

# Orthopaedic

## PHYSICAL THERAPY PRACTICE

VOL. 26, NO. 2 2014



THE MAGAZINE OF THE ORTHOPAEDIC SECTION, APTA

**40** TH ANNIVERSARY  
*Celebrating 40 Years*

Orthopaedic Physical Therapy 1974-2014

A celebratory graphic for the 40th anniversary. It features a large blue '40' with a yellow arrow pointing right. To the right of the '40' is the text 'TH ANNIVERSARY' and 'Celebrating 40 Years' in a script font. Below this is a blue banner with 'Orthopaedic Physical Therapy' and '1974-2014'. The background includes a dandelion seed head and several yellow stars.

# Orthopaedic

## PHYSICAL THERAPY PRACTICE

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**VOL. 26, NO. 2 2014**

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To serve as an advocate and resource for the practice of Orthopaedic Physical Therapy by fostering quality patient/client care and promoting professional growth.

### Publication Staff

#### Managing Editor & Advertising

Sharon L. Klinski  
Orthopaedic Section, APTA  
2920 East Ave So, Suite 200  
La Crosse, Wisconsin 54601  
800-444-3982 x 2020  
608-788-3965 FAX  
Email: [sklinski@orthopt.org](mailto:sklinski@orthopt.org)

#### Editor

Christopher Hughes, PT, PhD, OCS

#### Associate Editor

Christopher Carcia, PT, PhD, OCS, SCS

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**Stephen McDavitt, PT, DPT, MS, FAAOMPT**  
 Saco Bay Physical Therapy–Select Medical  
 55 Spring St Unit B  
 Scarborough, ME 04074-8926  
 207-396-5165  
 scfmpt@earthlink.net  
 Term: 2013-2016

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**Gerard Brennan, PT, PhD**  
 Intermountain Healthcare  
 5848 South 300 East  
 Murray, UT 84107  
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 (515) 440-3832 (Fax)  
 Clarkmfrpt@aol.com  
 Term: 2008-2015

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**Thomas G. McPoil, Jr, PT, PhD, FAPTA**  
 6228 Secrest Lane  
 Arvada, CO 80403  
 (303) 964-5137 (Phone)  
 tommcpoil@gmail.com  
 Term: 2012-2015

### Director 2:

**Pamela A. Duffy, PT, PhD, OCS, CPC, RP**  
 28135 J Avenue  
 Adel, IA 50003-4506  
 515-271-7811  
 Pam.Duffy@dmu.edu  
 Term: 2013-2016

**Orthopaedic Section:**  
[www.orthopt.org](http://www.orthopt.org)

# Website



**Bulletin Board feature  
 also included.**

## Office Personnel

**(608) 788-3982 or (800) 444-3982**

**Terri DeFlorian, Executive Director**  
 x2040..... tdeflorian@orthopt.org  
**Tara Fredrickson, Executive Associate**  
 x2030..... tfred@orthopt.org  
**Sharon Klinski, Managing Editor**  
 x2020..... sklinski@orthopt.org  
**Carol Denison, ISC Processor/Receptionist**  
 x2150..... denison@orthopt.org

## Chairs

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**Renata Salvatori, PT, DPT, OCS, FAAOMPT**  
 889 1 Belle Rive Blvd  
 Jacksonville, FL 32256-1628  
 904-854-2090  
 Nata.salvatori@gmail.com  
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**Editor:**  
**Christopher Hughes, PT, PhD, OCS**  
 School of Physical Therapy  
 Slippery Rock University  
 Slippery Rock, PA 16057  
 (724) 738-2757  
 chrisjhughes@consolidated.net

**ISC Associate Editor:**  
**Gordon Riddle, PT, DPT, ATC, OCS, SCS**  
 gordonriddle@hotmail.com

**OP Associate Editor:**  
**Christopher Garcia, PT, PhD, OCS, SCS**  
 carcia@duq.edu

### Managing Editor:

Sharon Klinski  
 (800) 444-3982, x2020  
 sklinski@orthopt.org

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 5014 Field Crest Dr  
 North Augusta, SC 29841  
 (803) 257-0070  
 ekrdpt@gmail.com

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 412 Blackberry Ridge Drive  
 Morgantown, WV 26508-4869  
 304-293-0264  
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 Term: 2013-2016

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 22 Duane Street  
 Quincy, MA 02169  
 (617) 724-4844 (Phone)  
 tbrudvig@mghihp.edu  
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 3001 Mercer University Dr  
 Duvall Bldg 165  
 Atlanta, GA 30341  
 (678) 547-6220 (Phone)  
 (678) 547-6384 (Fax)  
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**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:**  
**Cathy Arnot, PT, DPT, FAAOMPT**  
 414 Bally Bunion Lane  
 Columbia, SC 29229  
 (803) 576-5858 (Phone)  
 arnot@mailbox.sc.edu

*Members: RobRoy Martin, James Spencer*

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# Editor's Note

## Meeting of the Minds!

Christopher Hughes, PT, PhD, OCS



As I write this editorial, I am recently reflecting on this year's Combined Sections Meeting (CSM) experience in Las Vegas. If you were there, then you would have benefitted from a great program sponsored by the Orthopaedic Section! The CSM continues to grow in popularity, breaking attendance records every year. The ability to get away from daily duties to converse and debate with fellow colleagues is priceless, even in today's social media age where technology brings things within easy access.

Now is also a good time to plug the second Annual Orthopaedic Section Meeting in St Louis, MO, to be held May 15-17. Be sure and check out the ad in this issue or go to the Section web site to see details. There is always something about being there that brings about a long lasting learning event. The gathering allows not only queries for the speaker but also great informal interaction with other participants. Sometimes there is nothing like face-to-face communication. Last year's event in Orlando, FL, generated a great response from attendees and speakers. The intentional small venue format and the hands on breakout sessions make for a unique learning experience.

As Editor of both *Orthopaedic Physical Therapy Practice (OP)* and the Section's independent study courses (ISCs), I usually have a full schedule of Section meetings at CSM. However, this year we added two more meetings. The first was a meet and greet to interview an Associate Editor position for *OP*. I am happy to report that Christopher R. Garcia, PT, PhD, SCS, OCS, was approved by the Board to fill this position. Dr Garcia is Department Chair & Associate Professor at Duquesne University, Rangos School of Health Sciences, Physical Therapy in Pittsburgh, PA. He was instrumental in putting together the Duquesne faculty student issue we published in 2013 (Vol 25, No 3). His creativity, enthusiasm, and publication and editing experience will expedite turnaround times for article submissions and further enable *OP* to meet its objectives for the coming year. Welcome aboard Dr Garcia!

As ISC Editor, I also had the opportunity to attend a meeting with our newly appointed advisory panel. This handpicked 11-member group of researchers and seasoned clinicians will advise the Section on

the best upcoming topics for future independent study courses and also help us in recruiting authors. The birthing process from conception to publication of a typical monograph is about 8 months, so we have to get it right! The council's experience and insight will prove to be extremely valuable as we continue to strive to develop the best courses to meet your needs at a reasonable price. Our first meeting generated a great deal of discussion on a number of potential topics. Our courses continue to be popular, but we also know that members have many options to choose from to meet their learning needs. In addition, I have added an Associate Editor to the ISC process. Gordon Riddle, PT, ATC, OCS, SCS, CSCS, will be joining the team. He has been a past author on two ISCs and also has served as Subject Matter Expert on others. He will help the current staff, Managing Editor, Sharon Kliniski, and me with specific aspects of the publication process.

The Orthopaedic Section needs to be on the forefront of meeting the needs of its members and also continue to be a reputable source for practice information. Since *OP* does not solicit topics and authors, each issue is a reflection of "what's on the minds" of our readers. I am fortunate to have so many authors use *OP* as their choice for publication. Whether authors are first time writers, students, or veteran writers, the strength of the Section has always been and will always be its members! I thank those who have been involved in the Section's publication offerings and also encourage those who have not yet published to give it a try!



**Past and Present *OP* Editors—Chris Hughes (2004-present), Jonathan Cooperman (1992-1998), and Susan Appling (1998-2004) with the Managing Editor, Sharon Kliniski, at the Combined Sections Meeting in Las Vegas, NV. Past *OP* Editors not pictured are James A. Gould (1989-1990), Christine E. Saudek (1989-1990), and John M. Medeiros (1990-1992).**

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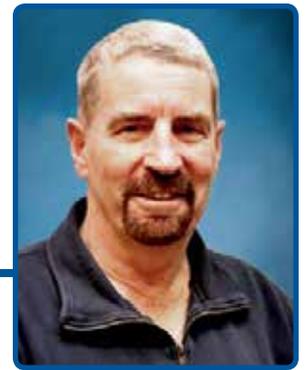
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# Paris Distinguished Service Award Lecture

**William H. O'Grady,  
PT, DPT, MA, OCS, COMT,  
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*The Paris Distinguished Service Award lecture was presented at the Combined Sections Meeting in Las Vegas, Nevada, in February.*

Board of Directors, distinguished guests and colleagues, my good friends, and my family, I am deeply humbled and grateful to be receiving this prestigious award. There is nothing more fulfilling than being honored by your peers. It is also gratifying that I have known the namesake of this award for over 35 years.

This year, coincidentally, I will celebrate my 50th anniversary in health care, the majority of which has been in physical therapy. Time does fly and stops for no one. Years ago, when I won the AAOMPT Mennell Award, I gave a little history lesson. I talked about how I stumbled into this field. Physical therapy was pretty much dominated by women; so when I was in school, it was not the first health care field that appeared on my radar. When I initially entered college, my goal was to be a physician. As you can see, I ended up as a physical therapist. I would not change a thing. This profession has brought me more personal growth, fulfillment, and lifelong friendships than one could imagine. My cup has runneth over many times.

When I entered the physical therapy profession, we had no specialization. We might treat a variety of chronic and acute neurological, vascular, and orthopaedic problems in the same day. In those days, we did not have SOAP notes. Everything was written in the form of narratives. I was a hospital-based therapist. There were some private clinics but they were not very plentiful. Our clinics were stock full of machines! That alone should tell you something. Yes, we handled patients, but if we could exercise someone with an NK table or DeLorme weights or use on a modality, we were good. We had Linquist ultrasounds, Tru-trac traction tables, Burdick DC electro-stimulators, and infrared, microwave and short wave diathermy machines. These were nothing like we use today.

I found a new use for our old micro-

wave units. I discovered that they were most effective in warming my lunch sandwiches. Who would have thought? In those days, I was always fascinated about having and/or purchasing the latest treatment modality for the clinic. One of my neat parlor tricks with the newer short wave diathermy units was to demonstrate its depth of penetration to my patients. Placing the drum on my back I could light an incandescent bulb held in front of me. When electro-galvanic stimulators came out, I thought it was one of the best things since sliced toast. At the time, I was working on my Master's degree at the University of Southern California (USC).

When I first considered going to physical therapy school, they had no Master's programs just Bachelor's and certificate programs. Needless to say, I was so excited about the use of electro-galvanic current that I could not wait to somehow use this as a thesis topic at USC. My intention was to do my master's topic on the use of galvanic current to discover its effectiveness on the reduction of postexercise soreness. I contacted the eminent gerontologist, Dr Herb DeVries, at USC. Using surface EMGs in this classical study, he illustrated that there was increased EMG activity in the presence of postexercise muscle soreness. I wanted to reproduce this study, but additionally, apply galvanic current to see if it reduced postexercise soreness, and hence, result in reduced EMG activity. He had suggested that I might get one of my physician friends to inject hypotonic saline into my subject's back and perform the same study. This is not exactly what I had in mind. When I presented this to one of my orthopaedic surgeon friends, he thought I had lost my mind. This is at a time where medical malpractice issues in California were starting to gain critical momentum. Needless to say, this adventure came to an abrupt end.

As it worked out, I did my thesis on the tonic neck reflex. One has to keep in mind that my physical therapy (PT) school background was more neuro based. Margaret Rood, Maggie Knott, Jackie Perry, Signe

Brunstrom, the Bobaths, and Florence Kendall were my major influences in those days. Florence, incidentally, was our consultant in the Army. I learned muscle testing by watching her tapes. As a PT undergraduate, I actually had separate classes in modalities, massage, and therapeutic exercise. We did dissection in our anatomy labs like anyone else. Dissection of the spine was pretty much an afterthought, as we were not exposed to it until the last week or two of anatomy class. Now, thanks to major changes in entry-level PT education, this is no longer the case.

My first job out of PT school was at Centinela Valley Hospital in Inglewood, CA. I was the first male therapist there. We had a chief, a senior physical therapist, and me. I was usually conscripted into doing the heavy patient lifting when the nurses saw me on the wards. I had a dubious record, through no fault of my own, of having a patient die on me on 6 of the 7 floors of the hospital. This is not the kind of thing that motivates you to stay in the field. I then went into private practice for a while, but felt that I was missing something. I would treat patients, and loved doing this, but felt pretty unfulfilled and was pretty much on autopilot. Physical therapists, back then, were treated more like technicians, I am sad to say. We could not even change the wattage on our ultrasounds without physician approval. This was how it was.

I knew I needed a change. Initially, I was looking to go into the Army reserves. I was prior service. Vietnam had ended a few years earlier so I was not worried about being in harm's way again. At the advice of the AMSC recruiter, I took a trip to San Francisco where I met a younger, slimmer Major Rick Ritter at Letterman Army medical center at the Presidio. Rick said, "Why don't you just come on active duty. You can get some constructive credit for your education and experience." Rick likes to take credit for making me a "war hero" because I was one of 6 physical therapists to go to the Gulf War Part I.

This has been an ongoing joke between us for many years. However, in hindsight, it was the best decision I ever made.

So I went into the Army with the rank of a senior captain. As magna cum laude graduate from PT school, I thought I was a pretty good physical therapist. Upon observing what the Army therapists were doing, I felt like a deer in the headlights. They were doing things I could never imagine doing at the time. This, combined with the numbers of patients they were seeing in a day, was pretty intimidating. Then an angel came into my life in the form of Colonel Jane Gerhardt when I went to Ft. Bragg. What a lady! She knew I was overwhelmed with what was before me. She was the one who supported and gently eased me into the world of military PT. Mind you, this is in the 70s. Army therapists were pretty much acting autonomously since 1973. After Vietnam, many of the “Barrie planners” (drafted doctors) left the military in a huge exodus starting in 1972. There was a shortage of orthopaedic surgeons. The Army was left with a lot of neuromuscular complaints that overwhelmed the primary care guys because the orthopaedists were consumed with doing the more critical surgical assessments and care. The vacuum had to be filled by someone. It seemed to fall on the logical choice: the Army physical therapists. It was a steep learning curve, but they did it with efficiency and aplomb. By the time I came back into the military a few years later, these therapists were the neuromusculoskeletal specialists in the Army. I believe the military was the precursor to specialization. The Army therapists, serving as primary care providers, were allowed to order certain meds, write profiles, order imaging and lab studies, and have direct patient access long before it was fashionable on the outside. Jane had me shadow

a few of these young therapists. I learned so much and am forever grateful for her in changing my life and to Rick for talking me into going back on active duty.

Nevertheless, after working with a few of these therapists, I came to the instant conclusion that I was wanting. Although initially reeling from the feeling of being overwhelmed, I accepted the challenge to try to become as good as they were. I went to any course I could to enhance my evaluation and treatment skills. I worked with Army osteopaths and manual therapists and anyone who would help me refine my manual skills. Along the way, I was fortunate enough to get mentored by some of the giants in our field.

Without sounding like a recruiter, I would like to talk a little more about the Army. Today, in the civilian sector, we continue the fight with the federal government, states, and insurance companies over many practice issues. I have been on the front line of many of these battles. During most of my time in the physical therapy, we have been treated as allied health care providers rather than as a separate profession. This should not be happening. We should be the go-to people for neuromusculoskeletal problems, and in essence, the primary care providers for this. How much research has been done to show that going to physical therapy is more effective than many surgeries?

The entry level for PT school is now a Doctorate. In the Army, we were not doctors, but were treated with the collegiality of physicians and essentially acted as physician extenders for most acute neuromusculoskeletal problems. In 1994, my friends—Dave Greathouse, Cindy Benson, and Dick Shreck—published a paper illustrating the efficiency and prowess of Army physical therapists in the primary care role. They pointed out, from 1973 to the time

they wrote the article, that no Army physical therapist had a single legal action brought against them. This was remarkable in that the Army physical therapists had performed millions of neuromusculoskeletal evaluations and treatments. What is more amazing is that the Army has been doing this for over 40 years. I have asked myself and others, “Why is this not the standard on the outside?”

The Army long ago provided the template for us being primary care providers for the evaluation and conservative management of neuromusculoskeletal problems. We, in the civilian sector, have seen all kinds of excuses and fear tactics used to prevent us from this. We are the doctors in our field. I decided long ago that I did not want to be a physician. Sometimes, I had second thoughts. I remember when my good friend, Dick Erhard was enrolling in chiropractic school. I asked him why he did this. He said so he could have autonomy. Don't you think it is about time that we do too? The profession has evolved since I came into it over 40 years ago. Our profession helps more people and affects the quality of life and is more hands-on than any of the other health care professions.

How many times have you received a diagnosis where the only thing that was correct was that the involved body part was in the same room? We have all seen this. I don't blame the physicians. I trained physicians over the years. Their exposure to what we do is pretty minimal. As a result, with the exception of a few specialties in medicine, we are better at diagnosing and treating acute neuromusculoskeletal problems. The research supports this. Our time has come. We are the doctors in our field. To many, this is still an empty title. Our doctorate should be no less valid or less recognized than a doctorate in any other pro-



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fessional health care discipline. I have been to court to serve as an expert witness and have been told I cannot diagnose. I guess I did not get that memo. Tell me who does what we do better than us?

I cannot state how excited I am about the research and many of the things that have led to the clinical prediction rules and such. We have generated more research than in the history of our profession. Thanks to young researchers like Chad Cook, Josh Cleland, Julie Fritz, John Childs, Steve George, Joel Bialosky, and many others I have failed to mention, our profession has been elevated to heights that were previously unimaginable when I came into practice. The output of clinical prediction rules for treating various musculoskeletal conditions has been nothing short of spectacular. It has validated many of the things we have been doing for years. It has gone a long way to help people to predict the chance of success of using certain interventions. However, do not discount experience.

There are a great many conditions that do not fit into the clinical prediction rules. Perhaps we should call them clinical prediction guides. It is probably more appropriate to view a clinical prediction rule as a predictor of success as opposed to using it as something to help decide whether you should treat a condition or not, as I have witnessed in the field. Sometimes, you will find that, despite a condition following a clinical prediction rule, you might not want to treat it with that intervention. I believe clinical reasoning comes into play. How often have we found conditions that we treat do not follow the clinical prediction rule? Experience has shown that there are patterns of presentation that seem to reoccur. Using clinical reasoning helps sort these things out. As an experienced clinician, I find sleuthing using clinical reasoning is very gratifying and usually leads to pretty good outcomes.

I would like to take more credit for these but I get a lot of help from my patients. Listening to your patients is critical. If you really listen to them they will actually tell you what is wrong with them and even tell you how to get them better. They don't dictate the treatment, but by winning their confidence and by effectively establishing a common ground of communication you get them to buy into participating in their recovery.

I believe physical therapists play a huge part in improving the quality of life of more people than any other health care

discipline. We are more cost effective, more proactive, are a hands-on profession, have more frequent contact with our patients, and insist that our patients become vested in the aiding of their recovery. Our intervention starts when the patient walks into the clinic. How you observe, communicate, and handle a patient can dictate success or not. You can teach a therapist the technical skills of applying a treatment. You cannot teach the innate personality traits and interpersonal skills needed to instill confidence in your patients. I will take a person with a lot of personality over someone who is highly book learned but has little interpersonal skills. I can teach the other stuff.

Joel Bialosky describes what he calls a positive placebo. He also says that a placebo is "NOT nothing." Although he was talking about research, I think it holds true in the clinic. We do not do "nothing." The simple laying of hands, gentle touch, finding common ground through effective communication, and effective listening will all contribute to laying the groundwork for better outcomes before you even touch the patient.

I was lucky enough to have PT professors that aggressively promoted membership in our organization. I have been a member of the Orthopaedic Section since its inception. The only way we can continue to make change is through continued involvement in our organization. We have about 186,000 physical therapists in this country. Yet, only 77,000 are members of the APTA. The number of therapists that are not members of our association is both sad and distressing. These same individuals still have taken advantage of the political action, advocacy, continuing education, marketing, and research generated by members of our association. We are all advocates. We need to encourage our students and new graduates to be part of this great organization.

I would like to touch upon a few things I have learned over the years that are dear to me. These are the same things I have tried to pass on to my students. First, continue lifelong learning. I am still as giddy as a little kid when I get to learn something new that will help my patients and improve my skills. I have been teaching in an entry-level program for the last 5 years but have taught in residencies, fellowships, and continue to teach around the country. I have had the honor to teach with some of the giants in our field. Teach people what you know. The best honor a student can pay you is to

become better than you. This has been a two-way street for me. I have learned, and continue to learn, from my students. Teaching continues to be an ongoing and exciting mentoring experience and learning experience. How great is that?

We need to be ambassadors for our profession. Get into the community and let people know what we do. Who knows it better? Stay politically involved. Get to know your political representative. Even if there is not a pressing issue, send them a note, email, or make a call to let them know who you are and praise them for efforts on your behalf. If you like an issue they handled, well let them know or just say hello.

Next, be discriminative consumers of the research. There is just as much bad research as there is good. I was a lifelong clinician. I have tried to apply what I have learned from the research to practical use in the clinic. I will be honest. I do not understand a lot of the statistical terms. It is nice to have friends like my University of Nevada, Las Vegas colleague, Louie Puentedura to translate for me. It is a lot easier than reading "Research Stats for Dummies."

Lastly, try to stay humble. Speaking from experience, it is very easy to get taken down a few rungs when you get a big head. Let your actions speak for themselves. Be enthusiastic, tolerant, and gentle. It is my observation when you are arrogant and overbearing with your students, it stifles their learning.

I would leave you with the words of Maya Angelou on the impact you can have on people's lives: "I've learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel."

# Effects of Implementing Nordic Hamstring Exercises for Semi-professional Soccer Players in Akershus, Norway

Christian Sebelien, PT, MSPT<sup>1</sup>  
Christine H. Stiller, PT, PhD<sup>2</sup>  
Sara F. Maher, PT, DScPT<sup>3</sup>  
Xianggui Qu, PhD<sup>4</sup>

<sup>1</sup>Physical Therapist, Fjellhamar Clinic, Fjellhamar, Norway

<sup>2</sup>Special Instructor, Department of Physical Therapy, Oakland University, Rochester, MI

<sup>3</sup>Associate Professor, Department of Physical Therapy, Oakland University, Rochester, MI

<sup>4</sup>Associate Professor, Department of Mathematics and Statistics Oakland University, Rochester, MI

## ABSTRACT

**Background and Purpose:** Hamstring injuries are common in sports with sprinting demands, kicking, and sudden accelerations. Rehabilitation programs aimed at the prevention of future hamstring injuries have been recommended. This study examined if Nordic hamstring (NH) exercises decreased injury rates, increased sprinting speed, and increased hamstring and quadriceps muscle strength among semi-professional soccer players. **Methods:** A convenience sample of level 3 and 4 male soccer players from Norway (ages 18-39) participated in the study. Participants were randomly divided into either a control group (usual warm-up exercises) or a NH group (usual warm-up plus NH exercises). Injury data was collected on 119 players for 10 months. Twenty-seven participants were evaluated twice over the same period on sprint speed, eccentric and isometric hamstring strength, and concentric hamstring and quadriceps strength. Independent t-tests compared changes in strength and speed between the control and NH groups. Paired t-tests analyzed within group changes. Statistical significance was set at  $P \leq 0.05$ . **Findings:** There was a significant difference in the number of injuries between the control (6 injuries) and NH (zero injuries) groups. No significant changes in strength or sprint speed were found between the groups. The NH group experienced a statistically significant decrease in speed, during the first 10 m of sprint testing. In addition, both groups had a significant decline in the eccentric total work of the hamstrings. **Clinical Relevance:** Incorporation of NH exercise protocol into regular practice sessions may be effective in reducing the number of hamstring injuries in soccer players.

**Key Words:** hamstring strains, muscle injury, physical therapy, eccentric training

## INTRODUCTION

Hamstring muscle strains and injuries are common among high school, college, and professional athletes, especially in sports with sprinting demands, kicking, and sudden accelerations.<sup>1-10</sup> Sports with a high number of hamstring injuries included sprinting (11-29%),<sup>6,9</sup> Australian Rules football (15%-23%),<sup>6,7,9,11</sup> general football (15%),<sup>11</sup> soccer (10%-47%),<sup>6,7,9,11-18</sup> and rugby (6%-15%).<sup>7,11</sup> Among soccer players, hamstring strains were reported as the most common injury.<sup>16,18-22</sup>

Injuries to the hamstrings have been attributed to both intrinsic and extrinsic risk factors. Extrinsic risk factors are characteristics within the environment, many of which are not in the athlete's control. The greatest risk factor for this type of injury is due to contact with an opponent, accounting for 44% to 47% of all injuries.<sup>23</sup> Intrinsic injuries, on the other hand, are characteristics within each athlete and may or may not be modifiable. The most commonly cited nonmodifiable risk factors included a previous hamstring injury,<sup>4,6-8,11,22,23</sup> older age,<sup>4,6-8,11,23</sup> gender (more common among males),<sup>21</sup> and ethnicity.<sup>4,7</sup> Modifiable risk factors were more numerous and included leg length asymmetries,<sup>5,23</sup> muscle strength deficits,<sup>3,4,6,11,22-24</sup> poor neuromuscular control,<sup>11</sup> lack of flexibility,<sup>3,5-7,11,22-24</sup> lack of warm-up,<sup>5-7,11,22,24</sup> imbalances between the quadriceps/hamstring musculature,<sup>5-7,11,22,25</sup> poor lumbo-pelvic strength and stability,<sup>7,24</sup> and fatigue.<sup>3,5-7,22,24</sup>

Several authors examined internal risk factors in great detail, especially those that were modifiable and could prevent future hamstring injuries. For soccer players in particular, a previous injury to the hamstring musculature was the greatest risk factor for development of a future hamstring injury.<sup>12</sup> Once a hamstring injury occurred, the player often suffered prolonged symptoms, a

poor healing rate, and a high risk of reinjury (as great as 12%-33%).<sup>1,2,4,8,13,15,16,20</sup> Reinjuries were significantly more severe than first time occurrences, and have led to as many as 25 lost playing days (versus 7 lost days for a first time occurrence).<sup>7</sup> For the team and player, the costs associated with an injury varied and included missed training time, unavailability for matches, lost payment for the player, and even the end of a career.<sup>6,8,9</sup>

Given the variety of deficits that follow a hamstring injury, rehabilitation programs aimed at the prevention of future injuries were recommended for both the injured and noninjured athlete.<sup>21</sup> Common preventative interventions included stretching, strengthening (eccentric and concentric), correction of movement dysfunction, manual therapy, neuromuscular strategies, educational awareness, and general intervention programs (warm-up, aerobics, activity specific drills).<sup>26</sup> Results of the effectiveness of these interventions were mixed. Some authors reported no change in the incidence of hamstring strain with the use of stretching.<sup>1,6,26</sup> Other authors recommended improvements in active range of motion through both static stretching and strengthening regimes,<sup>3,7,20</sup> or stretching while a muscle is fatigued.<sup>10</sup> Manual therapy was found to possibly prevent injuries of leg muscles.<sup>26</sup> Balance training and warm up/cool down had no supportive evidence, or inconclusive evidence, for preventing leg injuries.<sup>26</sup> Strengthening exercises had varied results based on the type of exercise performed.<sup>26</sup> Several authors advocated for eccentric and concentric exercises for the hamstring musculature.<sup>1,3,17</sup> Other authors recommended eccentric exercise alone such as Yo-Yo curls (eccentric hamstring curls performed in a prone position)<sup>17</sup> or Nordic hamstring (NH) lowers (eccentric lowering of the upper body to the floor from a kneeling position, followed by a return to the starting position).<sup>9,12</sup> Finally, some authors

recommended sport specific training drills to prevent hamstring injury.<sup>10</sup> In general, there was insufficient evidence from randomized controlled trials to draw definitive conclusions about the effectiveness of any intervention to prevent hamstring injuries.<sup>26</sup>

Nordic hamstring exercises, such as NH lowers, have had positive results among soccer players. Using these exercises, elite soccer players from Norway and Iceland reported decreased hamstring injuries,<sup>6</sup> maximal eccentric hamstring strength increases,<sup>9</sup> enhanced optimal lengthening of the hamstring musculature,<sup>15</sup> and improved ability of the hamstrings to progressively sustain loads.<sup>24,25</sup> Peak hamstring torque was shifted to a more extended knee angle position after training with NH exercises.<sup>24</sup> Clarke et al<sup>24</sup> postulated that since most hamstring strains occur during eccentric contraction of the hamstring muscles, increased torque in an extended knee position may reduce the occurrence of strains. While elite athletes are at the most risk, injury incidence may be impacted by level of play, exercise load, and standards of training.<sup>27</sup> High-level players are most often injured during matches, while low-level players are more often injured during training sessions.<sup>27</sup> Since most studies have been performed with professional athletes, the purpose of this study was to investigate whether NH exercises were beneficial to semi-professional athletes during training and the beginning of the soccer season, when most injuries occur as mentioned previously. Specifically, this study sought to determine if NH exercises decreased the number of hamstring injuries and increased hamstring and quadriceps muscle strength from pre- to mid-season, among semi-professional soccer players in Norway. In addition, the authors were interested to see if any changes occurred in sprinting speed, since sprinting injuries are common in soccer, and increased sprinting speed was reported among eccentrically trained athletes.<sup>17</sup>

## METHODS

### Participants

Members of 10 adult level 3 and 4 (semi-professional) Norwegian soccer teams (ages 18-39) were recruited for the study. Coaches of the teams were given the exercise protocol and assisted with recruiting players. All coaches agreed to allow players who volunteered for the study to participate in the randomly selected exercise protocols.

