



Confidently Communicate Chiropractic & Active Care

Applying the Science of Chiropractic to Clinical Practice

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Communicating Chiropractic

- The **science** supporting chiropractic care has been growing by leaps and bounds.
- From the impact of **posture on longevity** to the improved **function of the brain** following the adjustment, the evidence supporting chiropractic is strong.
- With **dozens of footnotes**, this presentation is designed to help you communicate the benefits of chiropractic more clearly than ever before.



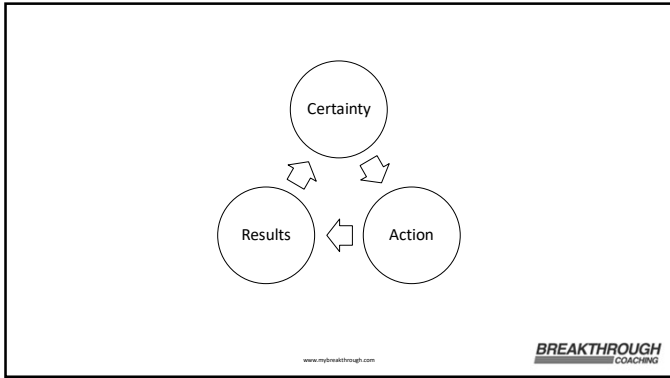
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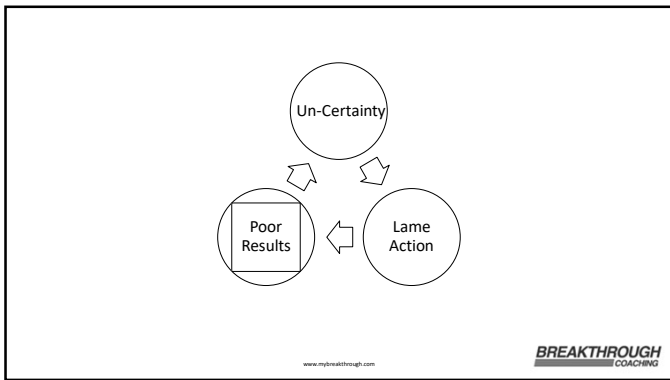
The foundation of success in practice lies in your ability to look your patients in the eyes and deliver your clinical and financial recommendations for care with absolute certainty.




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The Posture Connection

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BREAKTHROUGH COACHING The Posture Connection

- Posture is one of the most overlooked aspects of good **health** and **longevity**.
- Research shows a clear connection between **poor posture** and **diminished longevity** and **quality of life**.



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The effect of posture on health is becoming more evident. spinal pain, headache, mood, blood pressure, pulse and lung capacity are among the functions most easily influenced by posture.

AMERICAN JOURNAL OF PAIN MANAGEMENT ¹

London, J. Shealy, N. Cady, P. Postlethwaite. Respiratory Modulation of Autonomic Function. Pain & Health, 2003, Vol. 4, No. 2 January 159-4

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“You are only as young as your spine.”

Jack LaLanne, DC

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BREAKTHROUGH COACHING Anterior Head Movement

- As the head moves forward **all measures** of health status are reduced.
- Rene Cailliet, Director of the Dept. of Physical Medicine and Rehab. at USC, concluded that **forward head posture can add up to 30 pounds of pressure on the spine and reduce lung capacity by as much as 30%**, which can lead to heart and blood vascular disease.
- He determined a relationship between forward head posture and the **digestive system** as well as **endorphin production** affecting pain and the experience of pain.²

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BREAKTHROUGH COACHING Chronic Inflammation

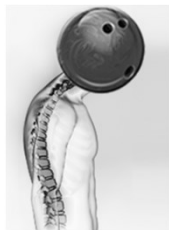
- "Chronic inflammation has become one of the hottest areas of medical research.
- It destabilizes cholesterol deposits in the coronary arteries, leading to heart attacks and potentially even strokes. It chews up **nerve cells** in the brains of Alzheimer's victims.
- Chronic inflammation may be the engine that drives many of the **most feared illnesses** of middle and old age."



