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Dynamic Neuromuscular Stabilization (DNS): The foundation for movement and a new opportunity for practical applications

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Dynamic Neuromuscular Stabilization largely originated during the last decade of the last century in the mind of Professor Pavel Kolar of the Rehabilitation Department, Motol Hospital, 3rd Medical School, Charles University. Since then, it has expanded dramatically in both principles and methods. Early courses were attempted in the United States around the beginning of the century, but the critical course that established a real foothold occurred in Redondo Beach, California in October 2014 (change date). The initial courses were simply called Developmental Kinesiology according to Kolar, until the official name of Dynamic Neuromuscular Stabilization was established in October 2008. With the combined teamwork of Professor Kolar, the organizational and supporting efforts of Assistant Professor Alena Kobesova, the Prague physiotherapists and the international instructors, DNS has grown over the past decade to become an internationally accepted rehabilitation approach taught in dozens of countries worldwide.

DNS concepts are largely based on the genesis of “first generation” Prague School instructors, the late Professors’ Karel Lewit, Vladimir Janda and Frantisek Vojta. Professor Kolar ingeniously move the model forward with his critical understanding and skills utilizing the concepts of neurophysiologically-based developmental kinesiology (childhood movement development), muscle imbalance and postural dysfunction with a new neurophysiologically based functional assessment therapeutic protocols.

At its core, DNS is based upon the concepts of ontogenesis (the maturation of the human from point of conception until sexual maturity) to understand critical milestones in the locomotor system maturation to explain the processes of how newborns, without any conscious motor control, can establish postural stability needed to become bipedal after the first year. As Professor Janda had found with his observations of consistent patterns of chronic pain syndromes, postural dysfunctions and muscle imbalances (i.e. Upper Crossed Syndrome, Lower Crossed Syndrome, etc.), DNS demonstrates consistent patterns between faulty infantile postures and movement dysfunction and functional compromise (i.e. chronic pain, poor athletic performance, advanced degenerative changes, etc.).

“I have said for years now that DNS is foundational,” says Dr. Craig Morris, “in that it helps human to improve and stabilize the critical aspects underlying of human locomotion such as body awareness, posture and respiration. Furthermore, DNS is the universal clinical partner with all other clinical techniques, helping to improve their efficacy because of the stabilizing DNS effect. So, regardless of your assessment, manual techniques, counseling and exercises, the DNS approach will team together well with them.”

The principles and methods of DNS are somewhat challenging to learn. Part of this may be that developmental kinesiology milestones that form the DNS foundational principles are not regularly taught in Chiropractic schools. Also, the manual methods are complicated and can require additional therapeutic time in practice compared with the typical chiropractic visit time allotments. Finally, the practical application of DNS principles and methods into clinical practice and specific patient management is challenging. Several years of training and clinical application are required before a clinician has a solid understanding to of these principles and practices.

POLITE Method: Pain Reduction & Self Treatment *Another article in Tucker RAW series*

Jeffrey Tucker, DC, DACRB ¹

1. ACA Council Secretary

The POLITE Method of patient care is a trademarked name. The 'P' is for pain relief, prevention, protection, perception, posture, progression and plan. Static posture (seated and standing) evaluation is the beginning of my examination. At the same time I'm looking at posture, I'm teaching patients "neutral" posture for prevention and protection of the spine. The 'O' is a reminder to pick an 'Outcome Assessment Tool' (OAT). These are absolutely necessary in today's practice environment. Common OAT's include NDI, Oswestry, DASH (upper extremity) and LEFS (Lower extremity). Based on what the patient and I see in the static posture evaluation, I start to explore functional movements for 'optimal loading' (OL). 'OL' is a time of movement exploration for the patient with the understanding that some of the movements may become an exercise (one of the E's) that gets done at home as part of the patient's participation and self-treatment. With my patients I say that "10-20% of the treatment happens in the office and about 80-90% outside of the office". You might find that number different but the take home message is "You need to do some things at home on your own" to get better.