Players were excluded from the study if they had a hamstring injury currently or in

the last 6 months, or if they had other injuries (eg, knee injuries, surgeries, or hip or back complaints) that made them unable to perform the initial strength and sprint testing protocols. In addition, players who sustained hamstring injuries during the season were withdrawn from the strength and sprint test protocols if they were unable to continue with the NH or their usual warm-up exercises, or if they were unable to complete soccer practices or games for a period of two weeks. This was to ensure that the participants did not sustain any additional injury to the hamstring musculature due to the demands of the testing protocol. Injury data was collected on all participants regardless if they withdrew from the strength and sprint testing protocols. In our study, hamstring injury was defined as an athlete having posterior thigh pain, where direct contact with the thigh was excluded as the cause of the injury, and the injury resulted in missed match or practice time.

### Procedures

Approval for the study was obtained through the Institutional Review Board for the Protection of Human Subjects at the authors' university, and the rights of all participants were protected. After obtaining informed consent, all participants completed a questionnaire consisting of demographic information, the number and type of previous injuries, the dates of these injuries, and amount of time they were unable to participate in any sporting events because of any injuries. A computer randomly divided players into two groups, a control group (usual warm-up exercises) and a NH group (usual warm-up plus NH exercises).

Members of both groups were scheduled to participate in (1) concentric, eccentric, and isometric hamstring strength testing using a Cybex 6000 (Lumex and Ronkonkoma, NY); (2) concentric quadriceps testing using the same machine; and (3) a 40-m sprint test. Participants were tested 3 times throughout the study: a pretest in December, retest in April (before competitive games started), and a final test in August (before the second half of the season started). Strength testing and the 40-m sprint were performed at the Norwegian University of Sports and Physical Education by volunteers who were trained in the testing protocol and blinded to group assignment. In addition, coaches and participants were instructed to inform the researchers of all injuries that occurred during the season every 14 days by documenting all injuries on an injury form.

Throughout the study, all exercises were performed as part of the players' usual soccer practice, under the direction of coaches (trained by the principle investigator) to make sure players were following the correct protocol and were consistently performing all exercises. The players in the control group participated in the team's usual warm-up exercises, while the players in the intervention group performed the usual warm-up exercises in addition to the NH-protocol exercises. Both groups practiced 3 days per week during preseason, and two days per week during the soccer season.

### Testing Procedure

The pre-, beginning, and mid-season test procedures consisted of (1) a warm up, (2) sprint time testing, and (3) strength testing. The Cybex 6000 was used to test all muscles strengths (concentric, eccentric, and isometric). Test-retest correlation coefficients for all parameters of the Cybex 6000 were reported above 0.90.<sup>28</sup> Prior to participant testing, the Cybex 6000 was calibrated. All testing procedures, including the warm-up exercises, were carried out by two volunteers who were trained by the researchers. Testing of isometric and eccentric strength was carried out on the hamstrings only, since this was the primary muscle group being investigated in this study and because weaknesses in these types of contractions were found to contribute to hamstring injuries.<sup>1,3,6</sup> Concentric strength testing was examined for both the quadriceps and hamstring muscles.

A general warm-up consisting of jogging progressing to sprinting was performed to prepare the muscles for maximal effort in strength testing. Following the general warm-up, a specific warm-up for the hamstrings was completed. In a standing position, the participants were asked to alternately kick their right and left heel as close to their buttocks as possible in 3 sets of 20 repetitions. Between the sets, the participants did 10 repetitions of lifting their knees as close to their chest as possible. The participants then did 3 isometric stretches using the contract-relax method. Each stretch started with the participant pressing his heel to the ground with the knee in slight flexion. The stretch was held for 15 seconds and was within the participant's tolerance of pain.

Following completion of the warm-up exercises, participants started the testing protocol. Participants were tested for maximal sprint by performing three 40-m sprints, with the best of the 3 attempts being used for data analysis. Timing started when

the participant released pressure on the front foot from the start mat, and was measured electronically in 10-m intervals up to 40 m. Next, the participants were strength tested using the Cybex 6000. Participants were tested on the right leg only, since all players were right leg dominant. Testing was initiated by positioning and fixating each participant's right leg in a seated position. The set-up for each participant was noted in the research protocol for replication during the retests in April and August.

First, concentric quadriceps and hamstring strength was measured. The participant did 3 voluntary hamstring and quadriceps contractions by flexing and extending the knee joint without rest between the contractions. The concentric strength tests for both the hamstring and quadriceps muscles were performed at a test velocity of 60°s<sup>-1</sup>. Participants were given 4 warm-up repetitions, and then performed 3 maximal contractions. The best of these 3 trials was used for analyzing peak torque (PT), and the sum of all 3 trials was used for determining total work (TW). After a one minute rest, a test for isometric hamstring strength was performed with the knee at 20°, 40°, and 60° from full extension. Since the ability to increase hamstring strength in an extended knee position has been postulated to reduce the occurrence of hamstring injuries,<sup>24</sup> measurements moving toward full knee extension were selected for the study. Participants performed a 5 second maximal voluntary contraction, 3 times at each knee flexion angle, with a 30 second rest period between each contraction. The best of 3 trials was recorded. Next, eccentric hamstring strength was tested. Each participant was tested in a range from 20° to 60° of knee flexion, by resisting an elevating arm from the machine. The participants performed 3 maximal efforts using the best trial for PT and the sum of all 3 trials for TW. Finally, the ratio of the hamstrings (H) and quadriceps (Q) muscle groups was calculated using the formula Hecc/Qcon (ratio of eccentric hamstring strength to concentric quadriceps strength). This H/Q ratio is thought to be more functional for running as it compares the agonist/antagonist roles of the two muscle groups.<sup>29</sup>

### The Training Program – Nordic Hamstring Exercises

The training sessions began with a general warm up for both groups (jogging and light sprinting), at which point the two groups split up. The control group performed general stretching, while the intervention group

performed NH exercises (Table 1). Both groups came back together and participated in technical skills and soccer specific activities, followed by a cool-down consisting of either light stretching or jogging. Each training session lasted 90 minutes.

The NH protocol was divided into 3 different parts and included a self-stretch, a stretching exercise with a partner, and a strengthening exercise (NH lowers), also performed with a partner (Table 1). Practice tips were given to the participants and included using some type of soft material under the knees, trying to relax the ankles and calves during the exercises to avoid cramps, and following the suggested protocol (Table 2) to avoid overuse and possible injury. Sets and number of repetitions were gradually increased through the fourth week. Beginning in the fifth week, participants were encouraged to add speed and resistance to tolerance.

### Data Analysis

Differences in strength (recorded by the Cybex 6000) and running speed (calculated during the 40-m sprint test) were collected for analysis at 3 testing sessions (pre-, beginning, and mid-soccer season). However, due to the limited number of participants who attended the second testing session (beginning of the soccer season), only data from the first (T1) and last (T3) testing sessions were used for data analysis. Data for number of injuries for both groups were collected

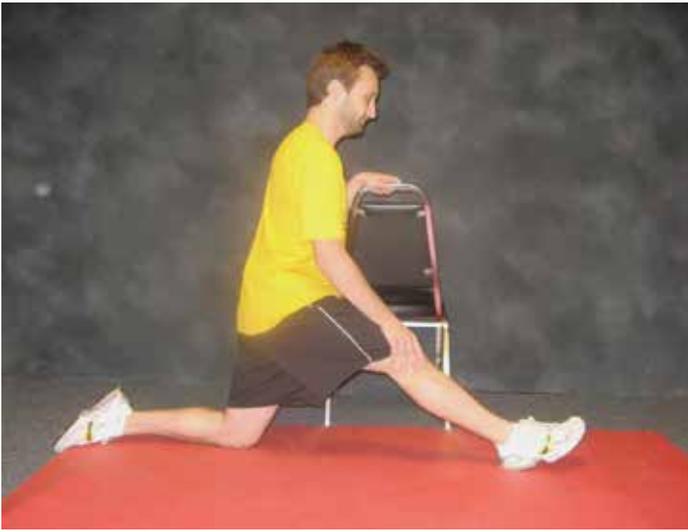
every 14 days. Pearson Chi-square test of independence was performed to examine the relationship between group assignment and number of injuries prior to data collection (one year before the study) and during the 10 months of the study. Absolute risk reduction (AAR) was calculated using the formula AAR = control event rate - experiment event rate. Independent t-tests were used to compare changes in strength and speed from T1 to T3, between the control and NH groups. Paired T-tests with 95% confidence intervals were used to analyze within group changes. Data from participants who suffered an injury and did not participate in the sprint and strength testing sessions was included in the study for the number of injuries only. Data were analyzed using SPSS 18.0 and the significance level was set at 0.05.

### RESULTS

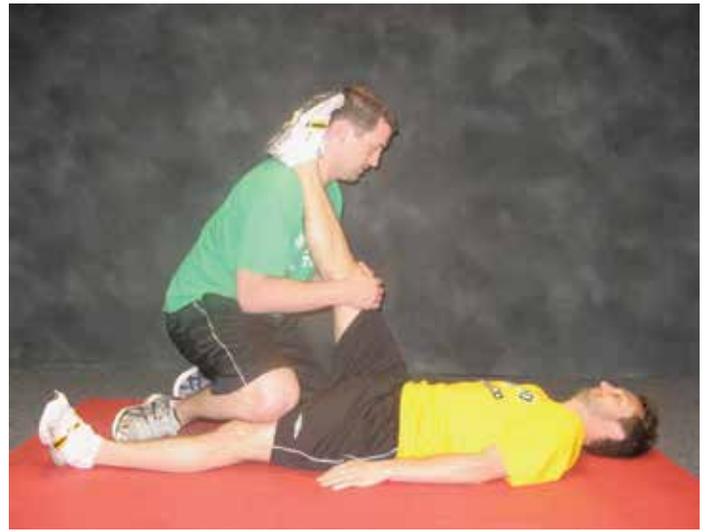
One-hundred and forty-two players volunteered for this study (control group = 70, NH group = 72). During the study, there were 23 drop-outs: 11 of the players decided to stop playing soccer and 12 players were not able to continue due to moving for school and work opportunities; therefore, injury data was only collected on 119 participants. Of the 119 participants, 59 individuals were in the control group (18-29 years of age) and 60 players were in the NH group (20-36 years of age). All 119 participants completed injury forms whenever a hamstring injury occurred during both before

**Table 1. Nordic Hamstring Exercises**

Exercise	Instructions
Self-stretch	Use support from a partner or stationary object such as a chair or low table. The knee should be bent at the start, and the ankle relaxed (Figure 1). Press the heel against the ground for 5-10 seconds to activate the hamstring muscles, then relax and use your hand to extend your knee. Hold the stretch for about 20 seconds. If necessary, increase the distance between your legs and bend your hips little more, but keep your back straight. Stretch each thigh three times.
Partner stretch	Your partner raises your leg with the knee bent, until you feel the back of the thigh stretch (Figure 2). Hold this position for a few seconds before you press your leg towards your partners shoulder. Hold for 10 seconds. Then relax while your partner stretches firmly, but cautiously by leaning forward. Hold this position for 45 seconds. Stretch each thigh three times.
Nordic hamstring lowers	Your partner holds your legs stable. Lean slowly forward with a steady speed (Figure 3). Hold your back and hips straight. Try to resist with your hamstring muscles as long as possible, until you lose your balance and fall on your arms (Figure 4). As you get stronger, make the exercise more demanding by increasing speed in the beginning of the movement, even by being "pushed" by your partner. Let the chest touch the ground. Use your arms to push up immediately, until your hamstring muscles can take over the movement and pull you up to the starting position. Be careful in the beginning, use two sets with 5 reps, and increase slowly to 3 sets with 12 reps.



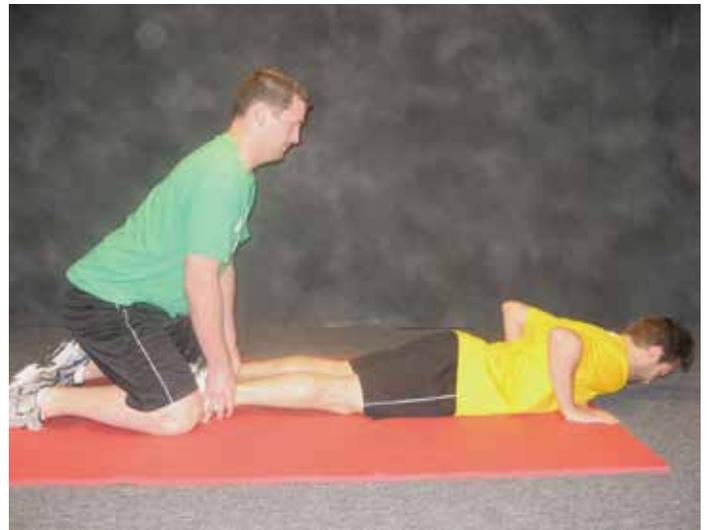
**Figure 1. Self-stretch.**



**Figure 2. Partner stretch.**



**Figure 3. Beginning position for Nordic hamstring lowers.**



**Figure 4. Ending position for Nordic hamstring lowers.**

and during soccer season. However, injury sheets were only collected every 14 days. Of the 119 participants, only 27 (22.7%) completed the pre- and midseason testing; the remaining participants did not attend the training sessions due to injuries not related to the study, school and work responsibilities, unwillingness to drive to the testing session, or coaching requests. Therefore, the results for strength testing and sprint speed were analyzed using the means of 27 participants (control group = 11, NH group = 16). At the first session, the means of both groups were compared using independent T-tests for all outcome data. The two groups did not differ statistically on any measure ( $P = .072$  to  $.999$ ).

The number of injuries reported one year prior to (from the initial questionnaire) and during the study is shown in Table 3. There were no significant differences in the number

of injuries between the groups during the 10 months prior to the study ( $X^2(1) = .89, P = .345$ ). However, during the 10-month study all of the injuries occurred in the control group (6 injuries), which was a statistically significant difference between the groups ( $X^2(1) = 6.44, P = .010$ ). Overall, there was a 10% AAR of sustaining a hamstring injury associated with participation in the NH exercise protocol, as calculated by the AAR formula mentioned previously.

For sprint testing, no statistically significant differences were found between the groups for any measure. Only one statistically significant difference was seen within each group: The NH group significantly increased their speed from 1.62 m/s to 1.65 m/s (Table 4), during the first 10 m of the sprint test ( $t(13) = 3.43, P = .005, 95\% CI: -0.040, -0.009$ ). Cohen's effect size calculated this finding as a small effect ( $d = .04$ ).

Results of all strength testing can be found in Table 5. There were no statistically significant differences between the groups in any measure. Within group changes revealed one statistically significant difference for both groups. The total work for eccentric hamstring contractions decreased for both the control (Mean T1 = 485.9, SD T1 = 189.7; Mean T3 = 439.5, SD T3 = 187.0) ( $t(7) = 3.18, P = .016, 95\% CI: 11.88, 80.87$ ) and Nordic exercise (Mean T1 = 510.6, SD T1 = 87.2; Mean T3 = 460.6, SD T3 = 101.1) ( $t(12) = 2.68, P = .020, 95\% CI: 9.34, 90.65$ ) groups. While Cohen's  $d$  revealed a small effect size for the control group ( $d = .025$ ), a moderate effect was observed for the NH group ( $d = .529$ ).

## DISCUSSION

The purpose of this study was to investigate the effect of an NH exercise program

**Table 2. Nordic Hamstring Strengthening Protocol**

Week	Training Number	Sets/Repetitions	Comments
1	1	2/5	Straight upper body (with a slight bend in the hip) throughout the whole movement. Resist falling as long as possible. Fall on your arms, let the chest touch the surface and push up immediately, until your hamstring muscles can take over the movement.
2	2	2/6	Try to reduce the lowering speed more.
3	3	3/6-8	Gradually increased load. You can resist falling even longer, and for an increasing number of repetitions.
4	3	3/8-12	Full program: 12, 10, and 8 repetitions.
5	3	3/8-12	When you can control the movement in all repetitions, you can increase the load by allow more speed in the start phase. Additionally, you can have a partner give your shoulders a little push to increase the resistance.

**Table 3. Occurrence of Hamstring Injuries**

	Control Group	NH Group
Age (years)	18-29	20-36
2005	7*	11*
Injury Occurrences	February: 3 March: 2 September: 2	January: 3 February: 1 April: 2 June: 1 August: 2 September: 2
2006	6*	0*
Injury Occurrences	January: 2	February: 1 April: 1 September: 2
* Total number of injuries		

combined with traditional training, versus traditional training alone, on hamstring and quadricep strength, sprinting speed, and number of hamstring injuries, in semi-professional soccer players. Our hypothesis was that the players, who participated in the NH exercises in addition to their usual training program, would experience a decreased number of hamstring injuries, improved sprinting speed, and increased hamstring and quadriceps strength compared to the control group who participated in a traditional training program.

In spite of the fact that the NH group had more risk factors for hamstring injuries, including older age, and a greater number of prior injuries, they did not experience

any hamstring injuries during the study period. The control group, on the other hand, reported 6 injuries. This change was statistically significant as determined by the Pearson Chi-square test of independence. A similar decline in hamstring injuries, following eccentric training, was reported in a number of studies.<sup>1,6-8,17</sup> Most hamstring strains are thought to occur during eccentric activity of muscles.<sup>6</sup> Nordic hamstring exercises specifically targeted at eccentric training of the hamstring musculature may have resulted in a decrease in the numbers of hamstring strains.

With regard to sprint speed, no significant changes were observed between the groups. However, within group changes

revealed a significant difference in the 10-m sprint speed in the NH group, which changed from 1.62 m/s to 1.65 m/s, meaning the participants were slower at the last testing session (Table 4). (A change of 0.03 m/s is above the standard error of measurement calculated at 0.018 m/s.<sup>30</sup>) This is in contrast to a study by Askling et al,<sup>17</sup> where significantly increased speed was observed for eccentrically trained participants on a 30-m test.<sup>17</sup> There are several reasons our NH group may have experienced these changes. First, NH exercises were performed at a slow rate and running is a high velocity activity. Several authors<sup>9,10,17</sup> have found that specificity of training is important for a carryover effect into functional activities. Theoretically, the NH exercises should be performed at high rates of speed in order to have an impact on running, which was not the case in this study. In the Askling et al study,<sup>17</sup> the participants used a fly-wheel to increase speed, followed by eccentric braking of the wheel at varying degrees of knee flexion, which more closely replicates the function of running/sprinting. Second, the players trained during the Askling et al<sup>17</sup> study reported delayed onset muscle soreness at the beginning of eccentric training exercises, which gradually decreased over the training period. During our study, the players and coaches may have avoided maximal participation in the training sessions if muscle soreness interfered with subsequent matches.

With regard to strength changes, no significant differences were found between or within the groups, for concentric measures of quadriceps strength. These results are similar to other studies that reported no changes in concentric peak torque.<sup>9,15,24</sup> Mjolsnes et al<sup>9</sup> hypothesized that this is due to training being activity specific. In order to increase concentric strength, concentric exercises focusing on the targeted muscle should be performed.<sup>9</sup> None of the exercises introduced in our study focused on quadriceps strengthening.

For isometric hamstring strength, no statistically significant changes were observed between or within the groups. In fact all isometric hamstring strength values declined for both groups from test session #1 to test session #3, with the exception of 20° of knee flexion in the NH group, which increased slightly from 138.0 Nm to 139.9 Nm (Table 5). Although this finding was not statistically significant, increased isometric strength of the hamstrings in an extended position was reported by previous authors.

**Table 4. Mean Sprint Testing at Preseason (Test #1) and Midseason (Test #3)**

Sprint Measurement	Control Group		NH Group	
	Test #1	Test #3	Test #1	Test #3
10-meter (s)	1.59 +.055	1.59 +.066	1.62 +.055	1.65 +.054
20-meter (s)	2.86 +.099	2.86 +.113	2.93 +.084	2.94 +.086
30-meter (s)	4.05 +.150	4.04 +.177	4.14 +.119	4.14 +.142
40-meter (s)	5.22 +.201	5.20 +.239	5.34 +.158	5.33 +.155

Abbreviations: s, seconds  
Shaded areas = significant findings

**Table 5. Mean Strength Testing at Preseason (Test #1) and Midseason (Test #3)**

Strength Measurement	Control Group		NH Group	
	Test #1	Test #3	Test #1	Test #3
Concentric Quadriceps PT (Nm)	196.1 + 59.6	182.7 + 64.6	202.8 + 38.9	203.9 + 30.9
Concentric Quadriceps TW (J)	552.7 + 172.0	502.1 + 182.7	588.1 + 124.7	570.1 + 88.0
Concentric Hamstrings PT (Nm)	114.0 + 32.3	110.1 + 42.3	121.4 + 26.6	118.0 + 20.4
Concentric Hamstrings TW (J)	388.1 + 120.8	371.7 + 146.8	418.3 + 90.6	396.1 + 69.1
Isometric Hamstrings				
20° PT (Nm)	139.6 + 49.9	131.7 + 65.1	138.0 + 22.8	139.9 + 33.7
40° PT (Nm)	150.0 + 45.6	141.5 + 51.6	142.0 + 25.1	139.6 + 25.1
60° PT (Nm)	140.0 + 44.8	134.3 + 47.3	138.5 + 29.2	135.4 + 23.2
Eccentric Hamstrings PT (Nm)	156.3 + 46.0	145.5 + 61.4	150.4 + 20.5	147.6 + 24.6
Eccentric Hamstrings TW (J)	485.9 + 189.7	439.5 + 187.0	510.6 + 87.2	460.6 + 101.2
Hecc/Qcon PT	.80 + .08	.80 + .11	.74 + .13	.72 + .11
Hecc/Qcon TW	.88 + .16	.88 + .16	.87 + .19	.81 + .16

Abbreviations: PT, peak torque; Nm, Newton meters; TW, total work; J, Joules  
Shaded areas = significant findings

Clark et al<sup>24</sup> reported that peak hamstring torque shifted to a more extended knee position after intervention training using NH lowers. The authors postulated that increasing peak torque in an extended position may reduce muscle damage due to eccentric contractions.<sup>24</sup> Hamstring injuries, in particular, occur during two points of running—the take-off segment of the support phase and the late forward swing phase. In the late swing-phase, the hamstrings are at the greatest length, contracting eccentrically to decelerate flexion of the thigh at the hip and extension of the lower leg at the knee.<sup>5,6</sup> During sprinting, the deceleration phase shortens, requiring the hamstrings to work even harder to compensate for the forward momentum.<sup>9</sup> Thus, increased peak torque in an extended position, seen in the participants in our NH group, may or may not have contributed to the decline in hamstring injuries seen among this group.

The last strength measure, eccentric hamstring strength, also resulted in no

significant changes between the groups. However, there was a significant decline in eccentric TW of the hamstrings for both the control and NH groups (Table 5). The control group declined from 485.9 J during initial evaluation to 439.5 J at 6-month re-evaluation. The NH group experienced a similar decline, decreasing from 510.6 J to 460.6 J over the duration of the study. These findings are in contrast to other authors who reported increased eccentric hamstring strength following exercises targeted at eccentric hamstring training.<sup>9,17</sup> We can only postulate on the differences observed in this study. One theory is that participants may not have provided maximal effort during strength testing. Some of the participants experienced soreness in their hamstring muscles after the pretest, and to avoid this soreness again, may not have performed with maximal force at the next testing sessions. Some coaches were displeased that muscle soreness interfered with their players' ability to perform during practices and

games. In fact, 5 players from one club were not allowed by their coach to complete the last strength test due to other players in the same club experiencing soreness and pain in their hamstring and groin after completing testing several days earlier. This soreness interfered with the tested participants' playing ability at a subsequent match. A second hypothesis may be attributed to motivation of the participants to complete the exercise protocol in which they were randomly assigned. Some participants may have heard that NH exercises were effective and could prevent them from sustaining hamstring injuries, thus leading to disappointment if not selected for the NH group. This may have changed motivation levels among control group members. On the other hand, there may have been participants who did not want to perform the NH exercises, and these individuals may not have been motivated to complete the NH protocol.

On a final note, the Hecc/Qcon ratio did not change significantly between or within groups during the duration of the study. The H/Q ratios above 0.6 are frequently cited as a goal to prevent hamstring injuries.<sup>29</sup> The mean Hecc/Qcon ratios for our participants ranged from 0.75 to 0.89 (see Table 5), which were well above the 0.6 goal and the average reported mean of 0.63 + 0.07.<sup>29</sup> However, H/Q averages in the 0.6 range may not account for joint angle or speed in the analysis.<sup>29</sup> As the knee moves to a more extended position (similar to how our participants were tested), Hecc/Qcon values have been reported above 1.00.<sup>29</sup> Since our participants had less muscle imbalance in the hamstrings and quadriceps to begin with, this could be a reason for the lack of changes in hamstring strength that we originally hypothesized would occur.

### Limitations

There were several limitations to this study. First, of the 119 participants who volunteered and completed the injury data section of the study, only 27 were willing and able to complete the testing protocol, which limits the ability to generalize the findings. A second limitation was the use of self-report data as the basis to analyze injury rate. Although injury reports were collected every two weeks, players may or may not have remembered to complete the injury sheets in a timely fashion.

The lack of blinding of the participants may have also contributed to our findings. As mentioned previously, some participants may have wanted to be in a different group

than they were randomly assigned to, leading to decreased motivation among these participants at both the practice sessions and during the testing protocol. In addition, the testing protocol always followed the same sequence, which may have led to a test order effect. Finally, a number of participants developed muscle soreness following the initial evaluation. Due to fear of missing upcoming playing time, or pressure from the coaches, participants may have given less than maximum effort on subsequent re-evaluations, and even possibly during training sessions.

Future studies could examine injury rates over several years to see if the number of injuries remains lower among NH exercise participants. In addition, studies with a larger sample size are warranted. Participation rates should be available for both control and intervention groups to see if other variances contribute to the results. Another suggestion is to have participants perform strengthening exercises that incorporate both concentric and eccentric contractions and to perform the exercises at different speeds and different joint angles. Changes in speed and joint angle are a functional component of any running or sprinting activity. Finally, repeating this study with recreational soccer players, with athletes in other sports that involve similar muscle actions, and with different age groups, could also contribute to the body of literature on hamstring strengthening and injury prevention.

## CONCLUSION

No significant changes in strength or sprinting speed were found between a control group (using traditional training) and an intervention group (using NH exercises), among semi-professional soccer players. There were several within group changes including a significant decline in speed among the NH group during the first 10 m of a 40-m sprint test. In addition, both the control and NH groups had a significant decline in the eccentric total work of the hamstring musculature. These results may be reflective of the training and testing protocols. Finally, there was a significant difference in the number of injuries in the intervention group ( $n = 0$ ) compared to the control group ( $n = 6$ ). However, we are not sure of why fewer injuries occurred in the intervention group since the remaining variables in the study were not statistically different between groups. The incorporation of the NH exercise protocol into regular practice sessions, therefore, may or may not

be effective in reducing the number of acute hamstring injuries in soccer players. Based on the results of this study, further research with a more rigorous research design is recommended.

