

Body Fat Percentage and Hormonal Intrauterine Device Use Are Independently Associated with Self-Reported Menstrual Regularity in Young Adult Females

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ABSTRACT

Menstrual regularity is a key indicator of energy availability, long-term bone density, and other important health information in females. The occurrence of a regular menstrual cycle indicates that an individual's level of estrogen is supportive of strong bones and that they are achieving the caloric intake required to support their activity level. In contrast, an irregular menstrual cycle can be indicative of insufficient energy availability which may, over time, result in low bone mineral density and thus a higher risk of bone stress injuries. However, hormonal contraceptive use, including the rising use of intrauterine devices (IUDs), may mask these changes in menstrual regularity. **PURPOSE:** The purpose of this study was to examine factors related to self-reported menstrual regularity among a population of young, generally healthy females. **METHODS:** Participants were included if they were no more than 50 years of age at the time of enrollment and had less than 50% body fat as assessed via dual-energy x-ray absorptiometry (DXA). Participants were asked via questionnaire if they reported having a regular menstrual cycle, defined as menstrual periods occurring at predictable intervals and no missed periods in the past six months. Additionally, participants were asked if they were currently using any form of hormonal contraception, and if so, what type. A logistic regression was run with menstrual regularity (1 = regular; 0 = irregular) as the dependent variable and body fat percentage (BFP) and contraceptive type as the predictors. **RESULTS:** Out of the 76 participants (mean±SD age: 23.2±5.1 years; height: 164.5±6.5 cm; weight: 65.2±13.6 kg; BFP: 32.3±8.5%), 54 (71%) reported having a regular menstrual cycle. Of the 45 (59%) participants using hormonal contraception, 27 (60%) used a combined oral contraceptive pill, six (13%) used a progestin-only pill, nine (20%) used an IUD, two (4%) used a hormonal implant, and one (2%) used a vaginal ring. Overall, a higher BFP was associated with a greater likelihood of menstrual regularity (coefficient±SE: 0.08 ± 0.04; $p = 0.04$) while IUD use was associated with a lower likelihood (coefficient±SE: -1.8 ± 0.9; $p = 0.04$). No other hormonal contraception type was independently associated with self-reported menstrual regularity. **CONCLUSION:** These results collectively suggest, within a population of generally healthy, young adult females, that lower BFP and hormonal IUD use are both independently associated with a lower likelihood of having a regular menstrual cycle. When assessing the lack of a regular menstrual cycle, practitioners may consider hormonal IUD use as one potential factor in addition to a general assessment of body composition and energy availability. However, this analysis was limited by a relatively small sample size, which may have reduced the ability to detect the relationship between menstrual regularity and less commonly used contraceptive types. Future research is required to determine the relationship between these contraceptive types and menstrual regularity in generally healthy adult females.