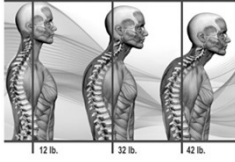
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BREAKTHROUGH COACHING Imagine Your Head was a Bowling Ball

- And your neck as the hand that holds that ball.
- Imagine letting the bowling ball sit in the palm of your hand with your arm tucked tight into your body.
- Slowly move your arm away from your body while continuing to palm the ball.
- The weight of the ball will put more and more **stress** on your arm as it moves away from your body until the weight **causes failure or injury** to occur.

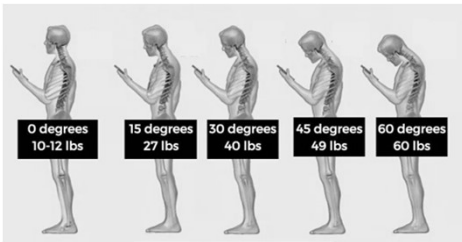


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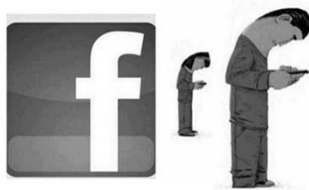


- For every **1 inch** that the head moves forward, it increases the weight of the head on the neck by **10 pounds**.
- The typical forward neck posture of **3 inches** increases the weight of the head on the neck by **30 pounds** and the pressure on the muscles **6 times**.³

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- Researchers found that men who lost **3 cm** in height were **64%** more likely to die of a heart attack.
- Over the 20-year period of the study, men lost an average of **1.67 cm** which was associated with a **42%** increased risk of heart attacks, even in men who had no history of cardiovascular disease.⁴



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- You can tell a lot about a person from the way they carry themselves.
- For instance, picture the way someone stands when they are feeling **depressed**: mid-back and shoulders rolled forward, head hanging, gaze focused on the ground.
- Not exactly the picture of health and vitality!



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Yoga gurus have long said that it is impossible to be depressed with your armpits open.



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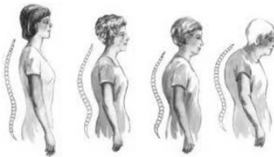
BREAKTHROUGH COACHING Posture & Life Expectancy

- A group of scientists led by Dr. Deborah M. Kado wanted to see if there was a correlation between **postural distortion** and a person's **health**.
- They started with the biggest health problem: **death**.
- They asked: "Was there any correlation between a person having a **hyperkyphosis** and having a decreased **life expectancy**?"⁵



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BREAKTHROUGH COACHING The Frightening Long Term Effects



- Dr. Kado reported in the Journal of the American Geriatrics Society that people with hyperkyphosis were **2 times** more likely to die from **pulmonary causes**.
- They were also **2.4 times** more likely to die from **cardiovascular disease** than those without poor posture.⁵

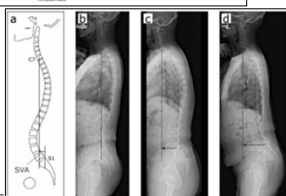
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BREAKTHROUGH COACHING Posture & Cognitive Decline³³

- A 2019 study published in Nature reports that **sagittal spinal alignment (posture)** correlates strongly with health-related **quality of life**.
- Anteriorization of the sagittal vertical axis (SVA) can be regarded as an easily visible indicator of **latent cognitive decline in seniors**.

scientific reports

OPEN Detection of cognitive decline by spinal posture assessment in health exams of the general older population



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- According to a study from the American Cancer Society the amount of time you spend **sitting** can affect your risk of death.
- Followed 127K people over 21 years.
- Prolonged periods of sitting have a negative influence on key metabolic factors like **triglycerides**, **high density lipoprotein cholesterol**, and a number of other biomarkers of **obesity** and other **chronic diseases**.⁶

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To live a long, active, energetic life, few things matter more than posture.



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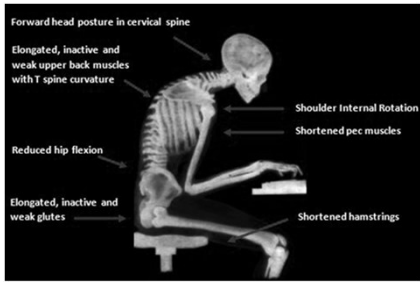
This quote by Thomas Meyers, Author of Anatomy Trains, says it all...

