

SHE'S BUILT DIFFERENT (LITERALLY)

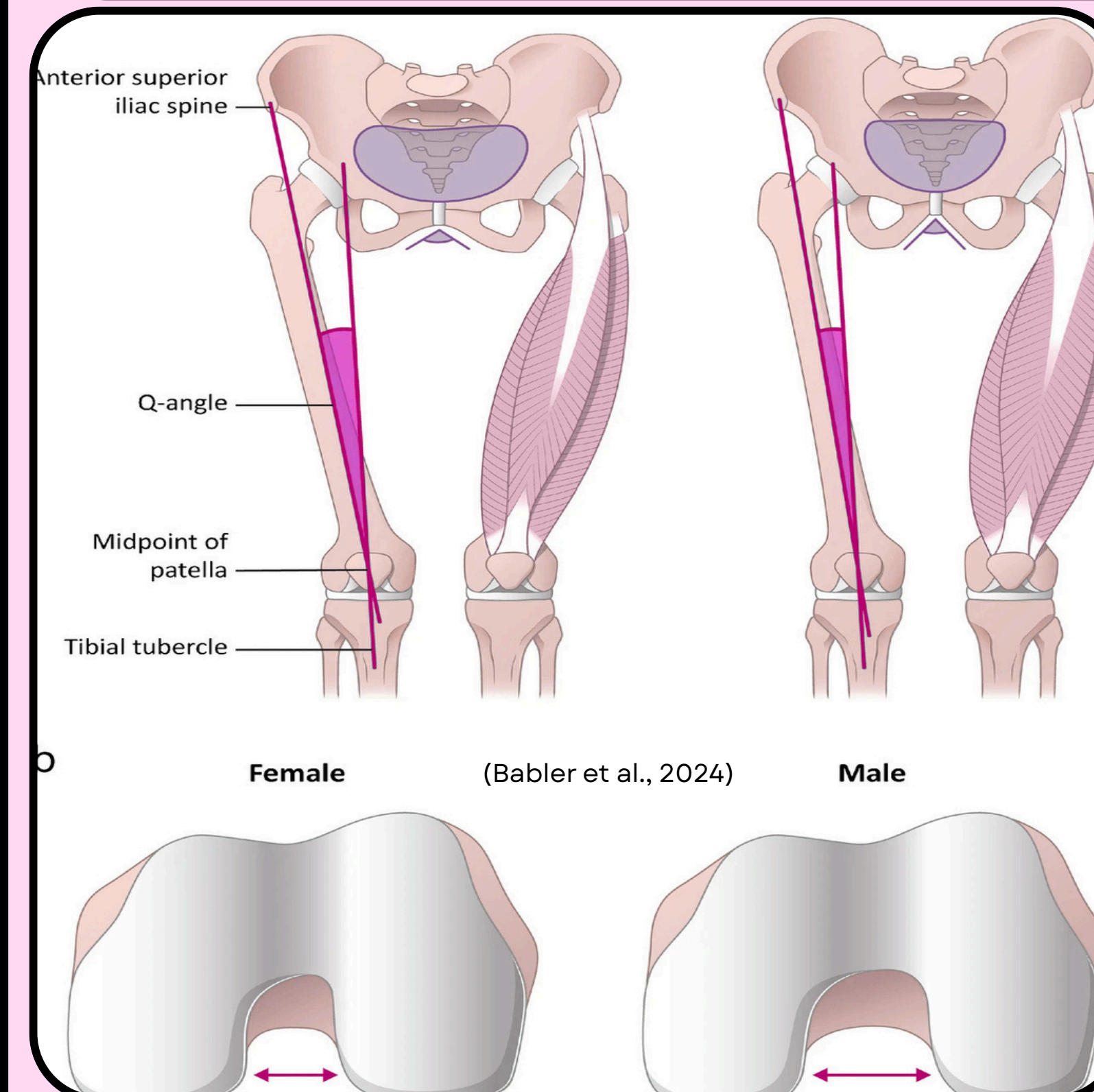
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Introduction

- Females underrepresented in sport research¹
- Key differences:
 - Anatomy (Q-angle, laxity)
 - Hormonal fluctuations (menstrual cycle)
- Gap: Limited research on combined effects
- Purpose: Examine impact on performance, fatigue, ACL risk in female athletes

