TACSM Abstract

Metabolic Flexibility in Healthy Hispanics in the Rio Grande Valley with and without a Family History of Type 2 Diabetes

JAIME RODRIGUEZ, RYAN D. RUSSELL, GABRIEL FIGUEROA, SMARAN MARUPUDI, ALEXANDRO RODRIGUEZ, SARASWATHY NAIR, JIMMY GONZALEZ, YU LUN TAI

CardioMetabolic Exercise Lab; Department of Health and Human Performance; College of Health Professions, University of Texas Rio Grande Valley; Brownsville, TX

Category: Masters

Advisor / Mentor: Tai, Yu Lun (YuLun.Tai@utrgv.edu)

ABSTRACT

Type 2 Diabetes (T2D) has several comorbidities such as cardiovascular disease, elevated lipid profile, microvascular complications, and impaired metabolic flexibility (MF: the ability to switch substrate use upon stimulation). Further, healthy Caucasians with a family history of T2D (FH+) have impaired MF similar to T2D, suggesting impaired MF could be an early-detection tool to identify at-risk populations. Hispanics of the Rio Grande Valley have ~3x the T2D rates as the US average, and have ~79% of the people in this region are either overweight or obese. However, patterns of MF in this population have not been addressed. **Purpose:** The purpose of this study was to quantify metabolic flexibility in this population, and determine if differences in MF are noted between FH+ and those with no history of T2D (FH-). **Methods:** To determine changes in metabolic flexibility we utilized a hooded metabolic cart to quantify substrate oxidation in FH+ and FH- participants while 1) fasted at rest, and 2) for 60-min after consumption of mixed composition meal challenge (MMC). Participants were matched according to BMI, age, weight and height (25.23 ±3.4, 74.1 ±14.9, 167.3 ±8.5 respectively). Blood draws and expired gas were taken before and after each state at intervals 0, 15, 30, 60, 90 and 120 min. **Results:** No differences were noted in RMR between FH+ and FH- groups (1588.90 ± 97.57 and 1540.87 ± 81.12, mean ± SD respectively, p=0.7), fasting RER (0.76 ± 0.04 and 0.80 ± 0.03 mean ± SD respectively, p=0.44), or max RER (0.85 ± 0.05 and 0.95 ± 0.04 mean ± SD respectively, p=0.1). However, MF in FH+ was lower than in FH- (0.24 ± 0.23 and 0.41 ± 0.20 mean ± SD respectively, p=0.03). **Conclusion:** In Hispanics of the RGV, healthy FH+ individuals display impaired MF when compared with matched FH- counterparts. Additional testing is warranted to compare ethnicities to determine differences between Caucasians and Hispanics, as well as additional variables that may affect MF.