# ORTHOPAEDIC PHYSICAL THERAPY PRACTICE

Watch for the upcoming Orthopaedic Section election & don't forget to VOTE!

THE MAGAZINE OF
THE ORTHOPAEDIC SECTION, APTA

VOL. 17, NO. 3 2005

ORTHOPAEDIC SECTION • AMERICAN PHYSICAL THERAPY ASSOCIATION •

APTA
American Physical Therapy Association
*The Science of Healing. The Art of Caring.*

# CARDON REHABILITATION PRODUCTS, INC.™

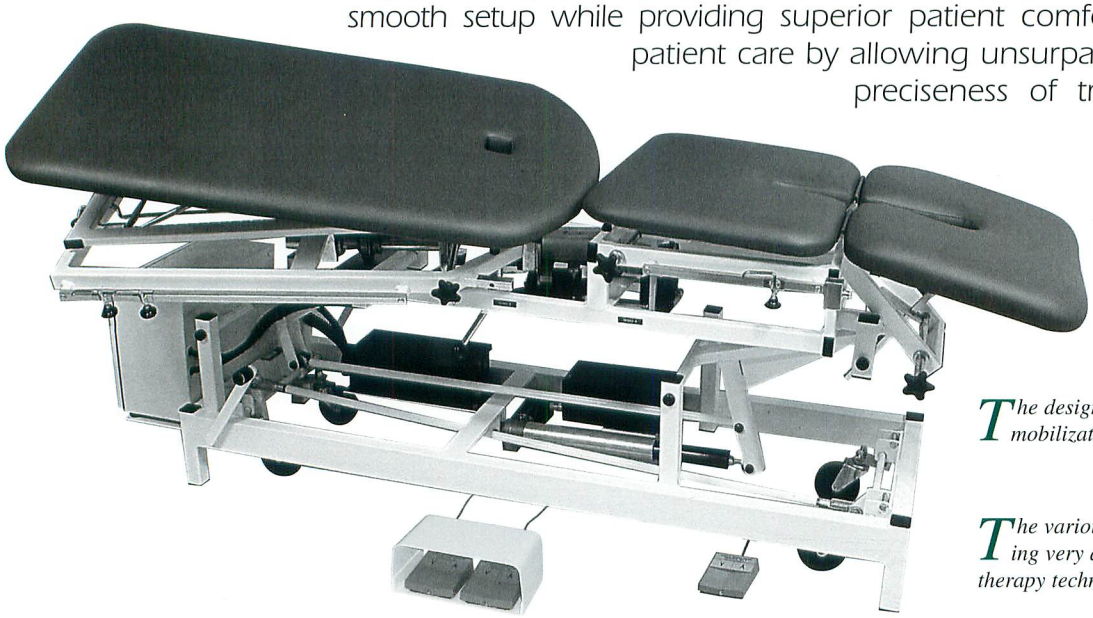
Wurlitzer Industrial Park, 908 Niagara Falls Blvd.
North Tonawanda, NY 14120
Telephone: 1-800-944-7868 ▪ Fax: 716-297-0411
E-mail: sales@cardonrehab.com

THE ACCEPTED STANDARD OF PERFORMANCE

## The Cardon Mobilization Table...

Going beyond the third dimension...

**Now available** with the patented option which eliminates the use of flexion and rotation levers. This allows the therapist to perform advanced manual therapy techniques with complete confidence and comfort with an ergonomically friendly design. The unique design provides more efficient and smooth setup while providing superior patient comfort. The option enhances patient care by allowing unsurpassed opportunity for more preciseness of treatment and monitoring of segments and joints.



*The design and concepts make this the best mobilization table manufactured today"*
Professor Freddy Kaltenborn
Author, Int'l Lecturer in Manual Therapy

*The various sections have minimum flex allowing very accurate application of specific manual therapy techniques"*
Olaf Evjenth
Author, Int'l Lecturer in Manual Therapy

### YES! I would like to preview the Cardon Mobilization Table.

Please rush your 15 minute VHS video (for standard model):

Name: _____ Title: _____

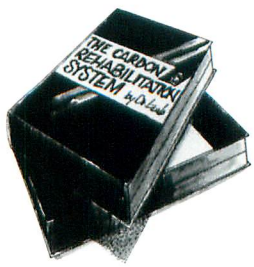
Clinic/Institution: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Telephone: _____ Signature: _____

CARDON REHABILITATION PRODUCTS, INC.™
Wurlitzer Industrial Park, 908 Niagara Falls Blvd.
North Tonawanda, NY 14120
Telephone: 1-800-944-7868 • Fax: 716-297-0411
E-mail: sales@cardonrehab.com




### SEE FOR YOURSELF THESE OUTSTANDING FEATURES:

- Accurate localization of the vertebral segment
- Precision and versatility of technique
- Absolute control of the mobilization forces
- Excellent stability for manipulation.

Evidence in Motion, LLC
508 Thurber Dr.
Schertz, TX 78154-1146 (USA)
Ph: (210) 363-5237 ◦ Fax: (210) 579-2637
info@evidenceinmotion.com
www.evidenceinmotion.com
blog.evidenceinmotion.com

Foundation for Physical Therapy

**10% of profits donated to the Foundation for Physical Therapy.**

◦ **Partner** with us in **hands-on, evidence-based** seminars that integrate your clinical expertise with **current best evidence** for physical therapy clinical examination and interventions for patients with spinal disorders. **Extensive, hands-on laboratory sessions** are included to achieve proficiency in selected **thrust and non-thrust manual physical therapy** interventions.

◦ ***New!*** Come **blog** with us at **blog.evidenceinmotion.com**. We are committed to helping busy clinicians translate evidence into practice!

## Evidence-based Examination and Selected Interventions for Patients with Lumbopelvic Spine and Hip Disorders (1.5 CEUs)

**2005**
- Nov 5-6 (Victoria, BC)

**2006**
- Mar 18-19 (Atlanta, GA)
- April 29-30 (Denver, CO)
- May 6-7 (Brooklyn, NY)

## Evidence-based Examination and Selected Interventions for Patients with Cervical Spine Disorders (1.5 CEUs)

**2005**
- Sep 10-11 (San Antonio, TX)
- Sep 17-18 (Brooklyn, NY)
- Oct 29-20 (Phoenix, AZ)

**2006**
- Mar 4-5 (Victoria, BC)
- Apr 1-2 (Tucson, AZ)
- May 20-21 (Concord, NH)
- Jun 3-4 (Fairhope, AL)

◦ **Objectives:** Upon completing these courses, you'll be able to:
1. Incorporate information from the clinical examination to guide evidence-based decision-making.
2. Demonstrate evidence-based clinical examination psychomotor skills
3. Synthesize examination findings to establish an accurate diagnosis and prognosis.
4. Select and demonstrate manual physical therapy and exercise interventions based on current best evidence.

### John D. Childs, PT, PhD, MBA, OCS, FAAOMPT

Dr. Childs is an Assistant Professor in the US Army-Baylor University Doctoral Program in Physical Therapy and Post-professional Doctoral Program in Orthopaedic & Manual Physical Therapy. He is board-certified as an Orthopaedic Clinical Specialist and is a Fellow in the American Academy of Orthopaedic and Manual Physical Therapists. Dr. Childs is internationally recognized by his peers for his expertise in advanced clinical examination techniques, evidence-based practice, and manual physical therapy. Actively involved in clinical research related to identifying subgroups of patients with low back and neck pain, he has received numerous grants from federal and professional funding agencies and has published over 25 manuscripts in leading peer-reviewed journals. He has received numerous awards related to his research. Dr. Childs is an Associate Editor for the *Journal of Orthopaedic and Sports Physical Therapy*.

### Robert S. Wainner, PT, PhD, OCS, ECS, FAAOMPT

Dr. Wainner is Associate Professor and Director of Research at the US Army-Baylor Doctoral Program in Physical Therapy. He is nationally recognized by both clinical and scientific communities for his expertise in the area of the clinical examination, manual therapy, and management of spinal disorders. He has published over 20 manuscripts in leading peer-reviewed journals and is the author of 2 educational CD-ROMs on Orthopaedic Manual Physical Therapy. Dr. Wainner has received numerous awards related to his work, including the coveted Steven J. Rose Excellence in Research Award. He is currently an Editorial Review Board Member for the *Journal of Orthopaedic and Sports Physical Therapy*. Dr. Wainner is the President of Texas Physical Therapy Specialists, P.C. (www.texpts.com) a therapist owned and operated practice dedicated to providing evidence-based care to patients with musculoskeletal disorders.

**How do I register? Register on-line at www.evidenceinmotion.com.**

These are hands-on interactive courses with a significant lab component. Registration is limited to provide maximum interaction with faculty. **Early registration is recommended.**

Translating Evidence into Practice

# Orthopaedic Section Directory

Mike - 314-529-6540 - Maryville

## ■ OFFICERS

| President: | Vice President: | Treasurer: | Director: | Director: |
|---|---|---|---|---|
| **Michael T. Cibulka, PT, MHS, OCS**<br>Jefferson County Rehab & Sports Clinic<br>1330 YMCA Drive, Suite 1200<br>Festus, MO 63028<br>~~(636) 937-7677 (Office)~~<br>(636) 931-8808 (FAX)<br>mcibulka@earthlink.net<br>Term: 2004 - 2007 | **Thomas G. McPoil, Jr, PT, PhD, ATC**<br>1630 W University Heights Drive<br>South Flagstaff, AZ 86001<br>(928) 523-1499<br>(928) 523-9289 (FAX)<br>tom.mcpoil@nau.edu<br>Term 2004 - 2007 | **Joe Godges, DPT, MA, OCS**<br>Kaiser PT Residency & Fellowships<br>6107 West 75th Place<br>Los Angeles, CA 90045-1633<br>(310) 215-3664 (Office)<br>(310) 215-0780 (FAX)<br>godges@msn.com<br>Term: 2005-2008 | **James Irrgang, PT, PhD, ATC**<br>University of Pittsburgh<br>Department of Physical Therapy<br>Sennett at Atwood Streets<br>Pittsburgh, PA 15260<br>(412) 432-1237 (Office)<br>(412) 647-1454 (FAX)<br>irrgangjj@msx.upmc.edu<br>Term: 2003-2006 | **William H. O'Grady, PT, DPT, OCS, FAAOMPT, AAPM**<br>1214 Starling St<br>Steilacoom, WA 98388-2040<br>(253) 588-5662 (Office)<br>w.ogrady@comcast.net<br>Term: 2005-2008 |

## ■ CHAIRS

**MEMBERSHIP**
**Chair:**
**Scott Adam Smith, MPT**
29 Lawrence Street
Hicksville, NY 11801
(516) 681-5647 (Office)
smittypt14@aol.com

***Members:*** *Hunter Bowie, Julia Chevan, John Childs, Melissa Corriveau, Byron Russell, Terry Trundle*

**EDUCATION PROGRAM**
**Chair:**
**Ellen Hamilton, PT, OCS**
720 Montclair Road, Ste 100
Birmingham, AL 35213
(205) 298-9101
(205) 599-4535 (FAX)
ellen.hamiltonpt@charter.net

**Vice Chair:**
**Beth Jones, PT, DPT, MS, OCS**

***Members:*** *Dee Daley, Bob Duvall, Deborah Gross-Saunders, Kristinn Heindrichs, Joe Kleinkort, Deborah Lechner, David McCune, Tara Manal, Cheryl Mauer, Stephen Paulseth, Chris Powers, Christopher Scott, Jeff Stenbach*

**INDEPENDENT STUDY COURSE**
**Editor:**
**Mary Ann Wilmarth, DPT, MS, OCS, MTC, CertMDT**
10 Nollet Dr
Andover, MA 01810-6312
(978) 682-8802
mwilmarth@comcast.net

**Managing Editor:** Kathy Olson
kmolson@orthopt.org
(See Office Personnel)

***ORTHOPAEDIC PRACTICE***
**Editor:**
**Christopher Hughes, PT, PhD, OCS**
School of Physical Therapy
Slippery Rock University
Slippery Rock, PA 16057
(724) 738-2757
cjh@nauticom.net

**Managing Editor:** Sharon Klinski
sklinski@orthopt.org
(See Office Personnel)

**RESEARCH**
**Chair:**
**G. Kelley Fitzgerald, PT, PhD, OCS**
University of Pittsburgh
Department of Physical Therapy
6035 Forbes Tower
Pittsburgh, PA 16260
(412) 383-6643 (Office)
(412) 383-6629 (FAX)
kfitzger@pitt.edu

***Members:*** *Paul Beattie, Gregory Hicks, Lori Michen, Sheri Silfies*

**ORTHOPAEDIC SPECIALTY COUNCIL**
**Chair:**
**Robert Johnson, PT, MS, OCS**
406 N Brainerd
LaGrange, IL 60526
(708) 579-0423
robertjohnson406@sbcglobal.net

***Members:*** *Col. Nancy Henderson, Rob Landel*

**PRACTICE**
**Chair:**
**Robert (Bob) H Rowe, PT, DMT, MHS, FAAOMPT**
126 Oak Leaf Drive
Slidell, LA 70461-5006
(504) 568-4285
(504) 568-6552 (FAX)
rrowe@lsuhsc.edu

***Members:*** *Bill Boissonnault, Joe Farrell, Helene Fearon, Jay Irrgang, Aimee Klein, Stephen McDavitt, Ken Olson, Richard Smith, Debbie Todd*

**PUBLIC RELATIONS/MARKETING**
**Chair:**
**Richard Watson, PT**
1266 Berkshire Lane
Barrington, IL 60010-6508
(847) 726-9181
(703) 935-4754 (FAX)
rick@mrpt.com

***Members:*** *Amanda Adams, Cheryl Dimapasoc, Michelle Spicka, Michael Tollan*

**FINANCE**
**Chair:**
**Joe Godges, DPT, MA, OCS**
(See Treasurer)

***Members:*** *John Childs, Steve Clark, Pam White*

**AWARDS**
**Chair:**
**Thomas G. McPoil, Jr, PT, PhD, ATC**
(See Vice President)

***Members:*** *Gary Hunt, Susan Appling, Carl DeRosa, Dale Schuit*

***JOSPT***
**Editor-in-Chief:**
**Guy Simoneau, PT, PhD, ATC**
Marquette University
P.O. Box 1881
Milwaukee, WI 53201-1881
(414) 288-3380 (Office)
(414) 288-5987 (FAX)
guy.simoneau@marquette.edu

**Executive Director/Publisher:**
**Edith Holmes**
*edithholmes@jospt.org*

**NOMINATIONS**
**Chair:**
**Leza Hatch, PT, MSPT, MA, OCS**
930 Olive Dr, Unit 59
Bakersfield, CA 93308-4182
leza_h_pt@yahoo.com

***Members:*** *Pamela Duffy, Kyndall Boyle*

**SPECIAL INTEREST GROUPS**

OCCUPATIONAL HEALTH SIG
*Deborah Lechner, PT, MS - President*

FOOT AND ANKLE SIG
*Stephen G. Paulseth, PT, MS, SCS - President*

PERFORMING ARTS SIG
*Susan Clinton, PT, MHS - President*

PAIN MANAGEMENT SIG
*Joe Kleinkort, PT, MA, PhD, CIE - President*

ANIMAL PT SIG
*Deborah Gross-Saunders, PT - President*

**APTA BOARD LIAISON**
Stephen Levine, PT, DPT, MSHA
stevelevine@apta.org

**2005 HOUSE OF DELEGATES REPRESENTATIVE**
Bob Rowe, PT, DMT, MHS, FAAOMPT

**Orthopaedic Section Website:**
www.orthopt.org
Bulletin Board feature also included. Check it out soon!

## ■ OFFICE PERSONNEL

Orthopaedic Section, APTA, Inc., 2920 East Avenue South, Ste 200, La Crosse, WI 54601-7202, (800) 444-3982 (Office), (608) 788-3965 (FAX)

| | | | | | |
|---|---|---|---|---|---|
| *Terri DeFlorian, Executive Director* | *x 204* | *tdeflorian@orthopt.org* | *Kathy Olson, Managing Editor ISC* | *x 213* | *kmolson@orthopt.org* |
| *Tara Fredrickson, Executive Associate* | *x 203* | *tfred@orthopt.org* | *Carol Denison, ISC Processor/Receptionist* | *x 215* | *cdenison@orthopt.org* |
| *Sharon Klinski, Managing Editor J/N* | *x 202* | *sklinski@orthopt.org* | | | |

# Editor's Corner
# Where Have All The Mentors Gone!

I was working with a patient recently who posed an interesting question? Why is it that there are not many older physical therapists? Without getting into a drawn out discussion on what is the meaning of 'old' I preceded to inform the patient about the career paths therapists often take as they 'mature' in the profession. Many advance up the career ladder into supervisory positions which can take them out of the general circulation with regard to treating patients on a daily basis. Others move into niche areas that many patients may never enter into for common musculoskeletal pathologies. And still some therapists move into academia to share their experiences with upcoming clinicians. Then of course, some use their knowledge in physical therapy to cross over into new careers such as pharmaceutical sales, wellness, and some even work for product manufacturers in the rehabilitation industry.

As I continued to ponder the patient's question, I began to wonder. Who is mentoring the young therapist or recent graduate entering into the field? Has mentoring in physical therapy been effected by the turbulence that has occurred in health care over the years? Just exactly how do recent graduates make decisions about choosing a mentor? Or more importantly does it even enter into their decision making process or where does it really rate when looking for a job?

Physical therapy is similar to most other professions in that your actual education begins **after** you graduate. Other professions such as business and law view mentoring as vital initiation into the profession and an ongoing process of professional development. Although educational programs do their best in preparing students for the 'real' world of physical therapy, I believe there still is a considerable divide between academic performance and the clinical realities of practice, competency, and efficiency.

"Physical therapy is similar to most other professions in that your actual education begins **after** you graduate."

In many instances this divide will most effectively be narrowed by the newcomer of the profession garnering beginning experiences under competent veteran clinicians. The wisdom that an experienced and seasoned clinician can bring to a new grad, or even a veteran therapist who is switching into a different area of practice, can be priceless in terms of professional growth and development. When our graduating seniors ask my advice on new job opportunities and making decisions on accepting a job offer, my first question to them is.....who will be your mentor? Is the staff that you will be working with experienced? Will there be opportunities for professional growth? Who will invest in your career? Is the environment stimulating enough to foster continued clinical expertise? These are important questions to know the answers to. Often the pressures of paying back student loans, geographic restraints, and personal relationships heavily influence a new graduate's decision in taking their first job. Jobs that offer secluded practice without peer interaction and limited professional opportunities at the expense of a higher salary can put the new graduate on a downhill slide right from the start and almost always will result in a step backward upon the next job placement.

**THE MENTOR—MENTEE (PROTÉGÉ) RELATIONSHIP: A TWO WAY STREET**

Much has been written on what it takes to be a successful mentor and also the responsibilities of the mentee. For the sake of brevity, I have listed a few characteristics below.

**Characteristics of a Good Mentor**

- Knowledgeable and competent
- Leads by example
- Available to mentee
- Cares for the mentee
- Commitment to mentee (desire to help)
- Good communicator
- Good listening skills
- Able to give valid feedback
- Honest and trustworthy
- Ethical
- Sense of integrity
- Motivational and energetic
- Positive attitude
- Able to provide opportunities
- Shares networking relationships

**Characteristics of a Good Mentee (protégé)**

- Positive attitude and motivated to improve
- Eagerness to learn
- Has clearly defined professional goals
- Ability to work as a team player
- Able to accept praise and criticism
- Patient (with learning and career advancement)
- Risk taker (accept new and challenging experiences)

For a more detailed perspective on mentoring I refer interested readers to an article on mentoring that appears on the APTA website written by Jody Shapiro Gandy, PT, PhD, Director of Clinical Education/ Education Systems for the American Physical Therapy Association. She brings out some excellent points on

what traits and characteristics both parties need to be vested in the process. Furthermore the American Physical Therapy Association has tried to help members link up with potential mentors through the establishment of a "Members Mentoring Members" directory located on the APTA website (see under member services link).

The most effective mentors tend to be a product of the system by having been a previous mentee themselves. The feeling of giving back is strong in the mentor and there is a true sense of openness and sharing to foster growth in the mentee. A mentor is an individual, usually older, always more experienced, who helps and guides another individual's development. Most importantly, this guidance is not done for personal gain. Good mentors do not make the mentoree dependent on them or try to have the mentee idolize them. The mentor strives to provide opportunities and professional growth.

Mentors take pride in seeing their protégés accomplish and reach their goals. Working with a mentor should not be looked upon as a duty or task by either party. Mentoring relationships can be short or long term with both participants having an interest in insuring the success of the relationship.

Mentoring is a form of professional development and should be the responsibility of every clinician, manager, educator, and researcher in physical therapy. In this way an aspiring person entering the profession can work their way through any number of mentors who each contribute something unique to the professional advancement of the mentee. By promoting the capabilities and aspirations of individuals within the profession and by fostering the development of physical therapy in the health and wellness systems, mentoring can have a tremendous impact on the areas of clinical practice, physical therapy education, and research.

In the final result establishing a mentor-mentee relationship creates a fertile clinical environment that can only be a positive influence on not only the mentor-mentee but also the patients being treated. Patients are very perceptive and can pick up fairly quickly on positive and negative influences of care. When a patient sees fellow therapists and other staff members functioning in a collaborative and supportive manner, they get a sense of being in the right place for their care. Patients also understand that when coworkers nurture and support their own, the best conditions exist to establish continuity in care and ultimately enable better outcomes for the patient.

Who is your mentor?

**REFERENCE**

1. Gandy JS. Mentoring. Available at http://www.apta.org. Accessed June 24, 2005.

*Christopher Hughes, PT, PhD, OCS*
*Editor, OP*

# UNIVERSITY OF ST. AUGUSTINE

## FOR HEALTH SCIENCES

Register Online at www.usa.edu or Call today at 1-800-241-1027!

