

A Monthly Publication by EIM Faculty

THE INSIGHT HUB



MEET THE EXPERT

Chad Cook PT, PhD, MBA, FAPTA, FAAOMPT

What is the best advice you have received in your professional journey?

I've had different phases of focus in my 35-year physical therapy career: 1) clinician, 2) administration and 3) academic/research. I was reminded by my first clinical mentor that being a clinician requires you to always *"put your patient's needs first and that my role is to trust, believe and help them."* With respect to administration, the best advice I received was from a seasoned employee, who said I should *"be transparent, and to let people know you have their best interests at heart."* With respect to research, the most valuable advice I have been given was from a very successful NIH research, who said that *"all research should directly and indirectly influence clinical practice."* This has helped reduce the risk of a "so what" research study. All of these have helped shape my actions as a physical therapist.

What is one article all therapists should read and why?

The one article I always recommend is Robert Herbert, Gro Jamtvedt, Judy Mead, and Kåre Birger Hagen's 2005 paper titled "Outcome measures measure outcomes, not effects of intervention", published in the Australian Journal of Physiotherapy. This paper nicely positions what patient outcomes tell us in non-randomized studies. It helps correct the mis-assumption that we can compare clinician outcomes across clinicians from different settings (without randomization), or that good outcomes are because the treatment was appropriate (it could be natural history or others reasons). I see this mistake made by those who have access to outcomes data, who really don't understand what story that data can tell.

What is one book all therapists should read and why?

I would recommend Atal Gawande's "The Checklist Manifesto" which states that no matter how expert you may be, well-designed checklists can improve outcomes. For me, it helped show that the simplest things can lead to the most effective outcomes, and since I'm more of a "big idea" guy, it has helped me stay relevant and be a better communicator.

What are you working on right now?

I'm very lucky to have many national and international collaborators, which means I am often working on a lot of different studies. We have an ongoing funded clinical trial called SS-MECH (PT Foundation), in which we are comparing mechanisms and outcomes between a manual therapy approach and an exercise approach for neck pain. I am a PI of the NIH funded ForceNET, and that's led to a number of terminology/taxonomy initiatives for manual therapy as well as general networking initiatives across multiple professions. I also am the Director of the Center of Excellence in Manual and Manipulative Therapy at Duke. The Center's goal is to provide accurate information about manual therapy and reduce the misinformation that is present. For my role at Duke, I coordinate many medical students or physician-clinicians research so I commonly will be part of surgical studies as either a data analyst or a methodologist.

Do you have any advice for early-career therapists?

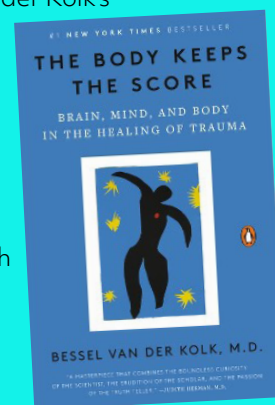
I truly believe that curiosity is most important element for loving your job so find things that you find intriguing. For example, I've recently been exploring the diagnostic concepts around myofascial pain syndrome and it is very messy, it is riddled with unproven components, and it has many assumptions that need further investigation.

BOOK CLUB

The Body Keeps the Score covers pioneering research showing the link between emotional trauma and how it affects physical health and well-being. This book was foundational for me to start understanding the complexities of pain, especially pain that persists beyond regular healing time frames. If you treat people with chronic pain, you need to read this book to more deeply understand the biopsychosocial model of pain. - Kory Zimney, PT, DPT, PhD

About the book:

Trauma is a fact of life. Veterans and their families deal with the painful aftermath of combat; one in five Americans has been molested; one in four grew up with alcoholics; one in three couples have engaged in physical violence. Dr. Bessel van der Kolk, one of the world's foremost experts on trauma, has spent over three decades working with survivors. In *The Body Keeps the Score*, he uses recent scientific advances to show how trauma literally reshapes both body and brain, compromising sufferers' capacities for pleasure, engagement, self-control, and trust. He explores innovative treatments—from neurofeedback and meditation to sports, drama, and yoga—that offer new paths to recovery by activating the brain's natural neuroplasticity. Based on Dr. van der Kolk's own research and that of other leading specialists, *The Body Keeps the Score* exposes the tremendous power of our relationships both to hurt and to heal—and offers new hope for reclaiming lives.



