

# LONGITUDINAL CHANGES IN VERTICAL JUMP HEIGHT DURING THE FINAL PEAKING PERIOD PRIOR TO NATIONAL COMPETITION IN FEMALE COLLEGIATE OLYMPIC WEIGHTLIFTERS

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## Introduction

- Countermovement vertical jumps are a common method of assessing athletes that provide useful insight into power production, a key attribute that influences success in the sport of Olympic weightlifting.
- This non-fatiguing test can be conducted in a short period of time using portable force platforms, and data can be used by coaches to monitor athletes' neuromuscular fatigue and overall readiness to perform.
- Little information is available regarding potential changes in these parameters throughout the final peaking period prior to competition in female Olympic weightlifters.

## Purpose

- To determine whether day-to-day fluctuations occur in countermovement vertical jump height in female collegiate weightlifters in the final two days following a taper, prior to a major national competition.

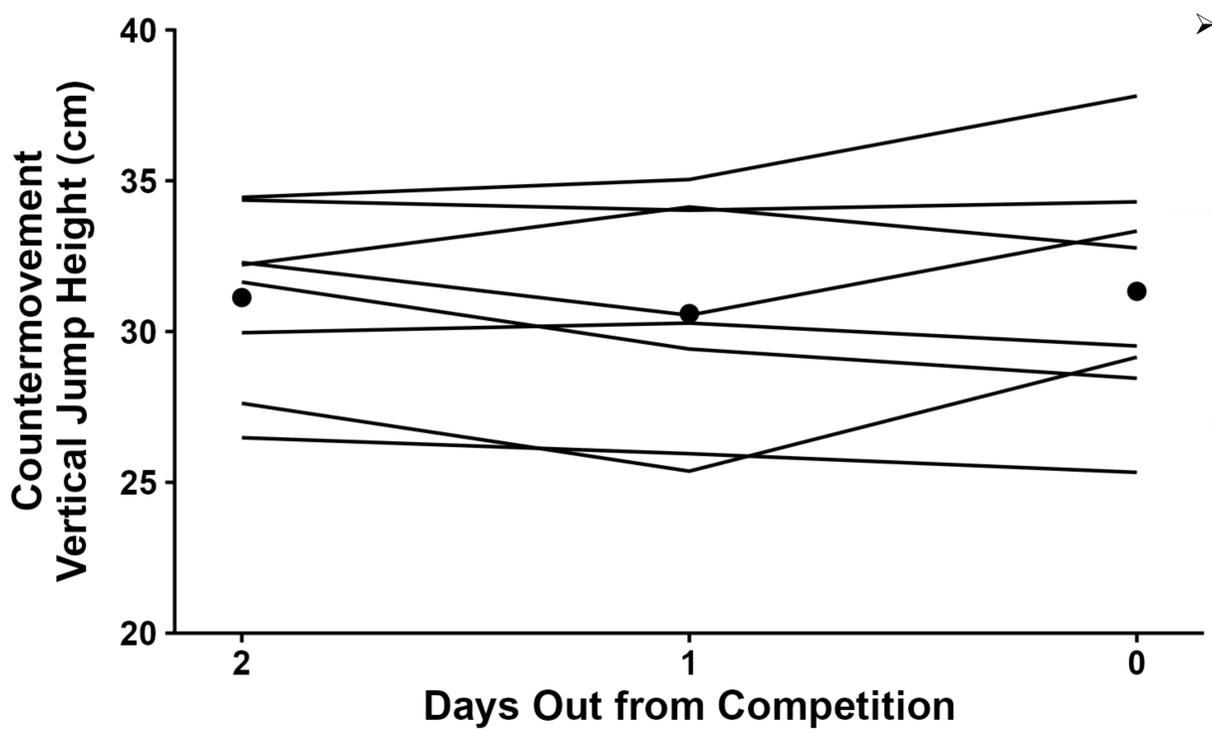
## Methods

- Participants**
- 8 Collegiate Female Olympic-style weightlifters were recruited to participate in this investigation.
  - Females:  $n = 8$ ,  $20.0 \pm 2.0$  years,  $70.0 \pm 8.4$  kg
- Data Collection**
- Completed three trials of countermovement vertical jumps with arms akimbo using Hawk Dynamics dual force platforms upon waking two days prior to, one day prior to, and the morning of a major national competition.
  - Performance testing was conducted following a self-selected dynamic warmup and a trial repetition at 50% effort. Thirty seconds of rest were allotted between each attempt.
  - Daily peak countermovement vertical jump height was collected and compared across days via one-way repeated-measures analysis of variance ( $\alpha = 0.05$ ).

### Acknowledgements

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## Results



- There were no differences in jump heights across the days leading up to competition ( $P = 0.519$ ). Regardless of day, jump height was  $31.0 \pm 3.4$  cm (mean  $\pm$  SD).



**The variation in CMVJ showed no significant changes throughout the three-day testing period. This indicates that less frequent testing may be performed leading up to competition.**

## Practical Applications

- The present investigation found that countermovement vertical jump heights remained stable during the days leading into competition.
- Coaches can perform a single assessment a few days out from competition to gain insight into an athlete's overall performance status and level of fatigue rather than conducting tests on multiple days, including the competition day.
- Future studies should evaluate the potential pattern of change in countermovement vertical jump height and related metrics across a longer period around competition to better understand how athletes can best peak for competition at an individual level.

## Conclusions

- These findings show countermovement vertical jump height, a metric representative of readiness to perform, does not change in the two days leading up to or on the day of a major competition in female collegiate Olympic weightlifters.
- It is unclear, however, whether changes would have been observed if the period of daily jump assessments was extended to one week prior to competition as accumulated fatigue began to dissipate as part of the tapering and peaking processes.