## Manual Therapy and Orthopaedic Seminars
## 2005 Seminar Calendar

## CONTINUING EDUCATION SEMINARS

Stanley V. Paris, PT, PhD, FAPTA
President

### S1 - Introduction to Spinal Evaluation & Manipulation
40 Hours, 4.0 CEUs (No Prerequisite) **$825**

| | | |
|---|---|---|
| San Francisco, CA | Yack | Jun 8 - 12 |
| Boston, MA | Smith | Jun 23 - 27 |
| St. Augustine, FL | Paris/Viti | Jul 6 - 10 |
| Detroit, MI | Viti | Jul 13 - 17 |
| Columbus, OH | Lonneman | Aug 10 - 14 |
| Ft. Myers, FL | Viti | Aug 10 - 14 |
| Minneapolis, MN | Yack | Aug 11 - 15 |
| Honolulu, HI | Viti | Sep 21 - 25 |
| St. Augustine, FL | Paris/Viti | Oct 5 - 9 |
| Oak Ridge, TN | Viti | Nov 2 - 6 |
| Baltimore, MD | Smith | Nov 11 - 15 |
| Phoenix, AZ | Yack | Nov 16 - 20 |
| Houston, TX | Yack | Dec 7 - 11 |

### E1 - Extremity Evaluation and Manipulation
36 Hours, 3.6 CEUs (No Prerequisite) **$695**

| | | |
|---|---|---|
| Atlanta, GA | Busby | Jun 9 - 12 |
| Denver, CO | Turner | Jun 9 - 12 |
| New Orleans, LA | Fox | Jul 7 - 10 |
| Sarasota, FL | Busby | Jul 7 - 10 |
| Phoenix, AZ | Turner | Aug 4 - 7 |
| Boston, MA | Busby | Aug 18 - 21 |
| St. Augustine, FL | Patla/Fox | Sep 22 - 25 |
| Los Angeles, CA | Turner | Oct 20 - 23 |
| Harrisburg, PA | Fox | Oct 20 - 23 |
| Cincinnati, OH | Fox | Nov 10 - 13 |
| Dallas, TX | Turner | Dec 8 - 11 |

### The Pediatric Client with a Neurological Impairment
32 Hours, 3.2 CEUs (No Prerequisite) **$625**

| | | |
|---|---|---|
| St. Augustine, FL | Decker | Oct 20 - 23 |

### Motor Control & Motor Learning
23 Hours, 2.3 CEUs (No Prerequisite) **$545**

| | | |
|---|---|---|
| St. Augustine, FL | Lowe | Sep 16 - 18 |

### Basic Cranio-Facial
20 Hours, 2.0 CEUs (No Prerequisite) **$525**

| | | |
|---|---|---|
| Reykjavik, Iceland | Rocabado | Nov 30 - Dec 2 |

### S2 - Advanced Evaluation & Manipulation of Pelvis, Lumbar & Thoracic Spine
27 Hours, 2.7 CEUs (Prerequisite S1) **$545**

| | | |
|---|---|---|
| Ft. Myers, FL | Irwin | Jun 17 - 19 |
| Chicago, IL | Yack | Jul 22 - 24 |
| Ft. Lauderdale, FL | Irwin | Jul 29 - 31 |
| Houston, TX | Irwin | Aug 12 - 14 |
| Milwaukee, WI | Yack | Aug 26 - 28 |
| St. Augustine, FL | Irwin | Aug 26 - 28 |
| New York City, NY | Yack | Sep 30 - Oct 2 |
| Sarasota, FL | Yack | Nov 11 - 13 |
| New Orleans, LA | Yack | Dec 16 - 18 |

### MF1 - Myofascial Manipulation
24 Hours, 2.4 CEUs (No Prerequisite) **$545**

| | | |
|---|---|---|
| St. Augustine, FL | Stanborough | Jul 22 - 24 |
| Dallas, TX | Cantu | Jul 22 - 24 |
| Atlanta, GA | Cantu | Aug 5 - 7 |
| Ft. Lauderdale, FL | Grodin | Aug 5 - 7 |
| New York City, NY | Grodin | Oct 7 - 9 |
| Las Vegas, NV | Stanborough | Oct 7 - 9 |
| Denver, CO | Stanborough | Oct 21 - 23 |
| Chicago, IL | Cantu | Nov 11 - 13 |

### E2 - Extremity Integration
24 Hours, 2.4 CEUs (Prerequisite E1) **$545**

| | | |
|---|---|---|
| Ft. Lauderdale, FL | Varela | Jun 3 - 5 |
| New York, NY | Patla | Jun 24 - 26 |
| Washington, DC | Patla | Jul 22 - 24 |
| St. Augustine, FL | Patla | Jul 29 - 31 |
| Flint, MI | Varela | Jul 29 - 31 |
| Denver, CO | Varela | Aug 12 - 14 |
| Sarasota, FL | Varela | Sep 16 - 18 |
| Chicago, IL | Varela | Oct 7 - 9 |
| St. Augustine, FL | Patla | Oct 7 - 9 |
| Boston, MA | Patla | Nov 18 - 20 |
| LaJolla, CA | Patla | Dec 2 - 4 |

### Advanced Cranio-Facial
20 Hours, 2.0 CEUs (Prerequisite Intermediate Cranio Facial) **$525**

| | | |
|---|---|---|
| LaJolla, CA | Rocabado | Sep 14 - 16 |
| Reykjavik, Iceland | Rocabado | Nov 28 - 30 |

### S3 - Advanced Evaluation & Manipulation of the Cranio Facial, Cervical & Upper Thoracic Spine
32 Hours, 3.2 CEUs (Prerequisite S1) **$750**

| | | |
|---|---|---|
| Baltimore, MD | Smith | Jun 16 - 19 |
| St. Augustine, FL | Paris/Rot | Jun 16 - 19 |
| Las Vegas, NV | Rot | Jul 7 - 10 |
| New York, NY | Rot | Jul 21 - 24 |
| Charlotte, NC | Smith | Aug 13 - 16 |
| Boston, MA | Smith | Sep 15 - 18 |
| Chicago, IL | Rot | Sep 15 - 18 |
| Atlanta, GA | Smith | Oct 7 - 10 |
| St. Augustine, FL | Paris/Rot | Oct 13 - 16 |
| Los Angeles, CA | Rot | Oct 20 - 23 |
| Bayshore, NY | Rot | Nov 3 - 6 |
| Ft. Lauderdale, FL | Smith | Dec 10 - 13 |

### S4 - Functional Analysis & Management of Lumbo-Pelvic-Hip Complex
16 Hours, 1.6 CEUs (Prerequisite S1) **$495**

| | | |
|---|---|---|
| Troy, NY | Nyberg | Jun 18 - 19 |
| Indianapolis, IN | Varela | Jul 9 - 10 |
| LaJolla, CA | Nyberg | Aug 13 - 14 |
| Detroit, MI | Varela | Sep 10 - 11 |
| New York, NY | Nyberg | Sep 10 - 11 |
| Ft. Lauderdale, FL | Varela | Oct 15 - 16 |
| St. Augustine, FL | Nyberg | Nov 19 - 20 |
| Chicago, IL | Varela | Dec 3 - 4 |
| Atlanta, GA | Nyberg | Dec 10 - 11 |

### CERTIFICATION WEEK Preparation and Examination
36 Hours, 3.2 CEUs
(Prerequisites for each Certification vary) **$925**

| | | |
|---|---|---|
| St. Augustine, FL | | Sep 26 - Oct 1 |
| St. Augustine, FL | | Oct 24 - 29 |

### Intermediate Cranio-Facial
20 Hours, 2.0 CEUs (Prerequisite Basic Cranio Facial available Online) **$525**

| | | |
|---|---|---|
| *LaJolla, CA | Rocabado | Sep 11 - 13 |

IACET

**Advance Your Opportunities by Investing in Your Education**

**Earn Your Transitional DPT**

BSPT to DPT 30 Credits
MPT to DPT 22 Credits

- Convenient Distance Education Format with Online Courses
- Can Earn a Certification and a DPT Degree
- Clinically Relevant

Call 1-800-241-1027 or Visit our website www.usa.edu

*Specifically designed to respect the Sabbath.

Seminar dates, locations, and tuition are subject to change, please call before making any non-refundable reservations.

University of St. Augustine
For Health Sciences
1 University Boulevard
St. Augustine, FL 32086-5783
Registration: 800-241-1027
FAX: 904-826-0085

Name: _____
___PT
Address: _____
City: _____
State: _____ Zip: _____
Email: _____
Home: (____) ____-____
Work: (____) ____-____
FAX: (____) ____-____
Please register me for:
Seminars: _____
Locations: _____
Dates: _____

Prerequisite information:
Seminar: _____
Location/Date: _____

Is this your first seminar with the University? Yes____ No ____

A $50 non-refundable deposit must accompany registration form. A 50% non-refundable, non-transferable deposit is required for Certification. Balance is due 30 days prior to start date of the seminar. Balance can be transferred or refunded with 2 week written notice. Notice received after that time subject to only 50% refund. No refunds or transfers will be issued after the seminar begins.

METHOD OF PAYMENT
____Check or Money Order enclosed
Please make payable to: University of St. Augustine
Charge my: VISA MasterCard
___ ___
Card # _____
Exp. date: ___/___
Amount: $_____
Signature: _____

**Team Discount** - Two or more persons from the same facility registering for the same seminar at the same time, receive a 10% discount at the time of registration.
(Advanced notice and full payment required, does not apply after the first day of a seminar.)

**Multiple Seminar Discount** - Register and pay in full for two or more seminars at the same time and receive a 10% discount.
(May not be combined with any other discounts or previous registrations.)

Ortho 6-05

# President's Message

**Michael T. Cibulka, PT, DPT, MHS, OCS**
**President, Orthopaedic Section, APTA, Inc.**

### Celebration and Contribution

I just got back from Annual Convention and had a short but enjoyable 3 days in Boston. The programming was stimulating and interesting, the exposition hall busy, the posters nice, and the seafood excellent (especially the steamers). Bob Rowe, the Orthopaedic Section's Practice Committee Chair, was our Delegate to the House of Delegates (HoD). Bob, a veteran of the House, performed his usually stellar job. The biggest issue coming out of the House was the passage of RC 6-13 that dissolves the RBNA and established a new organization for interaction of physical therapist assistance within the APTA governance. The new system will allow PTAs to have 5 nonvoting delegates to the HoD. This should allow the PTAs to have a more active voice relative to governance within the association. The analogy in terms of voting is similar to the Sections since all sections have a delegate who does not having voting privileges; however, has the ability to make motions and debate motions. This structure puts the PTA back into the APTA. Like all new structures time will tell if this will work and we can only wait and see. However, APTA is hopeful that this will allow PTAs a more active role in the Association.

Next congratulations to Stanley V. Paris, PT, PhD the founder of the Orthopaedic Section and our first President for being named next year's Mary McMillan lecturer, the APTA's most prestigious award. I am sure Stanley will provide an enlightening and enjoyable McMillan lecture. At least he has a year to prepare. Next Congratulations to all of the Orthopaedic Section members who were recently named Fellows of the American Physical Therapy Association. The Catherine Worthingham Fellow is a special member classification which numbers less than 100 physical therapists and recognizes those members who have made lasting and significant advances in the science, education, and practice of the profession of physical therapy. This year the Orthopaedic Section is honored to have members George Davies, PT, DPT, FAPTA; Karen Hayes, PT, PhD, FAPTA; Barbara Norton, PT, PhD, FAPTA; and David Sinacore, PT, PhD, FAPTA named as Catherine Worthingham Fellows of the APTA. The Orthopaedic Section was highly visible in members who were selected Lucy Blair Service Award (for outstanding service to the APTA) winners. Section members who received the Lucy Blair Award include Cynthia Driskell, PT, GCS; James "Jim" Dunleavy, PT, MS; Evelyn "Evie" Hallas, PT, BS; and Jane Synder, PT, MA. Other Orthopaedic Section members who won awards at APTA's Annual Conference and Exposition include Richard Bohannon, PT, EdD, NCS, who received the Marian Williams Award for Research in Physical Therapy. Dan Riddle, PT, PhD received the Helen J. Hislop Award for Outstanding Contributions to Professional Literature. Mark Werneke, PT, MS, Dip MDT and Dennis L. Hart, PT, PhD received the Chattanooga Research Award to recognize the best clinical research article published in *Physical Therapy*. Michael T. Cibulka, PT, DPT, MHS, OCS received the Jack Walker Award recognized for the best article on clinical practice written in *Physical Therapy* in 2004. William "Bill" Boissonnault, PT, DHSc, FAAOMPT received the Dorothy E. Baethke-Eleanor J. Carlin Award for Excellence in Academic Teaching. What an accomplishment! Congratulations to all Orthopaedic Section members who received awards.

> "... I love going to physical therapy convention, I get a chance to see the many friends and colleagues I have from around the country."

This year has been an especially tough one for me. I lost my father unexpectedly during a hip operation, and I lost one of my closest friends to bile duct cancer within 2 months of each other. This reaffirmed that life is just too short and too precious. I guess that is one reason why I love going to physical therapy convention, I get a chance to see the many friends and colleagues I have from around the country. However, the good comes with the bad; and when I go, I also am reminded of the many friends I have lost: Steven J. Rose, a mentor/friend and the person who motivated me most to reach higher, explore further, and then to publish and contribute to the literature what I found; Bob Burles, a past Orthopaedic Section Treasurer, whose friendship and smile I always looked forward to seeing. Marilyn Gossman the 'eternal flame.' I always got the biggest 'smooch' and the best and most genuine hug always with that huge Marilyn smile. Marilyn had a personality and heart that was unmatched. I can't see where the Foundation would be without Marilyn's ardor and commitment. Gordon Cummings, I can still see Gordon out there dancing late at night with his boundless energy. Eugene "Mike" Michels my statistics teacher at Washington University in St. Louis, MO who was always there when I was a young nascent writer/clinical researcher. Mike's calm demeanor always gave me balance when I got a bit too enthusiastic about a topic or project. Where did they all go? Why so soon? Life really is special.

Thinking about all those friends I have lost also reminded me of all that I have and all of the special friends I have made throughout the last 27 years of being a physical therapist. Funny I have made many friends, but I also cultivated some that for what ever reason just don't understand me. That is life. I accept that. Moving on is difficult when seemingly insurmountable objects are blocking your path. Speaking of insurmountable objects, we have a fellow Orthopaedic Section member who could really use

our help right now. He is a member who has been very visible in the profession for many, many years, and a former teacher of mine. I know he would never request this, but I am asking because I believe that as physical therapists we are a caring and compassionate people that take care of our own. When I saw him at Annual Conference get out of his motorized wheelchair and walk down the aisle to assume his seat at the Mary McMillan Lecture, I was deeply moved by a man who has had to overcome much adversity. His body much thinned, his hair completely gone, but regardless a radiant smile, a gleam in his eyes, and a hand shake that showed a strong and resilient zest for life. The man I am talking about here is Jules Rothstein, PT, PhD, FAPTA. Jules has had more than his share of health woes from problems developing after a much needed liver transplant. Jules medical bills are simply enormous and just overwhelming. My humble request is that you would consider donating just a few dollars to help cover Jules immense medical bills. I ask this not as President of the Orthopaedic Section but as a fellow physical therapist and human being. Money is ephemeral but kindness lasts forever. Hopefully together we can help defray this huge burden. Again let me remind you Jules did not ask me to do this; I am asking this just because I think this is the right thing to do for a colleague in need! I hope you agree.

If you could help by contributing a few tax deductible dollars, here is the address to send a check:

Make the check payable to:
National Transplant Assistance Fund
c/o Jules Rothstein

and send to:
National Transplant Assistance Fund
3475 West Chester Pike, Ste 230
Newton Square, PA 19073
800.642.8399

or you can charge your donation to:
transplantfund.org/contributions/index.cfm
Patient: Jules Rothstein

Thank you in advance and God Bless.

## Upcoming Election

**Watch for the upcoming Orthopaedic Section's election! Offices open for the 2006 election are 1 Director, and 1 Nominating Committee Member. The voting period is from November 1, 2005 – November 30, 2005.**

Orthopaedic Section physical therapists and physical therapist assistants will receive a notification either by e-mail (for those members with an e-mail address) or via the USPS regarding the start of the election period. Specific instructions pertaining to the voting process will be included with that notification.

**Please take part in this very important process!**

# Practice Guideline: Acute Care Management Following Total Hip Arthroplasty (Postoperative Days 1-4)

**Elaine L. Bukowski, PT, MS, (D) ABDA**

## INTRODUCTION

This practice guideline describes elements of acute care management that physical therapists provide for patients who have undergone a total hip arthroplasty (replacement) secondary to the consequences of rheumatoid arthritis, osteoarthritis, avascular necrosis, and/or trauma.[1] This phase of care is provided in the inpatient hospital setting and is limited to postoperative days 1 through 4, at which time discharge from acute care is anticipated. The continued phases of rehabilitation are provided in other settings (ie, inpatient rehabilitation center or home) based upon the status of the patient at the time of discharge from acute care. However, those continued phases of rehabilitation are not included in this guideline. Patients classified in this practice guideline have undergone a unilateral total hip arthroplasty secondary to hip pain that leads to impaired function. This impaired function includes pain secondary to the surgical procedure, decreased range of motion, muscle guarding, muscle weakness, inability or decreased ability to transfer, ambulate and/or dress the lower extremities, and decreased weight-bearing ability associated with both the hip pain and the sequelae of total hip joint arthroplasty.[1,2]

### Levels of Recommendation

The levels of recommendation used in this guideline are based on the Oxford Centre for Evidence-based Medicine Levels of Evidence.[3] The medical diagnoses included in this guideline are based on Level A current evidence.[1,2]

## ICD-9-CM CODES

See Table 1 for the current and most typical ICD-9-CM codes related to this practice guideline.[4]

**Table 1. ICD-9-CM Codes Specific to Practice Guideline[4,6]**

| |
|---|
| 714 Rheumatoid arthritis and other inflammatory polyarthropathies |
| 714.0 Rheumatoid arthritis |
| 715 Osteoarthritis and allied disorders |
| 716 Other and unspecified arthropathies |
| 716.8 Other specified arthropathy |
| 820 Fracture of neck of femur |
| 820.8 Unspecified part of neck of femur, closed |
| 820.9 Unspecified part of neck of femur, open |
| 958 Certain early complications of trauma |
| Supplemental Classification of Factors Influencing Health Status and Contact with Health Services: |
| V43 Organ or tissue replaced by other means |
| V43.6 Joint |
| V43.64 Hip |

## EXAMINATION

The examination is divided into 3 components: the patient history, the systems review, and tests and measures. The selection of examination procedures and the depth of the examination are based on the patient age, severity of the problem, the acute stage of recovery, the early phase of rehabilitation, home situation, and other relevant factors.[4] The use of documentation templates for inpatient patient history and systems review from the *Guide to Physical Therapist Practice*, 2nd edition, is recommended.[6(pp 709,710,713)] These templates organize the pertinent factors in a concise and orderly fashion.

### Tests and Measures

See Table 2 for the tests and measures that cover the key areas for assessment. They have been found valid and reliable for patients included in this guideline. (Referenced studies are provided in the table.)

### Levels of Recommendation

The examination components included in this guideline are based on Level A,[19,20] Level B,[5,7-18,21-34] and Level D[6] current evidence.

## EVALUTION/DIAGNOSIS/PROGNOSIS

The physical therapist's evaluation is based on the data gathered from the above history, systems review, and tests and measures. During this process, the physical therapist will synthesize the examination data to establish the diagnosis and prognosis (including the plan of care). The clinical findings, extent of loss of function, severity of the problem, possibility of multisystem involvement, preexisting conditions, potential discharge destination, social considerations, physical function, and overall health status will influence the complexity of the evaluation.[5,6,35] The diagnosis may include: impaired joint mobility, motor function, muscle performance, and/or range of motion associated with the sequelae of total hip joint arthroplasty.[6(p259)] The prognosis is based on the course of 4 days of intervention. Over the course of these 4 days, the patient will demonstrate bed mobility, transfers, and ambulation, with assistive device, with least amount of assistance that renders patient safe. The patient will demonstrate adherence to total hip precautions throughout all of the above activities. By the end of the 4 days, the patient will achieve the anticipated goals and expected outcomes of the interventions that are described in the plan of care for this acute phase of rehabilitation.[1,35,37]

**Table 2. Tests and Measures Specific to Practice Guideline**

| | |
|---|---|
| Fatigue Severity Scale[7] | Elderly Mobility Scale[17,18] |
| Harris Hip Scale[8-12] | Braden Scale for Predicting Pressure Sore Risk[19-23] |
| Manual Muscle Test for UE and Nonoperated LE[13-16] | Range of Motion with Goniometry[24-34] |

### Levels of Recommendation

The recommendations for the evaluation, diagnosis, and prognosis components are based on Level A,[35-37] Level B,[5] and Level D[6] current evidence.

## EXPECTED RANGE OF NUMBER OF VISITS

The expected range of number of visits is 4 to 8. Twice daily visits are recommended over once daily visits. It is anticipated that 80% of patients who are classified in this practice guideline will achieve the anticipated goals and expected outcomes within 4 to 8 visits during the acute phase of rehabilitation.[38] See Table 3 for factors that may modify the frequency of visits.[2,6(p 265)]

### Levels of Recommendation

The recommended number of visits is based on Levels A[2] and D[6,38] current evidence. The factors that may modify the frequency of visits are based on Level A[35] and Level D[38] current evidence.

## PLAN OF CARE AND OUTCOMES

The plan of care includes: (1) coordination, communication, and documentation; (2) patient-related instruction; (3) procedural interventions (see Tables 4-6). The goals and expected outcomes are provided with each intervention in the tables.[1,2,6,38,39] Re-examination is conducted on a daily basis and at discharge from acute care phase. Indications for re-examination include new clinical findings or failure to respond to physical therapy interventions.[6(p 47)] The re-examination at discharge includes the same tests and measures used at initial examination. Outcomes are based on individual patient tolerance for exercise and functional activity.[40]

**Table 3. Factors That May Modify Frequency of Visits**

| | |
|---|---|
| Accessibility and availability of resources | Overall health status |
| Adherence to the intervention program | Pain and early movement tolerance |
| Age | Potential discharge destinations |
| Cognitive status | Premorbid conditions |
| Comorbidities | Probability of prolonged impairment, functional limitation, or disability |
| Complications from surgery | Psychological and socioeconomic factors |
| Concurrent medical, surgical, and therapeutic interventions | Psychomotor abilities |
| Decline in functional independence | Severity of the current condition |
| Level of impairment | Social support |
| Level of physical function | Stability of the condition |
| Nutritional status | Stability of vital signs |

**Table 4. Plan of Care for Coordination, Communication, and Documentation[6]**

**Intervention:** Obtain informed consent.
**Goal:** Informed consent is obtained.
**Expected Outcome:** Patient consents to services.

**Intervention:** Admission and discharge goals and planning.
**Goal:** Admission data and discharge planning are completed.
**Expected Outcome:** Patient understands anticipated outcomes.

**Intervention:** Collaboration and coordination with nursing, occupational therapy, social services, family, equipment suppliers, and agency to which patient is being discharged.
**Goal:** Care is coordinated with patient and other appropriate caregivers; equipment needed by patient is obtained; smooth transition of services upon patient's discharge from acute care.
**Expected Outcome:** Resources are utilized in a cost-effective way; patient has equipment needed to increase independence in functional activities; patient continues to receive needed services throughout episode of care.

