



## INFLUENCE OF THE MENSTRUAL CYCLE ON AEROBIC POWER AND EXPLOSIVE STRENGTH OF UPPER LIMBS IN ULTIMATE FRISBEE ATHLETES IN BUCARAMANGA – COLOMBIA

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High-performance sport currently shows a greater participation of women in different sports disciplines. According to what is reported by scientific evidence, it has been shown that concentrations of hormones such as estrogens and progesterone can enhance aspects related to aerobic power and muscle performance in athletes. For this reason, the evaluation and planning processes in athletes must be implemented taking into account biological variables such as the phase of the menstrual cycle. The Ultimate Frisbee is a team neo-sport that demands a series of capacities and skills on the part of its athletes, where women have a high percentage of participation. The aim of this study was to evaluate the influence of the menstrual cycle phases on the aerobic power and explosive strength of the upper limbs in Ultimate athletes from Bucaramanga. Of a total of 25 players, 5 were recruited to participate (mean  $\pm$  standard error of measurement (SE): 21.4 $\pm$ 1.0 years of age; 1.58 $\pm$ 0.01 m in height; 51.4 $\pm$ 1.7 Kg of body mass; 20.5 $\pm$ 0.8 of Body Mass Index-BMI). The phase and length of the menstrual cycle was determined by monitoring with the *Flo* application for two months. In this way, the days were established for the application of the tests of the variables of aerobic power and explosive force of upper limbs in the follicular (FF: day 13) and luteal phase (FL: day 19) for each athlete. Aerobic power was evaluated through the Yo-Yo Intermittent endurance test and oxygen consumption (ml/kg/min) and distance reached (m) were determined. The explosive strength of upper limbs was evaluated with the 2kg medicine ball throw test, analyzing the distance reached in meters. Local IRB approved the study. Measures of central tendency and dispersion (means $\pm$ SE) were used for the sociodemographic variables and the differences between the phases of the menstrual cycle and the output variables were determined by means of a paired student's t-test taking into account the normal distribution of the data. The mean duration of the menstrual cycle was 30 $\pm$ 1.2 days and the time of training in sport by the athletes was 3  $\pm$  0.4 years. Statistically significant differences were found in aerobic power for the variables of distance covered (FF: 604 $\pm$  83.2 m; FL: 844  $\pm$  50.7 m; p = 0.032) and oxygen consumption (ml / kg / min) ( FF: 36.8  $\pm$  1.4 ml/kg/min; 41.5 $\pm$  0.5 ml / kg / min; p=0.021). Regarding the explosive force of upper limbs, no statistically significant changes were observed in the distance reached during the test (FF: 6.38 $\pm$ 0.5 m; FL: 7.2 $\pm$ 0.37 m; p>0.05). In conclusion, the study demonstrated the positive influence of the FL of the menstrual cycle on aerobic power, due to the high concentrations of the hormone progesterone, on oxidative enzymes in the metabolic pathway. These results demonstrates the importance of carrying out the training planning processes and the dosage of the loads taking into account this biological variable in order to favor a better performance.

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