TACSM Abstract

Total Lean Body Mass and Lower Body Lean Mass Correlation with Vertical Jump in Untrained Women Basketball Players after 8 Weeks of Resistance Training

MATHIS ROLLIN[1], KATELYN KOLODZIEJCZYK[1], ROBERT MILLS[1], ALYSSA FATERKOWSKI[1], JACI DAVIS[1], NIKOLAS KERATSOPOULOS[1], RUEL TANDOH[1], JAYDEN WIDENER[1], LEM TAYLOR[1,2], AND MANY PARRA[1]

[1]Human Performance Lab; School of Exercise & Sport Science; University Mary Hardin-Baylor; Belton, TX

[2]Doctor of Physical Therapy Program; School of Health Professions; University of Mary Hardin-Baylor; Belton, TX

Category: Undergraduate

Advisor / Mentor: Parra, Mady (mparra@umhb.edu)

ABSTRACT

Basketball is a fast, explosive sport where a high vertical jump (VJ) is extremely beneficial. Research has shown that greater amounts of lean mass have been associated with higher force output, and therefore higher VJ. **PURPOSE**: The purpose of this study is to examine the correlation of overall total lean body mass percentage (TBLM%) and lower body lean mass percentage (LBLM%) and Body fat percentage (BF%) with VJ in previously untrained collegiate D-III women basketball players. **METHODS**: Fourteen females (20±1.3 years, 170.68±8.76 cm, T1 BF% 28.68±5.38, T2 27.11±5.12) basketball team participated in this study. Athletes were tested on two different occasions (T1 and T2). Dual-X-Ray Absorptiometry (DXA) body composition scan and standard VJ assessment was performed using a Vertec to determine maximum jump height prior to (T1) and following (T2) 8 weeks of an undulating periodization resistance training program 5 days/week). DXA were further analyzed to determine total body lean mass % (TBLM%) and lower-body lean mass % (LBLM%). Data was analyzed using SPSS using paired samples T-test to detect differences ($p<0.05$) from T1 to T2, and Pearson product moment correlations were assessed for TBLM% and LBLM% with VJ height at T1 and T2. **RESULTS**: Significant increases from T1 to T2 were observed for TBLM% ($p<0.05$), LBLM% ($p<0.01$) and VJ height ($p<0.001$). There was a strong positive correlation between TBLM% and VJ height at T1 ($r=0.766$, $p<0.001$) and T2 ($r=0.681$, $p<0.01$). There was also a strong, positive correlation in LBLM% and VJ height for T1 ($r=0.866$, $p<0.001$) and T2 ($r=0.748$, $p<0.01$). A significant decrease in BF% ($p<0.001$) was also observed between T1 and T2 thus indicated by the observed TBLM% and LBLM%. **CONCLUSIONS:** These data support that the introduction of a structured resistance training program in Division III women athletes with novice history will facilitate improvements in body composition and vertical jump performance in 8 weeks. Additionally, this data indicates a significant relationship between TBLM%, LBLM% and VJ was present at baseline and remained after the training period. This provides evidence that a preseason programming for female athletes that are new to structured training programs could play a key role in athletic performance.