

Effects of physical activity interventions on cognitive performance of overweight or obese children and adolescents: a systematic review and meta-analysis.

Childhood obesity is a major public health concern globally. The chronic, relapsing disease not only confers adverse health effects but has been shown to impair cognitive performance (CP). Studies of children living with obesity have identified reduced attention focus, problems in the visuospatial organization and nonverbal ability, impaired working memory, and increased susceptibility to decision-making disorders.

Physical activity can prevent overweight and obesity, while simultaneously have beneficial effects on cognitive function. Yet, few studies have observed the impact of exercise on CP of children living with overweight obesity. If they have, they have not identified the different CP outcomes that improved and those that did not extensively. CP can be divided into five domains: Core Executive Function's (EF's), Higher-level EFs, Non-EFs, Academic Performance and Life Skills. (see figure 1).

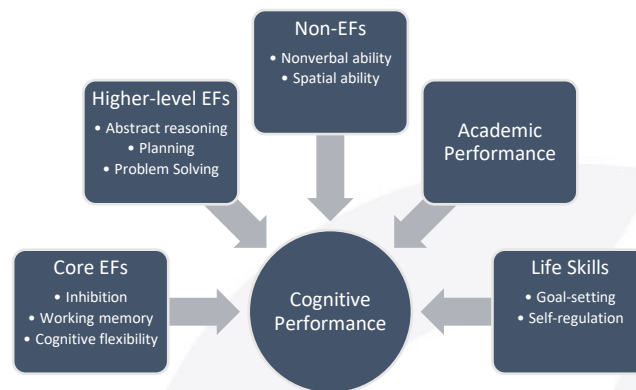


Figure 1 - The five domains of cognitive performance (CP)

The systematically reviewed studies were extracted from PubMed and published before October 2019. After screening, seventeen studies met the inclusion criteria. Of these, ten were randomised controlled trials. There was wide geographic representation with studies conducted in eleven countries including the United Kingdom, Spain, Denmark, Belgium, France, and Italy.

It was concluded that exercise contributes to improved CP in children living with overweight and obesity, particularly for core EFs and non-EFs and in the short term. The benefit for higher-level EFs (abstract reasoning, planning, problem-solving), cognitive life skills, and academic performance was on the other hand less significant.

Future studies should look at the different physical activity intervention methods and mediums in more detail, as improvements to CP are not uniform across all.

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