**Intervention:** Documentation of services provided.
**Goal:** Documentation occurs throughout patient management.
**Expected Outcome:** Interdisciplinary collaboration is maintained throughout acute care.

**Table 5. Plan of Care for Patient-related Instruction[6]**

**Intervention:** Instruction in total hip precautions (reinforce as needed).
**Goal:** Maintain motion restrictions of operated hip until restrictions are lifted by surgeon (6-12 weeks).
**Expected Outcome:** Prevent postop dislocation or subluxation.

**Intervention:** Instruction in posture/positioning in bed (reinforce as needed).
**Goal:** Prevent flexion contracture of operated hip.
**Expected Outcome:** No flexion contracture of operated hip.

### Levels of Recommendation

Interventions are based on Level A,[39] Level B,[40] and Level D[6,38] current evidence. It should be noted that most of the literature supports the use of exercise for the operated lower extremity, even if limited, during this acute phase. However, the emphasis is placed on mobility skills.

## CRITERIA FOR TERMINATION OF PHYSICAL THERAPY SERVICES

The criteria for termination of services are listed in Table 7.[35,39] In addition, patient satisfaction will be determined by the use of a modified form of Goldstein, Elliott, and Guccione's Patient Satisfaction Questionnaire (see Table 8).[41(p 863)] Please note: This is not the end of the episode of care. The patient will be transferred to another setting for the continuation of this episode of care. The setting will be determined by the patient's home situation and functional status at the time of discharge from acute care. Possible settings include: home, inpatient rehabilitation facility, or outpatient rehabilitation facility.

### Levels of Recommendation

The criteria for termination of services are based on Level A[35,39] and Level B[41] current evidence.

## PLANNED REVISION OF GUIDELINE

This guideline will be updated in April 2010 or sooner if it becomes outdated. A systematic review of the literature will be conducted at the end of 2009 to determine the effectiveness of the guideline for acute care management of patients following total hip arthroplasty. Based on the outcomes of the review, the guideline will be revised and updated.

## CRITIQUE

### Strengths

One of the strengths of this practice pattern lies in the tests and measures chosen for the examination section. All tests and measures reflect those that have been studied and found valid and reliable for this specific patient population (see references for tests and measures). They focus on those areas of patient functional abilities that are key factors in determining the need for interventions following total hip arthroplasty (Level A,[2,19-22,35] Level B,[5,7-10,13-18,21-34] and Level D[6] current evidence). Another

**Table 6. Plan of Care for Procedural Interventions**[1,2,6,38-40]

**Intervention**: Bed mobility training (BID).
**Goal:** Maintain independence or increase independence in moving and positioning in bed while maintaining hip precautions.
**Expected Outcome:** Safe and independent bed mobility.

**Intervention**: Transfer training (BID).
**Goal**: Maintain independence or increase independence in transferring from supine <-> sitting on side of bed/sit <-> stand with assistive device while maintaining hip precautions.
**Expected Outcome**: Independent mobility and transfers with assistive device; decreased risk for immobility and its sequelae.

**Intervention**: Gait training with assistive device (BID).
**Goal**: Maintain independence or increase independence in ambulation while maintaining hip precautions.
**Expected Outcome**: Independent ambulation with assistive device; decreased risk for immobility and its sequelae.

**Intervention:** Balance training (BID).
**Goal**: Maintain postural alignment while maintaining weight- bearing status during transfers and ambulation.
**Expected Outcome:** Safe and independent transfers and ambulation.

**Intervention**: Exercises: Ankle pumps (1 set of 10 repetitions every hour).
**Goal**: Reduce the risk for deep vein thrombosis.
**Expected Outcome**: Prevent deep vein thrombosis.

Deep breathing exercises (1 set of 10 repetitions every hour).
**Goal:** Reduce the risk for pulmonary complications.
**Expected Outcome**: Prevent pulmonary complications.

Submaximal muscle setting for quadriceps and gluteal muscles on operated side (1 set of 10 repetitions twice a day, progressing to 2 sets three times a day, based on patient tolerance).
**Goal**: Prevent reflex inhibition and atrophy of muscles on operated side until resistance exercises initiated (approximately postop week 6).
**Expected Outcome**: Independent bed mobility, transfers, and ambulation.

If greater trochanteric osteotomy performed, avoid forceful hip abduction. Use minimal intensity only (same progression as above).
**Goal**: Prevent avulsing osteotomy sutures while preventing reflex inhibition and atrophy of hip abductors on operated hip until soft tissues have healed (approximately postop week 6).
**Expected Outcome**: Independent bed mobility, transfers, and ambulation.

If needed, active and/or resistive exercises to upper extremities and non-operated lower extremity (same progression as above).
**Goal**: Prevent atrophy of muscles in upper extremities and non- operated lower extremity.
**Expected Outcome**: Independent bed mobility, transfers, and ambulation.

If being discharged to home, home exercise program (same as above).
**Goal**: Same as above.
**Expected Outcome**: Same as above.

**Intervention:** relaxation exercises (if needed)*
**Goal**: Pain is reduced or eliminated.
**Expected Outcome**: Ability to perform physical activities related to self-care; performance of and independence with ADL is increased; tolerance of positions and activities in increased.
*Typically, pain is managed pharmacologically.

**Intervention**: Referral to occupational therapy.
**Goal:** ADL training.
**Expected Outcome**: Independent with ADL.

**Table 7. Criteria for Termination of Physical Therapy Services**[35,39]

Prior to discharge from physical therapy, the patient will demonstrate the following:

- Consistent use of total hip precautions during all activities.
- Independence in bed mobility.
- Independence with transfers.
- Independence or least amount of assistance to ambulate 100 feet on level surfaces and stairs.
- Independence with home exercise program (if being discharged to home).

strength is the choice of interventions which reflect interventions that are supported by Level A[1] and Level D[6,38] current evidence. They support the focus of rehabilitation for the first 4 days following total hip arthroplasty. Finally, a specific revision date is a strength of this guideline. Given the changes in length of stay during the past several years, a systematic review of the literature in the next 5 years should reveal any additional changes in length of stay, as well as any changes in the focus of rehabilitation for acute care management.

### Limitations

The guideline is limited to the first 4 post-op days. Rehabilitation with this particular population continues beyond these first 4 days. Therefore, the next phases of rehabilitation are not included and may be seen as a limitation. Another limitation may be the exclusion of rheumatoid arthritis with deconditioning, ankylosing spondylitis, juvenile rheumatoid arthritis, neoplasms of the bone, multiple arthroplasties, recurrent postoperative dislocation, and secondary postoperative infection which account for patients with other impairments, functional limitations, or disabilities who undergo total hip arthroplasty. However, patients with these conditions were excluded as they will require longer than 4 days in the acute care phase due to the comorbidities.[2,35,40] No interventions addressing pain management were included. Typically, this problem is managed pharmacologically and does not require physical therapy intervention.

### Areas Requiring Further Development

Interventions directed to pain management, postoperative complications such as deep vein thrombosis or dislocation, as well as those directed toward patients with rheumatoid arthritis with deconditioning, ankylosing spondylitis, juvenile rheumatoid arthritis, neoplasms of the bone, multiple arthroplasties, recurrent postoperative dislocation, and secondary postoperative infection could be included. This guideline could also be expanded to cover all the phases of rehabilitation associated with total hip replacement (acute care through termination of the episode of care). If this was to be done, issues related to length of stay could be addressed as well.

**Table 8. Patient Satisfaction Questionnaire**

Dear Patient,

You recently received physical therapy services following your total hip replacement. We strive to deliver the best possible physical therapy services. We are interested in learning from you how we might improve our services. Please take a few minutes to complete and return this questionnaire. Please answer the following questions. Feel free to make any additional comments you wish. Use the reverse side of this questionnaire for your comments. They are welcome. Please return the questionnaire to us at your earliest convenience. Thank you very much for your feedback!

1) Your age: _____ years

2) Your sex: ❑ male ❑ female

3) How did you learn about this facility: (Check all that apply,)
❑ physician ❑ friend ❑ former patient ❑ telephone book
❑ insurance company recommendation ❑ other, please specify_____

4) Was this your first experience with physical therapy? ❑ yes ❑ no

5) Was this your first experience with this facility? ❑ yes ❑ no

Please rate your degree of satisfaction with each of the following statements. (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly disagree. Please check N/A if you have no opinion on the subject.)

| | 1 | 2 | 3 | 4 | 5 | N/A |
|---|---|---|---|---|---|---|
| 6) My privacy was respected during my physical therapy care. | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 7) My physical therapist was courteous. | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 8) All other staff members were courteous. | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 9) I was satisfied with the treatment provided by my physical therapist. | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 10) My first visit for physical therapy was scheduled quickly. | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 11) My physical therapist understood my problem or condition. | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 12) The instructions my physical therapist gave me were helpful. | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 13) My physical therapist encouraged me to ask questions. | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 14) My physical therapist explained treatments in a way I could understand. | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 15) My physical therapist respected my opinion. | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 16) I was satisfied with the overall quality of my physical therapy care. | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 17) I would recommend this facility to family or friends. | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 18) I would return to this facility if I required physical therapy care in the future. | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 19) I was referred to the appropriate agency or facility for my continued physical therapy. | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |
| 20) Overall, I was satisfied with my experience with physical therapy. | ❑ | ❑ | ❑ | ❑ | ❑ | ❑ |

Inclusion of a presurgical exercise program could be considered as there is evidence that such a program improves early functional recovery after total hip arthroplasty.[1,39] Additionally, the impact of critical pathways could be included as there is evidence that critical pathways are effective in early functional recovery following total hip arthroplasty.[37]

## Application to Practice

This practice guideline is recommended for use in acute care hospitals that provide services for patients undergoing total hip arthroplasty and in those courses in entry-level physical therapy curricula in which this topic is covered. By introducing students to this guideline, they may be better prepared to work with patients who undergo total hip arthroplasty during the acute care phase of management.

## REFERENCES


1. Brander VA, Mullarkey CF, Stulberg SD. Rehabilitation after total joint replacement in osteoarthritis: An evidence-based approach. *Phys Med Rehabil.* 2001;15(1):175-197.
2. Munin MC, Rudy TE, Glynn NW, Crossett LS, Rubash HE. Early inpatient rehabilitation after elective hip and knee arthroplasty. *JAMA.* 1998; 279:847-852.
3. Oxford Centre for Evidence-based Medicine Levels of Evidence (May 2001). Available at: http://www.cebm.net/levels_of_evidence.asp#levels. Accessed August 12, 2004.
4. World Health Organization. *International Classification of Diseases. 9th Revision. Clinical Modification (ICD-9-CM)*, Volumes 1 and 3. Chicago, Ill: American Medical Association; 2000.
5. Kwoh CK, Petrick MA, Munin MC. Inter-rater reliability for function and strength measurements in the acute care hospital after elective hip and knee arthroplasty. *Arth Care Res.* 1997;10(2):128-134.
6. American Physical Therapy Association. *Guide to Physical Therapist Practice*. 2nd ed. Alexandria, Va: American Physical Therapy Association; 1997.
7. Krupp LB, LaRocca NG, Muir-Nash J, Steinberg AD. The fatigue severity scale. Application to patients with multiple sclerosis and systemic lupus erythematosus. *Arch Neurol.* 1989; 46(10):1121-1123.
8. Wright JG, Young NL. The patient-specific index: asking patients what they want. *Am J Bone Joint Surg.* 1997;79(7):974-983.

9. Blanchard C, Feeny D, Mahon JL, et al. Is the Health Utilities Index responsive in total hip arthroplasty patients? *J Clin Epidemiol.* 2003;56 (11):1046-1054.
10. Blanchard C, Feeny D, Mahon JL, Bourne R, Stitt L, Webster-Bogaert S. Is the Health Utilities Index valid in total hip athroplasty patients? *Qual Life Res.* 2004;13(2):339-448.
11. Harris WH. Traumatic arthritis of the hip after dislocation and acetabular fractures: treatment by mold arthroplasty. *J Bone Joint Surg.* 1969;51-A(4):737-755.
12. Harris WH. Preliminary report of results of Harris total hip replacement. *Clin Orthop Rel Res.* 1973;95: 168-173.
13. Wadsworth CT, Krishnan R, Sear M, Harrold J, Nielson SH. Intrarater reliability of manual muscle testing and hand-held dynametric muscle testing. *Phys Ther.* 1987;67(9):1342-1347.
14. Brandsma JW, Schreuders TA, Birke JA, Piefer A. Manual muscle strength testing: intraobserver and interobserver reliabilities for the intrinsic muscles of the hand. *J Hand Ther.* 1995;8(3):185-190.
15. Finucane SD, Walker ML, Rothstein JM, Lamb RL. Reliability of isometric muscle testing of knee flexor and extensor muscles in patients with connective tissue disease. *Phys Ther.* 1988;68(3):338-343.
16. Bohannon RW. Make tests and break tests of elbow flexor muscle strength. *Phys Ther.* 1988;68(2):193-194.
17. Smith R. Validation and reliability of the Elderly Mobility Scale. *Physiother.* 1994;80(11):744-747.
18. Prosser L, Canby A. Further validation of the Elderly Mobility Scale for measurement of mobility of hospitalized elderly people. *Clin Rehabil.* 1997; 11(4):338-343.
19. Bergstrom N, Braden BJ, Laguzza A, Holman V. The Braden Scale for Predicting Pressure Sore Risk. *Nurs Res.* 1987;36(4):205-210.
20. Bergstrom N, Braden B, Kemp M, Champagne M, Ruby E. Predicting pressure ulcer risk: A multisite study of the predictive validity of the Braden Scale. *Nurs Res.* 1998;47(5): 261-269.
21. Bridel J. Assessing the risk of pressure sores. *Nurs Stand.* 1993;7(25): 32-35.
22. Lyder CH, Yu C, Stevenson D, et al. Validating the Braden Scale for the prediction of pressure ulcer risk in blacks and Latino/Hispanic elders: a pilot study. *Osto Wound Manage.* 1998;44(3ASuppl):42S-49S; discussion 50S.
23. Lyder CH, Yu C, Emerling J, et al. The Braden Scale for pressure ulcer risk: evaluating the predictive validity in Black and Latino/Hispanic elders. *Appl Nurs Res.* 1999;12(2):60-68.
24. Boone DC, Azen SP, Lin CM, Spence C, Baron C, Lu L. Reliability of goniometric measurements. *Phys Ther.* 1978;58(11):1355-1390.
25. Ekstrand J, Wiktorsson M, Oberg B, Gillquist J. Lower extremity goniometric measurements: a study to determine their reliability. *Arch Phys Med Rehabil.* 1982;63(4):171-175.
26. Elveru RA, Rothstein JM, Lamb RL. Goniometric reliability in a clinical setting. Subtalar and ankle joint measurements. *Phys Ther.* 1988;68(5): 672-677.
27. Rothstein JM, Miller PJ, Roettger RF. Goniometric reliability in a clinical setting. Elbow and knee measurements. *Phys Ther.* 1983;63(10):1611-1615.
28. Watkins MA, Riddle DL, Lamb RL, Personius WJ. Reliability of goniometric measurements and visual estimates of knee range of motion obtained in a clinical setting. *Phys Ther.* 1991;71(2):90-96; discussion 96-97.
29. Youdas JW, Carey JR, Garrett TR. Reliability of measurements of cervical spine range of motion –comparison of three methods. *Phys Ther.* 1991;71(2):98-104; discussion 105-106.
30. Youdas JW, Garrett TH, Suman VJ, Bogard CL, Hallman HO, Carey JR. Normal range of motion of the cervical spine: an initial goniometric study. *Phys Ther.* 1992;72(11):770-780.
31. Youdas JW, Bogard CL, Suman VJ. Reliability of goniometric measurements and visual estimates of ankle joint active range of motion obtained in a clinical setting. *Arch Phys Med Rehabil.* 1993;74(10):1113-1118.
32. Riddle DL, Rothstein JM, Lamb RL. Goniometric reliability in a clinical setting. Shoulder measurements. *Phys Ther.* 1987;67(5):668-673.
33. Gajdosik R, Simpson R, Smith R, DonTigny RL. Pelvic tilt. Intratester reliability of measuring the standing position and range of motion. *Phys Ther.* 1985;65(2):169-174.
34. Clapper MP, Wolf SL. Comparison of the reliability of the Orthoranger and the standard goniometer for assessing active lower extremity range of motion. *Phys Ther.* 1988;68(2):214-218.
35. Munin MC, Kwoh CK, Glynn NW, Crossett LS, Rubash HE. Predicting discharge outcome after elective hip and knee arthroplasty. *Am J Phys Med Rehabil.* 1995;74:294-301.
36. Scarcella JB, Cohn BT. The effect of cold therapy on the postoperative course of total hip and knee arthroplasty patients. *Am J Orthop.* 1995; 24:847-852.
37. Kim BS, Losina E, Solomon DH, Wright J, Katz JN. Effectiveness of clinical pathways for total knee and total hip arthroplasty-literature review. *J Arthroplasty.* 2003;18(1): 69-74.
38. Enloe LJ, Shields RK, Smith K, Leo K, Miller B. Total hip and knee replacement treatment programs: A report using consensus. *J Orthop Sports Phys Ther.* 1996;23(1):3-11.
39. Gibley HJ, Ackland TR, Wang AW, Morton AR, Trouchet T, Tapper J. Exercise improves early functional recovery after total hip arthroplasty. *Clin Orthop.* 2003;408(3):193-200.
40. Zavadak KH, Gibson KR, Whitley DM, Britz P, Kwoh CK. Variability in the attainment of functional milestones during the acute care admission after total joint replacement. *J Rheum.* 1995;22:482-487.
41. Goldstein MS, Elliott SD, Guccione AA. The development of an instrument to measure satisfaction with physical therapy. *Phys Ther.* 2000; 80(9):853-863.

---

*Elaine L. Bukowski is a Professor of Physical Therapy at Richard Stockton College of New Jersey in Pomona, NJ.*

# Rating of Perceived Exertion: Use with Patients Taking Beta-Blocker Medication

Lisa T. Hoglund, PT, OCS

## INTRODUCTION

Physical therapists working in an outpatient setting regularly treat patients with impairments of the musculoskeletal system. Yet the clinician must be aware of each patient's comorbid medical conditions and all medications in order to provide safe, appropriate interventions. This information will be gathered during the history and systems review portions of the physical therapy examination. One example in which a therapist may alter the treatment plan based on comorbidities and/or medication usage is when utilizing therapeutic exercise as an intervention for the patient taking beta-blocker medication.

## BETA-BLOCKER PHARMACOLOGY

Physical therapists frequently work with patients and clients who are taking beta-blockers, or beta-adrenergic blockers. This group of drugs is sympatholytic, ie, they decrease sympathetic activity.[1] The sympathetic nervous system normally acts to increase heart rate (HR) and myocardial contractility by increasing nerve conduction in response to stress. Beta-blockers act by binding to the postsynaptic receptors of postganglionic sympathetic neurons, thus blocking these receptors from accepting the sympathetic neurotransmitter norepinephrine. Inhibition of the sympathetic innervation of the heart results in a decreased HR and decreased contractility of the myocardium. The resultant reduction in cardiac output produces decreased blood pressure and a reduction in the workload of the heart. The beta-blocker class of drugs is therefore frequently prescribed for the treatment of hypertension (HTN) in order to lower blood pressure.[1] The prevalence of HTN in the United States makes it highly likely that a therapist will encounter patients using beta-blockers. One in four adults (more than 50 million people over age 6) have the condition.[1,2] Prevalence of HTN is even higher in the non-Hispanic black community which was found to be 40.5% in the National Health and Nutrition Examination Surveys (NHANES) for the study period 1999-2002.[3]

One goal of the Healthy People 2010 conference of the US Department of Health and Human Services is to increase to 95% the percentage of people with HTN who are taking steps to control this condition (from a baseline of 82%).[4] This will increase the number of people taking antihypertensive medication, including beta-blockers.

Beta-blockers are not only used to treat HTN. Additional conditions that may be treated with this class of drugs are congestive heart failure, angina, cardiac arrhythmia, peripheral vascular disease, migraine headaches, hyperthyroidism, anxiety or tremors, glaucoma, and to prevent recurrence after a first myocardial infarction.[5,6] The clinician must be aware that patients who do not report HTN in their medical history may still be taking beta-blockers. Considering the multitude of medical conditions that may be treated with beta-blockers, the physical therapist should be conscious of the side effects of these medications and the necessary precautions when treating individuals taking drugs of this class. Refer to Table 1 for a list of some beta-blockers and combination medications including beta-blockers.

One adverse effect of beta-blockers is bradycardia.[1,7] In addition, beta blockers blunt the cardiac response to increased physical activity, preventing the normal rise in HR to increase cardiac output.[7] Since one method of determining exercise intensity is to monitor HR, bradycardia makes it difficult for the physical therapist to accurately grade the level of exercise in patients taking these medications. The clinician may be unaware that exercise intensity is dangerously high or that it may be too low to achieve a therapeutic effect. It is therefore important for the physical therapist to have another means of monitoring the impact of exercise on patients' cardiovascular systems in order to prescribe safe, effective therapeutic exercise programs.

