Innovations in Physical Therapy: Motor-Cognitive Strategies for Reducing Falls

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Walking Woes: The Cognitive Connection

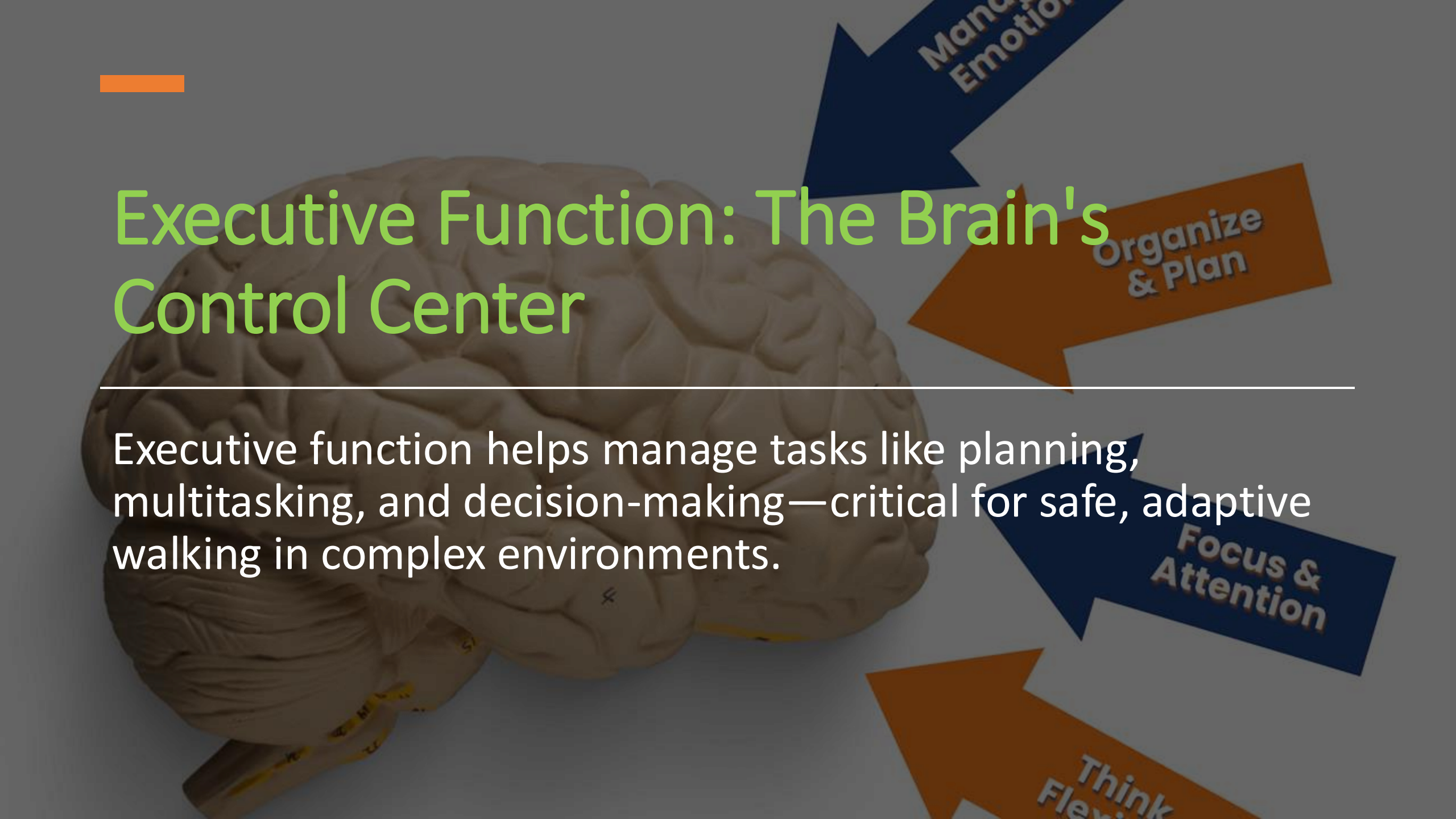
Do you know any “Jim”?

