

Driving and Peripheral Neuropathy

ADED – The Association for Driver Rehabilitation Specialists

Peripheral neuropathy is a chronic condition that involves damage to the peripheral nerves (National Institute of Neurological Disorders and Stroke, 2022). It can progress slowly over time or more rapidly depending on the cause. Peripheral nerves transmit sensory information such as pressure, light touch, temperature, and pain from the limbs to the brain. Peripheral nerves also send signals to the muscles from the brain to allow a limb to move. Peripheral neuropathy is typically acquired, meaning it is not present at birth, but develops over time and the cause is not always known. Physical trauma, diabetes mellitus, autoimmune diseases, certain cancers, medication side effects, and infections can potentially cause peripheral neuropathy. A common symptom for people with peripheral neuropathy is numbness and difficulty sensing pressure (National Institute of Neurological Disorders and Stroke, 2022) which may progress to a total loss of sensation in the affected area and can have a direct impact on fitness to drive (Meyr & Spiess, 2017). Peripheral neuropathy is usually not curable but depending on the cause, may be managed with medication, adaptations, and lifestyle changes.

Peripheral neuropathy is rarely life-threatening, but the symptoms can be uncomfortable and disrupt a person's day-to-day activities, such as driving (Perazzolo, 2020).

Symptoms that may affect driving include:

- Decreased/abnormal sensation – numbness, tingling, or loss of sensation (i.e., pressure, temperature, light touch)
- Impaired proprioception—or the ability to judge where one's body part is in space (e.g., placing a foot on the correct pedal and accurately modulating the force)
- Pain
- Weakness or loss of movement (e.g., foot drop)
- Impaired coordination

WARNING SIGNS

- Difficulty regulating speed (e.g., driving too fast or too slowly)
- Accidentally pressing both pedals with one foot
- Slowed brake reaction time (Meyr & Spiess, 2017)
- Foot slipping off the pedals
- Difficulty shifting the foot between the brake pedal and the accelerator
- Leaving increased following distances between vehicles due to a lack of confidence in efficient braking
- Slowing early or pressing the brake repeatedly when approaching an intersection or hazard to ensure the foot is on the brake
- Rear-end collisions
- Bumping and/or striking fixed objects
- Difficulty modulating pressure on the pedals (e.g., abrupt acceleration or braking)

NEXT STEPS AFTER IDENTIFYING A PERSON WITH PN:

If you or someone you know is experiencing any of the above warning signs, a comprehensive driving evaluation is indicated. A driver rehabilitation specialist with knowledge about the medical condition can provide a comprehensive evaluation to determine one’s ability to drive, and if appropriate, recommend adaptive equipment to compensate for the changes in function.

REFERENCES

Meyr, A. J., & Spiess, K. E. (2017). Diabetic Driving Studies—Part 1: Brake Response Time in Diabetic Drivers with Lower Extremity Neuropathy. *Journal of Foot & Ankle Surgery*, 56(3), 568–572. <https://doi.org/10.1053/j.jfas.2017.01.042>

National Institute of Neurological Disorders and Stroke. (2022, July 25). Peripheral Neuropathy Fact Sheet. <https://www.ninds.nih.gov/peripheral-neuropathy-fact-sheet#:~:text=More%20than%2020%20million%20people,for%20all%20forms%20of%20neuropathy>

Perazzolo, M., Reeves, N. D., Bowling, F. L., Boulton, A. J. M., Raffi, M., & Marple, H. D. E. (2020). Altered accelerator pedal control in a driving simulator in people with diabetic peripheral neuropathy. *Diabetic Medicine*, 37(2), 335–342. <https://doi.org/10.1111/dme.13957>

CLINICAL PRACTICE RECOMMENDATIONS FOR THE CDRS:

Consider, at a minimum, to include the following assessments in the comprehensive driving assessment:

- Manual muscle strength
- Foot-foot coordination
- Sensation
- Proprioception
- Kinesthesia
- Brake reaction time
- Executive/cognitive function
- On-road evaluation

Based on the results of the comprehensive driving evaluation, the driver rehabilitation specialist may recommend adaptive driving equipment. Specifically, to compensate for the loss of accurate lower extremity control, hand controls to operate the gas and brake pedals, may be recommended if the individual shows potential for continued driving. This type of equipment can be installed in most automatic transmission vehicles and allows the user, after practice sessions and behind-the-

wheel training, to be fully independent. The driver rehabilitation specialist will determine the most appropriate type of equipment; issue a prescription for the installation of the adaptive equipment; ensure accuracy in the placement of the equipment with the vehicle modifier; determine a training schedule for the client; and ensure safe, functional, and independent use of the vehicle adaptations, with follow-up suggestions if the client experiences progressive decline.

To locate a driver rehabilitation specialist in your area or if you are interested in becoming a driver rehabilitation specialist, please contact:

ADED – The Association for Driver Rehabilitation Specialists
 200 First Avenue NW, Suite 505 • Hickory, NC 28601
 (866) 672-9466 Toll Free in the US & Canada • info@aded.net • www.aded.net