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Gait analysis critical diagnostic tool

Shuffling steps, uncertain turns and slow walking speed. Signs of normal aging or something more? Gait analysis can help you find out.

"Gait is a strong indicator of a wide range of health problems, and gait speed has been called the fifth vital sign (in addition to heartbeat, breathing rate, temperature and blood pressure)," said Terry Shea, a physical therapist, geriatric certified specialist and a neurologic clinical specialist, who works in the outpatient neurological rehabilitation area at the University of Wisconsin Hospital and Clinics Rehabilitation Clinic in Madison, Wis.

Problems with gait can also contribute to the likelihood of falls. According to the National Council on Aging, one in three community-dwelling persons over age 65 falls each year, and this rate increases to one in two by age 80. And when the elderly fall, the consequences are serious: falls are the leading cause of injury deaths among older adults (ages 65 and up), taking the lives of nearly 20,000 older adults in 2008.¹

Careful gait screening, plus follow-up analysis and treatment, are critical to resident health and well-being.

Initial gait screening

Shea recommends using these easy screening methods as a first step. They are typically administered by a physician, nurse or physical therapist and should be conducted as part of the admission process:

- **Get-Up-and-Go Test** — The resident rises from a chair, stands in place, walks about 10 feet, returns to the chair and sits down. "You're observing if they struggle with getting up from the chair, their steadiness, whether they get light-headed and the quality of their movements as they walk and turn around," Shea said. "Can they easily lower themselves into the chair, or do they flop? Do they miss the chair?"
- **Timed-Up-and-Go Test** — A timed version of Get-Up-and-Go. "If it takes the resident longer than 14 to 15 seconds, they're at increased risk of a fall, and if it takes 30 seconds or longer, their ability to perform activities of daily living is strongly affected," said Shea. "If a resident can't move quickly, they'll have challenges dealing with their environment."

Located in Seattle is the country's largest assisted living company. Similar tests are conducted at admission, 30 days after and every six months thereafter. "We also build them into our evaluation process

¹Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. [Web-based Injury Statistics Query and Reporting System \(WISQARS™\)](#) (online). Accessed November 30, 2010.

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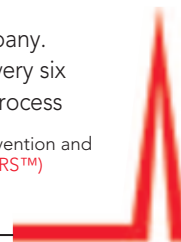
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Risk Reporter talks with John Hoffman, marketing director for exit and emergency lighting at Cooper Lighting



(Gait)

whenever a resident has a major change in their status or has returned from the hospital," said Sara Padilla, vice president of quality service programs for Emeritus.

Ask about falls

Find out if the resident has a history of falls and examine the circumstances surrounding their most recent one. "Ask them what caused them to fall and if there was anything they could have done differently to avoid it," Shea recommended. "If they trip a lot, maybe there are vision issues; if they have weakness, physical therapy might be helpful. You're trying to get at the nuts and bolts of their falls because anyone who has two or more falls a year has a 50 percent chance of falling again."

"We frequently see residents coming into our facilities because of falls," Padilla said. "Understand their history so that you can create a service plan that meets their needs."

Diagnose the problem

If screening indicates gait issues, work with the resident's primary care provider to pinpoint and address underlying causes. Common reasons for gait challenges and falls can include the following, and it's not unusual for residents to be dealing with more than one:

- **Environmental issues** — "Does their apartment have a lot of throw rugs? Is the lighting bad? Is there clutter? These problems have simple fixes that can make a big difference," Padilla said.
- Sometimes it can be a matter of too many things blending together. "If you have a bathroom with a white toilet, a white floor and white walls, a person with vision issues is going to struggle," Shea said. "Color contrasts can help."
- **Inappropriate footwear** — Some residents might choose to live in low-traction slippers, while others embrace heels or a shoe size that fit them 30 years ago. All can cause problems with gait and balance.
 - **Medication** — "Pain medications and those used to treat anxiety typically have a sedating effect that makes it hard to pay attention and slows your reaction time, and those for hypertension can cause dizziness," Shea said. "Some medications affect how the eyes move."
 - **Medical conditions/diseases** — Parkinson's, osteoporosis, hypertension and diabetes are just a few conditions that can contribute to problems with gait and balance. "People with diabetes often don't have good feeling in their feet and legs — when they get up to walk, they might not really know where their limbs are," Shea said. "And, of course, vision impairment is also typical."
 - **Structural challenges** — This includes things like arthritis and other joint-related problems, muscle deterioration, postsurgical issues and spine and back issues.
 - **Cognitive status** — Residents with dementia often struggle to process external data. "Information may be coming into their brain correctly — their vision is OK, their senses are working properly — but the brain isn't able

to process it," Shea said. "A person might think they're moving when they're standing still or vice versa; they might not be able to figure out that others around them are moving."