“Movement becomes **habit**, which becomes **posture**, which becomes **structure**.”



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BREAKTHROUGH COACHING **Sitting Disease**





Postural Assessment

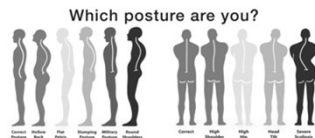
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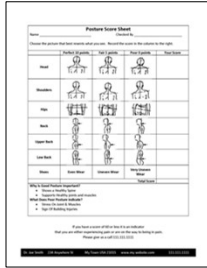
BREAKTHROUGH COACHING **The 7-Step Posture Check**

- We recommending using the **7-Step Posture Check** in all of your community outreach presentations.
- This quick check gets the audience moving and provides them with **tangible evidence** of their postural distortions that they can take home to **share** with their friends and family.
- They can also take extra copies of the form to perform the posture check on their loved ones.



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The 7-Step Posture Check



• Pick a partner & perform the 7-Step Posture Check

1. Head
2. Shoulders
3. Hips
4. Neck
5. Upper Back
6. Low Back
7. Shoes

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Posture Apps are a Snap!

Use a **Posture App** or HIPAA-compliant smart device or tablet to capture and analyse posture.



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Your Criteria for Care

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How do you know where your patients are in the spectrum of health?

How do you know when your patients are **done** with acute care?



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What is a Baseline & Why is it Important?

- A **baseline** is a starting point used for comparisons.
- How do you know how your patient is doing if you don't know how far from normal he is?
- What **goals** is the patient moving toward and how will you know when he gets there?
- A great example is blood pressure: 120/80.



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How to develop a baseline for healing.

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BREAKTHROUGH COACHING A Baseline Must Be

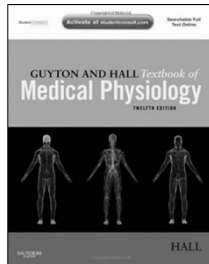
- Based on Normative Data
- Reliable
- Valid
- Published in a Peer Reviewed Journal



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BREAKTHROUGH COACHING Establishing Your Criteria for Care

- We all studied from the same textbook **Guyton's Textbook of Physiology**.
- While none of the information presented today is new, this may be the first time many chiropractors have learned how to apply its clinical implications.



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BREAKTHROUGH COACHING Basic Science

- | | |
|-----------------------------|---|
| • Acute Inflammation | • 3 – 4 days ⁷ |
| • Tissue Repair | • Day 2 – 6 weeks ⁸ |
| • Tissue Remodeling | • 3 weeks – 1 year ^{9,10} |
| • Angiogenesis | • Months to complete ¹¹ |
| • Ligament Healing | • 50% in 6 months
80% in 1 year
100% in 1 – 3 years ¹² |
| • Muscle or Tendon | • 10 days – 10 weeks ¹² |
| • Proprioceptive Adaptation | • 8 – 10 weeks ^{13,14} |

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BREAKTHROUGH COACHING What Are Your C4C?

- Without Criteria for Care (C4C) **beyond pain relief**, when the pain goes away—so does the patient!
- In addition, if the patient discontinues care at this point, there is a considerable risk for **permanent impairment** due to non-functional scar formation.



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BREAKTHROUGH COACHING Establishing Medical Necessity

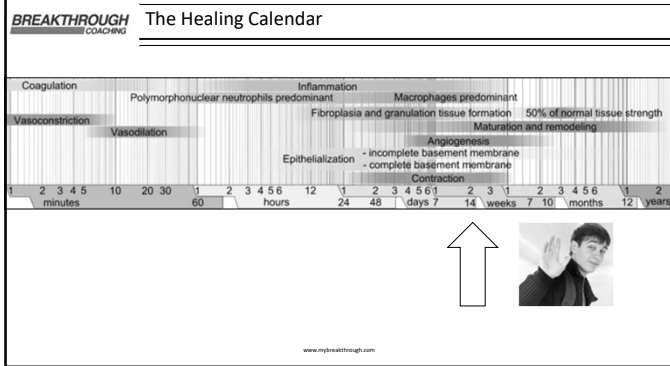
- The typical chiropractic case management protocol includes examination by provocative testing procedures, dermatomal and reflex testing.
- In the absence of neurological involvement, these procedures do little to support the **medical necessity** of care.
- This requires a **different** set of Criteria for Care (C4C).

