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Volume 2, Issue 4
July 2007

clinical conduit

Can Pilates-based exercise affect patients with non-specific low back pain?

Is there a place for Pilates-based exercise in the rehabilitative setting? Or is it just another fitness fad that will fade away as soon as the next trend comes along? I don't think so and that is because many of the core philosophies that are innate to the Pilates approach parallel important tenets used by therapists in rehabilitation. What are some of these important similarities?

Control – the exercises require specific movements with great attention to form and technique

Centering – movement originating from a stable, balanced, and flexible core

Concentration – the exercises require intense focus and precision to ensure movement quality with neuromuscular specificity

Coordination – a smooth and flowing movement pattern that allows efficient recruitment of important tonic, postural stabilizers and phasic mobilizers.

Calm – minimizing intense, painful contractions while focusing on an appropriate breathing pattern

How about some evidence to support these contentions? You may remember the study by Rydeard, et al, published in the Journal of Orthopedic and Sports Physical Therapy last year that looked at the efficacy of a Pilates exercise approach in a population of subjects with non-specific low back pain.

The study looked at a modified Pilates approach to improve posture and neuromuscular control in the spirit of building local spinal segment stability. The second phase of the rehabilitation protocol focused on developing global stabilization strategies in the gluteal muscles to control the lumbo-pelvic region. Throughout the study the subjects were taught to consciously recruit the deep anterolateral abdominals with coactivation of the pelvic floor and lumbar mulifidus muscles prior to activation of the gluteal muscles.

A control group was randomized to a "usual care" approach that did not define the specific exercise intervention but allowed medical and therapy consultation as necessary.

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Upcoming Course Schedule

Pilates Course
Aug 18-19 - Plano, TX

Knee Course
Jul 14-15, 2007–San Antonio

Foot-Ankle Course
Sep 29-30, 2007 – Grapevine

Cervical Course
Nov 3-4, 2007 - Grapevine

A detailed description of the course content and learning objectives is available at our web site — www.continuing-ed.cc

Tape It or Brace It?

Prophylactic ankle taping has long been considered the mainstay of ankle injury prevention at all levels of athletic competition. An alternative to taping is a semi-rigid ankle brace. The upside to bracing is that is does not required the skilled service of an athletic trainer to apply the orthotic protection. However, what does the literature say regarding the efficacy and cost efficiencies of these types of intervention?

First of all, who does it help? Olmstead, et al, 2004 found that the greater benefit of prophylactic support is offered to those with a previous history of ankle sprain. They performed a number-needed-to-treat analysis which is a function of the absolute risk reduction and found that you could prevent one ankle sprain for every 18 subjects you braced and every 26 you taped. In subjects without a history of ...

continued on page 3

Pilates Exercise continued …

References

Rydeard RR, Leger A, Smith D. Pilates-based therapeutic exercise: effect on subjects with non-specific chronic low back pain and functional disability: a randomized controlled trial. J Orthop Sports Phys Ther. 2006; 36(7):472-484.

Donzelli S, et al. Two different techniques in the rehabilitation of low back pain: a randomized controlled trial. Eur Medicophys. 2006 Sep; 42(3):205-210.

The subjects' outcome was evaluated by a disability outcome score and a pain rating on a visual analog scale (VAS). In the Pilates-based exercise group there was a significantly lower level of functional disability (as measured by the Roland Morris Disability Questionnaire) and pain scores. The authors also found that the subjects who completed this 4-week program of specific exercise intervention maintained their functional abilities and reduced pain intensity for a full year.

In another study (Donzelli, et al, 2006), Pilates-based exercise was compared to a widely accepted and effective method of treating low back pain – the "Back School". Based on an Oswestry Low Back Pain Disability Scale and pain rating on a VAS both groups realized significant improvements. However, the Pilates group showed an even higher level of compliance and subjective satisfaction with the exercise specific method of treatment.

Pilates-based exercise programs have their place in the management of peripheral joint injuries as well. The idea of restoring good proximal stability before focusing on distal mobility fits perfectly into the credible exercise paradigm that most therapists readily accept.

