Oh how poorly we are “designed”!

Stand up and extend your lumbar spine - did you know that we are the only mammals with the ability to do that? Notice how the dermatome map makes more sense when the human model is positioned on all fours. Since we became bipedal (approx. 7 million yrs ago), the nerves CURVE around our legs instead of going directly down in a straight line as they do in all other mammals.

I am certain that being bipedal had advantages such as being able to carry food, tools etc. while walking. The lordosis and the greater extension in our spines has perhaps made us better bipedal runners but bipedalism has come with a host of uniquely common human maladies1 such as L4-5-S1 nerve root entrapments, stenosis and spondylolisthesis due to the excess compression forces occurring with erect standing.

“All apes display significantly less spinal disease than in a comparable human sample...” 2

If only we had the intervertebral foramen of primates, perhaps back pain and nerve root issues would be much less common! I’m not suggesting going back to walking on our knuckles but it is an interesting question: was bipedalism worth it? (Read on my rant at the end of the Report)

1. The National Geographic Magazine,2006 NGM.com
In the past number of decades health care professionals and the general public have been convincingly made to believe that foot pronation is “evil” so the shoe companies saw great opportunities in “fixing” flat footed people by making supportive high arch shoes. (That’s my left flat foot by the way.)

This paper looked at 29 relevant studies and concluded that “High arch and flat-foot foot types are associated with lower extremity injuries but the strength of this relationship is low.”

It seems like review papers can “cherry pick” the studies they include as there are some studies that see absolutely no link between foot type and injuries. See below...

**Flat footed runners need arch support?**


If you have flat feet and wish to start running, you better choose a supportive “motion control” shoe to reduce your risk of injury, right? NOT!

This was a 1-year Danish epidemiological study that investigated the running distance to first running-related injury in almost 1000 novice runners wearing neutral running shoes.

Irrespective of their foot posture (i.e. supinated, neutral or pronated) all the runners were given the same neutral running shoe (Adidas Supernova Glide 3).

Within the one year period, one quarter of the runners developed some kind of running related lower extremity injury that limited their running for at least one week.

**Result:** In fact they discovered that the incidence rate of running injury in the runners with mild to moderate pronation was significantly LESS than those with either supinated or neutral feet.

“Foot pronation is not associated with increased injury risk in novice runners wearing a neutral shoe.”

**Conclusion:** Although still controversial, this study contradicts the general belief that pronating runners are at increased risk of injury if they run in a neutral running shoe.

I have flat feet and am proud of them and have never considered orthotics or high arch shoes for running. In fact I love my non-supportive Vibram 5-finger shoes.

**Sleeper Stretch for Pitchers**


Athletes involved in overhead activities such as pitchers, football and volleyball players have been shown to have a loss of shoulder internal rotation ROM on their dominant side. This loss of ROM has been shown to reduce the subacromial space which explains the greater prevalence of impingement in those athletes. Basically the smaller the acromiohumeral distance (AHD), the greater the risk of having a painful shoulder.

For this study, all athletes with limited shoulder medial rotation were randomly assigned to either a 6 week “sleeper stretch” program or to a control group.

Basically the stretching group showed significant improvements in their shoulder internal rotation ROM (15° on average), while the control group showed no changes in their ROM. Most importantly the subacromial space, as measured
by ultrasound imaging, increased in the stretching group but did not in the control group.

I give the “sleeper stretch” to almost all my overhead athletes both as a treatment and as a preventative measure. Now I have the evidence to support giving that stretch.

If you wish to view the video of me teaching the “Sleeper stretch”, go to YouTube and search for APTEI. While there, view all the other short (2 min.) videos.

Injection vs NSAID for Frozen Shoulders


What advice would you give a patient with a painful frozen shoulder? Cortisone injection or just take meds?

For this 2013 study almost 200 patients with adhesive capsulitis were assigned to one of four groups.

Group I: Subacromial injection
Group II: Intra-articular injection
Group III: Intra-articular & subacromial injection
Group IV: NSAIDs

Irrespective of the exact location, the patients treated with a single corticosteroid injection had faster pain relief, greater ROM and had greater satisfaction levels than the patients in group IV who received only NSAIDs.

