
ACL Injury Prevention for Collegiate Female Athletes

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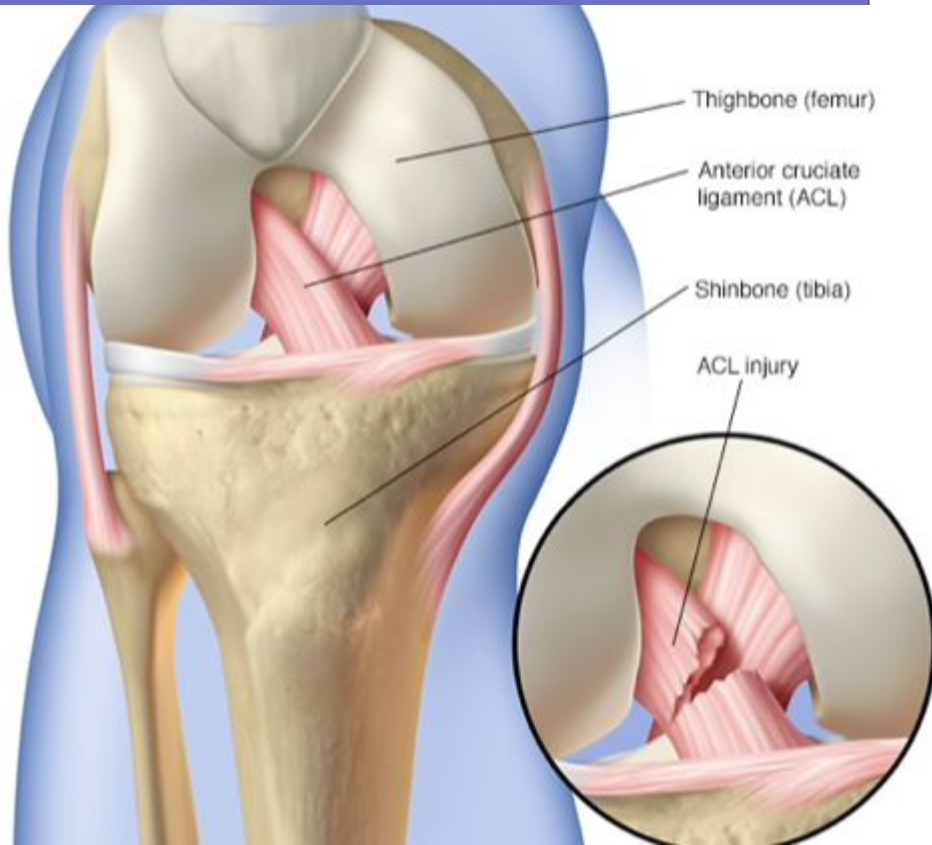
01. THE BACKGROUND
What we are talking about

