Association between executive functions and gross motor skills in overweight/obese and eutrophic preschoolers: cross‑sectional study.

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BMC Pediatrics 22: 498, 2022.

Background: Preschool age (3–5 years old) is a crucial period for children to acquire gross motor skills and develop executive functions (EFs). However, the association between the qualitative gross motor skills and EFs remains unknown in preschoolers, especially among overweight and obese children.

Methods: This was a cross-sectional, exploratory, and quantitative study carried out on 49 preschool children, divided into two subgroups according to their body mass index (overweight/obese: 24; eutrophic [normal weight]: 25). The mean age was 4.59 years. More than half of the sample were boys (55%) and most of the mothers had completed high school (67%) and were class C socioeconomic level (63%). Gross motor skills were assessed using the Test of Gross Motor Development-2, while EFs were evaluated using Semantic verbal fluency (SVF), Tower of Hanoi (TH), Day/Night Stroop, and Delayed Gratification tests. Multiple linear regression models adjusted for sex, age, maternal education, socioeconomic status, quality of the home environment, and quality of the school environment using the stepwise method were executed, considering the cognitive tasks as independent variables and gross motor skills as dependent variable.

Results: The overweight/obese preschoolers showed worse locomotor skills than their eutrophic peers and below average gross motor quotient (GMQ). Overweight/obese girls performed worse in OC skills than boys with excess weight. SVF (number of errors) and TH (rule breaks) explained 57.8% of the variance in object control (OC) skills and 40.5% of the variance in GMQ ($p < .05$) in the overweight/obese children. Surprisingly, there was no significant association between any of the EF tasks and gross motor skills in the eutrophic children.