## RATING OF PERCEIVED EXERTION SCALES

One method that has been proposed as an alternative to the use of HR to grade exercise is the use of Rating of Perceived Exertion (RPE) scales.[8,9] A commonly used RPE scale is the Borg's RPE.[10] This

**Table 1. Beta-Blockers**

| Generic Name | Brand Name |
|---|---|
| Acebutolol | Sectral |
| Atenolol | Tenormin; (Tenoretic: combination with chlorthalidone)* |
| Betaxolol hydrochloride | Kerlone |
| Bisoprolol fumarate | Zebeta; (Ziac: combination with hydrochlorothiazide)* |
| Carteolol | Cartrol |
| Carvedilol** | Coreg |
| Labetalol hydrochloride | Normodyne, Transdate |
| Metoprolol succinate | Toprol XL |
| Metoprolol tartrate | Lopressor; (Lopressor HCT: combination with hydrochlorothiazide)* |
| Nadolol | Corgard; (Corzide: combination with bendroflumethiazide)* |
| Oxprenolol | Trasicor |
| Penbutolol sulfate | Levatol |
| Pindolol | Visken |
| Propanolol | Inderal: (Inderide, Inderide LA: combinations with hydrochlorothiazide)* |
| Sotalol | Betapace |
| Timolol maleate | Blocadren; (Timolide: combination with hydrochlorothiazide)* |

* Combination beta-blocker and diuretic
** Combination beta-blocker and alpha-blocker

scale requires a subject to choose a numeric rating of his or her internal perception of exertion.[11] Several of the numerals are associated with verbal descriptions to facilitate a subject's choice of RPE rating. Higher numeric ratings correspond to higher perceived exertion. Borg's initial RPE scale is an ordinal scale numbered from 6 to 20; this numbering was selected based upon the results of various experiments such that a linear relationship existed between RPE and HR. In young, nonmedicated individuals the following relationship holds: HR = RPE x 10.[10]

### Reliability and Validity of the Borg RPE Scale

Due to its design, it is not surprising that the Borg's RPE has been demonstrated to correlate well with HR. It has also been found to correlate well with another measure of physical work capacity, percentage of maximal oxygen consumption ($VO_{2max}$).[12] $VO_{2max}$ is a measure of an individual's maximal aerobic capacity, thus percentage $VO_{2max}$ is a measure of exercise intensity.[13] Borg's RPE scale has been shown to be both reliable and valid as a measure of perception of work intensity in both lean and obese individuals[14] as well as in individuals ranging in activity level from sedentary to very active.[15] (A revised Borg scale that is a category-ratio scale numbered from 0.0 to 11.0 has also been developed. The ordinal scale has been more widely referenced in the literature.)[4] Since most physical therapists do not have access to laboratory equipment used to measure the amount of oxygen consumed, eg, open circuit indirect calorimetry, the Borg RPE scale is very useful to measure exercise intensity clinically. See Table 2 for the ordinal and category-ratio versions of this scale.

### Exercise Capacity, $VO_{2max}$, and RPE in Persons Using Beta-Blockers

Borg's RPE is recommended for use in exercise training for persons taking beta-blockers since perceived exertion is not affected by medication.[9] A similar relationship exists between percentage of $VO_{2max}$ and rating on Borg's RPE in individuals taking beta-blockers as compared to nonmedicated individuals.[17] But one adverse effect of beta-blockers is decreased maximal exercise capacity and decreased $VO_{2max}$.[17-19] This reduction in maximal exercise capacity causes the RPE chosen by individuals taking beta-blockers to be higher than nonmedicated individuals, when the *absolute* work rate is the same. When RPEs chosen are compared by proportion of $VO_{2max}$ this difference based on medication use disappears.[17] Therefore, since training intensities are determined by a *percentage* of $VO_{2max}$, the RPE can be used in individuals using beta-blockers to prescribe and monitor safe, effective levels of exercise intensities.

A strong positive correlation still exists between HR and RPE in individuals on beta-blocker medications.[19] The RPE associated with a given HR is lower in these individuals as compared to nonmedicated persons, however. RPE can still be used to predict maximal work rate in patients taking these drugs.[19]

**Table 2. Borg Scales for Rating of Perceived Exertion***

| Ordinal Scale | | Category-Ratio Scale | |
|---|---|---|---|
| 6 | No exertion at all | 0 | Nothing at all |
| 7 | Extremely light | ... | ... |
| 8 | ... | 0.5 | Very, very light |
| 9 | Very light | 1 | Very light |
| 10 | ... | ... | ... |
| 11 | Light | 2 | Light |
| 12 | ... | ... | ... |
| 13 | Somewhat hard | 3 | Moderate |
| 14 | ... | 4 | ... |
| 15 | Hard | 5 | Heavy |
| 16 | ... | 6 | ... |
| 17 | Very hard | 7 | Very heavy |
| 18 | ... | 8 | ... |
| 19 | Extremely hard | 9 | ... |
| 20 | Maximal exertion | 10 | Very, very heavy[16] |

*Ellipses indicate no verbal descriptor or numeral applicable

## EXERCISE GUIDELINES

The American College of Sports Medicine (ACSM) recommends that for maintenance of a healthy heart aerobic exercise should be performed at a level between 60% to 85% of an individual's maximal HR.[11,13] Maximal permissible HR (MPHR) may be measured during an exercise stress test. It may also be estimated from a calculation based on an individual's age (220 - age = max HR).[20] For those whose HR is artificially depressed, such as individuals taking beta-blockers, an RPE of 12 - 13 is approximately equal to 60% max HR; an RPE of 16 is approximately equal to 85% max HR.[21] The ACSM guidelines for exercise intensity are levels associated with RPEs from 13 to 16 for most individuals ("somewhat hard" to "hard" verbal descriptors) and initial exercise intensities of 11 to 12 for unconditioned individuals ("light").[11] Recommendations for individuals taking beta-blockers are similar: 13 to 15 RPE on the Borg scale.[9] An additional safeguard in these individuals is to avoid increases in HR of greater than 20 beats per minute over the resting HR.[8]

There are individuals in whom it is contraindicated to perform a maximal exercise test in order to determine $VO_{2max}$. This includes individuals with congestive heart failure (CHF). Yet patients with CHF are often treated with beta-blockers to decrease the excessive sympathetic activity and its effect on the heart.[22] Aerobic exercise is also indicated in persons with CHF to prevent deconditioning and improve function.[23] Those individuals classified as New York Heart Association classes I or II (cardiac disease present with no or slight limitation to physical activity) are recommended to participate in exercise programs.[23] These programs should be individualized and limited by symptoms of angina or dyspnea. Initial exercise intensity is recommended to be between 11 and 14 on Borg's RPE scale ("light" to "somewhat hard").[23] Exercise intensity can be increased gradually as tolerated.

Exercise is beneficial to promote cardiovascular fitness and improve physical function in individuals with fitness levels from deconditioned to very active. This includes persons taking medication that blunts the HR response to exercise, eg, beta-blockers. Physical therapists can use Borg's Rating of Perceived Exertion scale to safely and effectively grade exercise programs for patients and clients taking beta-blockers. It is useful with patients referred for evaluation and treatment for a wide variety of impairments and disabilities. The following are representative of only a few cases the author has encountered in which the use of Borg's RPE scale is useful.

## SAMPLE CASES

### Knee Osteoarthritis

Patients referred for evaluation and treatment of musculoskeletal degenera-

tive conditions such as osteoarthritis also may have coexisting cardiovascular disease. The author recently worked with a 54-year-old female patient referred by her family physician for treatment of bilateral knee osteoarthritis. She had consulted with an orthopaedic surgeon for possible total knee replacements, however, she was not a surgical candidate. Her medical history included HTN as well as diabetes type II and a stroke. She had retired for health reasons and reported a weight gain since retirement. Her medications included Coreg (a combination beta- and alpha-blocker), a diuretic, an antianginal medication, a platelet aggregation inhibitor, aspirin, an antilipemic medication for lowering serum cholesterol, and an antidiabetic medication. Functionally she rated herself severely limited with a score of 34/80 on the Lower Extremity Functional Scale.[24] She required 20 seconds to complete the Timed-Up-and-Go physical performance test,[25] which is excessive; however, it is shorter than the 30 seconds that corresponded with functional dependence in persons with pathology. On examination she had reduced flexion and extension active and passive range of motion, 4/5 grade strength of bilateral quadriceps and hamstring muscle groups, moderate laxity of the medial collateral and anterior cruciate ligaments on the right knee, and swelling of both knees, right worse than left. Her chief complaints were knee pain, severe difficulty climbing stairs and performing housework (laundry), and an inability to go clothes shopping. The therapist chose Musculoskeletal Practice Pattern 4D, Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated with Connective Tissue Dysfunction as the primary practice pattern from the *Guide to Physical Therapist Practice.*[26] An important additional practice pattern to use for this patient is the Cardiovascular/Pulmonary Preferred Practice Pattern 6D, Impaired Aerobic Capacity/Endurance Associated with Cardiovascular Pump Dysfunction or Failure.[26] This second pattern includes the use of perceived exertion scales as one of the possible tests and measures physical therapists may select. The author felt it was important to monitor RPE with this patient when she performed therapeutic exercise in order to safely and efficaciously treat her impairments of weakness and reduced endurance. This was deemed critical for the patient to achieve her primary goal of being able to shop at the mall with her grandchildren.

### Functional Capacity Evaluation

Some patients and clients seen by physical therapists are referred for evaluation only; one example is the individual who undergoes a functional capacity evaluation (FCE). An FCE is a method of measuring an injured worker's function utilizing tests that yield objective information regarding the ability to perform required work-related tasks safely as well as any work restrictions.[27] Aerobic capacity may be one limiting factor to a person's physical capacity to perform tasks, eg, repetitive lifting or climbing ladders. In order to be certain that a client does not perform work-related tasks at a dangerously high level, the examiner may monitor the client's heart rate. A particular percentage of baseline maximum aerobic capacity, commonly assessed as a percentage of MPHR, has been recommended as a physiological criterion to limit loads lifted.[28,29] Workers recovering from musculoskeletal injuries may also have comorbid conditions requiring the use of beta-blocker medication. Borg's RPE scale can be useful to monitor the individual's physiological response to performed tasks. A typical example is the 45-year-old laborer that underwent an FCE performed by the author to determine his readiness to return to work after a lateral ankle sprain and subsequent lateral ankle ligament reconstruction. This client's medical history included HTN and hypercholesterolemia. His medications included atenolol (a beta-blocker), as well as a diuretic and an angiotensin-converting enzyme (ACE) inhibitor, and an antilipemic medication. This patient's primary classification according to the *Guide to Physical Therapist Practice* was determined to be Musculoskeletal Practice Pattern I: Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated with Bony or Soft Tissue Surgery.[26] A secondary practice pattern was thought appropriate for this patient due to the diagnosis of hypertension, Cardiovascular Practice Pattern 6B: Impaired Aerobic Capacity/Endurance Associated with Deconditioning.[26] His heart rate was monitored throughout the FCE, as was his RPE, in order to prevent unsafe work levels. As expected, his HR response to dynamic activities was blunted, with the highest HR recorded as 105 beats per minute (bpm). The corresponding RPE chosen was 15, "Hard," which should correspond to a heart rate of 150 bpm in healthy, nonmedicated individuals. This RPE indicated that this client was at 85% of his MPHR, as calculated by the age-predicted method.[20] This case demonstrates the usefulness of the RPE scale to determine the physiological endpoint for particular work-related tasks and ensure safety for the client during testing.

## CONCLUSION

Physical therapists use a multitude of tests and measures to determine the need for and the response to interventions when treating patients. One of these measures is the Borg's Rating of Perceived Exertion scale. This scale has been demonstrated to be both reliable and valid in many populations including individuals medicated with beta-blocker drugs. Familiarization with this scale can be useful to the physical therapist in treating these individuals.

## REFERENCES


1. Ciccone CD. Adrenergic drugs. In: *Pharmacology in Rehabilitation.* Philadelphia, Pa: F.A. Davis Company; 2002:286-302.
2. Gulotta SJ, D'Agostino RD, Hamby RI. High blood pressure. Heart Center Online Web site. Available at: http://www.heartcenteronline.com/myheartdr/common/articles.cfm?ARTID=365. Accessed January 23, 2005.
3. Centers for Disease Control and Prevention. Racial/ethnic disparities in prevalence, treatment, and control of hypertension - United States, 1999-2002. *MMWR Morb Mortal Wkly Rep* [serial online]. January 14, 2005; 54(01):7-9. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5401a3.htm. Accessed January 24, 2005.
4. US Department of Health and Human Services. Healthy people 2010 (conference ed, in 2 vols). Washington, DC: US Department of Health and Human Services; 2000. Available at: http://www.health.gov/healthypeople. Accessed January 24, 2005.
5. Cohen KH, Hamby RI. Beta blockers. Heart Center Online Web site. Available at: http://www.heartcenter

online.com/myheartdr/common/articles.cfm?ARTID=331. Accessed January 23, 2005.
6. Beta-adrenergic blocking agents (systemic). US National Library of Medicine Web site. Available at: http://www.nlm.gov/medlineplus/druginfo/uspdi/202087.html. Accessed January 25, 2005.
7. Ciccone CD. Antihypertensive drugs. In: *Pharmacology in Rehabilitation.* Philadelphia, Pa: F.A. Davis Company; 2002:303-326.
8. Goodman CC. The cardiovascular system. In: Goodman CC, Boissonnault WG, Fuller KS, eds. *Pathology: Implications for the Physical Therapist.* 2nd ed. Philadelphia, Pa: Saunders; 2003:367-476.
9. McConnell TR. Cardiorespiratory assessment of apparently healthy populations. In: American College of Sports Medicine. *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription.* 4th ed. Philadelpia, Pa: Lippincott Williams & Wilkins; 2001:361-375.
10. Borg GAV. Perceived exertion. *Exerc & Sport Sci Rev.* 1974; 2:131-153.
11. Holly RG, Shaffrath JD. Cardiorespiratory endurance. In: American College of Sports Medicine. *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription.* 4th ed. Philadelpia, Pa: Lippincott Williams & Wilkins; 2001: 449-459.
12. Byrnes WC, Jensen CA. Adaptations to exercise training. In: Kamen G, ed. *Foundations of Exercise Science.* Philadelphia, Pa: Lippincott Williams & Wilkins; 2001:35-50.
13. Byrnes WC, Jensen CA. Exercise physiology. In: Kamen G, ed. *Foundations of Exercise Science.* Philadelphia, Pa: Lippincott Williams & Wilkins; 2001:15-33.
14. Skinner JS, Hutsler R, Bergsteinova V, Buskirk ER. The validity and reliability of a rating scale of perceived exertion. *Med Sci Sports Exerc.* 1973;5: 94-96.
15. Dunbar CC, Robertson RJ, Baun R, et al. The validity of regulating exercise intensity by ratings of perceived exertion. *Med Sci Sports Exerc.* 1992;24:94-99.
16. Hillegass EA, Temes WC. Therapeutic interventions in cardiac rehabilitation and prevention. In: Hillegass EA, Sadowsky HS, eds. *Essentials of Cardiopulmonary Physical Therapy.* 2nd ed. Philadelphia, Pa: W.B. Saunders Company; 2001:676-726.
17. Eston R, Connolly D. The use of ratings of perceived exertion for exercise prescription in patients receiving beta-blocker therapy. *Sports Med.* 1996;21:176-190.
18. Rueckert PA, Slane PR, Hanson P. Adding β-2 agonism does not improve β-1 blockade exercise responses in hypertensives. *Med Sci Sports Exerc.* 1994;26:945-950.
19. Eston RG, Thompson M. Use of ratings of perceived exertion for predicting maximal work rate and prescribing exercise intensity in patients taking atenolol. *Br J Sports Med.* 1997;31:114-119.
20. Goodman CC, Boissonnault WG, Fuller KS. Appendix B: Guidelines for activity and exercise. In: Goodman CC, Boissonnault WG, Fuller KS, eds. *Pathology: Implications for the Physical Therapist.* 2nd ed. Philadelphia, Pa: Saunders; 2003:1201-1207.
21. Sciaky A, Stockford J, Nixon E. Treatment of acute cardiopulmonary conditions. In: Hillegass EA, Sadowsky HS, eds. *Essentials of Cardiopulmonary Physical Therapy.* 2nd ed. Philadelphia, Pa: W.B. Saunders Company; 2001:647-675.
22. Ciccone CD. Treatment of congestive heart failure. In: *Pharmacology in Rehabilitation.* Philadelphia, Pa: F.A. Davis Company; 2002:356-372.
23. Braith RW. Exercise training in patients with CHF and heart transplant recipients. *Med Sci Sports Exerc.* 1998;30:S367-S378.
24. Binkley JM, Stratford PW, Lott SA, Riddle DL, The North American Orthopaedic Rehabilitation Research Network. The Lower Extremity Functional Scale (LEFS): scale development, measurement properties, and clinical application. *Phys Ther.* 1999;79:371-383.
25. Podsiadlo D, Richardson S. The timed "Up & Go": a test of basic functional mobility for frail elderly persons. *J Am Geriatr Soc.* 1991;39:142-148.
26. American Physical Therapy Association. Guide to physical therapist practice. 2nd ed. *Phys Ther.* 2001; 81:9-744.
27. American Physical Therapy Association. Occupational health physical therapy guidelines: evaluating functional capacity. [APTA Web site]. BOD 11-01-07-11 (Program 32). Available at: http://www.apta.org/rt.cfm/Publications/occ_health/functional_capacity. Accessed February 20, 2005.
28. Blankenship KL. Pre FCE data. In: *The Blankenship System Functional Capacity Evaluation: The Procedure Manual.* 2nd ed. Macon, Ga: The Blankenship Corp; 1994:7.01-7.08.
29. NIOSH. Elements of Ergonomics Programs: A Primer Based on Workplace Evaluations of Musculoskeletal Disorders. In: *NIOSH Musculoskeletal Documents on CD-ROM: Preventing Work-related Disorders.* DHHS (NIOSH) Publication No. 2001-122. [book on CD-ROM]. Cincinnati, Ohio: NIOSH; 2001. Based on: NIOSH, *Elements of Ergonomics Programs: A Primer Based on Workplace Evaluations of Musculoskeletal Disorders,* NIOSH Publication No. 97-117. Cincinnati, Ohio: Department of Health and Human Services, Public Health Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health; 1997.

---

*Lisa T. Hoglund is working at Excel Physical Therapy in Philadelphia, PA and is a doctoral student in the Department of Physical Therapy, Temple University, Philadelphia, PA. She can be reached via email at lisapt@temple.edu.*

# Diastasis Recti and Low Back Pain

Marie D. Wade, PT, MS, OCS

## INTRODUCTION

The female anatomy undergoes tremendous changes during the childbearing year. These physiological changes enable the body to nourish the developing fetus and then deliver the child into this world. The woman's body is then able to continue nourishing the child after it is born. It is all a very amazing and miraculous process. Many physiological changes are visible to the naked eye, yet other numerous changes are not seen but felt by the woman and/or her health care provider. Some of the changes that occur during pregnancy affect the urological, the reproductive, the cardiopulmonary, the thermoregulatory and the musculoskeletal systems.[1] The changes occur at various times throughout the childbearing year for a reason and a purpose.

As the fetus develops and grows within the woman, the hormones are thought to influence the connective tissue to enhance the carrying capacity for the uterus and pelvis as well as assist with the delivery of the child.[2,3] It is believed that estrogen, relaxin, progesterone, and prostaglandins are responsible for numerous physiological changes that occur.[2-4] The musculoskeletal changes may cause diastasis recti abdominis (DRA), low back/sacroiliac pain, ligament laxity, and pelvic floor dysfunction.[1]

## DEFINITION

A DRA is known as a split between the 2 rectus abdominis (RA) muscles to the extent that the linea albea may split under strain.[3,4] The linea albea is the anterior abdominal aponeurosis or rectus sheath in the midline. It is formed by the interlacing of aponeuroses of the external oblique (EO), internal oblique (IO), and transversus abdominis (TA) muscles from both sides. It is broader, superiorly, where the recti are separated at a considerable interval. It is narrower, inferiorly, where the recti are closely placed. Above the umbilicus, the linea albea is a single layer, whereas below the umbilicus, it has a double layer.[5]

The size of the DRA can vary from 2 to 3 cm to 12 to 20 cm in width and from 12 to 15 cm to the entire length of the recti muscles.[4] The muscle fibers permit stretch, however, the linea albea and the other collagen components probably undergo structural changes due to the hormones released[3,4,6,7] and mechanical stress during pregnancy.[3,6,7] It has not been determined whether the separation is a true tear or a relaxation of the tissue.[6,8]

## INCIDENCE

A DRA is common in pre- and postpartum women.[3,9] Predisposing factors for a DRA in women include obesity, a narrow pelvis, multipara, multiple births, excess uterine fluid, large babies, and weak abdominals prior to pregnancy.[3,4,6] The incidence of DRA is 37% for primiparas women[6] and 62.5% for multiparas women.[7] The separation may develop during the second and third trimesters of pregnancy, during second stage labor, and during the postpartum period.[3,6,8,9] According to Boissonnault and Blaschak,[6] a DRA occurred 27% in the second trimester, 66% in the third trimester, 53% immediate postpartum, and 36% three months postpartum. This does not support the concept that a DRA resolves spontaneously after the postpartum period.[6]

## DETERMINING A DIASTASIS RECTI ABDOMINIS

Criteria have been established for determining a DRA.[3,4,9] The therapist will measure with fingers horizontally, at the umbilicus and 2 inches above and below the umbilicus. The patient will lie in the hook-lying position and raise their head and shoulders while reaching toward their feet. Any separation will be palpable and a wide ridge of bulging tissue may actually be visible.[3,4,9] Any separation greater than 2 fingers wide constitutes a DRA and therefore, restrictions on abdominal exercise prescription should apply.[3] Interrater reliability for measuring a DRA by manually inserting the fingers into the gap has been considered poor.[7] According to Noble,[3] the most common site of occurrence is the umbilicus. It has been found that 52% occur at the umbilicus, 36% occur above the umbilicus, and 11% occur below the umbilicus.[6]

## EFFECT OF DIASTASIS RECTI ABDOMINIS

It is believed that a DRA may hinder the abdominal wall function related to posture, trunk stability and strength, respiration, visceral support, diminished pelvic floor facilitation, and delivery of the fetus.[6,8] An umbilical hernia may result as well.[3] There may be a marked anteflexion of the pregnant uterus associated with a DRA during the latter portion of the pregnancy.[10] The abnormal uterine position may hinder proper transmission of uterine contractions to the cervix and cervical dilatation.[10] An abdominal binder may provide additional support to the anteflexed uterus and restore normal positioning.[10]

The DRA is believed to contribute to chronic pelvic and low back pain (LBP).[3,4,8] There is a considerable amount of research related to abdominal function and its implications towards LBP as well as prevention and treatment of back pain in the pregnant and nonpregnant population. There is minimal research related to women during the childbearing year with DRA and LBP.

## BACK PAIN IN THE NONPREGNANT POPULATION

A great deal of research has been completed evaluating the function of the abdominals and/or any correlation to LBP in the nonpregnant population.[11-15] The RA has been determined to generate movement of the spine and spinal stability through counteraction to spinal orientation and limb movement.[12] In patients with LBP, it is difficult to isolate TA from the other abdominal muscles including RA.[13] It has been determined that TA works in synergy with multifidus.[15] At a segmental level, inhibition of multifidus occurs during episodes of acute LBP; however, it can be reversed with focused retraining.[11] The TA and multifidus lose their anticipatory function in patients with LBP, which hinders automated support functions.[12] It has

also been determined that a balance between strength and length of muscles is essential for proper movement patterns.[14] When muscles are tight, they create dysfunction and when muscles are weak, they allow dysfunction.[14] The muscles surrounding the pelvis and lumbar spine provide stabilization and movement. Numerous muscles in this region can cause dysfunction in both the pregnant and nonpregnant populations.