02. THE QUESTIONS
What we were trying to figure out

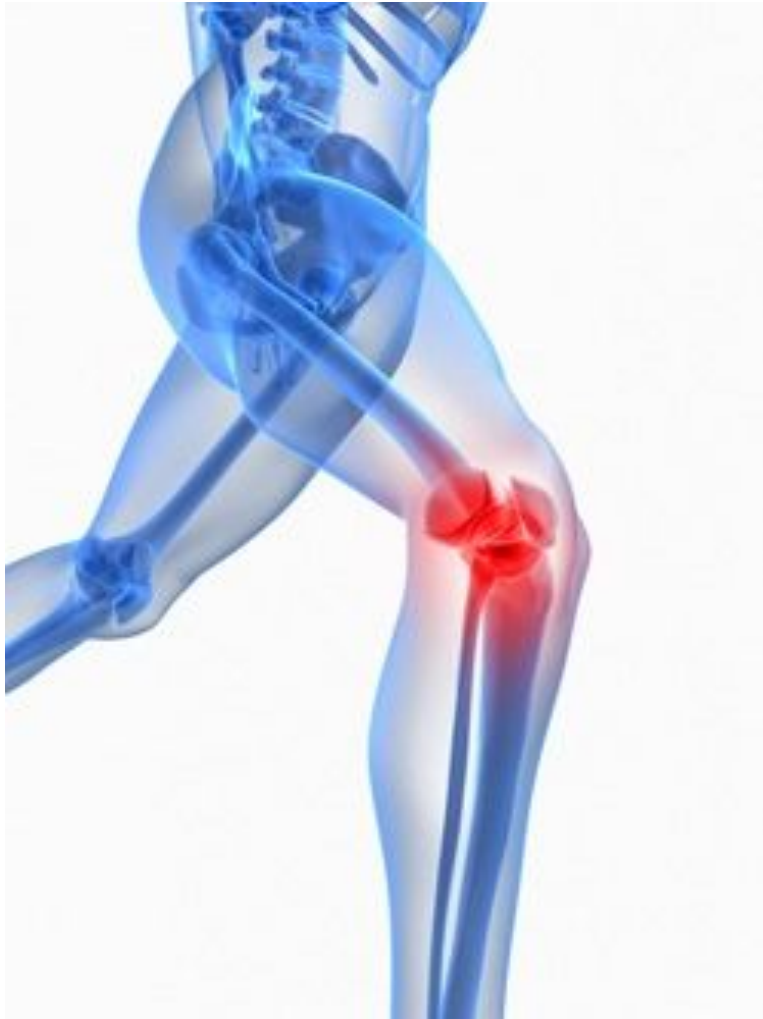
03. THE METHODS
How we did it

04. THE RESULTS
What we found out

05. THE DISCUSSION
What we can do now

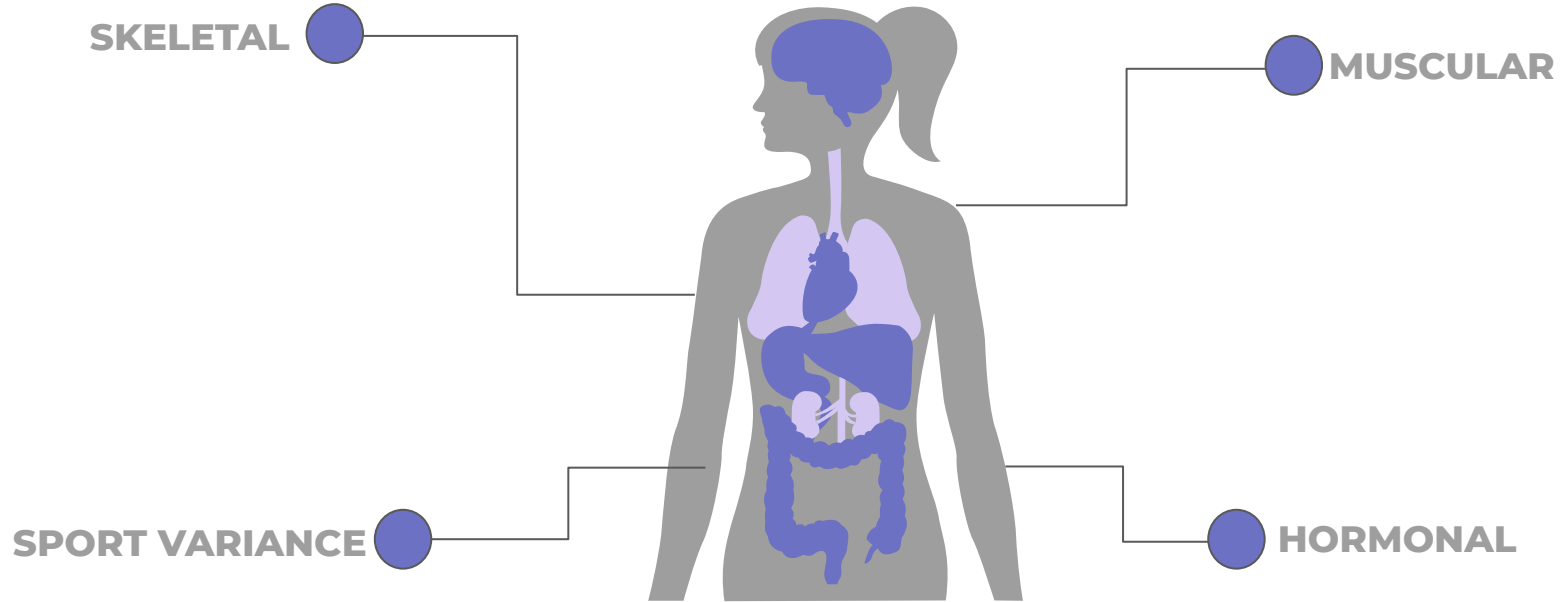


The ACL

