Custom-made foot orthoses for Rheumatoid arthritis: Looking at responders and no responders

Simonsen, Morten Bilde; Hirata, Rogerio Pessoto; Woodburn, James; Andersen, Michael Skipper

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Custom-made foot orthoses for rheumatoid arthritis: Looking at responders and no responders

Morten Bilde Simonsen[1], Rogerio Pessoto Hirata[2], James Woodburn[3], Michael Skipper Andersen[1].
[1]Department of Materials and Production, Aalborg University, [2]Department of Health Science and Technology, Aalborg University, [3]School of Health Sciences and Social Work, Griffith University

INTRODUCTION

Rheumatoid arthritis (RA) is a chronic inflammatory disease affecting synovial tissue in multiple joints, especially in the smaller joints of the hands and feet are affected [1]. Foot orthoses (FO) are the first-line treatment for foot pain and impairments in patients with RA. However, the pain-relieving effects of FO are still controversial. Our previous studies have shown that patients have different pain-relieving effects [2,3]. This study aimed to investigate potential biomechanical differences between patients with RA responding well to a custom-made FO with patients not responding in pain relief.

METHODS

Twenty-five participants with RA completed this quasi-experimental study using a control insole for four weeks and then a custom-made FO in the following four weeks. A visual analog scale was used to monitor changes in foot pain. 3D gait analysis was measured during walking with a control insole and a custom-made FO, respectively. Responders were participants with a foot pain intensity relief greater than 20mm on a VAS scale. No responders were participants with a foot pain intensity relief smaller than 20mm.

RESULTS

The responder group (n=8) had a pain relief of -40.1 (±13.1) mm and reduced ankle plantarflexion moment with the FO compared to the control (Fig. 1). The no-responders (n=15) had a pain relief of -4.3 (±4.3) mm and no difference in gait mechanics between the control and the FO.

CONCLUSIONS

The present study demonstrates a paradox. Although the FO was customized to each participant's foot, it did not cause similar motion control changes for all participants. Participants without altered gait mechanics did not achieve a clinically significant pain reduction.

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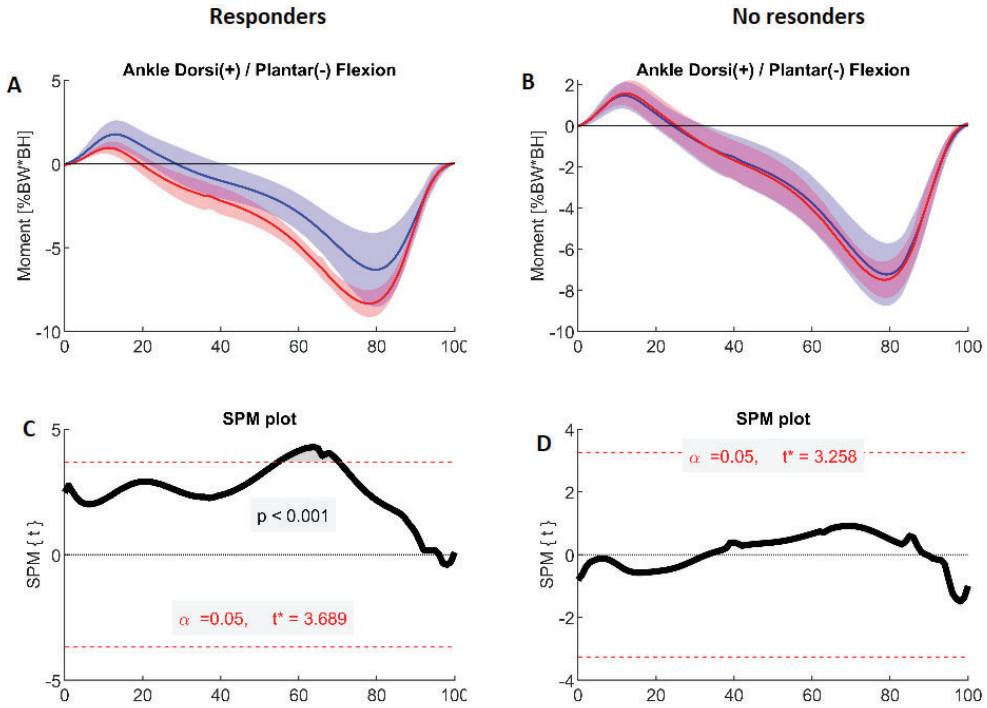

Fig. 1 A: Mean and standard deviation of the ankle moment for the responders walking with custom-made FO (red line) and responders walking with the control insole (blue line). B Mean and standard deviation of the ankle moment for the nonresponders walking with custom-made FO (red line) and responders walking with the control insole (blue line). C and D are the corresponding SPM plot to the figure above. The dotted red line is the critical threshold. If the black line crosses the critical threshold, the two variables are statistically different, during which the red dotted line is broken.