Optimal loading is really exercise that is used to normalize and stimulate the sensors and the brain. I work on inputs and not the muscles first. I prioritize looking to decrease unwanted patterns of movements and behaviors such as poor sitting, sleeping position, eating, etc. These are also things that we could put under 'E' for Eating and Ergonomics.

The 'I' in POLITE is instruments. My reset instrument tools include ice, manipulation, mobilization, PNF, trigger point therapy, IASTM, etc. The instruments in my office also include laser (Theralase, Light Force), shock wave (EnPuls, PiezoWave), PhysioTouch lymph drainage, SCENAR and vibration/percussion devices (RRT, DMS).

The 'T' stands for technology which can include a reminder for me to think about x-rays, MRI, ultrasound tests, lab work, etc. The "T" is also for taping. Often times there is a need for kinesiotaping to provide or enhance perception. I often place tape over areas I want a

patient to perform some foam rolling, stick work, Lacross ball rolling, hand massaging, vibration, and tapping at home. In my mind taping is OK even if it has no other use than a place I mark as a reminder to do something to that area at home. Other times I use taping as an 'off limits' area and tell the patient not to touch that area and just leave it alone.

The 'E' is for education, eating, energy, exercise and ergonomics. This reminds me to have a discussion to reinforce (at home and work) education about hydration, nutrition (eating), sleep quality/quantity/positions, and ergonomics while driving, and chairs at the desk space at work and home. Again I am reinforcing 'Protection' to reduce stress and exacerbations.

As far as exercise goes I still like the neurodevelopmental sequence of movement therapy but too many in our profession have made it complicated. If you would ask me, "What's a good exercise progression?" I would ask you, "Can they breathe (supine, prone) properly? Can they roll? Can they be in a neutral quadruped and move the opposite arm and leg? Can they do dead bug properly? Can they crawl (Bear crawl)? Can they achieve transitional postures? These include kneeling, long sitting, sitting, sitting in deva pose, standing, hip hinging, and squatting. Can they push down to get up to vertical (standing), symmetrical stance, asymmetrical stance, and single leg stance?" These days I still ask myself "Is this patient in need of flexibility or stability?" If it's flexibility I teach them yoga type movements. For evaluating stability I'm using supine and prone planks, glut bridges with feet elevated, and two variations in the side plank. If the patient and I think they have a motor control issue, I try to come up with exercises that help reload the nervous system. It's like trying to put a new software in the computer. I don't prescribe strengthening for a motor control pattern. If a patient performs a body weight movement flawlessly without any resistance, I might try to load the person with Thera-band CLX band resistance and see how they do.

How many of you follow this protocol? Breathing, rolling, quadruped, ½ kneeling, Dead lift, single leg deadlifts, hip mobility, lunges, squats, pistols, kettlebell bottom up carries, Farmers carries with the kettlebell in various arm positions and eventually get-ups.

Teaching breathing is so less complicated for me than it was a few years ago. Here's my update. I ask patients to count breath cycles per minute. During my consult the patient sits in the chair and I time them for one minute while they count one inhalation and one exhalation as one breath. Are they over breathing? If they are over 13 breaths (normal inhale/normal exhale) I get concerned. If they are at 5-10 cycles per minute they are doing it right. The next thing I test is called the 'Control pause.' When breathing normally, we neither completely fill or empty our lungs. The pause starts after a normal exhale. The pause time is the number of seconds you can comfortably hold your breath after a normal, gentle exhalation. When you finish the pause you should return to normal breathing immediately, with your mouth closed. If you sound strained or breathe heavily to recover,

you did not do the test properly. How long is your control pause? People can normally hold their breath between 25 and 30 seconds. If less than 15 seconds it may mean low tolerance to carbon dioxide. If they can hold it more than 30 seconds they are good. Breathing is not a strength thing. It's more of a carbon dioxide thing. Manual therapy to the diaphragm feels good and is often needed to help correct breath.

Use every opportunity to discuss breathing, short foot, neutral postures, grip and mobility. The movement sequence is supine, prone, rolling, quadruped, crawling, sitting, kneeling, squatting, vertical stance and gait. Stability and motor control are posture specific i.e. Bird dog needs to be transitioned to something else. Side bridges need to be transitioned to something else. Squats in the down position needs to be transitioned into something else.

