

## **The Effect of Menstruation Duration on the Achilles Tendon Cross-Sectional Area in Female Ballet Dancers**

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### **ABSTRACT**

Females are more likely to suffer Achilles tendon injury that consequently leads to more complications including pain or tendon rupture, and experiencing fewer benefits from therapeutic interventions. There is a lack of knowledge on how estrogen, which may limit collagen synthesis, can affect tendon health and growth. **PURPOSE:** The objective of this study is to examine the relationship between menstruation duration and cross-sectional area (CSA) of the Achilles tendon over a 5-month period of intensive dance training. We hypothesize the female dancers who reported a menstruation duration of 1-3 days will have the smallest average tendon CSA in comparison to the groups of 4-7 days and 8-10 days within the same time point. **METHODS:** A sample of 25 female ballet dancers was selected randomly, and ultrasound imaging sessions were conducted to observe and measure both Achilles tendons. Following each imaging session, surveys were administered to collect information on their injuries and menstruation duration. **RESULTS:** A consistent pattern was found: individuals with menstrual cycles lasting 1-3 days exhibited the smallest tendon CSA average each month, in contrast to those with cycle durations of 4-6 and 7-10 days. The 4-6 days menstruation group and 7-10 days group varied in size ranks between the months although no within-group change was statistically significant ( $p>0.05$ ). **CONCLUSION:** The results of this study do not support the hypothesis that there were no significant differences between groups at any measured time points. Further research is essential to comprehend the implications fully, emphasizing the need for personalized preventive strategies and targeted interventions to optimize tendon health in this demographic.