Results

Anatomy



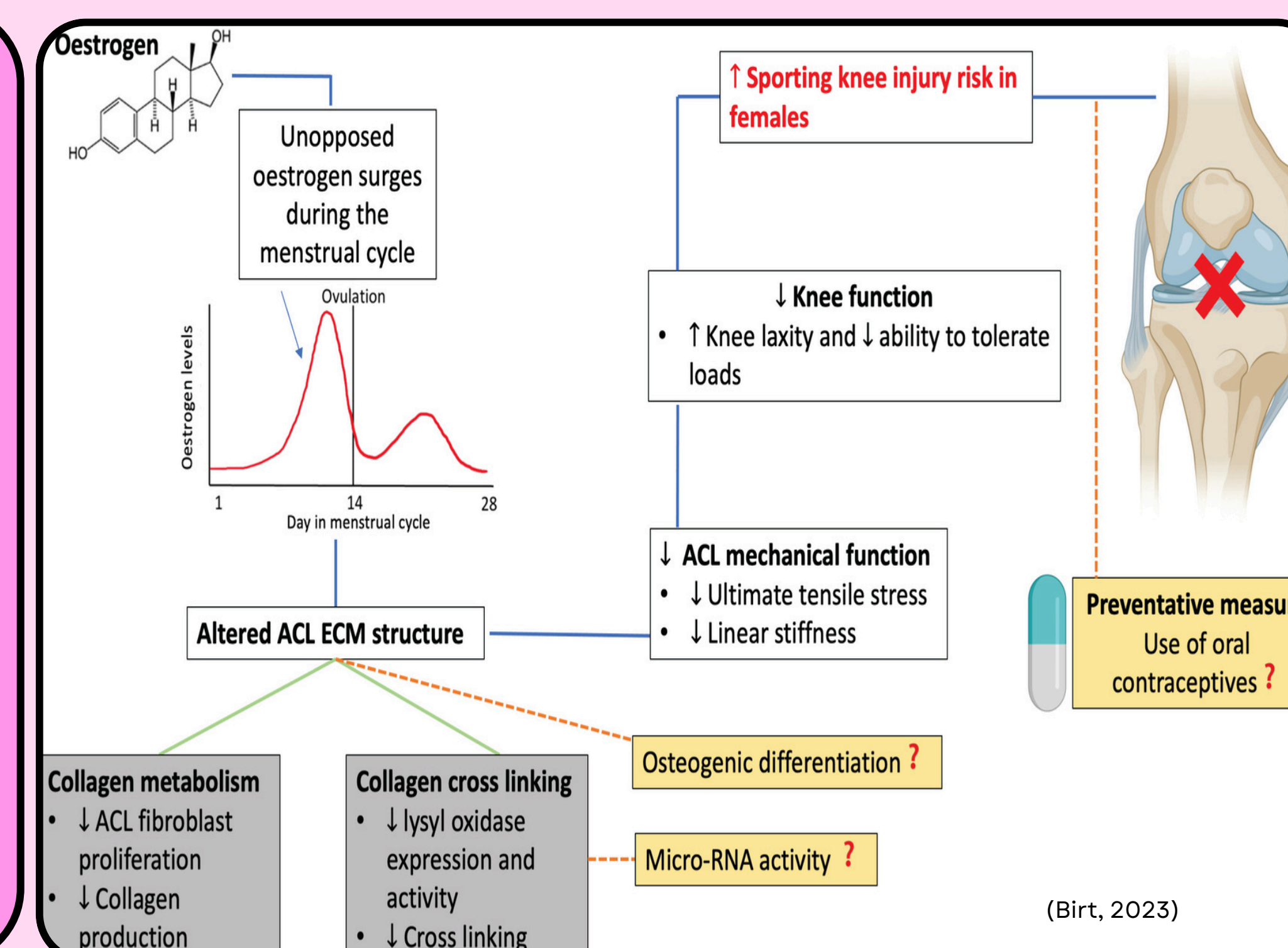
- Higher risk of ACL injury, up to 8 times greater than males¹¹
- Greater Q-angle contributes to knee valgus, ↑ stress on the ACL
- ↑ ligament laxity reduces joint stability & control¹⁵
- Structural differences place strain the ACL during cutting, landing, & pivoting movements

Conclusion

- ACL injury risk → interacting anatomical and hormonal factors
- Structural differences create risk → hormones affect stability and control
- Risk increases during movements (e.g., cutting, pivoting)
- Research is limited and underrepresents females
- Future work should integrate hormonal factors and support individualized strategies

Hormones

- Estrogen ↑ knee laxity & ↓ collagen strength, weakening the ligament³
- Progesterone is associated with ↑ fatigue & reduced neuromuscular control
- Many athletes report performance changes, with 87.8% reporting negative effects⁷

