Pain Science Education has to be about pain, and for Physical Therapists, it should be “hands on”

I’ll be the first to admit that when I was first exposed to pain science and the need to explain pain to my patients, I didn’t really understand it and it didn’t fit my practice paradigm. So I just shrugged it off and kept doing what I was doing. It was in the early 1990’s in Victoria, Australia, and Mobilization of the Nervous System was a very hot ‘new’ topic that physiotherapists began to embrace. I can remember it being thought of as the missing tissue that needed to be addressed in manual therapy. We had muscles, joints and ligaments, and now the nerves were discovered as important things to mobilize. Great stuff! In short order, everyone was slumping, straight leg raising and brachial plexus tensioning their patients. I’ll admit I jumped on board the bandwagon, but when my patients were made significantly worse, I began to use it less and less and revert back to my Maitland mobilizations and osteopathic-based manipulations.

continued
I can remember a discussion with some colleagues in 1995 about adverse neural tension and mobilizing the nervous system, and I think it may have been Michael Shacklock who brought up the fact that we were not considering the physiology of the system. That by treating it as just another tissue that gets stiff and needs to be mobilized, we were ignoring the inevitable neurophysiological consequences. It led to a change in terminology from ‘adverse neural tension’ to ‘neurodynamics’. I remember thinking, “OK, I guess that makes sense.” But then I began to hear about ion channels, abnormal impulse generating sites, temporal summation, up-regulation and down-regulation, peripheral and central sensitization, and I just could not take it all in and make sense of it. It was too much to take in and embrace, and for me personally, it was a time when I was experiencing ‘burn out’ with the profession. I can remember this comment or quote from Louis Gifford around that time “The powerful links between the neuroendocrine and sympathetic systems and the immune system are well recognized. The important clinical implication is that if we can positively change the way people feel emotionally, by for instance changing their knowledge and beliefs about their problems or situations, we can beneficially change activity in the output systems.”

It didn’t help! I was a manual therapist. What did I know about the neuroendocrine or sympathetic systems, or the immune system? Why the heck should I want to know about it?

Fast-forward to 2016 and I have to admit that my understanding of what was being presented way back then has significantly improved. This is largely because the information can be understood more easily (by me and by my patients) through stories and metaphors which really make a lot of sense. We are at a point now where we can all agree that pain neuroscience education can be helpful for patients suffering from chronic pain. Educating patients about pain has become a hot topic of research in the past few years, but it would appear that some researchers (and perhaps some clinicians) don’t fully understand what that education entails.

Take, for example, a recent systematic review and meta-analysis of the effect of education on non-specific neck and low back pain (my emphasis). The authors concluded that education programs could not be recommended in preventing or treating neck and/or low back pain. The problem with this review and meta-analysis is that the education programs were primarily anatomical and biomedical approaches, where the focus was often on “protecting” a “damaged” neck or back, and this is not in line with contemporary pain physiology. This was nicely highlighted in a letter to the editor by Hurley et al and they made the excellent point that not all education is the same and to treat them as such was inappropriate. I think this highlights a very important point, that it is what we teach patients and how we teach them that makes all the difference. Poor education, even if it does include an understanding of pain mechanisms, will likely result in poor outcomes. So it is incumbent upon us to make sure we continue to hone our skills in teaching patients about pain. It takes practice, lots of practice, to do it well and do it with compassion, empathy and understanding.

“The powerful links between the neuroendocrine and sympathetic systems and the immune system are well recognized. The important clinical implication is that if we can positively change the way people feel emotionally, by for instance changing their knowledge and beliefs about their problems or situations, we can beneficially change activity in the output systems.” -Louis Gifford
And this brings me to another important point. Teaching patients why they hurt without involving them physically is really no different than just telling a smoker that cigarettes cause cancer and leaving it at that. You have to change behavior if you want to stop hurting or stop smoking. While some have advocated for a “hands off” approach to treating people with chronic pain, we have always held the position that therapeutic neuroscience education should be “hands on”. It doesn’t help my patient feel any better if I just explain how pain works without showing them how to do what they want to do despite the pain. The argument for a “hands off” approach has been that by adding manual therapy (in the traditional sense) draws undue attention to the tissues as the problem, and might effectively negate any benefit of explaining pain mechanisms. But if we think a little differently about how manual therapy might work, we can see that it can play a very valuable role in a person truly understanding their pain, and what to do about it. Of course, I’m talking here about the concept of manual therapy as a means to refresh or ‘sharpen’ a smudged somatosensory homunculus. There are certainly some exciting research opportunities to explore this as a fundamental mechanism of manual therapy.

