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Systematic review and meta-analysis investigating moderators of long-term effects of exercise on cognition in healthy individuals

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Abstract

As cognitive function is linked with academic achievement, career success and mental health, there is a need to understand how the cognitive benefits of long-term exercise can be optimized. Our meta-regression included 80 randomized controlled trials and examined moderators of the effects of exercise on cognition in healthy individuals. The summary effect was small and did not differ between cognitive domains. Higher benefits of exercise on cognitive function were found after coordinative exercise compared with other exercise types. With longer intervention length, the effect size increased with longer session duration. Exercise was less effective in female compared with male individuals, and the dose–response relationship differed between sexes. Our findings suggest a general rather than domain-specific effect of exercise on cognition, which is influenced by sex, exercise type and reciprocal relationships between dose parameters. We derive sex-specific recommendations on how cognitive benefits can be optimized by exercise intensity, its progression and exercise type.