Clinical Relevance: Regrettably NSAIDs are of little value in patients with frozen shoulder. Recommend that they see an MD with experience in injecting anywhere in the shoulder. Ideally an intra-articular injection would seem to be better, but this study showed that the site of injection made no difference, they were all equally good.

Predicting a Scaphoid Fracture


This prospective study involved 215 patients with scaphoid fractures and concluded that the following 4 clinical tests had 100% sensitivity, meaning if any of the tests are negative, the patient is unlikely to have a scaphoid fracture.

i) Anatomical snuff box tenderness
ii) Scaphoid tubercle tenderness
iii) Pain on longitudinal compression of the thumb
iv) Pain on thumb ROM testing

Are Race, Genetics and BMI a Risk Factor for Frozen Shoulder?


As of 2013 we still do not know the actual cause of most frozen shoulders; aka idiopathic adhesive capsulitis (IAC).

This 2013 Australian study demonstrated that the top 6 risk factors for the development of IAC were diabetes, thyroid disease, a lower body weight, a lower BMI, and a positive family history of IAC.

Surprisingly having parents/grandparents born in the British Isles or being born in the British Isles was another risk factor for AC. Funny, I recall my frozen shoulder patients being of varying race and colour but I must admit I’ve never kept a tab if most were of white British decent.

Personal comment: When I was a new into the PT world I used to feel guilty and responsible if my patient developed a frozen shoulder... it was as if I had failed to prevent it. In hindsight, and now thanks to research, it was never my “fault” that they developed a frozen shoulder. I can’t be expected to change genetics, race, thyroid issues, diabetes or low BMI!
On the other hand individually these tests had low sensitivity. The specificity was 9% for anatomical snuff box tenderness, 30% for scaphoid tubercle tenderness, 48% for pain on longitudinal compression of the thumb and 66% for pain on thumb ROM testing.

**What does this all mean in a clinical setting?**

If you see a patient post fall onto outstretched hand with soreness at the scaphoid region, do the above mentioned 4 tests.

If only one, two or three of the tests are +ve they likely do not have a scaphoid fracture. If all four tests are +ve, they should definitely get an x-ray. A scaphoid fracture should not be missed!

If in doubt, the rule of thumb (no pun intended) is that the wrist and thumb should be braced and stabilized until symptoms improve, in case a fracture was missed on an x-ray.

**An Effective Self-Wrist Mobilization**

**Reference:** Choung SD et al Short-term effects of self-mobilization with a strap on pain and range of motion of the wrist joint in patients with dorsal wrist pain when weight bearing Man Ther. 2013 Jul 3.

Although I rely on various Mulligan wrist MWMs for helping my patients improve their pain and ROM, this recent study looked at the efficacy of a novel self-mobilization technique.

The effects of self-mobilization with a strap (SMWS) while weight bearing through the hand was studied on patients reporting of persistent dorsal wrist pain on weight-bearing.

They demonstrated that after only one week the self mobilization technique was beneficial in reducing dorsal wrist pain on weight-bearing and increasing wrist ROM.

The mid-point of the strap is placed across the proximal carpal bones, just below the distal end of the radius.

The patient is then instructed to passively extend the wrist by sitting up. The strap provides a volar glide of the proximal carpals the entire time.

At the onset of pain during the wrist extension, the patient then pulls the arm upwards, to distract the wrist joint space while maintaining volar gliding with the strap and maintain it for 10 seconds.

The patient is instructed to repeat the technique 10 times with a 20 second rest period between each rep. The exercise is to be performed once per day.

**Clinical Relevance:** On your next patient with limited and painful wrist extension, consider teaching them this self-mob. As for the strap, I use the key lanyards sold in dollar stores.

**A Really Effective MWM for Knee OA**


The evidence supporting the efficacy of Mulligan’s mobilizations with movement (MWM) is growing and here is the latest one that every PT must be aware of and apply clinically.
Patients with symptomatic knee OA with an average age of 71, received four treatment sessions of MWMs within a 2 week period along with a home program.

The patients had significant improvements in knee ROM, pain and functional scores after only 2 weeks with the greatest benefit occurring immediately following the first session of knee MWMs.

The Evaluation
With the patient in supine lying flex and extend the knee and note the most symptomatic direction and note pain level.

