

Back To Chiropractic CE Seminars

Chiropractic Technique ~ 4 Hours

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This course counts toward your California Board of Chiropractic Examiners CE. (also accepted in other states, check our website or with your Chiropractic State Board)

The California Board requires that you complete all of your CE hours BEFORE the end of your Birthday month. We recommend that you send your chiropractic license renewal form and fee in early to avoid any issues.

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Please retain the certificate for 4 years.

If you get audited and lose your records, I'll have a copy.

I'm always a phone call away... 707.972.0047 or email: marcusstrutzdc@gmail.com

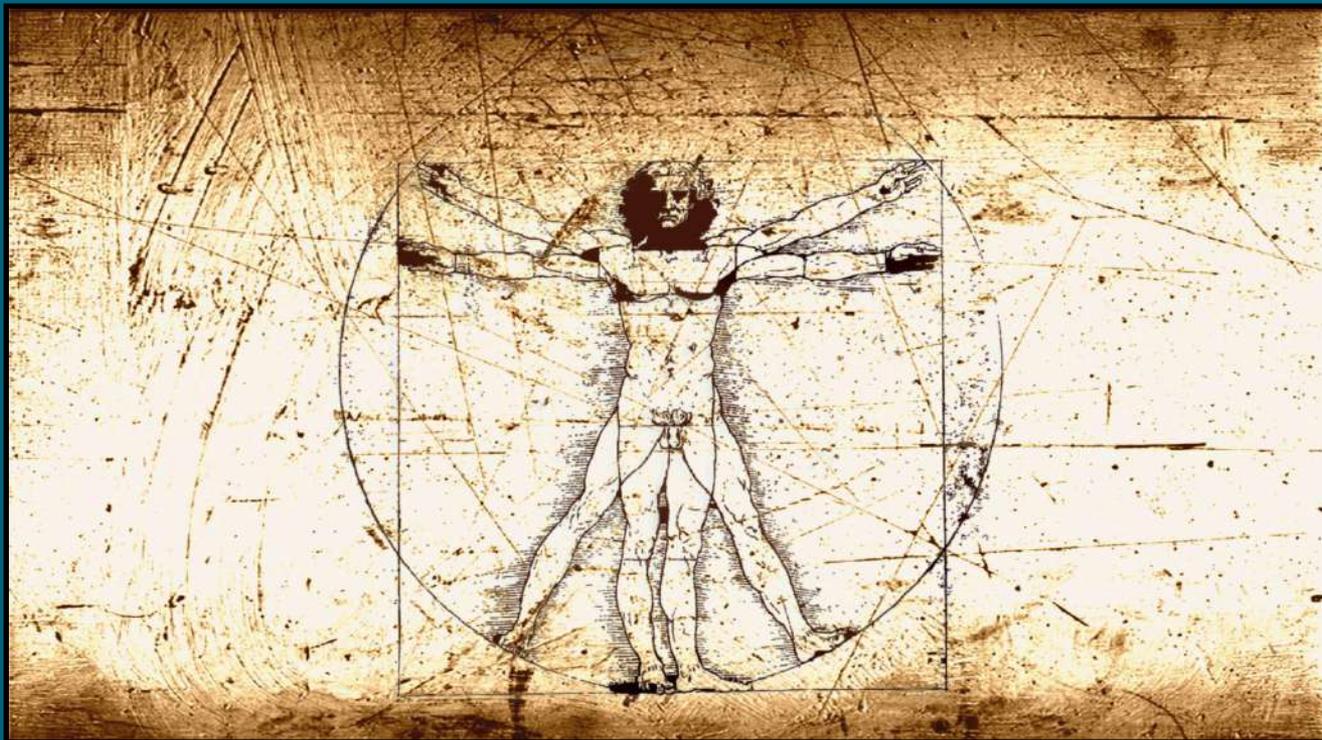
Marcus Strutz, DC

Back To Chiropractic CE Seminars

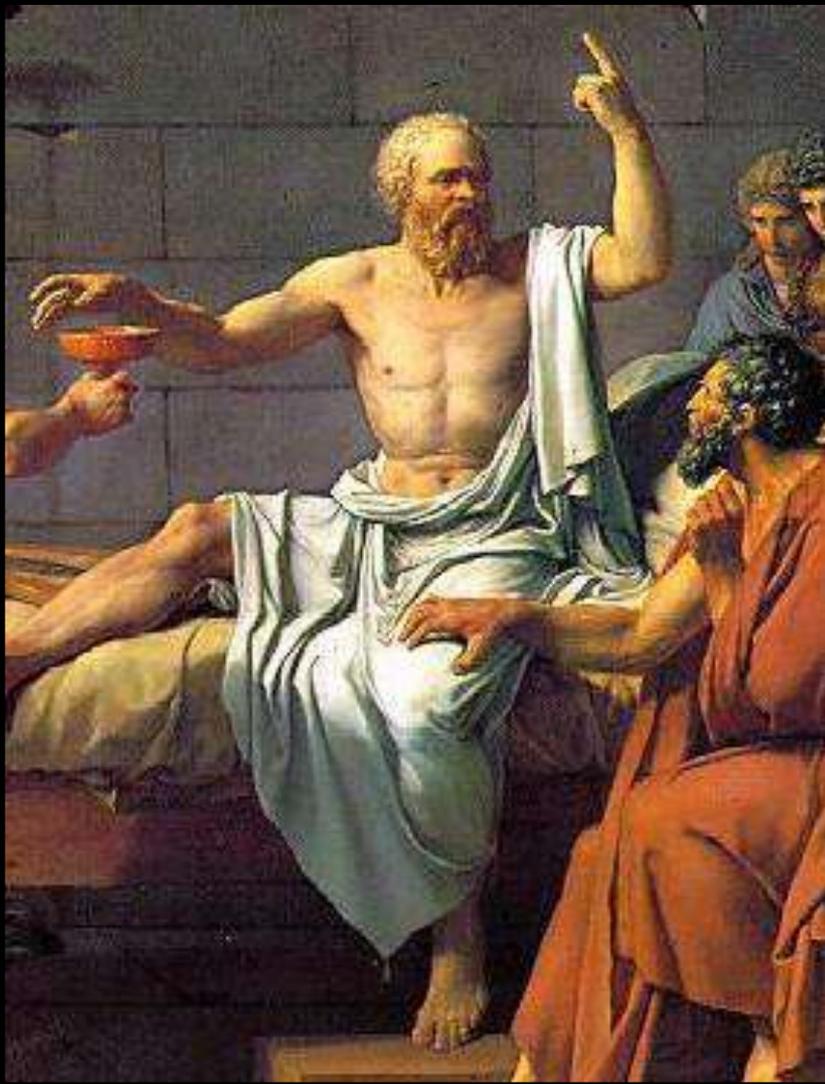
Chiropractic Technique

CE Seminar 4 Hours

Back To Chiropractic CE Seminars



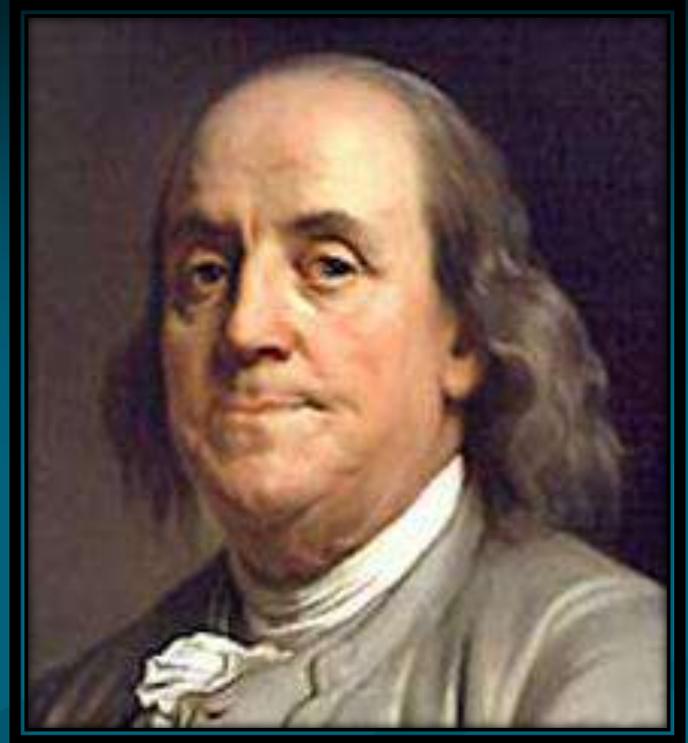
Socratic Method Of Teaching



The basic idea is a series of questions designed as tests of logic & fact intended to help a person (pt) or group discover their beliefs & understanding about a given topic on their own vs being told.

Wisdom From Ben

**“Tell me and I forget.
Teach me and I remember.
Involve me and I learn.”
~ Ben Franklin**



**The more we can use this strategy with pts,
the more they will understand the many
concepts & ideas of chiropractic!**

Adjusting Styles

I have seen every technique under the sun be super successful and I have seen everyone of them fail. **The difference?**

Well the difference was always the DC. If the DC was 100% behind the philosophy of that technique or style then success seemed inevitable. But if that DC was unsure of what they were doing then the whole thing seemed doomed.

The INTENT of that DC was the key to success.

Macro vs Micro Trauma

In The Beginning...

In the DC's office you get 2 types of cases, macro-trauma (think hit by a bus) or the dreaded repetitive micro-trauma (RMT).

For the typical DC office 90-99% of new pts likely present with RMT instead of macro-trauma, but we shall consider both.

For this course I will assume that visceral & systemic pathology have already been ruled out & that we are dealing with classic acute & chronic soft tissue injuries.

What's Happening!

With Macro or Micro Trauma...

