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Title: Novel regression equations predicting lung age for Mediterranean population

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Body: Background. Published reference equations predicting estimated lung age (ELA) didn't reliably predict chronological lung age (CLA) data in healthy adults representing a sample of a Mediterranean population. Aims. To develop novel equations for ELA from varied anthropometric data and FEV₁. Methods. Applying multiple regression analysis, equations predicting ELA were invented using data from 540 never-smokers with normal spirometry (group I). Validation was made based on data from 41 never-smokers with normal spirometry (group II). Equations were further applied for 91 subjects with confirmed COPD. Results. Novel regression equations allowing prediction of reference value of ELA and normal limits of difference between ELA and CLA were elaborated in both genders. In men, ELA (yrs) = 42.85 - 20.74 x FEV₁ (l) + 47.41 x body surface area (m²) - 0.62 x body mass index (BMI, kg/m²). In women, ELA (yrs) = 64.64 - 8.00 x FEV₁ (l) - 0.17 x BMI (kg/m²) + 8.82 x Height (m). Normal limits of difference between ELA and CLA were ±16.9 yrs in the men and ±14.8 yrs in the women. Established equations predicted ELA of group II with no significant difference (p > 0.05) between CLA and ELA in either gender (respectively, 42.9±16.6 yrs vs. 40.3±13.7 yrs in men, 42.0±13.5 vs. 45.6±7.7 in women). ELA was significantly (p < 0.05) older than CLA age only in COPD patients with grades III and IV ((ELA-CLA) (yrs) averaged -1.8 (grade I), +13.3 (grade II), +21.7 (grade III), +26.4 (grade IV)). Conclusion. The use of contemporary lung age equations may translate into greater success for smoking cessation programs.