

Study Title: Softball Performance & Men. Cycle

This research investigates the impact of menstrual cycle phases on athletic performance, specifically focusing on softball metrics. The purpose of this study is to explore the potential hormonal effects on athletic performance, particularly softball swing exit velocity and home-to-first sprint times across three phases of the menstrual cycle.

The rationale stems from the underrepresentation of female athletes in sports science, limiting the understanding of their unique physiological needs. By examining how hormonal fluctuations influence performance, this research aims to provide evidence-based insights for optimizing training and competition strategies for female softball players.

The study adopts a cross-sectional design, recruiting female athletes aged 18–23 years from the Alma College Women's Softball Team during the 2024–2025 academic year. Participants must have regular menstrual cycles (28–35 days) and meet specific inclusion criteria, excluding those using contraceptives, pregnant, breastfeeding, or with reproductive health conditions. Data collection spans 8–12 weeks, encompassing two menstrual cycles, with measurements taken during the luteal, menstrual, and follicular phases.

Participants attend six 20-minute sessions under controlled conditions. Swing exit velocity is measured using a radar gun, while sprint times are recorded with a stopwatch. Participants warm up independently for 10 minutes, hitting 15 softballs off a tee. Testing includes hitting three balls off the tee, with a 30-second break between swings, and measuring swing velocities. Immediately after, participants perform two home-to-first sprints, with recorded times and a two-minute break between sprints. Confounding factors are minimized through standardized protocols for nutrition, hydration, sleep, and caffeine intake.

Data analysis employs ANOVA to examine variations across cycle phases. The independent variable is the menstrual cycle phase, and the dependent variables are swing exit velocity and sprint time.

I am currently in the data collection phase, and the results are yet to be analyzed. Expected findings include reduced swing exit velocity and slower sprint times during the mid-to-late luteal phase, potentially due to elevated progesterone and decreased estrogen levels. This study seeks to enhance understanding of hormonal influences on performance, advance gender equity in sports science, and provide tailored coaching strategies to support female athletes.