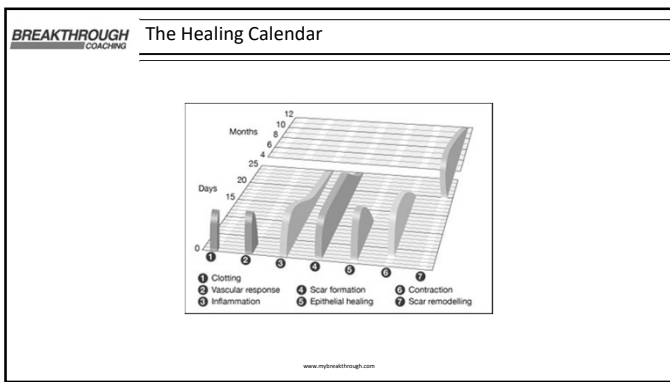
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BREAKTHROUGH COACHING The Pain Relief Model of Care

- The utilization of chiropractic for pain relief is a paradigm of care that was thrust upon the profession by third party payers.
- It is the model of **third party** reimbursement not the model of **self-paid** care.
- It requires the chiropractor to **measure, document and communicate** goals to both patients and third party payors **beyond pain relief**.
- These goals must be **science/evidence** based.
- Let the science continue...

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- BREAKTHROUGH COACHING** Documenting Your C4C
- | | |
|---|---|
| • Pain Level | • Balance & Coordination/
Proprioception |
| • Bone/Joint/Disc Health Or
Degeneration | • Abnormal Illness Behaviors |
| • Posture | • Anxiety Level |
| • Flexibility/Range of Motion | • Depression |
| • Muscle Spasm/ Contusions | • Cognitive/Coping Skills |
| • Strength | • Fear-avoidance |
| • Endurance | • Locus of Control |
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Documenting Your Criteria for Care

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Assessing Pain

- Assessment of pain is the **starting point** for documentation not the finishing point.
- The Medicare **PART Process** for documentation of subluxation without x-ray requires the documentation of pain on each visit.



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Numerical Rating Scale (NRS)

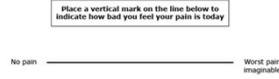
- Purpose: To assess the severity of pain
- Population: Adults and children 10 years old or older.
- Time Required: 30 sec—5 minutes
- Description: 11-point scale for patient self-reporting of pain.
- Score on a scale of 0-10.¹⁵



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Visual Analog Scale (VAS)

- Purpose: It is a measurement instrument for subjective characteristics or attitudes that cannot be directly measured.
- Population: Adults and children 10 years old or older.
- Time Required: 1-5 minutes
- Description: When responding to a VAS item, respondents specify their level of agreement to a statement by indicating a position along a continuous line between two end-points.
- Score on a scale of 0-10.



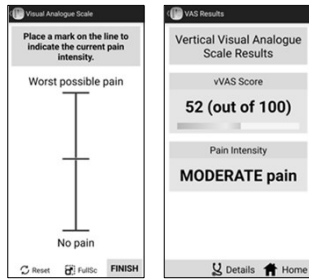
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Visual Analog Scale (VAS) ETZ.soft App



Pain Rating Scales

ETZ.soft



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Algometry

- Algometry is a well researched method of documenting pain.
- The Pain Pressure Threshold (PPT) is the minimal pressure (force) which induces pain.
- The instrument has been proven to be useful in clinical practice for quantification of deep muscle tenderness.
- Trigger points, fibrositis, myalgic spots, activity of arthritis as well as assessment of sensitivity to pain assessed with algometry.



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BREAKTHROUGH COACHING Pressure Normative Data

- Tenderness varies greatly at different sites of the same body part also in healthy subjects, but studies have shown no difference in PPT between right and left sites in homologous body regions.
- The healthy side is used as a normal reference in unilateral painful conditions.
- A compression force equivalent to more than **20N** between a painful site and a corresponding normal site is considered clinically significant.