I think the real key to "Pilates" success is the attention to detail. Coaching, counseling, and critiquing therapeutic movements in an exact manner ensures that the exercise will provide its intended effect and provide the necessary postural stability and muscular symmetry that is required for smooth and efficient function.

Question of the Month

My child was diagnosed with Sever's disease. Is there anything we can do about it besides wait for skeletal maturity?

A.K., PT - VA

Calcaneal apophysitis (Sever's disease) is the most common source of heel pain in adolescents. The condition has historically been thought to be a traction apophysitis brought on by repetitive microtrauma. More recently, MRI evidence has suggested this condition actually represents microfractures in the metaphysis of the calcaneus.

Children with this condition complain of activity-related pain in the posterior aspect of the heel. It is common to have concurrent bilateral involvement and seems to be much more prevalent in boys than girls. Running and jumping athletes seem to be the most susceptible particularly during active periods of growth. Some have suggested that cleat wear is an aggravating factor but that has not been conclusively proven in the literature.

Examination usually reveals tenderness at the Achilles insertion and symptoms are reproduced with medial-lateral compression of the posterior calcaneus. (as pictured to left)

Radiographic examination (below) may be unremarkable or show increased density (sclerosis) and/or irregular fragmentation.

Usually the symptoms resolve in a few weeks with some fairly simple interventions. It is also important to note as suggested in the question that the discomfort will subside as the calaneal apophysis amalgamates with the main body of the calcaneus at skeletal maturity. In the meantime palliative care with ice massage and/or non-steroidal anti-inflammatories will often provide symptomatic relief.

The level of discomfort dictates the need to refrain from offending plyometric activities. It is also important to teach the patient an appropriate heel cord stretching routine. While the condition is resolving and flexibility is improving I've found that the use of simple heel lift offers the most powerful relief of symptoms during activities. I usually use a 3/8'' lift that can be transferred from shoe to shoe and still allows the heel to fit comfortably in the heel counter and Achilles notch without the heel backing out of the shoe. A lift with a cushioned aspect can also dampen ground reaction forces at heel strike.

The best news is that this condition has an excellent prognosis with virtually no risk for surgical intervention or perma-nent damage. Questions you would like addressed in a future issue can be sent to mulliganpt@tx.rr.com.