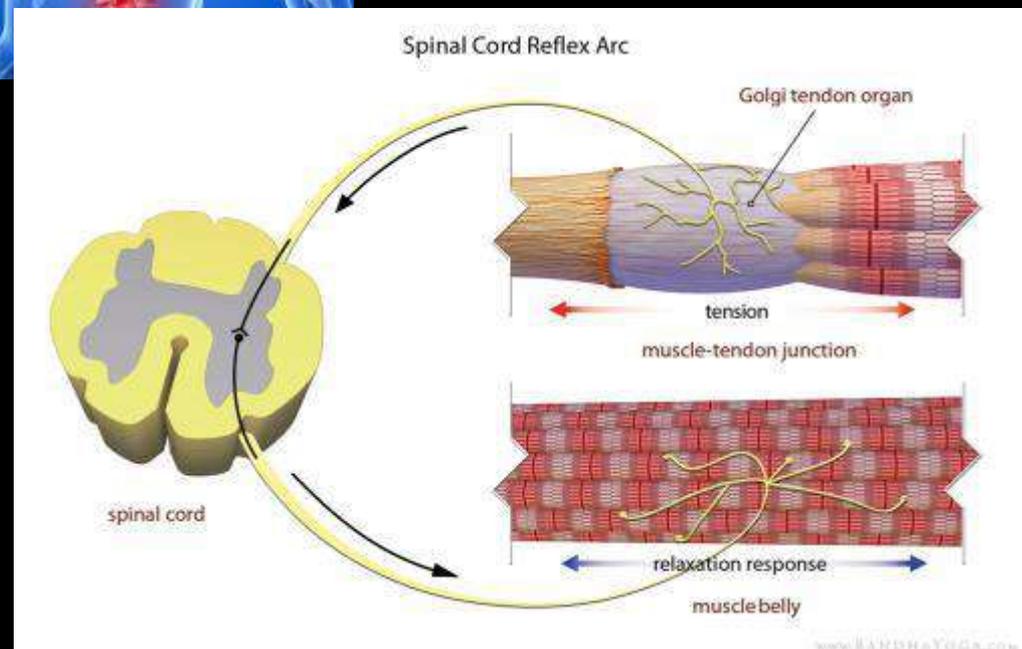
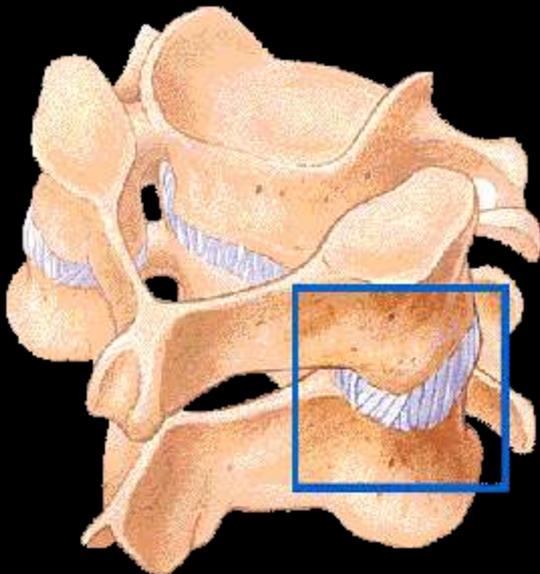
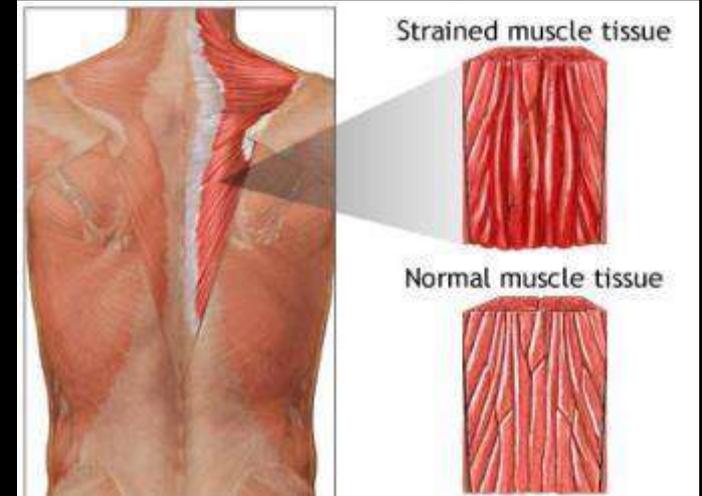
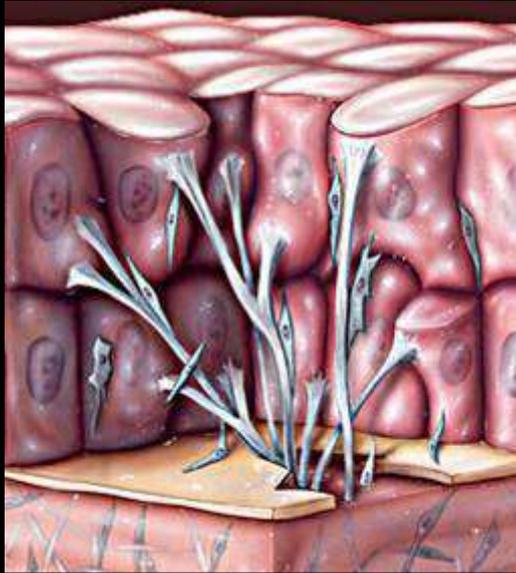
1. Pt has tight contracting muscles (acute and/or chronic)
2. Chemicals become trapped in the soft tissue cells (acute inflammatory, chronic inflammatory and/or normal natural cellular metabolic waste products)
3. Adhesions form (visible under microscope within 4 days)
4. Joints involved now have restricted motion.
5. With time the cycle continues & all of the above becomes worse. Important to adjust sooner than later to slow these processes.

