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Journal of the Spinal Research Foundation

The Journal of the Spinal Research Foundation

A multidisciplinary journal for patients and spine specialists

Spinal Research Foundation (SRF) Board of Directors

From the Editor: Brian R. Subach, M.D., F.A.C.S.

There is a need to spread information in the spine community. It is not simply a need for doctors to communicate with each other, but a need for doctors to speak to their patients. Away from the examination room and away from the research areas, spinal care providers and patients need a common ground. The amount of literature currently available covering the basic anatomy, diseases, and treatments of the spine is staggering. Without some filter or guidance, any attempt to assimilate the information in a useful fashion remains impossible. The mission of the Spinal Research Foundation (SRF) is to quite simply improve spinal health care through research and education while the mission of this Journal is to provide the vehicle to do so.

We have chosen experts in the fields of both operative and non-operative spinal healthcare to assist in this endeavor. Specialists range from physical therapists and chiropractors to acupuncturists and surgeons. We claim to be a multidisciplinary publication and aspire to achieve this goal by bringing in the best and brightest from each area, asking them to contribute information useful to our patients, updates on their research projects and editorial comments or reviews of material submitted for publication.

The journal is currently subdivided into three subsections. First, there are research updates. These updates are generally composed of reliable data-based information provided to inform patients and non-spinal specialists alike of the progress being made. Second, there are newsworthy topics. Less geared toward the rigors of scientific research and more geared to current events in the spine field, these items will draw attention to important issues in the media and lend them a factual basis. Third, there will be contributed works by guest authors. These may be opinion or fact but will reflect the passion of a spine care specialist regarding a particular facet of his or her work.

> "Only 15 percent of patients fully understand what their doctors tell them… 50 percent leave their doctors' offices uncertain of what they are supposed to do to take care of themselves" - *New York Times 2004*

Our goals in this publication are clearly lofty. For the non-profit Spinal Research Foundation to succeed, support in the form of contributions is necessary from those touched by the work being done. For the Journal of the SRF to succeed, we need the interest of the readership, both time and effort from the editorial staff, and the distilled facts describing the truth in a certain matter from our contributing experts. As a Journal, we remain poised on the edge of greatness. As a Foundation, we have already found that success is not to be quantified in terms of dollars or publications produced, but in revolutionizing the way spinal health care is provided. That is something we count one patient at a time.

Comments on the Spine Patient Outcomes Research Trial (SPORT)

By Mark R. McLaughlin, M.D.

In late 1999, the National Institutes of Health (NIH) funded the $13.5 million dollar Spine Patient Outcomes Research Trial, known as the SPORT study. The results of this study are due to be published in late 2006.

Dr. Stephen Katz from the NIH stated , "Based on this [SPORT] trial we shall, for the first time, have scientific evidence regarding the relative effectiveness of surgical versus nonsurgical treatment of herniated lumbar disc, spinal stenosis, and degenerative spondylolisthesis." Most decisions regarding treatment for these disorders have been based upon individual patient successes, review of surgical case files and to a significant degree physician preference. The absence of solid evidence for such decisions is glaringly obvious.

The SPORT study is a prospective, randomized, multicenter trial comparing surgery to non-operative management for herniated lumbar disc, spinal stenosis, and degenerative spondylolisthesis. The study will enroll 1,450 patients at 11 spine centers over a five-year period. The cost-effectiveness of each treatment will be evaluated as well.

Critics of the study cite statistical errors such as intrinsic bias, "one-way" crossover, and a flawed intent-to-treat analysis. In essence, a study using millions of Federal tax dollars and years of data collection may be doomed to failure by problems identified in 1999. Clearly, a study of such magnitude which produces erroneous findings may harm the delicate health care balance in our country.

Obviously, our goal as spinal health care providers is to provide the most effective treatment to the greatest number of patients for the lowest cost. Studies such as the SPORT trial illustrate the difficulties in performing clinical research. Independent entities such as the Spinal Research Foundation are uniquely without bias. Perhaps the majority of clinical research should be performed by such independent groups to avoid squandering precious resources while our patients suffer.

Choosing a Physical Therapist for Spinal Rehabilitation

By E. Larry Grine, MSPT, ATC and Richard A. Banton, DPT, ATC
Virginia Therapy & Fitness Center, PLC

Careful consideration is required in choosing the appropriate physical therapist to assist in the successful recovery of a spinal injury or spinal surgery. The physical therapist is a vital link in your medical management team to assist you in getting back to doing the things in life you like or need to do. Additionally, a properly designed physical therapy program will prevent spine injury relapses and promote good spine health. Points to consider, which will help determine the skill level of your potential physical therapist, will be addressed in this article. First, a brief understanding of how physical therapists are similar and how they differ will be imperative in choosing the right physical therapist.

