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Influence of menstruation/withdrawal bleeding on self-reported physical and psychological day-to-day parameters in Norwegian cross-country skiers and biathletes: The FENDURA project.

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INTRODUCTION:

Menstruation, as well as the 1-4 days before bleeding has been reported to negatively interfere with sleep quality and motivation to train. Furthermore, around 50-70% of female athletes use hormonal contraceptives (HCs), with the reduction of menstrual-related symptoms as one common reason for using HCs. Although, previous studies provide initial insight, the influence of menstruation/withdrawal bleeding and pre-bleeding has not been investigated from a long-term perspective. The purpose of this study was therefore to investigate the influence of three different phases (pre-bleeding, menstruation/withdrawal bleeding, and non-bleeding) on self-reported readiness to train (physically and mentally), sleep quality, menstrual-related symptoms, sickness, and injury in female cross-country (XC) skiers and biathletes.

METHODS:

A total of 67 XC skiers and biathletes stratified as HC and non-HC users (21 ± 3 y; 170 ± 5 cm; 63 ± 5 kg; 632 ± 111 annual training hours) volunteered to participate in a 12-month prospective cohort study. The athletes used an online training diary to report self-perceived menstrual-related symptoms, sleep quality, and readiness to train on a 1-10 scale, as well as menstruation/withdrawal bleeding, sickness, and injury on a day-to-day basis. Data were grouped into three phases, i.e., bleeding-days, 1-4 days pre-bleeding and non-bleeding days.

RESULTS:

In total, 63% ($n = 42$) of the athletes reported using HC, with 76% ($n = 32$) preferring progestin-only HC. Menstrual-related symptoms were significantly more likely to occur during bleeding or pre-bleeding compared to non-bleeding for all athletes (cumulative probability of score $>1 = 57%$ [bleeding]; $10%$ [pre-bleeding]; and $3%$ [non-bleeding], $p < 0.001$). Sleep quality was lower during pre-bleeding compared to bleeding- and non-bleeding days ($p < 0.001$), with no differences between HC-users and non-HC users ($p = 0.104$). Mental readiness to train was lower in non-HC users compared to HC users for all phases ($p = 0.025$). No significant differences in sickness, injury days or physical readiness to train were found between the different phases or between HC users and non-HC users.

CONCLUSION:

In this study of highly trained endurance athletes followed during a 12-month period, we found sleep quality to be lower during the pre-bleeding phase compared to bleeding and non-bleeding phases, independent of HC use and non-HC use. Mental readiness to train was positively influenced by HC use.

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