## BACK PAIN DURING PREGNANCY

Back pain during the childbearing year is quite prevalent.[3,4,9] The incidence of back pain during pregnancy has ranged from 47% to 82%.[16,17] Back pain after delivery has been reported to occur 67%, while 37% experienced back pain 18 months postpartum.[18] Back pain tends to begin early in pregnancy, with 25% prevalence at 12 weeks.[16] The most common location of back pain in pregnant women is the sacroiliac (SI) region.[16] The cause of back pain during the childbearing year is thought to be related to the mechanical[3,4,9] and hormonal[2,19] changes. The relationship between posture and back pain in the nonpregnant population remains controversial. According to Franklin and Conner-Kerr,[20] no significant relationship was found between magnitude of change or the change in posture and back pain in the pregnant population.[20]

Fast et al[21] found that about 10% of pregnant women develop LBP and 16.6% of pregnant women could not perform a single sit-up. There was no significant relationship between sit-up performance and LBP.[21] The authors concluded that during pregnancy the abdominal muscles become insufficient.[21] There was no evaluation for a DRA.

Ostgaard et al[17] found that individualized exercise and education was significantly helpful in reducing back pain during the 8 weeks postpartum phase; however, no differences in back pain were found during pregnancy. Weekly physical exercise before pregnancy was found to reduce the risk for back pain during pregnancy.[17]

Electromyography studies of RA and EO have been done on primiparas women during the pre- and postpartum stages.[22] It was found that the abdominals generated the same muscle activity throughout the pregnancy, however, the ability to stabilize the pelvis against resistance decreased as the pregnancy progressed and continued to remain low postpartum.[22] It was observed that the RA length, angles of insertion, and DRA were significant between 18 to 30 weeks with further structural changes between 26 to 38 weeks, therefore the ability to produce torque may be reduced.[22] The decreased functional deficits were present up to 8 weeks postpartum, in conjunction with the incomplete resolution of the structural adaptations of RA.[22] It is essential that these functional and structural deficits be addressed with pre- and postpartum women.

Diagnostic ultrasound has been used to determine exercise effectiveness on decreasing the amount of a DRA.[23] It was determined that when performing a curl-up, the RA contraction significantly reduced the DRA, compared to other the movements studied.[23] The additional movements tested were curl-up with rotation to left and right, posterior pelvic tilt and abdominal hollowing.[23] There was not an evaluation of a possible relationship between DRA and back pain.

A DRA was not present in those women that had exercised prior to the onset of pregnancy.[6] Although it was not a controlled variable in this study, exercise prior to pregnancy may reduce the risk of a DRA.[6]

## TREATMENT OF DIASTASIS RECTI ABDOMINIS

According to Noble,[3] exercises for the abdominals to prevent, decrease, and/or eliminate a DRA should be prescribed. Proper exercise intensity is essential and intervention should occur as soon as possible. If exercise has not been started before or during pregnancy, basic abdominal isometrics with exhalation should begin within 24 hours of delivery.[3] On postpartum day 3, the abdominals should be evaluated for a DRA.[3] If a DRA of 1 to 2 fingers (1-2 cm) is present, this is considered within normal limits.[3] Curl-ups with the abdominal isometric and the crossover of the upper extremities (UE) for additional support can be done.[16] If the DRA is greater than 3 fingers (3 cm), there are restrictions on curl-ups and leg lowering exercises.[3] Curl-ups of the head only, with the abdominal isometric and the crossover of the (UE) should be prescribed.[3] Advancement of the exercises should not occur until the DRA has decreased.[3] Many times women will actually increase the DRA during the postpartum phase with abdominal exercises that are too progressive for the individual.[3] The patient should be instructed in self-monitoring of her DRA.[3] Exercise progression will include pelvic tilts, abdominal isometrics while on hands and knees, advanced curl-ups, and abdominal isometrics with lower extremity movements.[3] Maintaining the stability of the pelvis and decreasing the DRA are the goals for exercise progression.[3] Educating the patient about proper body mechanics and posture are necessary to prevent undo stress on the back and a DRA during the postpartum phase.[3]

## CONCLUSION

There has been minimal research about DRA in general and a correlation with back pain during the childbearing year, therefore a strong need for additional research exists. There is a significant amount of research about the abdominals relationship to back pain in the nonpregnant population, yet the pregnant population has seen little attention. There is a lack of longitudinal studies related to DRA, the postpartum phase greater than 3 months, and rehabilitation process. It is important for physical therapists to learn the screening skills and know that a DRA has a potential impact on the stability of the pelvis on a long-term basis.

As physical therapists, we need to be more involved in the care of women during both the pre- and postpartum phases from a prevention and education standpoint. There tends to be involvement after the dysfunction has occurred rather than avenues to prevent it from occurring. Ongoing education of health care providers about DRA in women and its potential impact on the back and pelvis stability would be beneficial to make the prevention component more effective. It appears that the possible correlation between DRA and back pain in women remains inconclusive at this time.

## REFERENCES


1. Baker PK. Musculoskeletal problems. In: Steege JF, Metzger DA, Levy BS, eds. *Chronic Pelvic Pain: An Integrated Approach*. Philadelphia, Pa: WB Saunders Co; 1998.
2. Boissonnault JS, Blaschak MJ. Incidence of diastasis recti abdominis during the childbearing year. *Phys Ther.* 1988;68:1082-1086.

3. Bursch SG. Interrater reliability of diastasis recti abdominis measurement. *Phys Ther.* 1987;67:1077-1079.
4. Ellson D, Bullock-Saxton JE. The effect of abdominal muscle contraction on diastasis recti in post-natal women determined by diagnostic ultrasound. Washington, DC: Research Presentation 12th International Congress of the World Confederation for Physical Therapy. June 1995.
5. Fast A, Weiss L, Ducommun EJ, et al. Low back pain in pregnancy. Abdominal muscles, sit-up performance and back pain. *Spine.* 1990; 15:28-30.
6. Franklin ME, Conner-Kerr T. An analysis of posture and back pain in the first and third trimesters of pregnancy. *J Orthop Sports Phys Ther.* 1998; 28:133-138.
7. Gilleard WL, Brown JM. Structure and function of the abdominal muscles during pregnancy and the immediate post-birth period. Washington, DC: Research Presentation 12th International Congress of the World Confederation for Physical Therapy, June 1995.
8. Gray H. In: Clement CD, ed. *Gray's Anatomy of the Human Body.* 30th ed. Baltimore, Md: Williams and Wilkins; 1985.
9. Hides JA, Richardson CA, Jull GA. Multifidus muscle recovery is not automatic following acute first episode low back pain. *Spine.* 1996; 21:2763-2769.
10. Hodges PW, Richardson CA. Feedforward contraction of transversus abdominis is not influenced by the direction of arm movement. *Exp Brain Res.* 1997;114:362-370.
11. Hodges PW, Richardson CA. Transversus abdominis and the superficial abdominal muscles are controlled independently in postural tasks. *Neurosci Lett.* 1999;265:91-94.
12. Jull GA, Janda V. Muscles and motor control in low back pain: Assessment and management. In: Twomey LT, Taylor JR, eds. *Physical Therapy of the Low Back.* New York, NY: Churchill, Livingstone; 1987.
13. Jull GA, Richardson CA. Motor control problems in patients with spinal pain: A new direction for therapeutic exercise. *J Manipulative Physiol Ther.* 2000;23:115-117.
14. Kristiansson P, Svardsudd K, von Schoultz B. Serum relaxin, symphyseal pain and back pain during pregnancy. *Am J Obstet Gynecol.* 1996; 175:1342-1347.
15. MacLennan AH, Nicolson R, Green RC, et al. Serum relaxin and pelvic pain of pregnancy. *Lancet.* 1986;2: 243-245.
16. Noble E. *Essential Exercises for the Childbearing Year.* 4th ed. Harwich, Mass: New Life Images; 1995.
17. Lecture notes on Obstetrical Physical Therapy from Pennsylvania State University at Monte Alto, Physical Therapist's Assistant Program. Course *PT260: Rehabilitation II.*
18. O'Connor LJ, Gourley RJ. *Obstetric and Gynecologic Care in Physical Therapy.* Thorofare, NJ: Slack Inc; 1990.
19. Ostaard HC, Andersson GB. Postpartum low-back pain. *Spine.* 1992; 17:53-55.
20. Ostaard HC, Andersson GB, Karlsson K. Prevalence of back pain in pregnancy. *Spine.* 1991;16:432-436.
21. Ostaard HC, Zetherstrom G, Roos-Hansson E, et al. Reduction of back and posterior pelvic pain in pregnancy. *Spine.* 1994;19:894-900.
22. Polden M, Mantle J. *Physiotherapy in Obstetrics and Gynaecology.* Great Britain: Butterworth-Heinemann Ltd; 1994.
23. Stat Ref Medical References Fall 2000. *Williams Obstetrics.* 20th ed. Stamford, Conn: Appleton and Lange; 1997.

*Marie D. Wade is the Director of Physical Rehabilitation and Sports Medicine at Franklin Memorial Hospital in Farmington, ME.*

# Injuries in Competitive Amateur Sailors

Jeremy J. McVay, DPT; John R. Parziale, MD

## INTRODUCTION

Sailboat racing is a multifaceted sport that places the competitive sailor in different ergonomic positions and requires activities that depend upon the boat size, boat class, and/or the responsibilities of the individual sailor. Little information is available regarding the types of injuries sustained in this sport (JB Allen, RC Cody, unpublished data, December 2004). Overuse injuries of the lower back and shoulder were cited among 28 world-class female athletes who participated as crewmembers for the America 3 yachts in pursuit of the prestigious America's Cup (JB Allen, RC Cody, unpublished data, December 2004). The injuries seen amongst elite athletes on these larger yachts measuring 100 feet or more in length are not the same types of injuries seen in recreational sailors racing 20 to 50 foot vessels.

The purpose of this study was to provide information about the frequency and types of injuries sustained by subjects sailing on recreational craft measuring 20 to 50 feet in length over a 3-year history of a typical yacht club season (Memorial Day to Labor Day).

## METHODS

Written surveys were distributed to 70 competitive sailors participating on the last day of the racing season in 2003 at Barrington Yacht Club in Barrington, Rhode Island. A total of 62 surveys were returned completed (89%); 57 were fully completed (81%), with the results included in this study. Survey questions were designed to determine the frequency of sailing injuries, the types of injuries sustained, treatment sought, and the effectiveness of treatment.

## RESULTS

Of the 57 individuals completing surveys, 43 were male (75%) and 14 female (25%). The age of these sailors ranged between 13 and 63 years, with a mean age of 43.9 years (mode of 49 and median of 47). Twenty-two sailors reported a sailing frequency of 1 to 2 times a week, 28 sailed 2 to 3 times per week, and 7 sailed 4 or more times per week during the sailing season.

Thirty-two of the 57 sailors surveyed reported sustaining at least one injury directly related to sailing during the last 3 competitive seasons (56% of those surveyed experienced injuries). Twenty out of 21 reported had successful treatment of their injuries. Seven of these required a visit to the emergency department. Twenty-three sailors reported 1 to 2 injuries over the season, 7 reported 3 to 5 injuries, and 3 reported 6 or more injuries over the most recent season. The most common injuries cited were to the hand(s) (12), thigh or leg (11), lower back (10), shoulder (7), head or neck (6), arm/elbow (5), ankle (5), foot (4), eye (3), wrist (3), or trunk (2) (Figure 1).

Body mechanics (13) was cited frequently as the most likely cause of injury. Explanations under 'Other,' another frequent answer for mechanisms of injury, included repetitive motion, equipment failure, and/or a trip or fall (Figure 2).

Diagnoses were self-reported and generally nonspecific, although 2 persons reported sustaining a fracture. Ice and nonsteroidal anti-inflammatory medications were the most frequently used treatments (14 each). Four sailors required physical therapy and 2 opted for surgery (Figure 3). All but one person responded that treatment was successful.

The incidence of injuries was higher for males versus females surveyed. Sixty-five percent of males were injured, compared to 43% of females (Figure 4). The incidence of injury increased with age until the age of 38, and the number of injuries decreased markedly after age 38.

The highest rate of injuries occurred at a frequency of approximately 3 days per week of sailing. The results tended to increase with the frequency, but decreased slightly for those sailors that sailed most frequently.

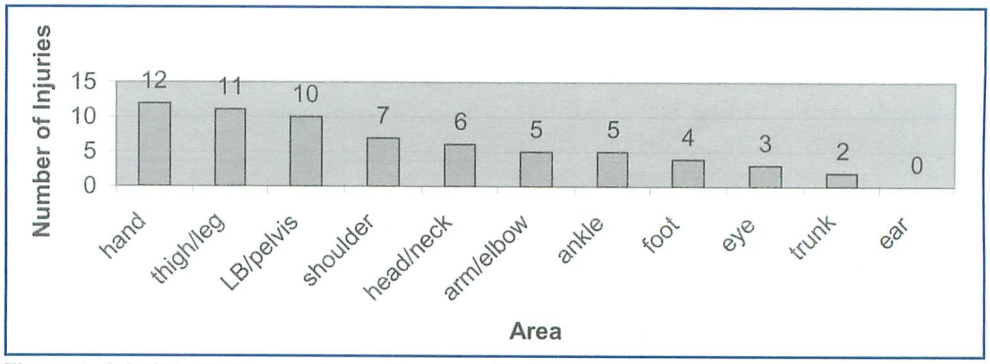



Figure 1. Injuries cited by amateur sailors specified by region.

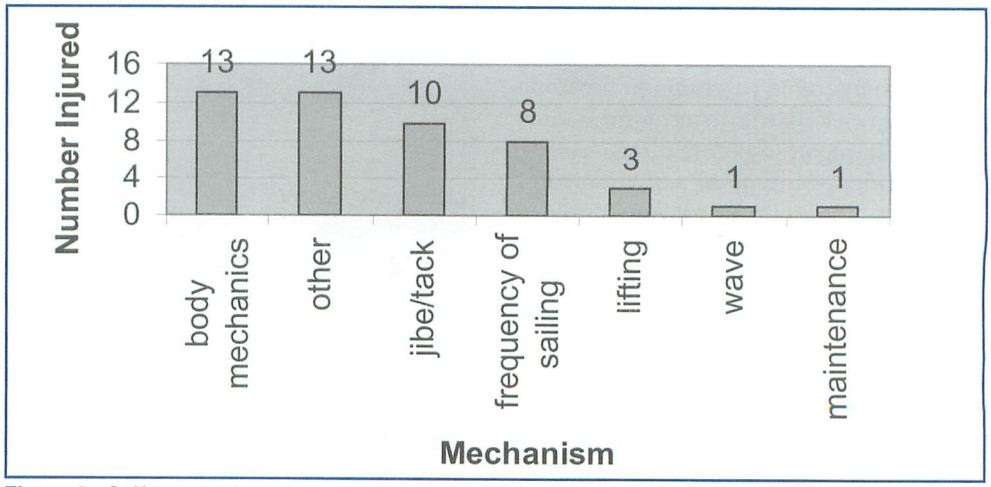



Figure 2. Self reported mechanism of injury for competitive sailors.

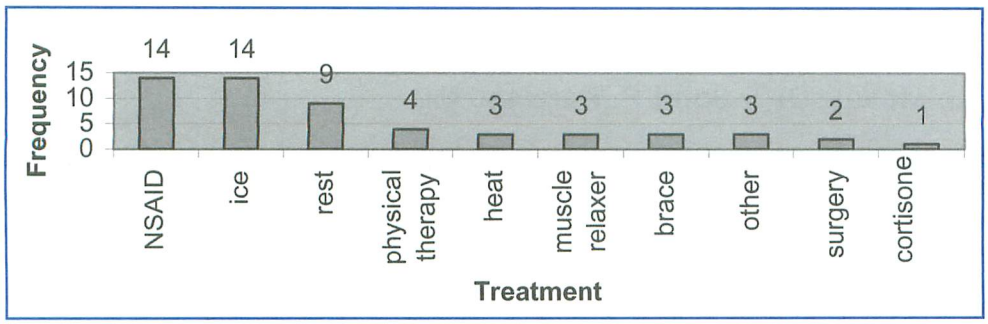



**Figure 3. Treatments reported by competitive sailors following injury.**

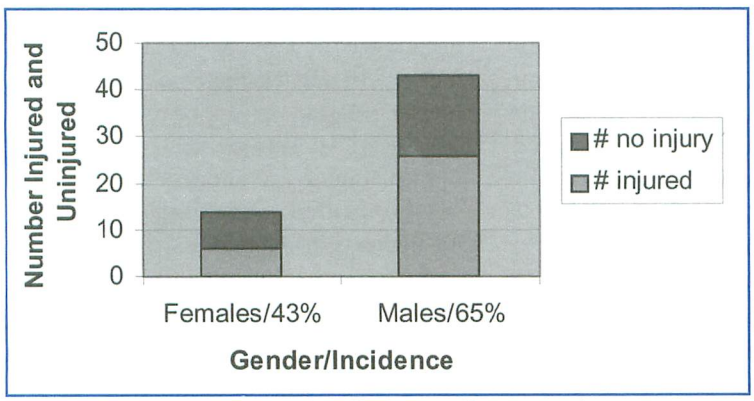



**Figure 4. Injuries by sailors classified according to gender.**

## DISCUSSION

The wind has been harnessed to move and power vessels for many centuries. However, technology has altered the technique of sailing over the last few decades. Competitive wind-powered racing takes on such varied forms as America's Cup yacht racing, ice boating at over 160 mph, and windsurfing. Many individuals in the United States participate in weekly racing program sponsored by local or regional clubs.

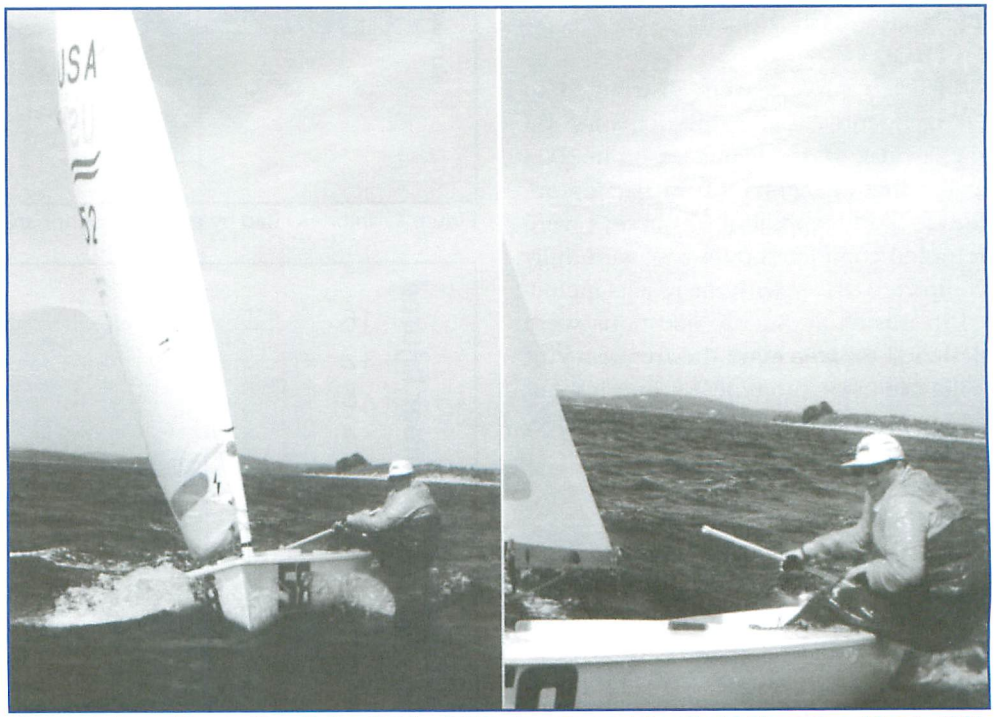
While many team sports have been studied extensively, there is a dearth of sailing injury research. Searches on MedLine, Pubmed, and Ovid using the term *sailing* produced very limited information, pertaining primarily to high-level competition or windsurfing. An article on windsurfing injuries and prevalence was found; however, these injuries may not be comparable to common amateur sailing injuries.[6] Little to no information is available regarding recreational sailing competitions, the type of activity involving most competitive amateur sailors throughout the United States.

The estimated number of persons using sailboats in the US, from 2001 to 2002, was 10,838,282.[13] The US Coast Guard reports that: "Each year hundreds of lives are lost, thousands are injured... and millions of dollars of property damage occurs because of preventable recreational boating accidents on US waterways."[13] There are more than 70,000,000 Americans who participate in boating, and over 13,000,000 registered recreational vessels in the US alone.[13] A Coast Guard conducted a study in 2001-2002 of 25,547 individuals showed that sailors remain on the water in their boats longer than any other type of boating vessel other than houseboats.[13] This is significant because the average number of hours on the water when an injury occurred that required medical treatment was 14.9.[13]

There is scarce information available regarding recreational sailing competition, a common activity for amateur sailors throughout the United States. There is little question that competitive sailing at the elite level of the America's Cup is demanding. These boats are longer than those considered in this study. This study involved amateurs sailing boats 20 to 50 feet in length, and the study of injuries over a 3-year history of typical yacht club racing seasons (approximately Memorial Day to Labor Day).

On smaller craft, sailors experience increased stress on the quadriceps mechanism during 'hiking' maneuver, which may play a role in thigh, leg, and/or patellofemoral pain (Picture 1). This finding is consistent with previous studies from the Olympics that suggest that patellofemoral joint syndrome is more common in those racing in the smaller Finn and Laser class boats. Such vessels may be unstable at high speed, and these considerations are important in designing boats and/or boating equipment for physically challenged sailors.[1,7,10,11]

The boats studied have crew positions that require varied ergonomic actions. There is usually one helmsman who steers the boat and is constantly watching both the actions of all other crewmembers and the sails to ensure they are properly set. There are usually 2 to 3 persons that run the sheets to the sails using winches while performing other activities such as pulling up the



**Picture 1. Darrell Peck: Finn Sailor "Hiking" (Top American at the World Championships in 1994, '95, '96, '97, & '99).**

sails, releasing, and/or pulling in sheets/lines. Another crewmember or 2 may be positioned on the foredeck, with responsibilities that include changing sails, ensuring that sheets do not get caught on equipment, etc.