HEALTH CORNER: BREATHWORK

Eric Fjeldheim PT, DPT, Therapeutic Pain Specialist and Pain Fellow

Breathing exercises, or breathwork, has been rising in popularity in the healthcare and wellness circles for some time. There are numerous studies demonstrating the effectiveness of using breathing exercises to manage things like inflammation,¹ mental health,² and pain.³ From what I can see, there isn't a consensus on which breathing exercises are best and this is highly debated among those in the air space. Most of the aforementioned therapeutic effects of breathing exercises seems to come from slow, deep, paced, and/or mindful breathing. So where does one know where to start? Box breathing? Wim Hof Method? Diaphragmatic? One technique that can be effective is the 4-7-8 breathing technique developed by Dr. Andrew Weil. The best part is that it requires no equipment and is simple to do (if you can count to 8).

Step 1: Find a comfortable position either sitting or lying down, close your eyes or gently cast your gaze downward

Step 2: Inhale through your nose for a count of 4

Step 3: Hold your breath at the top of the exhale (if comfortable) for a count of 7

Step 4: Slowly exhale out your mouth for a count of 8

Step 5: Repeat this process for 4-5 cycles of breathing or until the desired effect is reached



1. Craighead DH, Heinbockel TC, Freeberg KA, Rossman MJ, Jackman RA, Jankowski LR, Hamilton MN, Ziemba BP, Reisz JA, D'Alessandro A, Brewster LM, DeSouza CA, You Z, Chonchol M, Bailey EF, Seals DR. Time-Efficient Inspiratory Muscle Strength Training Lowers Blood Pressure and Improves Endothelial Function, NO Bioavailability, and Oxidative Stress in Midlife/Older Adults With Above-Normal Blood Pressure. *J Am Heart Assoc.* 2021 Jul 6;10(13):e020980. doi: 10.1161/JAHA.121.020980. Epub 2021 Jun 29. PMID: 34184544; PMCID: PMC8403283.
2. Balban MY, Neri E, Kogon MM, Weed L, Nouriani B, Jo B, Holl G, Zeitzer JM, Spiegel D, Huberman AD. Brief structured respiration practices enhance mood and reduce physiological arousal. *Cell Rep Med.* 2023 Jan 17;4(1):100895. doi: 10.1016/j.xcrm.2022.100895. Epub 2023 Jan 10. PMID: 36630953; PMCID: PMC9873947.
3. Jiang X, Sun W, Chen Q, Xu Q, Chen G, Bi H. Effects of breathing exercises on chronic low back pain: A systematic review and meta-analysis of randomized controlled trials. *J Back Musculoskelet Rehabil.* 2024;37(1):13-23. doi: 10.3233/BMR-230054. PMID: 37718775.

RESEARCH CORNER



A Non-Pharmacological Multidisciplinary Pain Program within a Hospital Wellness Program: A Mixed Methods Study



E Rebne, A Louw, K Hoffman, B Graf, B Mitchler, R Gordon, L Fencel, C Zeddies, E Werner, C Schroeder, M Milbrath, K Niquette and L Vaca

The primary aim of this study was to determine if a non-pharmacological pain program, delivered by a multidisciplinary team in a wellness program yields positive results.

Over a 2-year span, data was collected on 35 participants in a hospital-based wellness program, focusing on pain neuroscience education (PNE), different forms of exercise and various strategies aimed to calm a hypervigilant nervous system. Prior to and immediately following the 4-week program, pain knowledge, pain catastrophization and kinesiophobia was measured.

At the completion of the study, all formal measures increased significantly – rNPQ ($p < 0.001$), PCS ($p < 0.004$) and TSK ($p < 0.001$), with various patients moving below cut-off scores. Patients highly recommended the class (mean score of $8.81 \pm 1.69/10$), citing learning more about pain and additional ways to treat their pain non-pharmacologically as key takeaways.

Delivering such a pain program into existing wellness programs may allow for more local, evidence-based, affordable care for patients with chronic pain within their local communities.



