



Mid Atlantic Regional Chapter of the American College of Sports Medicine

Annual Scientific Meeting, November 4th- 5th, 2017
Conference Proceedings

International Journal of Exercise Science, Issue 9, Volume 6



Sex Hormone-Binding Globulin and Resting Testosterone Levels in Relation to Weight Status: NHANES 2003-2004

Joseph M. Willett, Evan L, Matthews, Peter A. Hosick. Montclair State University, Montclair, NJ

Resting testosterone level (RTL) has been shown to negatively correlate with BMI and adiposity. Sex hormone binding globulin (SHBG) is the primary carrier protein for testosterone, and therefore plays a major role in determining its bioavailability. However, little is known about how the relationship between the two is altered by weight status. **PURPOSE:** To evaluate the relationship between sex hormone-binding globulin and resting testosterone levels in men of different weight categories. **METHODS:** A total of 142 male subjects' ages 18-35 from the 2003-2004 National Health and Nutrition Survey Examination were analyzed. Subjects were grouped based upon weight status as defined by BMI and included 60 normal (N), 45 overweight (OW), and 37 obese (OB) subjects. Body fat percentage (BF%) was determined by DXA scan. Bivariate correlation coefficients were calculated between SHBG and RTL; SHBG and BF%; and SHBG and predicted maximal oxygen consumption (VO_2max). Partial correlation coefficients were calculated between SHBG and RTL controlling for BF% and for SHBG and RTL controlling for VO_2max . All relationships were analyzed including all subjects combined and separated by weight status. **RESULTS:** The bivariate correlations between SHBG and RTL were significant and positively correlated between the OW ($r=0.330$, $p=0.027$) and OB ($r=0.517$, $p=0.001$) groups only. After controlling for BF%, this relationship was only significant in the OW group ($r=0.400$, $p=0.039$). When controlling for VO_2max the N group had a negative relationship ($r=-0.427$, $p=0.001$), but the other two weight groups had a positive relationship (OW: $r=0.322$, $p=0.033$; OB: $r=0.486$, $p=0.003$). **CONCLUSION:** The result show that the relationship between SHBG and RTL is different depending on weight status, negatively for normal weight and positively for OW and OB. Also, VO_2max may have an effect on resting testosterone, but likely does not influence SHBG. These findings are important as SHBG can affect the bioavailability of testosterone.