Injuries to the hand, lower back, and leg were most common in the population we studied; this finding is at variance with elite crews sailing 100 foot yachts in which lumbar strain [24%, occurring in the "grinder" positions or those handling the sheets (ropes)] and rotator cuff tendonitis (16%, in the foredeck positions) were the most frequent injury sites (JB Allen, RC Cody, unpublished data, December 2004). Sailors commonly use leather gloves to avoid injuries to the hands, such as rope burns and compression injuries. The rapid changes that occur in tacking (changing direction) may increase risk for this type of injuries. More research is needed to determine causational relationships of the injuries.

The phenomenon of differing injury types and/or frequencies amongst elite performers as compared with amateurs has been reported in other recreational sports such as golf.[7,10,11] Although technology has increased to allow multispeed winches and/or low-stretch sheets and lines, the sleek racing machines that sport this technology often have poor footing, and may require crouching for extended periods of time and other potentially hazardous activities. Study of injuries on smaller and or larger vessels than those studied may be completely different as well. This is due to the difference in responsibilities of these sailors.

Discussions with sailors led the authors to suspect that adjustments of body mechanics and avoiding hazardous situations were more common in more experienced sailors. This could account for the decreasing frequency of injury in persons greater than 38 years of age. Persons younger than 38 years may be less cautious due to inexperience. Conditioning may have been another factor, and some individual comments alluded to this. Lack of conditioning was not formally addressed in this study, and further investigation may be helpful in understanding injury prevention in sailors. There were 43 males studied compared to 14 females. The lower sample of females may result in a less accurate representation of injuries from this group. The frequency of sailing correlated with the frequency of injury for those sailing up to 3 times per week. After this, the frequency of injury decreased.

The retrospective methodology used in this study has limitations, and is likely to under-report the frequency and/or severity of injuries in amateur sailors. Those who were injured to the point that they were unable to return to sailing would not have been present to race on the final day of competition, and therefore more serious injuries may not have been included in the completed surveys. Other sources of error include those who may have forgotten an injury or thought it not important enough to include in this study.

## CONCLUSION

Competitive amateur sailors frequently experience injuries while sailing. Two of the 37 individuals in our study reported fractures and 2 reported having surgery. However, most reported injuries are treated effectively with conservative measures. The nature and types of the injuries suffered by competitive amateurs may not be the same as those experienced by elite racers, ie, those racing and/or practicing daily on large vessels. More research is needed to determine causational relationships and the role of safety, experience, and conditioning practices play in preventing injuries during competitive sailing activities.


## ACKNOWLEDGEMENTS

The authors accepted no financial support for this study.

The authors extend their appreciation to the Barrington, RI Yacht Club for their cooperation in completing the surveys.


## REFERENCES


1. Christians U. A paraplegic skipper of his own sailing yacht. *Rehabilitation*. 1985;24(2):96-99.
2. Dunkelman NR, Collier F, Rook JL, Nagler W, Brennan MJ. Pectoralis major muscle rupture in windsurfing. *Arch Phys Med Rehabil*. 1994; 75(7):819-821.
3. Legg SJ, et al. Knowledge and reported use of sport science by elite New Zealand Olympic class sailors. *J Sports Med Phys Fitness*. 1997; 37(3):213-217.
4. Legg SJ, Mackie HW. Change in knowledge and reported use of sport science by elite New Zealand Olympic class sailors. *J Physiol Anthropol Appl Human Sci*. 2000; 19(2):83-92.
5. Petersen W, et al. Mechanisms and prevention of windsurfing injuries. (Article in German.) *Sportverletz Sportschaden*. 2003;17(3):118-122.
6. Prymka M, et al. Injury mechanisms in windsurfing regatta (Article in German.) *Sportverletz Sportschaden*. 1999;13(4):107-111.
7. Parziale JR. Healthy swing: a golf rehabilitation model. *Am J Phys Med Rehabil*. 2002;81:498-501.
8. Mackie HW, Legg SJ. Development of knowledge and reported use of sport science by elite New Zealand Olympic class sailors. *Appl Human Sci*. 1999;18(4):125-133.
9. McCarroll JR, Gioe TJ. Professional golfers and the price they pay. *Phys Sportsmed*. 1982;10:54-70.
10. McCarroll JR. Injuries in the amateur golfer. *Phys Sportsmed*. 1990;18:122-126.
11. Parziale JR, Horgan H. Sailing; taking the wheelchair out of wheelchair sports. *Arch Phys Med Rehabil*. 1988;69:740.
12. Schonle C. Medical aspects of selecting a new high performance olympic sail boat (Article in German.) *Sportverletz Sportschaden*. 1998;12(1): 44-46.
13. US Coast Guard. Available at: http://www.uscg.mil/hq/g-cp/comrel/factfile/index.htm. Accessed June 20, 2004.
14. Walls WT, Gale TJ. A technique for the assessment of sailboard harness line force. *J Sci Med Sport*. 2001;4(3):348-356.



*Jeremy J. McVay is a Doctor of Physical Therapy at University Rehabilitation Inc. and John R. Parziale is a Clinical Associate Professor, Brown University Medical School and Physiatrist-in-Chief, University Rehabilitation, Inc.*

# Book Reviews

## Coordinated by Michael J. Wooden, PT, MS, OSC

Erickson M, McKnight B. *Documentation Basics: A Guide for the Physical Therapist Assistant.* Thorofare, NJ: Slack, Inc.; 2005, 153 pp.

Providing a complete and accurate account of an episode of clinical care in the medical record is one of the most critically important competencies that a Physical Therapist Assistant can attain in his or her academic experience. *Documentation Basics: A Guide for the Physical Therapist Assistant* is not only a valuable textbook for prospective Physical Therapist Assistants preparing to work in the clinic, but also an excellent reference resource for the experienced clinician. Both as physical therapists and educators, Erikson and McKnight relate current and relevant information integrating topics and examples that assist the reader to more fully understand the impact of quality medical documentation in effective Patient-Client management.

*Documentation Basics: A Guide for the Physical Therapist Assistant* organizes documentation principles into 8 book chapters. Specifically, these are: (1) Physical Therapy and Disablement, (2) Reasons for Documenting, (3) Documentation Formats, (4) The Physical Therapy Process, (5) Documentation Practice, (6) Reimbursement Basics, (7) Legal and Ethical Considerations for Physical Therapy Documentation, and (8) SOAP Notes Across the Curriculum. Each chapter begins with a list of clear learning objectives with review questions and application exercises at the end allowing students to practice documenting with regard to each chapter's main theme. Additionally, there is a comprehensive glossary of terms, list of abbreviations and symbols, and sample forms and templates to augment the text's body of information. The text is well referenced in the final pages so the student clinician or seasoned practitioner can easily locate additional reading resources on topics of interest.

Chapters 1 through 3 can be used sequentially by instructors in a basic documentation format. Chapter 4 then can assist the student understand the Patient/Client Management Model answering the age-old question "What do I do with this patient?" based on clinical decision making as it related directly to documentation specific to goals and treatment plan. Guidelines and rules for medical documentation are reviewed in Chapter 5 with specific examples of SOAP note documentation. As a result of clear initial evaluation, plan, and progress note reporting, PTAs can then determine what questions to ask, data to collect, and pertinent information to then document in their daily role as care provider.

The discussion in Chapter 6 about reimbursement basics is particularly interesting in that it clearly explains key components of documentation that serve to maximize reimbursement with emphasis on progress notes. This aptly relates documentation directly to the PTA's performance, not only in the episode of care, but also in the subsequent reimbursement continuum. Varied reimbursement types are presented along with CPT coding including examples of RBRVS values with conversion factors as used by Medicare. Understanding payers and how documentation that quantifies functional improvement from skilled therapeutic interventions is key, elevates each PTA's professional perception and quality of care.

Chapter 7 invites the student to think about Legal and Ethical Considerations for Physical Therapy Documentation. It presents an overview of HIPAA privacy standards, billing fraud vs. abuse, ethical responsibilities, and points out 'perils and pitfalls' with regard to risk management. It is very important that all licensed clinicians commit to following established documentation requirements. The authors emphasize that medical information accurately recorded at the time that care is delivered will be reliable reference material if reviewed and/or questioned years later.

*Documentation Basics: A Guide for Physical Therapist Assistants* is easily reviewed topic-by-topic as a professional curriculum textbook. The oversized paperback text is concisely written with ample room to complete the documentation exercises on its pages, which can then be kept in close proximity at the clinic as a resource. Educators are encouraged to review this text for themselves after which they will surely agree that it is a must for their PTA curriculum. With this guide in one's clinical 'tool box,' a new graduate PTA can enter the profession more confidently and qualified than ever before.

*Roberta L. Kayser, PT*

Houglum JE, Harrelson GL, Leaver-Dunn D. *Principles of Pharmacology for Athletic Trainers.* Thorofare, NJ: Slack Inc; 2005, 422 pp.

This textbook provides the basic principles of pharmacology that pertain to the treatment of musculoskeletal injuries and how drugs may enhance or limit an athlete's or client's performance. In structuring the chapters, the summaries of each topic are placed at the end of the discussion. According to the authors, the goals of the textbook are to provide a basic knowledge about drugs and their effect on the athlete. Secondly, basic drug information should help the clinician to improve performance during the rehabilitation of injuries. And lastly, it will help to identify drug-related problems in the athlete.

The textbook consists of 14 chapters. The first chapter introduces the reader to pharmacology. Discussions of the role of drugs, the difference between generic and nongeneric drugs, how drugs are classified, and the use of drug information sources are reviewed. The second chapter visits the pharmokinetic principles of drugs while the third chapter discusses the pharmodynamic principles including the mechanism of drug action and therapeutic considerations. Chapter 4 reviews the medication management in athletic training facilities including state and federal regulations. The subsequent 8 chapters (chapters 5-12) discuss the drugs for treating infections, inflammation, pain, asthma, colds and allergies, gastrointestinal disorders, hypertension and

heart disease, and for relaxing skeletal muscle. Each chapter discusses the symptoms of the disorder, the drug therapy often prescribed, and the role of the athletic trainer. The last 2 chapters discuss performance enhancing drugs and drug testing in sports. Also included in the text are a 17-page glossary of key words as well as an abbreviation list and index.

This text is well organized and each chapter is designed to outline and simplify the material presented. This text would be beneficial to those clinicians desiring a reference guide for commonly prescribed drugs in order to review their role, possible adverse effects, and to summarize the role of the clinician in a rehab or sports environment. It is difficult to study the drug effects on exercise due to its complexity. Adequate caution is reminded throughout the chapters to heighten awareness of the clinician when treating clients that are taking prescribed drugs. The text is not intended to provide a caregiver with the ability to make recommendations regarding drug therapy. This is not in the practice acts for physical therapists, including over-the-counter medications. This text is easier to understand when comparing it to the Physicians' Desk Reference that is commonly found in each clinic.

*Sylvia Mehl, PT, OCS*

Follett KA. *Neurosurgical Pain Management*. Philadelphia, Pa: Elsevier Saunders; 2004, 287 pp., illus.

The Introduction in *Neurosurgical Pain Management* states this book is intended "as a practical reference to facilitate the continued participation of neurosurgeons in the field of pain medicine and to provide physicians in nonsurgical disciplines a concise source of information about neurosurgical pain disorders and therapies." Whether this book meets these intentions is beyond my expertise; however, the information presented in many of the 34 chapters of this book is relevant to the practice of physical therapy. The content is written for the physician and surgeon's point of view, and physical therapists will benefit from appreciating and understanding the rationale for their interventions for pain.

This book is organized into 4 sections. Section I includes 5 chapters on the fundamental considerations for treatment of pain. Chapter 1 focuses on the effect of pain on the patient, with the emphasis on chronic pain. The author of this chapter describes how chronic pain is *different*. He reviews the history of treatment of chronic pain, classifications of chronic pain, psychosocial factors, preoperative evaluation, and the importance of the multidisciplinary approach that includes physical therapy, vocational counseling, psychology, and the surgeon working together as a team. I was impressed with the author's emphasis on understanding the patient and the *meaning* of the chronic pain state to the patient.

Chapter 2 begins with an explanation of the peripheral mechanisms of somatic pain, and includes an overview of the anatomy, physiology, and pharmacology of spinal mechanisms involved in acute, inflammatory, and chronic pain. The chapter ends with an explanation of descending modulation of pain including pharmacology of opioid analgesia and non-opioid inhibition of nociception. Chapter 3 explores the pathophysiology of neuropathic pain. I found this chapter to be particularly helpful in understanding the clinical symptoms and spinal and supraspinal mechanisms of neuropathic pain. A brief overview of treatment of neuropathic pain is included. "Physical medicine therapies" are recommended but not explained. Chapter four's title is "Psychological Considerations in Spine Surgery," in which the author hopes to provide a foundation for determining when psychological consultation should be sought and the type of questions to pose to the consultant. A brief discussion of the hypothesized physiologic and neurochemical mechanisms by which some of the psychological factors are believed to exert their influence is included. The table of risk factors for poor surgical outcomes identified in the presurgical psychological screening is helpful in understanding some of the causes of surgical failure. Chapter 5 looks at pharmacologic therapies for pain. Authored by a dentist/MD, this chapter discusses each type of analgesic, singling out a few representative drugs, and provides information on the effective use of these medications. General principles of efficacy, potency, and half-life are explained, and medications discussed include NSAIDs, acetaminophen, antidepressants, anticonvulsants, and opioids.

Section II includes 7 chapters on various pain syndromes of neurosurgical importance. The first half of chapter 6 discusses myofascial pain syndromes, and the second half is an overview of the multidisciplinary team for treatment of pain based on the Rosomoff Comprehensive Pain and Rehabilitation Center's approach. The stated premise of this chapter is that extraspinal soft tissue structures are responsible for initiating biochemical alterations associated with hyperalgesia and chronic pain. Common myofascial syndromes of the lower and upper quadrants are described. A section titled "Treatment Overview" states that "a simple lumbar sprain" requires an "early referral to an experienced medical provider" to prevent a "catastrophe." This is contrary to current understanding that most episodes of back pain are transient and do not require medical intervention. Later in the chapter recommended modalities for "physical medicine and rehabilitation" include questionable (and perhaps dangerous) techniques such as "the body part should be packed in ice for periods in excess of 30 minutes" and "gravity traction is applied for iliopsoas contractures." The summary for this chapter claims that "myofascial syndromes are always present with spinal disorders" without substantiation.

Chapter 7 is a very good explanation of "failed back surgery syndrome." Etiology, evaluation, and treatment of patients with this syndrome are discussed. I found the table on radiographic evaluation of neck and back pain very helpful in understanding the advantages and disadvantages of each type of diagnostic radiologic technique. The chapter includes medical and surgical considerations for these patients. I disagree with the author's statement that most patients with chronic back and neck pain "can be given instructions for home exercise programs . . . by their physicians" without "specific care by a physical therapist." Most patients have a poor understanding of correct exercise technique and need instruction and supervision by physical therapists for the program to be effective.

Chapters 8 through 12 each focus on a specific type of pain syndrome or neuralgia. I found the explanation of spinal

cord injury pain, post-stroke pain, and phantom limb pain in chapter 11 particularly interesting. Chapter 12 describes the taxonomy, epidemiology, clinical features, pathophysiology, diagnosis and evaluation, psychology, and treatment regimens for chronic regional pain syndrome (CRPS). This chapter is especially useful for physical therapists that see patients with this syndrome.

Section III includes 17 chapters describing various neurosurgical pain therapies. Black and white illustrations supplement each chapter. This section will be of interest to therapists who see patients that have had or are contemplating having one of these procedures.

Section IV includes 5 chapters of miscellaneous topics. Chapter 30 is titled "Physical Medicine and Rehabilitation in Pain Management" authored by 2 physicians. The chapter includes a general overview of pain rehabilitation programs including recommendations for referral and physical rehabilitation modalities. The information on referral includes antiquated recommendations to provide specific directions for referral to physical therapists, and the information on states with patient direct access to physical therapy is out-dated. The authors emphasize that there is evidence that the incorporation of physical rehabilitation in pain management programs is effective. Chapter 31 is an overview of the concepts, components, and organization of multidisciplinary pain treatment programs. Chapter 32 is a brief review of disability and impairment in patients with pain, including the challenges associated with rating pain as an impairment. Chapter 33 looks at outcome assessment, including determination of the cost and value of interventions for patients with pain. Chapter 34 discusses how to establish and maintain a neurosurgical pain practice.

Physical therapists who see patients with pain, particularly chronic pain, will find valuable information in this book on the physiological, psychological, pharmacological, and surgical aspects of pain and its treatment. The chapters in Section I and chapters 7, 11, and 12 are particularly pertinent to the practice of physical therapy. Information on rehabilitation is limited and may not reflect best practice. I recommend this book as a reference source for practicing physical therapists.

*Thomas P. Nolan Jr., PT, MS, OCS*

McNabb JW. *A Practical Guide to Joint and Soft Tissue Injection and Aspiration*. Philadelphia, Pa: Lippincott Williams & Wilkins; 2005, 133 pp., illus.

*A Practical Guide to Joint and Soft Tissue Injection and Aspiration* was written to explain both the theory and performance of joint and soft tissue injections and aspirations. The author is a family medicine physician and the primary audience of the text is physicians, physician assistants, nurse practitioners, and other qualified medical professionals who serve in a primary care setting.

The book is comprised of 4 sections. The first section discusses anatomical considerations, indications, contraindications, necessary equipment, technique, patient safety, informed consent, patient complications, aftercare, and billing/coding. The use of local anesthesia, corticosteroids, and viscosupplementation are also discussed in terms of the different agents and dosages available.

Sections 2 through 4 discuss joint and soft tissue injections and aspirations for the upper extremity, trunk, and lower extremity. While the section pertaining to the trunk is limited to injections of muscular trigger points and the sacroiliac joint, the sections pertaining to the upper and lower extremity are quite extensive. For example, the section on the upper extremity describes several techniques for the shoulder, elbow, wrist, and hand; for the shoulder, the author describes injections of the subacromial space, the glenohumeral joint (posterior and anterior approaches), the acromioclavicular joint, and the sternoclavicular joint.

For each technique discussed in the book, clear step-by-step guidance is given with the following parameters briefly but adequately described: relevant anatomy, patient position, landmarks, anesthesia, equipment, technique, and aftercare. High quality color figures are used to describe each injection or aspiration with relevant anatomy and needle insertion highlighted. Clinical pearls also are offered by the author for each technique. Two appendices are included that provide a patient consent form and an aftercare patient handout. An up-to-date reference list is also included at the end of the book that contains 160 citations that are grouped according to different regions of the body or diagnoses; unfortunately, very few of these references are actually cited in the text. This book could have been improved if a greater effort had been made to discuss the available evidence for the different techniques described in this text.

Although joint and soft tissue injections and aspirations are beyond the scope of practice for physical therapists, this book does have usefulness for physical therapists. Specifically, this book would assist physical therapists in educating patients regarding injections and aspirations, as well as provide physical therapists with an understanding of additional treatment options that may assist in the management of patients with musculoskeletal disorders. While I highly recommended this book for physical therapists that treat patients with orthopaedic disorders, it would probably best serve as a reference text for a hospital or university library, where it can be accessed by different disciplines.

*Michael D. Ross, PT, DHS, OCS*

Karageanes SJ. *Principles of Manual Sports Medicine*. Philadelphia, Pa: Lippincott Williams and Wilkins; 2005, 686 pp., illus.

This text has over 60 contributing authors mainly from the osteopathic field. The preface states that this book is the first attempt to define manual sports medicine. Initially, various manual techniques such as functional techniques, high-velocity, low-amplitude, counterstrain, muscle energy, myofascial release, massage, and soft tissue mobilization are defined and discussed. The use of joint play is presented as an aid in the diagnosis of joint dysfunction. The roles of physical modalities such as heat, ice, ultrasound, phonophoresis, diathermy, electrical stimulation, light therapy, and traction are mentioned. Exercise principles and prescriptions are discussed in relation to the healthy athlete as well the athlete who may have a disease of their cardiac or pulmonary systems. The section on stretching presents the theory behind stretching 5 different types or methods of stretching. The rationale for core stabilization for athletes is explained. The last

chapter on exercise presents a throwing program, which includes an interval throwing progression.

The body has been separated into various regions. The regions are the head and neck, shoulder, elbow, wrist and hand, thoracic spine, lumbosacral spine, hip and pelvis, knee, and the foot and ankle. In each section the anatomy, physical examination, and common conditions seen are discussed in detail for each region. Pictures accompany the text to show the physical examination techniques and treatment. In those techniques that have multiple steps, they are shown in sequence. The neurological exam is displayed in tables and the dermatomes are shown pictorially. One of the strengths of this text is that the influence of other body regions is stressed in the treatment of the different disorders and in the training programs. The chapter on gait analysis concentrates on alterations in the mechanics of the foot and its affect on gait.

The next 14 chapters deal with the manual sports medicine approach to specific sports. The sports that are presented are: baseball, basketball, cycling, dance, football, golf, gymnastics, ice hockey, lacrosse, martial arts, rowing, running, soccer, and volleyball. The sports-specific requirements and common injuries are presented for each sport. In the cycling section, the bicycle fitting process is described. In the dance and golf sections, the basic movements are pictured. This helps the clinician who does not have a strong background in the mechanics to these sports to better understand the unique demands they have. In those sports such as lacrosse and martial arts that people may not be as familiar with, rules that govern the sport are given. A unique aspect of being a physician at a martial arts competition is that the physician must cover the floor during simultaneous matches. This is different than being on the sidelines where the injury may be directly observed. There is a comprehensive chapter on running which covers the biomechanics, the kinetic chain, and lower extremity dysfunctions. Sports-specific terminology is used in each section. This enhances the ability of the clinician in discussing technique and equipment with the athlete.

The last 6 chapters of the book cover different populations of athletes. The industrial athlete is a term that is used to describe the worker rather than a competitive athlete. Workers, like athletes, use their bodies to perform a task. This has lead to a shift towards pre-employment screening, on-site fitness programs, and ergonomic evaluations to prevent injuries before they occur. This movement has also reinforced the idea of restoring job specific function in musculoskeletal problems.

The chapter on the disabled athlete, reinforces the attitude that athletes should be evaluated for what they can do versus what they cannot. Specific treatment techniques may be contraindicated based on the athlete's condition. Alternative techniques, along with the rationale for using them are presented. The geriatric patient is the focus of the next chapter. The changes and effects of the cardiopulmonary, peripheral vascular, musculoskeletal, metabolic, and endocrine systems that occur in the body as we age are presented. Some of the more common conditions such as spinal stenosis are presented. Exercise and treatment precautions are given. The emergency room athlete is the title for the next chapter. This refers to any patient, athlete or not, who presents with a musculoskeletal component to their complaint. Contraindications are presented for manipulative treatment. The author of this chapter claims clinical experience has shown that manual medicine can provide relief for patients with retroperitoneal abscess, pelvic inflammatory disease, pulmonary embolus, appendicitis, and pelvic neoplasms. The author does state that the patient's response to treatments does not change diagnostic decision-making process. Unique issues and injuries to the pediatric athlete is the focus of the next chapter. The social and psychological differences are discussed. The pregnant athlete is the title of the final chapter. The changes in mechanics and strength as the pregnancy progresses are explained. Absolute and relative contraindications to exercise are given along with warning signs about when to stop exercise. Unique conditions relative to the pregnant athlete are presented along manual treatment approaches that are not contraindicated.