Re-evaluate active assisted knee flexion / extension in supine by applying

Option 1: A lateral glide to the tibia while stabilizing the femur close to the joint line (aka Lateral glide)

Option 2: A lateral glide with medial rotation

Option 3: A lateral glide with lateral rotation

Option 4: A medial glide

The patient is asked to report which option provides the most symptomatic relief during knee flexion/extension. Of the 4 options, the most beneficial glide direction is then chosen as the treatment of choice.

The Treatment
The most effective glide is then applied in weight bearing with the effected knee on a chair. The MWM is repeated 10 times with 3 sets. Self MWMs are performed every 3 hours.

Identifying Pelvic Floor Dysfunctions
Submitted by: Carolyn Vandyken, PT & Nelly Faghani, PT

Orthopaedic therapists routinely prescribe Kegel exercises for core and pelvic floor dysfunction. Kegels are usually given without assessing the pelvic floor muscle strength or tightness first. PTs everywhere would be critical of such a practice elsewhere in the body. Should this routine practice continue for the pelvic floor?

Research shows that women with chronic low back pain (LBP) have an accompanying 78% pelvic floor dysfunction. A 5-year prospective study on almost 40 000 women showed that the strongest co-morbid factors in chronic LBP are pelvic floor dysfunction and respiratory dysfunction.

A poster presentation at the First World Congress on Abdominal-Pelvic Pain in Amsterdam (2013) involving 1600 patients demonstrated that in both LBP and pelvic pain, 57% of women and 36% of men complain of concurrent pelvic floor dysfunction. Could pelvic floor dysfunction be a major and overlooked driver of chronic LBP and pelvic girdle pain?

So, why don’t we just do more Kegels? Simply put, pelvic floor dysfunction is a general term used for both hypertonic and hypotonic muscular problems. There may also be fascial problems, as well as neural tension challenges in the pelvic floor, which will be aggravated by doing Kegels.

Ideally every orthopaedic PT should be able to identify the patient’s who need pelvic floor strengthening versus those who need pelvic floor lengthening. However, our training programs do not specifically address this issue unless you have taken the appropriate courses to assess the pelvic floor through internal palpation. This needs to change!
Medically and therapeutically we are divided into specialties. The orthopaedic PTs often under-represent the pelvic floor and the pelvic floor physiotherapist may too closely focus on these structures alone. The pelvic floor needs to have its rightful place back in the body, with all PTs and medical specialists considering its role accurately in both orthopaedic and gynecological problems.

However, not every PT is interested in doing internal exams. Pelvic Health Solutions is introducing a new, one-day evidence-based pelvic floor-retraining course for the orthopaedic PTs, involving no internal exams, in 2014. There is a key role for all PTs to accurately assess and treat pelvic floor dysfunction, knowing when to refer to a subspecialist and whom to treat in-house.

For more information visit www.pelvichealthsolutions.ca or email info@pelvichealthsolutions.ca

Evidence of a Poorly “Designed” Pelvis

Reference: Ackerman, J. The National Geographic Magazine.2006 NGM.com

I started off this report with a rant on bipedalism, and I shall continue, especially since we are now talking about the pelvis.

The fossilized remains of the first hominid skeleton were discovered in Ethiopia dating back about 3.2 million years.

The very excited anthropologists called her “Lucy” (Since they were listening to The Beetles “Lucy in sky with diamonds” at the time).

Although Lucy had the physical characteristics of a chimpanzee, there was one major exception; her pelvis looked more human-like than ape-like. Lucy’s ilium was rotated which is the hallmark of bipedal locomotion. Anthropologists concluded that we all now share Lucy’s distinctly “human-like” pelvis.

Among the great apes (chimpanzees, orangutans and gorillas) the female pelvis is quite roomy, and birth is far easier than it is for humans. An average length of labour for a woman having her first child is 12 to 18 hours, while for chimpanzees, the gestation period is 8 months and a their labour normally lasts only 40 minutes!

You see, the pelvic canal of primates is like a straight canal ...making it ideal for giving birth.

On the other hand the human pelvic canal is flattened oval in one way and then makes a 90° turn and flattens the other way, making human birth far more difficult and risky when compared to some quadrupeds.

