

# Comparative Study of Ankle Support Devices

The purpose of this study was to compare the ability of four commonly used ankle support devices (Active Ankle®, Aircast Sport Stirrup®, DonJoy Ankle Ligament Protector® and Malleoloc®) to restrict active inversion range of motion before and after exercise. The subjects also compared the devices on subjective characteristics including stability, comfort, and ease of application and removal. Eighteen subjects had both ankles tested for maximum inversion on a specially designed measuring apparatus during three sessions: 1) before application, 2) before exercise with the support device, and 3) after exercise with the support device.

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**Abstract:** The subjective data obtained from the questionnaires provide insight into the ability of the devices to maintain normal joint mechanics while restricting ankle motion. The athlete must feel secure and comfortable in wearing these devices to ensure maximum performance and compliance.

The subjective results were similar to the objective results, with the Active Ankle and Aircast ranking the highest. Significant differences were demonstrated on all three rating scales: stability, comfort and ease of application. In the area of stability Active Ankle was rated significantly higher than DonJoy, while Aircast was rated significantly higher than Malleoloc. As for comfort and ease of application, Active Ankle and Aircast were rated higher than DonJoy and Malleoloc, but statistical significance was not shown between specific devices (pairwise comparisons).

When the subjects were asked if the device hindered their performance in any way, a wide variety of responses were noted. The total number of negative responses for Active Ankle was five, with two subjects stating that they had pain at the hinge site laterally. The Aircast device had nine negative responses, with three subjects stating it was uncomfortable and two subjects saying it was bulky. DonJoy had the most negative responses with 16. Six subjects reported pain in their heels and three noted a decrease in sagittal plane movement. The Malleoloc had 11 negative responses, of which five subjects noted pain under the arch of their feet, while three received a blister.

When asked the all important question of which device the subjects would prefer to wear, most preferred the Active Ankle support device. Next in preference, about an equal number preferred the Aircast and Malleoloc. Only one subject indicated preference for the DonJoy device.

**Conclusion:** In this study, four commonly used ankle support devices were compared objectively for their ability to restrict active inversion range of motion and subjectively on such characteristics as stability, comfort, ease of application, and overall preference. Based on the results of this study, the following conclusions are noteworthy. All four devices retained their ability to restrict inversion range of motion after exercise, increasing only an average of 3.27 degrees. Active Ankle and Aircast resisted active inversion range of motion significantly more than DonJoy and Malleoloc, and DonJoy more than Malleoloc. Active Ankle and Aircast ranked the highest in terms of stability, comfort, and ease of application. Active Ankle had the lowest number of negative responses concerning performance hinderance. Active Ankle had the highest percentage of subjects preferring to wear it during competition.

Mean ratings for stability, comfort and ease of application by treatment groups

