

# Is adherence to the Mediterranean Diet associated with healthy habits and physical fitness? A systematic review and meta-analysis including 565,421 youths

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## Abstract

The relationship between adherence to the Mediterranean Diet (MD), physical activity (PA), sedentary behaviour and physical fitness levels has been analysed in several studies; however, there is mixed evidence among youth. Thus, this study aimed to meta-analyse the associations between adherence to the MD and PA, sedentary behaviour, and physical fitness among children and adolescents. Three databases were systematically searched, including cross-sectional and prospective designs with a sample of healthy youth aged 3-18 years. Random-effects inverse-variance model with the Hartung-Knapp-Sidik-Jonkman variance estimator based on DerSimonian-Laird were used to estimate the pooled effect size (correlation coefficient [r]). Thirty-nine studies were included in the meta-analysis, yielding a total of 565,421 youth (mean age, 12.4 years). Overall, the MD had a weak-to-moderate positive relationship with PA ( $r = 0.14$ ; 95% confidence interval [CI], 0.11 to 0.17), cardiorespiratory fitness ( $r = 0.22$ ; 95% CI, 0.13 to 0.31) and muscular fitness ( $r = 0.11$ ; 95% CI, 0.03 to 0.18), and a small-to-moderate negative relationship with sedentary behaviour ( $r = -0.15$ ; 95% CI, -0.20 to -0.10) and speed-agility ( $r = -0.06$ ; 95% CI, -0.12 to -0.01). There was a high level of heterogeneity in all of the models ( $I^2 \geq 75\%$ ). Overall results did not remain significant after controlling for sex and age (children or adolescents) except for PA. Improving dietary habits toward those of the MD could be associated with higher physical fitness and PA in youth, lower sedentary behaviours and better health in general.

## Author keywords

Cardiorespiratory Fitness  
ChildHealthy diet  
Muscular fitness  
Sedentary Behaviour