Effect of open kinetic chain exercises during the first weeks of anterior cruciate ligament reconstruction rehabilitation: A systematic review and meta-analysis

V Fontanier, M Vergonjeanne, P Eon, A Bruchard, D Laplaud

Closed kinetic chain (CKC) exercises are the gold standard for rehabilitation after anterior cruciate ligament reconstruction (ACL-R). Open kinetic chain (OKC) exercises may provide benefits, but their use in the early stages remains controversial.

Overall, the methodological quality was low and the population, intervention, comparison, outcome, time (PICOT) criteria were heterogeneous. However, OKC was found to have beneficial effects on patient reported outcomes (PROMs), strength, function, and

return to play, especially when performed at least four weeks after surgery in rehabilitation programs that began with CKC exercises.

The evidence suggests that OKC exercises may provide benefits and no adverse effects in the early stages of rehabilitation after ACL-R, particularly when initiated after CKC exercises. These findings are consistent with current clinical practice guideline recommendations for the inclusion of OKC in rehabilitation programs.



Systematic literature review of imaging features of spinal degeneration in asymptomatic populations.

W Brinjikji, P H Luetmer, B Comstock, B W Bresnahan, L E Chen, R A Deyo, S Halabi, J A Turner, A L Avins, K James, J T Wald, D F Kallmes, J G Jarvik

Degenerative changes are commonly found in spine imaging but often occur in pain-free individuals as well as those with back pain. We sought to estimate the prevalence, by age, of common degenerative spine conditions by performing a systematic review studying the prevalence of spine degeneration on imaging in asymptomatic individuals.

We selected age groupings by decade, determining age-specific prevalence estimates. For each imaging finding, we fit a generalized linear mixed-effects model for the age-specific prevalence estimate clustering in the study, adjusting for the midpoint of the reported age interval.

Thirty-three articles reporting imaging findings for 3110 asymptomatic individuals met our study inclusion criteria. The prevalence of disk degeneration in asymptomatic individuals increased from 37% of 20-year-old individuals to 96% of 80-year-old individuals. Disk bulge prevalence increased from 30% of those 20 years of age to 84% of those 80 years of age. Disk protrusion prevalence increased from 29% of those 20 years of age to 43% of those 80 years of age. The prevalence of annular fissure increased from 19% of those 20 years of age to 29% of those 80 years of age.

Imaging findings of spine degeneration are present in high proportions of asymptomatic individuals, increasing with age. Many imaging-based degenerative features are likely part of normal aging and unassociated with pain. These imaging findings must be interpreted in the context of the patient's clinical condition.

