Review

The effect of the menstrual cycle on physical condition : Is nutritional intake a factor?

Mikako SUNAGA

Department of Exercise Physiology, School of Childhood Sport Education, Nippon Sport Science University

ABSTRACT

This review examines physiological changes associated with the menstrual cycle. Physical and emotional status during the menstrual cycle can affect athletic performance. Estrogen and progesterone levels fluctuate throughout the menstrual cycle and are low during the follicular phase (FP) and high during the luteal phase (LP) in women with normal cycles. Previous studies have shown that ovarian hormones influence energy metabolism. Accordingly, we performed a study to determine whether the blood metabolite profile at rest and during endurance exercise is affected by the menstrual cycle phase in female athletes. We found that levels of glucogenic amino acids were significantly lower before, during, and after exercise in the LP compared with levels in the FP. These results suggest that physiological changes associated with the menstrual cycle may be affected by a change in energy substrate utilization. Future research should investigate the effect of altered nutritional intake according to the phase of the menstrual cycle.

Keywords: menstrual cycle, conditioning, premenstrual syndrome, amino acid