People suffering from depression can also have spatial challenges. "They might have slow reaction time and not notice their surroundings," Shea said. "When we're walking around, we're constantly scanning the environment, looking ahead and to the sides and adjusting our movement. But if you struggle to pay attention, you don't see those obstacles, you run into things and you increase the likelihood of a fall."

Next steps

If the resident's condition can be diagnosed, treatment is likely to include the following:

- **Medication management** — Shea recommends working with the resident's physician to determine if they can be put on a lower dose of a problematic medication or switched to something new. Padilla also suggested seeing if it helps to give medication at a different time of day.
- **Exercise** — "Exercise can help improve flexibility, strength and mobility," Shea said. "It's not simple, and it takes a commitment on the resident's part, but you've got to try to maximize what you've got."

According to the U.S. Department of Health and Human Services, older adults who are at risk of falls should do balance exercises three or more days a week and exercises shown to reduce falls, such as walking backward and sideways. Tai Chi and yoga are popular choices. All exercise programs should be approved by the resident's primary care provider.

- **Physical therapy/assistive devices** — An experienced physical therapist can determine underlying muscular and structural issues and create a personalized treatment program. If appropriate, they can recommend and select assistive devices, such as braces, canes or walkers.
- **Additional supervision** — "Create a service plan that reflects their care needs," Padilla said. "Ideally, you're involving them in the community. Getting them out of their room is good for their emotional well-being, and it also makes it easier for you to keep an eye on them."

Make sure you don't overpromise the resident or family members. "If, for instance, a resident has Parkinson's, there will be issues with gait and balance, and you may not be able to completely eliminate falls," Padilla said. "Tell the resident and the family the steps you're taking to decrease falls and the risk of injury, but be honest and open about the realities of their condition."

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- **Resources:** The American Geriatrics Society's Clinical Practice Guideline is a helpful tool for preventing falls in older adults: http://www.americangeriatrics.org/health_care_professionals/clinical_practice/clinical_guidelines_recommendations/prevention_of_falls_summary_of_recommendations/.
 - This video summarizes how physical therapy can help improve balance and prevent falls: <http://www.youtube.com/moveforwardpt#p/u/2/4GjKk7ZtJsE>.





Managing Your Risks

Whenever they occur, be prepared for claims

Have you ever wondered if more or less claim activity occurs on certain days of the week at senior living communities? Church Mutual investigated that very subject for the first three quarters of this year.

Wednesdays and Thursdays are the busiest days of the week for liability claim frequency. Individually, each day generates slightly more than 18 percent of the claims.

When it comes to claim severity, Saturdays take the lead with more than 30 percent of the claim costs occurring on that day. One reason could be that more people are out and about on Saturdays visiting senior living communities.

From a workers' compensation standpoint, Thursdays are the most frequent day for claim activity (19 percent of claims), and Tuesdays generate the most costly claims (21 percent of claim costs).

In another recent study we conducted on senior living communities, Church Mutual's claim data indicated that 85 percent of our liability losses involved slip-and-fall claims with guests and visitors. Developing solutions to help reduce slip/trip/fall hazards is a key element when it comes to preventing injuries to residents, guests, volunteers and employees.

One good work practice to follow is to closely monitor changing surface conditions of sidewalks and exterior stairways. Now that winter months are upon us, a little snow or ice on a walking surface can quickly turn a "safe-surface" condition into a potential "accident-waiting-to-happen" situation.

Keeping up with Mother Nature is a maintenance hassle when snow falls and ice patches develop. To help monitor attempts to keep up with changing surface conditions, we suggest you keep a snow and ice maintenance log.

Keep logs for at least a year. They can be very helpful in the event an alleged injury is claimed several months after the reported date of injury.

