



# A Prospective Study on Maximalist Athletic Shoes as Part of a Comprehensive Approach to the Medical Management of Early-Stage Plantar Fasciitis

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## Abstract

Plantar fasciitis (PF) is the most common musculoskeletal disorder of the foot. The purpose of this study was to evaluate the possible benefit in the management of early-stage PF. Patients with confirmed PF (>4.0 mm) were randomized to either a maximalist athletic shoe (HOKA Bondi 6) or standard athletic shoe (New Balance 880v9) in conjunction with standard of care (SOC) for a period of 12 weeks. Pain assessment and ultrasonographic measurements were made pre- and post-treatment. Those who wore maximalist shoes as part of SOC reported a significant decrease (p=0.003) in their pain Visual Analog Scores (VAS, mean decrease of 6 points) as compared to standard athletic shoe group (mean VAS decrease 4.12 points). A greater mean decrease in plantar fascia thickness from pre-treatment to post-treatment was observed for the maximalist group (1.46 mm) than the standard group (1.14 mm), but this did not reach statistical significance. 95% of patients randomized to maximalist group reported that the shoes helped in their recovery process, as compared to 76% of patients randomized to standard group. This study tested the effect of highly cushioned maximalist athletic shoes as compared to standard running shoes part of a comprehensive approach to the medical management of plantar fasciitis. We conclude that highly cushioned maximalist athletic shoes, such as the HOKA Bondi 6, may be considered as part of standard of care for management of plantar fasciitis.

**Keywords:** Plantar fasciitis; Heel pain; Maximalist shoes; Athletic shoes; Hoka

## Introduction

Plantar Fasciitis (PF) is the most common musculoskeletal disorder of the foot encountered by healthcare professionals and has significant impact on quality-of-life [1,2]. In the United States, one in ten people will experience complaints associated with plantar fasciitis in their lifetime [3]. While the exact pathology of PF is unknown, repetitive microtrauma associated with persistent load bearing caused

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an-2022, Manuscript No. CRFA-22-51321; **Editor assigned:** 10-  
C No. CRFA-22-51321 (PQ); **Reviewed:** 17-Jan-2022, QC No.  
; **Revised:** 24-Jan-2022, Manuscript No. CRFA-22-51321 (R);  
Jan-2022, DOI: 10.4172/2329-910X.1000329

an R, Obradovic KN (2022) A Prospective Study on Maximalist  
s Part of a Comprehensive Approach to the Medical Management  
Plantar Fasciitis. Clin Res Foot Ankle, 10: 329.

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their level of stability, namely neutral, stability or motion-control, with degrees of pronation and supination dictating shoe selection. Newer classifications are defined by heel-toe drop, which highlight differences between heel elevation and forefoot elevation of the midsole, expressed as minimalist, traditional/neutral, or maximalist [16]. Minimalist shoes are defined by a highly flexible sole and upper that weighs 200g or less, a heel stack height of 20mm or less and a heel-toe differential of 7mm or less [25]. Traditional shoes have a heel-toe drop less than 10mm [16]. Although there is no standard definition for what constitutes maximalist running shoes [26], there are termed as such because they provide a highly cushioned midsole in both the rearfoot and forefoot, as compared to a traditional running shoe [26,27].

The aim of this study was to determine if maximalist running shoes can be used as part of a comprehensive management protocol for plantar fasciitis, and if it has a measurable impact over standard supportive running shoes.

## **M a a M**

This study was submitted to and approved by the Western Institutional Review Board (#20192587). Informed consent was reviewed and signed by each of the participants, and the rights and privacy of the subjects were protected as per standard protocol. The

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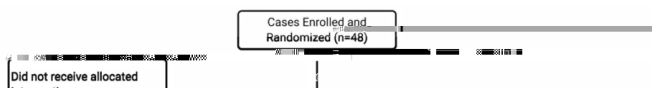


Figure 1: Trial Design. Summary of participation throughout the study (n = number of plantar fasciitis cases). HOKA Shoe shown is the HOKA Bondi 6. Standard

am Post-Treatment U/S Size 0.890 4.59 ± 0.86 0.17 Decrease U/S 1.46 ± 0.87 1.14 ± 1.01 0.309 Pre-VAS 7.38 ± 1.50 7.94 ± 1.20 0.209 Post-VAS 1.38 ± 1.36 3.82 ± 1.70

## Results

Demographic distribution of sex, laterality, age, and BMI were roughly equal in both experimental groups, as shown in Table 2. Outcome measures were also reported for each experimental group (Table 3). While a greater mean decrease in plantar fascia thickness from pre-treatment to post-treatment was observed for the maximalist treatment group (1.46 mm) than the standard comparator group (1.14 mm), this difference did not reach statistical significance (Figure 2). However, the decrease in the pain VAS scores from pre-treatment to post-treatment was statistically significant (Figure 3). Patients who were randomized to the maximalist shoes + SOC reported an average improvement in their pain VAS scores by 6 points, whereas the patients who were randomized to the standard running shoes + SOC only reported pain improvement by an average of 4.12 points (p=0.003).

Additionally, 95% of patients randomized to maximalist shoes reported that the shoes helped in their recovery process, as compared to 76% of patients randomized to standard athletic shoes (Figure 4).

## Discussion

This study looked at the effect of highly cushioned maximalist



**Citation:** Fridman R, Obradovic KN (2022) A Prospective Study on Maximalist Athletic Shoes as Part of a Comprehensive Approach to the Medical Management of Early-Stage Plantar Fasciitis. *Clin Res Foot Ankle*, 10: 329.

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