MOVI-daFIT! Intervention: Rationale and design of a cluster randomized controlled trial testing the effects on improving adiposity, cognition, and subclinical atherosclerosis by increasing cardiorespiratory fitness in children

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INTRODUCTION: High-intensity interval training (HIIT) programs have demonstrated positive effects on cardiorespiratory fitness and cardiometabolic parameters, but their impact on other health parameters (such as body mass and fat) and cognition remains unclear. This paper presents the rationale and methods of a HIIT after-school physical activity (PA) intervention (MOVI-daFIT!) on reducing fat mass and cardiovascular risk, and improving physical fitness, executive function, and academic achievement among children aged 9 to 11 years old. METHODS: A cluster randomized controlled trial (RCT), including 10 schools from Cuenca province, Spain, was designed. Schools were randomly assigned to the MOVI-daFIT! intervention and to the control group. Children were evaluated at the beginning (September 2017) and at the end (June 2018) of the school year. Children in the intervention group were involved in 60-minute after-school sessions 4 days per week developed in the school setting. Each session consisted of 15 minutes of set-up and warm-up games, 28 minutes of games using the HIIT protocol, and 10 minutes of cool down. In addition, children in the intervention and control groups received 2 regular 50-minute physical education

sessions per week, as it is compulsory by law in Spanish schools. CONCLUSION: This study will determine the effect of an after-school physical activity intervention (MOVI-daFIT!), designed as a HIIT program, on reducing fat mass and cardiovascular risk, and improving fitness and cognition, including executive function and academic achievement.