Until recently, all physical therapists were educated at the university level with either a bachelor's degree, master's degree, or a doctorate of physical therapy degree; all are considered entry level programs. Current programs offer only master's degrees and doctorate of physical therapy degrees. All licensed physical therapists are required to pass a board certified exam in the state where they will be practicing.

In the orthopedic spine rehabilitation setting, physical therapists tend to be more competent to treat complex spinal disorders when they have completed an orthopedic physical therapy fellowship, completed or are currently enrolled in a manual therapy curriculum, have at least 3-5 years of experience, and have spinal rehabilitation as a sub-specialty within their clinic. Continuing education courses alone do not assure the competency of your physical therapist. The physical therapist should also be the leading care provider for each of the patient's appointments. The physical therapist should be involved in the entire treatment session, and each session should last at least 45 minutes. The patient should spend a limited amount of their treatment with support staff such as assistants or aides.

Excellent spinal care should begin with a comprehensive examination consisting of a neurological screening, biomechanical assessment of related joints and anatomy, and special tests to all structures that have been identified as having the potential to generate the patient's pain. An excellent physical therapist will demonstrate a keen knowledge of the related anatomy, useful treatment techniques, and the intellect and skills necessary to implement the appropriate treatment. This is most successfully accomplished by using a combination of manual therapy skills and therapeutic exercise. The patient must feel comfortable that the physical therapist is competent and able to provide high-quality care. Modalities such as moist heat packs, ice, electric stimulation, and ultrasound are useful as secondary and tertiary treatment strategies, but should not be the primary focus of the therapy.

When inquiring about your next set of treatments you should consider the following:

- The physical therapy clinic sub-specializes in spinal rehabilitation.
- The clinic's treatment strategy is manual therapy based.
- The physical therapist has completed, or is enrolled in, a manual therapy curriculum. If not, how long has the physical therapist been licensed and practicing?
- Have someone describe the type of evaluation that you will receive for your spinal condition.
- Make sure you will be with the same therapist for each visit to ensure consistency.
- How much time will the physical therapist spend with you, one-on-one, each appointment?
- Will physical therapy aides or assistants be involved in your care?

RESEARCH NOTE: Measurement of Lumbar Lordosis

Lumbar lordosis contributes significantly to the sagittal balance of the spine. Because of this importance, physicians routinely use X-rays to measure lumbar lordosis in patients with spinal disease. These measurements can provide quantitative evidence as to disease progression or the effectiveness of a surgical technique designed to restore lordosis. Historically, X-rays are measured manually and stored in hard copy. Today X-rays can be produced and maintained in a digital format. The development of a digital measurement tool for lordosis is thus required, as is the determination of how much variation exists between digital measurements and manual measurements within and between surgeons.

A study (1) examined the variations in manual and digital measurements by 12 spinal surgeons. The average variation between surgeons was 4.2˚ for the manual measurements and 4.1˚ for the computerized measurements. The average variation for a surgeon's repeated measurements was 7.7˚ for the manual measurements and 9.6˚ for the computerized measurements. In general, experienced surgeons using their measurement technique of choice demonstrated the least amount of variation. The computer-assisted measurements showed similar levels of variation as the manual measurements, indicating that the digital measurement tool is sound but could be improved.

1. Schuler TC, Subach BR, Branch CL, et al. Segmental Lumbar Lordosis. Manual Versus Computer-Assisted Measurement Using Seven Different Techniques. Journal of Spinal Disorders and Techniques 2004;17:372-279.