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BREAKTHROUGH COACHING Normative Data Algometry¹⁷

TABLE 3. Summary of Normal Pressure Thresholds*

	FEMALES		MALES	
	Lowest	Average	Lowest	Average
Upper Trapezius	2.0	4.0	2.9	4.7
Pectoralis			3.3	5.1
Levator Scapula	2.7	4.2	3.6	5.2
Supraspinatus	2.8	4.2	3.9	6.03
Teres Major	2.7	4.0	4.1	6.0
Infraspinatus	3.0	4.8	4.6	6.9
Deltoid	3.1	4.8	5.1	7.3
Lumbar Paraspinals	3.8	5.7	5.6	8.0
Gluteus Medius	3.7	6.0	4.3	6.4

*Minimal pressure inducing pain; side-to-side differences higher than 2 kg/cm²; lowest normal pressure threshold (95% sensitivity) and average values rounded up to 0.1 kg.

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BREAKTHROUGH COACHING Computerized Algometry



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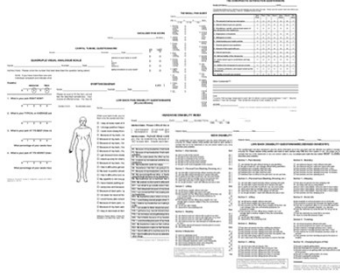
Outcomes Assessment Tools

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Outcome Assessment Tools



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The King of OATs: The Bournemouth Questionnaire

- Assesses **physical** and **psychological** disability for patients with back pain
- Works under the assumption that neck and back pain are **lifestyle illnesses**, rather than "diseases."
- Contains **7 core items**: Pain Intensity, Disability in ADLs, Social Activities, Anxiety, Depression, Fear Avoidance, & Locus of Control.^{18,19,20}



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The Bournemouth Questionnaire

- Time: 5 Minutes or Less
- Scoring: A score of 0 to 10 is possible for each of the seven categories.
- 70 represents the highest disability score and 0 the best score.



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Why is The Bournemouth King?

- The questionnaire not only identifies disabilities in the areas of pain, ADLs and social activities.
- **It also assesses:**
 - **Anxiety:** A feeling of worry, nervousness, or unease, typically about an imminent event or something with an uncertain outcome.
 - **Depression:** Severe despondency and dejection, typically felt over a period of time and accompanied by feelings of hopelessness and inadequacy.

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Why is The Bournemouth King?

- **Fear Avoidance:** A model that describes how individuals develop chronic musculoskeletal pain as a result of avoidance of activities based on fear.
 - This model helped explain how these individuals experience pain despite the absence of pathology.
- **Locus of Control:** The extent to which people believe they have power over events in their lives.
 - A person with an internal locus of control believes that he or she can influence events and their outcomes, while someone with an external locus of control blames outside forces for everything.
- How would each of these non-physiological effects impact your prognosis and patient education?

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Assessing Flexibility/ROM

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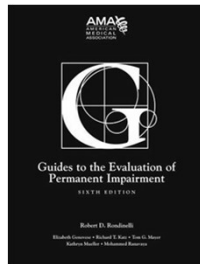


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Assessing Flexibility

- What is your **normative data** baseline for Range of Motion?
- Hopefully you are not assessing spinal ROM via goniometry but with **dual inclinometry**.
- The **AMA Guides to the Evaluation of Permanent Impairment** is used in Workers' Compensation systems, federal systems, automobile casualty and personal injury cases to rate impairment.²¹



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Global Range of Motion

- An easy to report method for assessing range of motion is **global range of motion**.
- Rather than reporting each plane of movement individually, i.e.: Flexion 60 degrees
- Total all of the planes of movement into one global **denominator**.
- According to the AMA Guides:
 - Cervical = 385 deg.
 - Lumbar = 175 deg.
- Note that rotation cannot be accessed via inclinometry.

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Normative Data		
Region	ROM	Global
Cervical	F + E + L/R LF + Rot	385 deg.
Th-Lumbar	F + E + L/R LF	175 deg.

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Muscle Assessments

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- Remember from our science lesson that muscles, **ligaments and tendons** can take from **days to years** to heal.

Muscle Injury Tissue Progression



SCAR TISSUE = ↑ RISK OF RE-INJURY + ↓ RANGE OF MOTION
 Scar tissue forms to heal injured tissue leaving the muscle weaker and less flexible.