Thinking about this reminds me of the randomized clinical trial we undertook in 2009 comparing thoracic spine manipulation to cervical spine manipulation in patients with acute neck pain.\(^2\) In that study, we were somewhat surprised to see such a dramatic decrease in fear (FABQ) in patients with neck pain who had their cervical spine manipulated when compared to those that didn’t. Did the manipulation do something to the homuncular representation of the neck in their somatosensory cortex? That would be hard to determine, but another thought is that perhaps those patients were less fearful of moving their neck because they had experienced a gentle, skillfully delivered and dramatic passive movement of their neck without feeling any pain, and this then made them less fearful of moving their neck themselves. It may also have been the positive expectation (placebo) associated with the cervical spine manipulation. It takes skill to enhance the positive expectations patients might have of manual therapy and so, as with teaching patients about pain, it is incumbent upon us to make sure we continue to hone our skills in manual therapy. It takes practice, lots of practice, to do it well and do it with gentleness, precision and some flair.\(^1\)

CHRONIC LOW BACK PAIN: WHAT YOU SEE IS WHAT YOU GET
JUNE 24-26 | MINNEAPOLIS, MN

Saturday Keynote Speakers:
- Francis J. Keefe PhD, Duke University
- Jo Nijs PT, PhD, Belgium
- Mark Jones BSc (Psych), PT, Grad Dip Advan Manip Ther, MAppSc, Australia
- Steven J. Linton PhD, The Center for Health and Medical Psychology, Örebro University, Sweden

Courses are filling up, register today!

**Friday Course Options:**
- Assessing and Treating Fear of Movement ........................................... Steve Linton
- Graded Motor Imagery ................................................................. Steve Schmidt, Kory Zimney
- Spinal Manipulation ................................................................. Flynn, Childs, Puentedura
- Physiotherapy, Psychosocial Assessment, Reasoning and Management ........... Mark Jones

**Sunday Course Options:**
- Altering Pain Memories Using Exercise Therapy .................................... Jo Nijs
- Cognitive Behavioral Therapy for Physical Therapists: An Experiential Workshop .... Frank Keefe
- Mindfulness & Massage .................................................................. Mark Pirtle, Megin Sabo John
- Evolving Motion: Pilates and Chronic Low Back Pain ............................. Janette Ahrndt, Mikki Townshend

**Fullness:**
- Full: 100%
- 95% Full
- 80% Full
- 75% Full
- 80% Full
Each month ISPI publishes a free monthly newsletter. The newsletter was designed as a means to keep ISPI course attendees up-to-date on current research in the field of pain science, manual therapy and spinal rehabilitation. Apart from the monthly featured articles, we also showcase special events, interviews, upcoming courses, etc. This month we will take a slight detour from the “typical” newsletter featuring articles and focus on some pertinent pain information as put together by the orthopedic residents of St. Ambrose University in Davenport, Iowa. This year marks the third year of my involvement in the orthopedic residency, thanks to Kevin Farrell and Mark Levson. Each year, I have 30 hours of direct teaching with the residents on pain science, consisting of the Therapeutic Neuroscience Education (TNE) class, follow-up in-depth TNE classes, graded motor imagery and ultimately a research project – with one already published, a second accepted for publication and this year’s group starting their project soon.

In-between TNE classes, residents have to complete small pain science homework:

- Search the Internet for stories where people experience a significant trauma (nociceptive event), yet experienced little to no pain; put into a PowerPoint and share with the class.

- Search the Internet for famous people who “despite their pain” have excelled. This may include pain-related disorders or other medical issues; put into a PowerPoint and share with the class.

As we build the resident’s familiarity with pain science, and especially the ability to share stories, I believe both of these projects provide valuable “ammunition” to discuss pain with patients. For example, sharing with a patient (with compassion) a story of someone like Morgan Freeman who despite having fibromyalgia for the past 8 years, still performs at a high level may be helpful for the right patient. Many people, despite having “labels” get on with their life...