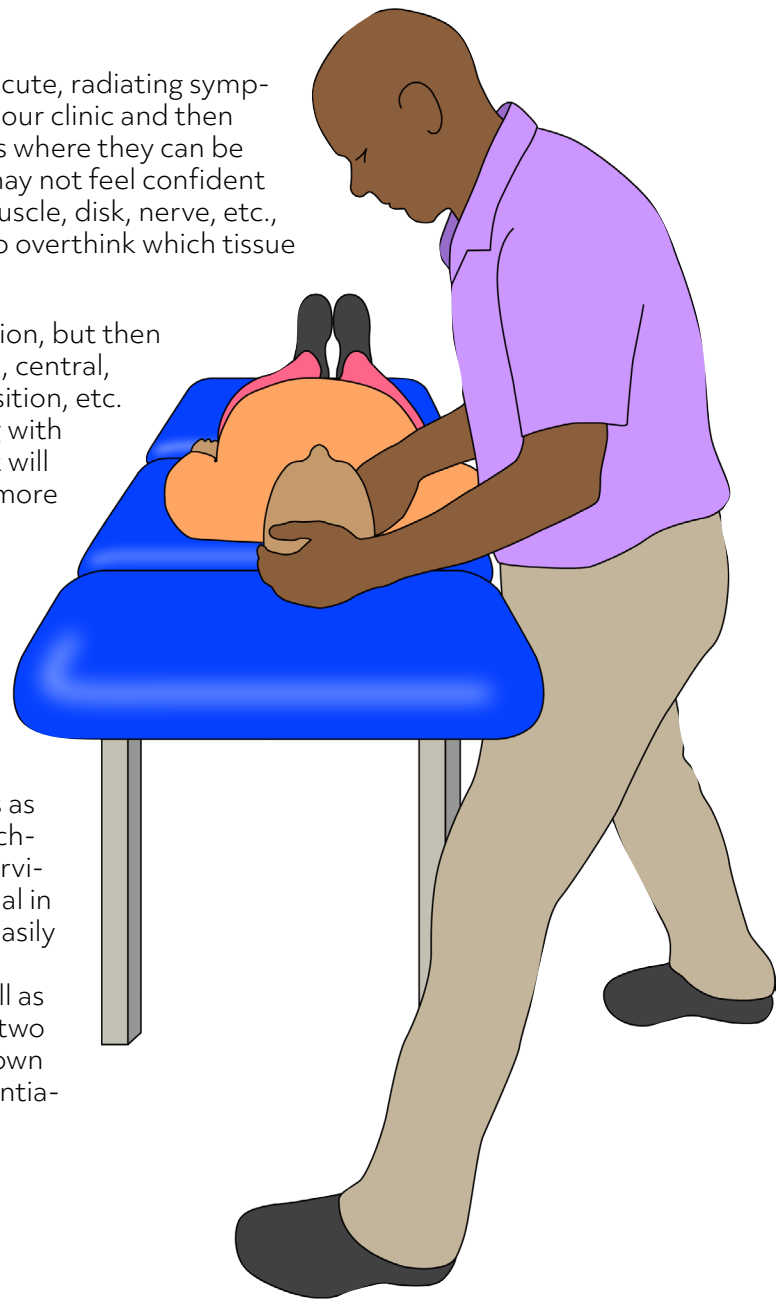
CLINICAL PEARL Kevin Farrell PT, PHD, OCS, FAAOMPT

In the clinic we often encounter patients with a variety of acute, radiating symptoms. Our goal is to screen if the patient is appropriate for our clinic and then determine a differential diagnosis. I've faced many patients where they can be too 'hot to handle,' but appear appropriate for therapy. I may not feel confident whether the underlying source of the symptoms is joint, muscle, disk, nerve, etc., but we seek to first calm them down. Therefore, I try not to overthink which tissue I am targeting initially.

Many therapists want to begin with PA's or even manipulation, but then we also begin debates on the specific technique (unilateral, central, up-slope, down-slope), grade, direction, angle, patient position, etc. that may be best. Two common things to consider starting with are gentle traction and transverse glides. A positive impact will then let you further funnel your differential diagnosis to a more specific tissue once the patient is less irritable so that your intervention can become even more specific.

Traction can impact many tissues including: stretching musculature, tenses ligaments and joint capsules, widens IVF, straightens spinal curves, and slides facet joints (usually into an open position). Traction has been shown to be beneficial for cervical radiculopathy.

Lateral or transverse glide accomplishes many similar goals as traction, but does have a bias toward neural tissue. This technique is reported to focus on the interface between the cervical spine and nerve root and has been found to be beneficial in reducing cervicogenic symptoms. This can be performed easily with the therapist standing at the head of the plinth or the side of the plinth, based on the patient presentation as well as the skill and preference of the therapist. Either way, these two techniques can be a great combination to calm patients down to a level where we can continue with more specific differentiation and intervention.



1. Fritz et al. Exercise only, exercise with mechanical traction, or exercise with over-door traction for patients with cervical radiculopathy, with or without consideration of status on a previously described subgrouping rule: a randomized clinical trial. *JOSPT* 2014 Feb;44(2):45-57
2. Cervical Radiculopathy: Effectiveness of Adding Traction to Physical Therapy-A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *J Sci Med Sport*. 2018 Apr;21(4):342-346.
3. Coppieters MW, et al. The immediate effects of a cervical lateral glide treatment technique in patients with neurogenic cervicobrachial pain. *JOSPT* 2003
4. Blanpied. Clinical Practice Guidelines Linked to the International Classification of Functioning, Disability and Health From the Orthopaedic Section of the American Physical Therapy Association.

“We need a broad biopsychosocial understanding of pain, not just lip service. We need a broader set of skills to assess pain. We need a different approach to care that focuses less on symptom palliation and more on patient empowerment.”

-Peter O'Sullivan PT, PhD