The human pelvis “design” is so bad that a century ago birthing was the leading cause of death among young women ...in fact even today birthing mothers continue to have a high mortality rate in some countries. (Note: there are many other reasons for this too, such as infections)

Most expectant primates find a quiet spot away from the group and give birth independently in solitude. However due to the difficulty of human birth it’s no wonder women around the world get help during labour and delivery. Oh how wonderfully yet poorly we are “designed”/evolved!
**Why are patients asking for Anti-biotics for their Back pain?**


Following a disc herniation, blood capillaries grow into the disc in order to nourish and heal the injured area. Sometimes the blood capillaries may introduce the bacteria called *Propionibacterium*, which is the same bacteria that causes acne. It is theorized that this bacteria may result in a chronic infection, which may explain the presence of vertebral body edema in some patients with chronic LBP.

To investigate the bacteria theory, researchers in Denmark recruited 162 patients with a history of a herniated disc, chronic LBP, and MRI confirmed bone edema for this study.

In this double blinded and randomized trial the patients received either 100 days of antibiotic treatment (amoxicillin) or 100 days of an identical placebo.

**Basic Result:** Compared to the placebo group, the patients receiving antibiotics had statistically significant improvements in pain and functional scores at 100 days and at one-year follow-up.

**Strange Result:** The strange part of the study was that 80% of the patients on the antibiotics had significantly less LBP, however the placebo group showed no improvement in any of the measured outcomes, whereas normally in other studies placebo groups show at least some improvement.

The problem with this study is that it is for now one of a kind and not yet replicated. However the public and the media are so enthusiastic to find a "back pain cure" that this one study is getting more credit than it deserves.

If your patient has heard of this study through the media and asks you, **"Should I take antibiotics?"** Tell them that this was a one off study and that the subjects had proven vertebral body edema on their MRI, so it was a very selective population. Also taking antibiotics for 100 days is not a benign thing, it has consequences!

**Drinking Alcohol = Low Back Pain?**


We know that excessive alcohol consumption is a risk factor for liver cirrhosis, heart attacks and type 2-diabetes. On the other hand we know that moderate alcohol use is associated with reduced risk of cardiovascular disease, systemic lupus and diabetes...go figure!

So is drinking alcohol associated with LBP? This 2013 systematic review analyzed 26 studies and showed that there was a very weak association between alcohol consumption and LBP and likely not a causal effect.

They conclude that the relationship between LBP and drinking alcohol is likely important only in those with alcohol dependence/abuse.

For now if you have back pain and enjoy your couple of glasses of wine with your dinner, enjoy it! After all, a lack of enjoyment in life is a greater risk factor for developing persistent back pain.

**In a Nutshell:** Cheers! Drink and be merry, but not too much and not too often (and don't mix with meds)
# 2013-14 APTEI Course Registration & Pain Booklet Order Form

**Instructor:** Bahram Jam, PT

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<td><strong>Shoulder Complex</strong> Waterfall, ON</td>
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<td><strong>ADVANCED PHYSICAL THERAPY LUMBO-PELVIC COMPLEX</strong></td>
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<td>Nov 9, Nov 30, Dec 8</td>
<td><strong>Complex Regional Pain Syndrome (CRPS)</strong> Instructor: Janet Holly, PT</td>
<td>Kinston, ON, Toronto, ON, Saint John, NB</td>
<td>Note: As these are primarily practical courses, please dress appropriately</td>
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<td>Nov 16, Nov 17</td>
<td><strong>Shoulder Complex</strong> Cervical Spine: Articular Dysfunctions</td>
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<td>Toronto, ON</td>
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<td>Dec 7-8 ($395)</td>
<td><strong>Art &amp; Science of Pain Management</strong> Instructor: Debbie Patterson</td>
<td>Edmonton, AB</td>
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<td>Jan 25, Jan 26</td>
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<td>Feb 1, Feb 2</td>
<td><strong>Knee Complex</strong> Hip Complex</td>
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### APTEI Acupuncture / Dry Needling (ADN)

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<td><strong>ADN: Introduction</strong> Immediately Applicable Needling <strong>ADN: Upper Extremity</strong></td>
<td>Brampton</td>
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<td>Nov 2</td>
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![Image](https://via.placeholder.com/150)

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