What Are We Doing!

Adjustments:

1. Relax tight contracting muscles
2. Allow new chemicals to flow into the cells
3. Allow acute/chronic inflammatory chemicals & normal natural metabolic cellular waste products to flow out
4. Stretch and/or break up adhesions
5. Allow for improved joint motion

What Are We Doing!



GTO & Muscles

Analogies: Carrying groceries or fire wood.

In both cases there are 2 possibilities.

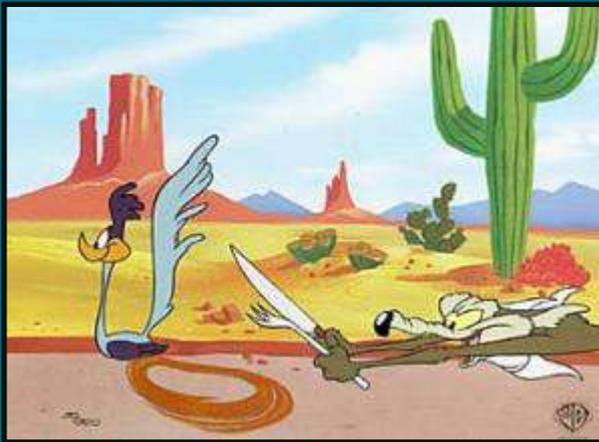
1. You slowly drop the load, this is due to muscular fatigue, your muscles can't hold.

2. The load drops all of a sudden, this is due to the GTOs being stimulated from sudden excess load & the GTOs in turn shut off the muscle spindles. This is exactly what happens during an adjustment.

Critical Factor: Speed

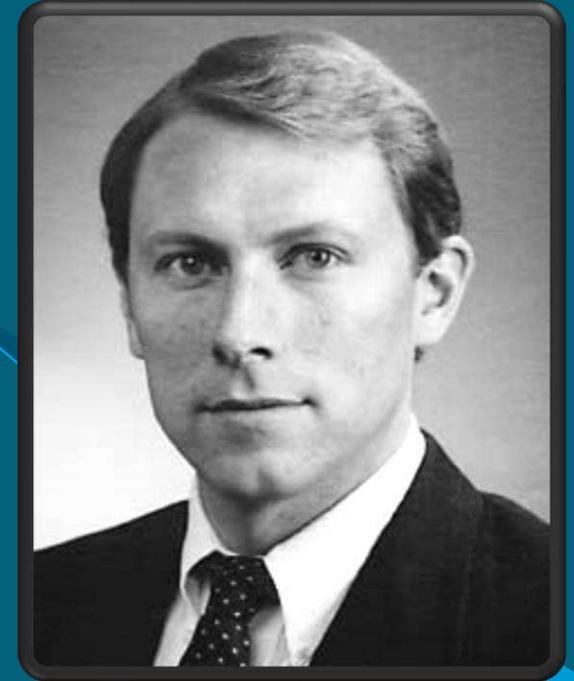
A fast stretch of sufficient speed fires GTOs inhibiting alpha motor neurons ipsilaterally. Insufficient speed fires low threshold muscle spindles resulting in excited alpha motor neurons, perpetuating \uparrow muscle tone.

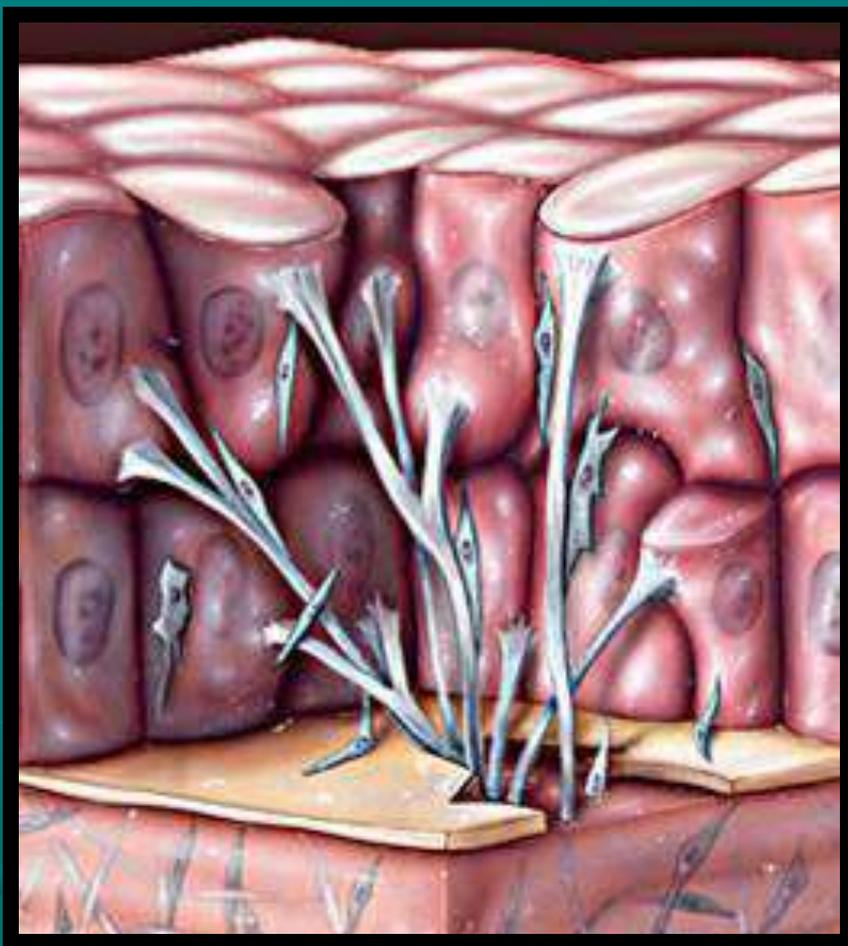
Remember: if you thrust slow the muscles will actually tighten.