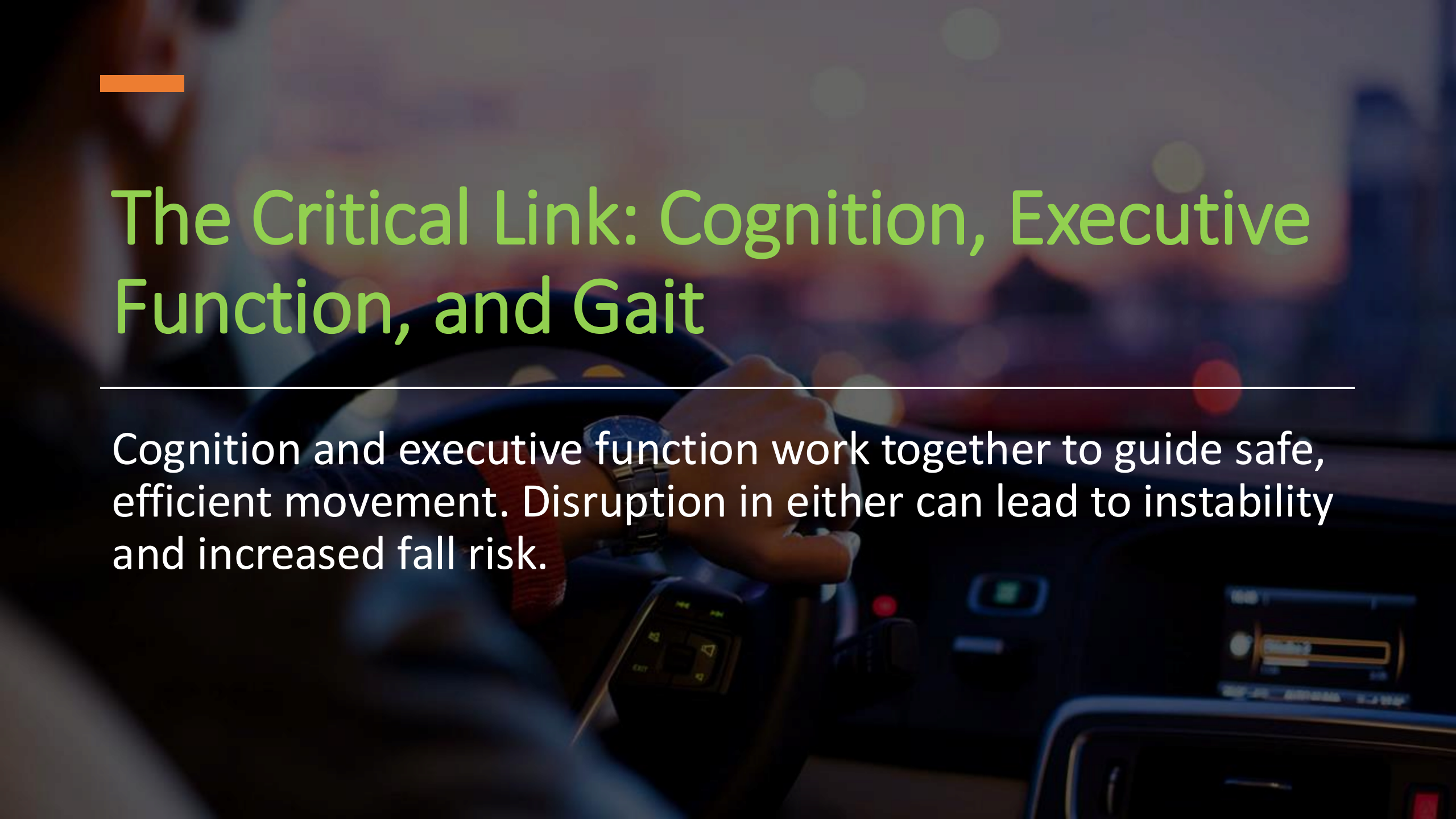
Cognition: More Than Just Thinking

Cognition involves attention, memory, and processing information—key elements that guide safe and efficient movement, especially when walking.

