



## KEY POINT SUMMARY

### OBJECTIVES

This study investigated the effectiveness of a night-light system on the weight transfer time (WTT), in two groups of older adults, those with and without fall risks.

The authors hypothesized that compared with conventional wall-plug night-lights, WTT in the sit-to-stand (STS) test would be better with a novel night-light system (providing low-level ambient lighting and better horizontal and vertical visual information) for both groups. A previous study indicated that, in healthy, nonfaller older adults, a similar night-light system was associated with less sway in the early phase of the STS test than with a traditional wall-plug night-light (NL). This study aimed to extend these findings by testing the effectiveness of a similar night-light system on WTT in the elderly.

## Lighting for Improving Balance in Older Adults With and Without Risk for Falls

Figueiro, M. G., Gras, L. Z., Rea, M. S., Plitnick, B., Rea, M. S.

*2012 / Age & Ageing*

*Volume 41, Issue 3, Pages 392-395*

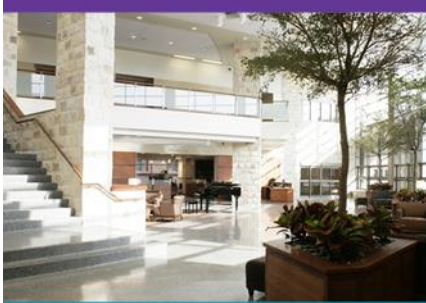
### Key Concepts/Context

Sensory information about self-position and location of objects in the environment helps maintain balance, together with sensory input from the vestibular and somatosensory systems. The dependence on visual information for the maintenance of postural stability and control increases with age due to age-related changes that occur in the vestibular and somatosensory systems. Studies show that lighting enhances veridical visual information about the environment, and this could help older adults maintain better balance and be associated with less falls.

### Methods

The researchers recruited participants who were aged 65 or older ( $n = 48$ ). They assessed postural stability STS test incorporated into the Balance Master, which measures the forces exerted by a person's feet on a plate when he or she shifts his or her center of gravity forward from a seated to a standing position. The Balance Master Report measures: center of gravity sway, WTT, left/right symmetry, and rising index. This paper focuses on WTT in seconds.

The study used three lighting conditions: a high ambient light level (approximately 650 lux at the cornea) from ceiling lights (CL condition), low ambient illumination ( $\leq 0.015$  lux at the cornea) from conventional, wall-plug night lights (NL condition), and low ambient illumination ( $\leq 0.015$  lux at the cornea) with veridical spatial cues from self-luminous horizontal and vertical visual lines (H/V condition). Participants from the two groups (fallers versus nonfallers) underwent three STS trials under the three lighting conditions.



### The Center for Health Design: Moving Healthcare Forward

The Center for Health Design advances best practices and empowers healthcare leaders with quality research providing the value of design in improving patient and performance outcomes in healthcare facility planning, design, and construction, optimizing the healthcare experience and contributing to superior patient, staff, and performance outcomes.

Learn more at  
[www.healthdesign.org](http://www.healthdesign.org)

## Findings

The researchers found that the WTT scores were significantly less under the CL and the H/V conditions than the NL condition. Further, fallers had a significantly greater WTT under the NL condition than both the CL and the H/V conditions.

These findings extended those from the previous study by showing that WTT under the enhanced night-light system (H/V condition) were similar to those under high levels of ambient illumination (CL condition). Further lighting effects were greater for fallers than for nonfallers.

## Limitations

The authors identified some limitations to this study.

- The height of the blocks on which fallers sat while performing the STS test was higher than those on which the nonfallers sat; the results for the nonfallers group might be less realistic than those for fallers because both groups will most likely use similar height chairs in everyday life.
- The study was done in a laboratory, so the findings need to be replicated in real-life situations and assessed for acceptability and cost.

## Design Implications

The study confirmed that the enhanced night-light system that provides robust veridical visual cues promoted better postural stability and control. This suggests that the enhanced night-light system may help prevent falls in the living environments of seniors. Therefore, this enhanced night-light system can be considered when designing the living environments of seniors to promote better postural stability and control of older adults.