots on One Leg, Tai Chi Stance, High Step. Horse stance was the first move incorporated to allow patient to work on proper postural alignment and diaphragmatic breathing while in stance phase. Initially patient had significant knee flexion in stance phase, variable audible breathing pattern with visible use of accessory muscles over diaphragm. Using this position first with one UE support and progressing to none, incorporating mindfulness to weight distribution throughout feet, focusing on bringing equal weight to both heels and toes. Then added Bear Roots on One Leg which allows for mindful weight-shift of center of mass from one foot to the next focusing on sensation of weight shift and weight acceptance, progressing to lifting one leg up slowly, with one UE support. Tai Chi Stance was introduced for anterior-posterior weight shift as well as gastrocnemius stretch and ankle range of motion. Finally High Step was introduced first with bilateral UE support, progressing to unilateral UE support to introduce single leg balance as is supported by principle 1 of Sherrington's best practices[6] on including single limb stance exercises in balance training to reduce falls.

Functional task training - Introducing gait training with

Table 2. ROM data at initial evaluation and discharge

	AROM R IE; DC.	PROM R IE; DC.	AROM L IE; DC.	PROM L IE; DC.
Ankle DF	2 deg; 2 deg	4 deg; 7 deg	3 deg; 2 deg	5 deg; 10 deg
Ankle PF	5 deg; 40 deg	8 deg; 45 deg	10 deg; 45 deg	15 deg; 48 deg
Ankle Inversion	16 deg; 15 deg	20 deg; 40 deg	20 deg; 20 deg	26 deg; 40 deg
Ankle Eversion	6 deg; 10 deg	10 deg; 15 deg	8 deg; 15 deg	12 deg; 18 deg

single point cane initially focusing on adequate heel strike at initial contact then progressing to forward gaze, then incorporating narrow pathways, changing of directions, horizontal and vertical head turns, and finally incorporating eyes closed or dark environments, walking backwards, side stepping and performing motor and cognitive dual tasks. Emphasis was placed on being able to maintain stability during ambulation in a variety of demanding environments. Different footwear was also introduced in training. Initially performing without shoes for sensory feedback and visibly being able to see when toes touched the ground and toe-off, then introducing shoes and slippers to ensure proper training in all situations patient may come into contact with. Pete's biggest challenges involved turning, side stepping, walking backwards, and cognitive dual tasking. Initially, considerable amount of concentration was required to perform tasks. As his ankle mobility continued to improve and he became independent in his home exercise program, time spent on ankle mobility exercises were reduced and time spent in functional task training was increased.

Other - Other exercises included posterior pelvic tilt holds in sitting, knee to chest in supine and forward flexion to reduce low back symptoms with exacerbations occurred. Some sessions focus on low back pain relief was required secondary to flare-up in symptoms. Additionally, patient was eager to be able to stand from chair without UE support. Through observation patient's biggest limiting factor was inability to weight shift forward in transfer as well as lack of power in LE. Incorporating weight shifting at beginning of transfer, isometric holds in various squat depth levels for proprioceptive feedback and ability to maintain balance in various positions, and power sit to stands from raised position to increase LE power.

Outcomes

Discharge outcome measure results are summarized in Table 1. On initial evaluation patient required UE use to stand from chair, at discharge patient was able to perform 10 repetitions in 30 seconds without use of UE demonstrating improved ankle range of motion and ability to weight shift anteriorly. Table 2 summarizes ankle AROM and PROM demonstrating improvement in mobility for all movements.

Discussion

My original clinical hypothesis was that Mr. Pete's restricted ankle mobility was contributing to impaired ankle strategy, instability in standing, and poor postural control. Mr. Pete's impaired sensation and history of Meniere's disease is most likely contributing to dependency on vision for balance control. Interventions were provided to target ankle mobility as well as movements adapted from Tai Chi to assist in weight shifting and weight acceptance, postural control through dynamic but stable movements. His original goals were to return to ambulation in home with a single point cane, reduce assistance of UE for balance, and stand up from a chair without use of hands on first trial. Although gait training was provided in a multitude of different situations, in discussion with spouse, it was decided to have patient continue to use a walker for long-term safety. Patient increased ankle mobility significantly, especially with plantarflexion and passive dorsiflexion. With improvements in ankle mobility as well as postural control through CKC activities, patient was able to perform sit to stands from bed, hard chair and recliner without use of UE. Patient's SIJ/LBP had only minor flare ups throughout course of treatments. Future studies should further examine the ordering of interventions in patients with musculoskeletal restrictions and high risk of falls.

