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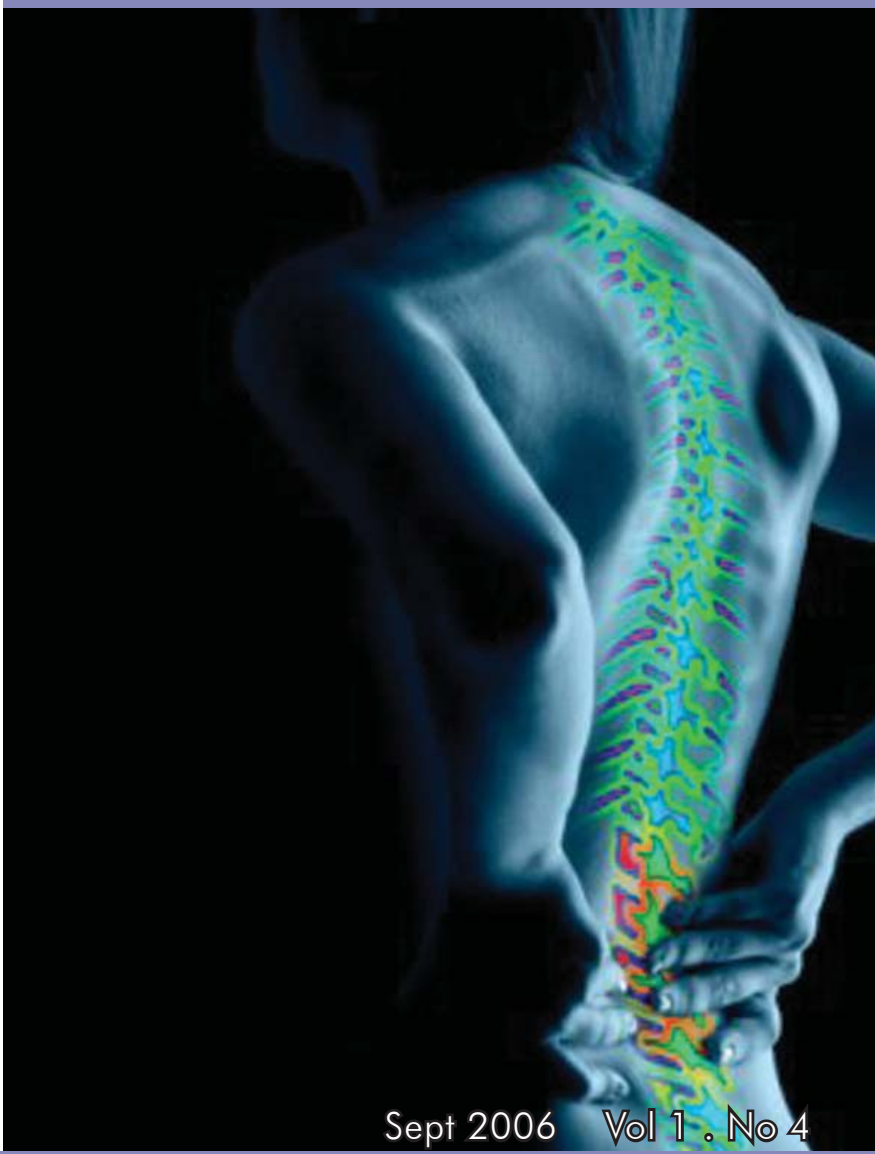
Evidence Based Update

An evidence-based newsletter related to the management of musculoskeletal disorders



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Physical Therapists Use of Spinal Manipulation For Low Back Pain

In our last newsletter we discussed the importance of classifying patients with acute LBP into pertinent sub-groups to guide intervention. We introduced the Treatment-Based Classification System as originally described by Delitto et al,[1] which includes four categories based on the type of intervention received. In this edition we will cover details of the Mobilization/Manipulation category and discuss the use of spinal manipulation by physical therapists.

The Mobilization/Manipulation category includes patients who will respond to either lumbar spine or sacral iliac joint mobilization or manipulation. Key discriminating variables for this category include shorter duration of symptoms (15 days), an average pain level of 5.5/10 and limited lumbar flexion range of motion.[2] The clinician then performs a cluster of clinical tests[3] to determine if the sacral iliac joint intervention is indicated or if lumbar spine techniques are required. Most commonly the lumbar spine is the area in need of manipulation.