**Cavitation, activator &
drop table all add enough speed
to result in high threshold
GTO discharge.**

**Dan Murphy, DC, DABCO
AM J of Clin Chiro, 1997**

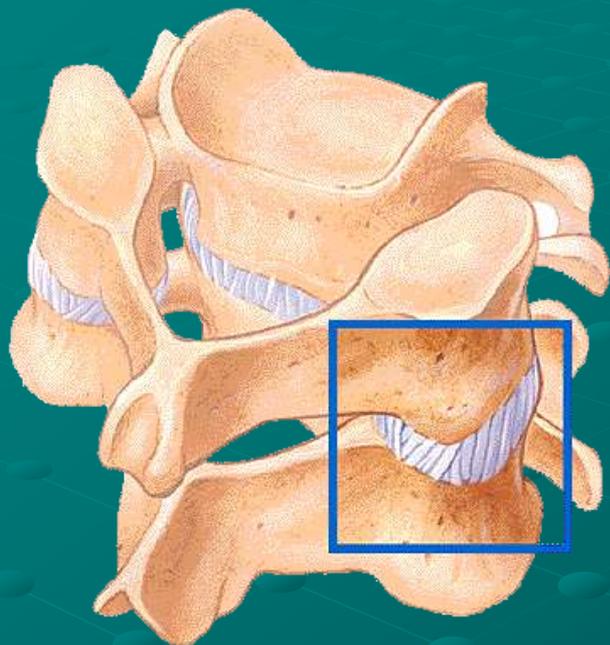




**Fibrin deposits
result in
chronic
inflammatory
conditions.**

Spine, 1987

**Adhesions begin to form in 4 days microscopically
It is likely they start forming right away!**



Hypomobility results in degenerative changes & adhesions around the facet joints.

Adjusting gaps the joint & breaks up adhesions, re-establishing joint motion.

JMPT, 2004

Adhesion Analogies For Patients

Scattered toothpicks: **all angles and orientations, different depths as well, (superficial/deep).**

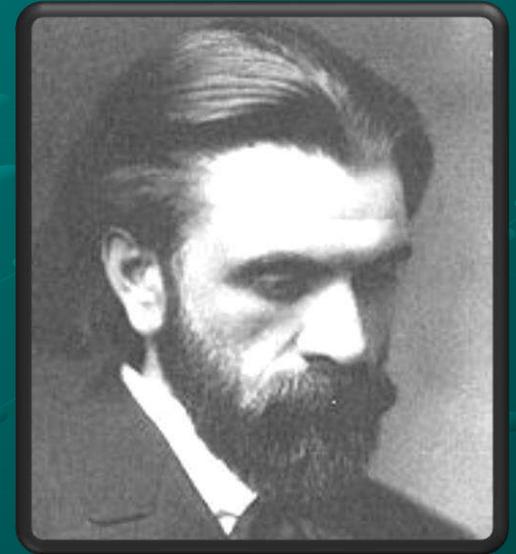
Shrink wrap: **tight & restricts motion.**

Spider web: **tight & restricts motion.**



BJ Palmer ~ 1881-1961 Last Printed Words

Time always has and always will perpetuate those methods which better serve mankind. Chiropractic is no exception to that rule. My illustrious father placed this trust in my keeping, to keep it pure and unsullied or defamed. I pass it on to you unstained, to protect as he would have you do. As he passed on, so will I.



