

Visceral fat prediction models according to age and gender

Chang S and Stanforth P

Fitness Institute of Texas; Kinesiology, University of Texas at Austin; Austin, TX

Category: Undergraduate

Advisor / Mentor: Stanforth PR (p.stanforth@austin.utexas.edu)

ABSTRACT

Obesity is the leading risk factor for metabolic syndrome and puts individuals at an increased risk for cardiovascular disease and diabetes. Past studies have shown that visceral adipose tissue (VAT), rather than subcutaneous fat (SF), is a major predictor of these disorders. VAT is the fatty tissue surrounding the vital organs, while SF is the fat found directly beneath the skin. SF's primary function is to provide energy storage while VAT cells are metabolically active and have been linked to increased insulin resistance, production of triglycerides and low density lipopids, which contribute to a higher risk of health diseases. Due to lack of sufficient evidence, there is no specific risk factor cut off value for VAT. In addition, dual energy x-ray absorptiometry (DEXA) now has the capability to estimate VAT; however, there is no normative data for DEXA derived VAT values. The purpose of this study was to (a) determine the gender specific correlation between VAT, age, total and regional percent body fat, lean mass and fat mass and (b) to create a VAT percentile ranking for men and women. Cross sectional DEXA measurements were collected from 1,040 public, non-student clients (471 males and 618 females) ages 20 to 74 ($x=41.1 \pm 0.1$) at the Fitness Institute of Texas. Using a pearson product correlation, the correlation between VAT, age, total and regional FM, lean mass and % fat in both men and women were observed. Age was significantly correlated with VAT in both females ($r=0.38$) and males ($r=0.37$). After controlling for age, all body composition variables were significantly correlated with VAT. However, fat mass in the trunk, android regions and total fat mass displayed the strongest correlation with elevated VAT levels ($r \geq 0.77$) and regional and total lean mass had the lowest correlation ($r \leq 0.42$). Males had higher correlations between VAT and fat variables than women, while women had higher correlation values between VAT and lean mass variables. This study suggests that VAT highly correlates with all measures of fat mass.