Executive Function: The Brain's Control Center

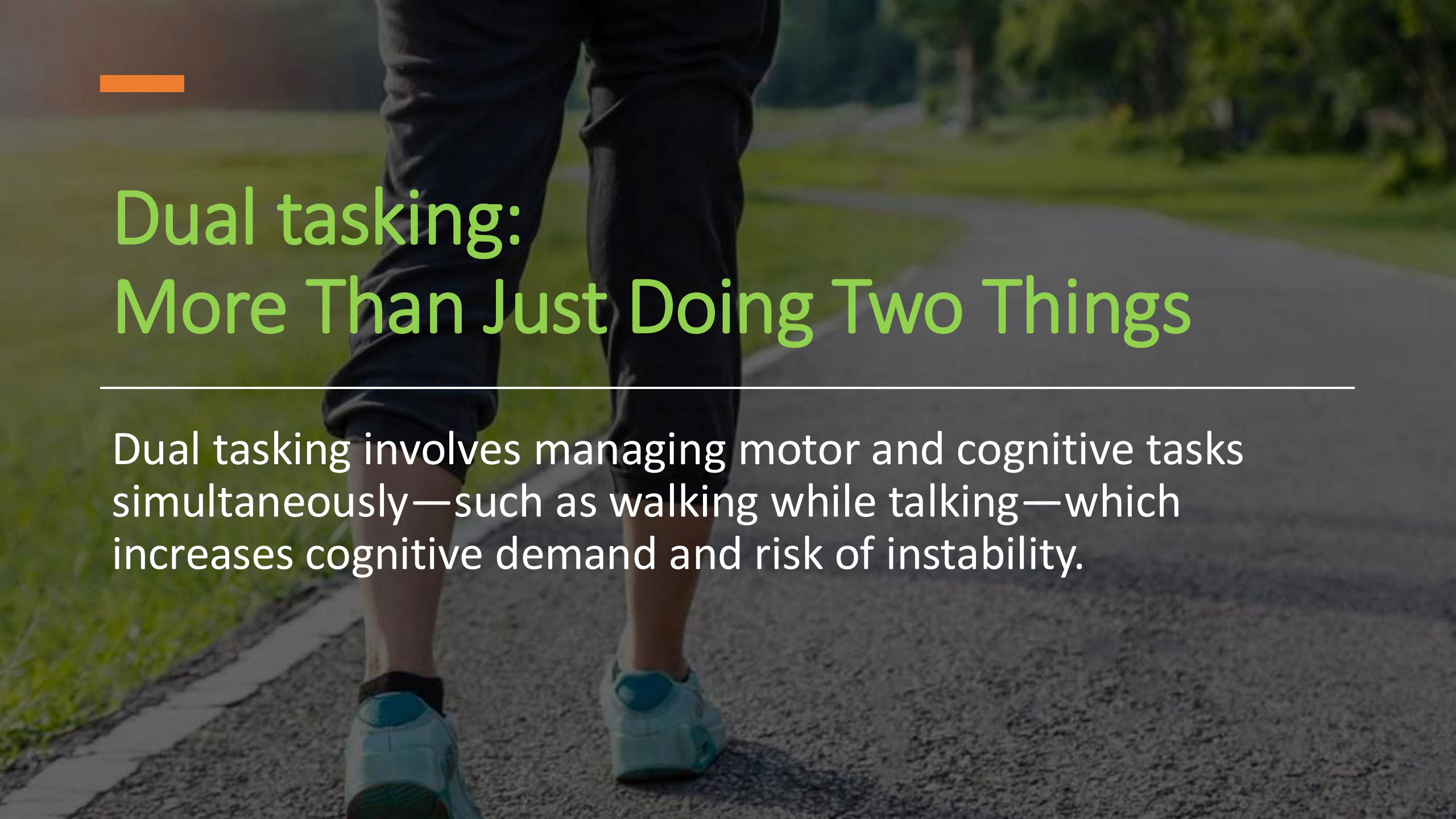
Executive function helps manage tasks like planning, multitasking, and decision-making—critical for safe, adaptive walking in complex environments.