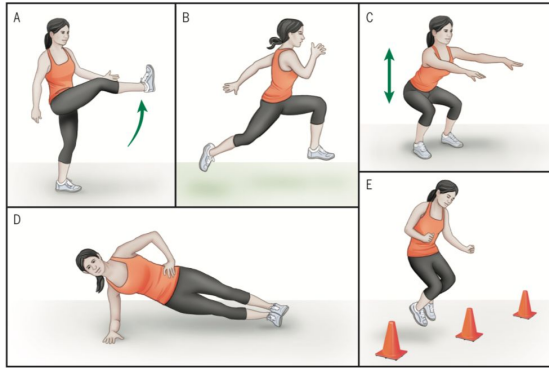


ACL INJURIES

FACTORS THAT INFLUENCE FEMALE ATHLETES

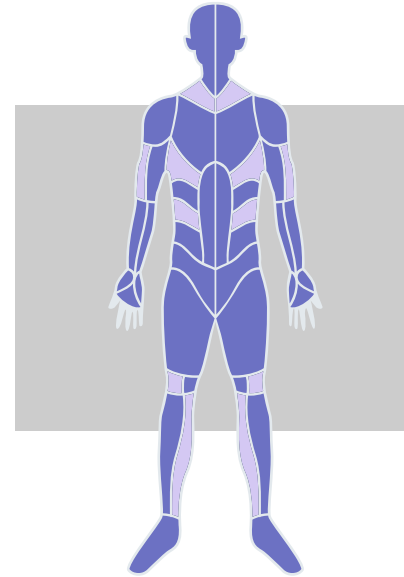


Injury Prevention



Jumping

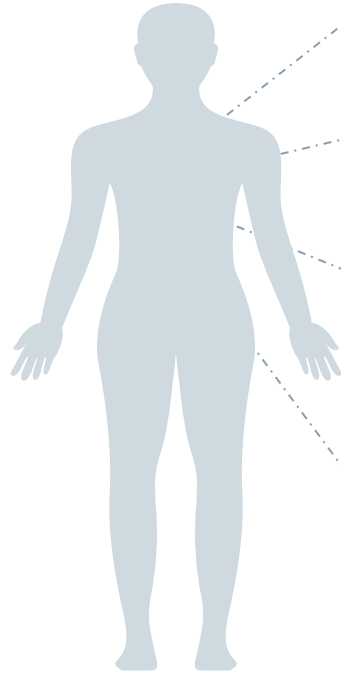
Practicing jumping and landing correctly helps the body regain muscle memory.