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BREAKTHROUGH COACHING Assessing Strength

- **Muscular strength** is the ability of a muscle or muscle group to exert force to overcome the most resistance in one effort.
 - Strength can be measured based on the amount of weight lifted.
- **Muscular endurance** is the ability of a muscle or muscle group to exert force to overcome a resistance many times.
 - The measurement of muscular endurance is based on the number of repetitions performed.

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BREAKTHROUGH COACHING Assessing Strength

- The assessment of **muscle strength** can be performed in many ways.
- Standardized strength assessments can be performed with **dynamometry**, by measuring a **10 repetition maximum (10RM)** with weights and by counting **repetitions against resistance** such as tubing or bands.



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BREAKTHROUGH COACHING Assessing Strength

- A deeper insight can be gained by assessing the **balance** between the muscles of the neck and trunk.
- The balance of strength between the **flexor and extensor** muscles provides insight into the potential for recurrence and chronicity.^{22,23}



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BREAKTHROUGH COACHING Normal Flexor/Extensor Ratio

- The extensor muscles of the **lower back** should be approximately **30%** stronger than the flexors.
 - This ratio is 1 to 1.3.
- The extensor muscles of the **neck** should be approximately **40%** stronger than the flexors.
 - This ratio is 1 to 1.4.
- This is called the Flexor/Extensor Ratio.²³



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BREAKTHROUGH COACHING Assessing Endurance

- **Hannu Alaranta, MD** published a battery of tests to assess endurance, which are safe, inexpensive, time efficient, reliable and comparable to normative databases. (All desirable!)
 - If a patient is less than **85% of normal** for any specific test, then rehab training is deemed medically necessary.
- Provides unmistakable evidence that the patient's condition may be due to factors in the **patient's and not the doctor's control**.²⁴

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BREAKTHROUGH COACHING Dynamic Endurance Tests²⁴

- **Repetitive Sit-ups - Arch-ups - Squatting**
 - 50 reps maximum
 - 2-3 seconds per repetition
 - If the motion becomes clearly jerky or asymmetrical, the test should be stopped.
- **Static Back Endurance**
 - 240 seconds maximum
 - Test discontinued if aggravated by pain or muscle spasm.

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Proprioception

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Why Train Proprioception?²⁵

Research Letter
June 4, 2019

Mortality From Falls Among US Adults Aged 75 Years or Older, 2000-2016

Klaas A. Hartholt, MD, PhD¹, Robin Lee, PhD, MPH², Elizabeth R. Burns, MPH², et al

> Author Affiliations | Article Information
JAMA. 2019;321(21):2131-2133. doi:10.1001/jama.2019.4185

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Do Daily Stairs
Fatal falls on the rise for seniors
June 5, 2019



More older Americans are reportedly dying after from falling. Many of these deaths are related to hip fractures and traumatic brain injuries that patients don't receive here.

A study published in the *Journal of the American Medical Association* states that fatal falls have nearly tripled in older Americans during a 16-year span, rising to more than 25,000 deaths yearly.



Single Leg Standing Predicts Mortality³⁴

• A 2022 study in the British Journal of Sports Medicine reports that the ability to successfully complete 10-second one-leg standing (OLS) is independently associated with **all-cause mortality** and adds relevant prognostic information beyond age, sex and other clinical variables.

• There is potential benefit to including the 10-s OLS as part of **routine physical examination** in middle-aged and older adults.

Original research
Successful 10-second one-legged stance performance predicts survival in middle-aged and older individuals

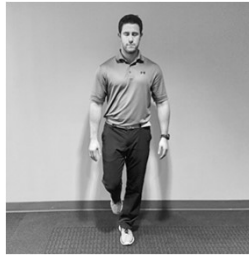
Claudio Gil Araujo ¹, Christina Grine de Souza e Silva ¹, Jani Antero Laakkonen ², Maria Fátima Singh ³, Sator Kanutor ⁴, Jonathan Myers ⁵, João Felipe Franca ⁶, Claudia Leticia Castro ⁶

