**Introduction**

Lower limb injuries are common in initial military training (1,2). Institute of Naval Medicine studies at Commando Training Centre Royal Marines show a lower limb injury rate of 36% (3,4). Running has been demonstrated to be a significant cause of over use injuries as demonstrated that in any 12 month period between 30 and 70% of both recreational and competitive runners sustain injuries (5,6).

The footscan® system works by measuring vertical force at 500Hz and 4 sensors per cm² (Total of 8192 resistive recordings of both right and left foot plantar surface). This allows the pressure to be calculated by dividing this contact up into different foot zones, and the timing of this event to be noted. The footscan® system can look at maximum pressures/forces when/where force is being applied during the stance phase. If there is an imbalance occurring in any of these areas, and the timing of this event, the system can be used to predict the injury rate.

The recommended orthotic prescription, if applicable, was graded (Fig.2) and those at high and medium risk were randomized to either receive a custom D3D™ orthotic or no intervention.

**Methods**

400 male participants gave written informed consent. Participants were asked to walk across the 18m track at their own pace (1,2). Institute of Naval Medicine studies at Commando Training Centre Royal Marines show that the increased muscle activation of lower limb musculature associated with running injury.

The footscan® system works by measuring vertical force over a number of sensors (8192 sensors on a 1m² Pressure plate). This allows the pressure to be calculated by dividing this contact up into different foot zones, and the timing of this event to be noted. The footscan® system can look at maximum pressures/forces when/where force is being applied during the stance phase. If there is an imbalance occurring in any of these areas, and the timing of this event, the system can be used to predict the injury rate.

The recommended orthotic prescription, if applicable, was graded (Fig.2) and those at high and medium risk were randomized to either receive a custom D3D™ orthotic or no intervention.

**Results**

Participants were followed up after the 14 week initial training phase for lower limb injury.

Definition of injury was a lower limb injury resulting in missing training for 2 days or more, excluding ankle inversion injury.

**Inclusion/Exclusion**

All new entry officers were given a presentation on the trial and given the opportunity to take part, as part of their joining procedure. Participants were excluded if they had existing orthotic prescription (n=3), declared existing lower limb injury (n=2) or withdrew their consent (n=1).

**Discussion**

The subjects were not blinded as to the nature of the injury, although the end point of the study was reporting of injury.

**Limitations**

The trend of structure and any dummy ‘non prescription’ insole was felt to add too great a confounding variable as this would contribute to altered kinematics. The non intervention group were unaware of their status as to low risk on control.

**Conclusions**

Prescription of the D3D™ orthotic reduced injury rate (ARR) by 31% in those categorised as High and medium risk. This gave NNT of 3.2. In an Initial Military training population, the footscan® D3D™ orthotic device is able to significantly (P<0.01) reduce lower limb injury.

**References**


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