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## **The effectiveness of using wheelchair seating principles to optimise the driving performance of drivers with spinal cord injury: Illustration through Case Studies**

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When teaching new drivers with spinal cord injuries, driving instructors frequently reported difficulty with the drivers losing their balance in the vehicle, particularly when turning corners. This resulted in slow progress in driver training and a loss of confidence in the driver.

The theoretical principle assumes that when wheelchair seating principles are applied to the driver's set-up it will improve the stability of the driver allowing increased strength to be transferred to the steering wheel without losing their balance, which enhances their driving performance. After observing a positive result in novice drivers the therapist wanted to evaluate this theory on experienced drivers with SCI.

This theory was formally tested on the skidpan and race track, in an environment where drivers are pushed to their limits and where limitations resulting from their disabilities are exaggerated and changes are measureable. Four participants with different levels of spinal cord injuries were evaluated in driving school vehicles. They completed four timed tests. These tests were initially done with a driving position that the participant considered 'normal', then repeated with seating principles applied. A third performance allowed each driver to choose a position of their choice. Their times were compared against their subjective feedback regarding their performance.

The theory was considered successful if the drivers voluntarily chose to adapt their driving position in their own vehicles due to their perception that it had improved their driving performance. The skidpan tests confirmed the theoretical principle and uncovered valuable insights into positioning to enhance driving performance.