

Correlation between Hip Strength and Vertical Jump Height in Collegiate Female Basketball and Volleyball Players

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Background

Vertical jump height (VJH) is considered a critical skill for many sports. Various research studies have described contributing factors to increase VJH, which include jump height, ground contact time, vertical speed, peak power, amortization power, extension power, and impulse of force (Ham, Knez, and Young, 2007).

Along with VJH, hip strength has also been studied based upon its effects on running and landings after performing a jump, but there is no current research connecting hip strength to VJH.

Purpose

The purpose is to determine whether participants with greater hip strength will also have a higher VJH.

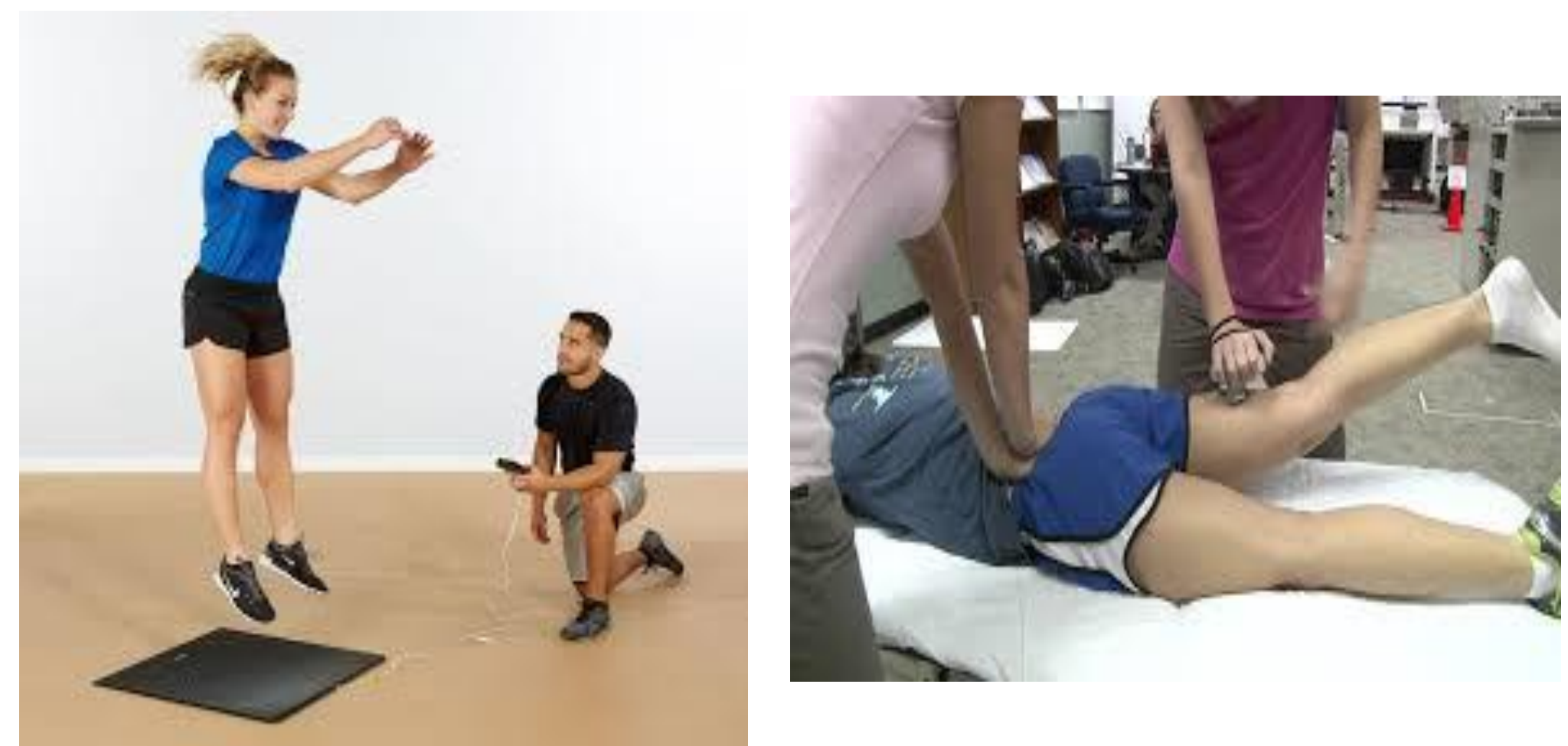
Methods

NCAA Division II collegiate volleyball and basketball players will be recruited for this study by contacting teams in the southern United States. For testing VJH a Just Jump Mat Force Plate will be used. The participant will be instructed to jump vertically three consecutive times. Data will be recorded in meters (m).

A handheld dynamometer will be used to test isometric hip strength. The participant will be seated in a chair with stabilization provided to ensure the tested muscle group is solely being used to perform the movement and ensure appropriate force application. Maximal strength during hip flexion, extension, adduction, and abduction will be measured. Three trials will be conducted for each measurement. The participant will be asked to complete a maximum voluntary contraction for 3-5 seconds against the dynamometer.

Anticipated Results

It is anticipated that participants with higher hip strength will also have a greater VJH compared to those participants with lower hip strength.



Conclusion

The results of this study will allow insight into the relationship between isometric hip strength and VJH in athletes, which then may be used to enhance performance in sport.

Reference

Ham, D. J., Knez, W. L., & Young, W. B. (2007). A deterministic model of the vertical jump: Implications for training. *The Journal of Strength & Conditioning Research*, 21(3), 967-972.