This month, I thought it may be good to share some of the highlights of these projects with our readers...enjoy!

Adriaan Louw

Celebrities with Chronic Diseases:

<table>
<thead>
<tr>
<th>Singer and Dancer</th>
<th>Paula Abdul</th>
<th>CRPS</th>
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<tbody>
<tr>
<td>Actor</td>
<td>Ben Affleck</td>
<td>Chronic migraines</td>
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<tr>
<td>US World Cup Soccer Player</td>
<td>Michelle Akers</td>
<td>Chronic Fatigue Syndrome</td>
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<tr>
<td>Actor</td>
<td>Alec Baldwin</td>
<td>Lyme Disease</td>
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<tr>
<td>Actor and Comedian</td>
<td>Lucille Ball</td>
<td>Rheumatoid Arthritis</td>
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<tr>
<td>Model</td>
<td>Tyra Banks</td>
<td>Irritable Bowel Syndrome</td>
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<td>Editor Elle magazine in France</td>
<td>Jean Dominique Bauby</td>
<td>Stroke</td>
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<td></td>
<td></td>
<td>Wrote a book by eye-blinking the alphabet. His story has been made into a movie.</td>
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<tr>
<td>Kansas City Chiefs Safety</td>
<td>Eric Berry</td>
<td>Cancer</td>
</tr>
<tr>
<td>Actor</td>
<td>Halle Berry</td>
<td>Diabetes</td>
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<tr>
<td>Singer</td>
<td>Toni Braxton</td>
<td>Lupus</td>
</tr>
<tr>
<td>New England Patriots Linebacker</td>
<td>Tedy Bruschi</td>
<td>Stroke with paralysis</td>
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<tr>
<td>Actor and TV Host</td>
<td>Nick Cannon</td>
<td>Lupus</td>
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<tr>
<td>Wellness Activist</td>
<td>Kris Carr</td>
<td>Survived vascular cancer and has written and spoken about her struggles and triumphs.</td>
</tr>
<tr>
<td>Actor</td>
<td>Lynda Carter</td>
<td>Irritable Bowel Syndrome</td>
</tr>
<tr>
<td>TV Host</td>
<td>Neil Cavuto</td>
<td>Multiple Sclerosis</td>
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<tr>
<td>Singer</td>
<td>Cher</td>
<td>Chronic Fatigue Syndrome</td>
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</tbody>
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PAIN STORY 1 (FROM: THE DAILY MAIL)
Julia Popova was mugged on her way home after work. After the ordeal she walked home 40 minutes without knowing an attacker buried a 6-inch knife in her neck, just fractions of an inch away from her spinal cord. When she got home, her parents rushed her to the hospital. She had no idea she was stabbed or the knife was in her neck.

PAIN STORY 2 (FROM: THE GUARDIAN)
A Japanese man continued to drive his motorcycle for over a mile after losing his right leg below the knee when he hit the central reservation on a motorway in Hamamatsu, south-west of Tokyo.

Kazuo Osada, 54, described as a company worker, crashed when he failed to negotiate a bend, and was unaware his right leg had been severed below the knee apparently because his attention was focused on the strong pain he felt from the crash, police said.

Mr. Osada noticed the loss of his lower leg when he arrived at a junction 2 km from the scene of the accident. Another motorcyclist traveling with him returned to pick up the severed limb.

PAIN STORY 3 (FROM NBC NEWS)
Patrick Lawler – a 23 year old working at construction site in Breckenridge, Colorado. A nail gun backfired on him and a few days later had a tooth ache. Neither ice cream nor Aspirin fixed his sore tooth. X-ray at dentist office showed....

PAIN STORY 4 (FROM NY DAILY NEWS)
A New Jersey man was smoking on porch when he was approached by a man asking for a light. The NJ man turned him down the man got mad, which resulted in a fight. Eventually the guy who approached him started losing the fight and left the scene. The NJ man went to bed, slept for 10 hours, before his brother noticed a knife in his back (5-inch blade).

PAIN STORY 5 (FROM REUTERS)
A Polish man, living in Germany, went to the doctor to have a cyst removed from the back of his head. Upon examination, the physician found a .22 caliber bullet in the back of the man’s head. When confronted, the man believed it may have happened 5 years ago when he was drunk at a New Years Eve celebration.

