



## Effective Exercise Instruction

### PROBLEM:      **Effective Exercise Instruction**

Patients are **less accurate and less compliant** in the performance of their exercises when a brochure or handout and minimal instruction is given, as compared to instruction and live instruction and modeling by a physical therapist.<sup>1-3</sup> This is regardless of whether the handout or brochure is given alone or in combination with General Practitioner advice, medication, or activity limitation.<sup>4,5</sup>

Simply providing a handout resulted in **double the error rate** when compared to live instruction and modeling by a physical therapist or video-tape instruction.<sup>1</sup> Use of a brochure alone may result in ½ of all patients performing their exercises incorrectly, contributing to delayed improvements in physical function.

### INTERVENTION:

- **Physical Therapist-Instructed Therapeutic Exercise**
- **Physical Therapist-Modeled Therapeutic Exercise**
- **Manual Physical Therapy & Therapeutic Exercise**

### EVIDENCE:      **Oxford Evidence Grade= A, B (level= 1a, 1b and 2b studies)**

A combination of manual physical therapy and physical therapist instructed therapeutic exercise has been repeatedly demonstrated to be **more effective** than a variety of other commonly used interventions for reducing pain and disability associated with musculoskeletal conditions, including osteoarthritis (knee and hip),<sup>11</sup> acute and chronic<sup>12,13</sup> mechanical neck pain,<sup>14</sup> and shoulder impingement.<sup>5,15</sup>

**Exercise Modeling** is important and most effective when demonstrated by a professional at periodic moments during the skill acquisition process.<sup>6</sup>

**Feedback** is critical for patients seeking to acquire and develop new motor skills like therapeutic exercise.<sup>7,8</sup>

**Quality Performance** is dependent upon the physical therapist's instructions, as demonstrated in several randomized controlled trials,<sup>1,9,10</sup> and there is a strong association between exercise performance and pain reduction.<sup>9,10</sup>

The beneficial effects of manual therapy and exercise continue to be observed up to **one year later**.<sup>14, 16, 17</sup>

**REFER:** Any patient for whom exercise is deemed an important part of their treatment program to maximize pain relief and improve function. Physical therapy exercise instruction and modeling is *especially* important for patients in whom long-term compliance is necessary to minimize disability associated with more chronic musculoskeletal disorders such as osteoarthritis, low back pain, and neck pain.

Based on evidence from high quality clinical trials, our manual physical therapy and exercise approach will benefit many of your patients with neck pain. However, if you are unsure, please give us the privilege of your referral or feel free to give us a call. We look forward to the opportunity to partner with you in an effort to improve the health of your patients and enable their return to optimal function during work and leisure activities.

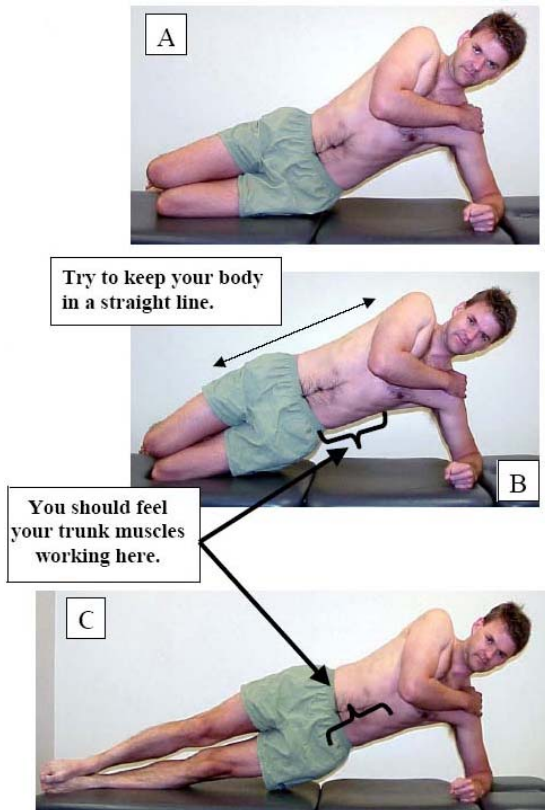
The best way is to send a consult with the “Evaluate and Treat” option checked. You will receive a copy of your patient’s initial note as well as a copy of the discharge note summarizing their outcome.

## **INTERVENTION:**

Exercise prescription is based on the results of a physical therapist evaluation, therapist modeled instruction in 2-3 selected, key exercises along with monitored feedback, and high-quality exercise handouts in support of a home exercise program. Patient demonstration of proper exercise technique is required and determines exercise progression.

