

CADCAM Orthotic Prescription and Design

Session 3

Total Contact Orthotic & Shoe Modifications for High Risk Feet

StepForce Training

Presented By Paul Graham

12/09/2020

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All about perspective



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DIABETICMedicine
DOI: 10.1111/j.1464-5415.2009.02835.x

Original Article: Complications

Plantar pressures in diabetic patients with foot ulcers which have remained healed

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Abstract

Aims The recurrence of foot ulcers is a significant problem in people with diabetic neuropathy. The purpose of this study was to measure in-shoe plantar pressure and other characteristics in a group of neuropathic patients with diabetes who had prior foot ulcers which had remained healed.

Methods This was an epidemiological cohort study of patients from diabetes clinics of two Swedish hospitals. From a database of 2423 diabetic patients, 190 surviving patients with prior plantar ulcers of the foot (heel, ball or metatarsal heads) caused by repetitive trauma were identified and 49 patients agreed to participate. Baseline and in-shoe plantar pressures were measured during walking. Data on foot deformity, activity profiles and self-reported behaviour were also collected.

Results Mean baseline plantar peak pressure at the prior ulcer site (164 kPa) was lower than in other published series, although the range was large (107–1152 kPa). Mean in-shoe peak pressure at the location averaged 207 kPa when measured with custom-made, baseline peak pressure only produced ~5–6% of the variance of in-shoe peak pressure, indicating no action in the efficacy of the individual footwear prescriptions (primarily extra-depth shoes with custom insoles).

Conclusions We propose that the mean value for in-shoe pressures reported in these patients be used as a target in footwear prescriptions for patients with prior ulcers. Although plantar pressure is only one factor in multifactorial strategies to prevent ulcer recurrence, the quantitative focus on pressure reduction in footwear is likely to have beneficial effects.

Keywords In-shoe pressure measurement, in-shoe pressure measurement, neuropathy, threshold

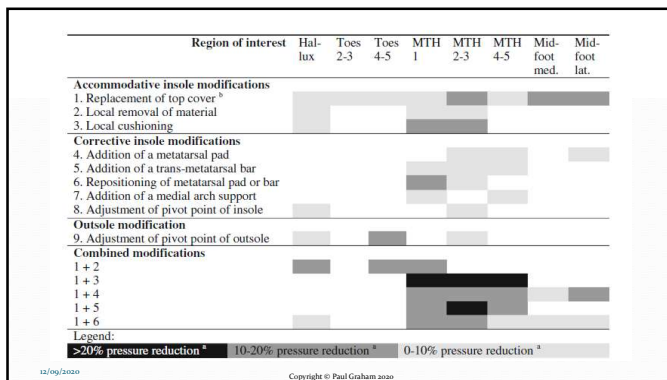
Diabet Med. 26, 1141–1146 (2009)

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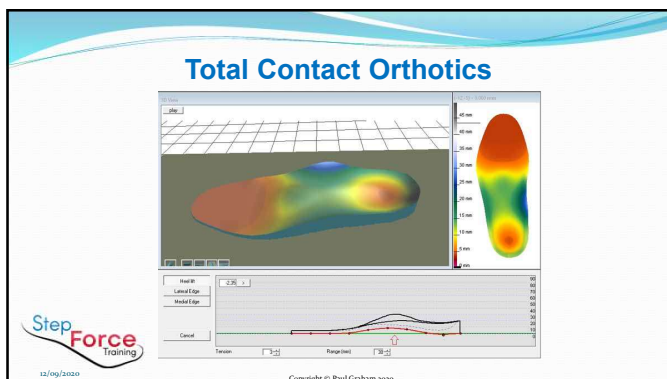
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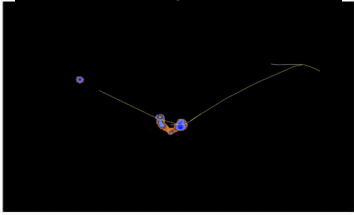


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Total Contact Orthotics



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Footwear Modification



Metatarsal Rocker



Midsole Rocker

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Footwear Modification

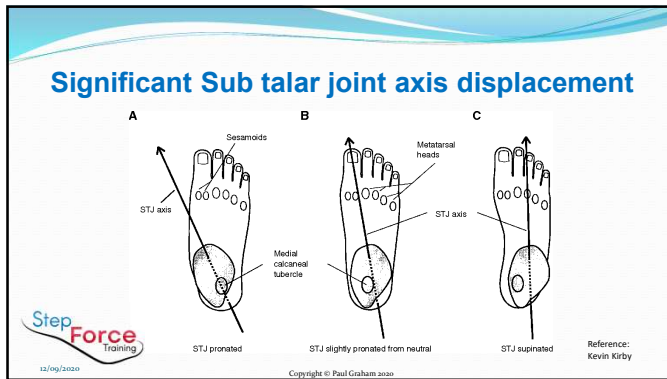
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Special Area Modifications

