

Decompression: A Non-Surgical Approach to Low Back and Neck Pain

by

Christopher Proulx, DC, PhD(abd), ATC, CSCS

And

Joseph A. Gallo, DSc, ATC, PT

This article was co-authored by Dr. Christopher M. Proulx, DC, PhD(abd), ATC, CSCS, a Clinical Consultant for DJO, llc and private practitioner and Dr. Joseph A. Gallo, DSc, ATC, PT, an associate professor in the Sport and Movement Science Department and Athletic Training Education Program Coordinator at Salem State University in Salem, MA.

Introduction

Low back and neck pain constitute a large medical problem in many countries. In the United States alone, low back pain has been reported cost 50 to 100 billion dollars per year (Frymoyer & Cats-Baril, 1991). Cervical pain, although not as high an incidence creates a great deal of disability, with cervical myelopathy being the number one cause of neck pain in older adults. Early intervention may provide added benefit and improvement to such conditions (Wand et al 2004).

Cyriax (1984) is often quoted for earlier descriptions and benefits to spinal traction. However, prior to Cyriax, E.J. Scrip (Scrip, 1955) describes the influence of spinal traction on backache and lumbar disc herniations and the potential clinical effectiveness. The last several decades have provided us with a great deal of information, including the specific effects on the spine. We continue to see more outcomes based research, enhancing the protocols that were once archaic, simply because of the devices we were using, including our hands. In the 1990's, traction has also taken on a different role in non-surgical management of disc herniations, referred to decompression. This is not to take the place of the surgical definition, however to imply simply an unloading of the biomechanical, physiological, and day to day compressive forces the human spine encounters. Since then, we now know that there are many different components to spinal pain and continue to develop more appropriate interventions, spinal traction being one of them.

Biomechanical, Physiological and Patient Outcomes

Although the biomechanical and physiological outcomes are well established in the literature, this brief discussion will also provide an introduction for further sections. There have been investigations on internal disc pressure, separation and positioning of the vertebrae, including decompressing the component and relieving nerve root pressure, cross section, myoelectric activity, and hemodynamics of muscle tissue, and autonomic nervous response.

Although internal disc pressures and pain have been studied for decades, we will focus on the outcome of such a response, retraction of the nuclear material subsequent herniation. This has been accomplished successfully in both the cervical and lumbar spine, in both single and multiple levels (Chung et al 2002; Sari et al 2005). In the lumbar spine, Sari et al (2005) determined that static traction resulted in significant increases of both the central and lateral canals. This was a result of decreased encroachment of disc herniations, at multiple levels and retraction of soft tissue, also referred to as non-surgical decompression. It is also interesting to note that there was a decrease in the cross sectional area of the psoas major muscle. Despite patient being positioned supine with iliofemoral flexion which shortens, even the small degree of motion by applying separation forces in the spine resulted in significant changes. It is not completely clear what clinical significance this may have, but as there is soft tissue attachment to the intervertebral discs, there may be some influence and certain reason for continued