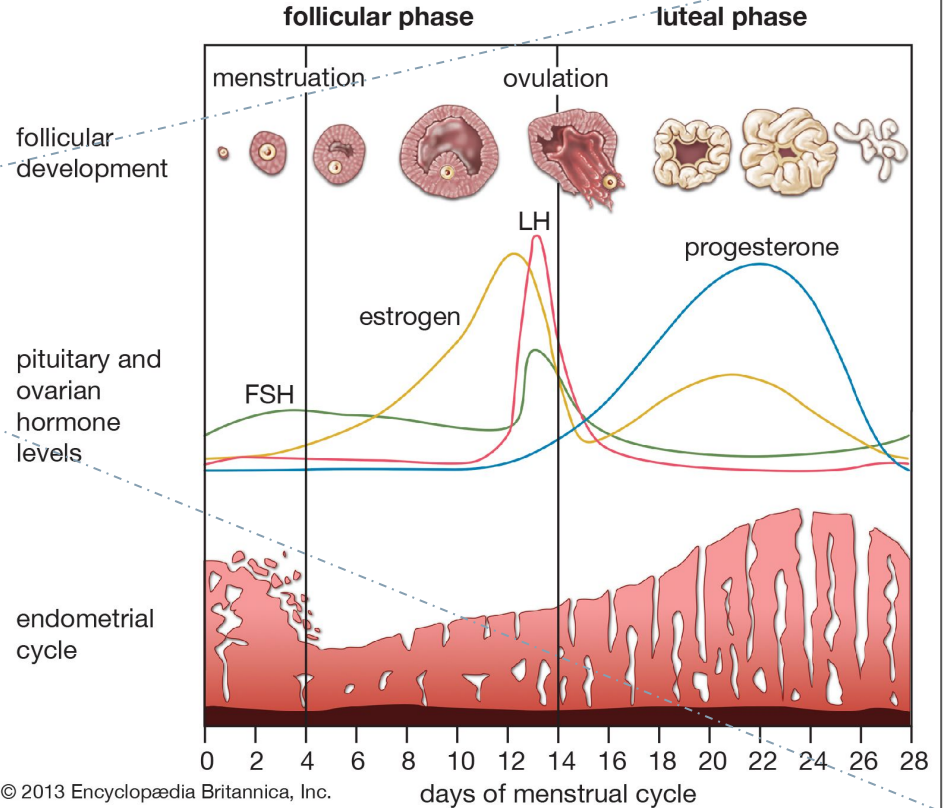
Strengthening

Strengthening muscles such as the hamstrings can help reduce the number of injuries.

THE MENSTRUAL CYCLE



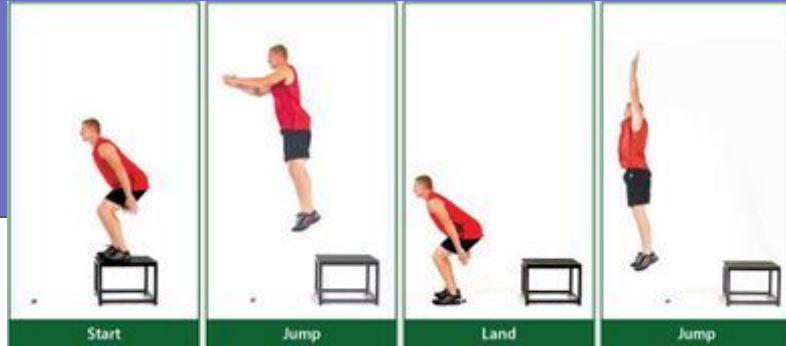
The menstrual cycle



THE LOWER EXTREMITY SCORING SYSTEM (LESS)



THE LOWER EXTREMITY SCORING SYSTEM (LESS)



LANDING ERROR SCORING SYSTEM (LESS)

SAGGITAL VIEW:

	Check if an error:		
	1	2	3
1. Knee Flexion Angle at Initial Contact: > 30 deg. Error if NO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Hip Flexion Angle at Initial Contact: Hips are Flexed Error if NO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Trunk Flexion Angle at Initial Contact: Trunk is Flexed Error if NO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Knee Flexion Displacement: > 45 deg. more than Initial Contact Error if NO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Hip Flexion Displacement: Hips flex more than Initial Contact Error if NO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Trunk Flexion Displacement: Trunk flexes more than Initial Contact Error if NO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Ankle Plantar-Flexion Angle at Initial Contact: Toe to heel Error if NO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FRONTAL VIEW:

8. Initial Foot Contact: Symmetrical Error if NO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Lateral Trunk Flexion at Initial Contact: Trunk is Vertical Error if NO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Knee Valgus Angle at Initial Contact: Knees over mid foot Error if NO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Stance Width: < Shoulder width Error if YES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Stance Width: > Shoulder width Error if YES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Max IR Foot Position: Toes > 30 deg. IR at max flexion Error if YES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Max ER Foot Position: Toes > 30 deg. ER at max flexion Error if YES	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Knee Valgus Displacement: Medial knee movement at max flexion Error if YES (Tibial tubercle inside 1 st ray)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

OVERALL:

16. Joint Displacement (Sagittal Plane) SOFT = no error, AVERAGE = 1 error, STIFF = 2 errors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Overall Impression EXCELLENT = no error, AVERAGE = 1 error, POOR = 2 errors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

TOTALS: _____ AVG: _____



THE BIG QUESTIONS

How Does ACL Injury Prevention Affect Different Female Sports and Their LESS Scores?