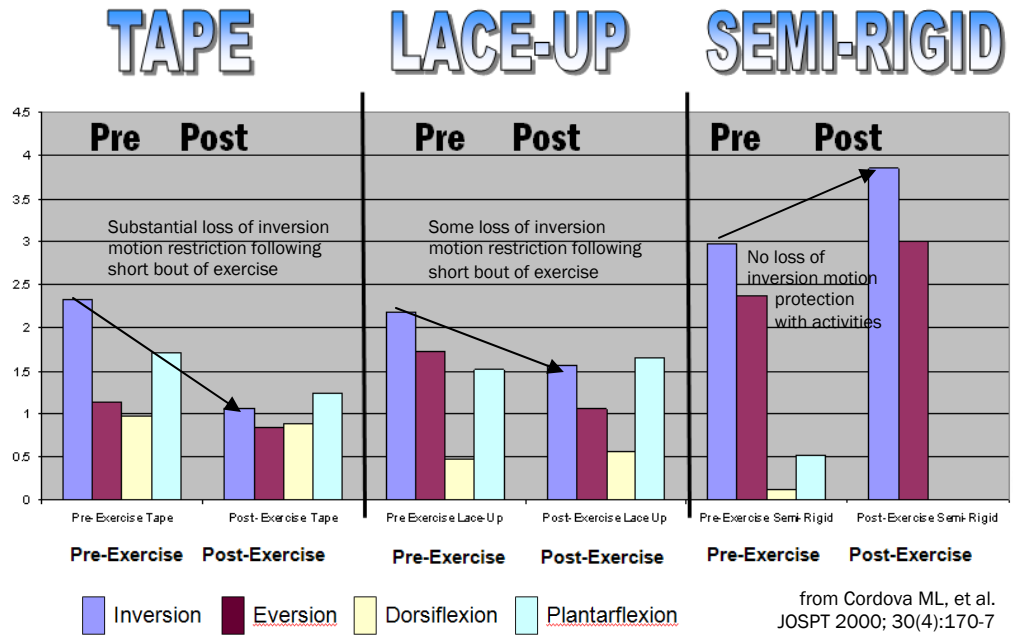
Bracing vs. Taping Evidence continued –

ankle sprain they had to brace 39 subjects or tape 126 subjects to prevent an injury. In addition, they found that taping is approximately three times more expensive to provide than bracing. In another study by Mickel, et al, last year in the J Foot Ankle Surg they found no statistical difference in the incidence of ankle sprains among subjects who were braced or taped. However, they found that the time and cost invested over the course of a season was significantly higher in the taped group and suggested that an athletic program could realize a substantial savings (without increasing risk of injury) by adopting a prophylactic bracing protocol.

The Cochrane Review (which is a summary of high quality random controlled trials) also concluded that external ankle support in the form of semi-rigid orthoses or stirrup type braces are effective at preventing ankle sprain injuries. Their only concern was its potential impact on performance. However, Cordova, et al, published a meta-analysis in 2005 concluding that the benefit in preventing injury outweighs the possibility of substantial but small impairment of performance when athletes use external ankle support

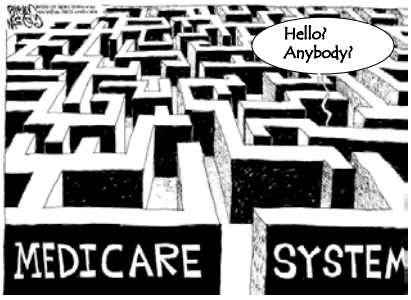
Cordova, JOSPT, 2000, also published a meta-analysis contrasting the range limiting effects of tape, lace-up braces, and semi-rigid orthoses. I think the chart below shows a definitive benefit to the semi-rigid stirrup device's ability to limit end range frontal plane motion (inversion is the purple bar) after a short bout of exercise and activity.

While taping is certainly an acceptable intervention and offers excellent proprioceptive protection, my preference based on the current literature, cost savings, and practical convenience is to recommend an ankle brace.



from Cordova ML, et al. JOSPT 2000; 30(4):170-7

$$ Medicare Bonus Program $$



Anyone else feel lost when talking about Medicare coding and reimbursement? Me too! To be honest it makes my brain go numb. However the new Physician Quality Reporting Index (PQRI) bonus program seems pretty simple. CMS will pay a lump sum bonus at the end of the year to all physical and occupational therapists billing under Part B that report on at least 80% of their patient's "Risk for Falls". The financial reward (subject to a cap) is equal to 1.5% of total Medicare payments if the reporting requirements are met during the July 1 – December 31, 2007 time frame.

The APTA's web site has a number of links to help therapists understand the process including a fall screening work sheet, CMS fact sheet, PQRI handbook, and a "FAQ" section to address common questions. The links to these resources are below:

Falls Screening Worksheet
CMS Fact Sheet on the PQRI
CMS PQRI Handbook
PQRI FAQ

Additional Resources:

Mickel TJ, et al. Prophylactic bracing versus taping for the prevention of ankle sprains in high school athletes: a prospective, randomized trial. J Foot Ankle Surg. 2006; 45(6):360-5

Handoll HH, et al. Interventions for preventing ankle ligament injuries. Cochrane Database Syst Rev. 2001; (3):CD000018.

Olmstead LC, et al. Prophylactic ankle taping and bracing: A numbers-needed-to-treat and cost-benefit analysis. J Athl Train. 2004; 39(1):95-100.