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# Identification and Management of Acetabular Labral Tears: A Resident's Case Study

Stephanie Raymond, PT, DPT<sup>1</sup>  
Mary Ann Wilmarth, PT, DPT<sup>2</sup>

<sup>1</sup>Rascal Creek Physical Therapy, Merced, CA

<sup>2</sup>Doctor of PT Program, College of Professional Studies, Bouve College of Health Sciences Northeastern University, Boston, MA

## ABSTRACT

**Background and Purpose:** Acetabular labral tears are now treatable impairments with the advancements in arthroscopic techniques and equipment. The acetabular labrum serves to increase the surface area of the hip joint by distributing loads more equally as well as contributing to the stability of the hip joint by maintaining the negative intraarticular pressure of the joint. An alteration of this system as a result of a labral tear can lead to associated chondral changes, pain, and decreased tolerance to functional activities. **Methods:** This is a retrospective resident case report of a patient with an acetabular labral tear. **Case Description:** CR is a 50-year-old female who injured her hip in a twist/fall resulting in a hyperextended and externally rotated position of the lower extremity. She was originally diagnosed with a hip strain despite displaying signs and symptoms of a labral injury and continued pain and limitations with functional activities. Fifteen months later, she was diagnosed with a labral tear, and following hip arthroscopy, had diminished pain reports and returned to prior work tasks and active lifestyle. **Clinical Relevance/Conclusion:** The diagnosis of an acetabular labral tear is complicated secondary to unspecific and insensitive diagnostic and clinical tests. Clinical suspicion of an acetabular labral tear should be raised when presented with patients with predominant complaints of groin pain and clicking with or without a specific precipitating onset regardless of negative diagnostic imaging to facilitate efficient and effective medical management while decreasing concomitant chondral changes.

**Key Words:** differential diagnosis, groin pain, hip pain

## BACKGROUND

Acetabular labral lesions are not uncommon.<sup>1</sup> The prevalence of acetabular labral tears in patients who report hip or groin pain has been reported to be 22% to 66%.<sup>2-4</sup> Acetabular labral tears are the most common

intraarticular hip joint disorder.<sup>5,6</sup> Recent advances in hip arthroscopy have led to improvements in the detection, diagnosis, and management of hip labral lesions.<sup>5,7-9</sup> However, acetabular labral lesions are often misdiagnosed initially leading to a delay in treatment and progressive degeneration of the hip.<sup>3,7,10-12</sup> With Vision 2020 on the horizon and the role of the physical therapist as the practitioner of choice with direct access, it is imperative for the practicing physical therapist to be aware of the signs and symptoms of an acetabular labral tear to effectively manage the care of patients without delay or risk for further impairments.<sup>4,13</sup>

The acetabular labrum of the hip is a fibrocartilaginuous structure that is innervated, primarily in the anterior and superior regions, with free nerve endings enabling nociception and proprioception. It is attached to the bony rim of the acetabulum.<sup>3,5,6,11,12,14</sup> It is wider and thinner anteriorly and thicker posteriorly.<sup>3,5,12</sup> Vascularity of the labrum is somewhat controversial with some authors reporting the outer one-third being vascularized by the obturator, superior gluteal, and inferior gluteal arteries, while other authors report no areas of vascularization.<sup>3,12</sup> The acetabular labrum has many roles in the hip joint. It deepens the socket by 21%, or 5 mm, and increases the surface area of the acetabulum by 28%, thereby distributing loads and decreasing contact stress.<sup>3,6</sup> Without the labrum, contact stress can increase by as much as 92%.<sup>3</sup> The labrum also provides a seal for the hip joint, maintaining the synovial fluid and negative articular pressure, thus stabilizing the hip joint.<sup>3,6,8,12-14</sup> A tear in the acetabular labrum may compromise the seal, affecting and predisposing an individual to higher joint stresses, increased contact loads, and joint deterioration.<sup>8,12</sup>

Acetabular labral tears have been classified into 4 types: radial flap, radial fibrillated, abnormally mobile, and longitudinal peripheral.<sup>5,8</sup> Radial flap tears are the most prevalent and are defined as having a disruption of the free margin of the labrum.

Radial fibrillated includes fraying of the free margin of the labrum and is often associated with degenerative joint disease. Abnormally mobile tears result from a detached labrum. Longitudinal peripheral tears are the least common and are defined as longitudinal tears in the peripheral aspect of the labrum.

Labral tears most commonly occur in the anterior and anterosuperior aspect of the labrum according to studies conducted in the United States and European countries, while posterior labral tears are more common in studies performed in Japan.<sup>2,3,5,6,8,15,16</sup> This is believed to be due to differing lifestyles and the propensity of squatting in the Asian countries, which may expose the hip to increased posterior forces. The prevalence of anterior labral tears in the Western cultures is supported by the fact that the anterior labrum is thinner, thus mechanically weaker than the thicker posterior labrum.<sup>3,12</sup> The anterior labrum has a relatively poor vascular supply, making it susceptible to wear and degeneration without the innate ability to repair itself.<sup>3,17,18</sup> The anterior labrum is also subjected to greater forces or stressors compared to other regions of the acetabular labrum.<sup>12</sup> The anterior hip joint is primarily supported by the anterior labrum, the joint capsule, and ligamentous supports due to the anterior orientation of the acetabulum and femoral head.<sup>3,12,15,18</sup> Anterior directed forces occur once the hip is extended approximately 5°, thus the last 20% to 30% of stance phase during the gait cycle.<sup>12</sup> The most common lesion to occur in the anterior labrum is what McCarthy and colleagues termed the watershed lesion; this is the typical finding after a minor trauma in which there is an anterior labral tear present concurrently with anterior acetabular chondral injury that can destabilize the adjacent acetabular cartilage.<sup>3,6,17</sup>

Acetabular labral lesions are commonly the primary dysfunction that can lead to secondary or concomitant hip pathologies.<sup>2,3,6-8,10,15,17</sup> Labral lesions have been associated with hip osteoarthritis.<sup>6,14,15</sup> It has been found that the relative risk of signifi-

cant chondral erosion doubles with labral lesions.<sup>3,14</sup> Seventy-three percent of patients with fraying or tearing of the acetabular labrum had chondral damage, and chondral damage is noted to be more pronounced in patients with labral lesions.<sup>3,8,17</sup> Isolated labral tears are most commonly found in younger populations, whereas a labral tear in conjunction with chondral lesions is more commonly found in older populations, indicating that the labral tear may precede and possibly predispose one to articular changes.<sup>3,5,8,19</sup>

Acetabular labral tears can be associated with acute traumatic onsets, but in the majority of cases, the onset of symptoms occurred in an insidious fashion with progressive worsening of symptoms over time.<sup>8,12,15,20</sup> The most common mechanism of injury is described as an external rotation force in a hyperextended position for traumatic onsets and repeated pivoting and twisting for repetitive microtrauma onsets.<sup>5,8</sup> Causes of acetabular labral tears may include trauma, femoral acetabular impingement, capsular laxity/joint hypermobility, hip dysplasia, and joint degeneration.<sup>2,3,12,14,21</sup> Labral tears are more prevalent in females compared to males.<sup>3,12</sup>

Acetabular labral tears are easily overlooked because physical findings are often vague and imaging studies are often non-specific (Table).<sup>10,11</sup> These factors can lead to a misdiagnosis and ineffective care by the physician and treating therapist.<sup>3,4,6,7</sup> Treatment recommendations prior to establishing the labral tear diagnosis include: nonsteroidal antiinflammatory medications, physical therapy, narcotic pain relievers, and surgical intervention at a site other than the hip joint.<sup>10</sup> Common diagnoses that are offered by health care providers instead of identifying labral lesions include: soft tissue injuries, osteoarthritis, low back pain, psoas or other tendonitis, inguinal hernia, rheumatoid arthritis, pelvic pain, and bursitis.<sup>3,5,10</sup> Red flags must also be considered during the history including: fever, night sweats, malaise, weight loss, intravenous drug use, cancer history, or known immunocompromised state that can indicate systemic problems and the need to refer for further diagnostic testing.<sup>7,8</sup> The mean time from the onset of symptoms to the diagnosis of a labral tear is 21 to 25 months.<sup>3,10,11,12,14,22</sup> An average of 3.3 health care providers see the patient prior to the definitive diagnosis.<sup>3,10,14</sup>

A thorough history and physical are important in determining hip pathology and specifically labral involvement. The

**Table. Sensitivity and Specificity of Clinical and Diagnostic Imaging Tests for Acetabular Labral Tears**

CLINICAL TEST	SENSITIVITY	SPECIFICITY	REFERENCE
MRI	25-30%	67-100%	6,8,9,12,14
MRA	71-92%	44-100%	6,8,9,10,12,14,16
Clicking/Locking	100%	85%	4,8,12
Anterior Hip Impingement Test	59-75%	43-100%	4,13,23
Groin Pain	75%	43%	4,8

quality and description of pain associated with a labral tear are important steps in establishing a diagnosis. The most common site of pain is the groin.<sup>2,3,5,8,10,12,15,20</sup> Groin pain has a sensitivity of 75% and a specificity of 43% in detecting acetabular labral lesions.<sup>4,8</sup> Buttock and lateral hip pain can also be present, but less frequently.<sup>3,8,10,12,20</sup> Anterior hip pain is more commonly consistent with anterior labral tears, while buttock pain is more often associated with posterior labral tears.<sup>3,12</sup> The quality and characteristics of the pain are commonly sharp and dull in the groin, which is activity related in the majority of cases and fails to improve with conservative rest.<sup>2,5,10,15,21</sup> In addition, pain at night and pain with walking and/or pivoting are common complaints.<sup>3,5,7,10</sup>

Mechanical symptoms, including clicking and locking, may also be present with acetabular labral tears.<sup>3,5,7,8,11,12,17,20</sup> Of these, clicking is the most consistent clinical and diagnostic symptom with a 100% sensitivity and 85% specificity.<sup>4,8,12</sup> The most consistent physical exam finding in patients with acetabular labral tears is a positive anterior hip impingement test.<sup>3,4,16,17</sup> A positive flexion adduction internal rotation (FADIR) test results in the elicitation of pain in the anterolateral hip or groin.<sup>3</sup> This test has a 59% to 75% sensitivity and a 43% to 100% specificity in detecting labral lesions.<sup>4,13,23</sup> A positive flexion abduction external rotation (FABER) test is useful for identifying intraarticular pathology but is not found to be a predictor of specific intraarticular hip pathology.<sup>8,12</sup>

Diagnostic imaging is not a reliable tool in establishing the diagnosis of a labral lesion. Standard radiographs are typically normal.<sup>3,6,8,14,16,17</sup> The use of magnetic resonance arthrography (MRA) to evaluate labral tears has a varied sensitivity of 71% to 92% and specificity of 44% to 100%.<sup>1,2,6,8-10,12,14,16</sup> However, MRA is seen as a useful tool to rule out other conditions such as: osteonecrosis, stress fracture, and neoplasms.<sup>10</sup> Stan-

dard magnetic resonance imaging (MRI) is less useful in detecting labral lesions compared to MRA.<sup>6</sup> An MRI has a specificity of 67% to 100% and a sensitivity range of 25% to 30%.<sup>6,8,9,12,14</sup> A diagnostic intraarticular injection can be used to determine intraarticular pathology from extraarticular pain.<sup>3,6,8,16,18</sup> Relief of pain with the injections confirms an intraarticular source of pain, while the lack of pain relief suggests an extraarticular source.<sup>7</sup> Often the diagnostic injection is performed when the MRA is done as there is a clear path established into the hip joint space. Clinical measures are not very reliable in the diagnosis of labrum tears.<sup>4,6</sup> Therefore, the differential diagnosis of labral lesions should be considered for active patients who predominately complain of groin pain that is exacerbated with activity and impact even though there may be little radiographic evidence of hip pathology.<sup>4,10,17</sup>

Hip arthroscopy is the gold standard for diagnosing and treating acetabular labral tears.<sup>3,6,15,18</sup> Hip arthroscopy can be performed in the supine or lateral position.<sup>2,5,6,16,24,25</sup> Hip arthroscopy was first discussed in the literature in 1931 when Burman reported that it was impossible to insert a needle between the head of the femur and the acetabulum.<sup>14,15,16,24</sup> Since then, not only has hip arthroscopy been validated, but the advancements in arthroscopic techniques and instruments have led to increased success rates while treating a multitude of structural and mechanical impairments with a relatively low complication rate.<sup>5,15,16,19,21,24,25</sup> Hip arthroscopy is contraindicated in patients with hip fusions, advanced arthritis, open wounds or cellulitis, obesity, stress fractures in the femoral neck, severe dysplasia, and stable avascular necrosis.<sup>21</sup>

Hip arthroscopy can include acetabular labrum debridement or repair.<sup>2,12</sup> The goal of arthroscopic treatment of a torn labrum is to relieve pain and decrease the predisposition of further mechanical stressors to the

hip joint, preserving the biologic joint by eliminating the unstable flap tear of the acetabular labrum.<sup>3,19,21</sup> The reported complication rate for hip arthroscopy ranges from 0.5% to 25%.<sup>3,12,14,15,16,17,24</sup> Complications that may occur include: neuropraxia of the lateral femoral cutaneous nerve or pudendal nerve, damage to the articular cartilage, heterotrophic bone formation, and deep venous thrombosis (DVT).<sup>3,24</sup> Arthritis and chondromalacia, based on radiographic features of subchondral sclerosis or erosions, joint space narrowing and osteophyte formation, are indicators of poor outcomes with hip arthroscopy.<sup>3,11,12,14,19,22,25</sup> Success with hip arthroscopy to treat acetabular labral tears was most noted in younger patients, especially in the second, third, and fourth decades as well as those with symptoms for less than 18 months.<sup>22,25</sup> At least 67% and as high as 91% of patients following hip arthroscopy will be satisfied with their outcome at 3.5 years.<sup>3,6,12,14,16,17</sup>

## DIAGNOSIS

CR is a 50-year-old office manager at a physician's office. She was changing bed linens on an examining table when she got tangled and fell to the right causing the left leg to hyperextend and externally rotate. She was seen by the physician on duty and diagnosed with a left hip strain, knee strain, and shoulder strain. She was prescribed Ibuprofen 800 mg every 8 hours, Flexeril 10 mg every 6 hours, and Vicodin 500 mg every 6 hours. She was encouraged to wear flat shoes and issued a knee brace and ordered to return to work without restrictions.

She returned to the physician 6 weeks later (8 weeks postinjury) with continued pain in the left trochanteric region. She was told to continue with the Ibuprofen 800 mg every 8 hours and was given a sample of Skelaxin 800 mg. She continued to work without restrictions.

One month later (12 weeks postinjury); she was reevaluated by the same occupational medical physician. She continued to report left hip pain and stiffness. Left hip radiographs were performed and were negative for fractures. The patient was referred to physical therapy with a diagnosis of hip/groin strain for 6 sessions.

Physical therapy was initiated approximately 4 months following the injury. At that time, she rated her pain range from a 4/10 to an 8/10. She reported a deep ache into the hip with occasional locking. She reported increased pain with standing from

low surfaces or after sitting for prolonged periods and getting in and out of bed. The physical therapist who performed the evaluation did not conduct special tests for the hip or lumbar spine during the initial evaluation or subsequent treatment sessions. CR was found to have the following measurements initially:

	PROM	MMT Grade
Hip Flexion	60°	4-/5
Hip Abduction	28°	4/5
Hip External Rotation	30°	4-/5
Hip Internal Rotation	40°	4-/5
Knee Extension	0°	4/5
Knee Flexion	130°	4+/5

The treating physical therapist noted muscle spasms into the left quadriceps, hamstring, and iliotibial band. The physical therapy plan was to decrease the patient's complaint of pain while improving the flexibility of the left hip. Physical therapy treatments consisted of lower extremity stretching, strengthening, recumbent bike riding, and electrical stimulation with cold modalities. She was treated for a total of 6 sessions, with the therapist discharging her back to the physician secondary to continued pain at 6/10-8/10. The therapist noted the following improvements in hip range of motion and strength upon discharge:

	PROM	MMT Grade
Hip Flexion	70°	5/5
Hip Abduction	35°	5-/5
Knee Extension	0°	5-/5
Knee Flexion	130°	5-/5

CR returned to the occupational medical physician for follow up 5 months postinjury and two months since the last evaluation. The physician noted 'unchanged' complaints of left trochanteric pain and ordered an MRI of the left hip.

The left hip MRI was performed with noted "nonspecific inflammatory changes in association with the greater trochanteric bursa and the adjacent tendinous attachment." The scan also revealed mild osteoarthritic changes.

The following month (6 months postinjury), she continued to report pain when standing after prolonged sitting and with palpation at the trochanteric region. The occupational medical physician then referred her to an orthopaedic surgeon.

CR saw the orthopaedic surgeon the following month (7 months postinjury). He noted pain at worst was an 8/10. He also noted she had increased pain when rising from a seated position. He reported she had no tenderness to palpation at left groin and moderate tenderness to palpation at the greater trochanter. He diagnosed CR with left trochanteric bursitis and performed an injection of Lidocaine and Kenalog into the lateral left hip.

CR returned to the occupational medical physician the following month (8 months postinjury) for a re-evaluation. It was noted that following the injection performed by the orthopaedic surgeon, she had improved range of motion and decreased pain for one to two weeks with symptoms returning to prior levels. She was referred back to the orthopaedic surgeon.

CR returned to the orthopaedic surgeon the next month (9 months postinjury) and received another injection of Lidocaine and Kenalog into the left greater trochanter. He also ordered an arthrogram of the left hip. The MRA was performed and revealed a "focal separation of the anterior superior labral attachment of the left hip."

CR returned to the occupational medical provider 11 months postinjury with noted decreased abduction range of motion and tenderness in the left hip region. She was prescribed Motrin 600 mg as needed, Toradol 60 mg, Ultram 50 mg 4 times a day, and Flexeril 10 mg every 6 hours. She was referred for a consult to an orthopaedic surgeon out of the area that performs hip arthroscopy procedures.

CR was evaluated by the second orthopaedic surgeon (4th health care professional) 14 months postinjury. It was noted that her pain was a 7-8/10 with increased pain when rising from a seated position and with increased hip flexion. The pain was described as aching and sharp. She was found to have a positive anterior hip impingement test (the first time this test was recorded in her medical records). An intraarticular injection was performed.

CR returned to the same orthopaedic surgeon two weeks later and it was reported that the intraarticular injection completely relieved her pain for 5 days, but since then her pain returned to prior levels. The following measurements/tests were noted:

	PROM	MMT Grade	Negative Positive
Hip Flexion	140°	5/5	
Hip Abduction	50°	5/5	
Hip Internal Rotation	30°	5/5	
Hip External Rotation	50°	5/5	
Impingement			Positive
FABER			Negative
ITB Tenderness			Negative
Ober's Test			Negative

CR underwent left hip arthroscopic surgery 15 months postinjury. The operation included debridement of an acetabular labral tear, osteochondroplasty of an acetabular pincer lesion, and synovectomy.

According to the *Guide to Physical Therapist Practice*, the movement impairments following hip arthroscopy are within Pattern I including impaired joint mobility, motor function, muscle performance, and range of motion (ROM) associated with bony or soft tissue surgery. The prognosis, according to the *Guide*, is that over the course of one to 8 months, the patient will demonstrate “optimal joint mobility, motor function, muscle performance, and ROM and the highest level of functioning in home, work, community, and leisure environments.”

CR returned to physical therapy for postsurgical ROM, strengthening, and pain management 13 days following hip arthroscopy including debridement of an acetabular labral tear, osteochondroplasty of an acetabular pincer lesion, and synovectomy. At the initial evaluation, CR rated her pain range 3/10 at the best to a 6/10 at the worst. She ambulated with bilateral axillary crutches with approximately 25% weightbearing (patient was permitted 50% weightbearing for two weeks postsurgery and then progressed to full weightbearing per MD orders). She was not braced and had no restrictions, per her surgeon, placed on ROM as she had a debridement rather than a repair of the acetabular labrum. She reported being independent with activities of daily living and able to drive independently as surgery was performed on her left lower extremity. She reported being able to sleep undisturbed by pain. She reported increased pain/difficulty with ambulation/increased weightbearing and lying on her left side. Initial measurements/tests (13 days postsurgery) were as follows:

	PROM	MMT Grade	Findings
Pain			Range 3/10-6/10
Ambulation			Grossly 25% weightbearing with bilateral axillary crutches with decreased hip extension.
Hip Flexion	Knee flexed: 90° Knee extended: 45°	3+/5	
Hip Extension	5°	3/5	
Hip Abduction	20°	3+/5	
Hip Adduction	NT	4/5	
Hip Internal Rotation	20°	3+/5	
Hip External Rotation	35°	3+/5	

Initial visits were focused on progressive hip ROM, gait mechanics, and pain management. Subsequent sessions emphasized strengthening, ROM, dynamic stability, and pain management. CR was released to return to work 4 weeks postsurgery. At 3 months postsurgery and 18 months post-original injury, she had the following measurements/tests:

	PROM	MMT Grade	Findings
Pain			Range 0/10-3/10
Ambulation			No assistive device or noted compensation
Hip Flexion	140°	5/5	
Hip Extension	15°	5/5	
Hip Abduction	50°	5/5	
Hip Internal Rotation	40°	5/5	
Hip External Rotation	50°	5/5	
Impingement			Negative

## DISCUSSION

According to the *Guide to Physical Therapist Practice*, the role of the physical therapist is to:

- diagnose and manage movement dysfunction and enhance physical and functional abilities;
- restore, maintain, and promote not only optimal physical function, but optimal wellness and fitness and optimal quality of life as it relates to movement and health; and
- prevent the onset, symptoms, and progression of impairments, func-

tional limitations, and disabilities that may result from disease, disorders, conditions, or injuries.

This resident case report illustrates this concept that the physical therapist's role in the health care system is an important one in identifying movement impairments and preventing concomitant impairments and pathologies from progressing due to a delay in care. Knowing the clinical signs and symptoms of an acetabular labral tear and being able to effectively communicate with other health care providers can expedite the differential diagnosis and management of a patient with an acetabular labral tear, as is expected and outlined in the APTA's Vision 2020.

CR's case is typical for an acetabular labral injury, diagnosis, and treatment. Her mechanism of injury was a specific event where her leg was hyperextended and externally rotated. This is the most common position for injury with traumatic events.<sup>5,8</sup> She is female, and labral tears are more common in females.<sup>3,12</sup> CR was originally diagnosed with a hip strain, which is one of the more common diagnoses offered by health care providers instead of identifying a labral lesion.<sup>3,5,10</sup> She was initially treated with physical therapy, nonsteroidal anti-inflammatory medications, and cortisone injections, again common initial treatment recommendations before a labral tear diagnosis is established. She was seen by a total of 4 health care professionals (one Occupational Medicine Physician, one Physical Therapist, and two Orthopaedic Surgeons) before her ultimate hip arthroscopy. This is typical, as the average person is seen by 3.3 health care providers prior to the definitive diagnosis.<sup>3,10,14</sup> The time it took CR to have hip arthroscopy from her original injury date

was approximately 15 months, faster than the average of 21 to 25 months.<sup>3,10,11,12,14,22</sup> Once hip arthroscopy was performed, CR had a labral debridement of the anterior superior labrum, osteochondroplasty of an acetabular pincer lesion, and synovectomy illustrating the prevalence of concomitant hip pathologies.<sup>2,3,7,8,10,15,17</sup>

CR displayed positive findings that should have led the health care professionals to include an acetabular labral lesion into the differential diagnosis. For example, while not all labral injuries are associated with a specific event, those that are common with hyperextension and externally rotated positions as she reported.<sup>5,8</sup> Secondly, she reported feeling as if her hip was locking or catching (at 4-month assessment). This can be a sign of labral involvement, much like that of the meniscus in the knee.<sup>3,5,7,8,11,12,17,20</sup> She also was found to have a positive impingement test (14-month assessment)—a test with a 43% to 100% specificity rating.<sup>4,13,24</sup> The noted relief from the intraarticular injection (14th month assessment) also confirms an intraarticular source of pain.<sup>7</sup> The radiographs (12-week assessment) of CR's hip were negative, which is common with labral lesions.<sup>3,6,8,14,16,17</sup> The MRI (5 month assessment) showed "non-specific inflammatory changes in association with the greater trochanteric bursa and the adjacent tendinous attachment." The scan also revealed mild osteoarthritic changes. An MRI has a specificity of 67% to 100% and a sensitivity of 25% to 30%.<sup>6,8,9,12,14</sup> While it did not identify a specific labral lesion, the MRI did note inflammatory processes secondary to concomitant impairments (trochanteric bursitis). CR had a positive MRA (9 months postinjury) that led to the ultimate referral to the orthopaedic surgeon and resultant hip arthroscopy and definitive diagnosis of an acetabular labral tear. The timeline from injury to surgery/diagnosis was not extraordinary (15 months compared to an mean of 21-25 months) in relation to acetabular labral lesions.<sup>3,10,11,12,14,22</sup> However, this extended time period led to continued impairments: prolonged period of pain, increased financial costs of tests, increased medical visits, and additional medications to manage symptoms. In addition, the emotional tolls on the patient led to frustration and depression.

Physical therapists can play a key role in the early detection of acetabular labral tears by being aware of the clinical signs and symptoms and performing thorough evaluations and clinical assessments. Deduc-

tive reasoning during the initial evaluation's subjective and objective components can lead to improved effectiveness with physical therapy interventions and communication with other health care providers enabling a more efficient differential diagnosis to be established as well as diminish concomitant structural changes from taking place. While the differential diagnosis of acetabular labral tears is not easy, being cognizant of special tests such as the anterior hip impingement test, first recorded in this patient's medical records 14 months postinjury, and reported symptoms of clicking/locking and groin pain could have facilitated the diagnosis of this movement impairment and significantly reduced the rehab time if performed and noted earlier in the course of treatment/evaluation.

Acetabular labral tears are a treatable condition due to advancements in arthroscopic techniques and instruments.<sup>5,15,16,19,21,24,25</sup> Labral tears are the most common intraarticular hip disorder<sup>5,6</sup> yet are often misdiagnosed and mistreated by the medical field.<sup>3,7,10,11,12</sup> Acetabular labral tears, if left untreated, can predispose one to osteoarthritis and chondral lesions<sup>2,3,6,7,8,10,14,15,17</sup> ultimately leading to more invasive and time consuming rehabilitation in that of a total hip arthroplasty, not to mention, continued pain and biomechanical compensatory postures and movements. Clinical and diagnostic testing are neither specific nor sensitive enough to rule in or out a differential diagnosis definitively.<sup>4,6,10,11</sup> Therefore, the practicing physical therapist must be aware of the signs and symptoms of an acetabular labral tear. The physical therapy examination should include a thorough subjective history including aggravating and easing factors, mechanism of injury (if available), symptom description, and prior interventions and treatments. The clinical presentation of a patient with an acetabular labral tear can vary due to the location and extent of labral involvement and concomitant structural changes.<sup>7,10,11</sup> However, the acetabular labral tear diagnosis should be considered when patients with predominant complaints of groin and/or hip pain that is exacerbated with activity and impact, clicking in the hip or groin, and a positive anterior hip impingement test is noted, with or without a history of trauma are presented to the practicing physical therapist.<sup>4,10,17</sup>

This resident case report demonstrated the importance of early recognition of acetabular labral tears in providing timely and effective patient care and preventing pro-

gression of concomitant chondral changes. Further research is warranted to establish more definitive clinical tests to rule in or out acetabular labral tears facilitating the differential diagnosis of this relatively common movement impairment in order to optimize appropriate medical management, functional recovery, and quality of life.

