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Home > [Journal of Athletic Training](#) > [March/April 2008](#) > Ankle Bracing, Fatigue, and Time to Stabilization in Collegiate Volley...

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### Original Research

## Ankle Bracing, Fatigue, and Time to Stabilization in Collegiate Volleyball Athletes

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### Abstract

**Context:** Fatigue has been shown to disrupt dynamic stability in healthy volunteers. It is not known if wearing prophylactic ankle supports can improve dynamic stability in fatigued athletes.

**Objective:** To determine the type of ankle brace that may be more effective at providing dynamic stability after a jump-landing task during normal and fatigued conditions.

**Design:** Two separate repeated-measures analyses of variance with 2 within-subjects factors (condition and time) were performed for each dependent variable.

**Setting:** Research laboratory.

**Patients or Other Participants:** Ten healthy female collegiate volleyball athletes participated (age = 19.5 ± 1.27 years, height = 179.07 ± 7.6 cm, mass = 69.86 ± 5.42 kg).

**Intervention(s):** Athletes participated in 3 separate testing sessions, applying a different bracing condition at each session: no brace (NB), Swede-O Universal lace-up ankle brace (AB), and Active Ankle brace (AA). Three trials of a jump-landing task were performed under each condition before and after induced functional fatigue. The jump-landing task consisted of a single-leg landing onto a force plate from a height equivalent to 50% of each participant's maximal jump height and from a starting position 70 cm from the center of the force plate.

**Main Outcome Measure(s):** Time to stabilization in the anterior-posterior (APTTs) and medial-lateral (MLTTS) directions.

**Results:** For APTTS, a condition-by-time interaction existed ( $F_{2,18} = 5.55$ ,  $P = .013$ ). For the AA condition, Tukey post hoc testing revealed faster pretest ( $2.734 \pm$

Volume 43, Issue 2  
(March/April 2008)

[< Previous](#) [Next >](#)

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0.331 seconds) APTTS than posttest ( $3.817 \pm 0.263$  seconds). Post hoc testing also revealed that the AB condition provided faster APTTS ( $2.492 \pm 0.271$  seconds) than AA ( $3.817 \pm 0.263$  seconds) and NB ( $3.341 \pm 0.339$  seconds) conditions during posttesting. No statistically significant findings were associated with MLTTS.

**Conclusions:** Fatigue increased APTTS for the AA condition. Because the AB condition was more effective than the other 2 conditions during the posttesting, the AB appears to be the best option for providing dynamic stability in the anterior-posterior direction during a landing task.

**Keywords:** [dynamic stability](#), [postural control](#)

Megan Y. Shaw, MS, ATC; Phillip A. Gribble, PhD, ATC; and Jamie L. Frye, PhD, ATC, contributed to conception and design; acquisition and analysis and interpretation of the data; and drafting, critical revision, and final approval of the article.

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