Physical Inactivity during COVID-19 Moderates Body Fat Percentage - Relative Handgrip Strength Relationship on Black Females.

MICHELLE ETCHEBASTER1, MELISSA DORVILY1, ANDREAS STAMATIS2, JEFFREY FORSSE3, TAL AMASAY1 and ZACHARIAS PAPADAKIS1

1Human Performance Laboratory, Department of Exercise Science, Barry University, Miami Shores, FL; 2SUNY Plattsburgh, Plattsburgh, NY; and 3Baylor University, Waco, TX.

Category: Undergraduate

Advisor / Mentor: Papadakis, Zacharias (zpapadakis@barry.edu)

ABSTRACT
Metabolic syndrome (MetS) prevalence is high in Blacks. Physical inactivity is among the contributing factors of MetS development. Relative handgrip strength (HSR), divided by body mass index, is negatively linked to MetS. Increased body fat percentage (BF%) worsens HSR and contributes to MetS. Physical activity (PA) improves related-MetS risk factors. Only 45% of Blacks over 18 years and less than 40% of US females are meeting the ACSM PA guidelines. During COVID-19 PA levels have been decreasing, while stress has been increasing. Such a phenomenon may contribute to MetS due to a change in BF%-HSR dynamics. PURPOSE: To explore associations between BF% and HSR and to investigate the effect of being physically active during the pandemic on the BF%-HSR relationship. METHODS: Anthropometrics, HS (dynamometer), and BF% (bioelectrical analysis) measurements performed on nine black female college students (age 21.3±4.0 yr). PROCESS® v.3 by Hayes moderation analysis performed using SPSS®. BF% centered for product construction and heteroscedasticity consistent error. Moderation and conditioning significance set at p<0.05. RESULTS: Model significantly predicted HSR (F3,5=503.1, p<.001, R2=.73). BF% and PA significantly predicted HSR (b=-.1, t5=-.5.0, p=.004 and b=-1.2, t5=-8.3, p=.0004 respectively). BF% x PA interaction significantly moderated HSR (F1,5=57.9, p=.0006, ΔR2=.2). Black females, who met the PA guidelines before but not during the pandemic, presented significant positive relationship between BF% and HSR (b=0.07, t5=38.1, p<.001). CONCLUSION: Results support the negative clinical relationship of BF% and HSR for previously physically active Black females that kept exercising during the stressful pandemic period. For those who did not remain physically active during the pandemic, BF% and HSR relationship was adversely (positive) moderated by their choice. No causal inferences can be drawn due to the cross-sectional design and small sample size. However, based on Bjorntrop hypothesis, the combined effect of physical inactivity and additional stress during COVID-19 may have altered the hypothalamicpituitary-adrenal axis and increased cortisol levels that led to an increase in fat accumulation. Larger-scale studies are needed to examine the mechanistic explanation of this observation.