

Excess Body Weight and Orthotic Support

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Patients who are classified as either overweight (having an excess of body weight compared to set standards) or obese (having an abnormally high proportion of body fat)¹ have specific requirements and issues regarding foot orthotics. Their rate of developing lower extremity and spinal problems is higher, as is their requirement for shock absorption. Shoe fit concerns and biomechanical distortions are potential obstructions to achieving a satisfactory response. The following are special considerations that are important in obtaining good results with obese chiropractic patients.

Obesity: A Growing Problem

Most researchers have concluded that Americans are becoming increasingly overweight, with nearly one-quarter of U.S. adults defined as obese.² Since the additional weight load places more stress on the supportive skeletal structures, it isn't surprising that being overweight contributes to more musculoskeletal and arthritic problems.

Obesity Biomechanics

Lower extremity biomechanics are very different in the overweight patient. Obese individuals walk more slowly, take shorter steps and have an increased step width. They have increased Q-angles at the knee, more hip abduction, significantly more abducted foot angles, and increased out-toeing (foot flare). Overpronation is greatly increased, with a greater contact angle at heel strike, more eversion of the foot, more flat-footed weight acceptance period in midstance, and a faster maximum eversion velocity. There is also greater ankle dorsiflexion, but less plantar flexion.

In a 1996 study,³ Frey determined that overweight patients experience a higher incidence of plantar fasciitis, tendinitis, osteoarthritis, and fractures/sprains of their feet and ankles. A more recent study suggested that obesity is "a cause and initiator of heel pain and plantar fasciitis/calcaneal spur, and that improper footwear aggravates the condition."⁴ A study by Riddiford-Harland, et al., concluded that excess body mass "appears to have a significant effect on the foot structure of prepubescent children, whereby young obese children display structural foot characteristics which may develop into problematic symptoms if excessive weight gain continues."⁵

Clinical Considerations in the Overweight Patient

- Biomechanical alignment of the lower extremities interfering with spinal function

Evaluate and correct for: Hyperpronation at the foot and ankle, arch collapse, valgus knees (knock-knees), and excessive knee and hip joint rotation.

- Shock absorption, cartilage and disc protection

Use orthotic materials and designs that supplement the heel pad and reduce the stress of heel-strike shock (transitory pressure) and sustained weight (continuous compression) on joint cartilage and spinal discs.

- Biochemical abnormalities - complicating factors

Remember that the cause of obesity in some patients is a biochemical imbalance, such as hypothyroid and/or adult onset diabetes (type 2). These problems will require dietary counseling and nutritional recommendations.

- Muscle imbalances - stretching and strengthening

Check the function of the muscles that support the foot and ankle. Gould⁶ reports that overweight patients with hyperpronation frequently demonstrate weakness of the posterior tibialis muscle, along with tight heel cords.

- Shoe and orthotic fit

Examine the shoes for rollover breakdown of the sides and heel counter, and excessive heel wear. Wrong shoe size will interfere with any attempt to introduce an orthotic. Slip-ons and loafers provide no support. Recommend a lacing shoe with a strong heel counter.

Orthotics for the Obese

There is an inherent conflict in the overweight patient's need for orthotics. A relatively rigid, very controlling type of support is needed to counteract the high forces generated by the heavier loads imposed on the lower extremities, but the need for shock absorption to decrease the excessive stress on the articular cartilage and slow the degenerative processes is also critical. Comfort is also a factor, since unworn orthotics aren't useful. So, which is optimal for an overweight patient: a rigid, controlling orthotic or a soft, flexible orthotic?

I recommend an orthotic that provides variable firmness, flexibility and control at midstance, and also protects the foot from heel-strike with a shock-absorbing material in the heel area. When an orthotic with these qualities is combined with advice on shoe fit, strengthening and stretching exercises, and appropriate chiropractic treatments for involved joints, the overweight segment of our population has a much greater opportunity to begin exercising safely and in comfort.

Doctors who treat low back pain and lower extremity problems should consider the benefits of orthotics for their obese patients. For many such patients, well-fitted and appropriately designed custom-made orthotics will help provide a more successful and longer-term clinical outcome.

References

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