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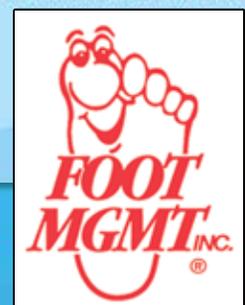
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# Improving Orthopaedic Postoperative Pathways of Care Using a Rehabilitation Discharge Planning Index

Gina Meyer, PT, DPT<sup>1</sup>  
Wayne M. Goldstein, MD<sup>2</sup>

<sup>1</sup>Apple Home Health Care, Bannockburn, IL

<sup>2</sup>Illinois Bone and Joint Institute, Morton Grove, IL

## ABSTRACT

**Purpose of the Study:** The pathway of care following orthopaedic surgery for elderly adults can greatly impact the outcome of physical therapy intervention. Unnecessary placement of elderly adults in an extended care facility following surgery results in suboptimal outcomes and greater risk of infection and other complications, in addition to increased costs. With increased pressure on case managers to decrease length of stay and the need to make decisions regarding discharge early in the postoperative recovery when the eventual patient outcome may still be unclear, a more objective way to assess ability to be discharged home for rehabilitation is needed. The purpose of this study was to develop and evaluate a pre-discharge clinical questionnaire, the Meyer Rehabilitation Discharge Planning Index (MRDP), to establish a more objective and consistent pathway of care following elective orthopaedic surgery for older adults in order to improve the pathway of care. **Primary Practice Setting:** Orthopaedic Acute Inpatient Hospital Setting. **Methodology and Sample:** Four Medicare patients undergoing primary elective total hip arthroplasty or total hip arthroplasty completed the study. Case managers completed the MRDP (an 8-dimensional weighted index), which indicated recommended discharge location. Each participant completed a preoperative and postoperative Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) and average differences were calculated to evaluate whether the questionnaire effectively indicates an appropriate discharge location for rehabilitation based on the outcome after rehabilitation is complete following inpatient discharge. **Results:** The MRDP Index effectively indicated which patients were appropriate for discharge directly home, as all patients sent home demonstrated minimal clinically important differences for improvement (12% change) for WOMAC global and subscale scores. **Implications:** Use of the MRDP Index to assist in planning the appropriate location

for rehabilitation following discharge from acute care for elderly adults who have had elective orthopaedic surgery may help in identifying which patients may be able to be discharged directly home, avoiding unnecessary placement in extended care facilities. As the MRDP poses no risk to patients, it may be used immediately to potentially improve outcomes and reduce costs. More research is advocated to evaluate this tool.

**Key Words:** home health, physical therapy, total joint replacement

## INTRODUCTION

The pathway of care following orthopaedic surgery for elderly adults can greatly impact the outcome of physical therapy intervention. Unnecessary placement of elderly adults in an extended care facility following surgery results in suboptimal outcomes and greater risk of infection and other complications. Decisions regarding discharge location have become more critical given the increased pressure to decrease length of inpatient stay and the need to make decisions regarding discharge early in the postoperative recovery, when the eventual patient outcome may still be unclear. Direct discharge from an inpatient setting to home health care (versus discharge to an extended care facility) can both reduce costs and improve outcomes for patients who have had primary total joint replacement.<sup>1,2</sup> A cost-effectiveness gain of up to 40% has been established when rehabilitation in an extended care facility is avoided.<sup>3</sup>

Currently, there is not an established and consistent pathway of care to ensure that patients who are able to be discharged home for rehabilitation end up there.<sup>4</sup> Additionally, a clinical index to objectively determine who can be discharged home with home health care for physical therapy interventions does not exist.<sup>5</sup> A more objective way to assess potential to be discharged home for rehabilitation is needed to improve clinical pathways, augment outcomes, and control costs.<sup>6</sup>

A standardized index, incorporating established parameters that indicate likely success with discharge directly home for rehabilitation, may help avoid unnecessary placement in extended care facilities. This study could significantly improve patient rehabilitation outcomes and help reduce costs.

## METHODS

Using recent literature,<sup>7-12</sup> a standardized questionnaire, the Meyer Rehabilitation Discharge Planning Index (MRDP), was designed to generate an objective recommendation for discharge location for rehabilitation of Medicare patients following acute care after elective primary total joint replacement (home, with home health services, versus to an extended care facility). This tool (Figure 1) includes 8 weighted parameters (caregiver in the home, unilateral or bilateral replacement, age, diabetes, other co-morbidities, body mass index, ambulation distance, whether the patient required a blood transfusion) to determine patients likelihood of success in a home health care setting versus an extended care facility.

Three results categories were established based on scores in the MRDP Index: (1) the patient is able to receive rehabilitation in the home with home health care; (2) the patient may be able to receive rehabilitation in the home with home health care; and (3) the patient's discharge planner may discuss rehabilitation in the home with home health care or in an extended care facility (Figure 2).

Medicare patients who received elective primary total joint replacement (knee or hip) were eligible to participate in the study. The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), a 5-point Likert-type index, was used to assess pain, stiffness, and physical function in patients with hip and/or knee osteoarthritis.

Participants signed an informed consent agreement and patient rights were protected. Participants completed the WOMAC at their preoperative clinic visit. Surgery and care proceeded per standard practice. The

This tool is to be used to assist in choosing the location of rehabilitation for patients who had a primary total joint replacement, following hospital discharge. Place the numerical score for each item in the box on the right, total the score in the total box and refer to Figure 2 at the bottom for recommended discharge location. **\*\*Note: you will need the patient's height and weight to complete this form.**

<b>MRDP: Postprimary Total Joint Replacement Rehabilitation Questionnaire</b>	
If the patient will not have a caregiver in the home with you after discharge from acute care enter <b>60</b> in the box to the right.	
If the patient had a bilateral total knee replacement enter <b>10</b> in the box to the right.	
If the patient is over 85 years old, enter <b>8</b> in the box to the right.	
If the patient has Diabetes, enter <b>4</b> in the box to the right.	
If the patient has other co-morbidities, enter <b>2</b> in the box to the right for each co-morbidity, for a maximum of <b>6</b> .  <i>For example</i> , if the patient has high blood pressure and emphysema, enter <b>4</b> . If the patient has high blood pressure, emphysema, heart disease, and high cholesterol, enter <b>6</b> , as this is the maximum score for this item, even though the patient has four co-morbidities. Do not enter any additional score for Diabetes in this section.	
If the patient's BMI is greater than 30, enter <b>5</b> in the box to the right.  To calculate BMI, multiply patient's height in inches by patient's height in inches. Divide the patient's weight by that number. Multiply by 703.  <i>For example</i> , if a patient's height is 64 inches and weight is 140 pounds, to get BMI:  $14/64 \times 64 = .04$ $.04 \times 703 = 28.12$ $28.12 \text{ is this patient's BMI}$	
If the patient cannot walk 10 feet or greater independently, with or without an assistive device, enter <b>4</b> in the box to the right.	
If the patient required a blood transfusion during surgery, enter <b>3</b> in the box to the right.	
<b>TOTAL: Add the scores from the boxes above and enter total in the box to the right.</b>	
Refer to the chart below for the discharge location that corresponds to the patient's score.	

**Figure 1. Meyer Rehabilitation Discharge Planning Index: Postprimary Total Joint Replacement Questionnaire.**

<b>MRDP: Postprimary Total Joint Replacement Rehabilitation Tool: Scoring</b>	
<b>If the patient's score is:</b>	<b>Rehabilitation Location:</b>
<b>25</b> or less	The patient is able to receive rehabilitation: <b>IN THE HOME WITH HOME HEALTH CARE</b>
Between <b>25</b> and <b>75</b>	The patient may be able to receive rehabilitation: <b>IN THE HOME WITH HOME HEALTH CARE</b>
<b>75</b> or greater	The patient's discharge planner may discuss rehabilitation: <b>IN THE HOME WITH HOME HEALTH CARE OR IN AN EXTENDED CARE FACILITY</b>

**Figure 2. Scoring of the Meyer Rehabilitation Discharge Planning Index.**

MRDP was completed by case managers for each participant. Discharge location was still determined by each participant's case manager as per standard practice, but the results of the MRDP and the location for post-inpatient rehabilitation were recorded. Participant care continued to proceed per standard practice. Upon completion of all rehabilitation postdischarge from acute care, the participant completed a postoperative WOMAC.

The WOMAC results were calculated for each patient using standard scoring procedures (scores are summed for items in each subscale, with possible ranges as follows: pain = 0-20, stiffness = 0-8, physical function = 0-68). Changes in subscale and global scores from the preoperative WOMAC and the postoperative WOMAC were calculated. The previously established thresholds for global and subscale scores of effects larger than 12% of baseline score were used.<sup>13,14</sup>

## RESULTS

All patients who completed the study were coincidentally discharged for rehabilitation to the location recommended by the MRDP and all patients showed improvements in values greater than the minimally clinically important difference of 12% needed for improvement on the WOMAC.

The WOMAC global and subscale scores following rehabilitation improved (as compared to baseline scores preoperatively) for both the patients who were discharged directly home for rehabilitation and the patients who were discharged to an extended care facility for rehabilitation. Changes in scores either met or exceeded the standard of 12% improvement from the baseline score, indicating all improvements were at or beyond minimally clinically important differences (Table).

The MRDP effectively indicated which patients were appropriate for discharge directly home, as all patients sent home

demonstrated minimal clinically important differences for improvement for WOMAC global and subscale scores.

## DISCUSSION

Given the likelihood of suboptimal rehabilitation outcomes and higher costs associated with placement in an extended care facility, there are many benefits to objectively identifying which patients could safely be sent home for rehabilitation. Based upon the results of this study, the MRDP is an effective way to predict which patients would be successful with rehabilitation in the home versus being sent to an extended care facility. Use of the MRDP to assist in planning the location for rehabilitation following discharge from acute care for elderly adults who have had elective orthopaedic surgery could help identify which patients may be able to be discharged directly home and avoid unnecessary placement in extended care facilities.

**Table. Results: Meyer Rehabilitation Discharge Planning Index Score Recommendations on Rehabilitation Discharge Location based on the MRDP score (MRDP rec), Preoperative WOMAC scores for Pain, Stiffness, and Physical Function (Preop Scores), Postcompletion of Rehabilitation WOMAC scores (Postoperative WOMAC), Global WOMAC scores preoperatively until completion of rehabilitation (Global Pre: Post).**

Patient	MRDP Score	MRDP Recommendation	Subscale (possible points)	Preop			Postop		
				Preop Score	Raw Score	12% of Raw Score	Postop Score	Raw Score	% Change
A	65	MRRH	Pain (20)	4	0.200	0.024	0	0.000	100.0%
			Stiffness (8)	3	0.375	0.045	1	0.125	66.7%
			Physical Funct (68)	25	0.368	0.044	6	0.088	76.0%
			Global (96)	32	0.333	0.040	7	0.073	78.1%
B	71	MRRH	Pain (20)	4	0.200	0.024	3	0.150	100.0%
			Stiffness (8)	3	0.375	0.045	2	0.250	66.7%
			Physical Funct (68)	18	0.265	0.032	10	0.147	76.0%
			Global (96)	25.00	0.260	0.031	15	0.156	78.1%
C	79	DECF	Pain (20)	14	0.700	0.084	6	0.300	100.0%
			Stiffness (8)	4	0.500	0.060	3	0.375	66.7%
			Physical Funct (68)	25	0.368	0.044	22	0.324	76.0%
			Global (96)	43.00	0.448	0.054	31	0.323	78.1%
D	78	DECF	Pain (20)	14	0.700	0.084	5	0.250	100.0%
			Stiffness (8)	4	0.500	0.060	2	0.250	66.7%
			Physical Funct (68)	41	0.603	0.072	13	0.191	76.0%
			Global (96)	59.00	0.615	0.074	20	0.208	78.1%

Abbreviations: MRDP, Meyer Rehabilitation Discharge Planning; MRRH, maybe able to receive rehabilitation in the home; DECF, discuss extended care

Given the small sample size in this study, results did not reflect a poorer outcome for those patients who were placed in an extended care facility. However, cost of care in an extended care facility was higher in the literature.<sup>3</sup> In addition, with a larger sample size, differences in outcome for discharge (those discharged to an extended care facility would likely have a poorer outcome) directly home in comparison to an extended care facility would likely be seen.<sup>5,15</sup> Considering the results of the MRDP during discharge planning presents no risk to patients and may potentially improve outcomes and reduce costs. More research is needed to continue to evaluate this tool.

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# Complex Regional Pain Syndrome in a Recreational Distance Runner Following Surgical Resection of Haglund Deformity

Jonathan Gallas, PT, DPT, CSCS

Rockford Orthopedic Associates, Rockford, IL

## ABSTRACT

**Background and Purpose:** Haglund deformity is a common cause of posterior heel pain at the insertion of the Achilles tendon affecting the retrocalcaneal and superior calcaneal bursae and Achilles tendon.<sup>1</sup> The purpose of this case study is to describe a patient that underwent surgical resection of a Haglund deformity for the right heel with complications of complex regional pain syndrome and returned to recreational running. **Case Description:** The patient is a 45-year-old female recreational distance runner who underwent surgical resection of her right Achilles tendon for Haglund deformity. **Interventions:** The rehabilitation focused on gastrocnemius and soleus flexibility and strengthening exercises, static and dynamic balance training on various surfaces, aqua running, and specific cadence training to initiate a midfoot striking running pattern. **Outcomes:** Outcomes for strength and range of motion were assessed as well as through administration of the Lower Extremity Functional Scale (LEFS).<sup>2-4</sup> The patient demonstrated improvements in right gastrocnemius and soleus strength and static and dynamic balance, and was able to train herself to strike with a midfoot pattern when running. **Clinical Relevance:** This case study describes complications following surgical resection of Haglund deformity and intervention strategies to return a patient to recreational running.

**Key Words:** gastrocnemius, soleus, cadence

## BACKGROUND

Haglund deformity is usually described as pain and tenderness at the posterolateral aspect of the calcaneus with the presence of a calcaneal prominence and inflammation of the soft tissue at the insertion of the Achilles tendon.<sup>1-5</sup> Radiographs identify an exostosis on the posterolateral calcaneus.<sup>1</sup> It is often referred to as ‘pump bump,’ calcaneus altus, high prow heels, knobby heels, or cucumber heel.<sup>5</sup> Haglund deformity must be distinguished from Haglund syndrome,

which involves inflammation of the retrocalcaneal bursa and insertional tendinopathy of the Achilles tendon, and Haglund disease, which involves osteonecrosis of the accessory navicular bone.<sup>5</sup>

Complex regional pain syndrome (CRPS) is defined as a “painful neuropathic disorder that develops after trauma affecting the limbs without overt nerve injury.”<sup>6</sup> It is characterized by spontaneous onset of pain and hyperalgesia, impaired motor function, swelling, abnormalities in sweating, and blood flow.<sup>6</sup>

Diagnosis of CRPS requires the following criteria: preceding noxious event, spontaneous pain and/or hyperalgesia not limited to a specific nerve distribution, presence of swelling, changes in skin temperature, trophic changes, loss of motor control, and exclusion of differential diagnoses.<sup>7</sup> Hyperalgesia was very common in this case study. Hyperalgesia associated with CRPS occurs in 75% to 100% of patients with CRPS.<sup>8</sup> Autonomic changes were also common in this case study as they are in 81% of patients with CRPS. These include hot/cold sensations in the skin with changes in skin color representing a bluish tint or red streaking.<sup>9,10</sup> Physical therapy treatment can be effective in treating patients with CRPS by providing relief from pain and swelling, improving joint mobility, managing vascular changes, and providing desensitization training for hyperalgesia.<sup>10</sup> The purpose of this case study is to describe a case study of a patient that returned to recreational distance running after following surgical resection of Haglund deformity and the complication of CRPS following this resection.

## CASE DESCRIPTION

### History

The patient is a 45-year-old female recreational distance runner. At the time of initial injury more than one year ago, the patient underwent a 12-week course of physical therapy treatment including flexibility, eccentric strengthening, proprioceptive training, iontophoresis, and ASTYM for her

right Achilles tendinosis. The patient was not currently running at this time. Magnetic resonance imaging results revealed right Achilles tendinosis and Achilles paratendinitis, chronic plantar fasciitis, flattening of the peroneus brevis tendon, and stenosis of the common peroneal tendon sheath. Current running footwear was the Nike Free 3.0. The patient continued to participate in recreational distance running to her tolerance of up to 8 miles following discharge from physical therapy.

The patient developed Haglund deformity after a challenging one-year period of resolving Achilles tendinosis from running. The patient was referred to the author for physical therapy treatment 10 weeks following surgery for right Haglund deformity. The patient had been in a plaster cast for two weeks followed by two weeks of partial weight bearing in a Cam walking boot, and 4 weeks of full weight bearing in a Cam walking boot. The patient was evaluated approximately two weeks after discontinuing use of the Cam walking boot.

### Initial Evaluation Following Surgical Resection for Haglund Deformity

Upon initial physical therapy evaluation 10 weeks following surgery, the patient’s chief complaints were posterior right heel pain with walking, calf weakness, and hypersensitivity to touch especially when wearing shoes with a raised heel collar on the back. The patient reported functional limitations with stair climbing, squatting, prolonged standing/sitting, and sleeping. The patient identified that prior to her surgery she was running 5 to 6 miles a day 5 days per week. The patient also rode a road bike on a stationary trainer two to 3 days per week. The Lower Extremity Functional Scale (LEFS) was administered at initial evaluation to assess outcomes at discharge.

### Examination Pain

Pain was assessed using a verbal 0-10 pain scale (0/10 was considered no pain

and 10/10 was considered emergency room pain). Upon initial evaluation by the author, the patient described her pain as 5/10 with walking, stair climbing, static standing and sitting, and squatting. Pain was sharp in nature, and located in the posterior lateral right heel. Pain increased to 8/10 with walking or standing in shoes with a heel. The patient experienced frequent episodes of hyperalgesia.

### Gait

The patient ambulated with a right antalgic gait pattern and increased external rotation of her right lower extremity at mid-stance and toe off. The patient demonstrated decreased step and stride length on her left lower extremity compared to her right lower extremity.

### Range of motion

Initial evaluation range of motion measurements were taken using a standard goniometer with the knee extended. The goniometer was parallel with the patient's lateral malleolus with the long arm of the goniometer pointing towards the patient's fifth metatarsal bone, and the reference arm pointing at the patient's fibular head.<sup>6</sup> Reliability values for foot and ankle range of motion have been previously demonstrated in studies by Boone et al<sup>11</sup> and Elveru et al.<sup>12</sup> Range of motion results obtained at initial evaluation are found in Table 1.

### Muscle strength

Manual muscle testing of the right ankle dorsiflexion and plantar flexion was 5/5. Manual muscle testing of the right ankle eversion was limited to 4/5, and inversion was limited to 4+/5. The testing was performed in long-sitting. The patient was unable to perform a double heel raise or squat due to increases in pain in her right heel.

### Palpation

Palpation of the patient's right heel and Achilles tendon indicated the presence of two scars on her medial and lateral right heel, each approximately 1.5 inches in length. Tenderness was noted at the patient's medial and lateral right heel and central plantar fascia. Muscle atrophy was measured at mid-calf on the patient's right calf and found to be .5 inches in comparison to the noninvolved side. Redness with streaking was noted in the patient's medial right gastrocnemius. Increased warmth of the patient's tissues in this area was also noted.

**Table 1. Range of Motion at Initial Evaluation by Author 10 Weeks After Surgical Resection of Haglund Deformity**

	AROM-Right	PROM-Right	AROM-Left	PROM-Left
Dorsiflexion	8°	13°	10°	15°
Plantar flexion	67°	72°	70°	75°
Rearfoot Inversion	35°	40°	25°	30°
Rearfoot Eversion	10°	15°	11°	16°

Abbreviations: AROM, active range of motion; PROM, passive range of motion

### Assessment of accessory motions/joint glides of the (subtalar joint)

The patient demonstrated decreased posterior, lateral, and anterolateral calcaneal or subtalar joint glide. This resulted in limited mobility of the patient's right ankle in weight bearing and nonweight bearing conditions.

### Girth measurement

Girth measurements were taken at the level of the medial and lateral malleolus around the patient's posterior calcaneus. Approximately .5 inches of edema was noted surrounding the patient's Achilles tendon and right heel.

### NEUROLOGICAL EXAM

#### Sensation and Proprioception

The patient demonstrated decreased light touch sensation at the medial and lateral right calcaneus. All sensation in the right gastrocnemius and soleus muscles as well as the dorsum and sole of the foot was normal. Light touch was performed by the therapist who swiped the patient with the tip of his finger while the patient's eyes were closed. The patient noted whether the sensation was felt and compared it to her left foot and ankle.

### DIAGNOSIS

Diagnosis was made according to the *Guide to Physical Therapist Practice*<sup>13</sup> Practice Patterns 4D-Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated with Connective Tissue Dysfunction and 4E-Impaired Joint Mobility, Motor Function, Muscle Performance, and Range of Motion Associated with Localized Inflammation.<sup>13</sup>

### PROGNOSIS

Protocol for surgical resection of Haglund deformity states that full recovery should be achieved by 12 months following surgery.<sup>14</sup> Additional rehabilitation

including aqua jogging and modification of patient's running gait was important in assisting the patient in return to previous recreational running status within 9 months following surgery.

### GOALS

Despite this timeframe, the patient wished to return to recreational distance running. Anticipated goals for this patient at initial evaluation included return to recreational distance running at a minimum of 5 miles 3 to 5 times/week and wearing high-heeled shoes of 2 to 3 inches with a strap on the back without irritation to her right foot/ankle.

### INTERVENTION

Conservative physical therapy management included modalities, posture changes to minimize pressure over the posterolateral calcaneus, and strength and flexibility exercises to treat underlying Achilles tendinosis.<sup>15-19</sup> Based on the initial evaluation data, the patient was performing a home exercise program consisting of range of motion and strength exercises for her right foot and ankle. These included active range of motion of her right ankle in all planes of motion, Theraband exercises, isometrics for right ankle inversion and eversion, gastrocnemius and soleus stretching performed in standing and at a wall, and seated heel/toe raises. Hyperalgesia of the patient's right foot and ankle was managed early with an over-the-counter compression garment, daily desensitization exercises for 5 to 10 minutes one to 3 times/day using a cotton ball and/or soft towel, and a transcutaneous electrical nerve stimulation unit at home. Edema was managed with ultrasound and soft tissue massage to the right foot, ankle, and lower leg. Scar tissue adhesions were managed with Kinesio taping and the ASTYM procedure. Kinesio tape was applied at the plantar surface of the patient's right heel and pulled with a 50% stretch, in

two separate strips, toward the patient's calf muscle as she actively dorsiflexed her ankle. Kinesio tape was applied to inhibit tightness in the patient's right gastrocnemius and soleus muscles. The ASTYM procedure was applied to the patient's lower leg, foot, and ankle with the ASTYM evaluator, localizer, and isolator tools and cocoa butter to decrease irritation to the patient's skin. The ASTYM procedure was applied to decrease fibrotic tissue in the patient's right lower extremity, particularly in her right foot, ankle, and lower leg.

Interventions for the first 8 weeks following initial evaluation focused on treadmill walking for up to 30 minutes at a self-selected speed, ranging from 2.5 to 4.0 mph, in running shoes, static and dynamic balance exercises including heel/toe walking, single leg stance, Romberg, and sharpened Romberg positions on various surfaces, heel-toe raises on flat surface and 2-inch and 4-inch steps.

### Aqua Running

Previous researchers<sup>20-23</sup> have reported that aquatic running resulted in improved proprioception, decreased post-running muscle soreness, and improved core strength. It also improves running economy and promotes midfoot and forefoot striking while running.<sup>21</sup> Based on previous research, aqua running began at week 8 following initial evaluation. The therapist followed the patient to the fitness facility to ensure that proper instruction was provided. The patient was initially instructed in form drills in the water (high knees, butt kicks, lateral walking, retro-walking, toe walking, heel walking, carioca, and squatting). The patient was instructed to focus on making initial contact with her toes with each form drill. Form drills covered 50 yards each. The patient was then instructed in proper forefoot running technique. She was instructed to run from waist-high water to shoulder-high water focusing on maintaining forefoot contact and leaning forward at her waist with her "nose over her toes." The patient aqua jogged for 10 minutes. The patient performed all form drills and aqua jogging in a pair of Speedo water shoes to protect her feet. Subsequent aqua jogging sessions took place on the patient's own time on an average of two times per week adding 3 to 5 minutes each session until 40-minute sessions were reached.

### Running

Running was initiated approximately 6 months following surgical resection of the

patient's right Haglund deformity. Running began on the treadmill in 30-second increments focusing on a midfoot striking running pattern. Running was progressed 30 seconds per interval every other day. Running intervals began with 3 x 30 seconds. Running was preceded by a minimum of 10 minutes of walking. An additional 10 minutes of walking took place after the running intervals. When the patient was able to run two 15-minute intervals with two to 5 minutes of rest in between, she began running 17 minutes. She then progressed by two minutes every other day of running. Running focused on a midfoot striking running pattern with an initial cadence of 180 steps per minute. Running cadence was practiced on a treadmill during running intervals with a metronome. Verbal cues were provided to increase or decrease running cadence. Upon discharge from physical therapy, the patient's self-selected running cadence was between 180 and 185 steps per minute. Range of motion values of the patient's right ankle 9 months following surgical resection of Haglund deformity can be found in Table 2.

### OUTCOMES

The LEFS is a "self-report measure designed to assess the functional status of patients with any musculoskeletal condition related to the lower extremity."<sup>4</sup> The LEFS was chosen for this case report because it has been used by previous researchers on injuries involving the foot and ankle, and it demonstrates excellent reliability (0.94-0.98).<sup>23</sup> The minimal clinically important difference of the LEFS is 9 scale points.<sup>2</sup> The LEFS was administered at initial evaluation and 9 months following surgical repair. The LEFS measures a person's degree of difficulty with various functional activities. The overall score is determined out of 80 points. Greater scores represent less difficulty in functional activities involving the lower extremities. At initial evaluation, the patient scored 22/80

on the LEFS. At 9 months, the patient scored a 48/80 on the LEFS.

### DISCUSSION

As previously described, Haglund deformity is pain and tenderness at the posterolateral aspect of the calcaneus with the presence of a calcaneal prominence and inflammation of the soft tissue at the insertion of the Achilles tendon.<sup>15</sup> It is often treated conservatively with modalities (ultrasound, iontophoresis), manual therapy (joint mobilization, ASTYM), and open and closed chain exercise for the affected lower extremity. It has been found helpful to avoid wearing footwear that puts pressure on the posterior heel. A heel lift with a gel sleeve to protect the posterior heel is often used to alleviate mild symptoms.<sup>14</sup> If this does not reduce symptoms, boot mobilization with a heel lift in combination with antiinflammatory medications may be implemented for several weeks to alleviate symptoms.<sup>14</sup>

When conservative treatment of Haglund deformity fails, surgical resection of the Haglund deformity is warranted. This involves resection of the 'pump bump' along with removal of inflammation of the retrocalcaneal bursa and debridement of the Achilles tendon. In cases of significant calcification, the Achilles tendon is detached and reattached with anchors.<sup>14</sup>

Rehabilitation begins between 6 to 8 weeks postoperatively of resection for Haglund deformity. In this case, rehabilitation did not begin until 10 weeks postoperative surgical resection for Haglund deformity per physician protocol. At this time, the patient had been out of the immobilization boot for two weeks. Haglund deformity (prominent tuberosity) was resected along with removal of inflammation of the retrocalcaneal bursa. The Achilles tendon was not detached and reattached in this case study, but a tenosynovectomy of the Achilles was performed.<sup>14</sup>

**Table 2. Range of Motion by Author 9 Months After Surgical Resection of Haglund Deformity**

	AROM-Right	PROM-Right
Dorsiflexion	16°	20°
Plantar flexion	75°	78°
Inversion	30°	35°
Eversion	12°	15°
Abbreviations: AROM, active range of motion; PROM, passive range of motion		

Early rehabilitation followed a standard Achilles tendon repair protocol until week 8 of rehabilitation (18 weeks post-op) when aqua jogging began. This was an integral part of the rehabilitation process because it allowed the patient's tissues in her right lower extremity to adapt to the changes of landing with a midfoot striking pattern. This type of footstrike pattern was recommended based on work by Cheung and Davis,<sup>24</sup> Daoud et al,<sup>25</sup> Divert et al,<sup>26,27</sup> Hasegawa et al,<sup>28</sup> Heiderscheid et al,<sup>29,30</sup> and Lieberman.<sup>31-33</sup> These study results demonstrated that there is less peak impact force at initial contact in runners that land with a forefoot and/or midfoot striking pattern. Further evidence has shown that this results in a lower incidence of running injuries. This is due to lower ground reaction forces sustained from decreased vertical displacement and increased step frequency.<sup>24,25,30</sup>

Figure 1 is a photo of the patient's running pattern prior to surgical resection of right Haglund deformity. Note the degree of knee extension on her right lower extremity at initial contact, elevated foot inclination angle of 27°, and overstriding (right foot out in front of center of gravity line at initial contact). Figure 2 demonstrates the mid-foot striking running pattern of the patient following resection of her right Haglund deformity. Note the greater amount of knee flexion present on her right lower extremity at initial contact, foot inclination angle < 20°, and initial contact almost directly under her center of gravity line. A larger foot inclination angle results in greater amounts of knee extension at initial contact and larger peak impact forces. Greater knee flexion angles at initial contact allow the patient to better absorb peak impact forces.

