065-HS

The Effects of the Menstrual Cycle Phases on Anterior Cruciate Ligament Tear Incidents in Female Athletes

Abstract

Female athletes face a significantly higher risk of anterior cruciate ligament (ACL) injuries compared to male athletes. Hormonal fluctuations during the menstrual cycle are a major contributing factor to this increased risk. While research varies on which menstrual phase poses the greatest risk, evidence suggests that hormones such as estrogen and progesterone are linked to increased ligament laxity, reduced tendon stiffness, and impaired neuromuscular control, all of which can compromise ACL integrity.

This systematic review aims to examine how hormonal changes throughout the menstrual cycle influence ACL injury risk. By evaluating each phase of the cycle, the review seeks to provide actionable insights to help female athletes, and their coaches identify periods of heightened vulnerability and adjust training regimens to reduce injury risk.

A comprehensive search of PubMed, Medline, and Google Scholar identified studies exploring the effects of the menstrual cycle on ACL laxity. Eligible studies included randomized controlled trials, systematic reviews, meta-analyses, case-control studies, and diagnostic research. Findings indicate that the ovulatory phase presents the highest risk of ACL injury, likely due to an estrogen surge that increases ligament laxity. This information highlights the importance of targeted education and preventive strategies during this phase. By adopting protective measures, athletes and coaches can mitigate injury risks and optimize performance.