**We admonish you to keep this principle and
practice unadulterated and unmixed.
Humanity needed then what he gave us.
You need now what we give you.
Out there in those great open spaces are
multitudes seeking what you possess.**



**The burdens are heavy;
responsibilities are many;
obligations are providential;
but the satisfaction of traveling the
populated highways and byways,
relieving suffering and adding
millions of years to lives of
millions of suffering people,
will bring forth satisfaction and
glories with greater blessings than
you think. Time is of the essence.**

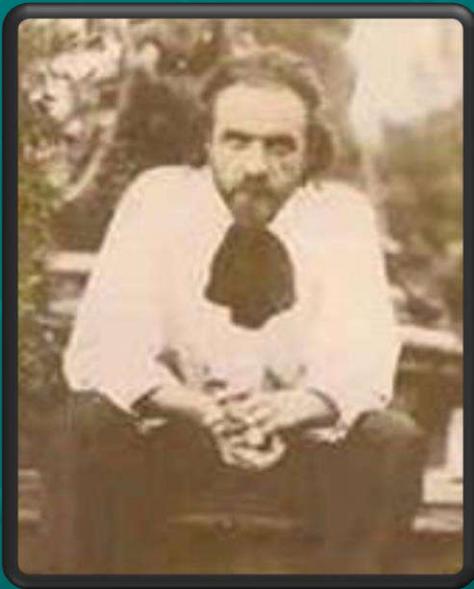


May God flow from above-down his bounteous strengths, courage's and understanding to carry on; and may your innate's receive and act on that free flow of wisdom from above-down, inside-out... for you have in your possession a sacred trust. Guard it well.

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Free Materials

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Watch for Dr. Palmer's technique:

Grade the following:

His posture, low back problems long term

Elbows, wrists & shoulders at 90 degrees

Line of drive plane line of disc

Idea that bone is "out"

Concept of spinal cord & nerve root

Ligament properties

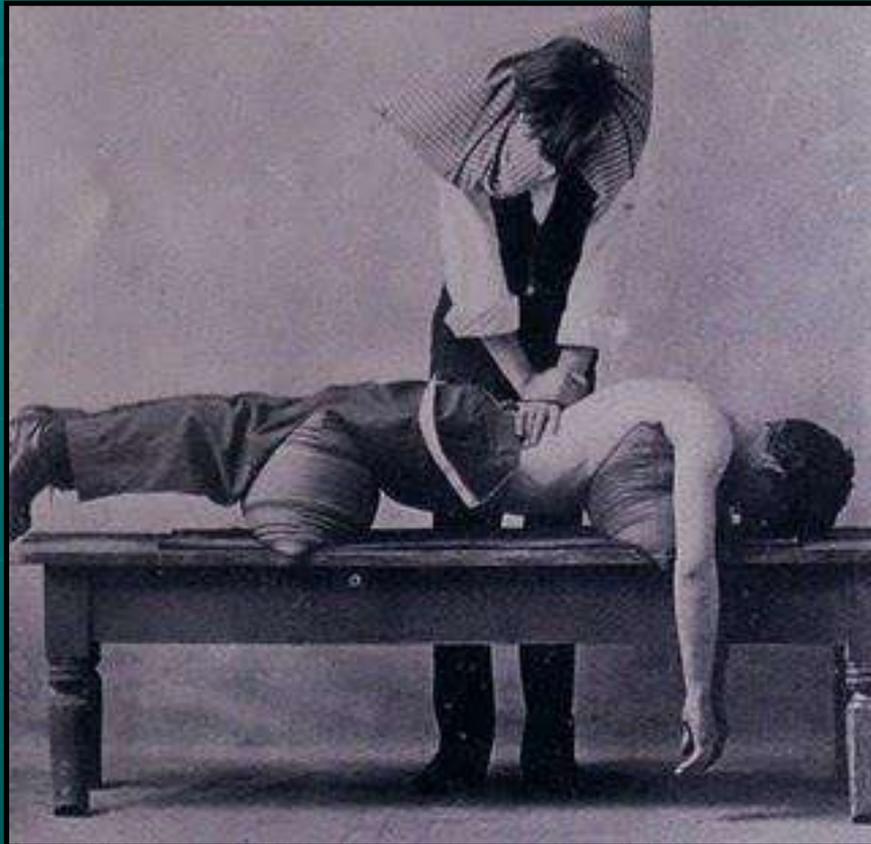
Did he do anything to make the move easier?

Would you want that adjustment?

BJ Palmer 1924

Please watch the video below

<https://www.youtube.com/watch?v=a2zKIUbbDTY>



How did he do?

His posture low back problems long term

(he was bent at the waist 90° , long term will cause DC to have sore low back)

Elbows, wrists & shoulders

(his elbows, wrists & shoulders were all bent at 90°)

The rule of 90° : any time a joint is bent at or close to being bent at 90° the joint is at risk of being damaged, as the energy from the thrusting motion will drive directly through that joint.)

Line of drive (plan line of disc or facets?)

(he was pushing P-A in the thoracics & lumbar, does that open or close the facets?)

Idea that bone is “out”

(you can see in 1924 they thought the vertebra was moving back & forth)

Concept of spinal cord & nerve root

(what would happen to the spinal cord & nerve roots if the vertebra did slide that much?)

Ligament properties

(the biomechanical properties of ligaments is what stops the vertebra from sliding)

Did he do anything to make the move easier?

(I did not see anything. He made it harder by rapidly pushing into the muscles before he adjusted. This causes the muscles to tighten. Also he had the patient on a knee chest table. This induces anterior pelvic tilt & hyperlordosis in the lumbar spine. Does this cause the facets to open or close?)

Would you want that adjustment?

(Of course, he is the greatest DC of all time, it would be an honor, one time!)

What Did He Do Well?

