

Help Your Patients Take a Stand Against Work-Related Foot Problems

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Prolonged standing is associated with an increase in frequency of distal lower pain symptoms, most notably in the lower leg or calf, and [the ankle](#) or foot for both men and women.¹ Fortunately, evidence suggests work fatigue and musculoskeletal symptoms in the same areas can be significantly decreased with the use of flexible, shock-absorbing shoe inserts. Even in patients with no need for specific foot or back treatments, supportive insoles can improve energy levels at work and help reduce subjective reports of tiredness.

The NYC Police Study

Researchers from the Division of Orthopedics at the New York College of Podiatric Medicine were interested in studying working-class people who spent considerable portions of the day on their feet. They found that police officers - most of whom wore stiff-soled work boots - made excellent subjects for testing the effects of wearing shoe inserts during their workday.²

One hundred twenty-two New York City police officers were recruited for this study. Each officer wore semi-custom, flexible insoles for five weeks, for an average of seven hours per day. Subjects walked an average of three miles per day for the duration of the study. The officers were all in good health, and any who were currently receiving treatment for back, leg or foot problems were excluded from the study.

The insoles used in this investigation were made with elastomeric polymers and were semi-custom, in that they were designed for either low-arched, normal-arched, or high-arched feet. Responses to questionnaires collected before and then after the five-week study were used to quantify the officers' foot problems and symptoms, and their satisfaction levels, in order to measure the effects of the supportive insoles.

Study Results

Before the study began, one-fifth of the police officers reported that they regularly experienced foot pain or discomfort at the end of their workday; 15 percent had calluses, corns or athlete's foot; 18 percent had sought treatment for a foot problem in the past; and 20 percent had worn foot orthotics at some point previously. After five weeks of wearing the semi-custom insoles, there was a significant reduction in tiredness in the feet at the end of the day, with 68 percent reporting less foot discomfort. At the end of the study, 70 percent of the officers said they planned to continue wearing the insoles. The shock-absorbing insoles were found to be very comfortable, and they significantly helped decrease both fatigue and foot symptoms at work, as well as after the work shift was over for the day.

Additional Research

A similar study demonstrated lower oxygen consumption and improved energy levels in healthy women who were fitted with flexible orthotics and tested on a treadmill.³ During walking, their heart rates and blood pressures were consistently lower than the control group, which did not receive shoe inserts. In this study, the inserts were built based on a "weight-bearing, functional position" image of the foot, and included support for the medial longitudinal arch.

Other clinical studies include one by Voloshin and Wosk of special interest to doctors of chiropractic.⁴ They found that viscoelastic shoe inserts significantly reduced reported pain levels in patients with low back pain. Another relevant report comes from Denmark, where a controlled study on soccer referees participating in a five-day tournament found "The incidence of soreness in Achilles tendon, calf, and back were significantly reduced by the use of shock-absorbing heel inserts."⁵

However, it has since been noted that placing shock absorption under the heel increases the mechanical loads in the anterior part of the foot during walking.⁶ This suggests the most effective insoles take advantage of the newer viscoelastic materials in a full-length, with shock absorption extending into the forefoot.

Standing and walking on concrete and other types of rigid flooring during working hours is a significant source of both foot discomfort and spinal complaints. The best materials for work insoles are the viscoelastic polymers, a group of man-made materials specifically created to improve on our body's ability to dissipate shock stress to sensitive and easily damaged tissues, according to G.R.

Johnson, a mechanical engineer.⁷ Johnson tested four different types of shoes and nine insoles of various materials for magnitude of shock absorption and reported, "Statistically significant reductions of shock factor were noted in 58% of cases," with a synthetic viscoelastic-based insole providing the most shock reduction.

Whether it is considered a workplace improvement, a wellness initiative, injury prevention, or simply providing needed support for the weight-bearing musculoskeletal system, orthotics should be considered for everyone who spends a large part of their day standing and walking on concrete, asphalt, or rigid flooring.

References

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