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Psychological and physiological changes to the cold pressor test in adolescent handball players with normal menstruation

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INTRODUCTION:

The menstrual cycle involves significant changes in hormone levels, which cause physical and psychological changes in women, which are further affected by stress. The cold-pressor test (CPT) in which subjects immerse their forearms in ice water is among the most commonly used laboratory stressors. **METHODS:**

Twenty-seven adolescent female elite athletes (mean age 16.6 ± 1.69 years) from a rural Hungarian womens handball club were included in the study. Anthropometric measurements (anthropometer, BIA, Tanner-scale) were taken 2 days before the socially involved cold pressor test. According to the menstrual cycle, 2 groups (follicular, and luteal) were formed. The average day of the menstrual circle in the follicular phase (n=12) was 8.38 ± 3.33 and in the luteal (n=15) 21.3 ± 5.52 days. Before the simulation, immediately after, and 30 minutes later, a saliva cortisol sample, blood pressure, and heart rate were measured. During the 30-minute break, the participants completed a psychological test package (SWLS, PSS, CD-RISC, HA-7, ACSI-28, SAS-2, MHC-SF). **RESULTS:**

Among the physiological parameters, the diastolic blood pressure value after the simulation was measurably higher (p=0.003), as well as the heart rate (p=0.046). No significant difference (p>0.05) could be detected in the salivary cortisol values and in the other cardiovascular parameters. The score on the Perceived Stress Scale was significantly higher (p= .015) in the follicular group (29.8 ± 7.17 points) than in the luteal group (22.5 ± 7.29 points). Furthermore, ACSI-28 confidence was significantly higher (p= 0.045) in the luteal group (13.2 ± 1.76 points) than in the follicular group (11.9 ± 1.38 points). The tolerance time spent voluntarily in the simulation did not differ (p>0.05) between the two groups.

CONCLUSION:

The data showed that neither the resting nor the salivary cortisol parameters following the stress simulation were different in the two stages of the menstrual cycle. Regardless, psychological differences were found. These results contribute to the wide range of stress simulation studies, supplementing them with adolescent subjects.

Topic:

Physiology

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