Focus

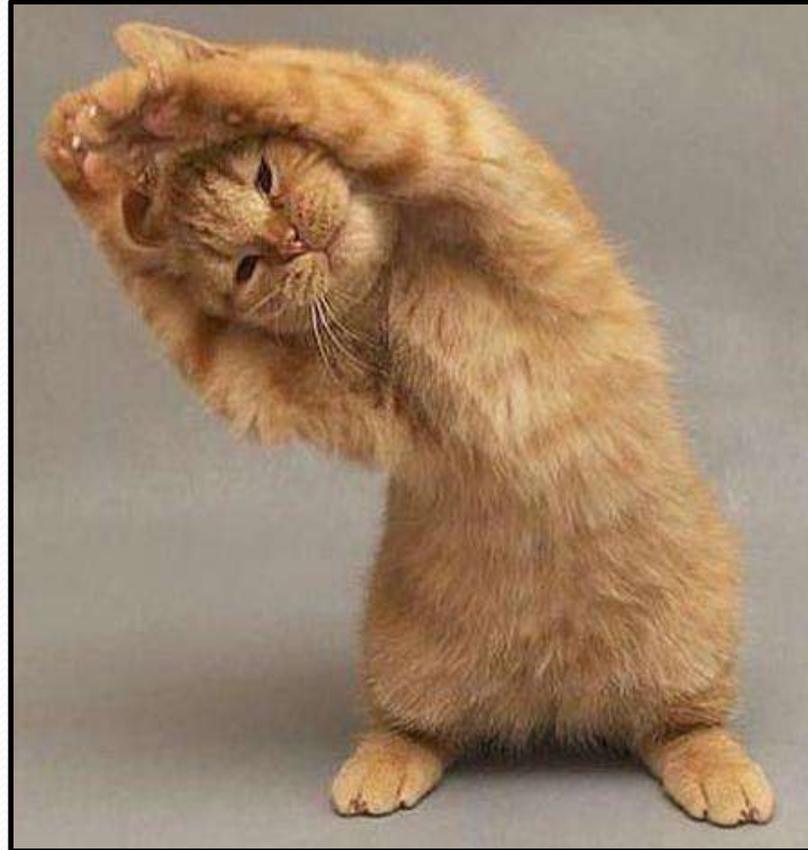
Intent

Passion

Specificity

Put motion into joint complex

Review of Proprioceptive Neuromuscular Facilitation Stretching



PNF Gets Started?

In the early to mid 1900s physiologist **Sir Charles Scott Sherrington** popularized a model for neuromuscular facilitation and inhibition. He received the Nobel Prize in Physiology or Medicine with Edgar Adrian, 1st Baron Adrian, in 1932 for their work on the functions of neurons. Prior to the work of Sherrington and Adrian, it was widely accepted that reflexes occurred as isolated activity within a reflex arc. Sherrington received the prize for showing that reflexes require integrated activation and demonstrated reciprocal innervation of muscles, (Sherrington's law), yes reciprocal inhibition.



Who Developed PNF?

Dr. Herman Kabat and **Maggie Knott** in the late 1940s and early 1950s used PNF as a means of rehabilitation for neurological disorders such as multiple sclerosis, cerebral palsy and poliomyelitis.



My History With PNF

I was first introduced to PNF in 1987 when I attended San Diego State in a kinesiology class. I was reintroduced to PNF in 1995, at Life West, by Dr. Carrie Picker. I then wrote the course notes and taught the Physiotherapy Rehab class from 1997-2002 at Life West.

They are still using those notes today.

It was during those years when I started applying PNF to the chiropractic adjustment. I discovered how much easier it was to adjust if I used the PNF protocols right before delivering the adjustment.

And that is what I will share with you today.



**LIFE CHIROPRACTIC
COLLEGE WEST**

Why Use PNF?

The goal is simple: make the adjustment easier.

If the muscles surrounding the joint to be adjusted are relatively relaxed then the adjustment will be easier to deliver and more effective.

Try this: Have your partner standing. Have them bend their elbow into flexion and contract their bicep. Try pulling their arm down. It's difficult. How come? Simple answer: the muscle is contracting and is restricting joint motion (in this case the elbow joint). Now have them loosely contract their bicep and then pull their arm down. Much easier! Why? The muscle is not contracting as much. So any time we can decrease the contractility of a muscle we know that it will be easier to increase joint motion.

So now apply this to an adjustment. I'm about to adjust a patient's low back in side posture or adjust a patient's shoulder. We know the muscles are in a contracted state restricting proper joint motion, (that is why we are adjusting it). What would make this adjustment easier? Yes, decreasing the contractility of the involved muscles **BEFORE** the adjustment. And this is where the PNF comes in. Now lets review the principals & protocols of PNF.

Yes this is the same stuff you saw in my general technique courses, as the PNF can be applied to all adjustments!

