

The Mediating Role of the Muscle Quality Index in the Relation of Screen Time and Abdominal Obesity with Health-Related Quality of Life in Chilean Schoolchildren

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Abstract

Screen time (ST) and abdominal obesity have a negative effect on health-related quality of life (HRQoL). However, there is little information regarding the mediating role of the muscle quality index (MQI) in these relationships. The aim of the present study was to investigate the association between HRQoL, physical status (i.e., anthropometrics and fitness), lifestyle (i.e., ST and physical activity), and the MQI, and then to determine the potential mediating role of the MQI in the relation of ST and abdominal obesity with HRQoL in Chilean schoolchildren. The cross-sectional study included 750 schoolchildren (girls, $n = 332$ and boys, $n = 418$) aged between 10 and 14 years (11.73 ± 1.08 y). MQI, lifestyle, fitness parameters, waist-to-height ratio (WtHR) and HRQoL were measured. HRQoL presented a significant correlation with WtHR ($r: -0.19$), VO₂max ($r: 0.20$), physical activity after school ($r: 0.26$), ST ($r: -0.26$) and MQI ($r: 0.15$). According to MQI, the high-MQI group reported higher HRQoL than the low-MQI group (low MQI: 36.10 ± 3.63 vs. high MQI: 37.43 ± 4.00 , $p < 0.001$). In the mediation model, ST and abdominal obesity were negatively linked to HRQoL; the indirect effect confirmed that MQI is a partial mediator in the relation between ST and HRQoL (indirect effect = -0.04 ; SE = 0.02 ; 95% CI: $-0.09, -0.01$) and in the relation between abdominal obesity and HRQoL (indirect effect = -1.81 ; SE = 0.83 ; 95% CI: $-3.41, -0.40$). In conclusion, MQI is related to better HRQoL in schoolchildren, and the negative relation of ST and abdominal obesity with HRQoL is mediated by MQI.

Author keywords

fitness; muscle quality index; quality of life; schoolchildren