This is a comprehensive text. One of the strengths is that there are a large amount of illustrations and pictures that depict the anatomy, examination, and treatment techniques clearly. There was one instance where the pictures of elbow extension and flexion and forearm supination and pronation were transposed. The greatest weakness of this book is the lack of evidence-based practice presented. Much of the material was based on clinical experience. Despite this, I would still recommend this book especially for the clinician who uses the osteopathic approach to manual medicine.

*Jeff Yaver, PT*

# Practice Affairs Corner

**Bob Rowe, PT, DMT, MHS, FAAOMPT, Practice Committee Chair**

At the recent APTA Federal Government Affairs Forum Michael Matlack who is the APTA Associate Director of Grassroots and Political Affairs provided an update regarding the PT-PAC. There was some very good news and some news that was not so good. PACs in general can be sensitive issues to many individuals, but like it or not, they are an important mechanism to keeping any association in a position of prominence within the legislative arena. Some points that we can take pride in is that the PT-PAC raised over $1.7 million during the last election cycle and contributed over $1 million to congressional candidates during the last election cycle. In 2004 alone the PT-PAC received over $938,000.00 in contributions.

Members of Congress are constantly being 'educated' by multiple special interest groups, each with their own agenda, which is not always in line with ours. Those with access to the members of Congress have the best opportunity to influence their decisions. Items such as the Medicare Therapy Cap do not change on their own and in reality it takes a tremendous amount of coordinated effort to influence change. APTA Staff has an excellent reputation and is known for being extremely effective on Capitol Hill, however, having a successful PAC assists them in helping us to attain our legislative goals and objectives.

**So why is the PT-PAC important to each of us as members of the APTA?**

- We can use the PT-PAC to help members of Congress who support our legislative agenda get elected.
- The PT-PAC allows us better access to members of Congress to educate them regarding our issues.
- Our opposition is not decreasing their fundraising. The Orthopaedic Surgeons contributed $1.2 million to congressional candidates during the last election cycle. Radiologists, Osteopaths, and General Surgeons have energized their PACs recently. The ATCs and Family Medicine MDs have recently created PACs for the first time.

Some more sobering news is that the number of individuals who contributed to the PT-PAC have decreased from 2002 through 2004. However on a more positive note the amount contributed by each individual has increased during that same time. Specifically related to the Orthopaedic Section, 18.9% of our members contributed to the PT-PAC in 2004, which is an increase of 2.1% over 2003. Unfortunately, our Section is 15th out of the 18 Sections in terms of how many members contributed to the PT-PAC. There are many legislative issues that are extremely important to all of us within orthopaedic practice such as the Therapy Cap, Medicare Direct Access, the Medicare fee schedule, self-referral for profit, etc. It is necessary for each Orthopaedic Section member to participate in the PT-PAC in order to preserve and expand our practice environments. Please contact Michael Matlack at APTA to make your PT-PAC contribution ASAP.

# Plan to Attend CSM 2006

**Ellen Hamilton, Education Program Chair**

Plans are well underway for CSM 2006 in San Diego, February 1-5. The Orthopaedic Section is sponsoring two preconference courses. The first, a 2-day course on Tuesday and Wednesday, is 'The Role of Spinal Manipulation in the Manual Therapy Management of Spinal Pain.' The second, a 1-day course on Wednesday, is 'Ergonomic Tools—Helping Clients and Your Business Partners Everyday.' We received quite a number of submissions for programming this year, and it should be a great line-up. A call for programming ideas for CSM 2007 will be going out in the fall of this year. Please consider submitting an idea.

Education Committee Members:

Beth Jones, Vice Chair

Dee Daley, Occupational Health SIG

Bob Duvall, Primary Care Ed Group

Gina Epifano, Animal PT SIG

Marie Bement Hoeger, Pain SIG

Tara Jo Manal, Performing Arts SIG

Dave McCune, Manual Therapy Ed Group

Cheryl Maurer, Foot and Ankle SIG

Chris Powers, Knee Ed Group

# Webwatch

APTA
American Physical Therapy Association

**www.apta.org**

This site is one that you more than likely have visited before but a new makeover has just been completed. Members will still login the same way with your membership number being your username and your last name your password. The first thing you will notice is a new color template that contrasts well with the topics and category headings. A more user-friendly menu has also been included. The page also loads quicker than the previous version. Printer friendly pages are still an option and a modified horizontal navigation bar supplements the vertical navigation bar titles which include: member services, professional resources, communities (chapters, sections, component information) advocacy (government affairs etc), education, publications, and research. Since the APTA page has just been launched you may find a few bugs but overall I have found the new design to be more efficient and certainly more pleasing to view.

## ORTHOPAEDIC SECTION, APTA, INC. PROPOSED BYLAW AMENDMENT

**ARTICLE VII. BOARD OF DIRECTORS AND OFFICERS**
**Section 1: Board of Directors;**
**G. Meetings and Conduct of Business;**
**1. Regular Meetings**

The Board of Directors shall have three regular meetings each year: a winter meeting, a summer meeting, and a fall meeting. If the Association has a Combined Sections Meeting, the Board's winter meeting shall be held in conjunction with it. If the Association has an Annual Conference the Board's summer meeting shall be held in conjunction with it. The time and place of each regular meeting shall be determined by the Board.

**MOVE TO AMEND ARTICLE VII. BOARD OF DIRECTORS, SECTION 1.G.,** by striking the following sentence, 'If the Association has an Annual Conference the Board's summer meeting shall be held in conjunction with it'.

# Section Members in the News

Association leaders, physical therapists, and physical therapist assistants gathered at a Recognition Ceremony during the Annual Conference and Exposition in Boston to honor and thank their colleagues for the contributions and commitment to practice, research, and education.

***Congratulations to the Orthopaedic Section members who received honors and awards.***

**HONORS**

Catherine Worthingham Fellows of APTA:

*George J Davies, PT, DPT, Med, SCS, ATC, CSCS, FAPTA*

*Karen W Hayes, PT, PhD, FAPTA*

*Barbara J Norton, PT, PhD, FAPTA*

*David R Sinacore, PT, PhD, FAPTA*

**AWARDS**

Lucy Blair Service Award:

*Cynthia A Driskell, PT, GCS*

*James M Dunleavy, PT, MS*

*Evelyn (Evie) Hallas, PT, BS*

*Jayne L Snyder, PT, MA*

Marian Williams Award for Research in Physical Therapy:

*Richard W Bohannon, PT, EdD, NCS, FAHA*

Helen J Hislop Award for Outstanding Contributions to Professional Literature:

*Daniel L Riddle, PT, PhD, FAPTA*

Chattanooga Research Award:

*Mark W Werneke, PT, MS, DipMDT and Dennis L Hart, PT, PhD*

Jack Walker Award:

*Michael T Cibulka, PT, DPT, MHS, OCS*

Dortohy E Baethke-Eleanor J Carlin Award for Excellence in Academic Teaching:

*William G Boissonnault, PT, DHSc, FAAOMPT*

Mary McMillan Scholarship Awards Physical Therapist Professional Education Students:

*Daryl K Arnold, SPT*

*Michael John Bade, SPT*

*Dale Allen Boren, Jr, SPT*

*Michael R Borich, SPT*

Physical Therapist Professional Education Students:

*Nathan Lowry, SPT*

*Jonathan Sum, SPT*

Congratulations!!!

# Occupational Health Physical Therapists Special Interest Group

## Orthopaedic Section, APTA, Inc.

Fall 2005 Volume 17, Number 3


## PT Documentation in Controverted Workers' Compensation Claims: A Critical View from the Outside


*Gwen Simons, PT, JD, OCS, FAAOMPT*
*Orthopaedic Physical Therapy Associates*
*Scarborough, ME*


Physical therapy documentation can be an important piece of evidence in a workers' compensation claim that is in controversy. However, poor documentation is of no benefit and can even be detrimental to a case. As part of my law school curriculum last spring, I had the opportunity to work as an advocate for injured workers in the Maine State Workers' Compensation Advocacy Division. The advocate division provides advocates that are either attorneys or other qualified professionals to assist an injured worker in settling their workers' comp claim with an employer when they do not have their own attorney. As an extern, I read hundreds of medical records written by physicians, physical and occupational therapists, athletic trainers, massage therapists, and other health care practitioners. I had to write position papers that used the medical evidence to argue the injured employee's case. This was an eye-opening experience that illustrated for me many of the problems in PT documentation. Health care providers in general do not have an adequate understanding of the legal issues in health care. When we don't understand the legal issues, we may not document our findings in a way that helps to answer the legal questions.

Many PTs who treat workers' comp patients don't understand the difference between "medical causation" and "legal causation." Legal causation will determine whether the employer is liable for the injury and whether they have a statutory duty to accommodate the worker to facilitate return to work. Each jurisdiction has a definition of legal causation, thus it is important to read the workers' compensation statute in the jurisdiction where you treat patients. Controversies in workers' comp claims commonly involve:

(1) whether the injury "arose out of and in the course of employment,"[1] and (2) whether the work-related injury "aggravated, accelerated or combined with" a pre-existing physical condition" . . . "in a *significant* manner,"[2] rendering the disability compensable. When an employee is determined to have a compensable injury, the controversy frequently shifts to whether they have work capacity; whether the work incapacity is partial or total temporary or permanent; and/or whether the effects of the work related injury have ended and residual work incapacity is from other nonwork-related conditions.

In many jurisdictions, the determination of legal causation and employer liability is determined through an administrative hearing process with an administrative law judge (ALJ) or a hearing officer (HO) serving as judge and jury. This process is less formal than a trial and allows the ALJ/HO more flexibility in admitting and weighing evidence. I interviewed 2 of the hearing officers for the Maine Workers' Comp Board to find out how useful PT documentation was in helping them decide a controverted case.

The hearing officers stated that careful and accurate documentation of the subjective complaints and pre/postinjury medical history is critical. However, in my search for PT "evidence," this information was frequently inadequate. The injured worker has the burden to prove that their injury arose out of and in connection with the employment. "Doctors don't always understand the difference between aggravation of the condition and aggravation of the incapacity," stated Hearing Officer Evelyn Knopf. This demonstrated to me that the hearing officers think more like PTs, differentiating the medical condition from the functional impairments it causes. Therefore, the hearing officers may look to PT notes to provide corroborating evidence of work capacity impairments. Because PTs are impairment specialists, PT documentation should provide quantitative information about the *significance* of the resultant disability. However, the majority of the hundreds of notes I reviewed lacked this critical information. When the notes are "cryptic" and do not provide a rational narrative explanation of the basis for the PT's opinion, they are of limited benefit to the hearing officer. Check the box forms and abbreviations with no assessment or explanation of the clinical findings severely reduce the value of the PT notes as evidence to answer the legal questions. To be credible and useful to the hearing officer and the attorneys arguing for either the employee or the employer, the PT documentation should explain in a narrative: (1) whether the subjective complaints and mechanism of injury match the objective findings, (2) to what extent the impairments (or work incapacities) are caused by the work injury (including secondary compensatory problems) versus other nonwork related conditions, and (3) the *significance* of a work related injury that aggravates, accelerates or combines with a pre-existing condition to produce a disability or work incapacity. PT documentation can provide credible evidence of the "significance" of the contribution of the work injury where the pre- and postinjury impairment and work capacity is quantified and qualified.

Hearing Officer Elizabeth Elwin stated she had observed workers being labeled by PTs as "noncompliant" just because they were not getting better. When the worker complains of new or worsening symptoms but the PT does not re-evaluate, modify the treatment plan, or document their opinion regarding the source of the new/worsening symptoms, the legal question becomes whether the continued injury/incapacity is due to the work injury or PT. To avoid a medical malpractice claim, PTs should take all subjective complaints seriously, re-evaluate every new or worsening complaint and make a narrative assessment of the reason for any changes or new objective findings (or lack thereof) despite whether they feel the worker is pain-focused, magnifying, malingering, or noncomplaint. Patients should not be labeled simply because we are unable to figure out their problems, especially if we haven't even tried.

In general, the hearing officers expressed a need for PTs to document more thoroughly and provide explanatory narrative opinions. However, they also had some advice about things to avoid stating in our documentation. For an opinion to be viewed as credible and unbiased, it should avoid: (1) blatant, glaring expressions of sympathy, (2) providing extraneous information about a worker's financial position or other aspects of the worker's personal life, and (3) expressions of disdain. The hearing officers do take into account whether the health care provider has a bias, but they also understand that the treating providers (versus the second opinion experts) have a better understanding of the worker's condition.

In summary, PTs who work with workers' comp clients should know the workers' comp statute in their state. It is critical to developing fundamental documentation skills if our professional opinions are to have credibility. My externship experience and opinions of the hearing officers and attorneys I worked with brought to my attention how important documentation is to our credibility and of our pursuit of autonomy. I hope this view of our profession from the legal world of workers' compensation will make all of us think about how our documentation reflects on our professionalism and our knowledge. I encourage everyone to take the opportunity to talk with people who read our notes to see what we can do better as we pursue the respect and autonomy that we know we deserve.

*Special thanks to Evelyn Knopf and Elizabeth Elwin, Hearing Officers in the Augusta office of the Maine Workers' Compensation Board, for their candid interviews and observations.*

## REFERENCES

1. 39-A M.R.S.A. §201(1) (Maine Workers' Compensation Act of 1992 defining and limiting entitlement to workers' compensation benefits. Most jurisdictions will have similar language in the entitlement definition that limits an employer's liability.
2. 39-A M.R.S.A. §201(4).

## Occupational Health Physical Therapist Special Interest Group Call for Nominations

The OHPTSIG Board welcomes new members with fresh ideas and a commitment to the role of physical therapists in occupational health.

The following positions on the OHPTSIG Board are open for 2006:

President
3-year term

Treasurer
3-year term

Nominating Committee members
1 for a term of 3 years
1 for a term of 2 years
1 for a term of 1 year

If you are interested in getting involved, contact our Nominating Committee Chair, Jennifer Steiner at jennifer.steiner@healthsouth.com.

# The Janet G. Travell, MD Seminar Series SM

**Course Schedule 2005**
**CME/CEU Approved!**

***Foundations of Trigger Point Examination and Treatment***
September 16 - 18, 2005
December 2 - 4, 2005

***Low Back and Pelvic Pain***
March 4 - 5, 2005
November 4 - 5, 2005

***Extremity Pain***
April 8 - 10, 2005

***Head, Face, Neck, and Shoulder Pain***
May 20 - 22, 2005

***Trigger Point Needling***
June 3 - 5, 2005

**Program Directors:**
Robert Gerwin, MD, Jan Dommerholt, PT, MPS
Information can be found online at www.painpoints.com

Workshops held in Bethesda, MD, a suburb of Washington, DC (USA)

**Interested in sponsoring a course**
**For information, contact Ms. Avelene Mahan**
**at Myopain Seminars**
**7830 Old Georgetown Road, Suite C-15**
**Bethesda, MD 20814-2432**
**At 301.656.0220 (phone), 301.654.0333 (fax)**
**mahan@painpoints.com (e-mail)**

FOOT & ANKLE
SPECIAL INTEREST GROUP
ORTHOPAEDIC SECTION, APTA, INC.

# TREATMENT OF CUBOID SYNDROME: MANUAL REDUCTION VIA GRADE 5 MOBILIZATION

(aka the "Cuboid Whip")

*Rob Landel, PT, DPT, OCS, CSCS, MTC*
*Associate Professor of Clinical Physical Therapy*
*Department of Biokinesiology and Physical Therapy*
*University of Southern California*

Cuboid syndrome is a condition that causes severe functional limitations and disability. The common presenting complaint is of lateral midfoot pain of sudden or gradual onset. The suspected cause of the condition is subluxation of the cuboid bone, most commonly in a plantar direction. Frank dislocation of the bone is rare,[1] subluxation is uncommon and since alignment changes are not often seen on radiographs despite the lateral foot pain, the more commonly seen condition is likely due to a less obvious positional fault of the cuboid bone. The etiology has been proposed to be secondary to overuse or due to an ankle inversion or lateral foot sprain.[2] The peroneals may play a role, either by pre-existing tightness or through a strong contraction while trying to control over-inversion. The peroneous longus tendon follows a course along the lateral border of the cuboid, then turning sharply under the plantar aspect of the cuboid to its insertion on the base of the first metatarsal (the so-called cuboid pulley). It is theorized that a tight or a strong contraction of the longus may sublux the cuboid bone in a plantar direction.[3] If this is the case, then manual reduction of the bone in a dorsal direction is warranted.[2-5] While Mooney and Maffey-Ward[3] provide an excellent description of the intervention and its indications, this article will briefly describe the technique, its indications and contraindications, and propose follow-up interventions.

## INDICATIONS FOR MANUAL INTERVENTION

### History

The diagnosis of cuboid syndrome is made based on the patient's history and clinical findings. Competing diagnoses that must be ruled out include: ankle sprain, tendinitis, neuroma, tarsal tunnel syndrome, reflex sympathetic dystrophy, rheumatoid arthritis, stress fracture, plantar fasciitis, metatarsalgia, cuboid syndrome, and tarsal coalition.[2] Plain film radiographs and MRI are rarely useful in making the diagnosis.[2,4] The chief complaint is of lateral midfoot pain.[3,4] The onset can be gradual or sudden.[2] There may be a history of an ankle sprain that 'never quite healed,' training asymmetrically, or of recurrent ankle sprains.[2,3,5]

### Physical Examination

- Painful to palpation on the plantar aspect of the cuboid, that is greater than on the uninvolved side. There may be palpable fullness on the plantar aspect of the cuboid.[5] Simultaneous bilateral palpation is recommended.
- Pain with weight bearing on the lateral aspect of the foot, often described as sharp. In cases of sudden onset, the patient may feel as though she or he has fractured the foot. This can often be reproduced or aggravated by a single leg heel raise. Careful gait analysis will often reveal that the pain is reproduced in terminal stance, at the onset of heel rise.
- Asymmetrical weakness of the peroneus longus muscle, possibly reproducing the lateral foot pain. This is thought to arise from poor mechanics of the peroneus longus muscle caused by alteration in the position of the cuboid bone adversely affecting the cuboid pulley mechanism.
- Range of motion may be decreased over the lateral foot.[2]

## CONTRAINDICATIONS

Contraindications to performing a Grade 5 mobilization in cuboid syndrome are as follows:

- Lack of full ankle plantar flexion ROM. The technique as described here may induce plantar flexion at a grade 5 level, producing undesired uncontrolled movement into restricted or painful range.
- Lack of foot and ankle sensation.
- Fracture: for the acute foot and ankle pain, the Ottawa ankle rules suggest that radiographs of the foot are required if there is midfoot pain and any of the following conditions exist: tenderness at the base of the 5th metatarsal, tenderness of the navicular, or inability to bear weight both immediately and in the emergency department.[6,7]
- Acute ankle sprain with objective signs of ligamentous laxity (swelling, painful, positive drawer signs).

## INTERVENTION

**Description of Technique** (based on Hartman[8] and others[9])

The patient may be prone (Figure 1), in quadruped, or standing in the 'horseshoeing' position[3] (Figure 2). The operator stands behind the patient or at the foot of the treatment table. The knee of the extremity being treated should be held flexed by the operator so that the muscles remain relaxed. Cross the thumbs and apply them to the plantar aspect of the cuboid (Figure 3). The fingers are overlapped on the dorsum of the foot, with the foot held firmly to control movement at

**Figure 1. Prone positioning for manual technique.**

**Figure 2. Standing (horseshoeing) position for manual technique. Arrow shows direction of force. The fingers are overlapped on the dorsum of the foot, with the foot held firmly to control movement at the ankle.**

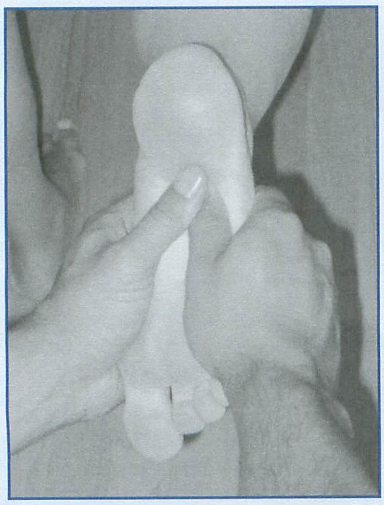


**Figure 3. Thumb contact on the plantar aspect of the cuboid, with patient in the standing position. Force direction is plantar to dorsal, and slightly lateral.**

the ankle. When applied in the standing position, the treatment movement comes from flexing and extending the hip and knee. In prone and quadruped, motion is induced at the knee. In all three positions, the knee is passively flexed and extended; this ensures that the patient is relaxed, and provides some recoil in the leg against which the Grade 5 treatment movement is applied. Midway through one of the knee movements, as knee recoils into flexion, the thumbs are driven against the cuboid in a dorsal-lateral direction while the fingers induce inversion, adduction, and compression. The maneuver can be repeated several times depending on the patient's response.

### Assessment of Response to Treatment

Immediate changes upon a successful technique will be less tenderness to palpation, improved and less painful single leg heel raise, improvement in peroneus muscle strength, particularly in the peroneus longus, and less pain on weight bearing and during ambulation.

### Follow-up Intervention

Intervention following successful manual treatment should consist of strengthening of the plantar flexors, particularly the peroneals. If the patient has a history of recurrent ankle sprains, then appropriate proprioceptive retraining should be instituted. Pain relief and improved function should be immediate and long-lasting, however, if the condition reoccurs, follow up care could include foot taping (for example using the Low-dye technique), use of arch supports or foot orthoses (over the counter or custom made), stretching, and/or soft tissue mobilization of the peroneus muscles, and adjustment to any asymmetrical training or daily habitual usage patterns.

