

## The Effects of Acute Physical Activity on Measures of Inhibition in Pre-School Children

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**Abstract :** Background: Due to the developmental trajectory of executive function in preschool age, the majority of existing studies investigating the association between acute physical activity and cognitive control have focused on adolescents and adult population. Aim- The aim of this study was to investigate the possible effects of physical activity on the inhibitory control of pre-school children. Methods: This is a prospectively designed study that was conducted in a primary school in Bristol in June 2015. The total number of subjects was n=61 and 20 trials of a modified Eriksen Flanker Task were completed before and after a 30-minutes session of moderate exercise (including both 5 minutes of warm up and cool down). For each test a pre- and post-test assessment took place that included both congruent and incongruent trials. The congruent trials were considered as the control condition and the incongruent trials as those that measure inhibitory control (experimental condition). At the end of the assessment, the participants were instructed to choose the face that described their current feelings between three options (happy, neutral, sad). Results: There was a trend for increased accuracy following moderate exercise, but there was statistical significance ( $p > .05$ ). However, there was statistically significant improvement in the reaction time following the same type of exercise ( $p = .005$ ). Face board assessment revealed positive emotions after 30 minutes of moderate exercise. Conclusions: The current study supports findings from previous studies related to the benefits of physical activity on the children's inhibitory control and provides evidence of those benefits in even younger ages. Further research should take place considering each child individually. Implementation of those findings could result in an improved curriculum in schools with additional time spent on physical education courses.

**Keywords :** cognitive control, inhibition, physical activity, pre-school children

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