

## Publication

### Very preterm birth and cognitive control: The mediating roles of motor skills and physical fitness

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The neurophysiological mechanisms underlying executive function deficits in very preterm born children still remain unclear. Moreover, evidence on factors that can be modified by behavior and exert an influence on these deficits is lacking. The present case-control study examined the association between very preterm birth and neurophysiological indices of response inhibition (i.e. the N200-P300 complex) as well as the potential mediation of this association by aspects of physical fitness. 54 children born very preterm completed a submaximal cycling ergometer test and a motor skill test battery. Event-related potentials elicited by a Go/NoGo task were recorded using electroencephalography. Cases were then matched to full-term children (age: 11 ± 0.7 y). A higher error rate on NoGo trials was found in children born very preterm compared to those born full-term. Path-analyses further revealed that very preterm birth was associated with decreased NoGo P300 amplitude. Motor skills, but not aerobic fitness, fully mediated this association. In early adolescence, very preterm birth is associated with less effective recruitment of attentional resources for stimulus evaluation processes. The improvement of motor skills rather than cardiorespiratory fitness appears promising for reducing this specific impairment in cognitive control.

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