Physical fitness and excess body fat in Spanish adolescents. Results from the AVENA Study

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Introduction
The prevalence of adolescent obesity is growing all around the world. This will have an impact on their future health, but also for their current health, lifestyle and well-being. The aim of this study was to assess the influence of body fat percentage on physical fitness in adolescents, using the EUROFIT battery test, and according to chronological age and maturity status.

Methods
A sample of 2477 adolescents of both sexes (1194 females), aged 13 to 18.5 from the Spanish AVENA multicenter study \cite{1} was analysed for triceps and subscapular skinfolds and Tanner staging to calculate body fat percentage according to the formula proposed by Slaughter et al. \cite{2} The sample was divided into three groups according to <15 percentile, 15-85 percentile and > 85 percentile of body fat. Physical fitness was assessed by using six tests included in the Eurofit battery test: sit-and-reach test (flexibility), standing broad jump (strength), dynamometry (handgrip strength), bent arm hung (upper body strength), 4 x 10 running (speed and agility), 20 m shuttle run test (cardiorespiratory endurance, Course-Navette Test, CNT). Statistical analysis was done with SPSS 12.0 for Windows.

Results
Those boys and girls included in the >85 percentile for body fat had significantly lower scores in all tests, exception made for the flexibility and the hand grip strength, compared to the other two groups. Within the 3 body fat groups, a gender effect was observed for flexibility. In boys, an age-effect was observed for CNT. In girls, the different response by age within the body fat groups was observed for all the tests. If analysed by Tanner staging, response within the groups was similar to those obtained by age.

Discussion/Conclusion
A high body fat percentage during adolescence has a negative impact on physical fitness, for both boys and girls and in all age groups. Specific differences observed for some of the variables have to be analysed more in depth.

References

Funding
\* This study was funded by the Spanish Ministry of Health, FEDER-FSE funds FIS n° 00/0015, CSD grants 05/UPB32/0, 109/UPB31/03 and 13/UPB20/04, the Spanish Ministry of Education (AP2003-2128), and grants from Panrico S.A., Madaus S.A. and Procter and Gamble S.A.