TACSM Abstract

Impacts of Menstrual Cycle Phase on Measures of Body Composition

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ABSTRACT

Fluctuations in body weight and water retention are common complaints made by many women as a result of hormonal changes that accompany menstrual cycle (MC). Specific research regarding how the different phases of the menstrual cycle may impact body composition measures have been limited, and typically are examined as a subset of other variables. As lean body tissue is approximately 73% water, fluctuations in body water due to changes in a women's MC may influence measurements of body composition. **PURPOSE:** To investigate whether phases of the MC have an impact on common measures of body composition. **METHODS:** A total of 51 females between the ages of 18 and 45 years participated in a total of four data collection sessions. Participants reported to the exercise physiology lab once a week, at the same time of day, seven days apart, for a total of four weeks. Each week, participants self-reported the presence or absence of menses during that week, including starting or ending days. Participants completed three body composition assessments: bioelectrical impedance analysis (BIA), air displacement plethysmography (ADP), and dual-energy X-ray absorptiometry (DXA) according to manufacturer's instructions. Physical activity patterns for the previous week were also self-reported weekly. **RESULTS:** RMANOVAs revealed no differences in physical activity levels between sessions for participants and that total body water amounts in participants did not change across time when measured via BIA. A 3 (device) x 4 (MC phase) RMANOVA demonstrated no significant device by phase interaction effects, nor were changes in body weight, body fat percentage, or lean body mass seen across time. However, significant differences in lean body mass measures ($p = .001$) between DXA and BIA ($\bar{x}$ difference = 1.62 ± 0.4 kg) and DXA and ADP ($\bar{x}$ difference = 1.74 ± 0.36 kg) measures were seen. **CONCLUSION:** Although there were no changes in body composition across the MC phases, there were differences in body composition values among the three types of devices used to quantifying body composition. These findings suggest that differences in the technology used to quantify body composition may explain varying results across studies.