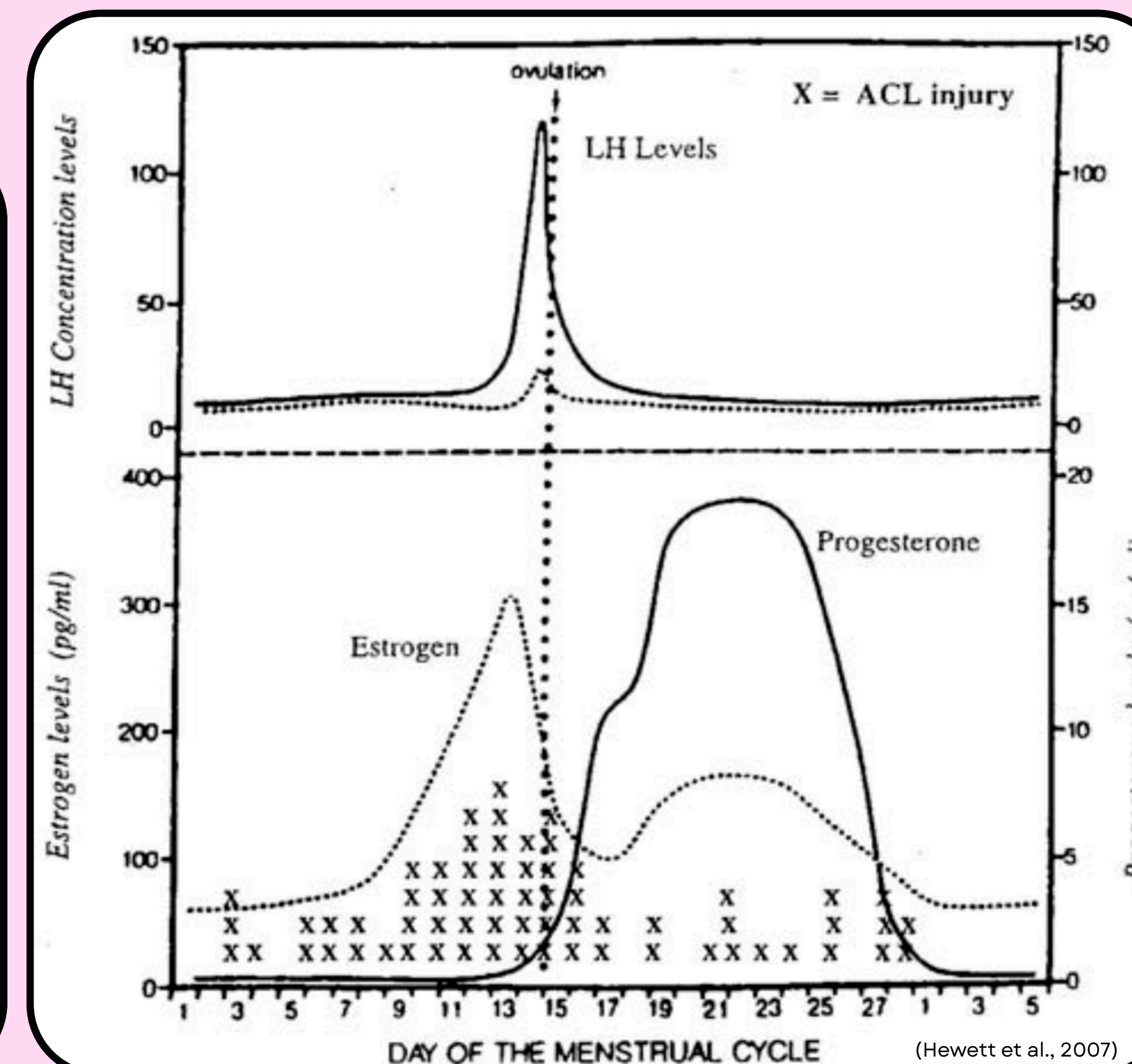


Methods

- Databases: Google Scholar, PubMed, NIH, CPH Library
- Focus: peer-reviewed research on female athletes
- Search terms: ACL injury, anatomical differences, menstrual cycle effects, sex differences, neuromuscular control, male bias

Interaction

- ACL injury risk highest in pre-ovulatory & ovulatory phases¹⁴
- Hormonal changes can ↑ ligament laxity & alter movement mechanics
- Estrogen & relaxin ↓ collagen strength & ↓ ligament integrity³
- These changes ↓ knee stability during high-risk movements, ↑ injury likelihood



Citations