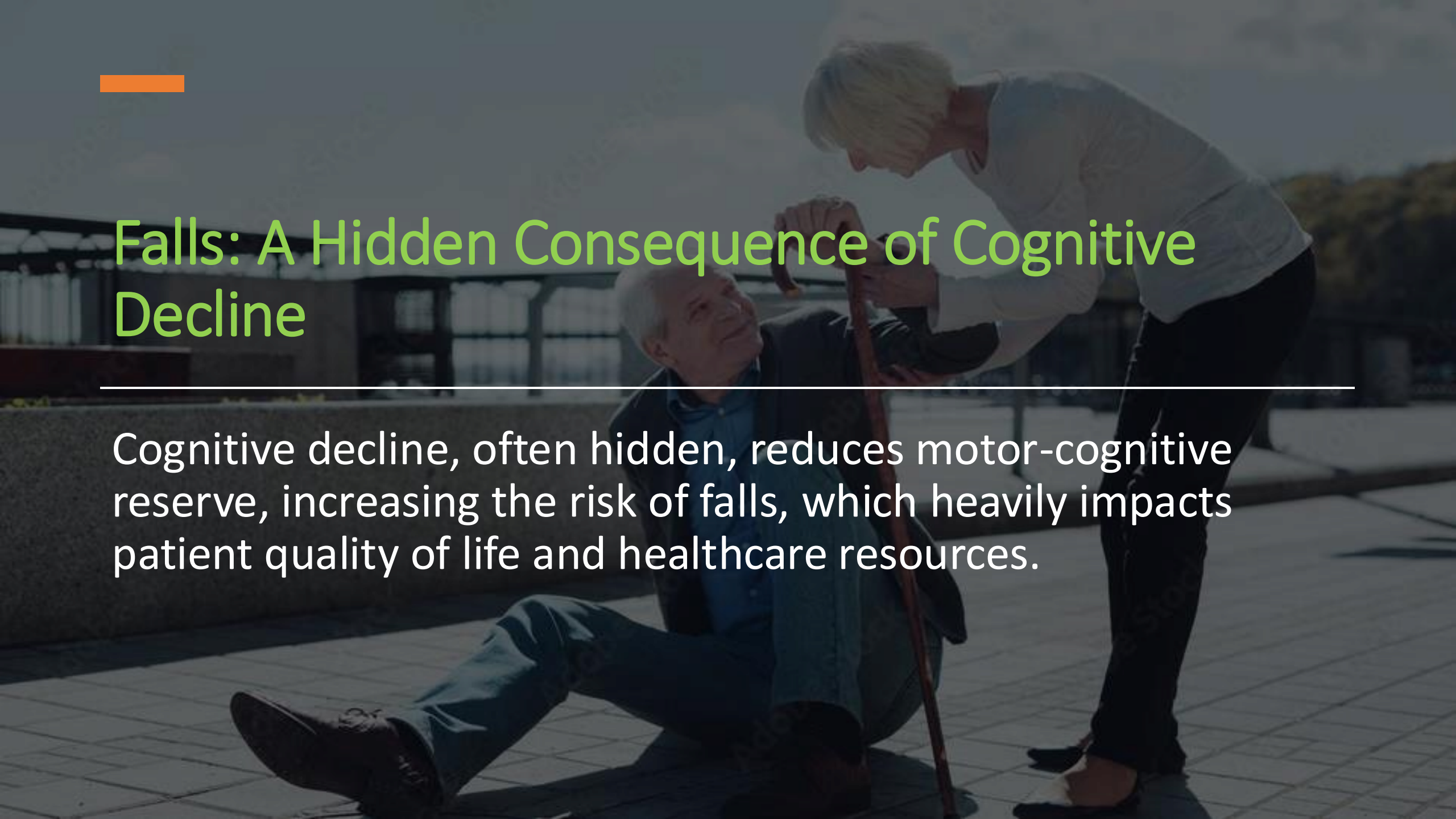
The Critical Link: Cognition, Executive Function, and Gait