The Natural History of Low Back Pain

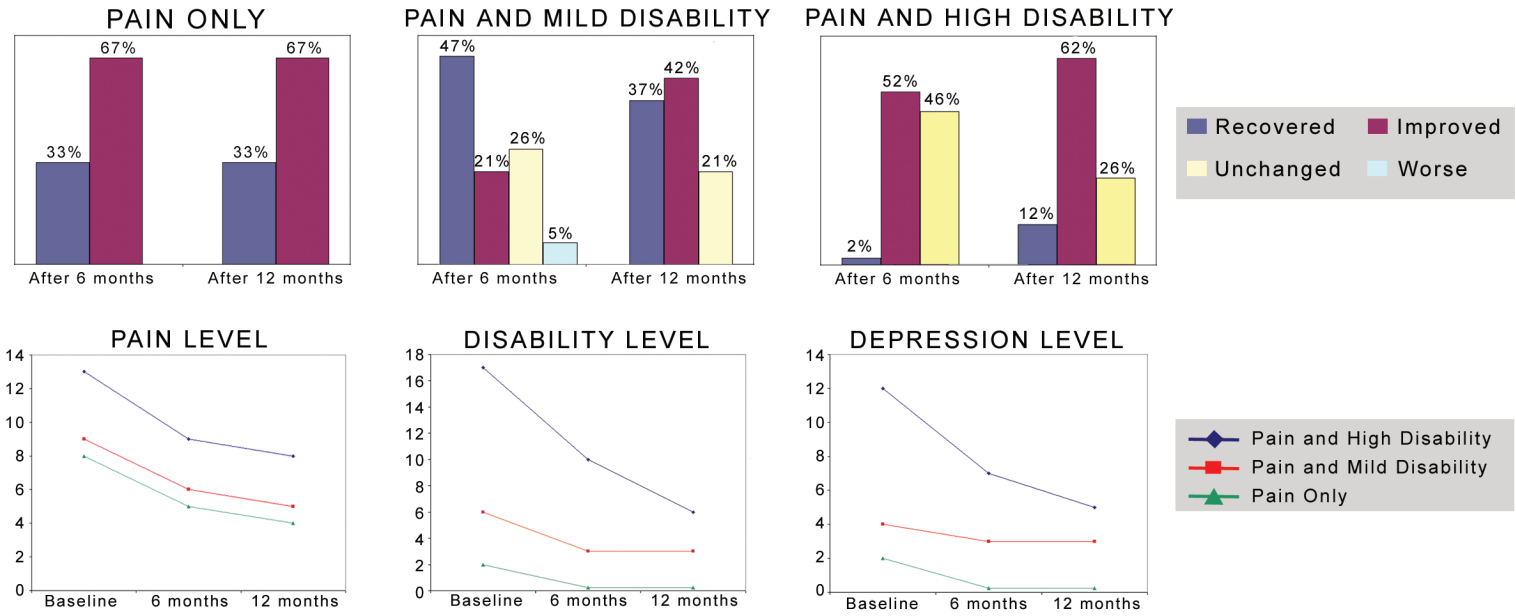
By Anne G. Copay, Ph.D.

What happens to individuals who experience low-back pain for the first time in their life?

A study by Wahlgren (3) looked at 76 individuals who experienced their first life-time episode of low back pain. One year after the onset of the pain, one third of the back pain sufferers had not improved, two thirds showed at least modest improvement, while only one in five individuals were completely pain free. In general, individuals who suffered more severe pain and disability were less likely to regain their previous level of function. For example, fewer than 5% of the severely afflicted would be totally recovered at one year. This is compared to the more than 33% having mild pain or disability who showed signs of significant return to their prior pain-free state.

A second study by Von Korff (2) followed 1128 patients who visited their primary physician with the complaint of new onset or recurrent back pain. After one year of conservative treatment, one in three patients remained unable to perform their occupational or home activities. Of those patients, 19.4% considered themselves to be significantly disabled by pain while 14.7% considered themselves to be moderately disabled. In general, the severity of pain at initial presentation seemed to predict the patient's level of function and recovery after one year of treatment. Patients with moderate to severe limitations of activities at baseline were 6 to 8 times more likely to still have limitations when compared to patients presenting with non-disabling, low-intensity back pain. The duration of pain in the 6 months prior to the physician visit also influenced the outcomes: the higher the number of days the patient spent in pain, the more likely limitations would persist after treatment. Finally, the study seems to show that women were 1.5 times more likely to have a poor outcome regarding back pain when compared to their male counterparts.

These studies illustrate the trends in the presentation and outcome of low back pain, but also show us how little we really know about the disease process. Most people will improve with anti-inflammatory medications such as ibuprofen. Many people will benefit from time spent with a physical therapist. However, despite such interventions some people will not be able to return to their previous level of function. More than fifty percent of primary care patients reporting significant limitations in their ability to carry out their activities of daily living had significant continued disability after treatment. The plain truth is that back pain tends to recur and is difficult to cure. Many times your doctor can make things better with safe, conservative treatments. The key is getting to the spinal specialist before things get out of hand.