How Many Athletic Teams Are Actively Participating in ACL Injury Prevention?

Does the Menstrual Cycle Phase Affect an Athlete's LESS Score?

HYPOTHESIS

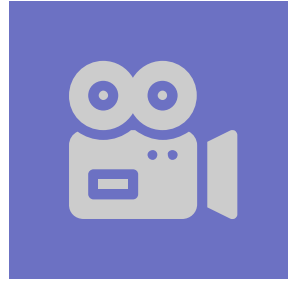
The athletes who participate in ACL injury prevention will have a lower average of LESS scores than those athletes who have not participated in ACL prevention. For the menstrual cycle data, the athletes that are at the follicular phase of their cycle will have a higher average of LESS scores than those athletes that are at the menstrual or luteal phases of their cycles.

THE METHODS



MET WITH THE TEAMS

Athletes who participated were given a questionnaire to fill out.



TESTED THE TEAMS

Each athlete was videotaped performing two jumps

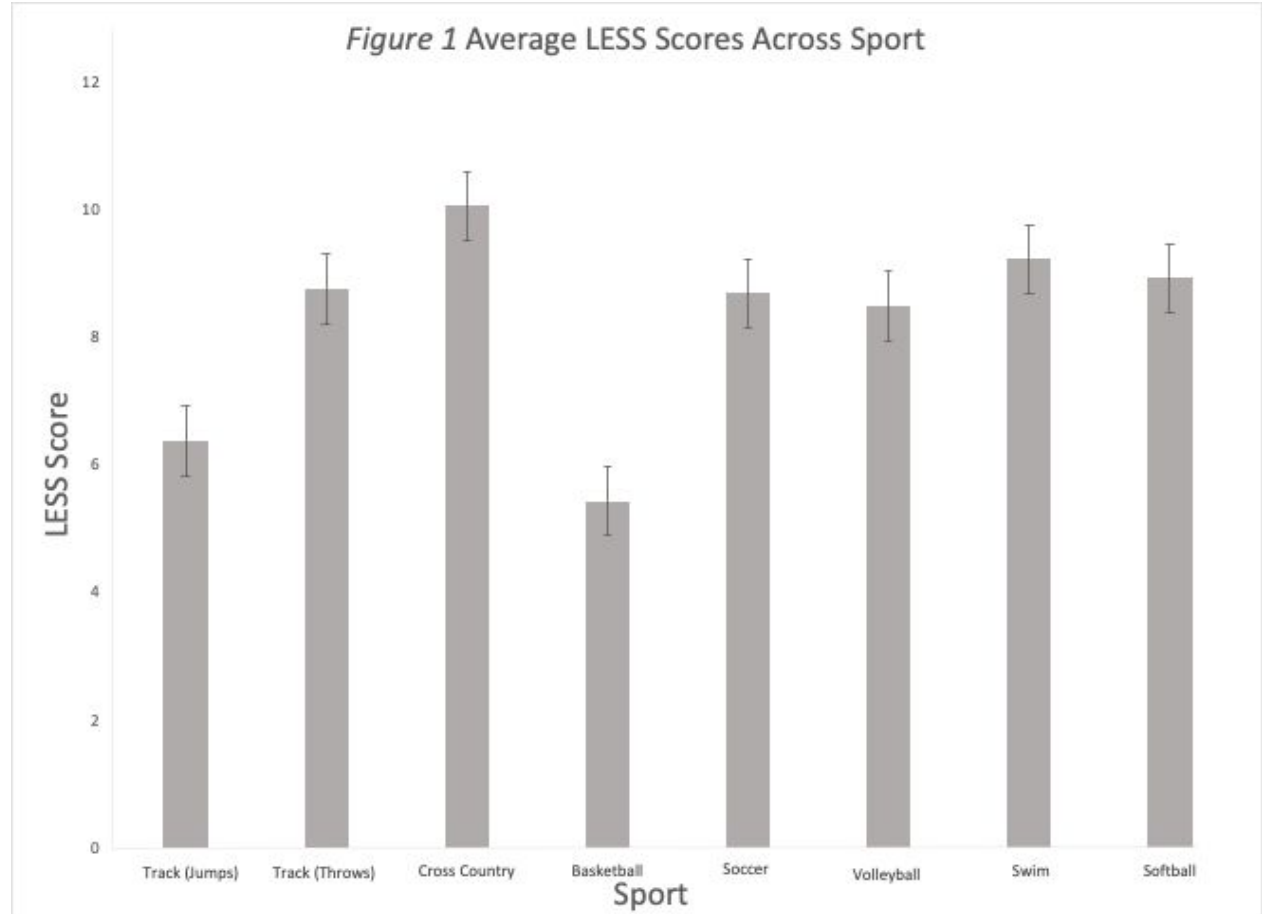


ANALYZED THE RESULTS

The jumps were scored and compared to the questionnaires.

RESULTS

