

A before-school physical activity intervention to improve cognitive parameters in children: The Active-Start study

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The aim of the study was threefold: (a) to test a before-school physical activity intervention (Active-Start) on academic performance, selective attention, and concentration capacity; (b) to test the effect of the Active-Start intervention on anthropometry, body composition, and physical fitness parameters; and (c) whether the physical fitness components are moderators of the effect of the Active-Start program on academic performance, selective attention, and concentration capacity in Chilean children. The Active-Start intervention was a RCT which comprised 170 children (8-10 years old) from three public schools with low socioeconomic status from the city of Santiago (Chile). The exercise intervention was delivered daily, before starting the first school-class (8:00-8:30 am) for 8 weeks. Changes in academic performance, selective attention and concentration capacity, anthropometric, body composition, and physical fitness parameters were measured. The analyses used were mixed regression models for repeated measures over time. No statistically significant changes in attention and concentration capacity were found. However, significant changes were seen in language (0.63; 95% CI 0.49-0.77) and mathematics (0.49; 95% CI 0.32-0.66) performance ($P < .001$). Also, improvements were seen in fat mass, fat-free mass, muscular, and cardiorespiratory fitness (all $P < .05$). The Johnson-Neyman technique revealed a significant relationship between the effect of intervention and attention and concentration when change in

cardiorespiratory fitness was above, but not below, 3.05 and 0.70 mL/kg/min, respectively.

Implementing before-school physical activity programs such as the Active-Start to enhance the cardiorespiratory fitness may benefit attention capacity and academic success among

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academic achievement

attention

cardiorespiratory fitness

exercise

academic success

anthropometry

article

body composition

cardiorespiratory fitness

child

Chile

Chilean

controlled study

exercise

fat free mass

female

human

human experiment

language

major clinical study

male

mathematics

physical activity

school child

selective attention

social status

academic success

attention

cognition

physical education

randomized controlled trial

school

social class

Academic Success

Anthropometry

Attention

Body Composition

Cardiorespiratory Fitness

Child

Chile

Cognition

Female

Humans

Male

Physical Education and Training

Schools

Social Class