Spinal manipulation has been described in the physical therapy literature as far back as the early 1920's. Manipulation techniques date back to the time of Hippocrates and no discipline "owns or invented" spinal manipulation.[4] Manipulation training is included in entry-level physical therapy education and is part of the basic

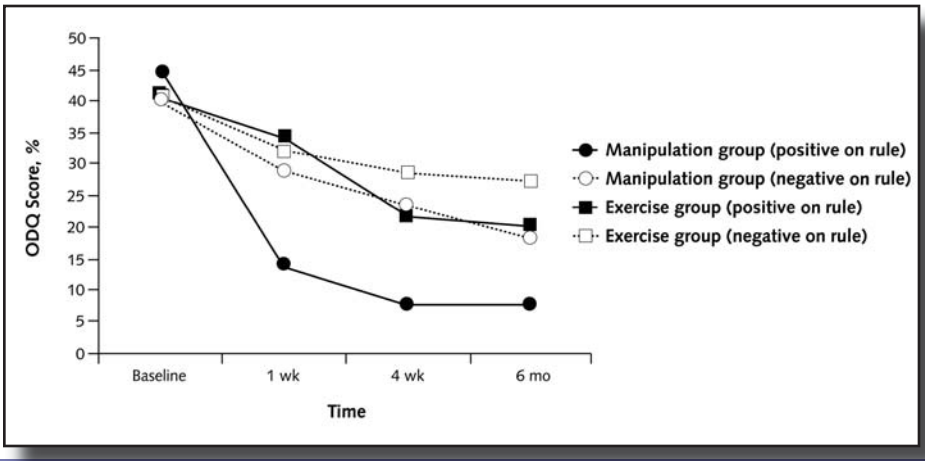
skill set of new graduates.[5] Spinal manipulation for the lumbar spine is considered safe. The most compelling risk is the development of cauda equina syndrome which has been estimated to be in the line of 1 in 100,000,000.[6]

To further specify which patients will likely benefit from spinal manipulation, physical therapy researchers have developed[7] and validated[8] a Clinical Predictive Rule (CPR). To develop a CPR you must first determine which factors statistically predict success with the intervention being tested then validate the rule in a randomized trial. Five factors came out of the research which predicted success (defined as a 50% reduction in disability) with manipulation including:

- **Onset of < 16 days**
- **No symptoms below the knee**
- **FABQ (fear avoidance behavior) score of <19**
- **Stiffness of the lumbar spine with anterior/posterior gliding**
- **Hip joint internal rotation ROM of >35 degrees**




By applying the evidence and determining if a patient with LBP meets the CPR for manipulation we are in effect, being very specific with classification. In this case we are matching the intervention to the patient and can statistically predict the outcome. Patients meeting the rule are generally manipulated **only twice** over a one-week period and then ROM and specific stabilization exercises are initiated. This protocol was used in the study completed to validate the rule,[8] which demonstrated significant disability reduction. This was maintained at 6 months for only those patients who had met the rule and received manipulation. This study randomized subjects into four groups and demonstrated that those who met the rule and did not receive manipulation, did not improve and those who did not meet the rule but were manipulated did not improve. *See the graph below showing disability reduction over time in each of the four groups from the study:*



The researchers did a secondary analysis of the all the patients involved in both of the CPR studies to determine which of the 5 factors contributed the most to a successful outcome. That is, are there any combinations of the 5 factors that can predict success or do all 5 have to be present? These results demonstrated the two most powerful factors are < 16 days since onset and no pain below the knee. With just these two factors present, the likelihood of success is approximately 80% (Positive Likelihood Ratio of 7.2). The researchers concluded: "***The results of this study demonstrate that two factors; symptom duration of less than 16 days, and no symptoms extending distal to the knee, were associated with a good outcome with spinal manipulation.***" [9]

It is also important to note that all patients in the study received the same general lumbar/sacral manipulation. Several therapists of varying levels of experience were involved in the study and there were no differences in outcomes between therapists. This indicates that patients improve with manipulation if they meet the rule and receive manipulation. It is not the specificity of the technique or the experience of the provider. It is simply matching the correct patient with the intervention. Not all patients need manipulation, in fact, only approximately 35% of acute LBP patients will meet the rule, but timely and substantial disability reduction can be achieved when this intervention is applied to the correct patient population.

The current best evidence related to treatment of the patient with acute LBP suggests timely referral (within

the first two weeks) to physical therapy for appropriate classification and intervention. This may include spinal manipulation, used only when statistically indicated. Otherwise, patients are matched to the most appropriate active intervention and an emphasis is placed on patient education and positive coping.

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UPCOMING EBP NEWSLETTERS:

October - Advances in Therapuetic Exercise for Low Back Pain

November - Summary of topics to date...how we incoporate our findings into patient care

List of References

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