## REFERENCES


1. Dobbs MB, Crawford H, Saltzman C. Peroneus longus tendon obstructing reduction of cuboid dislocation. A report of two cases. *J Bone Joint Surg-Am.* 2001;83-A(9): 1387-1391.
2. Leerar PJ. Differential diagnosis of tarsal coalition versus cuboid syndrome in an adolescent athlete. *J Orthop Sports Phys Ther.* 2001;31(12):702-707.
3. Mooney M, Maffey-Ward L. Cuboid plantar and dorsal subluxations: assessment and treatment. *J Orthop Sports Phys Ther.* 1994;20(4):220-226.
4. Omey ML, Micheli LJ. Foot and ankle problems in the young athlete. *Med SciSports Exerc.* 1999;31(7 Suppl): S470-486.
5. Marshall P, Hamilton WG. Cuboid subluxation in ballet dancers. *Am J Sports Med.* 1992;20(2):169-175.
6. Stiell IG, Greenberg GH, McKnight RD, Nair RC, McDowell I, Worthington JR. A study to develop clinical decision rules for the use of radiography in acute ankle injuries. *Ann Emergency Med.* 1992;21(4):384-390.
7. Bachmann LM, Kolb E, Koller MT, Steurer J, ter Riet G. Accuracy of Ottawa ankle rules to exlude fractures of the ankle and mid-foot: systematic review. *BMJ.* 2003; 326:417.
8. Hartman L. *Handbook of Osteopathic Technique.* 3rd ed. Cheltenham, UK: Stanley Thornes (Publishers), Ltd.; 1998.
9. Hertling D, Kessler RM. Chapter 14: The lower leg, ankle and foot. In: Kessler RM, Hertling D, eds. *Management of Common Musculoskeletal Disorders.* 3rd ed. Philadelphia, Pa: Lippincott; 1996:379-443.


## Performing Arts Special Interest Group • Orthopaedic Section, APTA

### PRESIDENT'S LETTER

Dear PASIG Membership!

This letter may not seem timely at the time I write because by the time it is published many things will have taken place over the summer. I hope that everyone is well and is looking forward to the fall and CSM 2006 with great anticipation. The Executive Board and Committee Chairs/members have been very busy working on many projects that everyone at CSM 2005 deemed as a priority. The main objective of the Board is to ensure that the work of the PASIG continues along the lines of the vision statement and the goals and objectives of the Orthopaedic Section in meeting the APTA Vision 2020.

The Membership Committee, under Chair, Julie O'Connell, has launched a new form via email and on the website to gather new information on all of the membership. With input from the Research Committee, the form has really evolved over the past few years. It not only reflects personal data, but also includes areas of expertise in clinical and research mentorship, practice issues, and a complete survey to help us ascertain the needs for conducting clinical research! Please visit our website at www.orthopt.org for the latest information available on the membership, or to complete a form and survey if you have not already done so. This information is important to help all members find the immense resources that are contained in our organization.

The Research Committee, under the chair of Shaw Bronner, is also very active in its efforts to bring a list serve to the membership of timely performing arts related research and to broaden the commitment to helping members interested in clinical research within the PASIG. The Practice Committee is also up and running under the chair of Joel Dixon. They are looking for help on their committee in the areas of informing the membership on interstate licensing and beginning to develop very important screening tools for dance and music. The strategic plans for both of these dedicated committees are listed on the website, and we welcome all of the memberships' comments and commitments to these important arenas.

Finally, the Education Committee, under the chair of Tara Jo Manal, is very involved in creating, designing, and producing the best programming for CSM 2006 in San Diego. The topic will include aspects of clinical care for the performing artist in the area of the lumbar spine/pelvis. Please visit the website for all of the program listings and speakers as this information becomes available.

Remember the Student Scholarship Program for CSM 2006. If you know of any students that submitted a research or case study abstract for CSM, they are eligible to apply for the Scholarship to attend 2006 and need to submit their abstracts for consideration to Leigh Roberts as soon as possible.

Thank you again to all whom make this organization so dynamic. Caring for the Arts brings out the best in all of us!

*Susan C. Clinton, PT, MHS*
*PASIG President*

### PASIG EDUCATION COMMITTEE UPDATE

Chair: Tara Jo Manal

Preparation for programming for CSM 2006 is in full swing. We have decided on a global topic and are actively seeking speakers who can contribute in this area. If you have suggestions about possible expert speakers in this area, please feel free to contact Tara Jo Manal at tarajo@udel.edu.

Come and see us present the following information:

EVIDENCE BASED APPROACH TO LOW BACK PAIN IN THE PERFORMING ARTISTS—HOW CAN THE EMERGINIG LITERATURE ENCHANCE OUR PRACTICE.

### PASIG PRACTICE COMMITTEE STRATEGIC PLAN

Chair: Joel Dixon

Members: Tara Jo Manal, Erica Baum

1) To further PASIG membership awareness of temporary interstate reciprocity issues and state to state practice requirements.
   a) Compile a list of current temporary interstate practice reciprocity clauses and rules. Utilize the APTA practice office as a resource for locating applicable language in each state practice act and associated rules.

b) Create a document that includes appropriate practice act and rules information as well as proposed courses of action for PASIG members wishing to practice temporarily. This information will be listed for each state and will be posted on the PASIG website for membership accessibility.
c) Notify PASIG membership of this document and its accessibility.
    i) Send notice via electronic mail to PASIG members.

2) To develop comprehensive screening programs for performing artists
    a) Compile information on dance and musician screening programs used in current performing arts physical therapy practice.
        i) Comprehensive literature search through medical research databases.
        ii) Communication and collaboration with members of IADMS and APTA Sports Physical Therapy Section.
    b) Present screening programs in a usable format to PASIG membership.
        i) Make screening program documents available to members on the PASIG website as PDF files.
        ii) Send notice via electronic mail to PASIG members of screening program availability.

**PASIG RESEARCH COMMITTEE**

Over the past several months the Research Committee has developed a strategic plan. It is deliberately open ended because we would like the feedback of the membership. PASIG members interested in joining this committee or submitting ideas or feedback, please contact:

Shaw Bronner, Chair
e-mail: sbronner@liu.edu
work: 718-246-6377

**PASIG RESEARCH COMMITTEE STRATEGIC PLAN**

Chair: Shaw Bronner
Members: Jeff Stenback, Jennifer Gamboa, Marshall Hagins, Sheyi Ojofeitimi, Brent Anderson

1. To further PASIG membership awareness of new performing arts (PA)-related scholarship and research.
    a. Establish and disseminate a monthly list serve of new PA citations. The PASIG Research Committee (RC) will initially contribute to the list serve at its initiation. The PASIG membership will be encouraged to submit items to assist in the success of this service.
    b. Develop a PA reference database in EndNotes. This will be indexed to items in the PASIG Technical Report, as identified by the PASIG RC. Initial contributions will be made from the LISTSERV. PASIG members may contribute to the database by contacting members of the PASIG RC. The RC will in turn make monthly entries to the database to keep it current. The database will reside on the PASIG website for PASIG members to access.
    c. The citation index will assist future efforts by the PASIG to contribute to the APTA "Hooked on Evidence" project with PA-related research evidence on the effectiveness of physical therapy interventions.
    d. Notify PASIG members of PA research platforms and posters (as well as PA-related subject matter) at PA-related venues such as CSM, IADMS, and PAMA.
2. To promote new research in PA.
    a. Survey the membership to ascertain why presentations and new research are submitted and presented at IADMS but not at CSM.
    b. Survey the membership to ascertain their educational needs in conducting, presenting, and writing about PA-related research.
    c. Develop a mechanism to facilitate the solicitation and submission of PA-related case studies to CSM and for publication.
    d. Develop and implement a mechanism to mentor new researchers.
    e. Award an annual student scholarship for best (accepted) abstract submission to CSM. PT programs, IADMS, and PAMA will be notified of this award program, working in concert with the PASIG Education and Scholarship committees.
        i) Work with Education and Scholarship committees to develop criteria for student scholarship submission acceptance.
        ii) Work with Education and Scholarship committees to notify PT programs of existing scholarship program.
        iii) Determine the annual application and acceptance rate for student scholarships.
3. Target areas of research focus and scholarship based on the PASIG Practice Analysis.
    a. Survey the membership to ascertain their research priorities. The survey can be developed from Tables 15 and 16 of the PASIG Technical Report (see page 41).
    b. Facilitate the implementation of research on prioritized topics identified through the survey.
    c. Contact IADMS, PAMA, and other organizations with common goals to facilitate collaboration.
    d. Contact university/college programs with physical therapy programs to encourage facilitation and collaboration of researchers, students, and PA-clinicians to conduct performing arts-based research based on prioritization of PASIG research agenda.

**PTs in the News**

**Marybeth Brown, PT, PhD, FAPTA,** a physical therapy professor at the University of Missouri, Columbia, is co-teacher and co-developer of a new class on maintaining

**Table 15. Partial List of Ongoing Topics of Performing Arts-Specific Research**

| |
|---|
| **Dance** |
| Analysis of intrinsic & extrinsic risk factors in dancers. |
| Biomechanics of dance movement in healthy dancers. |
| Conditioning programs for performance enhancement. |
| Effect of age, training, injury on biomechanics of dance movement. |
| Effect of comprehensive management on incidence, time loss & cost of injuries in professional dancers. |
| Effectiveness of Pilates training. |
| Injury reporting/analysis. |
| Nutritional habits of adolescent pre-professional dancers. |
| Pathomechanics of anterior hip pathology and psoas injuries. |
| Quantification of movement improvements with ACL repairs. |
| Screening programs for dancers. |
| **Music** |
| Healthcare pattern usage in musicians. |
| Injury pattern by instrument. |
| Injury risk factors for music students. |
| Prevention of musician injuries. |
| **Other** |
| Effects of comprehensive case management on injury rates and workers compensation rates. |

**Table 16. Partial List of Interests for Future Research in Performing Arts Physical Therapy**

| |
|---|
| **Dance** |
| Biomechanical and EMG analysis of dance movements. |
| Causes and epidemiology of os trigonum. |
| Effectiveness of pre-season dance screenings and the development of a valid screening tool for dancers (to predict likelihood of injury). |
| Effectiveness of proprioceptive retraining for foot/ankle injuries compared to other PT. |
| Epidemiological study of dance injuries. |
| Flexor Hallicus Longis tenosynovitis in dancers. |
| Foot/ankle movement tools (screening outcomes & comparison to injuries). |
| Hip movement dysfunction relative to anterior hip syndrome. |
| Impact of injury prevention education for undergraduate dance majors on change in attitudes & incidence of injury. |
| Increasing AROM in ballet dancers' hips. |
| Kyphosis/scoliosis curvature correction. |
| Lower quarter development in pediatric-adolescent dancers. |
| Lumbopelvic movement patterns (norm & pathological) in dancers. |
| Muscle imbalances in dancers. |
| Patellofemoral pain in dancers. |
| Pelvic floor function/dysfunction in dancers. |
| Pointe shoe research (more directed at dancer safety, rather than aesthetics). |
| Posterior Tibialis tendonitis in dancers. |
| Relationship of body type to injury rates in dancers. |
| Relationship of teaching style to injury rates in dancers. |
| Shoulder mechanics in port de bras. |
| SI dysfunction in dancers. |
| Talar compression syndrome in dancers. |
| Use of Pilates and Gyrotonics in rehabilitation of low back pain for dancers. |
| **Music** |
| Adaptive devices for music students. |
| Biomechanics of piano playing & identifying movements or lack of movements which contribute to injury. |
| Carpal tunnel syndrome in pianists. |
| Cervical spine especially in musicians. |
| Injuries among harpists, including shoulder impingement. |
| Over use injuries in instrumental musicians. |
| Tendonitis and focal dystonia in pianists. |
| Thoracic outlet syndrome in musicians. |
| **Figure Skating** |
| Boot design in figure skating. |
| Ice skating injuries—frequency, location, prevention, treatment. |
| **Other** |
| Acupuncture/pressure & pain control. |
| Integrating complementary and alternative therapies in acute & chronic performance rehabilitation. |
| Neuromuscular re-education modalities. |

healthy lifestyles. The course, reported in a recent Detroit News article as one of the first of its kind in the country, explores the basic science of a calorie, how to achieve energy balance to maintain weight, the biology of aging, and the link between physical inactivity and chronic disease and its implications for public policy. "It's ludicrous that so little attention is paid to educating students on the fundamentals of a healthy lifestyle," she says. "If we don't capture their interest now, it's going to be too late for them."

**Jennifer Gamboa, PT, MPT, OCS**, President of Body Dynamics Inc in Arlington, Virginia, recently was featured in an article about posture in The Washington Times. Good posture is "the dynamic balance of skeletal segments to promote effortless initiation and execution of movement, as well as efficient balance," Gamboa says.

**For a complete listing of our officers please visit our website.**

## Performing Arts Special Interest Group MEMBERSHIP FORM

To be a PASIG member, you must also be a member of the Orthopaedic Section. You may use this form for new membership, change of address, or updating your information.

Name: _____

Are you a: ❑ PT ❑ PTA ❑ Student

Prof. degrees/certifications: _____

Company name: _____

Address: _____

Phone: _____ Fax: _____ e-mail: _____

APTA member number: _____ Orthopedic Section Member: ❑ yes ❑ no

Years of experience treating performing artists: _____

What percent of your patient population are performing arts patients?

_____Dancers _____Gymnasts _____Skaters
_____Musicians _____Vocalists _____Circus Performers

Please list if you are affiliated with any performing arts schools, companies, or groups below:

_____

_____

Do you accept Student Affiliations? ❑ Yes ❑ No If yes, would you be willing to be a mentor? ❑ Yes ❑ No

Are you interested in serving as a mentor to other physical therapists or physical therapy students interested in the treatment of performing artists? ❑ Yes ❑ No

Are you interested in serving on any of the PASIG Committees?

❑ Practice ❑ Research
❑ Education ❑ Student Scholarship
❑ Nominating ❑ Membership/website

Can we list your name and contact information on the PASIG website, www.orthopt.org for a membership contact:
❑ Yes ❑ No

Thank you for taking time to complete this questionnaire. We look forward to having you as a member. Please return this form to the Orthopaedic Section or email the information to tfred@orthopt.org.

*Julie O'Connell, PT*
*PASIG Secretary and Membership Chair*

# Pain MANAGEMENT

**SPECIAL INTEREST GROUP • ORTHOPAEDIC SECTION, APTA, INC.**

## PRESIDENT'S MESSAGE

*Joseph A. Kleinkort, PT, MA, PhD, CIE, DAAPM*

I would hope that this message finds all of you healthy and blessed during the summer. There is an important act which is imperative for better management of pain in this country. The National Pain Care Policy Act would establish a National Center of Pain and Palliative Care, a White House Conference on Pain, and initiatives to promote awareness of pain management in federal programs. This act is truly important for the chronic pain advocate and patient alike. I would highly encourage you to address your representatives in both the senate and house to strongly support this most needed awareness in the federal government. Further information on this and other pending bills can be obtained from the APTA's Government Affairs Department at 800-999-2782, ext. 8533.

I would highly encourage each of you to use this venue as a basic way to write clinical articles that others can both enjoy and learn. There is such a wealth of information that therapists who treat chronic pain have and it should be shared so that everyone can enjoy greater comfort and ease in their quest to overcome pain. If anyone is interested, please send your thoughts and ideas on to me and I will see that they are published for all to enjoy. Remember this is as good as we all constructively make it.

I hope you all have a wonderful summer and fall and before we know it we will be at CSM again. This year we plan to have a party for those who are in the Pain SIG to network and get to know each other better. Please plan to attend CSM and this function either before or after our Business Meeting. I hope to see you all there.

## YOU DON'T HAVE TO HURT TO SAY NO!

**A Short Bit of Insight on Some Patients who Sabotage their Recovery**

We have all had those patients. The ones who are making good progress and then exacerbate when they do something completely against all the pacing, body mechanics, and joint protection that they have learned and practiced. They were so compliant with all of our instructions and then wham! We then just look at them and incredulously ask "why?" What

## PAIN MANAGEMENT SPECIAL INTEREST GROUP BOARD LISTING

**PRESIDENT**
Joseph A. Kleinkort, PT, MA, PhD, CIE
303 Inverness
Trophy Club, Texas 76262-8724
PH: 817-491-2339 • FX: 972-887-0294
indusrehab@aol.com

**VICE PRESIDENT**
John E. Garzione, PT, AAPM
PO Box 451
Sherburne, NY 13460-0451
PH: 607-334-6273 • FX: 607-334-8770
jgarzione@juno.com

**TREASURER**
Scott Van Epps, PT, PCS
45 Wapping Ave
South Windsor, CT 06074-1345
PH: 860-545-8600 • FX: 860-545-8605
svanepps@cox.net

**SECRETARY**
Elaine Pomerantz, PT
20 Brookwood Road
South Orange, NJ 07079
PH: 973-575-1112 • FX: 973-575-1369
smokeyman@aol.com

**NOMINATING CHAIR**
Tom Watson, DPT, DAPPM

**IT CHAIR**
Sandy Pomeroy, PT

**EDUCATION CHAIR**
Marie Bement Hoeger, PT, PhD

possessed you to think that (that activity) was so important you were willing to risk blowing all the improvement?

They look back and say something benign like "but someone had to do it!" The cycle repeats over and over and you ask them why they did it again (and again and again).

The only "have to's" in life are birth and death. Everything else in a choice. When asked why they chose to do the activity, the patient looks back incredibly and indicates that what they did was their only option. When you review it with them, it is obvious that there were many others.

I was having this conversation with a patient recently and was working on problem solving her decision making. We reviewed all the reasons (excuses) that she did what she did. When I asked her why she was sabotaging herself, she looked blank. She talked more about her family and how much they frustrated her when they placed demands on her or when they did not help out and she "had" to do their work or chores. She talked about only saying no to them when she hurt too much to do what ever it was that they wanted her to do. She expressed frustration on when they did not do something and therefore forced her to, that they only realized it and became contrite when she was harmed (with pain) by their lack of action. The presentation of her pain was the only thing that helped them realize this lesson. Her pain showed that the activity or chore was so important, that she was willing to hurt to complete it.

Then the light bulb went on. I looked at her and told her **"You don't have to be in pain to say no!"** (to your husband, family, or friends!!!!). In her mind, she could not say "no" to an activity, chore, or obligation unless she was in too much pain to do it. She could then in good consciousness explain why it was not possible to help. When she was frustrated with her family, she did activities that always resulted in pain so she could in good consciousness truthfully say she was hurting too much that she could not assist them. She did not do this actively or maliciously or knowingly at all. She just knew at some level of mind that if she hurt, she could say "no." She is a Mother, a teacher, a nurturer, and her world revolved around giving to others. Saying "no" was not easy for her to do. And when frustrated (when she wanted to say no), she indulged in activities she knew better than to do in a thinking, rational world. In hindsight, she could not reason why she had done them. They made no sense. She did not realize that her willingness to hurt to accomplish an activity did not indicate how important the activity is (to have been completed) to another person.

She digested this and we reviewed each exacerbation and found the triggering factor for each one. There was indeed a desire to say no to something that preceded each. For family chores, she did not feel she was getting through that the chore was important and critical to the function of the family. We discussed that if she said no with no or little pain, she felt guilty. She did not feel guilty saying no if she was in pain.

Her new mantra is "NO!" She does not have to explain why she says no (in fact, many times it is better if she does not). She has not had an exacerbation since the light bulb went on. She is doing much better at not diving in and doing things that her family neglects. She is working on not letting pain be the proof that they should have done it before she was "forced" to. Once she understood that she was doing this, she moved on to further recovery.

She recently called and informed me that she had made another important observation. When she was mad at her husband, she felt justified in doing things to pamper herself. She then realized he did not have to "make" her mad to pamper herself and she did not have to create situations for him to "make" her mad. These usually involved him not doing something so she "had" to and the hurt when doing so.

Looking back, I have seen this pattern many times. How many patients in your practice can not say "no" without pain? How many others have I missed?

Food for thought.

*Sandra Johnson Pomeroy, PT*

# *Orthopaedic Physical Therapy Practice* Instructions to Authors


Christopher Hughes, PT, PhD, OCS, Editor
Sharon L. Klinski, Managing Editor


1. *Orthopaedic Physical Therapy Practice (OPTP)* will publish articles pertaining to clinical practice. Articles describing treatment techniques as well as case studies and reviews of literature are acceptable. Language and format of articles should be consistent with the *Guide to Physical Therapist Practice*.

2. Manuscripts should be reports of personal experiences and written as such. Though suggested reading lists are welcomed, references should otherwise be kept to a minimum with the exception of reviews of literature.

3. Manuscript Preparation Guidelines
*(details can be found at www.orthopt.org)*

4. Manuscripts are accepted by mail or electronically. Save your monograph to a 3 1/2" IBM-compatible computer disk in Microsoft Word or plain text format. Provide 2 hard copies of the monograph. Protect any original photographs and artwork for shipment. The manuscript should be sent to:

Orthopaedic *Physical Therapy Practice*
ATTN: Managing Editor
2920 East Avenue South, Suite 200
La Crosse, WI 54601-7202
Tel: 800.444.3982 ext 202
FAX: 608.788.3965
Email: Sharon Klinski, Managing Editor at sklinski@orthopt.org and

Christopher Hughes, Editor at cjh@nauticom.net

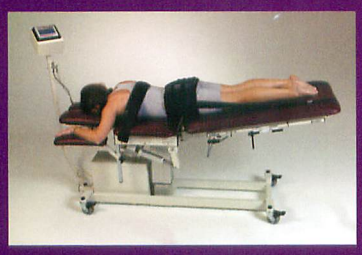
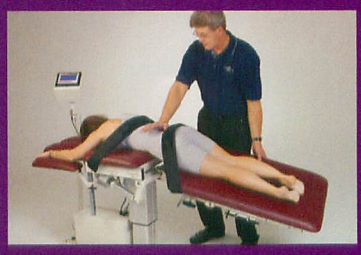
# Index to Advertisers

# The Most Versatile Traction System Available

- Effectively treat a wide range of musculoskeletal disorders, even those that are impossible to treat with conventional traction tables.
- Reduce the physical stress and strain on the clinician.
- Designed by one of the foremost experts in traction therapy*

  *FREE attendance at Duane Saunders' *Evaluation, Treatment & Prevention of Spinal Disorders* seminar.
- Flexible leasing options and possible tax benefits available.

## 3D ACTIVE TRAC®


**Discover how the 3D ActiveTrac can give you the widest range of therapeutic treatment options.**

"One thing we love about the table is that you can use it on everyone, whatever condition they are in. You can adapt the table to the patient and work from there. We are seeing immediate results with a lot of patients."

*– Christie Anderson, PT*

**1-800-779-0670**

**www.3DActiveTrac.com**

THE SAUNDERS GROUP INC.

*Orthopaedic Physical Therapy Practice*

Orthopaedic Section, APTA, Inc.

2920 East Avenue South, Suite 200

La Crosse, WI 54601