

### Body composition and muscular fitness in overweight and obese adolescents: Evasyon Study

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Body composition; Multi-intervention approach; Dual X-ray absorptiometry; Fat mass loss programme; Muscular fitness; Hand-grip strength

**Aim.** Physical fitness has been considered a powerful marker of health, in childhood and in adulthood, independent of physical activity. A low fitness status during childhood and adolescence is associated with important health-related outcomes, such as increased future risk for obesity and cardiovascular diseases, impaired skeletal health. Moreover, the main objectives of weight loss interventions in children and adolescents are to decrease fat mass while maintaining fat-free mass. The aim was to assess the relation between body-fat changes and strength performance in obese adolescents after 13 months in a multidisciplinary intervention.

**Methods.** Multi-intervention approach (diet, physical activity and psychological support in a family-group-based treatment) was implemented with a one-year intervention in 13-to-16-year-old overweight or obese Spanish adolescents. A total of 78 adolescents were recruited from Granada and Zaragoza, males (n=42) (31.98 kg/m<sup>2</sup>) and females (n=36) (32.24 kg/m<sup>2</sup>). We measured body composition with dual-energy X-ray absorptiometry and muscular fitness was assessed by standing broad jump and hand-grip strength. All measurements were made at baseline and 13 months. Non-parametric Spearman's rho partial correlation coefficients were applied to assess the associations between body-fat and strength performance based on anthropometric measurements at the end of the EVASYON treatment programme (13 months), controlling for potential confounders (age and Tanner stage).

**Results.** After controlling for age and Tanner stage, the body-fat during the EVASYON programme was significantly correlated with handgrip strength changes in females ( $\rho = -0.438$ ,  $p = 0.022$ ).

Moreover, in males body-fat changes was correlated with standing broad jump changes ( $\rho = -0.407$ ,  $p = 0.058$ ).

**Conclusions.** We found handgrip strength would be a good predictor of body-fat composition changes in females and standing broad jump in males. However, more researches are needed to find the best physical fitness predictor to body composition changes.

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### Effects of Pilates on the volume of iliopsoas muscles: a longitudinal MRI study

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Palabras clave: Pilates; Iliopsoas; Muscle hypertrophy; MRI

**Aim.** The purpose of the present study was to analyze the effects of Pilates on the volume of iliopsoas muscles.

**Methods.** Magnetic resonance imaging (MRI) was used to determine the volume of gluteal muscles in 9 non-active healthy women, before and after 36 wk of a standardized Pilates training program (50 min/session, 2 session/wk). The MRI images (L1-L2 intervertebral disc to pubic symphysis), were used to calculate the volume iliopsoas. Pre- and postraining comparisons were carried out using the paired Student's t-test. Significant differences were assumed when  $P < 0.05$ .

**Results.** Before Pilates, the volume of iliopsoas was similar in the dominant and in the non-dominant side ( $248.4 \pm 43.4$  vs.  $251.8 \pm 31.8$  cm<sup>3</sup>,  $P = 0.4$ ). Compared to pre-training, after Pilates the volume of iliopsoas was similar in the dominant ( $248.4 \pm 43.4$  vs  $256.5 \pm 31.8$  cm<sup>3</sup>, respectively,  $P = 0.4$ ) and in the non-dominant side ( $251.8 \pm 31.8$  vs  $258.1 \pm 34.0$  cm<sup>3</sup>, respectively,  $P = 0.4$ ). The degree of asymmetry in muscle volume between the dominant and the non-dominant side was also similar before and after Pilates ( $1.3 \pm 4.4$  vs.  $0.6 \pm 1.7\%$ , respectively,  $p = 0.7$ ).

**Conclusion.** This study shows that 36 wk of Pilates do not increase the volume of the iliopsoas muscle group in physically non-active healthy women. The iliopsoas muscles play a secondary role on lumbo-pelvic control during a standardized Pilates training program.

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### Self-Rated Perceptions of Health, Physical Activity and Fitness as predictors of All-Cause Mortality: a 23-year follow-up of the England National Fitness Survey

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Keywords: Health; Physical Activity; Fitness; Perceptions; All-cause mortality

**Objectives.** To study the independent and combined effects of self-rated health (SRH), self-rated physical activity (SRPA) and