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**Figure 1. Heel-striking before resection of right Haglund deformity.**



**Figure 2. Midfoot striking following resection of right Haglund deformity.**

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ISBN: 9783131724212, 229 pages, Soft Cover

Author: Krischak Gert, MD, MBA

**Description:** This book outlines both general and specific concepts of the management of trauma injury from basic wound healing to specific injuries and conditions related to different regions of the body. **Purpose:** The aim is to provide a "comprehensive presentation of individual injuries and their effect on function, as well as guidelines and potential results of physical therapy treatment." The book provides information beyond entry level regarding the specific medical management of trauma. As the profession of physical therapy continues to elevate the level of care in rehabilitation, books such as these are needed. **Audience:** The audience includes students, clinicians, and educators. A third of the book provides entry-level information, while the remaining two-thirds presents advanced information which would suit ambitious students interested in learning more about trauma management. Practicing clinicians in acute care and orthopaedics will find this a useful reference. **Features:** The book is organized into three parts. The first covers general traumatology, which includes topics such as wound healing, surgical infections, treatment of bone injuries, and complications of fracture healing and treatment. It serves as a good review for practicing clinicians. The second part, on special traumatology, is organized by regions of the body and includes clinical signs, diagnosis, treatment, and aftercare for each injury. Each part includes case studies and its own glossary as well as study questions. The book also has a nice amount of anatomic illustrations and radiological images. **Assessment:** This is a nice review of the medical management of traumatic and orthopedic injuries as well as considerations for rehabilitation. The special traumatology sections that outline each injury's clinical signs, diagnosis, and prognosis will be particularly helpful to clinicians practicing in a direct access environment. This is a good book for clinicians looking for more information about the surgical management of fractures and, overall, it is a fine reference for practicing clinicians in acute care and orthopedics as well as ambitious students.

*Monique Serpas, PT, DPT, OCS  
HealthReach Rehabilitation Services*

**PNF in Practice: An Illustrated Guide**, 4th Edition, Springer, 2014, \$89.99  
ISBN: 9783642349874, 312 pages, Soft Cover

Authors: Adler, Susan S.; Beckers, Dominiek; Buck, Math

**Description:** This book explains the use of proprioceptive neuromuscular facilitation (PNF) in the treatment of patients with various impairments. The number and quality of the accompanying photos are a highlight. **Purpose:** The purpose is to support the growth of the use of PNF in clinical settings. The authors state that they wanted

to provide a practical book that would complement other textbooks. These objectives are met by the generous number of high quality photos that illustrate the different techniques. **Audience:** While the authors do not identify a specific audience, this book would be an excellent reference for physical therapy students as well as physical therapists at all levels. PNF can be used in any setting, including in home health, the hospital setting, or an outpatient setting. Its use is not restricted to a specific patient population, and the principles and techniques of PNF address a spectrum of impairments throughout the lifespan. The authors are all senior instructors of the International PNF Association. **Features:** The book comprehensively covers the application of PNF to the scapula, pelvis, upper and lower extremities, neck, and trunk. It describes the patterns used during PNF, discusses the use of mat activities to improve a patient's mobility and stability, and presents PNF for gait training and activities of daily living. The most striking feature is the inclusion of over 650 photos depicting different uses of PNF. Photos are large enough to see details of hand placement and patient and therapist position, and vectors on the photos illustrate the direction of the applied force. **Assessment:** This book clearly explains the rationales for, and uses of, PNF. A section of questions at the end of each chapter gives readers a chance to test their knowledge and understanding. The photos illustrating the different techniques with well-written instructions are the true strength of this book.

*Jeff Yaver, PT  
Kaiser Permanente*

**Physical Therapy Documentation: From Examination to Outcome**, 2nd Edition, Slack Incorporated, 2014, \$55.95  
ISBN: 9781617112515, 177 pages, Soft Cover

Authors: Erickson, Mia L., PT, EdD, CHT, ATC; Utzman, Ralph R., PT, MPH, PhD; McKnight, Rebecca, PT, MS

**Description:** This update of a 2008 book thoroughly describes how to write various types of physical therapy documentation for the medical record in diverse clinical settings. **Purpose:** The purpose is to provide a reference on all aspects of documentation, from taking phone orders in the outpatient setting to writing discharge reports in a skilled nursing facility. The book uses the S.O.A.P. note format and emphasizes documentation of the skilled care services that physical therapists provide in order to maximize reimbursement for therapy services. **Audience:** This book is most suitable as a guide to proper documentation for physical therapy students. Experienced therapists will already be well versed in the documentation of various types of notes. **Features:** This update briefly covers needed documentation for CMS in the wake of the Affordable Care Act. Its breakdown of the basic S.O.A.P. note format into chapters that discuss each aspect of note writing is useful to students. Flow charts also help clinicians to include all pertinent information in written notes. The book emphasizes the use of outcome measures for goal writing, but does not focus on the components needed to write proper goals. This is evidenced by the lack of emphasis on using functional measures, in addition to outcome measures, in writing long-term goals to develop a more direct

*(Continued on page 118)*

# 2014 CSM Award Winners

The Orthopaedic Section awards ceremony was at CSM in Las Vegas, Nevada, this past February. Congratulations to all of this year's award winners.

## ROSE EXCELLENCE IN RESEARCH AWARD

The purpose of this award is to recognize and reward a physical therapist who has made a significant contribution to the literature dealing with the science, theory, or practice of orthopaedic physical therapy. The submitted article must be a report of research but may deal with basic science, applied science, or clinical research.



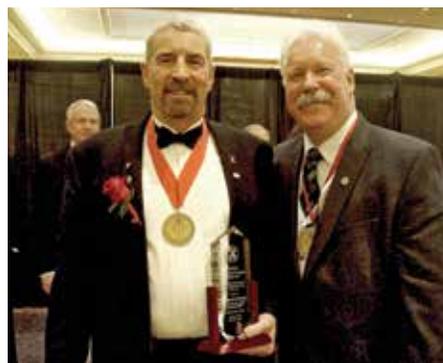
The recipient of the 2013 Rose Excellence in Research Award is Dr. Joshua Cleland PT, PhD, and his colleagues for the manuscript Cleland JA, Mintken P, McDevitt A, Bienek M, Carpenter K, Kulp K, Whitman JM. Manual physical therapy and exercise versus supervised home exercise in the management of patients with inversion ankle sprains: a multicenter randomized clinical trial. *J Orthop Sports Phys Ther.* 2013;43:443-455.

Dr Cleland earned a Master of Physical Therapy Degree from Notre Dame College in 2000 and the Doctor of Physical Therapy Degree from Creighton University in 2001. In February 2006, he received a PhD from Nova Southeastern University. He received board certification from the American Physical Therapy Association as an Orthopaedic Clinical Specialist in 2002 and completed a fellowship in manual therapy through Regis University in Denver, CO, in 2005. Josh is presently a Professor in the Doctor of Physical Therapy Program at Franklin Pierce University. He practices clinically in outpatient orthopaedics at Rehabilitation Services of Concord Hospital, Concord, NH. He is actively involved in numerous

clinical research studies investigating the effectiveness of manual physical therapy and exercise in the management of spine and extremities disorders. He has published over 150 manuscripts in peer-reviewed journals including *Spine*, *Physical Therapy*, the *Journal of Orthopaedic and Sports Physical Therapy*, and *Manual Therapy*. He is an Editorial Review Board Member for the *Journal of Orthopaedic and Sports Physical Therapy*. He is currently an author/editor of 3 textbooks. Dr Cleland is a well-known speaker at both the national and international level. He is the recipient of the 2013 Rose Excellence in Research Award and the 2009 Eugene Michels New Investigator Award. He also received the 2008 Jack Walker Award from the American Physical Therapy Association. Additionally, Dr Cleland was awarded the Excellence in Research Award from the American Academy of Orthopaedic Manual Physical Therapists on two separate occasions (2004 and 2006).

## PARIS DISTINGUISHED SERVICE AWARD

The Paris Distinguished Service Award is awarded by the Orthopaedic Section to acknowledge and honor an Orthopaedic Section member whose contributions to the Section are of exceptional and enduring value. The recipient of this award is provided an opportunity to share his or her achievements and ideas with the membership through a lecture presented at this evening's Awards Ceremony.



The 2014 Paris Award for Distinguished Service is presented to William H. O'Grady, PT, DPT, MA, OCS, COMT, MTC, DAAPM, FAAOMPT. Dr O'Grady

has demonstrated prominent leadership in advancing the interests and objectives of the Orthopaedic Section and physical therapy profession for over three decades.

He served as the Chief of the Orthopaedic Specialty Council Chair for two years, helped develop the DACP and subsequent DSP for orthopaedic physical therapy, developed the initial template for recertification for the Orthopaedic Specialty, served as representative to the *JOSPT* for the Orthopaedic Section for 5 years, helped develop the mentorship program for orthopaedic physical therapy, was Chair of the Section's Nominating Committee, President of the OHSIG, and served as Director of the Orthopaedic Section for 8 years.

Dr O'Grady continued his service over the past 20 years for the AAOMPT when he participated in the development of the initial DACP for the AAOMPT, served as the Chair and Chief Examiner of the Board of Examiners, set up the first large scale oral practical examination for the AAOMPT, and single handedly reviewed and screened all of the initial fellowship challenge candidates. The previously mentioned accomplishments were difficult to carry out since there was controversy over how examinations should be administered, how they were to be scored, and who would serve as examiners. Dr O'Grady led the AAOMPT through this process in a very professional and direct manner. Without his steady and even-handed leadership, many orthopaedic manual physical therapists would not have had the opportunity to become Fellows in the AAOMPT.

As an educator of physical therapists, Dr O'Grady has served as a clinical instructor on over a dozen university-based entry and post-entry level physical therapy programs as well as presenting 72 professional presentations at conferences and within the weekend seminar format over his 40-year career. In addition, he has over a dozen publications in peer reviewed journals relating to spinal disorders that has added further credibility to his teaching. He is well known for presenting material in an organized and clinically relevant manner with a dose of great humor.

Dr O'Grady is a role model for profes-

sionals having shared his time and expertise on the state and national levels of our profession as well as 38 years of service in the US Army (Retired Full Colonel). As a clinician, private practice owner, teacher, army reservist, and servant to the Washington State Physical Therapy Association, the following awards have been bestowed upon Bill: The John McMennell Service Award, The Lucy Blair Service Award, The Order of the Military Medical Merit, The Washington State Clinical Excellence Award, and the first "Life" Fellow of the AAOMPT.

Based upon Dr O'Grady's exceptional record of service and outstanding commitment to excellence in clinical practice, political advocacy, and education, his colleagues have strongly endorsed Bill as the 2014 recipient of the Orthopaedic Section's most distinguished award, the Paris Distinguished Service Award.

### OUTSTANDING PTA STUDENT AWARD

The purpose of this award is to identify a student physical therapist assistant with exceptional scholastic ability and potential for contribution to orthopaedic physical therapy. The eligible student shall excel in academic performance in both the pre-requisite and didactic phases of their educational program, and be involved in professional organizations and activities that provide the potential growth and contributions to the profession and orthopaedic physical therapy.



Samantha Grubb of Barbourville, KY, is currently a second-year PTA student at Somerset Community College. She serves as President of her class, was named the recipient of the James H. Anderson Award for Outstanding First-Year PTA Student, and was selected by her peers to be the Outstanding Physical Therapy Student Organization Member for 2013. She was also named to the Kentucky Physical Therapy Association's All-Academic Team for 2013.

She has been employed as a physical therapy technician at Total Rehab Center in Somerset, KY, while enrolled in the program.

Ms Grubb is active in a number of charitable and community service activities including assisting with free health screenings and fundraising events for the Kentucky Special Olympics, teaching and mentoring young students in Camp Jump Start and the Governor's Minority Scholarship Preparation Programs, and fundraising for the Foundation for Physical Therapy.

Ms Grubb has been active within the American Physical Therapy Association. She holds membership in the Orthopaedic Section and participated in an educational brochure design competition hosted by the Section on Geriatrics. She has attended two national conferences and has been published in the APTA's national student newsletter, the Student Assembly Pulse.

Upon graduation, she plans to work within the region as a physical therapist assistant. She is the daughter of Tommy Grubb and Peggy Retherford.

### OUTSTANDING PT STUDENT AWARD

The purpose of this award is to identify a student physical therapist with exceptional scholastic ability and potential for contribution to orthopaedic physical therapy. The eligible student shall excel in academic performance in both the professional and pre-requisite phases of their educational program, as well as be involved in professional organizations and activities that provide for potential growth and contributions to the profession and orthopaedic physical therapy.



The 2014 Orthopaedic Section Outstanding Physical Therapy Student Award is presented to Bryan James, who is a third year Doctor of Physical Therapy Student at the University of Kentucky. Bryan attended the University of Kentucky for his under-

graduate education where he graduated Summa Cum Laude with a double major in chemistry and biology. He has continued this academic excellence in the DPT program. Bryan James is a true leader in the class and has taken every opportunity to participate in leadership activities, APTA events, and opportunities to enhance his orthopaedic physical therapy skill set. These experiences have come via service learning as well as specific and calculated selection of orthopaedic clinical experiences.

Bryan has been the primary coordinator of the University of Kentucky's student-run pro bono clinic. He coordinates the activity of all the supervisors, assures that the clinic has the needed supplies, schedules students and supervisors, and takes his turn supervising the clinic as well as treating patients. This is a very challenging job, but Bryan does so with positive energy and gets the job done very well. He has also served on the medical mission to Ecuador with UK's Shoulder to Shoulder Global in which PT students, supervised by practicing physical therapists, evaluate and treat those who cannot access physical therapy in the poor neighborhoods of Santo Domingo, Ecuador. Many of these patients have musculoskeletal conditions so Bryan was able to learn while serving. He was one of the clinic coordinators to provide this information at the recent APTA Student Conclave along with students from Widener University. He will continue these efforts at CSM in a similar role.

Bryan purposely selected his clinical experiences to provide a strong challenge to his developing orthopaedic skills exemplified by his selection of Fort Knox in his desire to enhance his evaluation skills and then culminating in his final experience in Australia to enable him to work on manual skills. He anticipates that he will also complete an orthopaedic residency/fellowship post-graduation.

The Program Chair at the University of Kentucky stated, "Bryan has excellent critical thinking skills that couple well with a compassionate heart that will allow him to provide excellent care for the people he treats." Based on Bryan's academic achievements, leadership, and commitment to service as a student in the Doctor of Physical Therapy Program at the University of Kentucky, it is appropriate that he receives the 2014 Orthopaedic Section's Outstanding Physical Therapy Student Award. Bryan James certainly has the potential to be a leader in the field of orthopaedic physical therapy for years to come.

**RICHARD W. BOWLING – RICHARD E. ERHARD  
ORTHOPAEDIC CLINICAL  
PRACTICE AWARD**

This award is given to acknowledge an individual who has made an outstanding and lasting contribution to the clinical practice of orthopaedic physical therapy as exemplified by the professional careers of Richard W. Bowling and Richard E. Erhard. Individuals selected for this award must have been engaged in extensive orthopaedic physical therapy clinical practice for at least 15 years and have positively and substantially affected the shape, scope, and quality of orthopaedic physical therapy practice.



Julie M. Fritz, PT, PhD, ATC, has been a PT since 1992, received her PhD in 1998, and began her academic career shortly thereafter. In a relatively short period of time, Dr Fritz has grown into one of the most influential researchers in the history of orthopaedic physical therapy. She is probably best known for her intensive study of classification systems and low back pain and, most recently, in implementing these interventions on a large scale with health services objectives. Dr Fritz's publication record (N=111) is formidable and certainly puts her research productivity in an elite category. More pertinent to this award, one must look past sheer numbers and consider: (1) the high proportion of research papers that are primarily data based, (2) the fact that virtually all publications are clinically based and highly relevant to clinical practice, and (3) her work is inclusive of health services approaches that are so important in our present health reform environments. She is a 4-time winner of the Orthopaedic Section's Rose Excellence in Research Award, a multiple Jack Walker Award winner, which not only speaks to the excellence of her work but also its clinical relevance. Dr Fritz's influence is further amplified when the collective productivity of her protégés

are taken into account. Over the years, she has shown herself to be a masterful mentor of future academicians and leaders in the orthopaedic physical therapy field. When considering the achievements of just a handful of her mentees, the ripple effect of her influence is no doubt considerable.

**JAMES A GOULD EXCELLENCE IN  
TEACHING  
ORTHOPAEDIC PHYSICAL  
THERAPY AWARD**

This award is given to recognize and support excellence in instructing orthopaedic physical therapy principles and techniques through the acknowledgement of an individual with exemplary teaching skills. The instructor nominated for this award must devote the majority of his/her professional career to student education, serving as a mentor and role model with evidence of strong student rapport. The instructor's techniques must be intellectually challenging and promote necessary knowledge and skills.



Samuel T. Kegerreis, PT, ATC (L), a Professor at the Krannert School of Physical Therapy at the University of Indianapolis in Indianapolis (UIndy), IN, is the 2014 recipient of the James A. Gould III Excellence in Teaching Orthopaedic Physical Therapy Award.

Samuel, or better known as Sam, has provided an immeasurable positive influence on the orthopaedic practice of over 1,060 physical therapists during the past 30 years of his teaching here at UIndy. This is a truly remarkable number of impressionable young professionals who have been touched by Sam's unique ability to teach students not just about the key principles of the practice of orthopaedic medicine but also many life lessons.

Teaching is Sam's passion, and he expertly weaves the elements of current evidence, patient expectations, and clinical experience into a curriculum that is evidence based. Sam, however, teaches much

more than just the current evidence. He teaches his students to be caring health care professionals. With a strong interest and further education in human psychology and counseling, he stresses to his students the role of treating the whole person and not just the body part. Through many years of clinical practice where he was the clinician who worked closely with patients who had physical complaints that were strongly linked to psychological issues, Sam shares insightful stories with students that solidify the concept of treating the entire person.

Sam's teaching style incorporates many principles that facilitate student learning. He creates a safe classroom where it is alright to be wrong. He also innately knows where the students are mentally and emotionally, and he adjusts his plan for the day to meet them where they are vs. forging ahead with what he had planned.

Students who have learned orthopaedic skills under Sam's watchful eyes will talk about Samisms or statements that Sam uses to convey important messages. One ism that he is best known for is the green leafy vegetable to signify something that is essential to practice.

In summary, Sam Kegerreis exemplifies excellence in teaching orthopaedic physical therapy. He distinguishes himself through his knowledge, enthusiasm, and commitment to teaching and the well-being of his students.

## Book Reviews

*(Continued from page 114)*

treatment plan. **Assessment:** This second edition includes an abundant amount of solid, up-to-date information to help aspiring physical therapists or new clinicians write superior S.O.A.P. notes, covering various types of notes in different settings. A bonus for clinicians is a chapter covering documentation and reimbursement including insurance basics, Medicare plans, basic coding, and proper billing using CMS time coding. New therapists will find this invaluable.

*Jennifer C. Hoffman, PT, DPT, OCS  
Private Practice*

# Orthopaedic Section, APTA, Inc.

## CSM MEETING MINUTES

### CSM BOARD OF DIRECTORS MEETING MINUTES FEBRUARY 3 AND 4, 2014

Stephen McDavitt, President, called a regular meeting of the Board of Directors of the Orthopaedic Section, APTA, Inc. to order at 5:30 PM on Monday, February 3, 2014. The Board meeting continued its meeting on Tuesday, February 4 at 8:00 PM.

#### Present:

Stephen McDavitt, President  
Gerard Brennan, Vice President  
Steve Clark, Treasurer  
Tom McPoil, Director  
Pam Duffy, Director  
Duane Scott Davis, Research Chair  
Joe Donnelly, Practice Chair  
Tess Vaughn, Education Chair

#### Guests:

Kathy Cieslak, Practice Vice Chair  
Justin Moore, Vice President, Public Policy, APTA  
James Irrgang, Section representative to CSM Steering Committee; PTA Advanced Proficiency Pathways; PT National Outcomes Registry

Tara Fredrickson, Executive Associate  
Terri DeFlorian, Executive Director

The following guests were introduced: Kathy Cieslak, Practice Vice Chair; Justin Moore, Vice President of Public Policy with APTA; and James Irrgang, Section representative to CSM Steering Committee; PTA Advanced Proficiency Pathways; PT National Outcomes Registry.

The meeting agenda was approved with changes.

The January 13, 2014, Board of Directors Conference Call Meeting minutes were approved as printed.

The schedule of future Board of Directors conference calls was approved at 8:00 PM EST on the following dates:

- March 10, 2014
- April 14, 2014
- May 16, 2014 – Dinner meeting at the Orthopaedic Annual Meeting in St. Louis
- June 16, 2014
- July 24-25, 2014 – Board meeting in La Crosse, WI

The following motions on the consent calendar were adopted – there was no consent calendar for this meeting.

The following motions were adopted unanimously via e-mail – No email motions were adopted.

Steve Clark, Treasurer, reported that the Section currently has 72.7% of its operating expense in reserves. Section policy is to hold 60% of operating expenses in reserves. The Section continues to be in a good financial position.

James Irrgang, Section Representative to the CSM Steering Committee, reported (there are 13 members on the committee, each serving a 3-year term. A staggered rotation will be established when positions start opening up on July 1, 2015. Each member of the committee is liaison to 2 Sections. James is liaison to the Orthopaedic Section and Private Practice Section. The goal is to have committee members who have been involved in Section leadership but are not currently involved in Section leadership.

James Irrgang, Physical Therapy Outcomes Registry Chair, and Justin Moore, Vice President, Public Policy, APTA, reported that APTA has an existing outcomes database that is currently being used and are looking at this database being more inclusive. An outside company was contracted to do a feasibility study and the first build should be completed by mid-February. This will be fine-tuned over a 6-week period with a limited launch expected in April 2014. The legal structure is now being built with sample agreements anticipated by March 1, 2014. There are a few options for the governance model. These will be brought to the APTA Board of Directors in August 2014. **MOTION** from Jay's minutes and adding budget money. Approve Tuesday night at Board meeting.

**MOTION** for Research and Practice Liaisons to be on this committee. Address Tuesday night.

Gerard Brennan, Vice President, gave an update on the Section's search for a technology platform. Two are currently being investigated.

Gerard Brennan, Vice President, reported that 11 individuals were selected to be on the ISC Advisory Council. The purpose of this Council is to assist the ISC Editor in developing topics and authors for future ISCs. Their first meeting was held at CSM 2014. It is anticipated they will have 1-2 conference calls and a face to face meeting at CSM each year.

Terri DeFlorian, Executive Director, reported that the first floor remodeling project at the Section office has been completed. A temporary employee hired as a publishing assistant has been working for about a week and half and a decision to hire her on full time is being considered.

**=MOTION 1=** Stephen McDavitt, President, moved that the Orthopaedic Section Board of Directors approve hiring Heidi Hanse full time as Publishing Assistant after 2 weeks of favorable employment. ADOPTED (unanimous)

**Fiscal Implication:** \$1,606.73 buyout fee to the temporary agency

**=MOTION 2=** Pam Duffy, Director, moved that the Orthopaedic Section Board of Directors approve the attached Public Relations/Marketing Policy Cover Page. ADOPTED (unanimous)

**Fiscal Implication:** None

**=MOTION 3=** Gerard Brennan, Vice President, moved that the Orthopaedic Section Board of Directors approve the ISC Policies and Cover Page attached.

**Fiscal Implication:** None

**=AMENDMENT TO MOTION 3=** Tom McPoil, Director, moved that the Orthopaedic Section Board of Directors amend MOTION 3 by adding the following after attached, "...including *un-striking*, V. *AUTHOR HONORARIUM/EXPENSES, C. Deduction of Honorarium*. ADOPTED (unanimous)

**=MOTION 3 AS AMENDED=** Gerard Brennan, Vice President, moved that the Orthopaedic Section Board of Directors approve the ISC Policies and Cover Page attached including unstriking, V. *AUTHOR HONORARIUM/EXPENSES, C. Deduction of Honorarium*. ADOPTED (unanimous)

Stephen McDavitt, President, led a discussion on board accountability and performance concepts as a possible topic for the 2014 Annual Meeting Board Meeting in St. Louis, specifically as this relates to the Section's management and functioning of SIGs and EIGs. There was unanimous consent in favor of this discussion by the Board.

Pam Duffy, Director, led a discussion on how the Section could best plan for the implementation and management of social media. The Board agreed that Joe Donnelly, Practice Chair, and Eric Robertson, Public Relations Chair, would work with Pam on developing duties related to social media and the type of information the Section should be sending out via social media and report back to the Board at a future meeting.

Stephen McDavitt, President, announced that any discussions pertaining to award nominees will be done in an Executive Session.

Tess Vaughn, Education Chair, re-visited having the committee hold a slot in Scholar One for a residency program at CSM. The Board agreed to move the residency program to the Section's Annual Meeting thus eliminating the need to offer this program at future CSMs.

**=MOTION 4=** Tess Vaughn, Education Chair, moved that the Orthopaedic Section Board of Directors approve making the following changes to SIG programming hours at CSM beginning with CSM 2015:

- All SIG business meetings will be held from 7:00 – 7:50 AM
- All SIGs will conduct their programming between 8:00 – 10:00 AM

ADOPTED (unanimous)

**Fiscal Implication:** None

Tara Fredrickson, Executive Associate, reported that the 2014 Annual Orthopaedic Section meeting is on track and the meeting brochure has been completed.

**=MOTION 5=** Stephen McDavitt, President, moved that the Orthopaedic Section Board of Directors approve the Arizona Grand Resort in Phoenix, AZ, for the 2015 Annual Orthopaedic Section Meeting, May 14-16, 2015. ADOPTED (unanimous)

**Fiscal Implication:** None

**=MOTION 6=** Scott Davis, Research Chair, moved that the Orthopaedic Sec-

tion Board of Directors approve the funding of the following research grant proposals based on the recommendation of the External Grant Review Committee:

- **Unrestricted**  
PI: Gretchen B. Salsich PT, PhD  
Task-specific Movement Pattern Training for Treatment of Patellofemoral Pain  
Co-Is: Linda R. Van Dillen PT, PhD and Catherine E. Lang PT, PhD  
Funding Request: \$25,000.0
  - **New Investigator**  
PI: Audrey Elias DPT, OCS  
A Clinical Trial to Improve Motor Learning in Plyometric Training Post-ACL  
Via a Novel Body-Weight Support System<sup>22</sup>  
Co-I: Ryan L. Mizner PT, PhD  
Funding Request: \$15,000.00  
ADOPTED (unanimous)
- Fiscal Implication:** \$40,000.00 from the previously approved Research Grant budget of \$70,000.00

D. Scott Davis, Research Chair, reported that Lori Michener is chairing the CRN Advisory Board with members Kornelia Kulig, Phil McClure, Josh Cleland, and James Irrgang. The CRN Advisory Board approved the 6-month –Year 1 report in September 2013. The CRN Advisory Board will be meeting at CSM (Thursday, Feb 6 from 7-9 AM). The grant titled, “*Creation of the Orthopaedic Physical Therapy – Investigative Network (OPT-IN) for the Optimal Screening for Prediction of referral and Outcome (OSPRO) Cohort Study*”, was awarded to Principal Investigator: Steven George, PT, PhD; Co-Investigators/Consultants: Jason Beneciuk, PT, PhD, MPH; Joel Bialosky, PT, PhD, OCS; Robert Rowe, PT, DPT; Samuel Wu, PhD; Giorgio Zeppieri, PT, MPT, SCS, in October 2012.

=**MOTION 7**= Stephen McDavitt, President, moved that the Orthopaedic Section Board of Directors

charge the National Orthopaedic Physical Therapy Outcomes Database Task Force to establish sub-groups for the purpose of creating case report forms, a manual of operations and procedures (MOPs) and recommendations for reports that will support collection, analysis and interpretation of clinical outcomes and process of care data from the physical therapy episode of care for patients with impairment of the low back, shoulder and knee, with progress reports to the Board of Directors in June 2014 and January 2015. ADOPTED (unanimous)

Fiscal Implication: (10 people x \$600 for travel = \$6,000)(10 people x 2 days lodging/meals x \$300/day = \$6,000) TOTAL = \$12,000 x 4 meetings = \$48,000

=**MOTION 8**= Stephen McDavitt, President, moved that the Orthopaedic Section Board of Directors provide funding in the amount of \$2,000 per body region for an individual to develop and format the case report forms and a Manual of Operations and Procedures (MOPs) to support the collection, analysis, and interpretation of clinical outcomes and process of care data from the physical therapy episode of care for patients with impairment of the low back, shoulder, and knee. ADOPTED (unanimous)

**Fiscal Implication:** \$2,000 x 3 body regions = \$6,000

**ADJOURNMENT 7:06 PM. The meeting resumed Tuesday, February 4th at 10:00 PM and adjourned at 10:40 PM.**

*Submitted by Terri DeFlorian, Executive Director*

## CSM BOARD OF DIRECTORS/COMMITTEE CHAIRS/ SPECIAL INTEREST GROUP PRESIDENTS/ICF COORDINATOR MEETING MINUTES FEBRUARY 4, 2014

Stephen McDavitt, President, called a regular meeting of the Board of Directors, Committee Chairs, Special Interest Group Presidents, and ICF Coordinator of the Orthopaedic Section, APTA, Inc. to order at 6:30 PM on Tuesday, February 4, 2014.