Cordova ML, et al. Influence of ankle support on joint range of motion before and after exercise: a meta-analysis. J Orthop Sports Phys Ther. 2000; 30(4):170-7;

"Featured Internet Link"

National Guideline Clearinghouse

www.guideline.gov

The National Guideline Clearinghouse (NGC) is a comprehensive database of evidence-based clinical practice guidelines and related documents. NGC is an initiative of the Agency for Healthcare Research and Quality (AHRQ), U.S. Department of Health and Human Services. NGC was originally created by AHRQ in partnership with the AMA and the America's Health Insurance Plans. The NGC mission is to provide health professionals, providers, and purchasers an accessible mechanism for obtaining objective, detailed information on clinical practice guidelines and to further their dissemination, implementation and use. Key features include structured guideline summaries with annotated bibliographies.

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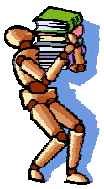
The "Clinical Conduit" newsletter is an every other month publication available to any allied health care provider free of charge upon request. Individuals who would like to be included on the email distribution list should contact the editor at mulliganpt@tx.rr.com



Targeting the Deep Cervical Flexors

Rehabilitation Exercise Technique

Son, if you really want something in this life, you have to work for it. Now quiet! They're about to announce the lottery numbers.
- Homer Simpson

Research has suggested that improving the muscular performance of the deep cervical flexors is effective in improving function and decreasing pain in patients with cervical disorders. It is important when training the deep cervical flexors to ensure proper technique that prevents the superficial sternocleidomastoid and scalene muscles from substituting during the chin tuck and head lift progression. The use of Stabilizer may ensure that appropriate recruitment and reinforce this proper technique.

A typical progression of exercise begins with a cervical retraction (chin tuck or cervical nod) on an incline table to minimize gravity's effect with progression to supine lying, and then sitting positions. If an inclined surface is not available you can use a hard 2-3" empty spiral notebook binder to create the incline. Once the cervical retraction is mastered progress to a chin tuck with a head lift in supine, progressing to prone (anti-gravity position), and finally against elastic resistance. Once this position can be maintained painlessly you can add functional maneuvers involving the upper extremities.

Progression from one exercise to the next is based on mastery of the technique without superficial muscular compensation. I typically asked the patient to build up to 10 second holds repeated for 2-3 minutes before changing the influence of gravity or adding the head lift and/or distal functional movement patterns.

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Featured Home Study Program
Proximal Humeral Fractures

Have you ever been frustrated by the difficulty in regaining motion in a patient that has suffered a proximal humeral fracture? Loss of motion along with non or mal-union, avascular necrosis, and neurovascular compromise are some of the common complications following this injury. The stiffness may also be influenced by the nature of the fracture itself (Neer Classification Parameters).

There is some evidence that immediate physical therapy, without routine immobilization, compared with that delayed until after two weeks immobilization results in less pain and both faster and potentially better recovery in patients with two-part fractures. Koval, et al, 1997, *J Bone Joint Surg*, evaluated 104 patients with minimally displaced proximal humeral fractures and contrasted their outcomes based on length of immobilization. There was no relationship between ultimate outcome based on age, dominant extremity, or the nature and location of the fracture. However, those patients that started therapy before 14 days had much higher satisfaction and range of motion than those that started after 14 days. 86% of the 58 patients that began therapy in the first two weeks had a good or excellent result while only 65% of the 46 patients who delayed therapy for more than two weeks had the good or excellent outcome.

If you are interested in learning more about the classification specific rehab of proximal humeral head fractures you may want to look at our on-line home study entitled "Proximal Humerus Fracture Rehab". This inservice can viewed or read free of charge. A post-test for CEU credit is available at http://www.continuing-ed.cc/homestudy.htm for a reasonable fee for clinicians licensed in Texas and Oklahoma.

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Lateral Ankle Instability	.2 CEUs
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Goniometric Examination	.2 CEUs
Principles of Joint Mobilization	.2 CEUs
Functional Anatomy of the Shoulder	.3 CEUs
Scapular Significance: Ortho Perspective	.2 CEUs
Proximal Humerus Fracture Rehab	**.2 CEUs**
Examination-Treatment of Hand/Wrist	.3 CEUs
Ethics and Professional Responsibility	.2 CEUs

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