Celebrities with Chronic Diseases:

Actor
George Clooney . . . . . Chronic pain in his spine
Nirvana Lead Singer
Kurt Cobain . . . . . . . Irritable Bowel Syndrome
Actor, Writer, Producer, Director
Lena Dunham . . . . . . Endometriosis
Soap Opera Actor
Susan Flannery . . . . . Fibromyalgia
Actor
Michael J. Fox . . . . . . Parkinson’s Disease
Actor
Morgan Freeman . . . . . Fibromyalgia
Pop Singer
Selena Gomez . . . . . . Lupus
Evangelist
Billy Graham . . . . . . Parkinson’s Disease
Seattle Mariners’ Center Fielder
Franklin Gutierrez . . . . IBS
NHL Hockey Player
Josh Harding . . . . . . . Multiple Sclerosis
Reality TV Star and Talk Show Host
Elisabeth Hasselbeck . . . Celiac’s disease
Actor
Michael James Hastings . . . . . . . Fibromyalgia
American Business Man
Howard Hughes . . . . . . CRPS
Artist
Frida Kahlo . . . . . . . . . Fibromyalgia
Reality TV Star
Kim Kardashian . . . . . . Psoriasis
President
John F Kennedy . . . . . . Irritable Bowel Syndrome
Actor and Comedian
Jerry Lewis . . . . . . . . . . . . . . . . . . . . . CRPS
PAIN STORY 6 (FROM ABC NEWS)
A 37-year old Florida woman Rachel Lilienthal was attacked by 300 lb alligator in 2015. Her arm was completely bitten off but she had little to no pain. She didn’t realize the arm was completely bit off until she saw her arm in the alligator’s mouth. She was rescued by a couple who helped her into their canoe and got her to the hospital.

PAIN STORY 7 (FROM BBC NEWS)
Terry Butcher, England soccer player, suffered a head laceration early in an important international game. He received sutures on the sideline and continued to play. During the match he continued to head the ball in the game which reopened the wound.

PAIN STORY 8 (FROM THE TELEGRAPH)
Adam Armitage walked into a gas station in New Zealand with a metal rod impaled in his head and calmly asked the attendant if she could phone the police. He was stabbed in the head while sitting in his car 4 blocks away and drove himself to the service station. “He just walked in with the rod in his head and I was just like, ‘Is that a drumstick in your head?’” he told 3 News. “And he was like, ‘Nah, it’s a rod.’ Mr. Shea said the man was remarkably calm. “He wasn’t freaking out or anything. He knew what had gone wrong and he said he knew his first-aid and that, so he didn’t try to rip it out or anything.” Armitage was taken to the hospital where he underwent brain surgery to remove bone fragments from his brain. He has had several seizures since the operation but is expected to fully recover. Armitage told doctors he felt no pain, only pressure until he reached the hospital. He told them he didn’t understand the extent of his injury until witness took pictures on their cell phones and showed him while he was waiting for the ambulance to arrive.

Celebrities with Chronic Diseases:
- **Actor**
  - Tobey Maguire . . . . Chronic pain
  - Ben Stiller . . . . . . Lyme Disease
  - Elizabeth Taylor . . . . Chronic Pain
  - Kathleen Turner . . . . Rheumatoid Arthritis

- **Actress**
  - Jenny McCarthy . . . . Irritable Bowel Syndrome
  - Kristy McPherson . . . Juvenile Arthritis
  - Jillian Michaels . . . . Polycystic ovary syndrome

- **Guitarist for Pearl Jam**
  - Mike McCready . . . . Crohn’s Disease

- **LPGA Golfer**
  - Kristy McPherson . . . . Juvenile Arthritis

- **Fitness Instructor and TV Host**
  - Jillian Michaels . . . . Polycystic ovary syndrome

- **PGA Golfer**
  - Phil Mickelson . . . . . . . Psoriatic Arthritis

- **Social Activist**
  - Florence Nightingale . . Fibromyalgia

- **US Olympic Distance Runner**
  - Maria Runyan . . . . Stargardt disease

- **Actor**
  - Ben Stiller . . . . . . Lyme Disease
  - Elizabeth Taylor . . . . Chronic Pain