### Present:

Stephen McDavitt, President  
Gerard Brennan, Vice President  
Steve Clark, Treasurer  
Tom McPoil, Director  
Pam Duffy, Director  
D. Scott Davis, Research Chair  
Joe Donnelly, Practice Chair  
Tess Vaughn, Education Chair  
Chris Hughes, OP/ISC Editor

### Guests:

Megon Poll, Membership Comm.  
Michelle Strauss, Membership Comm.  
Sharon Klinski, Managing Editor  
Stevan Allen, ARSIG Vice President  
Kathy Cieslak, ICF Revisions Coordinator

Eric Robertson, Public Relations/Marketing Chair  
Stephanie Jones, Orthopaedic Specialty Council  
Joe Godges, ICF Coordinator  
Lorena Pettey Payne, OHSIG President  
Clarke Brown, FASIG President  
Julie O’Connell, PASIG President  
John Garziona, PMSIG President  
Kirk Peck, ARSIG President  
Doug White, Imaging SIG President

Tara Fredrickson, Executive Associate  
Terri DeFlorian, Executive Director

### Absent:

Renata Salvatori, Membership Chair  
Bill Egan, Nominating Chair  
Nicole Stout, APTA Board Liaison

The meeting agenda was approved as printed.

Stephen McDavitt, President, introduced the guests in attendance.

Gerard Brennan, Vice President, reported that the Board is gathering more information from both JOSPT and APTA on their respective educational platforms to determine which one will best meet the needs of the Section. The Board will obtain this information prior to their March 10th meeting and discuss again at that time.

Terri DeFlorian, Executive Director, reported that the Section office remodeling project has been completed and a person from a temporary agency has been working as our Publishing Assistant for the past week. It looks promising that she will be hired on full time in the next couple of weeks.

Gerard Brennan, Vice President, gave a brief update on the Physical Therapy National Outcomes Registry.

Stephen McDavitt, President, informed the group that requests for content expertise received from APTA have been forwarded to the appropriate SIG Presidents to respond. The SIGs who have been involved in this were thanked for their part in providing a reply.

Tess Vaughn, Education Chair, presented an update on CSM 2014.

D. Scott Davis, Research Chair, presented an update on the Clinical Research Network.

Joe Donnelly, Practice Chair, informed the group that he will be the next Georgia Chapter President and needs to step down as Practice Chair within the next year. He will mentor Kathy Cieslak who will be the new Practice Chair. Kathy currently serves as the Practice Vice Chair.

Joe Donnelly, Practice Chair, reported he is working with Aimee Klein on reviewing and updating the residency curriculum. He will bring recommendations to the Board at their July meeting.

Megan Poll gave the Membership Committee report which is attached to these minutes.\*

Chris Hughes, Editor, gave the ISC and OTP reports which are attached to these minutes.\*

Eric Robertson, Public Relations Chair, gave the public relations report which is attached to these minutes.\* There was discussion on the SIGs having a vehicle to communicate with their members. The SIGs will work with Eric on the best way to accomplish this.

Stephanie Jones gave the Orthopaedic Specialty Council report which is attached to these minutes.\*

Gerard Brennan, Vice President, announced the 2014 award recipients.

Stephen McDavitt, President, gave the following Nominating Committee report – The following candidates were slated for the 2013 election:

### Vice President

- Gerard Brennan

### Nominating Committee Member

- James Spencer
- Jo Armour Smith
- Kevin Lulofs-MacPherson

The election results were:

- Gerard Brennan, Vice President
- James Spencer, Nominating Committee Member

The outgoing Nominating Committee Chair is:

- Bill Egan

The incoming Nominating Committee Chair is:

- Cathy Arnot

Joe Godges, ICF-guidelines Coordinator, gave the clinical guidelines report which is attached to these minutes.\*

=**MOTION 1**= Pam Duffy, Director, moved that the Orthopaedic Section Board of Directors approve the development of a clinical practice guideline grant application

and bring back to the Section Board of Directors for approval prior to submitting to APTA. ADOPTED (Stephen McDavitt – in favor; Gerard Brennan – opposed; Steve Clark – in favor; Tom McPoil – in favor; Pam Duffy – in favor)

**Fiscal Implication:** None

The following SIG reports were presented and are attached to these minutes.\*

- Occupational Health
- Foot and Ankle
- Pain Management
- Performing Arts
- Animal Rehabilitation
- Imaging

Bill Boissonnault, Foundation President, was invited to give an update –

- The Center of Excellence has raised \$3 million to satisfy the long term commitment. The Orthopaedic Section was thanked for their contribution. They are now looking for applications to start coming in.
- Stanley Paris set sail in November 2013 to circumfernce the world in an effort to break the current world record with contributions raised being donated to the Foundation for Physical Therapy. Due to the damage to his boat he had to end his sail in January 2014.
- The Orthopaedic Section Endowment Fund is doing very well. We are now set to fund a \$40,000 grant every three years for orthopaedic research using the fund's interest beginning in 2023.
- Gerard Brennan has joined the scientific review committee and will represent the Orthopaedic Section.

\*Detail can be found on the Orthopaedic Section web site ([www.orthopt.org](http://www.orthopt.org))

## ADJOURNMENT 10:00 PM

*Submitted by Terri DeFlorian, Executive Director*

## CSM 2014 ANNUAL MEMBERSHIP MEETING MINUTES LAS VEGAS, NV FEBRUARY 5, 2014

### I. CALL TO ORDER AND WELCOME

- Stephen McDavitt, PT, DPT, MS, FAAOMPT, President, called the meeting to order at 4:00 PM.
- Section Board of Directors and staff were recognized.
- Past Orthopaedic Section President's, newly certified orthopaedic specialists, all certified orthopaedic specialists, Orthopaedic Section Mentors, and the Student Assembly Liaison were recognized.
- A moment of silence was held for Orthopaedic Section members that have passed away in the last year.
- The agenda was approved as printed.
- The Annual Membership Meeting minutes from CSM in San Diego, CA on January 23, 2013 were approved as printed.
- Orthopaedic Section Election Results were presented by President Stephen McDavitt, PT, DPT, MS, FAAOMPT. For the 2014 election there were 906 ballots cast. The number of valid ballots was 906 and the number of invalid ballots was 0. The following individuals were elected: Vice President, Gerard Brennan, PT, PhD; and Nominating Committee Member, James Spencer, PT, DPT, OCS, FAAOMPT.

There was a call for nominations from the floor for the 2015 election for the positions of Treasurer, Director, and Nominating Committee Member. The following individual was nominated for Treasurer – Pam White. The following individual was nominated for Director – Beth Jones. No nominations were brought forth for the position of Nominating Committee Member.

The deadline for accepting nominations for the 2015 election is September 1, 2014.

### II. INVITED GUESTS

- JOSPT Executive Director/Publisher, Edith Holmes, reported the number of new submissions to JOSPT continues to go up. Currently JOSPT is ranked number 4 of 63 among rehabilitation publications, number 6 of 63 in orthopaedic publications and 9 of 84 in the area of sports sciences. Half of the papers published in 2013 are from countries other than the United States. Priorities for 2014 are to maintain the number of papers published at 7-9 per month, and develop one special issue for 2015.
- Jason Sanders, PT, DPT, OCS, GCS, updated the membership on the PT-PAC.
- William Boissonnault, President, Foundation for Physical Therapy, reported –
  - The Center of Excellence has raised \$3 million to satisfy the long-term commitment. The Orthopaedic Section was thanked for their contribution. They are now looking for applications to start coming in.
  - Stanley Paris set sail in November 2013 to circumfernce the world in an effort to break the current world record with contributions raised being donated to the Foundation for Physical Therapy. Due to the damage to his boat, he had to end his sail in January 2014.
  - The Orthopaedic Section Endowment Fund is doing very well. We are now set to fund a \$40,000 grant every 3 years for orthopaedic research using the fund's interest beginning in 2023.
  - Gerard Brennan has joined the scientific review committee and will represent the Orthopaedic Section.

### III. FINANCE REPORT – Steve Clark, PT, MHS, OCS

The year-end 2012 audit of the Orthopaedic Section's finances showed total assets of \$4,897,623 which is a 12.0% gain over 2011. 2012 audited income was \$1,730,977 and audited expenses were \$1,393,239 resulting in a profit of \$337,738. The unaudited income and expense figures for 2013 results in a profit of \$96,376. The total amount in the Section reserve fund (checking, savings, LPL investment fund) as of December 31, 2013, was \$1,658,466. The Section's encumbered fund; including SIG funds and the restricted capital expenses was \$143,707. These encumbered funds are part of the total reserve fund amount. The 2014 operating budget is balanced with income and expenses both at \$2,035,119. Operating expenses were 74% of the reserve fund at 2013 year-end. The Section's policy requires 40% to 60% of total operating expenses in the reserve fund. As of December 31, 2013, the total amount in the Practice, Research, and Education Endowment Fund was \$2,323,036. This is a total increase of 23% from the fund's inception in 2007. There was an 15.08% gain on the LPL building fund value. The Section also still retains some land for the building of a footprint addition should this become a viable option. Currently, the real estate market in La Crosse does not support expansion.

### IV. SECTION INITIATIVES

2010-2014 Strategic Plan – Stephen McDavitt, President

- James Irrgang summarized the results of the Neck Pain Pilot project for the National Orthopaedic Physical Therapy Outcomes Database.
  - ✓ Survey conducted to determine usefulness of information & burden of collecting information:
    - Those that contributed data (response rate was 44%)
    - Those that did not contribute data (response rate 30%)
  - Motivations for participating in pilot project?
    - ✓ 90% - Enhance professional development
    - ✓ 80% - Obtain feedback to improve clinical performance
  - How long did it take to record data?
    - ✓ 55% - 5 minutes or less per patient
    - ✓ 70% - 10 minutes or less per patient
  - Summary report easy to understand?
    - ✓ 90% - Yes
  - Summary report provided all information wanted by PT
    - ✓ 85% - Yes
  - Value of results provided to PT
    - ✓ 75% - rated value of results as 3 or 4 on scale where 4 was "Extremely Valuable" and 0 was "No Value at all"
  - Willingness to participate in future?
    - ✓ 95% - Yes
  - Other desired features?
    - ✓ 85% - Electronic data entry
    - ✓ 80% - Ability to compare results to national normative data

- ✓ 80% - Ability to generate summary reports for groups or subgroups of patients
- ✓ 65% - Integrate data collection with EMR
- Recommendations:
  - ✓ Develop case report forms for:
    - Low back
    - Shoulder
    - Knee
- Proceed with development of electronic data collection forms for neck pain
- Integrate NOPTOD into APTA Outcomes Registry
- James Irrgang reported that the PTA Advanced Proficiency Survey Development Work Group continues to meet via conference call to revise and refine the survey that will be distributed to PT members of the Section. The goal of this survey is to determine the work tasks that need to be demonstrated via a PTA to demonstrate advanced proficiency for working in a musculoskeletal PT work setting. The Work Group will be meeting at CSM to continue work on the survey.
- Tess Vaughn, Education Chair, reminded everyone of the Annual Orthopaedic Section Meeting that will be held May 15-17, 2014, in St. Louis, MO.
- Tess Vaughn, Education Chair, announced the location for the 2015 Annual Orthopaedic Section Meeting will be May 14-16 in Scottsdale, AZ, at the Arizona Grand Resort.

• Lori Michener, Chair, Clinical Research Network Advisory Board, gave the following update –

- ✓ **Primary purpose**
  - o Perform multi-center clinical project(s) delivered by physical therapists for patients with MSK conditions commonly managed by physical therapists, using the CRN.
- **Second purpose**
  - o Develop a CRN that is sustainable for future use by Orthopaedic Section members to conduct multi-center clinical projects.
  - o October, 2012 the Orthopaedic Section BOD approved the award of the CRN Grant
  - o \$300,000 over 3 years
- Opt-IN
  - o Develop a CRN OPT-IN infrastructure in Florida
  - o Expand OPT-IN to other clinical sites: 8 clinics in remaining geographic regions
- OPSPRO
  - o Provide validated screening tools for rapid identification of yellow (psychological distress) and red (systemic involvement) flags to enhance patient decision making for spine, knee & shoulder pain
  - o Two phases: development of tools, then validation of tools
- 6 Month Goals were met
  - o IRB approval and Manual of Operating Procedures
  - o Item bank for screening tools
  - o Database and data collection systems
  - o N=112 patients
- 12 month Goals
  - o Meeting here at CSM to review
  - o Presentation of 1 year status and results today
- ICF-based Clinical Practice Guidelines – Joe Godges, Project Coordinator, presented the following

Aims of the Guidelines

- ✓ Describe diagnostic classifications based upon ICF terminology
- ✓ Describe best outcome measures to use
- ✓ Describe best intervention strategies that are matched to the classification, in other words, reduce unwarranted variation and do the right thing at the right time for the right patient.

Published Clinical Practice Guidelines

- ✓ Heel Pain/Plantar Fasciitis (2008)
- ✓ Neck Pain (2008)
- ✓ Hip Osteoarthritis (2009)
- ✓ Knee Ligament Sprain (2010)
- ✓ Knee Meniscal Disorders (2010)
- ✓ Ankle Tendinitis (2010)
- ✓ Low Back Pain (2012)
- ✓ Shoulder Adhesive Capsulitis (2013)
- ✓ Ankle Sprains (2013)

Clinical Practice Guidelines in review - Revisions Coordinator, Christine McDonough

- ✓ Non-arthritis Hip Joint Pain
- Guidelines under Construction – Revisions Coordinator, Christine McDonough
- ✓ Patellofemoral Pain Syndrome
  - ✓ Carpal Tunnel Syndrome (collaborating with the Hand Rehabilitation Section)
  - ✓ Distal Radius Fractures (collaborating with the Hand Rehabilitation Section)
  - ✓ Hip Fractures (collaborating with the Section on Geriatrics)
  - ✓ Medical Screening (collaborating with the Federal PT Section)
  - ✓ Elbow Epicondylitis (collaborating with the Hand Rehabilitation Section)

Future Clinical Practice Guidelines

- ✓ Subacromial Pain Syndrome
- ✓ Shoulder Instability
- ✓ Potential Collaborations with the Sports Physical Therapy Section

Guidelines under Revision

- ✓ Heel Pain
- ✓ Neck Pain
- ✓ Knee Ligament Strain
- ✓ Knee Meniscal Disorders

Clinical Practice Guideline revisions are required at least every 5 years and include a systematic review of the literature, review and categorization of search results, and critical appraisals of publications. Assistance in this process is welcomed. Interested individuals should contact Joe Godges (godges@usc.edu) or Christine McDonough (cmm@bu.edu).

**V. RECOGNITION**

The following outgoing committee chair was recognized for his service to the Section as his term ends at the close of the 2014 CSM Membership Meeting –

- Bill Egan, PT, DPT, OCS, FAAOMPT – Nominating Chair

**VI. NEW BUSINESS MOTIONS**

No motions were brought forth.

**VII. OPEN FORUM**

- A. The question was raised on whether or not the Section had an active agenda on advocacy. Joe Donnelly, Practice Chair, gave an update on the activities of the Practice Committee relating to advocacy.
- B. Discussion on the PTA issue was brought forth. The membership requested the Board of Directors submit an active response to CAPTE by the February 4, 2014 deadline.
- C. A comment was made on imaging and changing the Medicare payment policy. Since this involves the APTA, the Imaging SIG was asked to bring forth a recommendation to the Board of Directors on how they would like to see action taken.
- D. Discussion on OT and PT practice area overlap was discussed. It was decided the Orthopaedic Section President and Practice Chair would take this issue up with the APTA Practice Department and report back to the membership.

Board of Director, Committee, ICF, SIG and EIG reports are located on the Orthopaedic Section web site (www.orthopt.org).

**ADJOURNMENT 5:30 PM**

# 2014 Annual Orthopaedic Section Meeting



St. Louis, Missouri | Hyatt Regency St. Louis at the Arch  
May 15–17, 2014

## The Triangle of Treatment: Integrating Movement System Impairments, Manual Therapy and the Biopsychosocial Approach in the Treatment of the Upper Quarter

*Dedicated to Advanced Orthopaedic Practice for Physical Therapists*

The first Annual Orthopaedic Section Meeting in Orlando was a resounding success and we are excited to present our second Annual Orthopaedic Section Meeting in St. Louis, Missouri. This is a unique 2-day meeting focusing on the latest clinical strategies in the clinical management of the upper quarter. The format will include lecture and laboratory experiences with outstanding speakers who are experts in their fields and leaders in clinical research. The breakout lab sessions are small in size to allow for hands-on instruction and feedback from the presenters and lab assistants. The general sessions will consist of a panel of speakers who will discuss how to integrate physical therapy treatments to achieve the best outcomes for patients with Upper Quarter dysfunctions. Attendees will have the ability to choose among multiple breakout sessions during both days of the conference. **We hope to see you at the Arch!**

### Program Information

#### Thursday, May 15, 2014

**\*Complimentary Session**  
3:30PM–5:30PM

***Lacking Resources to Implement the Didactic Portion of an Orthopaedic Residency Program? The Section's "Curriculum in a Can" Can be the Answer You are Looking For!***

Speakers: Joseph M. Donnelly, PT, DHS, OCS; Aimee Klein, PT, DPT, DSc, OCS  
\*\* This session will be offered to the first 50 attendees who would like to attend.

**Opening Reception & Keynote Presentation: 6:00 PM – 9:00 PM**

***Skills to Succeed in a Changing Health Care Environment***

Speaker: Alan Jette, PT, PhD, FAPTA

#### Friday, May 16, 2014

**Daily Schedule: 8:00AM–5:00PM**  
**General Session: 8:00AM–10:00AM**

***The Movement System Impairment, Manual Therapy and Biopsychosocial***

***Approach to Neck Pain: Are Similarities and Differences Complementary or Competitive?***

Speakers: James Elliott, PT, PhD; Shirley Sahrman, PT, PhD, FAPTA; Patricia M. Zorn, PT, MAppSci (MT), FAAOMPT; and (pre-recorded presentation) Gwendolen Jull, Dip Phty, Grad Dip Manip Ther, M Phty, PhD, FACP

#### **Concurrent Breakout Sessions:**

\*\* On Friday, four concurrent breakout sessions will be offered. The registrant will attend three out of four breakout sessions following the morning general session, based on order of preference indicated on the registration form. Note: space is limited, and therefore the attendee's breakout session assignments will be given on a first-come, first-serve basis.

***Session 1: Towards a Neurobiological Understanding of Traumatic Neck Disorders***

Speakers: James Elliott, PT, PhD; Janet Helminski, PT, PhD

***Session 2: Neck Pain: The Examination and Treatment of Neck Pain using an Integration of the Movement System Impairment Approach and Manual Therapy***

Speakers: Shirley Sahrman, PT, PhD, FAPTA; Patricia M. Zorn, PT, MAppSci (MT), FAAOMPT

***Session 3: Mind Matters: Integrating Neural Mechanisms into Pain Management***

Speaker: Kathleen Sluka, PT, PhD, FAPTA

***Session 4: Integrating Movement System Impairments and Manual Therapy in Assessment and Treatment of the Cervical Spine***

Speakers: Kenneth A. Olson PT, DSc, OCS, FAAOMPT; Michael Wong, PT, DPT, OCS, FAAOMPT

# CSM, Las Vegas, NV February 2014



40th Anniversary  
Cake



Ortho Staff Manning  
the Booth



Past Presidents

## Saturday, May 17, 2014

Daily Schedule: 8:00AM–5:00PM  
General Session: 8:00AM–10:00AM

**Using Movement System Diagnoses Versus Pathoanatomic Diagnoses in Everyday Clinical Decision Making**  
Speakers: Marshall LeMoine, PT, DPT, OCS; Paula Ludewig, PT, PhD

### Concurrent Breakout Sessions:

\*\* On Saturday, four concurrent breakout sessions will be offered. The registrant will attend three out of four breakout sessions following the morning general session, based on order of preference indicated on the registration form. Note: space is limited,

and therefore the attendee's breakout session assignments will be given on a first-come, first-serve basis.

### Session 5: Triangles of Treatment for Masticatory Muscle Pain

Speakers: Steve Kraus, PT, OCS, MTC, CCTT

### Session 6: Examination and Treatment of Movement System Impairments of Selected Conditions of the Hand and Elbow

Speaker: Cheryl Caldwell, PT, DPT, CHT

### Session 7: Integration of Biomechanics and Movement Classifications in Shoulder Rehabilitation

Speakers: Paula Ludewig, PT, PhD; Shirley Sahrman, PT, PhD, FAPTA

### Session 8: Integrating Movement System Impairments and Manual Therapy in Assessment and Treatment of Shoulder Dysfunction

Speakers: Marshall LeMoine, PT, DPT, OCS; Michael Wong, PT, DPT, OCS, FAAOMPT

This meeting will be held at the beautiful Hyatt Regency St. Louis at the Arch Hotel. Visit our web site at: [https://www.orthopt.org/content/c/orthopaedic\\_section\\_2014\\_annual\\_meeting](https://www.orthopt.org/content/c/orthopaedic_section_2014_annual_meeting) for full details regarding this exciting meeting, to book your guestroom, and to register.

**Do you enjoy baseball?** We have been informed that with the release of the 2014 St. Louis Cardinals baseball schedule, they will be playing both the Chicago Cubs and the Atlanta Braves at home during the same dates as our Annual Orthopaedic Section Meeting!

**Additional Questions?** Call toll free: 800-444-3982 x 2030  
or visit our web site at: [www.orthopt.org](http://www.orthopt.org)



# OCCUPATIONAL HEALTH

## SPECIAL INTEREST GROUP

### President's Message

Lorena P. Payne, PT, OCS

**The Independent Study Course for worker rehabilitation** is now available through the Orthopaedic Section. Experts in occupational health physical therapy have worked hard to create a top notch educational offering. Take advantage of this resource by purchasing it through the Orthopaedic Section website.

Members of the SIG continue to make significant contributions to this specialty area of practice. The following **authors are recognized** for their time and expertise as they submitted the articles published in *Orthopaedic Physical Therapy Practice* over the past year:

- Margot Miller, "Integrating Safety and Wellness Programming"
- Chris Juneau, "Holistic Emphasis Part 2: Pain Management Epidemic"
- Christopher Studebaker and Brian Murphy, "Common Industrial Ergonomics Assessment Tools for Physical Therapists"
- Nicole Matoushek, "Limitless Opportunities for the Physical Therapy Professional in the Occupational Health & Workers' Compensation Industry"
- John Lowe, "Occupational Health: It's not just workers' compensation" (2014)

**Authors are needed** for submitting articles for *Orthopaedic Physical Therapy Practice*. If you have ever thought of sharing information related to worker rehabilitation, injury prevention or perhaps a case study, please contact Lorena at [Lpettet@aol.com](mailto:Lpettet@aol.com).

**Sign up for involvement** in the Occupational Health SIG at the Orthopaedic Section website under special interest groups. If you do not get email updates from the SIG, please contact Tara Fredrickson at the Orthopaedic Section office (800-444-3982) or any of the OHSIG board of directors.

### It's Time to STarT to Integrate Evidence-based Low Back Pain Clinical Practice Guidelines into Occupational Settings

David A. Hoyle, PT, DPT, MA, OCS, MTC, CEAS  
National Director of Clinical Quality-WorkStrategies, Storrs, CT

Katie McBee, PT, DPT, MS, OCS, CEAS  
Regional Director of WorkStrategies, Louisville, KY

Low back pain (LBP) is the most prevalent and costly musculoskeletal problem in today's economically advanced societies, often leading to long-term disability and frequent use of health

care resources.<sup>1</sup> Despite spine-related expenditures substantially increasing, there is a lack of evidence of corresponding improvement in self-assessed health status.<sup>2</sup> In Canada, Finland, and the United States, more people are disabled from working as a result of musculoskeletal disorders (MSDs)—especially back pain—than from any other group of diseases.<sup>1</sup> A systematic review in 2008 estimated the total economic burden for LBP in the United States to be between \$118.8 and \$624.8 billion depending on the methods used to calculate these estimates.<sup>3</sup> A breakdown of costs associated with the treatment of LBP estimated that the largest proportion of direct medical costs for the treatment of LBP was spent on physical therapy (17%) and inpatient services (17%), followed by pharmacy (13%) and primary care (13%).<sup>3</sup>

Given the profound effect that occupational LBP can have on individual workers, their families, employers, and those responsible for paying for compensation and medical services, including the high utilization and cost of physical therapy, it is vital that as a profession, physical therapists institute processes to minimize costs and maximize outcomes associated with our role in management of this condition. In keeping with the advice of Delitto et al,<sup>4</sup> a staging and classification approach to the treatment of occupational LBP are recommended. In accordance with the original classification for management of LBP proposed by Delitto et al,<sup>4</sup> it is suggested that stage 1 involve the evaluation for the presence of red flags by all practitioners. In the absence of red flags and in the interest of efficiently using resources, stage 2 should seek to identify the likelihood of recovery without further treatment or with minimal treatment versus the need for more extensive intervention.<sup>5</sup> Finally, stage 3 should classify patients based on signs and symptoms into the most evidence supported treatment.<sup>6-10</sup> Below is a more detailed description of each stage.

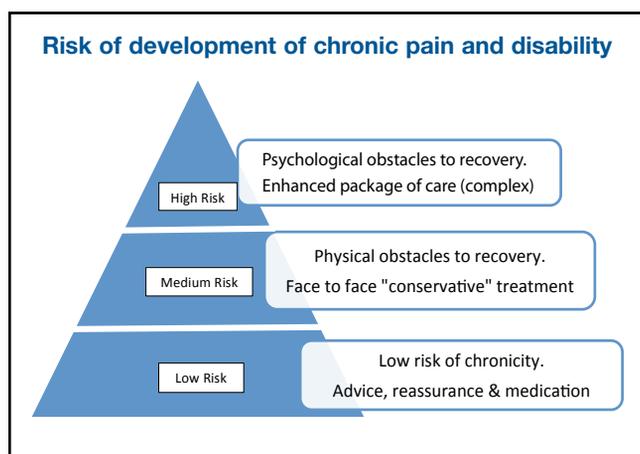
#### Stage 1: Rule Out the Need for Immediate Medical Intervention

The first stage serves to rule out red flags that would indicate the need for an immediate work up. In general, it has been demonstrated that early imaging leads to increased costs due to the cost of imaging itself, as well as an acceleration of costly and invasive treatments without significant benefit.<sup>11</sup> In fact, early imaging might be an iatrogenic cause of delayed recovery. However, in the presence red flags, appropriate work up is prudent. Red flags include signs and symptoms such as elevated body temperature, abnormal resting blood pressure, heart rate or respiration rate, and recent unexplained weight loss. Severe symptoms include constant pain unrelenting with positional change or movement, severe night pain unrelated to movement, history of significant trauma, abdominal pain especially if radiating into the groin and associated with hematuria, sexual dysfunction, recent menstrual irregularities, bowel or bladder dysfunction, or anesthesia in the perineum.<sup>4</sup> To this should also be added progressive distal weakness.

## Stage 2: Determine Risk Factors for Chronicity and Need for Skilled Care

Research has indicated there are many factors that help to predict the likelihood of an acute case of LBP transitioning on to chronic pain or resulting in failure to return to gainful employment in a reasonable time period. These predictive factors include severity of pain, and radiation of pain, as well as psychosocial factors often referred to as yellow, orange, blue, and black flags.<sup>12-17</sup> Yellow flags generally relate to psychosocial factors such as pain catastrophizing, fear avoidance beliefs and behaviors, depression, and self-efficacy or locus of control.<sup>18</sup> Orange flags indicate a comorbidity of a severe mental illness. Blue flags are factors that are unique to the worker and their work environment and include adversarial relationship with employer management, insufficient abilities to perform the job prior to injury, feelings of lack of control over the work environment or not being valued at the work place, etc.<sup>19</sup> Lastly, black flags include work environment or organizational factors that may affect the speed of recovery or ability to return to work. These can include insurance authorization delays, no light duty, high physical demands, required overtime, and lack of a flexible return to work program as well as others.

