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Evidence informed management of chronic low back pain with functional restoration

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Editors' Preface

The management of chronic low back pain (CLBP) has proven very challenging in North America, as evidenced by its mounting socioeconomic burden. Choosing amongst available non-surgical therapies can be overwhelming for many stakeholders, including patients, health providers, policy makers, and third-party payers. Although all parties share a common goal and wish to use limited healthcare resources to support interventions most likely to result in clinically meaningful improvements, there is often uncertainty about the most appropriate intervention for a particular patient. To help understand and evaluate the various commonly used non-surgical approaches to CLBP, the North American Spine Society has sponsored this supplement to *The Spine Journal*, titled Evidence informed management of chronic low back pain without surgery. Articles in this supplement were contributed by leading spine practitioners and researchers, who were invited to summarize the best available evidence for a particular intervention and encouraged to make this information accessible to non-experts. Each of the articles contains five sections (description, theory, evidence of efficacy, harms, and summary) with common subheadings to facilitate comparison across the 24 different interventions profiled in this supplement, blending narrative and systematic review methodology as deemed appropriate by the authors. It is hoped that articles in this supplement will be informative and aid in decision making for the many stakeholders evaluating non-surgical interventions for CLBP.

Section 1 - Description

Terminology

At the outset, it should be noted that functional restoration refers not only to an intervention for chronic low back pain (CLBP), but also to a wider conceptualization of its diagnosis, management, and the challenges facing clinicians and patients dealing with this condition. Functional restoration is based on the biopsychosocial approach to CLBP which views pain and disability as a complex and dynamic interaction among physiologic, psychologic and

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social factors that perpetuate or worsen the clinical presentation (e.g.(1;2)). This approach attempts to address the frequent differences observed among patients with CLBP in terms of symptomatology and response to treatment.

History

Functional restoration (first developed by Mayer and Gatchel(3)) gained popularity in the 1990s when clinicians and third-party payers, frustrated with costly and often ineffective interventions, were looking for alternative approaches to managing CLBP. Indeed, Rainville, Kimand, and Katz (4) have recently lauded functional restoration as receiving considerable attention worldwide because of its superiority to standard care, and indicated that:

“...the concepts underlying functional restoration have been found to be highly relevant to patients with chronic low back pain, medical providers, and disability systems, and continue to gain acceptance and integration into the care of patients throughout the industrialized world.”

This approach sought to overcome traditional limitations of history-taking based solely on self-reported pain and diagnosis through musculoskeletal imaging technology, by acquiring even more objective information to direct the management of patients with CLBP. This additional information came from structured interviews, quantitative measures, as well as the objective assessment of physical capacity with comparison to a normative database. In keeping with a sports medicine approach, this additional information allows the development of treatment programs tailored for each patient and aimed primarily at restoring physical functional capacity and psychosocial performance. The objectives of functional restoration are ambitious and include not only decreasing pain and medication use, but also restoring function in activities of daily living and returning to work, with sufficient physical capacity to avoid recurrent injury and limit future healthcare utilization.

Subtypes

The major treatment components of functional restoration include: 1. formal, repeated quantification of physical deficits to guide, individualize, and monitor physical training progress; 2. psychosocial and socioeconomic assessment to guide, individualize, and monitor pain, disability, behavior and outcomes; 3. multimodal disability management programs using cognitive-behavioral therapy approaches; 4. psychopharmacological interventions for any required detoxification and psychosocial management; 5. ongoing outcome assessment using standardized outcome criteria and objective data collection through structured interviews; and 6. interdisciplinary, medically directed team approach with formal staff meetings and frequent conferences.

Practitioner, setting, and availability

Functional restoration requires a multidisciplinary team of clinicians (Table 1) (3-11). Given the number of health providers involved, effective communication among functional restoration team members is crucial so that patients' fear of physical activity will not interfere with their physical reconditioning.

