

***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 ($R^2=0.37$). 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 ($R^2=0.28$). 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 ($R^2=0.41$). The visuo-integrative model ($R^2=0.12$) 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 ($R^2=0.25$). 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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