

Relation between testosterone levels and body composition, physical functioning and selected biochemical parameters in adult males

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Introduction: The objective of the study was to examine the relationship between the values of selected parameters of physical function, body composition, body mass index (BMI) and biochemical markers of metabolic health with the total testosterone (TT) levels in adult males. We aimed to analyse the correlation between these values and variations in the TT levels. **Methods:** A total of 17 subjects (age = 50.2 ± 8.1 years, TT = 11.4 ± 3.8 nmol/l) were included in the study. Subjects were tested on physical function (1RM on leg press, bench-press, handgrip, VO_{2max}), body composition (DXA), biochemical parameters (morning fasting blood samples). **Results:** TT was inversely correlated with abdominal circumference (AC) ($p < 0.01$) and with overall body fat, measured in kg ($p < 0.01$). On a biochemical level, significant correlations were found between TT and insulin ($p < 0.01$), and TT and homeostasis model assessment of insulin resistance (HOMA-IR) ($p < 0.01$). Physical function, muscle strength or lean mass were not significantly correlated with TT. **Conclusion:** The main finding of this study was that testosterone levels had a strong inverse correlation with abdominal circumference and total body fat mass. On metabolic level, strong inverse correlation was also found between TT with insulin and TT with HOMA-IR. However, we did not find statistically significant correlation between total testosterone levels and lean mass, muscle strength or physical function in middle aged males.

Key words: body composition, obesity, testosterone.