Reimbursement

Pertinent CPT codes for specific components of functional restoration include 97001: Physical therapy occupational evaluation; 97002: Physical therapy re-evaluation; 97530: Therapeutic exercise for the involved joint(s) instructed or physical or occupational therapy prescribed (OA); 97512: Neuromuscular re-education; 90804: Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an office or outpatient facility,

approximately 20 to 30 minutes face-to-face with the patient; 90805: Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an office or outpatient facility, approximately 20 to 30 minutes face-to-face with the patient; with medical evaluation and management services; other codes are available for longer durations; 90801: Biofeedback; 90801: Mental health evaluation; 99371: Telephone call by a physician to patient or for consultation or medical management or for coordinating medical management with other health care professionals (e.g. nurses, therapists, social workers, nutritionists, physicians, pharmacists); simple or brief (e.g. to report on tests and/or laboratory results, to clarify or alter previous instructions, to integrate new information from other health professionals into the medical treatment plan, or to adjust therapy); 99372: Telephone call by a physician to patient or for consultation or medical management or for coordinating medical management with other health care professionals (e.g. nurses, therapists, social workers, nutritionists, physicians, pharmacists); intermediate (e.g. to provide advice to an established patient on a new problem, to initiate therapy that can be handled by telephone, to discuss test results in detail, to coordinate medical management of a new problem in an established patient, to discuss and evaluate new information and details, or to initiate new plan of care).

Because such programs involve multiple professionals in a time-intensive manner, the initial cost for such an approach may be higher than that for the conventional medical management approach.

Although functional restoration has been shown to be both more therapeutic and cost-effective than traditional unimodal methods, third party payers often view them as too costly and resist reimbursement for such programs (9;10;14). Despite research suggesting that “carving out” portions of comprehensive, integrated programs (e.g. sending patients to different providers for their various needs outside of the comprehensive pain management programs) compromised the effectiveness of interdisciplinary pain management programs, managed care organizations continue to do so in an effort to reduce costs (10;12-15).

Section 2 – Theory

Mechanism of action

The purported benefit of functional restoration is that the combined effect of each intervention administered within this type of integrated program is greater than the sum of its parts. The expected benefits of functional restoration are achieved through enhanced communication between providers and by adopting a holistic approach to patient management by simultaneously addressing physical, psychological and vocational impediments to returning to work.

Diagnostic testing required

A thorough medical history and physical examination are required to rule out red flags indicative of serious pathology and establish a diagnosis of mechanical CLBP. Psychological testing is also required for functional restoration to identify co-existing conditions such as depression. Indications and contraindications

Functional restoration is an appropriate tertiary care option for those patients with CLBP who have failed to respond to secondary care programs such as reactivation and work-hardening, have not improved after surgical or other interventional methods, and have no active objective pathophysiology requiring immediate medical or surgical care.

A potential contraindication to consider is any language barrier that precludes and comprehending educational material presented to patients. Many functional restoration

programs (e.g. Productive Rehabilitation Institute of Dallas for Ergonomics), have bilingual therapists to overcome this potential barrier.

It is well known that significant psychosocial barriers to successful recovery may develop as patient progresses from acute to chronic pain. Although serious comorbid psychiatric disorders are often a contraindication to many interventions for CLBP, such psychopathology can be effectively managed within the context of a functional restoration program (e.g.(16)). The ideal CLBP patient for functional restoration is one who is motivated to learn to manage their pain more effectively, is compliant with the prescribed rehabilitation regimen and wishes to return to work and full activities of daily living.

Often, there are certain “barriers to recovery,” such as secondary gain associated with perceived financial incentives for remaining disabled. However, even these secondary gain issues can be successfully dealt with in a comprehensive functional restoration program (e.g. (17)).

Section 3 – Evidence of efficacy

Systematic reviews

A systematic review by Guzman et al found strong evidence that intensive interdisciplinary rehabilitation with functional restoration reduces pain and improves function in patients with CLBP significantly more than less intensive programs or usual care (18). In addition, van Tulder, Koes and Bombardier found strong evidence in favor of functional restoration programs, using the Cochrane Collaboration’s high methodology and analysis standards (19). Finally, a recent review in The New England Journal of Medicine concluded that an approach focusing on functional outcomes produced the best outcomes for CLBP (20).