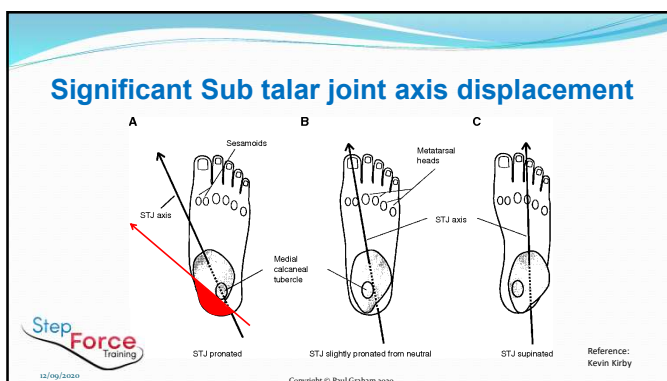
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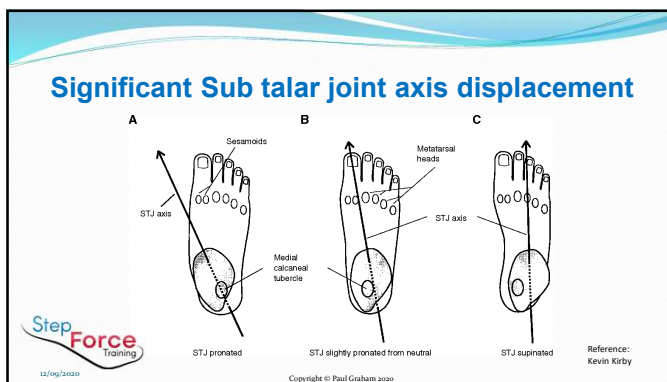
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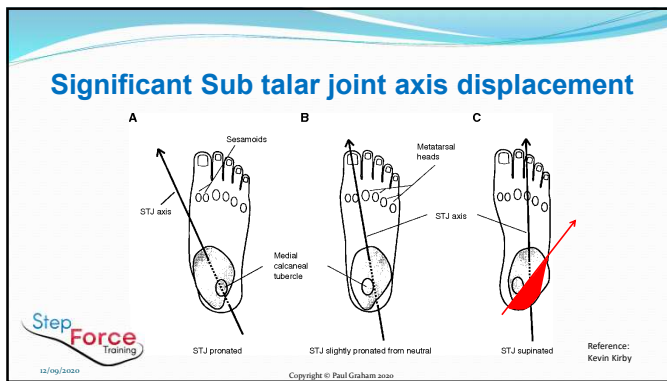
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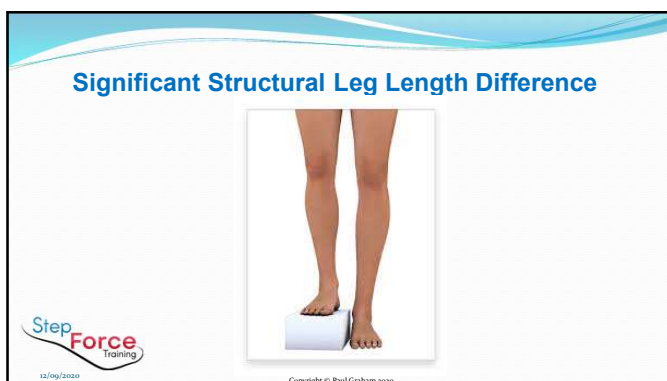
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Footwear Modification



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Case Study

HISTORY

- 68-year-old women in overall good health
- Spinal Fusion - 2014; L4 & L5 – successful, but has resulted in numbness in the most of the foot up to the ankle. When barefoot she loses balance and struggles to walk. The Left foot has slight numbness through the forefoot.
- Right Foot - 2005. Fusion of the 2nd met and intermediate cuneiform - successful until 2 years ago. CT exam shows significant progression of osteoarthritis

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Case Study

HISTORY

- Metatarsal Fusion, left foot - 2019, 2,3 & 4 at midfoot. Also straightening and pinning L2/ - healing well but she is having repeated stress fractures due to the osteoporosis
- Has been advised that the R/foot will require further surgery but is concerned about having the stress fractures occur in the R/foot also.

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Case Study

2. EXAMINATION RESULTS

- Factors affecting the Force Pathway
 - Moderate High arch structure
 - Short first Metatarsal
- Compensation Available
 - Stiffness and pain in midfoot and L/hallux dorsiflexion
 - Lower leg Muscle strength shows weakness and imbalance
 - Balance and proprioception decreased ? Due to lumbar fusion
 - Tightness in the leg posterior muscle and soft tissues; L > R



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Case Study



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Q and A Discussion



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