Cognition and executive function work together to guide safe, efficient movement. Disruption in either can lead to instability and increased fall risk.



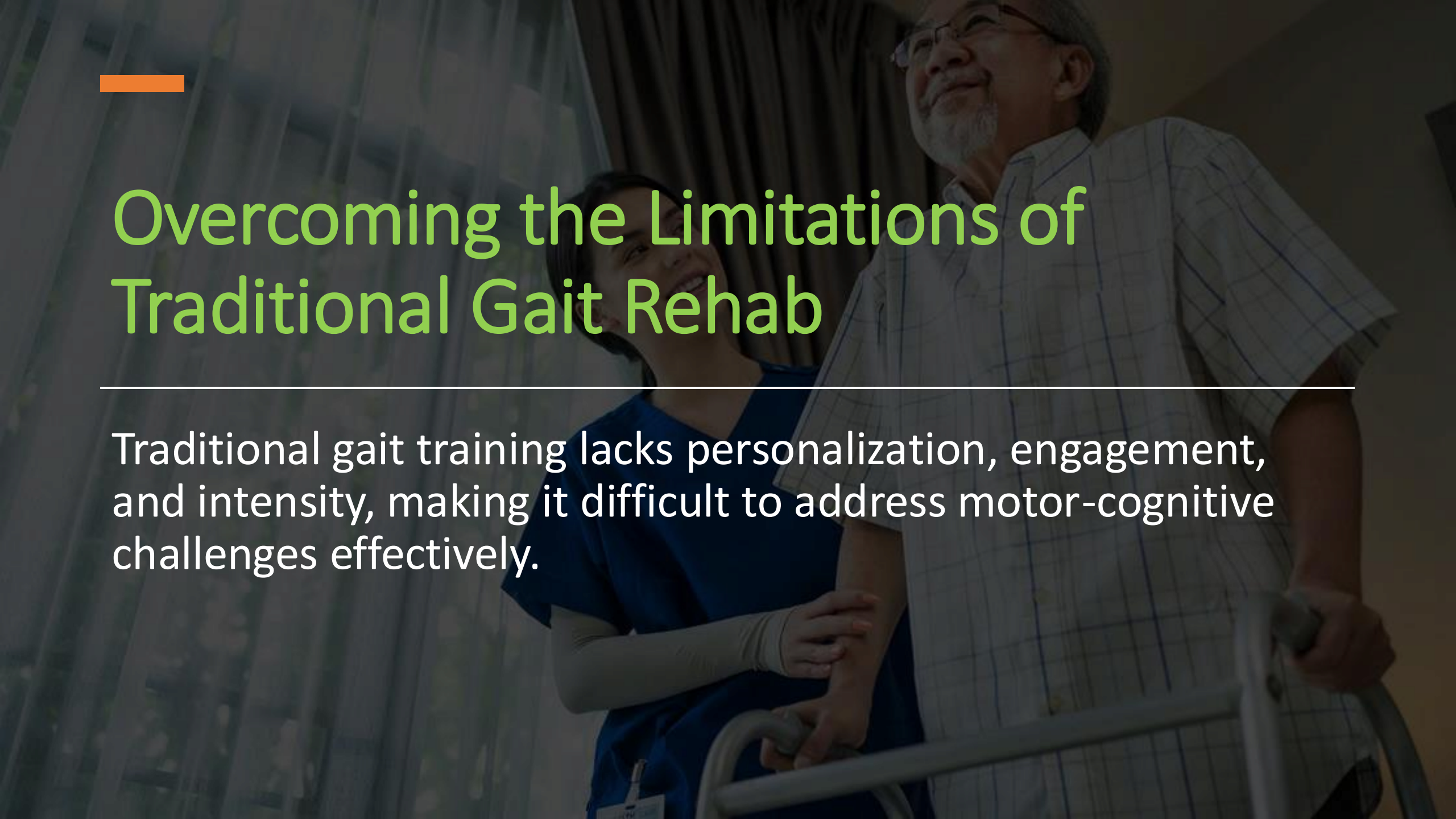
Dual tasking:
More Than Just Doing Two Things