Content:

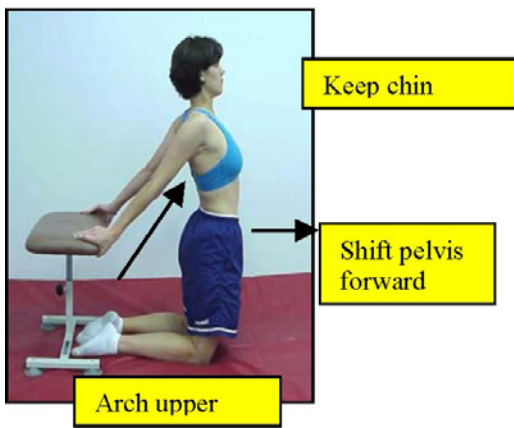
1. Evidence-based upper or lower quarter examination and affected joint complex<sup>18, 19</sup>
2. Exercise instruction modeled and explained using visual aides, tactile, and verbal cueing.
  - A. Strengthening



## B. Endurance Exercise



## C. Neuromuscular Re-education



## D. Stretching



1. Education and instruction based on current motor learning and skill acquisition theories<sup>7,8</sup>
2. Home exercises reinforced with handouts comprised of high-quality graphics, simple instructions, and force vector diagrams (see examples above).

## References

1. Reo JA, Mercer VS. Effects of live, videotaped, or written instruction on learning an upper-extremity exercise program. *Phys Ther* 2004; 84:622-33.
2. Cherkin DC, Deyo RA, Street JH, Hunt M, Barlow W. Pitfalls of patient education. Limited success of a program for back pain in primary care. *Spine* 1996; 21:345-55.
3. Cherkin DC, Deyo RA, Battie M, Street J, Barlow W. A comparison of physical therapy, chiropractic manipulation, and provision of an educational booklet for the treatment of patients with low back pain. *N Engl J Med* 1998; 339:1021-9.
4. Hoving JL, Gross AR, Gasner D, et al. A critical appraisal of review articles on the effectiveness of conservative treatment for neck pain. *Spine* 2001; 26:196-205.
5. Bergman GJ, Winters JC, Groenier KH, et al. Manipulative therapy in addition to usual medical care for patients with shoulder dysfunction and pain: a randomized, controlled trial. *Ann Intern Med* 2004; 141:432-9.
6. Hodges NJ, Franks IM. Modelling coaching practice: the role of instruction and demonstration. *J Sports Sci* 2002; 20:793-811.
7. Winstein CJ, Pohl PS, Cardinale C, Green A, Scholtz L, Waters CS. Learning a partial-weight-bearing skill: effectiveness of two forms of feedback. *Phys Ther* 1996; 76:985-93.
8. Winstein CJ, Pohl PS, Lewthwaite R. Effects of physical guidance and knowledge of results on motor learning: support for the guidance hypothesis. *Res Q Exerc Sport* 1994; 65:316-23.
9. Friedrich M, Cermak T, Maderbacher P. The effect of brochure use versus therapist teaching on patients performing therapeutic exercise and on changes in impairment status. *Phys Ther* 1996; 76:1082-8.
10. Bentsen H, Lindgarde F, Manthorpe R. The effect of dynamic strength back exercise and/or a home training program in 57-year-old women with chronic low back pain. Results of a prospective randomized study with a 3-year follow-up period. *Spine* 1997; 22:1494-500.
11. Deyle GD, Henderson NE, Matekel RL, Ryder MG, Garber MB, Allison SC. Effectiveness of manual physical therapy and exercise in osteoarthritis of the knee. A randomized, controlled trial. *Ann Intern Med* 2000; 132:173-81.
12. Childs JD, Fritz JM, Flynn T, Irrgang JJ, Delitto A, Johnson KK. Validation of a clinical prediction rule to identify patients with low back pain likely to benefit from spinal manipulation. *Ann Intern Med* 2004:In Press.
13. Niemisto L, Lahtinen-Suopanki T, Rissanen P, Lindgren KA, Sarna S, Hurri H. A randomized trial of combined manipulation, stabilizing exercises, and physician consultation compared to physician consultation alone for chronic low back pain. *Spine* 2003; 28:2185-91.
14. Gross AR, Hoving JL, Haines TA, et al. A Cochrane review of manipulation and mobilization for mechanical neck disorders. *Spine* 2004; 29:1541-8.
15. Bang MD, Deyle GD. Comparison of supervised exercise with and without manual physical therapy for patients with shoulder impingement syndrome. *J Orthop Sports Phys Ther* 2000; 30:126-37.
16. Bronfort G, Evans R, Nelson B, Aker PD, Goldsmith CH, Vernon H. A randomized clinical trial of exercise and spinal manipulation for patients with chronic neck pain. *Spine* 2001; 26:788-97; discussion 798-9.
17. Jull G, Trott P, Potter H, et al. A randomized controlled trial of exercise and manipulative therapy for cervicogenic headache. *Spine* 2002; 27:1835-43; discussion 1843.
18. Flynn TW, Whitman J, Magel J. *Orthopaedic Manual Physical Therapy Management of the Cervical-Thoracic Spine & Ribcage*. San Antonio, TX: Manipulations, Inc., 2000.
19. Whitman J, Flynn T, Wainner RS, Magel J. *Orthopaedic Manual Physical Therapy Management of the Lumbar Spine, Pelvis, and Hip Region*. San Antonio, TX: Manipulations, Inc., 2002.