With all of these factors that can affect the prognosis in occupational LBP, it is helpful to use screening tools to assist in an efficient assessment. The STarT Back Screening Tool (<http://www.keele.ac.uk/sbst/onlinetool/>) measures a group of psychosocial factors and has been shown to predict recovery in back pain.<sup>20</sup> The tool places individuals with back pain into 3 categories (Figure 1): (1) those likely to recover with appropriate advice and reassurance supplemented with medicine, (2) those with medium risk of developing chronicity and who have physical obstacles to recovery and should receive direct care from a physical therapist, and (3) those with psychological barriers to recovery that may require an *enhanced package of care* that targets these psychosocial risk factors.<sup>5</sup>



**Figure 1. Application of STarT Back Screening Tool/ Subgrouping and targeting treatment for low back pain. Adapted with permission from Keele University website (<http://www.keele.ac.uk/sbst/>). The copyright (© 2007) of the STarT Back Tool and associated material is owned by Keele University, the development of which was partly funded by the Arthritis Research UK.**

## Stage 3: Determine the Appropriate Dominant Treatment Classification

For patients requiring more intensive care based on their increased likelihood for chronicity, there is a need to match patient's signs and symptoms to the most appropriate intervention. The Clinical Guidelines for Low Back Pain summarizes current available evidence through 2010.<sup>6</sup>

A summary of what the staging and classification approach in the form of a decision making flow chart might look like is in Figure 2. It should be noted that not all presentations of back pain will fit firmly into one classification.<sup>21,22</sup> Patients may have elements of more than one classification or may change from one classification to another through the course of treatment. Furthermore, patients who score high on the STarT Back Screening Tool are more likely to require therapeutic neuroscience education,<sup>23,24</sup> cognitive behavioral techniques,<sup>25</sup> graded exercise, activity,<sup>26</sup> and exposure<sup>27</sup> as primary treatment approaches or in combination with more traditional physical therapy approaches.<sup>12,28</sup>

Physical therapists have the opportunity to decrease the costs associated with occupational LBP including direct medical costs and indirect indemnity costs by providing the most prudent, efficient, appropriate management strategies. More importantly, we have the opportunity to improve the lives of individuals who sustain occupational LBP as well as the lives of their families, and decrease the epidemic of chronic occupational LBP and disability. Physical therapists need to be cognizant of the appropriate use of the resources available to them and use tools that identify prognosis with regards to recovery. Greater resources should be invested where prognosis is poor and fewer resources where prognosis is excellent.<sup>5</sup>

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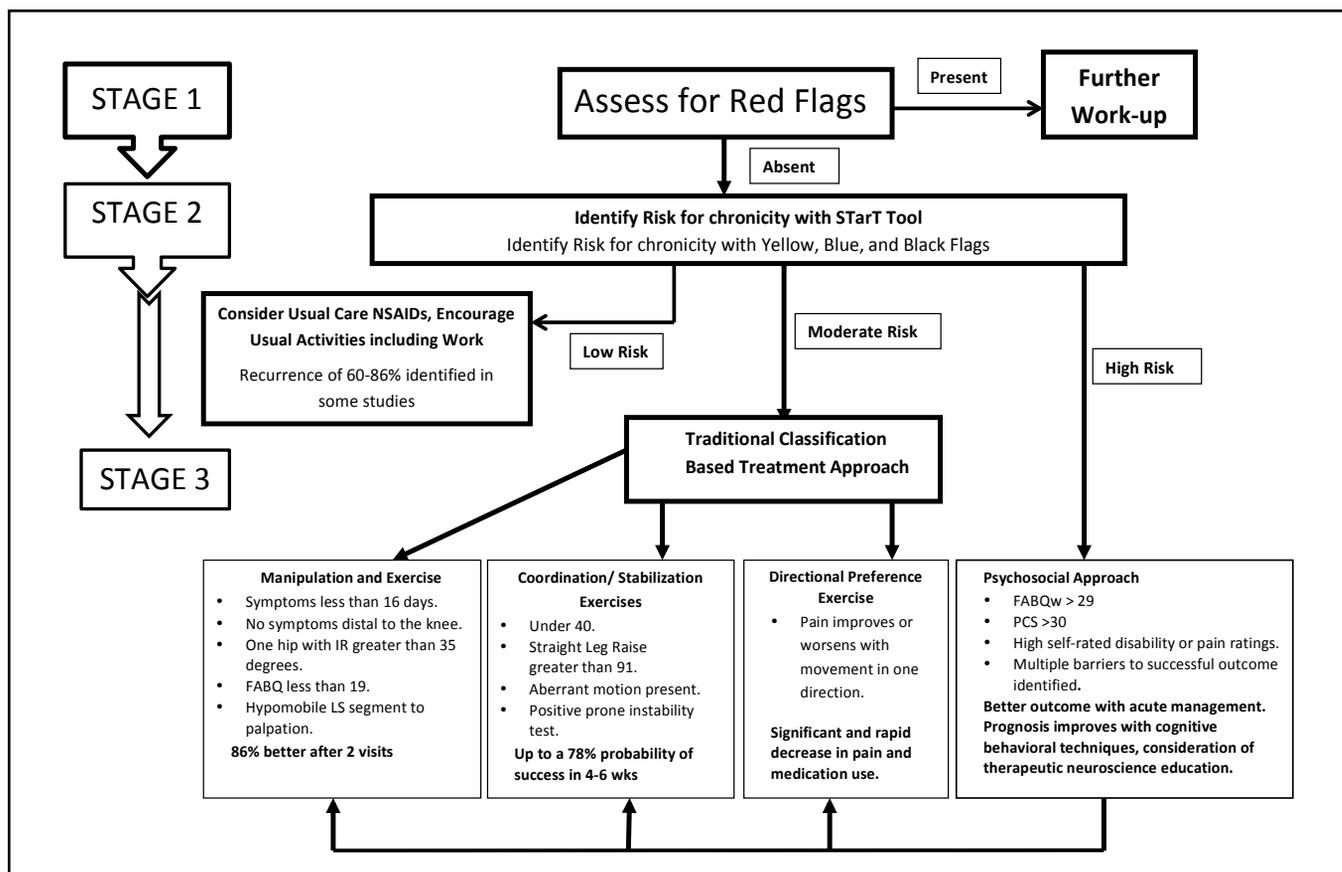


Figure 2. Occupational low back pain decision-making flow chart.

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# PERFORMING ARTS

## SPECIAL INTEREST GROUP

### President's Letter

Annette Karim, PT, DPT, OCS, FAAOMPT

The CSM 2014 PASIG Business Meeting was a great time for gathering clinicians, academicians, and students who have a passion for the care of performing artists. During the meeting we transitioned two committee positions.

On behalf of the PASIG, I would like to thank Julie O'Connell, 2011-2014 PASIG President, and Amanda Blackmon, 2011-2014 Nominating Committee Chair, for their 3 years of service to our SIG. Thank you, Julie and Amanda!!

Our current PASIG Board and Committee Chairs are listed below.

The following section is a report from our Business Meeting:

#### Education

In the area of continuing education, we discussed updating our monograph/s on Performing Artists. Members expressed a need for an increased level of continuing education courses for experienced clinicians that included more specific manual techniques and exercises for treating each type of performing artist. A request for more courses on treating musicians and vocalists was made. A suggestion was made to offer an advanced level preconference course to address these requests. A suggestion for a movement class was made. If you have a suggestion for future programming, please contact Mark Sleeper at m-sleeper@northwestern.edu.

#### Student Scholarships

Congratulations to our CSM 2014 Student Scholarship recipients, Lindsey Seidelman, SPT, and Sarah Beckett, SPT, from the University of Central Florida. They presented a poster, *Incidence and Prevalence of Musculoskeletal injury Among Collegiate Marching Band and Color Guard Members*. Thank you, Lindsey and Sarah! If you are a student who is interested in submitting performing arts research content to CSM for poster or platform presentation, do so early. When your submission is

accepted for CSM 2015, you are eligible for a \$400 scholarship, but you must apply for the scholarship separately, through the PASIG, via Amy Humphrey at amymarieis@comcast.net.

#### Nominating Committee

We are looking for PASIG members to serve on our Board and committees. Positions we would like to fill are Treasurer, Secretary, Bylaws Chair, Practice Chair, and Public Relations Chair. These are appointed positions decided upon by the current governing Board and Nominating Committee. The chair of each committee can appoint their committee members, and volunteers are welcome to initiate contact. Physical therapy students are welcome to participate and receive mentorship from committee members. This is a great way to grow into leadership positions. We will need candidates for one Nominating Committee position in 2015, an elected position voted in by all Orthopaedic Section members. We need committee members for the Student Scholarship Committee and the Education Committee. If you are interested in serving in any way, please contact Rosie Canizares, Nominating Chair, at rcc4@duke.edu. She will be able to provide chair and committee position descriptions upon request.

#### Research Call to Action

We need writers for the 2014 Citation blasts. These are put together on a monthly basis. Please contact Brooke Winder for more information at BrookeRwinder@gmail.com. Go to the web site to look at topics that have been covered, add new content, or update old citation topics at [http://www.orthopt.org/content/special\\_interest\\_groups/performing\\_arts/citations\\_endnotes](http://www.orthopt.org/content/special_interest_groups/performing_arts/citations_endnotes)

We need case reports and original research papers that focus on clinical applications to the care of performing artists to publish in the PASIG newsletter pages of our quarterly *Orthopaedic Practice* magazine. *Orthopaedic Practice* is a great way to get your case reports, original research, and clinical application pearls into the hands of our members. Please contact Annette if you are interested in submitting your writing at neoluvsonlyme@aol.com.

SIG Governing Board & Committees .....	Terms .....	Email
Annette Karim, President .....	2014-2017 .....	neoluvsonlyme@aol.com
Tom McPoil, Orthopaedic Board Liaison .....	2013-2016 .....	tommcpoil@gmail.com
Mark Sleeper, Vice President and Education Chair .....	2013-2016 .....	M-sleeper@northwestern.edu
Amy Humphrey, Student Scholarship Committee Chair .....	2012-2014 .....	amymarieis@comcast.net
Rosie Canizares, Nominating Chair .....	2012-2015 .....	rcc4@duke.edu
Elizabeth Chesarek, Nominating Committee .....	2013-2016 .....	Elizabeth.Chesarek@choa.org
Janice Ying, Nominating Committee .....	2014-2017 .....	JaniceYingDPT@gmail.com
Brooke Winder, Research Chair .....	2014-2016 .....	BrookeRwinder@gmail.com
Amanda Blackmon, Membership Chair .....	2014-2016 .....	Mandy@onetherapy.com
Sarah Wenger, Dancer Screening Chair .....	2014-2016 .....	Sbw28@drexel.edu

Information for potential authors can be found at: [https://www.orthopt.org/uploads/content\\_files/Downloads/OPTP/OP\\_Instructions\\_to\\_Author.pdf](https://www.orthopt.org/uploads/content_files/Downloads/OPTP/OP_Instructions_to_Author.pdf).

If you are seeking research participants, or are seeking a researcher to work with your potential participants, contact both Brooke Winder, Research Chair at [BrookeRwinder@gmail.com](mailto:BrookeRwinder@gmail.com).

### Membership

Membership is FREE to all Orthopaedic Section members! FREE!

Please take two seconds to join: [http://www.orthopt.org/sig\\_pa\\_join.php](http://www.orthopt.org/sig_pa_join.php)

Current members please update your profile: [https://www.orthopt.org/login.php?forward\\_url=/surveys/membership\\_directory.php](https://www.orthopt.org/login.php?forward_url=/surveys/membership_directory.php).

*\*You must be an APTA Orthopaedic Section member to join the PASIG.*

ALL Members: please send a quick e-mail to Amanda Blackmon, Membership Chair, at [mandy@onetherapy.com](mailto:mandy@onetherapy.com).

Amanda is organizing our membership by region, to facilitate improved communication between members. At CSM, our members have expressed an interest in geographically networking and having access to other members of PASIG, and increasing collaboration with other health care providers in a direct access environment. Amanda will also update our web site for internships, residencies, and fellowships, so please send her your information.

### Dance Screening

At CSM, we discussed standardization and consensus in screening the pre-professional dancer. If you have suggestions or questions, please contact Sarah Wenger at [Sbw28@drexel.edu](mailto:Sbw28@drexel.edu).

The following impromptu collaboration hopes to serve as a thought-provoking and informative demonstration of the clinical reasoning process behind screening and treating the young dancer. Enjoy!

*Annette*

## CLINICAL APPLICATIONS SCREENING AND TREATING THE YOUNG DANCER: A CLINICAL REASONING PROCESS

*Annette Karim, PT, DPT, OCS, FAAOMPT*

*Clare Frank, DPT, MS, OCS, FAAOMPT*

*Shirley Sahrman, PT, PhD, FAPTA*

The dancer is an 8-year old, hypermobile female who studied Vagonova ballet technique for two years, 3 classes per week. She would like to become a professional ballerina. In her Vagonova technique classes, she was praised for her flexibility and lines, but in her new classes, she struggled with jump height and speed of movement. She was a direct-access, cash pay wellness client, referred by a former dancer patient to Dr. Karim. The dancer currently had no injury, pain, musculoskeletal impairment, or functional disability. There were no red flags for outside referral. The following case description demonstrated clinical reasoning in screening and treating this dancer through movement system impairment exam by Dr. Sahrman, applied dynamic neuromuscular stabilization (DNS) principles by Dr. Frank, and spe-

cific dance medicine concepts by Dr. Karim. Participant photo consent was given.

*Dr. Sahrman:*

**Standing Posture:** The dancer stood in spinal extension, with the left leg and pelvis laterally rotated with the left knee more hyperextended than the right (Figure 1). At this point we asked if is this habit, or a structural issue. The pelvis tended to move to the left, so we needed to check the greater trochanters for symmetry. Since she hyperextended the left knee more than the right, she might prefer standing on her right leg since she could do this without excessive hyperextension. She used her back extensors excessively because her hip flexors pulled her forward so that the line of gravity would be over her base of support as she bends backward. In ballet, the dancer will hold her shoulders down when she raises her arms, so the latissimus pulled her into more extension. Her infrasternal angle was wide, so she needed to use her external obliques to pull the ribcage in.

**Standing Movement:** In forward bending, she had a high right hip at end range and felt a big pull of the hamstrings (Figure 2). The hamstrings “pulled” to provide stability until hip flexion was past 120°, at which point she could bend all the way down. Sidebending was unremarkable. She can rotate to the right more than the left so the left abdominal muscles were less taut than the right side. At this point, we thought the left external oblique may not be as active. With excessive knee hyperextension she doesn’t need to oscillate between quadriceps femoris and hamstrings, so she needed to balance hip flexors and hamstrings. In single limb stance on the left with right hip flexion (Figure 3), she demonstrated increased adduction of left femur and a trunk shift, indicating insufficient performance of the left abductors. She moved into lateral rotation and walked turned out to increase her base of support for stability. At this point, we earmarked the left hip abductor and left external oblique for further testing. With young children, it is difficult to see where the structural limit is, so we tested in different positions.

**Supine:** In her two-joint hip flexor test, her right side did not show much anterior tilt, but more so, abduction; therefore, her pelvic anterior tilt was a dynamic, not a tissue problem. On her left side, she abducted and laterally rotated, and when corrected into midline, her tibia laterally rotated, indicating a stiff tensor fascia latae pulling on the tibia into lateral rotation by virtue of its insertion into Gerdy’s tubercle on the lateral knee (Figure 4). In the leg log test, she had good internal and external rotation bilaterally. She toe flexed (pointing her toes), another problem in young dancers who overuse the toe flexors vs. the gastrocnemius, so we taught “lift your heels,” instead of pointing the toes. With passive hip flexion, the left hip was better than the right. There was increased right anterior glide, also seen in prior single limb stance left—the right hip posteriorly pelvic tilted, and in standing forward flexion, where the right hip is higher than the left. In bilateral leg lowering abdominal testing, she used the rectus abdominis instead of the external obliques. She performed sitting up very well, using the internal obliques, which widened the infrasternal angle. In ballet, dancers use the lower extremity co-contraction to stabilize the pelvis instead of the abdominals. Why would we give double leg instead of unilateral leg lowering as an exercise prescription? The tendency in ballet is to use the opposite hip extensors for stability and not the external obliques. We needed to recruit the



**Figure 1.** Left > right hip lateral rotation, left > right knee hyperextension, spinal extension.



**Figure 3.** Left femoral adduction and medial rotation, lateral trunk shift and pelvic rotation, tensor fascia latae/iliotibial band driven, sartorius substitution for right hip flexor insufficiency.



**Figure 2.** High right hip, taut right hamstring, left tibial lateral rotation.



**Figure 4.** Tensor fascia latae/iliotibial band on tension, tibia leads.

external obliques. Another exercise to use bent knee fall-out, to learn to use the lower extremity while learning to stabilize pelvis with external obliques. **Sidelying:** While lying on her left side, with right hip abduction and lateral rotation, her right hip did lateral rotation first, then abduction after doing it for a while. She did a good job using right lateral abdominals. At this point I asked, "What movement do I see? Is there a deficiency in the muscle test to back it up?" Her tendency while lying on her right side with left hip abduction and lateral rotation was to flex and roll back with a left lateral pelvic tilt. The left pelvis rotated back and the left tensor fascia latae compensated for the absence or insufficiency of gluteus medius activation. **Prone:** Gluteal folds were not level. In the prone two joint hip flexor extensibility test, the right was okay, but the left is positive. Is it the tensor fascia latae/iliotibial band? If I abduct her, she is still positive, so I needed to see the difference between the right and left iliopsoas. The left iliopsoas is more active than the right and the right is weaker. The left hip was more medially rotated than right (Figure 5), which is interesting because she liked to stand in left lateral rotation. Gluteus maximus testing was okay.

**Quadruped:** In quadruped rocking, she veered off to the left; when corrected, the right hip did not flex as much and the hip is high. With alternate arm raises, she tried to use her hamstrings to control her hips. **Seated:** With knee extension she showed lumbopelvic rotation. With unilateral hip flexion, her left iliopsoas was more active than her right, so there was more anterior pelvic tilt. Her left iliopsoas and her right hamstrings were stronger, or more active.

**Summary:** Functionally, she was trying to balance by using her hip flexors to pull herself forward or her back extensors to pull herself back. She needed to strengthen her right iliopsoas and left gluteus medius, left external oblique. She had an acquired lateral rotation, not structural. Her lateral rotation came from her tibia instead of her femur. She was not using her musculature. In sit to stand, she should not hyperextend the knees. She should learn arch exercises, walking heel strike to heels up with knees bent. She needed to work through her ballet movement to use her left external oblique, right iliopsoas, and left gluteus medius. Evaluation tools can be found in Dr. Sahrman's first book.<sup>1</sup>

*Dr. Frank:*

*My examination would be very similar to Dr Sahrman's structured movement exam with additional DNS tests.*

The intraabdominal pressure (IAP) regulation test<sup>2</sup> in the triple flexion position demonstrated a slight lumbar extension with pelvic rotation on the left, with insufficient left lower abdominal wall activity in the area just above the groin. (Figure 6). Providing a gentle caudal shift of rib cage to facilitate better abdominal activation (placing diaphragm in a better mechanical advantage for postural function) was an effective manual technique when teaching the exercise. To evoke/facilitate the support function of gluteus medius from the DK and Dynamic Neuromuscular perspective, I placed the dancer in an oblique sit position. Note the left hyperextended elbow with poor scapular stability and the bowing of her left lateral trunk (Figure 7). For movement re-education, I assisted by tacking the rib cage down slightly while avoiding elbow hyperextension while the dancer performed a rotational reach movement. My right hand applied pressure on the dancer's left lateral knee to facilitate the support function of the left gluteus medius by virtue of its reverse action (Figure 8). Scapular stability had a strong connection with lateral abdominals. A good Integrated Spinal Stabilizing System was necessary to provide a stable base for the hip musculature to function.<sup>3</sup> The dancer's impairments were listed as follows: There was inadequate ISSS and IAP regulation, especially on the left lower portion of abdominal wall; left tensor fascia latae stiffness; right 1-joint hip flexor weakness, excessive co-contraction of hamstrings, adductors, and extensors; poor left gluteal support function (ipsilateral rolling pattern turning to the left was impaired); excessive left tibia lateral rotation; dominance of toe extensors over gastrocnemius and soleus; decreased dynamic scapular stability; and habitual hyperextension of elbows and knees, which may perpetuate the hypermobility. Treatment focus should include narrowing the rib cage angle to improve external oblique function while maintaining good IAP regulation in triple flexion position, (Figure 6) and translating this awareness to various positions and movements. Make sure that neck and pectoralis muscles are relaxed as this may be a com-



Figure 5. Medial rotation range of motion of the hips.



Figure 6. A positive IAP test in 90/90 position with manual correction.



Figure 7. High oblique sit position with poor stabilization.

compensatory mechanism for insufficient ISSS. The high-oblique sit position with reach (ipsilateral pattern, Figure 8) can be used to improve left support function of gluteals, while making sure the other joints are centrated, ie, elbows, shoulders, foot. Muscles (gluteals, scapulae, etc.) must be trained in both the phasic (open kinetic chain) and support function (closed kinetic chain). Heel-toe gait (plantarflexion knee flexion) and sit-to-stand should be practiced avoiding hyperextension of the knees. Future visits should address checking proprioception, practicing quality single heel raises, and strengthening foot intrinsics to counter the pronatory stresses on foot/knee and up the chain.

*Dr. Karim:*

At the barre, the dancer stood in anterior pelvic tilt, with excessive lumbar extension and forward head, a wide infrasternal angle, and winged scapulae (Figure 9). In tendu en avant she sat into her left hip, curling her right toes vs. pointing her foot,



Figure 8. Corrected high oblique sit.

with forced turnout, “rolling in” her feet, with a temporary left first metatarsal pronation and proximal phalanx lateral deviation (Figure 10). To achieve this position, she activated her rectus femoris first. She stood on a left hyperextended knee with right arabesque, with loss of her lateral hip and core stabilizers, as well as scapular elevation as she struggled for stability. Standing right, she demonstrated left cervical and lumbar sidebend, excessive use of bilateral sternocleidomastoid, left pelvic lateral rotation as a compensatory movement for left<right hip external rotation. In single limb parallel pli e, she moved into extension rotation of the lumbar spine with adduction medial rotation of the femur on the left side. She was unable to balance in relev e pass e on either side. I expected poor activation of the relevant phasic, or postural muscles: intrinsic cervical spine flexors, serratus anterior, lower trapezius, transverse abdominis, external obliques, posterior gluteus medius, intrinsic external rotators, gluteus maximus, gastrocnemius, peroneals, and intrinsic foot muscles. This suspicion was confirmed with 3-/5 MMT on the left and 3/5 on the right for these muscles. Additional findings are a positive 9/9 Beighton’s Hypermobility Test,<sup>4</sup> an inability to single limb balance with eyes closed, a one second hold on the craniocervical flexion test,<sup>5</sup> and excessive passive accessory joint mobility throughout. There was no need to test other ballet movement, such as degag e, ronde de jambe, or jumping, as the foundational ballet position and movement intent was not correct. The dancer was given manual correction of posture in various positions, side oblique sitting, and corrected dance movement (Figures 11 and 12). Home exercise consisted of weight shifting to single limb stance while facing the mirror, bent knee fallout, and modified plank with hip abduction and external rotation. The plan of care for this dancer should involve therapeutic exercises, DNS, and ballet-specific dance movement with and without ballet class music and with and without a mirror, to simulate class and performance. Imagery,<sup>6</sup> intent, and breathing should be included in open and closed kinetic chain exercises. Cues should be given manually and visually, then verbally, less so with each visit. Eccentric and concentric chains of support should be addressed.



Figure 9. Preintervention ballet first position.



Figure 10. Preintervention tendu en avant.



Figure 11. Postintervention ballet first position.



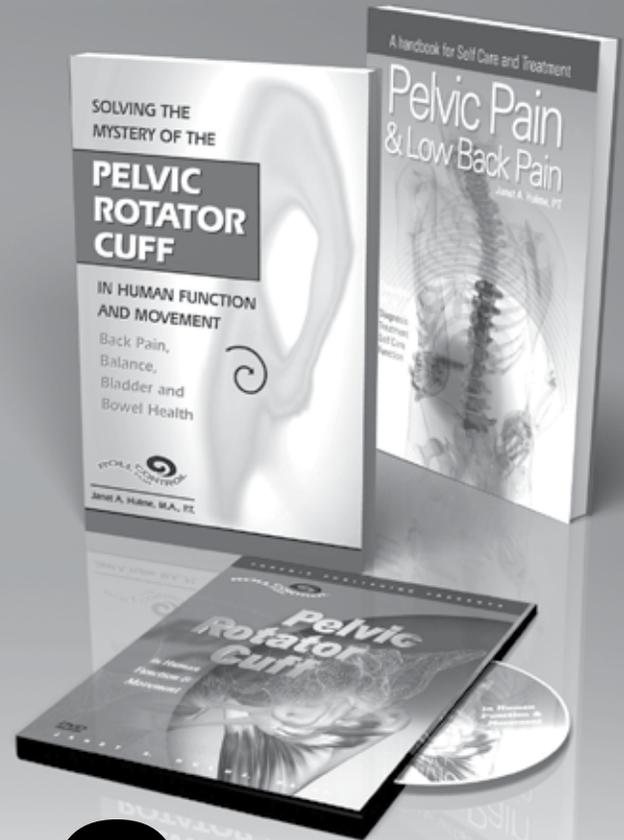
Figure 12. Postintervention tendu en avant.

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# PAIN MANAGEMENT

## SPECIAL INTEREST GROUP

### President's Message

*President: John E. Garziona, PT, DPT, DAAPM (2011-2014)*

*President Elect: Dana Dailey, PT, PhD (2014-2017)*

*Vice President: Marie Hoeger Bement, PT, PhD (2011-2015)*

*Nominating Committee: Laura Fry-Law, PT, PhD (2013-2016),*

*Neena Sharma, PT, PhD (2013-2015)*

*Nominating Committee Elect: Anita Davis, PT, DPT,*

*DAAPM (2014-2017)*

*Research Chair: Joel Bialosky, PT, PhD (2011-2014)*

This year's CSM programming, as always, was excellent. There was less hurry to get from one session to another. Thanks go Education Chair, Tess Vaughn, and her committee for working with us to get our requested program presented. I am always amazed at how Terri DeFlorian and Tara Fredrickson go above and beyond to make this meeting a huge success. Thank you to both of you and I will miss working with you.

The first PMSIG program was entitled, *Interdisciplinary Method for the Assessment and Treatment of Chronic Headaches*. This session allowed the participant to differentiate headache diagnosis: tension, migraine, and cervicogenic, as well as identify cervical spine and temporomandibular influences on headaches. Discussion included psychological factors that may limit improvement in single service PT headache patients, current outcome measures that could be implemented, and descriptions of a variety of self-management interventions. The presenters were Steve Krause, PhD; Mark Stillman, MD; Debbie Zajac, RN; Ian Stephens, PT, DPT, OCS; and Sunni Klein, PT, MSPT, from the Cleveland Clinic Departments of Pain Management and Sports Therapy, Cleveland, OH.

The second presentation was entitled *Integrating Behavioral Management into PT for Patients with Chronic Pain*. This session discussed how the physiology of chronic pain affects its presentation in our patients, taught the audience to appreciate the importance of a biopsychosocial approach in chronic pain management, and recognize and apply a variety of behavioral approaches that can be integrated into physical interventions with people who experience chronic pain. The presenters were Leslie Russek, PT, DPT, PhD, OCS, from Clarkson University in Postdam, NY, and Carolyn McManus, PT, MS, MA, from the Swedish Medical Center in Seattle, WA.

Both programs were informative and well-presented. Congratulations to all presenters for their good work.

### 2014 PMSIG MEETING MINUTES

#### CSM LAS VEGAS

Thursday, February 6, 2014

The meeting was called to order at 12:30 p.m. by John Garziona, President.

Tom McPoil, Orthopaedic Section Board Liaison, was present.

Last year's minutes were published in *Orthopaedic Physical Therapy Practice (OP)* and approved.

All attendees were again thanked for their involvement with SIG activities over the past year. Continued thanks went to Joel Bialosky, our Research Chair, for his contributions to the quarterly e-mail blasts, and Marie Hoeger Bement, our Vice President.