I get that our movement developed in a sequential fashion. Strength did too. For example, lifting the head in a prone position to get the upper body extension is the first strength pattern developed. The movement progression stays the same but the movement 'intensity' varies.

I look forward to seeing every one of you in Las Vegas at the next annual symposium. On Friday April 5, 2018 I'll be teaching the 5 stability tests I'm currently using to guide my exercise decisions and the most common Theraband CLX exercises I am using in my practice.

Motor Control Exercise + Chiropractic = Better Back Pain Results + MD Referrals

Opioids, NSAIDS and Tylenol are OUT according to New Back Pain Treatment Guidelines from the American College of Physicians

Steven Weiniger, DC

It's news when mainstream publications like the Wall Street Journal have headlines like No Drugs for Back Pain, New Guidelines Say¹. After all, it's not everyday when the American College of Physicians, the world's largest medical-specialty society (148,000 members, says don't take drugs because research shows it's better to handle back pain naturally².

Here's what the Medscape article prominently displayed in the physicians lounge of a hospital told the local MDs (underlines mine): (PICTURE AVAILABLE- EMAIL ME-DRW)

- *"For chronic low back pain, consider nondrug therapy, such as exercise, multidisciplinary rehabilitation, acupuncture, mindfulness-based stress reduction (moderate-quality evidence), tai chi, yoga, **motor control exercise**, progressive relaxation, electromyography biofeedback, low-level laser therapy, operant therapy, cognitive-behavioral therapy, or **spinal manipulation**".*

For the rehab focused DC who wants more MD referrals, the specification of motor control exercise (MCE), and not just any exercise (or rehab) performed with good form, is really, really significant. MCEs are about precise isolation of control and stabilization, with accuracy. This is a relatively new arena, and new evidence continues to come in supporting the idea that retraining subtle control can make a significant difference compared to stretching as well as when compared to other exercise³

Everyone in the rehab arena acknowledges the importance of posture and form for exercise, but once new injuries or old habits create symptoms, there's functional postural compensation and structural adaptation. Our contention is that unless someone focuses

with strong intent on an external cue to precisely correct a compensating or adaptive arc of motion, motion patterns are more likely to recur. Over time, weaknesses and asymmetries of the small stabilizing muscles propagate, especially in the inner core muscles, setting the stage for future issues.

The goal is improvement, which is why MCE and SMT work hand in glove. The passive adjustment unlocks subtle kinetic chain restrictions while stimulating proprioception in unused arcs of joint motion, arguably affecting patterns of NMS active, passive and control subsystems on a deeper level than any other passive therapy. Focused MCEs retrain those subtle motions.

We teach a systematic framework of MCEs focused on posture called the StrongPosture® protocols. Posture is the beginning of motion, and the protocols focus on one region of posture and element of motion control at a time. The goal is finding and then strengthening weak links in that individual's kinetic chain with an MCE designed to strengthen control and stabilization towards accuracy, towards symmetry, with an objective external focus of attention.

In other words, they're individualized exercises that are both diagnostic as well as therapeutic. As one of my favorite rehab guiding stars, Vladimir Janda, put it: ***The test is the exercise; And the exercise is the test.***

Attentional Focus, Posture and Effective Motor Control Rehab

Simply telling someone to pay attention to their form and move differently sounds good. But there's often a problem: Sensory and motor errors both accumulate when there's injury- and unfortunately standard rehab exercises often "burn in" to the individual's compensations.

Effective motor control exercise focuses attention to correlate perception to reality. However, humans can only focus on one thing at a time. Which is why we focus attention on training accurate control of one body region at a time- Head, Torso, Pelvis and the Lower Extremity. Each cueable region is known as a PostureZone®, and correlating each to an external proprioceptive reference while keeping other links in the kinetic chain stable is a powerful strategy for people to find, re-engage, recruit for coupled segmental motion and reintegrate that each single PostureZone® into whole body posture and motion patterns. It's also hugely engaging to the person when they perceive improvement, making them great for compliance.