ABSTRACT
Objective: Balance greatly diminishes after the mid-70s, increasing the risk for falls and other adverse health outcomes. Our aim was to assess whether the ability to complete a 10-s one-legged stance (10-second OLS) is associated with all-cause mortality and whether it adds relevant prognostic information beyond clinical characteristics, anthropometric and clinical data.
Methods: Anthropometric, clinical and vital status and 10-second OLS were assessed in 1702 individuals (60% men) aged 51–75 years between 2008 and 2010. Long-term and all-cause mortality were assessed separately, including 3025 in complete for 10–15 years.
Results: Mean age was 64.6 years, mean BMI was 26.5 kg/m², mean systolic blood pressure was 120 mmHg and mean follow-up was 7 years. 1726 (84%) were able to complete the 10-s OLS and the 10-s OLS forward score were lower for 503 (29%) compared with 1223 (71%) in a subgroup that successfully completed the 10-s OLS.
Conclusion: Successful 10-s OLS performance was independently associated with all-cause mortality in middle-aged and older individuals.

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Single Leg Standing Assessment

- Stand with Posterior Pelvic Tilt, arms relaxed at sides and eyes forward.
- Flex hip 60 degrees and knee 90 degrees.
- Toes of raised foot are at height of ankle of planted leg.
- Maintain position until loss of balance or raised foot touches down.
- Repeat with eyes closed.



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Single Leg Standing Normative Data²⁶

Normative Data		
AGE (years)	EYES OPEN (seconds)	EYES CLOSED (seconds)
20-59	29-30	21-28.8
60-69	22.5	10
70-79	14.2	4.3

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BoBo Proprioceptive Trainer: Available on Amazon.com

BoBo Core Trainer Balance Board
Whole Family Fitness Device with
Connected Game & Exercises App



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BREAKTHROUGH COACHING Vladimir Janda, MD

- Combined therapy and medicine in a hands on approach; one of the earliest to practice physical medicine and rehabilitation.
- Published more than 16 books and 200 papers.
- Defined **Crossed Syndromes** in 1979.
- Emphasized that the sensorimotor system, composed of sensory system and motor system, could not be functionally divided.
- He emphasized the importance of proper **proprioception**.



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BREAKTHROUGH COACHING Neurodevelopmental Locomotor Patterns

- **Tonic Muscle System:** prone towards tightness.
- **Phasic Muscle System:** prone towards weakness.
- Work together **synchronously** through co-activation for posture, gait and coordinated movement.



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BREAKTHROUGH COACHING Sherrington's Law of Reciprocal Inhibition

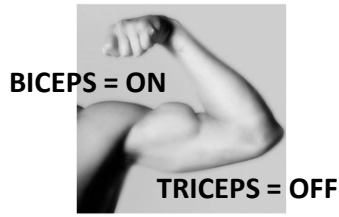
When a muscle contracts, its direct antagonist relaxes to an equal extent allowing smooth movement.

—C.S. Sherrington
The Integrative Action of the Nervous System 1906

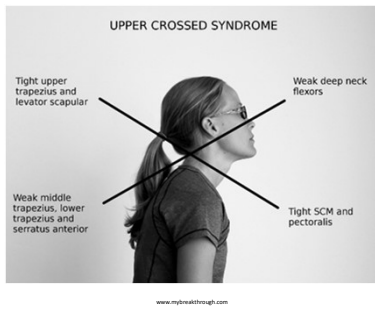


“The ON - OFF Law”

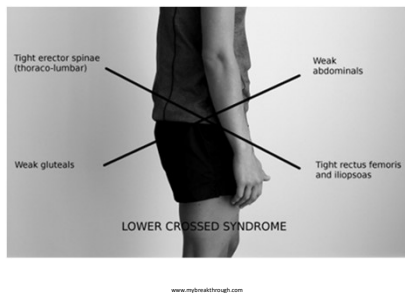
Sherrington's Law of Reciprocal Inhibition