Edward A. Steele
Risk Control Manager



Winter

Seasonal Spotlight

Stay on top of ice and snow to prevent falls

Icy sidewalks are dangerous. Whether snow is a once-in-a-blue-moon phenomena or a daily possibility throughout the winter months, these tips can help ensure the safety of your residents, staff and visitors:

- **Mark dangerous spots** — Before the snow falls — or at least before it gets too deep — mark anything that could be a hazard if hidden by deep snow.
- **Salt before it snows** — "Put down a good layer when there's snow in the forecast," said Jerry Vecchiarelli, vice president of Sabre Enterprises Inc., a company that specializes in snow removal in Syracuse, N.Y., which is one of the snowiest cities in the U.S. "This keeps the accumulation under control, stops ice and makes it easier to remove the snow."
- **Use calcium chloride when the temperature drops** — Although the cost can be roughly double that of standard rock salt, its freezing point is much lower. "Any time the temperature is expected to drop below 16 degrees, I'd recommend calcium chloride," Vecchiarelli said. "Plus, it won't damage your sidewalks, metal doors or plants."
- **Require safe footwear** — Anyone who's dealing with outdoor maintenance should wear slip-resistant footwear or ice cleats.
- **Keep a snow removal log** — A log helps prove staff took appropriate steps to ensure sidewalk safety and is essential in the event of an accident. Include the name of the person who handled the tasks, tasks performed, time they were performed and the weather conditions. Set parameters so employees know what conditions should prompt them to check sidewalks and parking lots.
- **Know who's responsible** — "Even if you have a contract with a snow removal company, it might be written for new snow only," said Vecchiarelli. "Facility employees are typically responsible for monitoring sidewalks and parking lots otherwise."
- **Designate employees** — Know who will be accountable for keeping an eye on conditions and handling needed salting and shoveling.
- **Remember little-used walkways/exits** — Maintain emergency and secondary exits and outside stairs and don't forget to check the parking lot.
- **Replace indoor mats frequently** — Once a mat is saturated, it's essentially useless. "Depending on conditions, you might need to replace your mats as often as you maintain your sidewalks," said Vecchiarelli.
- **Handy tools and supplies to have** — Remote thermometers make it easy for staff to keep on top of outdoor temperatures, and picks are great for removing stubborn ice. Vecchiarelli recommends using a plastic shovel with an aluminum handle and prefers ergonomic options. "Snow removal is a real workout — choose a shovel that gets the stress off your back and lets you shovel efficiently."

Q | A

A Perspective

Local building codes ensure the proper design and installation of emergency lighting, but are facility owners doing their part when it comes to ongoing testing and maintenance? The answer is “not always.” Since emergency evacuation can already be a challenge, given the limitations of the assisted living population, let’s not exacerbate the situation with malfunctioning emergency lighting. Risk Reporter spoke with John Hoffman, marketing director for exit and emergency lighting at Cooper Lighting, a leading provider of lighting fixtures located in Peachtree, Ga., to learn more.



Risk Reporter: What are some of the key issues covered by emergency lighting codes?

John Hoffman: There are a number of organizations that write codes and standards for emergency lighting. Those written by the National Fire Protection Association (NFPA) are part of NFPA 101, the Life Safety Code, and are used by many facilities. These codes and standards were established to enforce the required illumination levels along the path of egress and the minimum amount of time emergency lights need to run in the event of a power outage (usually 90 minutes). In addition, the ratios between maximum and minimum light levels and the letter size and typeface requirements on signs, among other things, are also regulated.

Risk Reporter: Who’s responsible for enforcing maintenance of emergency lighting?

John Hoffman: Enforcing maintenance is handled by the Authority Having Jurisdiction (AHJ), which is typically the local fire marshal.

Risk Reporter: Walk us through the testing requirements and what they’re measuring.

John Hoffman: There are two requirements — a monthly 30-second test and an annual 90-minute test. The monthly test demonstrates that the emergency light performs appropriately, while the annual test verifies that the battery is functioning properly.

Risk Reporter: There are three ways to test equipment. Please tell us about them and the pros and cons of each.

John Hoffman: Manual, self-diagnostic and computerized. The benefit to manually run the required test is it encourages good record keeping, and the facility manager can also examine each unit to make sure it’s working properly. On the downside, it does take time — which can be an issue if you have a large facility — and in some cases, emergency units can be hard to reach.

Products with self-diagnostic systems, which are one of the more popular choices, are programmed to automatically run the monthly and annual tests, making testing easier and more flexible. Typically, an indicator signals if the unit has passed or failed the test with a flashing light or a beeping sound. Testing doesn’t require any staff time except to follow up and record the results since these types of systems don’t generate a record.

Computerized systems are self-diagnostic and are designed to send information to a central computer or wireless device. They’re excellent for record keeping and require no staff time, but they can be expensive and can be found in large facilities, such as new airports.

Risk Reporter: What kind of record keeping would you recommend?

John Hoffman: My recommendation would be keeping a log of the locations of each emergency exit sign or light, the dates when monthly and annual testing were conducted, who did the testing and any problems that were noted and repaired.

■ **For more information** about emergency lighting requirements and maintenance, please visit the National Electrical Manufacturers Association website at <http://www.nema.org>.