EFFECT OF PHYSICAL ACTIVITY AND NUTRITIONAL EDUCATION ON ANTHROPOMETRIC PROFILES IN A PAEDIATRIC POPULATION

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INTRODUCTION

The cultural and social changes of recent years have changed the eating habits and physical activity of children. The objective was to determine the effects of nutritional education and vigorous extracurricular physical activity on anthropometric parameters on children in primary education.

METHOD

Participans

The sample group consisted of 87 children (9-11 years) divided between three groups: 41 students in the control group (G0), 21 students in nutritional education group (G1), and 25 students in physical activity and nutritional education group (G2). The study was carried out over 6 months between January and June 2012.

Procedure

The intervention consisted of 60-minute sessions of vigorous extracurricular physical activity (VEPA) [80% of maximum heart rate (MHR) for 35-40 minutes, 60-70% of the MHR for 10-15 minutes, and 50-60% for 5-10 minutes] twice a week. The present methodology has been put into practice in previous studies and was adapted to the age of the participants for this study. The nutritional education sessions informed participants about the benefits of a Mediterranean diet (high fruit, vegetable, legumes, fish, cereals, unsaturated to saturated fat ratio, and low meat, meat products and dairy products) and lifestyle. Nutritional education involved both parents and students. For parents, there were six classes of nutritional education, each lasting approximately 2 hours. One session was provided each week for the first 6 weeks of intervention. Either one or both parents could attend the sessions. For children, there were

two nutritional education sessions during school hours (tutorial hours), each lasting about 1 hour. One session was held each week for the first 2 weeks of intervention. The following measurements were taken: height, weight, skinfolds (triceps, biceps, subscapular, suprailiac, supraspinal, abdominal, thigh, and calf), perimeters (waist, hip, relaxed biceps, flexed and contracted biceps, thigh and calf), and diameters (bicondylar humerus, bistiloid and bicondylar femur). The body mass index (BMI) was calculated from height and weight. We compared the results gathered from the sum of the 8 skinfolds (triceps, biceps, subscapular, suprailiac, supraspinal, abdominal, thigh, and calf), fat percentage was calculated using the Slaughter equation and mass percentage using the Poortman equation.

Data Analysis

We performed T tests and Wilcoxon tests for two related samples to compare changes in anthropometric parameters. All analyses were conducted using the SPSS 19.0 statistics package.

RESULTS

All groups experienced an increase in weight between the pre- and post-test with G0 experiencing the greatest increase ($p<0.001$). BMI significantly increased in group G0 only ($p<0.01$). G0 showed a significant increase in the sum of the 8 skinfolds ($p<0.01$) and in fat percentage ($p<0.05$) at post-test. Conversely, we observed a significant decrease in the sum of the skinfolds and fat percentage in G2 ($p<0.05$). At the same time G2 significantly increased their muscle percentage ($p<0.01$).

DISCUSSION

Many papers have described intervention programs targeting obesity within children. Such interventions tend to focus on physical activity, sometimes in combination with controlled diets or nutritional education. However, it is noteworthy that most of the studies are performed with an overweight or obese population. In contrast, the present study focuses on prevention with a sample which includes normal weight, overweight and obese children. Vigorous physical activity can reduce overall body fat while simultaneously increasing muscle mass. A child can therefore improve their body composition with no significant reduction in BMI. Interestingly, aerobic fitness level is still not well recognized as a screening tool in paediatric populations.

We therefore suggest that other body composition indices may be more appropriate for use in future studies. The results of this study provide evidence that a school-based program incorporating vigorous physical activity and

nutritional education for children and parents can improve anthropometrics parameters in children.

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