

# Involvement In Sport: A Somatopsychic Rationale For Physical Activity



## Effects of Age and Task Load on Drivers' Response Accuracy and Reaction Time When Responding to Traffic Lights

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Due to population aging, elderly drivers represent an increasing proportion of car drivers. Yet, how aging alters sensorimotor functions and impacts driving safety remains poorly understood. This paper aimed at assessing to which extent elderly drivers are sensitive to various task loads and how this affects the reaction time (RT) in a driving context. Old and middle-aged people completed RT tasks which reproduced cognitive demands encountered while driving. Participants had to detect and respond to traffic lights or traffic light arrows as quickly as possible, under three experimental conditions of incremental difficulty. In both groups, we hypothesized that decision-making would be impacted by the number of cues to be processed. The first test was a simple measure of RT. The second and third tests were choice RT tasks requiring the processing of 3 and 5 cues, respectively. Responses were collected within a 2 s time-window. Otherwise, the trial was considered a no-response. In both groups, the data revealed that RT, error rate (incorrect answers), and no-response rate increased along with task difficulty. However, the middle-aged group outperformed the elderly group. The RT difference between the two groups increased drastically along with task difficulty. In the third test, the rate of no-response suggested that elderly drivers needed more than 2 s to process complex information and respond accurately. Both prolonged RT and increased no-response rate, especially for difficult tasks, might attest an impairment of cognitive abilities in relation to aging. Accordingly, casual driving conditions for young drivers may be particularly complex and stressful for elderly people who should thus be informed about the effects of normal aging upon driving.

**Keywords:** reaction time, response accuracy, driving, aging, cognitive impairment

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### INTRODUCTION

Driving requires processing large amounts of information simultaneously, e.g., external information about other drivers, road signs, traffic lights, in-vehicle information and individual information related to one's own driving actions. Management of such large amounts of information requires to select useful cues and to give priority to the most relevant. Overall, a given

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