- **Country Musician**
  - Clay Walker . . . . . . Multiple Sclerosis

- **TV Host**
  - Montel Williams . . . . Multiple Sclerosis

- **International Tennis Star**
  - Venus Williams . . . . Sjogren’s Syndrome
### 2016 Course Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Course Title</th>
<th>Location</th>
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<tbody>
<tr>
<td>On-Demand</td>
<td>Words that Harm &amp; Words that Heal in the Front Office (2 hour)</td>
<td>Online Learning</td>
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<tr>
<td>On-Demand</td>
<td>Introduction to Therapeutic Neuroscience Education (4 hour)</td>
<td>Online Learning</td>
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<tr>
<td>Sat</td>
<td>April 9</td>
<td>Rochester, MN</td>
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<tr>
<td>Sat/Sun</td>
<td>April 16 &amp; 17</td>
<td>Cedar Rapids, IA</td>
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<tr>
<td>Sat/Sun</td>
<td>Apr 23 &amp; 24</td>
<td>Lincoln, NE</td>
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<tr>
<td>Sat/Sun</td>
<td>Apr 23 &amp; 24</td>
<td>Milwaukee, WI</td>
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<tr>
<td>Sat/Sun</td>
<td>Apr 30 &amp; May 1</td>
<td>Des Moines, IA</td>
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<tr>
<td>Sat/Sun</td>
<td>Apr 30 &amp; May 1</td>
<td>Woodbury, MN</td>
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<tr>
<td>Sat/Sun</td>
<td>May 14 &amp; 15</td>
<td>Mill Creek, TX</td>
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<tr>
<td>Sat/Sun</td>
<td>May 21 &amp; 22</td>
<td>Des Moines, IA</td>
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<tr>
<td>Wed</td>
<td>June 1</td>
<td>Application Deadline</td>
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<tr>
<td>Sat/Sun</td>
<td>June 4 &amp; 5</td>
<td>Kent, WA</td>
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<tr>
<td>Sat/Sun</td>
<td>June 11 &amp; 12</td>
<td>Longmont, CO</td>
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<tr>
<td>Fri - Sun</td>
<td>Jun 24 - 26</td>
<td>Bloomington, MN</td>
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<tr>
<td>Mon</td>
<td>Aug 1</td>
<td>Application Deadline</td>
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<tr>
<td>Sat/Sun</td>
<td>Sep 5 - Oct 15</td>
<td>Edina, MN</td>
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<tr>
<td>Sat/Sun</td>
<td>Sep 10 &amp; 11</td>
<td>Story City, IA</td>
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<tr>
<td>Sat/Sun</td>
<td>Sep 17 &amp; 18</td>
<td>Flower Mound, TX</td>
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<td>Sat/Sun</td>
<td>Sep 24 &amp; 25</td>
<td>Carson City, NV</td>
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<tr>
<td>Sat/Sun</td>
<td>Oct 1 &amp; 2</td>
<td>Liberty, MO</td>
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<tr>
<td>Sat/Sun</td>
<td>Oct 1 &amp; 2</td>
<td>Falls Church, VA</td>
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<tr>
<td>Sat/Sun</td>
<td>Oct 15 &amp; 16</td>
<td>Carroll, IA</td>
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<tr>
<td>Sat/Sun</td>
<td>Oct 15 &amp; 16</td>
<td>Story City, IA</td>
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<td>Oct 22 &amp; 23</td>
<td>Des Moines, IA</td>
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<td>Sat/Sun</td>
<td>Nov 5 &amp; 6</td>
<td>Lincoln, NE</td>
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<td>Sat/Sun</td>
<td>Nov 12 &amp; 13</td>
<td>Des Moines, IA</td>
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<tr>
<td>Sat/Sun</td>
<td>Dec 3 &amp; 4</td>
<td>San Antonio, TX</td>
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<tr>
<td>Sat/Sun</td>
<td>Dec 3 &amp; 4</td>
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<tr>
<td>Sat/Sun</td>
<td>Dec 10 &amp; 11</td>
<td>Story City, IA</td>
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Courses are always being scheduled, keep checking back if you don’t see what you are looking for!

If you are interested in hosting a one or two-day class at your facility, contact us.