Dual tasking involves managing motor and cognitive tasks simultaneously—such as walking while talking—which increases cognitive demand and risk of instability.



Falls: A Hidden Consequence of Cognitive Decline

Cognitive decline, often hidden, reduces motor-cognitive reserve, increasing the risk of falls, which heavily impacts patient quality of life and healthcare resources.



Overcoming the Limitations of Traditional Gait Rehab

Traditional gait training lacks personalization, engagement, and intensity, making it difficult to address motor-cognitive challenges effectively.

GaitBetter: A New Approach to Motor-Cognitive Training

GaitBetter is an innovative system that uses virtual simulation and treadmill training to target both motor and cognitive skills, offering a more effective and engaging rehab solution.


Hurdles: 3/6 (50%)
Puddles: 1/2 (50%)
Decisions: 0/0 (0%)
PRECOR
GAITBETTER

GaitBetter: Evidence-Based Efficacy

A randomized controlled trial in *The Lancet* demonstrated significant improvements in dual-task gait and cognitive function using GaitBetter.

Supported by 22 peer-reviewed studies, including 5 interventional trials.

Maccabi Health Service Pilot: Real-World Results

A pilot with Maccabi Health Services demonstrated a 71% reduction in falls, fewer ER visits, and shorter hospital stays using GaitBetter.

NYU Case Study: Intensive Gait Training with Virtual Reality

At NYU Langone’s Rusk Rehabilitation, VR-enhanced treadmill training increased gait intensity and patient engagement, demonstrating clear benefits in achieving high-intensity gait training (HIGT) goals.

