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; Handgrip 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^2) and females (n = 36) (32.24 kg/m^2). We measured body composition with dual-energy X-ray absorptiometry and muscular fitness was assessed by standing broad jump and handgrip 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 ± 31.8 cm^3, 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 ± 31.8 cm^3, respectively, P = 0.4) and in the non-dominant side (251.8 ± 31.8 vs 258.1 ± 34.0 cm^3, 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 ± 4.4 vs. 0.6 ± 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

self-rated fitness (SRF) as predictors of all-cause mortality. Moreover, we also examined whether any protective effect of SRH on premature mortality was mediated by SRPA, SRF.

Methods. SRH, SRPA and SRF were self-reported in 7111 participants, aged 16 to 96 years, by asking their perceptions of health, PA and fitness, respectively, in comparison with their age peers. Based on their ratings participants were categorised in 3 incremental groups. Cox proportional hazards regression was used to examine associations between SRH, SRPA, SRF and all-cause mortality.

Results. During a median follow-up of 23 years, 1850 deaths occurred. SRH, SRPA and SRF were inversely and independently associated with mortality ($P < 0.05$) after adjustment for sex, age, socio-economic and marital status, body mass index, baseline medical conditions, parental history of chronic disease, fruit, vegetable and alcohol intake, and smoking habits. The association between SRH and mortality remained significant following additional adjustment for SRPA, SRF. Self-rated factors combined were associated with a more than 50% reduced hazard for premature mortality when comparing extreme categories.

Conclusion. SRH, SRPA and SRF are independent predictors of mortality. Perceptions of health, physical activity and fitness may be valuable additional tools in epidemiological studies, health surveillance and the clinical setting.

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Do overall physical fitness and subjective well-being help patients cope with fibromyalgia severity? The al-Ándalus project

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Keywords: Chronic pain; Functional capacity; Health psychology; Physical function; Positive psychology; Resilience (psychological)

Aim. The purposes of the current study were: (i) to analyse the associations of overall physical fitness (OPF) and subjective well-being (SWB) with fibromyalgia symptom severity (FS); and (ii) to test the combined effect of OPF and SWB on FS among female patients.

Methods. This cross-sectional study included 424 fibromyalgia women. OPF and the components of SWB, positive affect (PA), negative affect (NA) and cognitive well-being (CWB), and FS were assessed by means of the Functional Senior Physical Fitness Test Battery, the Positive And Negative Affect Schedule, the Satisfaction With Life Scale, and the Fibromyalgia Impact Questionnaire, respectively.

Results. Significant associations of OPF, PA, NA, and CWB (β=-.23, β=-.18, β=.26, and β=-.18, respectively) with FS were observed. The combination of high OPF and high PA, low NA, or high CWB reduced FS by ~20% (Cohen's $d > 1.0$).

Conclusion. Our findings support that multidisciplinary interventions aimed to increase physical fitness holistically and to enhance subjective well-being may be particularly advisable for patients with low OPF and low SWB.

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Socioeconomic Factors and Abdominal Obesity in European and Brazilian Adolescents: Data from Two Observational Studies

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Keywords: Adolescents; Abdominal obesity; Socioeconomic status; Waist circumference; Waist to height; Cross-sectional study

Objectives. This study aimed to different socioeconomic indicators as parental education, and occupation, and Family Affluence Scale (FAS), related to abdominal obesity in adolescents from two observational studies, HELENA and BRACAH.

Methods. Brazilian (n = 991, 54.5% girls aged 14-18y, BRACAH study) and European (n = 3528, 52.3% girls aged 12.5-17.5y, HELENA study) participant adolescents were recruited in two cross-sectional studies. From the total number (n = 3528) of adolescents studied in HELENA, we included in this analysis 3192, 53.1% girls. Adolescents with complete information on waist circumference (WC), height, socioeconomic status indicators and confounding variables (center, physical activity and sedentary behavior) were included. Socioeconomic indicators were measured through a self-reported questionnaire in order to assess the family social status from the adolescents. Multilevel linear regression models were used and results were adjusted for potential confounders.

Results. In *European girls*, mother's and father's education levels were inversely associated with waist to height ratio ($p < 0.0001$).