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## **Rehabilitation and Support Considerations for Obese Patients**

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Chiropractic patients who are overweight or obese are a group which has special health needs and concerns. Spinal problems and lower extremity conditions are more frequent. There is also a greater need for postural evaluation and absorption of heel-strike shock. Problems with shoe fit and multiple biomechanical abnormalities increase the challenge in achieving a satisfactory response. This article will attempt to address several factors which are crucial to achieving optimal results with obese patients.

### **Definition of and Predicting Factors for Obesity**

When people are 20 percent or more over the ideal weight for their height (as listed in the Metropolitan Life insurance tables), that are considered overweight. When weight exceeds 30 percent above the listed ideal weight, a person is defined as obese. Depending on the population studied and the exact definitions used, most researchers have found that Americans are becoming more and more overweight, with around 20 to 30 percent of our society defined as obese. A recent study<sup>1</sup> has concluded that among children above the age of three years, obesity is an increasingly important predictor of adult obesity, regardless of whether the parents are obese. And the same study observed that parental obesity more than doubles the risk of adult obesity among both obese and nonobese children under 10 years of age.

Given that increased weight places more stress on the supportive skeletal structures, it should not be surprising there is a greater frequency of musculoskeletal and arthritic problems (see Figure 1) found in those who are obese. This means that chiropractic offices may see even more overweight/obese patients than are present in the general population. Many of these patients can benefit greatly from well-fitted orthotics and simple, at-home rehabilitation equipment.

### **Biomechanics and Observations**

Lower extremity biomechanics are very different in the obese patient, and many gait changes and abnormalities are commonly seen. Obese individuals take shorter steps, have an increased step width, and walk more slowly. They have increased Q-angles at the knee, more hip abduction, significantly more abducted foot angles, and increased out-toeing (foot flare). Hyperpronation is greatly increased, with a greater touchdown angle, more eversion of the foot, more flat-footed weight acceptance period in early stance, and a faster maximum eversion velocity being measured. There is also greater ankle dorsiflexion, but less plantar flexion.

A recent study<sup>2</sup> described the effects that being overweight has on the prevalence of foot problems. The 38 percent of the participants in the study who were overweight or obese had experienced a higher incidence of plantar fasciitis, tendinitis, osteoarthritis, and fractures and sprains of their feet and ankles.

An earlier study by the same researcher found that 88 percent of a group of women patients were wearing shoes which were significantly smaller than their feet; those with the greatest discrepancy between foot and shoe size had the most lower extremity symptoms.<sup>3</sup> A followup report disclosed that over the next five years 70 percent of the women experienced a weight gain (averaging 9 lbs.), and the average measured shoe size increased by almost a full size.

A 1996 study by Sowers found that overweight women have an increased incidence of developing osteoarthritis during mid-life, and that the "articular cartilage suffers more wear and tear, which eventually leads to osteoarthritis. Overweight women are at even greater risk because they carry a heavier load."<sup>4</sup> This tendency is accentuated even more when overweight people begin an intensive, regular walking exercise program to lose weight.

### **What to Know and What to Look for**

1. Biomechanical alignment 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.
2. Shock absorption, cartilage and disc protection. Use materials and designs which supplement the patient's heel pad and reduce the stress of heel-strike shock (transitory pressure) and sustained weight (continuous compression) on joint cartilage and spinal discs.
3. Complicating factors. 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.

4. Muscle imbalances. Check the function of the muscles which support the foot and ankle. Overweight patients with hyperpronation frequently demonstrate weakness of the posterior tibialis muscle, along with tight heel cords. At home rehabilitative exercise systems can help strengthen muscle groups and restore balance in the spine and joints of the lower extremities.
5. Shoe and orthotic fit. Examine the shoes of every overweight patient for excessive heel wear and rollover breakdown of the sides and heel counter. Wrong shoe size is very common, and will interfere with any attempt to introduce an orthotic. Overweight patients need a lacing shoe with a strong heel counter; slip-ons and loafers do not provide adequate support.

### **Orthotic Selection**

In selecting an orthotic for an overweight/obese patient, a relatively rigid, controlling type of support is required to counteract the high forces imposed on the lower extremities by heavier loads. There is also a critical need in the long-term for shock absorption to decrease excessive stress on the articular cartilage and slow the degenerative processes. Comfort is also a factor, since orthotics which are not worn are the ones that are least useful.

Many chiropractors have found that what works best for the obese patient is a compromise orthotic: one that is firm yet flexible, with plenty of support for the arches, and contains shock-absorbing materials in the rear foot area. The ideal orthotic should also provide control with a heel cup and integral pronation wedge, and have a soft, comfortable top layer.

I recommend that all clinicians who encounter obese patients with low back pain and lower extremity problems consider combining appropriate chiropractic care with supportive orthotics, rehabilitative strengthening and stretching exercises, and advice on nutrition, weight reduction and shoe fit. In many cases, this "package" of modalities and guidance will yield a more successful and longer term clinical outcome.

### *References*

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