

## Analysis of the physical performance of women in different motor skills during the phases of the menstrual cycle

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### Abstract

The training of a motor skill promotes physical performance and depends on variables. For women, the menstrual cycle stands out. Studies have focused on the analysis motor skills during this period and emphasize hormonal issues with low attention to the physical performance. Thus, the objective of this study was to verify the physical performance in different motor skills during the phases of the menstrual cycle in two different cycles. During eight weeks, twelve women, divided into a trained and beginner group, underwent training for different motor skills, and at each stage of the menstrual cycle performed performance tests. The results suggest a higher strength of the lower limbs and a greater capacity of endurance in the Luteal phase in relation to the Follicular phase, but for the flexibility there were no significant differences, suggesting that there is no influence of the menstrual cycle on this motor skill.

### Key words:

Menstrual cycle, physical performance, motor skills.

### Introduction

The current studies about the performance of the menstrual cycle show that for the endurance capacity, in the Luteal phase, work and VO<sub>2</sub> recovery are better, indicating better performance (MIDDLETON, 2006). Regarding strength, it is higher in lower limbs a than in Follicular, although no differences were found in upper limbs. On the other hand, it is suggested that hormonal contraceptive users have decreased strength in the Follicular phase (BEZERRA, 2015). For performance in flexibility, no significant differences were found independent of contraceptive use or not (TEIXEIRA, 2012). From this, the objective of this study was to verify the physical performance of women in three different motor skills during the phases of the menstrual cycle in two cycles and to compare the different phases, cycles, tests and groups.

### Results and Discussion

Twelve women ( $\pm$  20.6 years), oral contraceptive users, familiar with exercises, isolated from other physical activities, divided into groups (trained: G1 and beginner: G2) trained twice a week for eight weeks, for motor skills: endurance, strength and flexibility. They followed this order and protocols: Endurance training: 20 continuous minutes of mid to moderate run. Strength training: three sets of 10 repetitions with 80% of the load of a maximal repetition (1RM) in extensor chair, bench press, flexor chair and paddle, in this sequence. Flexibility training: three sets of 30 seconds for the exercise of sitting and reaching the feet. During the cycles the internal training load and the intervals remained equalized. Performance tests were performed for each motor skills at each phase of each menstrual cycle (Phases: Follicular 1 and 2, Ovulatory 1 and 2 and Luteal 1 and 2). It was applied: Yo yo test for endurance, 1RM for strength and Wells bench for flexibility. The pause required for recovery after each test was respected, reducing the influence of one test on another. The analysis of variance technique was used for the model of repeated measurements in independent groups with the multiple comparisons test of Bonferroni.

Among the different phases it was found that Follicular 1 < Lutea 2 for the 1RM tests of lower limbs and for the Yoyo test:

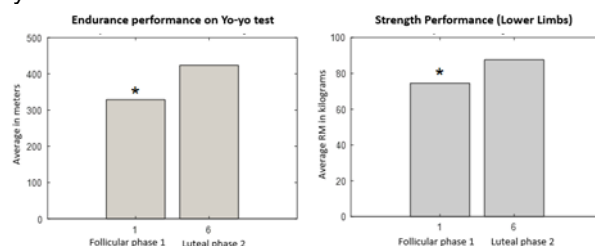


Figure 1. Endurance and Strength Performance (Lower limbs) for the Follicular 1 and Luteal phases 2, \* p < 0.05.

The Follicular 1 phase was the first to be analyzed and the Lutea 2 was the last, so that the training could have influenced the result, since there was evolution of performance in the tests during that period. Regarding the performance of strength (F1 < F6) only in lower limbs, suggesting that the strength of these is higher in the Luteal phase than in the Follicular. In addition, it was verified in the 2nd cycle that the strength of lower limbs > performance in the other tests. The performance of G1 was greater than that of G2, suggesting that it had evolved more rapidly, which may be justified by the level of physical fitness already existing in G1.

### Conclusions

The results suggest higher strength of lower limbs and greater capacity of endurance in Luteal phase. While the flexibility did not present significant results suggesting that there is no influence of the menstrual cycle on this motor skill. The study made possible a greater discussion about strength in lower limbs and upper limbs during the phases of the menstrual cycle and contributed with the findings of the literature on the motor skills of resistance and flexibility.

<sup>1</sup> Bezerra CHL. Et al. Muscle strength assessment in different periods menstrual cycle. *Revista cient. Da escola da Saúde*. 2015; v.4, n.2.

<sup>2</sup> Middleton LE<sup>1</sup>, Wenger HA. Effects of menstrual phase on performance and recovery in intense intermittent activity. *Eur J Appl Physiol*. 2006 Jan;96(1):53-8.

<sup>3</sup> Teixeira A.L.S. et al. Influence of different phases of menstrual cycle on flexibility of young women. *Rev Bras Med Esporte*. Nov/Dez, 2012; Vol.18, No 6.