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 Indication: Leg length discrepancy (LLD) between booted (longer) and contralateral (shorter) lower extremities
 Location/year: Department of Orthopaedic Surgery, Rush University Medical Center & others, Chicago, IL, USA/2020
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Effect of Leg Length–Evening Device on Perceived Balance in Patients Wearing a Controlled Ankle Motion Boot



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Background:

Patients are often made weightbearing as tolerated (WBAT) in a controlled ankle motion (CAM) boot for the management of various foot and ankle conditions. A boot causes a leg length discrepancy (LLD) between the booted (longer) and contralateral (shorter) lower extremities. This discrepancy can potentially cause balance problems, undue strain on joints, and discomfort in patients. We hypothesized that a leg length–evening orthotic [EVENup] placed on the plantar aspect of the contralateral shoe improves balance among patients who are in a CAM boot.

Method & Materials:

95 randomized patients completed the study. Patients in a CAM boot were randomized to either the leg length–evening orthotic intervention group (45) or to a control group (50).

Patients were followed for 2 weeks and asked questions pertaining to balance and pain (knees, hips and back). Balance was the primary outcome and was scored from 0 (no difficulty with balance) to 10 (great difficulty with balance). The orthotic used was the EVENup which had 2 different height options to subjectively maximize limb length–evening effect. Patients in the control group were told to wear a contralateral shoe of their choice.

Results:

Intervention patients [with EVENup] reported less difficulty with balance than control patients ($p=0.001$).

The trial was powered to identify a difference in the primary outcome measure of balance and may have been insufficiently powered to identify differences in knee, hip, back, or total pain.

	Intention-to-Treat			As-Treated		
	Control, Mean \pm SD (n=46)	Intervention, Mean \pm SD (n=49)	P Value	Control, Mean \pm SD (n=50)	Intervention, Mean \pm SD (n=45)	P Value
Difficulty with balance (0-10) ^a	3.2 \pm 1.8	2.0 \pm 1.5	.001	3.0 \pm 1.7	2.1 \pm 1.7	.009
Knee pain (0-10)	1.9 \pm 2.7	1.1 \pm 2.1	.17	1.7 \pm 2.5	1.2 \pm 2.3	.33
Hip pain (0-10)	1.8 \pm 2.7	1.2 \pm 2.1	.42	1.8 \pm 2.6	1.2 \pm 2.2	.33
Back pain (0-10)	1.7 \pm 2.6	1.2 \pm 2.2	.47	1.4 \pm 2.4	1.5 \pm 2.4	.90
Composite pain (0-30) ^b	5.4 \pm 5.8	3.5 \pm 4.8	.12	4.9 \pm 5.6	3.9 \pm 5.1	.36

Conclusion:

This multicenter randomized controlled trial found, that adding a limb length–evening orthotic (EVENup) to the plantar aspect of the contralateral shoe in a patient that is weightbearing as tolerated in a boot, has improved the balance