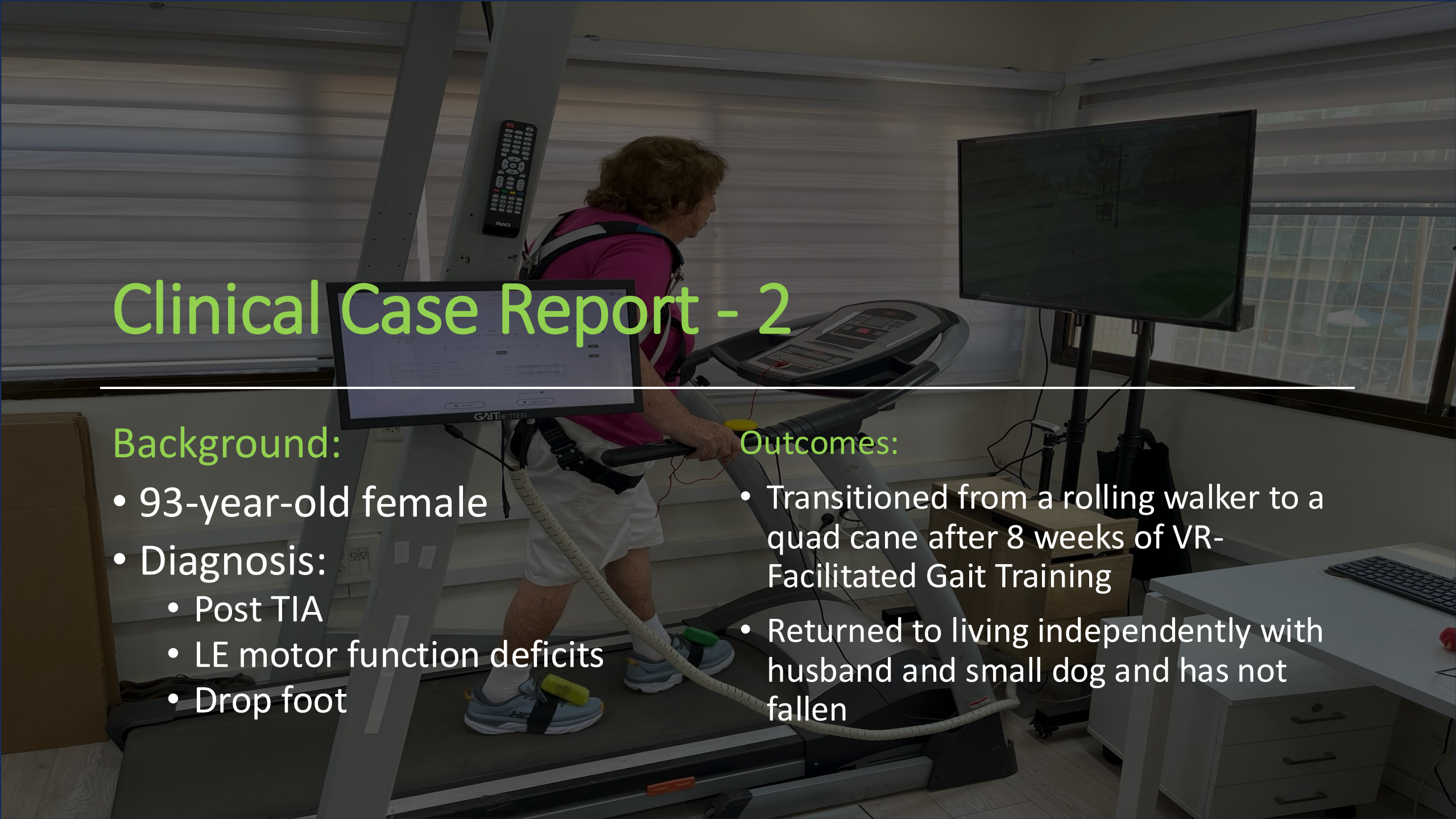
Clinical Case Report - 1

Background:

- 97-year-old female
- Diagnoses:
  - Idiopathic peripheral neuropathy
  - Gait abnormality
  - Weakness / deconditioning
  - Difficulty walking
- Lives independently

Outcomes:

- Achieved a CV response w/o an assistive device
- Remains independent, navigating home successfully and avoiding falls



Clinical Case Report - 2

Background:

- 93-year-old female
- Diagnosis:
  - Post TIA
  - LE motor function deficits
  - Drop foot

Outcomes:

- Transitioned from a rolling walker to a quad cane after 8 weeks of VR-Facilitated Gait Training
- Returned to living independently with husband and small dog and has not fallen

Motor Cognitive Training - challenges

- Safety
- Clinic size limitations
- Training intensity
- Subjective measurement
- Time & Equipment
- Creativity

Motor Cognitive Training – Solutions by using VR-facilitated gait training - GaitBetter

- Virtual training
- Safety harness
- Compatible with existing treadmills
- Documentation is easier and more objective
- Fun, engaging and motivating environment
- Fast and easy setup and operation

Reimbursement

- ICD-10 codes (examples)
- New Category III add-on code:
  - **0791T** (add-on code to Gait Training 97116)
- Medicare
- Private Payors

Any questions?

Please feel free to share your thoughts, ask questions, or discuss any related topic

Thank you!

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