

Note: This is an excerpt from a study using a different product, but the conclusion is relevant as Back-A-Line patented “curved and firm” in a wearable orthosis. (See highlighted section on pg. 2)

A Review of the New ORTHO-MOLD SPINAL ORTHOSES

by

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The results of lumbar orthoses in the treatment of adult low back pain disorders is unproven. The role of orthoses is to reduce pain and improve endurance. There is no evidence to date that orthoses play a role in biologically treating low back pain and hastening recovery, but physicians prescribe them on an empiric basis and patients accept them based upon a functional result. We present here a new orthosis, the Ortho-Mold lumbosacral and thoracolumbar orthosis, which has been found to be unusually therapeutically effective and acceptable to patients.

The biological origin of adult low back pain is not yet known. Its mechanical features are reflected clinically as pain exacerbated by prolonged posture, sitting, standing in place, bending, lifting, Valsalva maneuvers, and improved by recumbancy and short distance walking. These mechanical features are nonspecific and are also noted in lumbar disc herniation, spondylolisthesis, tumors, infection, and compression fractures. The mechanical features are correlated with, but not necessarily caused by, increases and decreases in intradiscal pressure. The determination of the pathologic process causing pain is sought after by the evaluating physician. The choice of an appropriate orthosis in the management of a specific condition can be made more rational by examining the goals of orthotic management.

The traditional goals of lumbar orthoses have been to immobilize the spine, increase intra-abdominal pressure to support the spine, provide contact with the back for proprioceptive pain blocking effects, and, in some instances, force the spine into a specific configuration, usually lumbar flexion. The concept behind immobilization is to splint and restrict motion so as to protect irritated structures and put them to rest, thus reducing pain and secondary muscular spasm. The clinical features outlined previously indicate a variance between the need for motion to reduce pain and the restricted mobility imposed by a more rigid orthosis. The practical result is that many patients feel worse and do not accept rigid braces.

Most lumbar orthoses attempt to raise intra-abdominal pressure. This feature is designed to allow an axial truncal load to be transferred to the abdominal cavity from the spine. It is consistent with the goal of reducing intradiscal pressure resulting in a symptomatic reduction in pain. Increasing intra-abdominal pressure is therefore a desirable goal of lumbar orthoses. Pressure should be smoothly delivered with a uniform distribution which can be easily adjusted by the patient and varied according to his subjective sense of what is enough but not excessive pressure. It is a feature usually provided by even the most rudimentary of corsets.

Patients with low back pain frequently find an alleviating effect of a firm, smooth surface in contact with their back. It provides a proprioceptive and apparent pain blocking feature. A smoothly contoured firm surface therefore appears to be a desirable feature of an orthosis. A firm posterior portion also provides a rigid segment against which the abdominal portion of the brace can pull. Many simple orthoses utilize molded plastic inserts to provide these features while more rigid orthoses, such as the MacAusland, Knight, Williams, and Norton-Brown, utilize bar arrangements. Two problems can arise in these systems. The first is from the existence of trigger points usually at the sacroiliac areas and commonly found in low back pain patients. Rigid bars and molded plastic inserts may worsen pain by stimulating these trigger points and therefore exacerbating pain. In these instances, patients may find bracing totally unacceptable. Additionally, the contours of braces with bar designs may cause irritation at the edges. Since the contours are set at the time of fitting, small translations during activities may place an edge elsewhere and create discomfort there, forcing the patient to constantly readjust the position of the brace. Molded plastic inserts may also suffer from this edge problem. Since most plastic molds are manually contoured, overzealous molding at the edge and central portions may create irritating contours again reducing patient comfort. Therefore, design features reducing edge effects and excessive contouring are desirable in an optimal lumbar orthosis. The role of forcing the lumbar spine into flexion remains unproven. Maintaining a configuration requires a rigid brace and therefore encounters the problems noted above.

There are additional features which make bracing unacceptable to patients. Braces tend to ride up by the sliding of the brace over underclothing or on skin during motion. Rigid braces tend to be less forgiving since they move up as a unit, but even simple fabric corsets suffer from this problem. Cosmetic considerations also enter into patient acceptance of braces. Some patients find the dress requirements to accommodate bracing too unacceptable and reject bracing on this basis. A slimming total contact brace is more acceptable than a large rigid brace producing obvious cosmetic distortions. Finally, cost considerations are present. Orthoses are expensive. To recommend "trying a brace" to a low back pain patient can be an expensive therapeutic experiment to patient and third party payers. Orthotic strategies need to be sensitive to the cost cutting needs currently mandated by our society.