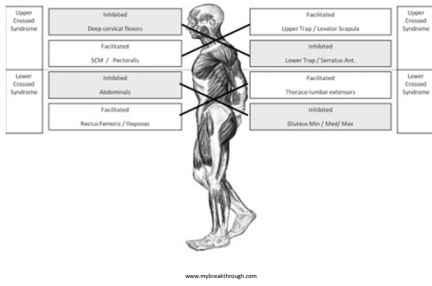
Upper Crossed Syndrome



Lower Crossed Syndrome



Janda's Muscle Imbalance Syndromes²⁷



Facilitated = Tight/On/Short

STRETCH



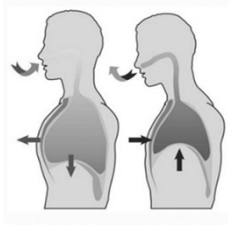
Inhibited = Weak/Off

STRENGTHEN



BREAKTHROUGH COACHING Oxygen is Really Important

- All functions of the body are regulated by oxygen.
- It must be replaced every moment because **90%** of our lives depends on it.²⁸
- Oxygen energizes cells so they can regenerate.
- The body uses oxygen to metabolize food and to eliminate toxins and waste through oxidation.
- The brain needs oxygen each second to process information.



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BREAKTHROUGH COACHING Chest Expansion

- Measured as the difference between **maximal inspiration** and **maximal forced expiration** in the 4th intercostal space in males or just below the breasts in females.
- Normal **2-5 inches**²⁹
- Measures thoracic mobility & breathing



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BREAKTHROUGH COACHING Pulse Oximetry

- Measures the **oxygen level** in the blood and **heart rate**.
- Normal SpO2 readings range from **95 to 100%**.
- Normal heart rate is **50-70** beats per minute.
- Low blood oxygen can result in **acidosis, cellular destruction, inflammation and disease**.



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BREAKTHROUGH COACHING Perfusion Index (PI)

- Assesses the vasomotor tone of the body.
- **Vasomotor readiness** of the peripheral nervous system to comply with need. (Fight/Flight)
- Breaks down with stress.
- Normal Perfusion index **0-10**.³⁰



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BREAKTHROUGH COACHING Don't Forget Body Mass Index

- A ratio between weight and height.
- Used to evaluate if a person is at an unhealthy weight.
- $BMI = \text{Weight [in pounds]} \times 703 / (\text{Height [in inches]}^2)$
- The acceptable range is **20-25** for men and women.
- Obesity is taken to start at a BMI of 30 and gross obesity at 40.³¹



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BREAKTHROUGH COACHING Wearable Tech = Weight + Percentage of Body Fat + More



- Every **10 lbs** of body of extra weight = **45 lbs** pressure on the low back and lower extremity joints
- Worn around the wrist, Fitbit monitors more than just steps.
- Equipped with GPS, skin temperature tracking, and a heart rate monitor, it provides key insights into health and activity, including **exercise performance, sleep** habits, and changes in **heart rate**.

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Heart Rate Variability (HRV)

- HRV is a measure of the variation in time between each heartbeat.
- HRV may offer a noninvasive way to signal imbalances in the **autonomic nervous system**.
- Based on much research, if the system is in more of a **fight-or-flight mode**, the variation between subsequent heartbeats tends to be lower.
- If the system is in **more relaxed** state, the variation between beats may be **higher**.
- **SonoHealth Portable EKG Heart Rate Monitor**, Wireless Handheld Home ECG Cardio & Electrocardiogram Machine, Biofeedback Finger & Chest Leads (Amazon.com)

HARVARD HEALTH BLOG

Heart rate variability: How it might indicate well-being

December 1, 2021

By Harvard Health Publishing Staff, Harvard Health



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Add Tech to Improve Patient Outcomes

- Adding technology to your case management toolkit can help **improve patient outcomes** through better documentation of your criteria for care.
- Use tech to increase patient motivation and retention by setting **clear-to-communicate** and **understand** goals for care.



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Results from National Health Interview Survey³²

- Reason reported for consulting a chiropractor:
 - For **general wellness or disease prevention** (43.3%)
 - To improve their **energy** (16.3%)
 - To improve **athletic or sports performance** (15.4%).
- Back pain (63%) and neck pain (30%) top specific health problem for which they sought chiropractic care.
- 66.9% reported that chiropractic care had helped them to improve **overall health** and made them **feel better**.

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- 42% reported **sleeping better**
- 40% reported chiropractic helped them by **reducing stress** or helped them to **relax**.
- 33% reported chiropractic gave them a **sense of control** over their health.
- 27% reported chiropractic helped them to **feel better emotionally**.
- 39% reported chiropractic made it **easier for them to cope** with their health problems.

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