Human perception of time is hardwired to a scale, somewhere between large and small, fast and slow. This Goldilocks scale works for our daily life, but it means we're oblivious to

things outside our design specs. And it means one key to reprogramming subtle sensori-motor control is pushing attention to perceiving the limits of how slow we can go.

On the perception (sensory) side, a fluorescent light appears to cast a constant light...even though the truth is the light is flickering off and on 60 times a second. To perceive the flashing, we have to slow it down.

On the motor side, most humans cannot isolate and control the motion of one vertebra on another. Even high level athletes who report a distinct difference on getting adjusted and understand the benefit of unrestricted segmental motion on performance cannot readily isolate individual segmental motion.

Correlating internal proprioception with an external reality is the key to training accurate perception, and moving with slow, intentional motion is the key to training control. Attentional focus controlled motion exercises (CME) combine both. It can be sitting on a ball, using a band, or just the touch of a trained person, but CME with a specific focus on the external has been shown to work significantly better than regular rehab and exercise¹.

Which is why controlled motion exercise like Yoga, Tai Chi and the StrongPosture® rehab protocols train the focus of attention on controlled motion. And all connect motion with breathe...(but respiratory attentional focus is a different article for a different day).

We're not just talking about injury rehab. Posture issues from today's tech habits and old injuries are often the beginning of a progressive posture asymmetry and poorly coupled motion which can begin slowly, usually unnoticed or attributed to "I'm just getting older".

This degeneration of postural stabilization patterns occurs from the interaction of declining sensorimotor and proprioceptive function with structural breakdown. As people age they think they know where they are in space..but their accuracy gets worse over time in each of the 3 Elements of Posture⁴: Balance, Alignment and Motion- BAM

For example, in:

-**Balance:** Errors in positioning can be a cause of falls in older people, as their feet aren't lifting up quite as high up as they thought during gait, causing them to stumble.

- **Alignment:** Forward head posture, "dowagers hump" and other displacement measurable on lateral posture pictures are objective deviations from vertical alignment, and mark unaware early stages of posture breakdown. And while over time people often become subjectively aware of the direction of the displacements, in my experience they always underestimate the extent of the deviation when shown their PostureZone® alignment on a picture.

- **Motion:** Of interest to DCs, postural pain and other NMS issues are often the result of chronic joint stress and muscle strain result from bio-mechanically inefficient balancing of the body.

Moving well is important to stay active and age well, which is why documenting and benchmarking subtle asymmetry of perceived posture is important when working everyone- millennial to athlete to geriatric. And especially for rehab.

References:

¹ <https://www.wsj.com/articles/no-drugs-for-back-pain-new-guidelines-say-1487024168>

² Qaseem, Amir, Timothy J Wilt, Robert M McLean, Mary Ann Forciea, and Clinical Guidelines Committee of the American College of Physicians. "Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians." *Annals of internal medicine* (2017)doi:10.7326/M16-2367

³ Effects of Motor Control Exercise Vs Muscle Stretching Exercise on Reducing Compensatory Lumbopelvic Motions and Low Back Pain: A Randomized Trial." Park, Kyue-Nam, Oh-Yun Kwon, Chung-Hwi Yi, Heon-Seock Cynn, Jong-Hyuck Weon, Tae-Ho Kim, and Hounng-Sik Choi. *Journal of manipulative and physiological therapeutics* 39, no. 8 (2016): doi:10.1016/j.jmpt.2016.07.006

⁴ Sturmberg, C., Marquez, J., Heneghan, N., Snodgrass, S., & van Vliet, P. (2013). Attentional focus of feedback and instructions in the treatment of musculoskeletal dysfunction: A systematic review. *Manual Therapy*. doi:10.1016/j.math.2013.07.002

⁵ Stand Taller~Live Longer: An Anti- Aging Strategy, S Weiniger, BodyZone Press, 2008

Comparing and Contrasting Kinesiology Tape: Is One Really Better Than the Other?

Scott Schreiber, DC, MS, DACRB, DCBCN

After the great symposium we had last April, I embarked on a mission to determine if one specific brand of kinesiology tape is better than the rest. My findings are below.

