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### Poster Abstract Presentations

#### Session Title: Physical Activity/Fitness

#### Abstract P435: Body Fatness, Cardiorespiratory Fitness And Inflammatory Markers In Adolescents

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#### Abstract

**Introduction:** The alarming increase in obesity worldwide and the decrease in cardiorespiratory fitness (CRF) levels among adolescents are of concern in the development of cardiovascular diseases. Therefore, the purpose of this study was to evaluate the association between body fatness, CRF, and inflammatory markers [C-reactive protein (C-RP), interleukin-6 (IL-6), tumor necrosis factor alpha (TNF-α), and leptin] in a sample of Portuguese adolescents.

**Hypothesis:** We assessed the hypothesis that adolescents with higher body fatness and lower CRF levels will have an increased level of inflammatory markers.

**Methods:** A cross-sectional school-based study was conducted on 529 Portuguese adolescents (268 girls) aged 12–18 years (mean age 14.3±1.7). Body fatness (BF) was assessed using the Bioelectric Impedance Analysis. Intravenous blood samples were taken after an overnight fast to determine inflammatory markers (C-RP, IL-6, TNF-α, and leptin). CRF was measured with the 20m-Shuttle-Run-Test from the Fitnessgram battery test as number of laps. Pearson correlation was used for bivariate associations between BF, CRF and inflammatory markers. Linear regression analyses were used to examine the association between BF, CRF and inflammation markers with adjustments for age and sex.

**Results:** Pearson's correlation analyses, adjusted for age and sex, revealed that BF was positively correlated with leptin ( $r=0.640$ ,  $P<0.001$ ) and C-RP ( $r=0.235$ ,  $P<0.001$ ), and negatively correlated with CRF ( $r=-0.473$ ,  $P<0.001$ ) whereas CRF was inversely correlated leptin ( $r=-0.420$ ,  $P<0.001$ ) and C-RP ( $r=-0.226$ ,  $P<0.001$ ). Among the inflammatory markers leptin ( $\beta=0.188$ ,  $p<0.001$ ) and C-RP ( $\beta=0.030$ ,  $p<0.05$ ) were positively associated with BF whereas leptin ( $\beta=-0.160$ ,  $p<0.001$ ) and C-RP ( $\beta=-0.56$ ,  $p<0.001$ ) were inversely associated with CRF, conversely, TNF-α ( $\beta=0.118$ ,  $p<0.05$ ) showed a positive association with CRF.

No associations were found between BF, CRF and IL-6.

**Conclusions:** Our findings emphasize the importance of increasing CRF levels and decrease body fatness among adolescents in order to prevent metabolic abnormalities predisposed to or associated inflammation and thus contribute to the prevention of cardiovascular diseases later in life.