



ORIGINAL ARTICLE

## Effects of programmed physical activity on body composition in post-pubertal schoolchildren<sup>☆</sup>



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### KEYWORDS

Motor activity;  
School health;  
Body composition;  
Overweight;  
Obesity

### Abstract

**Objective:** To assess body composition modifications in post-pubertal schoolchildren after practice of a physical activity program during one school year.

**Methods:** The sample consisted of 386 students aged between 15 and 17 years and divided into two groups: the study group (SG) comprised 195 students and the control group (CG), 191. The SG was submitted to a physical activity program and the CG attended conventional physical education classes. Body composition was assessed using body mass index (BMI), percentage of body fat (%BF), fat mass (FM), and lean mass (LM).

**Results:** A positive effect of the physical activity program on body composition in the SG ( $p < 0.001$ ) was observed, as well as on the interaction time  $\times$  group in all the variables analyzed in both genders. A reduction in %BF (mean of differences = -5.58%) and waist circumference (-2.33 cm), as well as an increase in LM (+2.05 kg) were observed in the SG for both genders, whereas the opposite was observed in the CG.

**Conclusion:** The practice of programmed physical activity promotes significant reduction of body fat in post-pubertal schoolchildren.

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**PALAVRAS-CHAVE**

Atividade motora;  
Saúde escolar;  
Composição corporal;  
Sobrepeso;  
Obesidade

## Efeito da atividade física programada sobre a composição corporal em escolares pós-púberes

**Resumo**

**Objetivo:** Verificar as modificações da composição corporal de escolares pós-púberes após a prática da atividade física programada durante um ano letivo.

**Método:** Amostra composta de 386 alunos, divididos em dois grupos: estudo 195 e controle 191, com idade entre 15 e 17 anos, o grupo estudo (GE) submetido à atividade física programada e o grupo controle (GC) a aulas convencionais de educação física. A composição corporal foi avaliada pelo índice de massa corporal (IMC), percentual de gordura (%G) e massa gorda (MG) e magra (MM).

**Resultados:** Foi possível observar um efeito positivo do programa de atividade física sobre a composição corporal no GE ( $p < 0,001$ ) do grupo e da interação tempo x grupo em todas as variáveis analisadas em ambos os sexos. Foi observadas reduções na %G (média das diferenças = -5,58%) e no perímetro da cintura (-2,33 cm), aumento da MM (+2,05 kg) no GE em ambos os sexos, o contrário foi observado no GC.

**Conclusão:** A prática de atividade física programada promove redução significativa de gordura corporal em escolares pós-púberes.

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**Introduction**

Physical activity can have its most significant effect on the prevention, rather than on the treatment of obesity. That was the conclusion of the authors of a study conducted for fifteen weeks with obese patients who walked 45 minutes five days a week. For the authors, the factors that lead to obesity are family influence, caloric diets high in fats, and insufficient energy expenditure.<sup>1</sup>

The problem for those treating obesity is that, shortly after the end of treatment, conditions return to previous proportions. This is probably due to non-adherence to regular physical activity habits or unhealthy diet, or both.<sup>2</sup>

The approach for preventing and treating excess weight in children and adolescents involves changes in lifestyle, including diet and physical activity, not only in relation to the child or adolescent, but also in relation to the family and to the school and its surroundings.

Some studies have addressed the effects of intervention programs inside and outside the school on body weight control and health of children and adolescents with excess weight. An eight-month intervention program conducted in 18 schools in the Netherlands included an individual educational program consisting of 11 biology and physical education classes to induce changes in energy intake and expenditure, additional physical education classes, and changes in school cafeterias. After the intervention period, significant positive changes in body composition of the adolescents submitted to the intervention were observed.<sup>3</sup>

Therefore, physical activity can produce significant changes in body composition and lean mass (LM), and is an important factor in the control of excess weight in children and adolescents, leading to a decrease in psychosocial disorders, depression, isolation, low self-esteem, and later

exerting a positive influence on hypertension, diabetes, and cardiovascular disease.<sup>4</sup> A meta-analysis evaluating the treatment of pediatric obesity evidenced the limited effects of short-term drug interventions and changes in lifestyle (less than six months of treatment).<sup>5</sup> Nevertheless, studies on long-term interventions (more than 12 months) have shown promising results of physical activity influence on lifestyle changes in and, consequently, body composition, both for prevention and treatment of excess weight in children and adolescents.<sup>6,7</sup>

Therefore, this study aimed to investigate the changes in body composition in post-pubertal schoolchildren after a programmed physical activity intervention implemented in physical education classes during one school year.

**Methods**

This was a simple randomized clinical trial conducted by pairing grades/classes of post-pubertal schoolchildren attending the first to the third year of high school of Colégio Meta, Rio Branco, AC, Brazil, aged 15 to 17 years, during the 2011 school year. This study was approved by the Ethics Committee of Universidade Federal de São Paulo (Edict 1073/10) and by the principal of the school, after an informed consent was obtained from the schoolchildren's parents or guardians.

**Exclusion criteria**

permanent or temporary physical disabilities that prevented anthropometric measurements and the performance of physical exercise; absence at over 25% of physical education classes during the study; and failure to meet the criteria of post-pubertal maturation classification.

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