Randomized controlled trials

The effectiveness of functional restoration programs has been assessed by Hazard et al. (21) and Patrick, Ahmaier, and Found (22) in the United States, Bendix et al.(23) and Bendix and Bendix (24) in Denmark; Hildebrandt, Pfingsten, Saur, and Jansen (25) in Germany; Corey, Koepfler, Etlin, and Day (26) in Canada; Jousset et al. (27) in France; and Shirado, Ito, Kikumoto et al. (28) in Japan. The fact that different clinical treatment teams, functioning in different states and different countries, with markedly different economic and social conditions and workers’ compensation systems, produced comparable positive outcome results speaks highly for the robustness of these research findings. In addition, this type of approach has also been found to be an effective early intervention treatment for preventing chronic disability in those with LBP. For example, in a RCT, acute LBP patients who were identified as “high risk” for developing CLBP were randomly assigned to an early functional restoration group or a treatment-as-usual group.(29) The functional restoration group displayed significantly fewer indices of chronic pain disability at one-year follow-up on a wide range of work, healthcare utilization, medication use, and self-reported pain variables. For example, the functional restoration group was less likely to be taking narcotic analgesics (odds ratio(OR) 0.44), and also less likely to be taking psychotropic medications (OR 0.24). Moreover, the treatment-as-usual group was less likely to have returned to work (OR 0.55). The cost-comparison savings data from this study were also quite impressive: The treatment-as-usual group cost twice as much as the functional restoration group over a one-year period.

Observational studies

Research by Mayer, Gatchel and colleagues demonstrated that functional restoration is associated with substantive improvement in important socioeconomic outcome measures

(e.g. return to work and resolution of outstanding legal and medical issues) in chronically disabled patients with spinal disorders after 1 and 2 years of follow-up (30-32). For example, in the 2-year follow-up study by Mayer et al., 87% of the functional restoration treatment group was actively working compared to only 41% of a non-treatment comparison group and twice as many in the comparison group had additional spine surgery and unsettled workers' compensation litigation (32). The comparison group had five times higher the number of patient visits to healthcare professionals, and higher rates of recurrence or re-injury. These results were observed in a group consisting primarily of CLBP workers' compensation cases, traditionally the most difficult cases to treat successfully. Many other studies from this group have documented similarly high success rates (16;33-35).

Section 4 – Harms

There are no undue complications, such as re-injury, because functional restoration is carefully monitored and directed by a physician and an interdisciplinary team of health care professionals who meet on a regular basis to discuss patient issues/problems.

Section 5 – Summary

The scientific literature has demonstrated the effectiveness of functional restoration for patients with CLBP in the US, as well as in different countries around the world. Results have been positive in different workers' compensation and socioeconomic systems, which speaks highly for the generalizability and robustness of this approach in carefully selected patients. An important advantage of functional restoration relative to traditional unimodal medical intervention methods is that it simultaneously addresses multiple outcome measures, including self-reported measures of pain and disability, objective physical functional measures, and socioeconomic outcomes such as return-to-work. The one major deterrent to the wider use of this approach is the reluctance of third-party payers to authorize its use because of its perceived high cost. However, such perceptions are misguided and incorrect in terms of the potential long-term cost savings of such a program.

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Table 1

Practitioners commonly involved in functional restoration

Practitioner	Role
Medical director	most commonly a physician with complete understanding of the biopsychosocial philosophy of interdisciplinary care and a firm background in providing medical rehabilitation for CLBP
Nurse	assists the physician, follows up the procedures, and serves as a physician-extender to address patient needs
Occupational therapist	involved in both the physical and vocational aspects of the patient's rehabilitation since many patients with CLBP will not be working addresses vocational issues such as return to work, work accommodations and training, and may serve as an advocate for the patient with insurers and/or employers.
Pain management specialist	provides anesthesiology services such as injections, nerve blocks and other medical procedures related to CLBP
Physical therapist	interacts with patients on a daily basis to address any issues related to physical deconditioning, educates the patient about the physiological bases of pain, and teaches methods of reducing the severity of pain through body mechanics and exercise pacing
Psychologist or psychiatrist	plays the leading role in the day-to-day maintenance of the psychosocial aspects and status of patient care using evaluations to identify potential barriers to recovery and a patient's psychosocial strengths and weaknesses. A cognitive-behavioral treatment (CBT) approach can then be used to address important issues such as pain-related depression, anxiety, substance abuse and other forms of psychopathology that may be encountered in long-standing CLBP. Such a CBT approach has been found to be the most appropriate and effective modality to use in interdisciplinary programs.