Figure 1. Teams with ACL injury prevention programs displayed lower LESS scores. The average scores of Track-Jumps (n=9), Track-Throws (n=6), Cross Country (n=9), Basketball (n=14), Soccer (n=20), Volleyball (n=21), Swim (n=25), and Softball (n=13) were all displayed above. Basketball had the lowest average of 5.43, and Cross Country had the largest with 10.05.



RESULTS

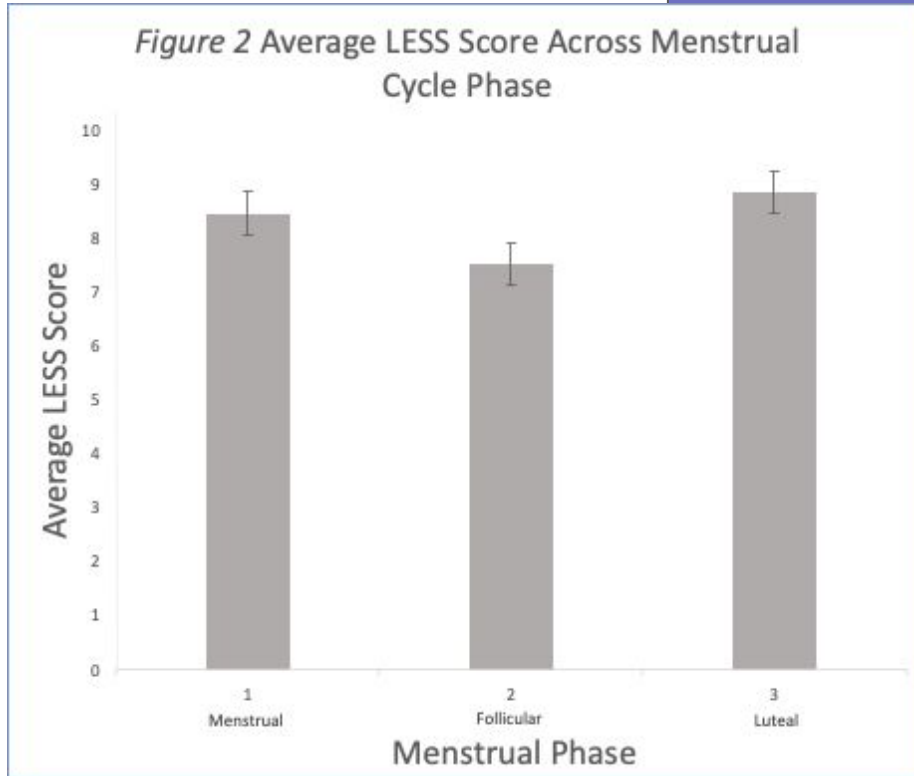


Figure 2. LESS scores were not meaningfully different during different phases of the menstrual cycle. The average scores of the LESS scores for each phase were shown with the different athletes that reported being in those respective phases. Menstrual (n=26), follicular (n=15), and luteal (n=43) were the three phases used in this study. The athletes in the follicular phase had the lowest average of 7.53, while also having the smallest number of athletes in that category.

DISCUSSION

Further Research?

High school implications?

Limitations?

What can we learn?



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QUESTIONS?