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2. Von Korff M, Deyo RA, Cherkin D, et al. Back Pain in Primary Care. Spine 1993;18:855-62.

3. Wahlgren DR, Atkinson JH, Epping-Jordan JE, et al. One-year follow-up of first onset low back pain. Pain 1997;73:213-21.

Fusion Surgery versus Non-Surgical Intervention for Spinal Disease

By Anne G. Copay, Ph.D.

A study recently compared the outcomes of surgical and non-surgical treatments of back pain in Sweden (1). All patients sent to a spine surgeon by their primary care physician with any combination of back and leg complaints were eligible for the study. Patients were included if they had suffered from pain in their lower back for at least 2 years and if their back pain was more pronounced than their leg pain. Seventy six patients followed a non-surgical treatment while 211 patients underwent fusion surgery. After 2 years, the fusion surgery patients were clearly doing better than the non-surgery patients.

Patients assessed their symptoms as follows:

	Fusion Surgery Patients	Non-Surgery Patients
Back Pain	Better by 32.7%	Better by 6.8%
Leg Pain	Better by 17.8%	Worse by 20.5%
Disability	Better by 27.8%	Better by 6.0%
Depression	Better by 19.7%	Better by 6.9%

Patients rated their back problems, compared to before treatment, as follows:

	Fusion Surgery Patients	Non-Surgery Patients
Much Better	28.8%	14.5%
Better	33.8%	14.5%
Unchanged	23.6%	45.2%
Worse	13.8%	25.8%

A spine surgeon, not involved in the study, also assessed the patients as follows:

Excellent: no pain, no functional restriction, no pain medication

Good: sporadic pain, slight restriction of function, occasional pain medication

Fair: moderate pain, moderate restriction, no sport, daily pain medication

Poor: moderate daily or occasional severe pain, function restricted to activities of daily living, use of strong pain medication

	Fusion Surgery Patients	Non-Surgery Patients
Excellent	16.5%	1.6%
Good	29.0%	16.1%
Fair	32.5%	40.3%
Poor	22.0%	41.9%

• Patients were asked: "Knowing the result, would you go through it again?" Seventy five percent of the fusion surgery patients said yes, compared to fifty three percent of the non-surgery patients.

• Thirty six percent of the surgery patients were able to go back to work, compared to thirteen percent of non-surgery patients.

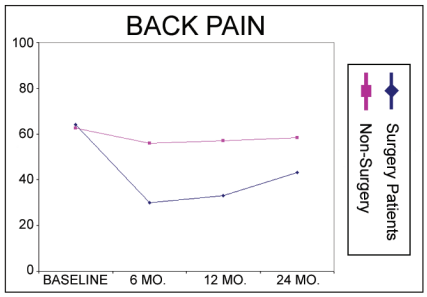
Even though the 2-year outcomes are in favor of fusion surgery, there are a few things to keep in mind.

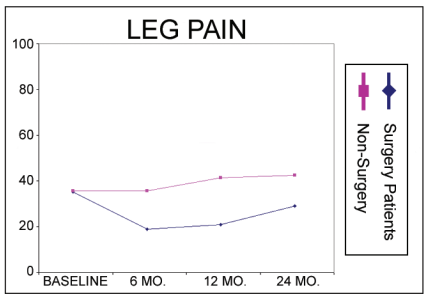
• There were complications in the surgery patients: there were 24 major complications and 26 minor complications associated with the surgery. A total of 16 out of 211 (7.8%) patients required a second surgery.

• Patients in the study were selected based on the combination of back and leg symptoms. For example, patients with symptoms of nerve root compression alone (leg pain) were excluded from the study because nerve impingement is often treated by decompression surgery rather than fusion surgery.

• The non-surgery patients received the typical course of treatment offered in Sweden: physical therapy which could be supplemented with information and education, pain relief (acupuncture, injections), cognitive and functional training, and coping strategies. A more intense and inclusive non-surgical treatment might have produced a better result (2).

• Pain and complications were measured at 6 months and 12 months in addition to the 2 year follow-up. The pain levels of surgery patients showed a sharp decrease at 6 months but slowly increased thereafter. Pain levels in the surgery group clearly remained improved versus the non-surgery group at two years. An important question is "Would the pain levels of fusion patients eventually match those of non-surgery patients if given longer follow-up?"





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Improving spinal health care through research and education

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