Conclusion

This case study looked to increase dynamic standing balance and reduce risk of falls in a 92-year-old man with a chief complaint of frequent falls and SI joint and low back pain. He presented with impaired sensation at plantar surface of B feet, dependency on vision for balance, impaired static standing balance without use of UE, impaired/delayed reactive response to perturbations, and significant reliability on walker for ambulation. At discharge he was able to demonstrate static standing balance for >30s without use of UE. Patient was able to demonstrate improved dynamic balance including safely ambulating in multiple directions, stepping over objects, and dual tasking with walker. Patient is able to stand from chair without use of UE demonstrating increase in LE strength and ability to weight shift forward. In conclusion, this case study demonstrates the impact of ordering interventions to restore mobility and stability before dynamic drills to reduce risk of falls in a community dwelling older adult.

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"As you move through this world advocating for what you believe in, do it with love and an open heart."

– Jenn Bruer, *Helping Effortlessly: A Book of Inspiration and Healing*

Finding Balance: Measures for a Comprehensive Assessment

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

Our last 2 articles explored examination and intervention options for individuals functioning at lower performance levels. What about people who are functioning at higher performance levels? We have probably all examined patients that seem on first glance to be doing great, and score well within norms on common measures like the Timed-up-and- go (TUG). However, we know that balance deficits may be nuanced. Barry reported in a systematic review that the TUG has limited predictive ability and should not be used in isolation to identify fall risk.[1] What tests screen for more subtle balance impairments? In this article we will discuss measures of balance for these types of patients.

Horak developed the Balance Evaluation Systems Test (BESTest) to provide differentiated assessment of 6 systems that contribute to postural control.[2] One aim of this test was to identify which aspect of balance was deficient in order to accurately target interventions. The 6 systems examined in this test are as follows:

1. Biomechanical constraints, such as ankle weakness or flexed posture;
2. Stability Limits/Verticality, e.g. control of the center of mass over the base of support;
3. Anticipatory Postural Adjustments, made prior to voluntary movements;
4. Postural Responses, such as the ability to respond to slips, trips or pushes;
5. Sensory Orientation, examining sensory pathways and integration when support or visual surfaces are moving; and
6. Stability in gait, or dynamic balance ability with various walking tasks.[2]

While the BESTest is very comprehensive, the longer time required to administer the 36 items make it less feasible for clinical use. Shortened versions soon emerged. Franchignoni et al introduced the 24-item mini-BESTest in 2010, items best representing dynamic balance.[3] An even more concise version, the Brief BESTest was developed in 2012. The Brief BESTest includes 1 item from each of the subsections of the original BESTest.[4] All of these tests have demonstrated excellent reliability and validity. While the BESTest has some superiority in fall risk assessment, all versions demonstrate utility for predicting falls in multiple populations, including those with Parkinson's disease,[5] stroke,[6] community dwelling adults,[7] people with COPD,[8] and residents of nursing homes.[9] All versions of the test demonstrate better overall accuracy in identifying history of falls than the Berg Balance Scale or the TUG.[10]

If your clinical setting has time constraints and limited equipment, consider using the Brief BESTest as a feasible, valid option for advanced balance assessment. Minimal detectable change values range from 2 - 5.6 points.[5,10] Cut-off scores to predict fall risk range from 9/24 for residents of nursing homes to 11/24 in a population with Parkinson's disease.[5,10]

The Four Square Step Test, another measure to consider for dynamic balance, is unique in that it includes backwards stepping ability. This test has been validated in a number of populations since it's development in 2002.[12] This test is a timed measure of an individual's ability to step forward, sideways, and backwards in a defined sequence over 4 canes set up in a cross pattern. A cut-off score of 15 seconds has been established for older adults. This test is quick to administer and might be considered as a brief addition to standard tests like the TUG, as it adds another piece of valuable information to the multifactorial assessment of balance.[12]

The Multiple-Lunge Test is another measure that is quick to administer and adds another dimension to fall risk assessment. This test requires the participant to take a step which is 60% of their leg length (as measured from the ASIS to the lateral malleolus). This step is repeated for a total of 5 repetitions with the same foot. If an older adult cannot complete 5 steps correctly, an increased risk of falling is indicated.[13]

Next time you are assessing an older adult who appears to present with great balance ability, consider one of these tests to take a closer look. Our next article will discuss intervention strategies for people with high performance balance deficits.

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