Scientific background: Despite public health concerns and the extensively documented health benefits of physical activity, a large proportion of Chilean children do not meet the physical activity recommendations (Aguilar-Farias et al., 2018). Since most children spend a majority of their waking hours at school, this environment is appropriate for the implementation of preventive interventions, particularly those that include activities promoting physical activity (Naylor & McKay, 2009). With the absence of opportunities for physical activity during the school day, before-school programs have become a popular option to help children increasing their physical activity levels (Stylianou, van der Mars, et al., 2016). Although several recent studies support a positive effect of before school-based physical activity on health (Westcott, Puhala, Colligan, Loud, & Cobbett, 2015), less literature has evaluate the cognitive outcomes (Stylianou, Kulinna, et al., 2016) such as attention capacity. **Objective**: To test the effectiveness of an 8-week before-school physical activity program to improve attention capacity, attention-deficit hyperactivity disorder and the different secondary outcomes among a group of socially disadvantaged Chilean children. **Design**: The Active-Start study is a non-blinded randomized controlled trial, conducted with children from three public schools classified as high vulnerable and located in a deprived area of Santiago (Chile). **Methods**: Preadolescents children between 8 to 10 years old, will be randomly assigned to a 8-weeks of a before-school physical activity group or to a control (non-exercise) group. Attention capacity, attention-deficit hyperactivity disorder, academic performance, body composition, physical fitness and social-behavioral outcomes will be assessed before and after the 8-week intervention. All students in fourth grade (aged 8–10 years) within participating schools will be eligible for participation. Exclusion criteria included (1) children with some physical pathology or medical contraindication

to perform physical exercise or (2) diagnosed with learning disabilities or mental disorders.

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Statistical Analysis Plan: the specific statistical methods that we hope to apply for each analysis are; test of normality and homoscedasticity assumptions using Shapiro-Wilk and Levene's tests. Intervention effects will be estimated using mixed linear and logistic regression models, with adjustment for baseline outcomes, and potential covariates. The effect estimates for the quantitative outcome variables will be describe the difference between the mean change in the intervention group and the mean change in the control group. The effect estimates for binary outcome variables will be obtained from logistic regression models and will be presented as odds ratios with 95% CIs. Finally, regression mediation or moderation analyses will be conducted using the PROCESS macro 2.16 to test the mediation or moderation role of several potential covariates.