We can always use more articles for the *OP* newsletter. Fortunately, we have had members who were willing to share their experiences in the past. This is also a good venue to get our students involved with writing clinical articles.

The idea of an Orthopaedic Section sponsored Independent Study Course (ISC) based on Kathleen Sluka's book was rejected by the International Association for the Study of Pain as they want to do their own program based on the book. I would suggest still doing an ISC with reference to Kathleen's book among the recommended readings.

### NEW BUSINESS

1.) A suggestion was made, in the SIG President/Vice President's meeting that each SIG contribute to a SIG brochure that would be placed with the Orthopaedic Section's information. This could be a short paragraph describing the SIG's objectives and mission. A suggestion was made for the PMSIG to put an ad in *PT Today* as well to reach APTA members who were not aware of the SIG.

2.) Other SIGs have expressed an interest in having their own logo associated with their SIG activities. Members were asked to consider this for the PMSIG.

3.) Congratulations went to Dana Dailey, our newly elected President, and Anita Davis, our newly elected member of the Nominating Committee.

It has been my extreme pleasure to serve this fine group of dedicated professionals throughout the years from the beginning of the SIG until now. Thank you all for your support.

The meeting was adjourned at 12:40 PM.

*Respectfully submitted,  
John E. Garziona, President*

### Message from the President

As a second-term FASIG President, it is wise for me to ponder our current leadership and our vision. Other than an Osteo-blast announcement or our Business Meeting at CSM, I have no other means to chat with you, a member of our FASIG membership.

First, our positions of leadership are as follows:

- President—Clarke Brown
- Vice President and Programming Chair—Todd Davenport
- Nominating Committee: Stephanie Albin, JW Matheson, and Steve Pettineo

Let me just say that these practitioners and researchers collectively make a very effective leadership team for FASIG. I am indebted to their contributions. Quite naturally, the next FASIG President will come from this group of people. However, involvement on this leadership team is an exceptional opportunity, for anyone interested in foot and ankle research and treatment, to be more involved in the processes of the APTA and the Orthopaedic Section in propagating the research, and discussions that are the foundations of our profession.

Second, many physical therapists have contacted me over the past few years, for issues related to all aspects of foot and ankle physical therapy. The most common questions are related to, "how do you treat this \_\_\_\_\_?" As a result, this column has increasingly addressed protocols and treatment strategies related to common dysfunctions. This issue tackles insertional tendinitis and offers some practical exercises and treatment reminders.

Third, the most common request from our members is a platform from which the FASIG members can more efficiently and frequently communicate with each other. All of us, throughout the Orthopaedic Section, are acutely aware of this membership request and we are working on several solutions.

Fourth, our SIG's largest undertaking, the "Foot and Ankle Curriculum Guidelines for Entry-level Therapists" continues to develop. We need your input now! The latest version was first introduced at CSM and is available at the CSM portal. Short of that, contact me directly if you would like a copy or wish to discuss the content or delivery of this document. Feedback at CSM was resounding acceptance and the open-forum discussions provided many critical additions and suggestions. At CSM programming, students voiced appreciation of knowing the standards while academic instructors appreciated the reference-based information and comprehensiveness. Stay tuned as we continue developing this very important educational tool.

Finally, please don't hesitate to contact me regarding foot and ankle orthopaedic information. My contact information is provided below and I welcome your input!

*Sincerely,  
Clarke Brown  
FASIG President*

### Exercise Considerations Following Insertional Calcaneal Spur Resection Case Study: Part 2

*Kaylee M. Peluso, PT, DPT*

Part 1 of our Insertional Calcaneal Spur Resection case study (RK) detailed the unsuccessful rehabilitation of a patient with posterior heel pain due to Achilles tendinopathy.<sup>1</sup> Following referral for orthopedic consult, RK underwent Insertional Calcaneal Spur Resection (ICSR) and debridement. Achilles tendinopathy is common in athletes and physically active people.<sup>2,3</sup> Approximately one-third of all Achilles tendinopathies are distal and associated with retrocalcaneal bursitis and Haglund's heel deformity.<sup>4</sup>

As a result, RK was placed in a walking boot for 6 weeks and progressed from toe-touch weight bearing to weight bearing as tolerated within the boot. At this point, RK presents back to physical therapy.

#### VISIT 1: POSTOPERATIVE EVALUATION

Unlike previously, RK presents with minimal pain (2/10). He presented with subtalar and talocrural tightness on joint mobility testing in all directions. Strength testing, utilizing manual muscle test, revealed post-immobilization weakness of all lower leg muscles, particularly the gastroc-soleus complex, peroneals, and tibialis posterior. Gait examination revealed decreased push-off on operative foot and asymmetrical stride due to equinus.

RK's treatment program consisted of restoration of capsular mobility with mobilization and restoration of strength and ROM with exercise. A resistance band program, focusing heavily on sagittal plane movement, is begun. A slant-board for gastroc-soleus stretching (Figure 1) and "toe jams" (Figure 2) were introduced to begin stretching of the plantar-fascia, carefully dosing the intensity of stretch.

Patient management includes boot weaning, partial weight bearing with crutches, scar mobilization, and modalities for inflammatory reduction.

#### VISITS 2 THROUGH 4

RK tolerated all sagittal plane exercise well. We continued to implement joint mobilization, beginning at the metatarsals, working throughout the foot to the subtalar joint. These mobilizations were used to restore joint motion following immobilization.

The "Wedge" Stretch becomes very important during this phase (Figure 3). The Wedge stretch helped to stretch the lateral compartment and peroneals while encouraging rear foot inversion.

Various exercises were used to improve range of motion, balance, coordination, and proprioception (Figures 4-8).



Figure 1. Slant-board for gastrocnemius stretching.



Figure 2. Toe jams.



Figure 3. The “wedge” stretch.



Figure 4. Balance training on disc.



Figure 5. Balance training on bosu.

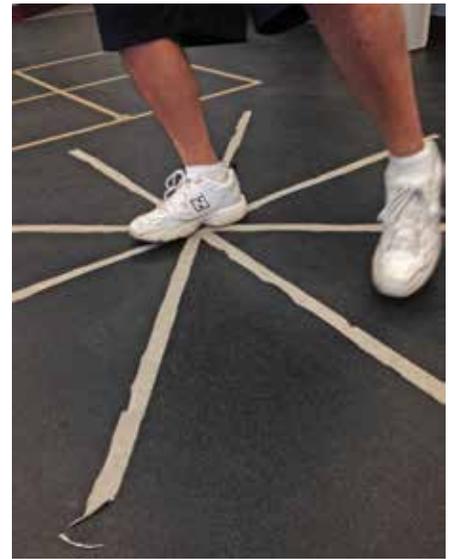


Figure 6. Star excursion balance training.



Figure 7. Stability training using mini-tramp.



Figure 8. Balance proprioception training using ladder markings.

## VISITS 5 THROUGH 8 (8-12 WEEKS POST-OP)

Proprioceptive activities are incorporated and progressed.

Such activities include:

- BAPS board
- Single leg stance activities
- Balance board, foam, discs
- Walking across uneven surfaces
- Walking lunges
- Wall squats
- Line walking
- Star excursion drills

Strength and power development began with weight bearing exercises at increasing intensities:

- Double and single-leg heel raises
- Toe-heel walking Squats with weights
- Trampoline
- Hopping/jumping/landing

## TREATMENT CONSIDERATIONS

After surgery, restoration of active range of motion, strength, proprioception, and gait became the focus of treatment. Secondary to the motion and strength limitations that were noted on the day of evaluation, a deliberate progression from the sagittal plane to the frontal plane was utilized. Since sagittal plane motion (dorsiflexion/plantar flexion), dominates during gait, an attempt was made to get this motion back first. With proper weight bearing restrictions, manual techniques, and therapeutic exercise, RK returned to full function without complication.

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## Clinical Anatomy (with Dr. Andry Vleeming)

CA-1 May 2-4 (Biddeford, ME)

## CRAFTA Craniomandibular

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CRAFTA-2 Oct 2-5 (Bethesda, MD)



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Oct 17-19 (Bethesda, MD)

### DN-2 - Foundations II

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Jun 20-22 (Lima, Peru); Aug 15-17 (Bethesda, MD)

Sep 12-14 (Dubai, UAE & Laramie, WY)

Oct 10-12 (Nashville, TN)

### DN-3 - Advanced I

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# IMAGING

## SPECIAL INTEREST GROUP

### SUMMARY OF THE IMAGING SPECIAL INTEREST GROUP BUSINESS MEETING

#### CSM 2014

##### ISIG Leadership

Douglas M. White, DPT, OCS - President

Deydre Teyhen, PT, PhD, OCS – VP

Nominating Committee

Wayne Smith, DPT, Med, AT-ret, SCS, RMSK,

Outgoing Chair

James “Jim” Elliot, PhD, PT, Incoming Chair

Richard Souza, PT, PhD, ATC, CSCS

Marcie Harris-Hayes, PT, DPT, MSCJ, OCS

Research Committee

George Beneck, PhD, PT, OCS, KEMG, Nominated

Publications

John C. Gray, DPT, FAAOMPT Editor

Gerard Brennan, PT, PhD - Ortho Section Board Liaison

#### 2013 Activities

Nominating Committee Report

- Success in recruiting for open position
  - o 4 candidates for one open position on Nominating Committee
- Positions open for 2014 election
  - o President
  - o Vice President
    - Term of office for President or Vice President may be extended by one year to allow for staggered terms of office.
  - o Nominating Committee one to be elected

Research Chair

George Beneck, PhD, PT, OCS, KEMG

**Action: George Beneck confirmed as Research Committee Chair by vote of membership Term 2014-2017**

ISIG Education Activities

Programing for CSM 2014

Diagnostic Imaging and Clinical Examination of the Spine: Consistency, Coincidence, & Comparison: Charles Hazle, Jr, PT, PhD

Diagnostic and Procedural Imaging in Physical Therapist Education Edmund M. Kosmahl, PT, EdD, et al

American Institute of Ultrasound in Medicine (AIUM)

President appointed to the AIUM for the development of Point-of-Care US Guidelines. These guidelines are still in draft.

Research Committee

R13 Conference

Exploring a submission to the National Institutes of Health for funding for a R13 conference on developing imaging in physical therapist practice, education, and research.

Survey of Imaging Curriculum in PT Education Programs

Results presented by William Boissonnault, PT, DHSc, DPT, FAAOMPT, FAPTA

Publications

John C. Gray, DPT, FAAOMPT Editor

Orthopaedic Physical Therapy Practice

Imaging Pearl

The Little Posterior Bridge, John C Gray, DPT, FAAOMPT; OPTP 2013 Vol. 3

The Vacuum Disc Phenomenon, John C Gray, DPT, FAAOMPT; OPTP 2013 Vol 4

Clinical and Ultrasound Evaluation of an Acute Achilles Tendon Rupture, Theodore Croy PhD, MPT, OCS; OPTP 2014 Vol. 1

Soliciting Submissions for Imaging Pearl

Recruit Members

We are growing! 179 members

Social media

Discussed Section initiatives on social media

Encouraged members to use Twitter @Douglas\_M\_White

Member Needs Survey

Summary of the survey results to be published in the next issue of *OPTP*.

#### New Business

Noteworthy

American Registry Diagnostic Medical Sonography new credential (RMSK) in MSK Sonography. Open to PTs

#### 2014 Activities

Research Committee

Appoint members

Develop Research Committee agenda

R13 Conference planning

Education Activities

Recruit high quality submissions for CSM

Imaging in PT Education

Survey article submitted to the *Journal of Orthopaedic and Sports Physical Therapy* for publication consideration

Develop curricular guidance?

Strong interest by ISIG members in attendance for developing imaging education guidance/manual

Competencies

Interest from membership on developing competencies for imaging

Need to define entry-level competency and advanced competency

Policy initiatives

Remove barriers for payment for physical therapists performing imaging

Remove barriers for imaging “privileges”

Conduct analysis of PT practice acts to determine scope of practice for imaging

# Imaging Pearl

John C Gray, DPT, FAAOMPT



## Syringomyelia

Syringomyelia is a fluid-filled cyst (syrinx) within your spinal cord (myelia). The cyst, or syrinx, contains cerebrospinal fluid and can grow over time, causing the spinal cord to expand and stretch nerve tissue. Eventually, the syrinx can cause permanent nerve damage, muscle weakness, pain, and sensory changes in the extremities. The most common cause of syringomyelia is a Chiari malformation. A syrinx can also form after an injury to the spine, a spinal infection, spine surgery, or as a result of a tumor or mass in the spinal cord.

On magnetic resonance images (see Figures 1-3 below) the syringomyelia will be seen as an area of increased signal intensity. Increased signal activity often indicates the presence of edema or increased water content (cerebral spinal fluid) in the spinal cord.

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3. Bosmia, AN, Tubbs RI, Clapp DC, et al. Johann Conrad Brunner (1653-1727) and the first description of syringomyelia. *Childs Nerv Syst.* 2014;30(2):193-196.
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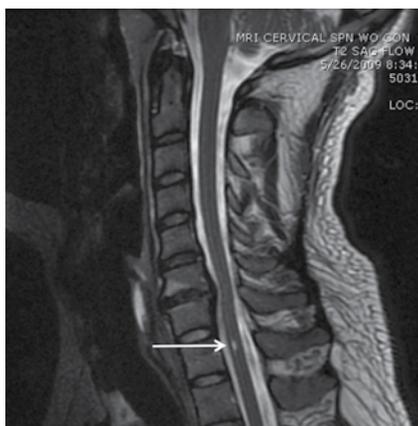


Figure 1. T2-weighted sagittal view of cervical spine of 35-year-old male demonstrating a syrinx at T1 vertebral level of spinal cord (see arrow – lighter than surrounding spinal cord tissue). Also note the Type I and II Modic changes, moderate size HNP, and central stenosis at C6-7.



Figure 2. T1-weighted sagittal view of cervical spine of 35-year-old male demonstrating a syrinx at T1 vertebral level of spinal cord (see arrow – darker than surrounding tissue).



Figure 3. T2-weighted axial view of cervical spine at level of T1 revealing a syrinx within the spinal cord (see arrow).

## Call for Imaging Submissions

The Imaging SIG is soliciting submissions for publication in this space. Types of submissions can include:

- Case Report: A detailed description of the management of a unique, interesting, or teaching patient case involving imaging. Case reports should include: Background, Case Description including Imaging, Outcomes, and Discussion.
- Resident's Case Problem: A report on the progress and logic associated with the use of imaging in differential diagnosis and/or patient management. Resident's Case Problem should include: Background section, Diagnosis section which details the examination and evaluation process leading to the diagnosis and the rationale for that diagnosis, including a presentation of imaging studies. Interventions section used to treat the patient's condition and the outcome of treatment; however, the focus of the resident's case problem should be on the use of Imaging in the diagnostic process and patient management. The Discussion section offers a critical analysis of how the Imaging guided the management of the patient.
- Clinical Pearl: Clinical pearls are short papers of free standing, clinically relevant information based on experience or observation. They are helpful in dealing with clinical problems for which controlled data does not exist. Clinical Pearls should describe information pertaining to Imaging that help inform clinical practice.

Submissions should be sent to: John C. Gray DPT, FAAOMPT, Publications Editor. [jcgray@san.rr.com](mailto:jcgray@san.rr.com)

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# ANIMAL REHABILITATION

## SPECIAL INTEREST GROUP

### President's Message

Kirk Peck, PT, PhD, CSCS, CCRT

#### APTA Combined Sections Meeting- Las Vegas, 2014

On behalf of the entire ARISG, I extend a special thanks to Laurie Edge Hughes, BScPT, MAnimSt (Animal Physio), CAFCI, CCRT, who presented on manual therapy of the canine thoracic spine during the SIG programming in Las Vegas. Her presentation was without question, another excellent example of quality education in animal rehabilitation. In addition, the programming was well attended this year, a testament to both Laurie's notoriety in the world of animal rehab and a growing interest by those seeking to learn more about this exciting area of practice. A highlight of Laurie's presentation was her uncanny ability to self-produce home video with live dogs to augment instruction on multiple treatment techniques.

Following Laurie's presentation, the ARISG met for its annual business meeting. Multiple topics of interest were discussed this year so I encourage you to please read the minutes as posted on the SIG web site. Topics of discussion included SIG engagement in CEU opportunities, the need to develop a pool of expertise for speaking events, a review of the 2007 Practice Analysis Survey, and state legislative updates to name a few. However, one of the most important issues discussed related to programming for next year's CSM in Indianapolis, IN. Several great ideas were generated but top billing focused on anything related to therapeutic exercise for canine rehab. SIG officers have already identified a potential speaker for this topic and will strive to have a proposal submitted for CSM in 2015. Submission of SIG proposals to CSM does not equate to automatic acceptance. All proposals, even those associated with APTA Sections, are subjected to the same level of criteria grading, so keep your fingers crossed.

#### ABC News Release- Associated Press

In late January I was contacted by a journalist from New York who works for the Associated Press. She expressed a fascination in what she recently discovered as a new option for animals in the area of physical therapy. Long story short, the reporter interviewed not only me but also Sasha Foster PT, CCRT, who works at Colorado State University and the Canine Rehab Institute, Coral Springs, FL. The story presented a positive view of animal physical therapy on a national scale. It was posted in the February 4 online edition of ABC News titled, *PT for Pets? Vets Prescribing Physical Therapy* by Diana Marszalek.

#### IAVRPT- 8th International Symposium - Mark Your Calendars!

The ARSIG is now a proud **Silver Sponsor** for the "8th International Symposium on Veterinary Rehabilitation/Physical Therapy and Sports Medicine" to be held in Corvallis, OR, August 4-8, 2014. This is the first time the ARSIG has co-sponsored a non-APTA event related to animal rehabilitation thanks to generous approval by the Orthopaedic Section Board

of Directors. This year's symposium proves to be an exciting event for both veterinarians and physical therapists seeking to learn new and innovative approaches to rehabilitation based on scientific evidence. Please explore the IAVRPT website for more details and programming highlights.

#### Legislative Update

Physical therapists from multiple states have recently been contacting me regarding practice law on animal rehab. I have recently heard from colleagues in Wisconsin, West Virginia, Florida, Arizona, Oregon, and New Jersey to name a few. This is wonderful news since it indicates a growing interest in this particular field of practice, but it also creates a new dilemma for political discussion and debate. The question is, "What language should people be looking for by way of legal authority?" The answer is, it all depends, and it is multifactorial, therefore not easy to address with a simple response. So I offer a few very important questions everyone should be well versed to answer based on your particular state law:

1. First, does the PT Practice Act specify that treatment is delivered to humans, patients, clients, individuals, or some associated mix? If it states "humans" only then animals are pretty well eliminated from the picture. Words such as Individuals, Patients, and Clients are open to broader interpretation but it depends on who is reviewing the language, eg, Professional Boards of PT, Departments of Health, Attorney Generals, etc.
2. Is there explicit language in the PT Practice Act pertaining to animal rehab or animal physical therapy?
3. Does explicit language exist in the Veterinary Practice Act providing an option for animal therapy by non-veterinarians?
4. What about rules and regulations for physical therapists and veterinarians? Statutory language is often less detailed than regulations so make sure to explore all documents related to scope of practice in your state. Most states post these materials online for public consumption so please get familiar with the laws in your state.

Without diving into excessive details my primary message at this point is for therapists to please become intimately familiar with all state laws regarding animal practice - in fact, it is your duty as a licensed practitioner. This means to review the practice acts for *both* the physical therapy and veterinary professions. Some states, like Colorado and New Hampshire, adopted language in the PT Practice Acts, but other states, such as Nevada and Nebraska, adopted language in the Veterinary Practice Acts. This creates added complexity when exploring legal language related to animal physical therapy.

#### Supervision of PT Services on Animals

I am going to comment about a concern circulating among veterinarians regarding supervision of PT services on animals. This issue is very important since it relates directly to current and future legislative debate on the adoption of language in scope of practice for physical therapists. In short, there are 3

basic scenarios of supervision in animal rehab: (1) direct supervision where a veterinarian is on premise and immediately available to a PT, (2) indirect supervision or basically treatment by referral to a PT practicing off-site and the veterinarian is not on premise, and (3) Unrestricted direct access as currently practiced in human care in many states.

Language adopted in Colorado, New Hampshire, and Nebraska allow for practice by referral following medical clearance by a veterinarian. This level of supervision encourages a positive relationship between the PT and Veterinarian and provides assurance that medical conditions are being addressed along with physical limitations and activity restrictions. The unrestricted direct access model is, of course, preferred by the PT profession in general, but physical therapy practice on animals is not an entry-level competency at the present time.

Simply put, the practice of animal rehabilitation by physical therapists is growing but remains in infancy. Therefore, evaluation and treatment by referral is an acceptable improvement over laws that require direct supervision. The profession of physical therapy has experienced many growing pains in achieving current levels of practice on humans. Unfortunately, we are now experiencing a repeat of similar growing pains as the profession evolves into collaborative practice on animals. There is more to come on this topic in the near future so please stay tuned.

Have A Great Spring!!

Contact: Kirk Peck (President ARSIG): (402) 280-5633 Office; Email: kpeck@creighton.edu

### Animal Physical Therapy Providers – Have You Checked Your Liability Insurance Lately?

In the past few months, I have spoken to many physical therapists who are active in treating animals. Many are unaware the professional liability insurance policy they currently have may exclude them from coverage. Shortly after completing my certification program in canine rehab, I was reviewing my policy with the APTA sponsored program HPSO/CNA. I knew my policy included an endorsement for “service to animals” so I assumed everything was in order. As I reviewed my policy, I came across an “exclusion” which stated that if I spent more than 50% of my time treating animals, I was NOT covered! I contacted HPSO and asked for clarification, and was told if I am treating animals greater than 50% of the time, I was in fact, NOT covered. No one from HPSO or CNA could give me the “why” for this exclusion.

The insurance agent took my request to several markets, which all declined coverage. We eventually did find coverage, but at a large cost in premium. Each year I would make my annual call to HPSO to inquire if the limitation of “no more than 50% time spent treating animals” remained.

Several weeks prior to this year’s CSM meeting in Las Vegas, I contacted HPSO and CNA as a newly elected officer of the ARSIG and discussed concerns with this limitation and the numbers of current ARSIG members who are unaware of the exclusion. I was pleased by their willingness to sit down with Kirk Peck and me at CSM to see if we could come up with a solution. Our meeting was very productive with both representations from HPSO and CNA underwriters. The final outcome, as yet to be finalized, has the potential to see the 50% exclusion dropped. I anticipate a final decision by the end of February

2014, and will notify our ARSIG as soon as possible. I feel this is an important “win” for us as part of the Orthopaedic Section within the APTA to not be excluded from APTA sponsored programs such as professional/general liability insurance.

HPSO/CNA produces a nice package of risk analysis that can be obtained online. I was struck by the comment, “We firmly believe that KNOWLEDGE is the key to patient safety.” Knowledge in our state practice act is imperative in mitigating your exposure. Some of the important strategies to minimize risks include:

- Communicate effectively with patients, families, and colleagues.
- Know and comply with state laws regarding scope of practice.
- Adapt an informed consent process that includes discussion and demonstrates that the patient/owner understands all the risks
- Ensure that clinical documentation practices comply with the standards promulgated by PT professional associations, state practice acts, and facility protocols
- Avoid documentation errors that may weaken legal defense efforts in the event of litigation.
- Maintain clinical competencies specific to the relevant patient population.
- Recognize patients’ medical conditions and co-morbidities that may affect therapy.
- Delegate patient therapy services only to the appropriate level of staff.

*(Continued on page 144)*

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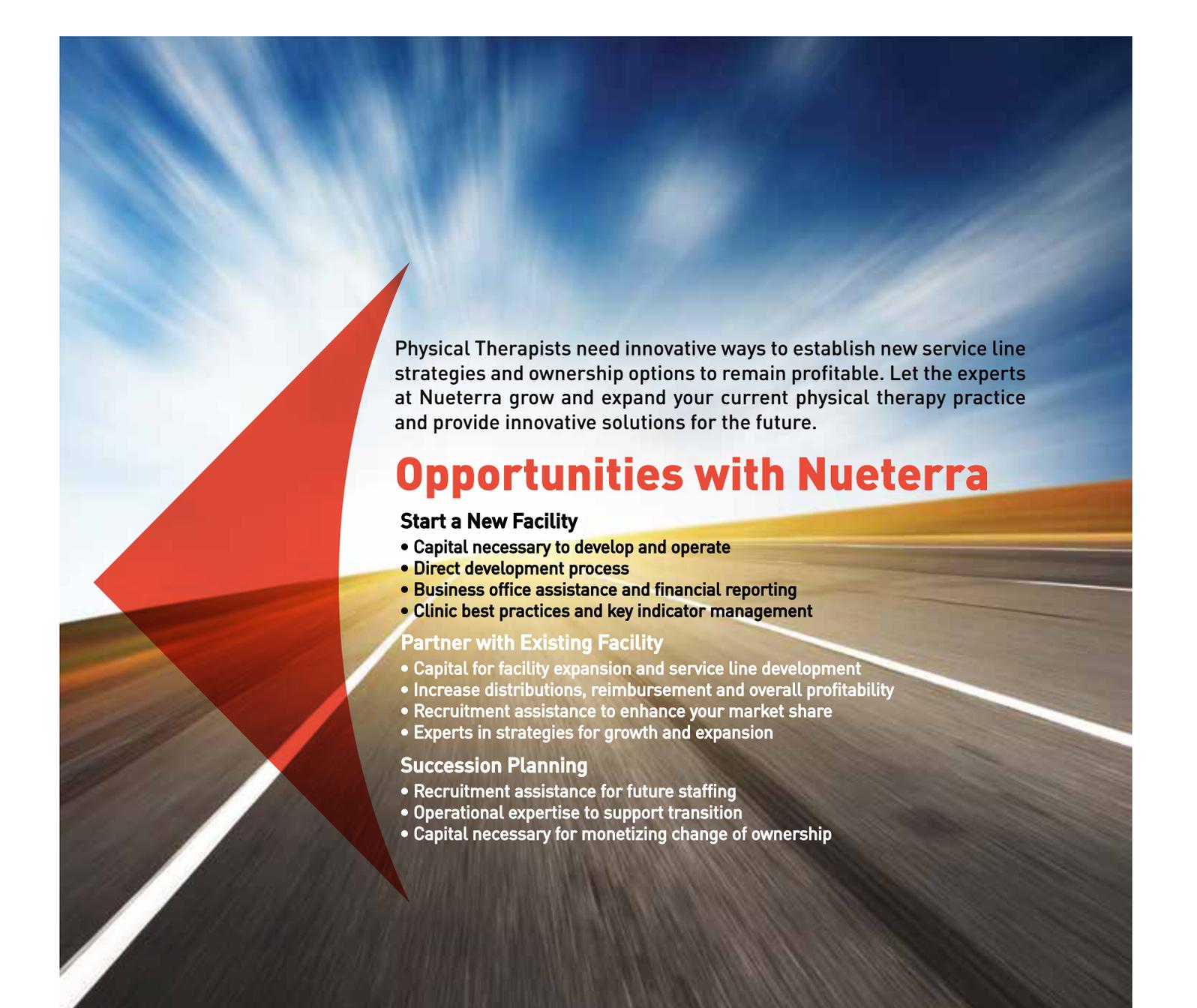
## ANIMAL REHABILITATION

(Continued from page 143)

There are many more excellent reminders that must be considered, but our KNOWLDEGE in what we do, and what we are allowed to do, is the KEY! If you have any questions or comments, I would love to hear from you.

*Stevan Allen MAPT, CCRT  
VP Animal Rehabilitation SIG  
[Stevan.allen@gmail.com](mailto:Stevan.allen@gmail.com)*

*P.S. On February 20, 2014, we received confirmation from CNA that they have agreed to remove the limitation of "less than 50% of a provider's practice to be performed on animals" for coverage, and the limits of liability are \$10,000 and for a nominal fee may be increased to \$25,000. This is very exciting news and allows physical therapists treating animals affordable coverage.*



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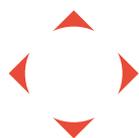
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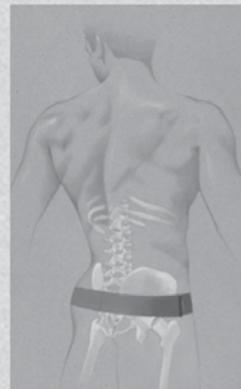
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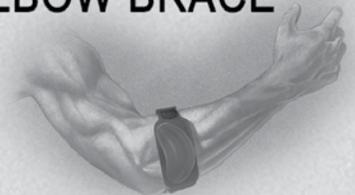
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