Pressure reducing characteristics of offloading devices commonly used to manage diabetes-related foot ulceration

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RESEARCH WEEK
5-9 OCTOBER 2020
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Background and Aim

Why?	• Diabetes related foot ulcers (DRFUs) are associated with increased morbidity and mortality rates[1], and are increasing in prevalence[2].
DRFU aetiology and treatment	• DRFUs are multi-factorial, with peripheral neuropathy and elevated plantar pressures being key risk factors for DRFU development, and are managed with pressure reduction[3], also called 'offloading'.
Evidence and clinical practice	• Non-removable offloading devices (NRDs) such as Total Contact Casts provide the greatest amount of offloading and healing outcomes[4], although their use is comparatively low to removable devices[5].
Research needs	• These removable devices have not been extensively studied, and current literature is of varied quality, meaning further research is required[4, 5]
Aim	• This study aimed to quantify pressure reduction with devices commonly used to manage DRFUs

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Methods and Results

Methods

A within-participant, repeated measures design was utilised. Peak plantar pressure in kilopascals (kPa), was the primary outcome measured in 16 participants with plantar neuropathic DRFUs. Three variations of a removable cast walker (RCW) (see images below) and a control were measured using the pedar-X® in-shoe plantar pressure measurement system.

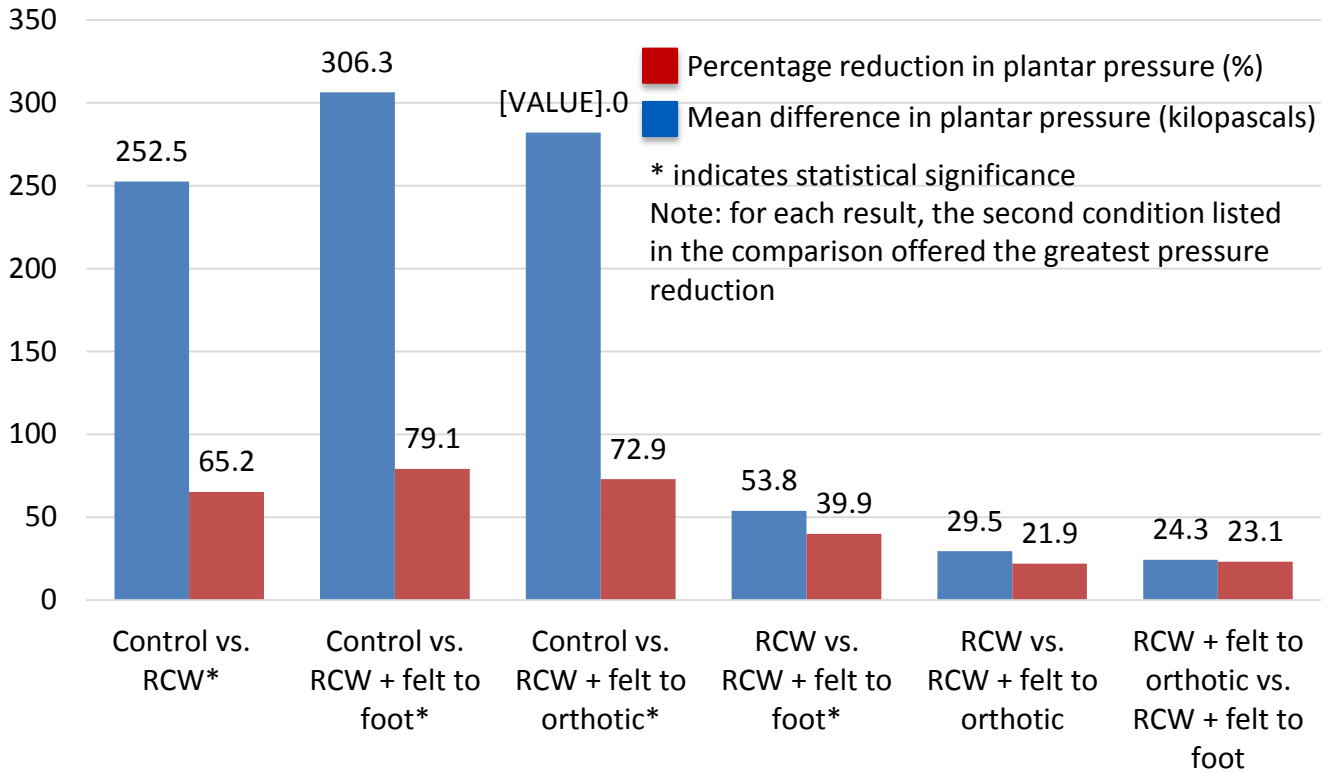
Control Condition: DARCO

RCW only

RCW + felt to foot

RCW + felt to orthotic

Results: Plantar pressure data



RCWs + felt to foot reduced peak pressures the most compared to control and RCWs alone.

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Interpretation, Conclusions, References

Interpretations

- RCWs + felt to foot offered the greatest offloading, with statistically significant reductions compared to RCWs and control.
- RCWs + felt to orthotic offered the next greatest amount of offloading, with statistically significant reductions compared to control
- RCWs alone offered the least amount of offloading, but was still statistically significant compared to control

Conclusion

- RCWs + felt to foot reduced peak pressures the most
- Clinically, the practicality of felt used in combination with an RCW renders it a suitable alternative when NRDs are contraindicated or unavailable
- However, further high quality trials are needed to investigate the healing efficacy of these devices.

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