DETERMINANTS OF PERFORMANCE ON SPECIFIC ON-ROAD SKILLS IN MULTIPLE SCLEROSIS

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ABSTRACT

Summary: In this prospective cross-sectional study, we investigated the cognitive, visual, and motor deficits underlying poor performance during on-road driving in 102 individuals with multiple sclerosis (MS). Thirteen specific skills categorized into hierarchic clusters of operational, tactical, visuo-integrative, and mixed driving were assessed during the on-road evaluation. Stepwise regression analysis identified the off-road skills that influenced overall performance on the on-road test and in each cluster. Study results showed that visuospatial function (p=0.002), inhibition (p=0.008), binocular acuity (p=0.04), vertical visual field (p=0.02), and stereopsis (p=0.03) together accounted for the highest variance in total on-road score (R²=0.37). Attentional shift (p=0.0004), stereopsis (p=0.007), glare recovery (p=0.047), and use of assistive devices (p=0.03) best predicted the operational cluster (R²=0.28). Visuospatial function p=0.002), inhibition (p=0.002), reasoning (p=0.003), binocular acuity (p=0.04), and stereopsis (p=0.005) best determined the tactical cluster (R²=0.41). The visuo-integrative model (R²=0.12) comprised binocular acuity (p=0.007) and stereopsis (p=0.045). Inhibition (p=0.0001) and binocular acuity (p=0.001) provided the best model of the mixed cluster (R²=0.25). These results provide more insights into the specific impairments that influence different dimensions of on-road driving and may be used as a framework for targeted driving intervention programs in MS.
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