Kinesiology Tape was invented by Kenzo Case in 1973. At that time, he was searching for a taping method that would assist with healing of injuries and prolonged the benefits of treatment. Conventional taping, such as athletic taping or strapping was great for joint support, however, he felt it was not a viable option. After years of research, kinesiology taping as we know it was born!

Kinesiotape is the pioneer taping brand. It has the most longevity and has stood the test of time. They offer certifications to a variety of health care professionals. They also have an annual symposium, which all are invited. They manufacture two different types of kinesiology tape, Kinesio tex gold and Kinesio tex FP. Kinesio tex gold is the go-to choice for musculoskeletal disorders. Kinesio tex FP has been useful clinical for circulatory, lymphatic or neurological treatments. For those that treat animals, they also have an equine version of Kinesiotape. They offer a variety of pre-cut taping applications, using their traditional “x”, “I”, and “y” cuts, as well as lymphatic cuts.

Spider-tech taping was the original taping brand to offer pre-cut taping applications. While they still offer traditional rolls, they claim that their pre-cut tape is easier to apply, less chance of snagging on clothing and adheres better to the skin. Spider-tech also offers certification courses, online as well as in-person.

Rock tape is another taping company designed for both the athletic population and the general public. Their philosophy is different stating that, “We tape movements, not muscles”. Rock tape is available in non-traditional designs and colors compared to traditional brands. They can even customize tape design. They claim to have better adhesion than traditional kinesiology tape. They also make a variety of tape designed for special populations, such as children, older adults and those sensitive to tape.

Certifications are offered at many venues. Not only to they make kinesiology tape, but they make a variety of other products designed for athletes.

KT is another popular brand of tape. They have a mixture of precut and standard rolls. They also produce several varieties of tape, cotton and synthetic. They believe that cotton is inferior when it comes to elasticity and resistance to water. Synthetic tape is manufactured, specifically for active individuals, due to the sweat factor and taking showers. KT tape comes in a variety of colors and applications. They produce recovery patches and pro X strips, for pain at specific areas. They have an additional variety called KT flex, which provides additional support for areas of instability. Within the KT flex tape is a piece of flexible polymer plastic, which will provide stability.

As you can see, there are a variety of different types of tape, all having unique qualities and purposes. In my opinion, kinesiology taping is here to stay and whatever brand you use, your patients will benefit; just make sure that you OWN the technique. I use multiple types of tape, sometimes in the same application; they all have their place. Check them out, get certified, and make a give your patients an edge in healing!

www.kinesiotaping.com

www.spidertech.com

www.rocktape.com

www.kttape.com

19th Annual ACA Rehab Symposium Flamingo Casino-Hotel, Las Vegas April 6th – 8th, 2018

The 19th Annual **ACA Rehab Council Educational Symposium** is almost here. Please place the dates April 6th – 8th, 2018 on your calendar and be sure to book yourself a room at the Las Vegas Flamingo Casino-Hotel which has undergone millions of dollars' worth of renovation and is simply beautiful inside and out. The block room rate for Rehab Council members is \$135.00/night plus resort fee and tax.

The list of speakers includes noted researcher Michelle Maier, PhD, Jeffrey Tucker, DC, DACRB, Mitch Malley, DC, Eric Cressey, MA, CSCS, Steve Weiniger, DC and William Morgan, DC, President of Parker College of Chiropractic. A total of 18 CEUs have been applied for in the following states: AK, AZ, CA, CO, CT, DE, DC, FL, GA, IA, ID, IL, IN, KY, MD, MA, MI, MN, MS, MT, NC, ND, NE, NJ, NM, NV, NY, OH, OR, PA, RI, SC, SD, TN, TX, UT, VA, VT, WA, WI, WY. And don't forget the Rehab Council Member & Vendor Social Hour starting at 6:30 pm on Friday, April 6th at the Flamingo Hotel which includes a complimentary drink.

In order to register for this Symposium all you need do is click on the following link: <http://www.ccptr.org/next-annual-symposium/>. Hope to see all of you in Las Vegas at the Flamingo Casino-Hotel on April 6th, 2018.

Jerrold J. Simon, DC, DACRB
President, ACA Rehab Council
