cost-effective option is above 0.60 both for the base-case and secondary analysis (societal perspective) at a willingness to pay threshold of £30,000 per QALY. The results are robust to the scenario analyses testing assumptions regarding resource use, perspective of analysis and level of imputation regarding missing data on HRQoL.

Conclusions

The results of the economic evaluation conducted alongside the REFORM trial suggest that the multifaceted intervention is a cost-effective option for falls prevention. However, the short follow-up of the study might be insufficient to take into account for differences in costs and QALYs that may be expected over the longer term. If we make the assumption that falls reduction should also lead to a fracture reduction, it is likely that the podiatric intervention might yield to long term cost savings within the NHS. We therefore recommend a longer-term model to explore whether the multifaceted intervention would become more cost-effective over time.

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Does the severity of diabetic peripheral neuropathy alter the effect of insoles on balance?

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Background

People with Diabetic Peripheral Neuropathy (DPN) routinely wear offloading insoles to reduce foot ulcer risk. It is implicated that such insoles impede balance by dampening any remaining sensory input. Likewise, the usefulness of textured insoles designed to optimise residual sensory awareness are considered useless in those completely unable detect texture. However there has been little research to determine if the effect of insoles on postural balance differs with DPN severity. It is clinically important to understand how the potential benefits and risks of insole therapy differ within the intended clinical populations.

Objectives

To compare differences in the effect of a standard offloading insole and its constituent parts on postural balance in people with moderate and severe DPN.

Methods

In this sub group analysis, 21 people with severe DPN, and 27 people with moderate DPN, were observed standing for three 30 second trials, with eyes closed, under five test conditions presented in a random order; 1) no insole, 2) standard offloading insole, 3) three other insole types with one design component systematically altered (including texture). The validated F-scan pressure measurement system captured movement of the centre of pressure (COP). Total velocity of COP and velocity of COP in the medial/lateral (ML), anterior/posterior (AP) directions were calculated. Likewise, total path length of COP and path length in the ML and AP directions were calculated. DPN severity was quantified using a neurothesiometer applied to the apex of the hallux. Mixed between-within subject ANOVA, using data collected under each test condition were used to compare differences in postural balance between moderate (vibration perception threshold VPT range: 20-40 volts, mean age: 72 years) and severe (VPT: >40 volts; mean age 68 years) DPN groups.

Results

No significant interaction between DPN severity and insole condition, $p > 0.05$ was found. Comparison of moderate and severe DPN findings were not significant for any of the postural sway parameters ($p > 0.05$), suggesting that DPN severity makes no difference to the effect of the insoles. There was a significant main effect between insole test conditions for all measures of postural sway (p0.05).

Conclusions

The effect of insoles on postural balance is independent of neuropathy severity. The standard offloading insole increased postural sway in people with DPN but this effect was countered by; 1. the addition of a textured cover, 2. The removal of the arch fill. People with DPN, who display poor postural balance when wearing the standard offloading insole, may benefit from wearing a flat insole. Textured insoles appear to alter sensory awareness even in those with severe neuropathy. The effect of texture on balance, gait and falls in all people with DPN (regardless of neuropathy severity) merits further investigation.

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Influence of ambient temperature on in-shoe foot temperature kinetics during a 40-minute treadmill walk

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Background

There are two competing drivers for foot temperature during exercise and they seem to be related to thermoregulatory vasodilation and reflex vasoconstriction, associated with the exercise. However, the pattern of change in foot temperature kinetics during exercise has not been described previously. This study provides continuous measurement data of ambulatory foot temperature in different ambient temperatures aiming to provide insight into the influence of climate on ambulatory foot temperature kinetics. These results, in healthy participants provide the first data on foot temperature kinetics during exercise in individuals living in a Mediterranean climate, and provide the foundation for the use of this type of technology in clinical contexts including the evaluation of patients at risk of foot ulceration.

Methods

Fourteen healthy individuals (5 males, 9 females) were recruited to assess the influence of ambient temperature on in-shoe micro climate during ambulation by comparing foot temperature kinetics during Mediterranean winter and summer seasons. A dedicated thermistor was placed on two locations of the foot – the web space between the hallux and second toe and below the navicular. After acclimatizing for 15 minutes, participants walked on a treadmill for 40 minutes while continuously recording foot temperature. This protocol was repeated on two different occasions representing ambient winter (17.1 °C at 67% RH) and summer (28.2 °C at 70% RH) conditions, at the same treadmill speed and whilst wearing the same socks and shoes, on both occasions. Data was recorded every minute throughout the 40-minute trial.

Results

Foot temperature kinetics approximated a sigmoidal shaped curve in both seasons, displaying a much 'flatter' s-shape during summer. Overall, ambient temperature had a significant influence on in-shoe forefoot and midfoot temperatures during the 40 minutes of moderate physical exercise (Paired Sample T-test; $p = < 0.05$). Results demonstrated that in an ambient temperature of 28.2 °C (±0.6) typical of summer season in a Mediterranean climate, foot temperature during exercise increased by 3 °C (from 33 °C to 36 °C). A different foot temperature kinetic pattern was evident in winter with temperature increasing by 7 °C (from 27 °C to 34 °C) over 40-minutes of exercise when the ambient temperature was 17.1 °C (±0.4).

Conclusion

This study has shown a distinct difference between summer and winter in in-shoe temperature kinetics demonstrating that ambient temperature has a significant influence on foot temperature kinetics during exercise in healthy participants, revealing that thermoregulatory function may be reflected in these measurements. To date there has been relatively little study of in-shoe foot temperature kinetics during physical exercise in relation to ambient temperature. Therefore, this study provides baseline data for comparison with diabetic participants where any difference detected may reveal presence of thermoregulatory dysfunction and impaired microcirculation with implications to diabetic foot ulceration development.