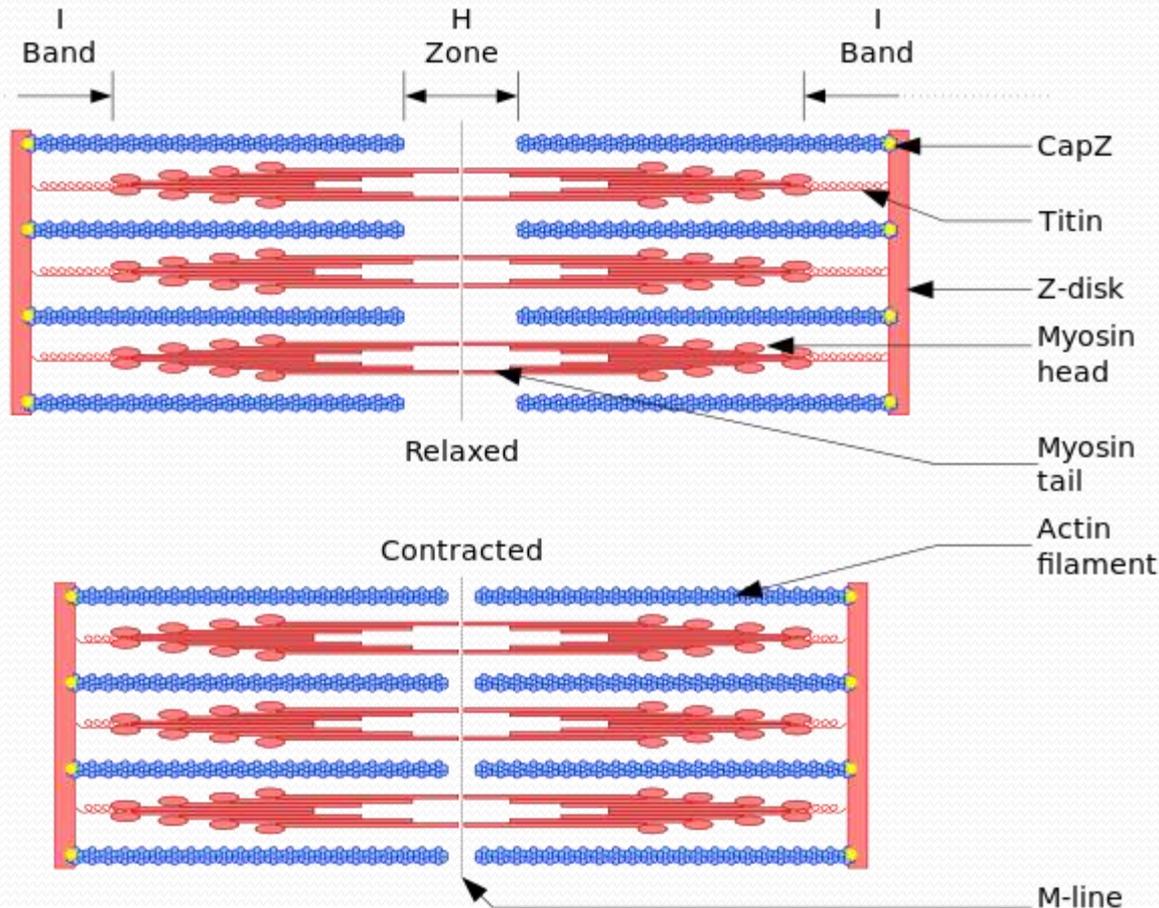
Sarcomere Complex

Muscle contraction is NOT an on-off switch, all or none phenomenon.

Muscles are rarely 100% on or 100% off.

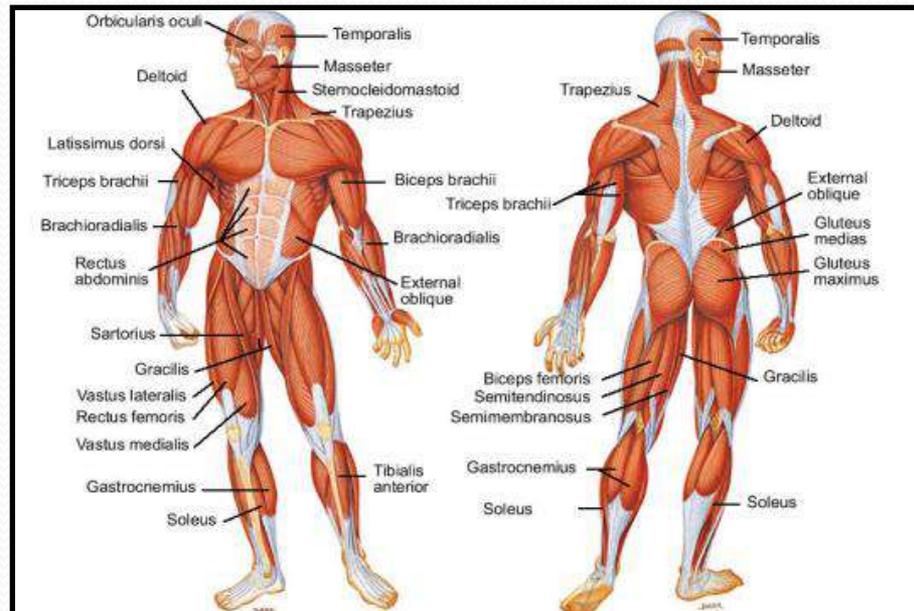
Muscles most often are in a partially contracted state.

So think of a dimmer switch where the muscle can be partially contracted.



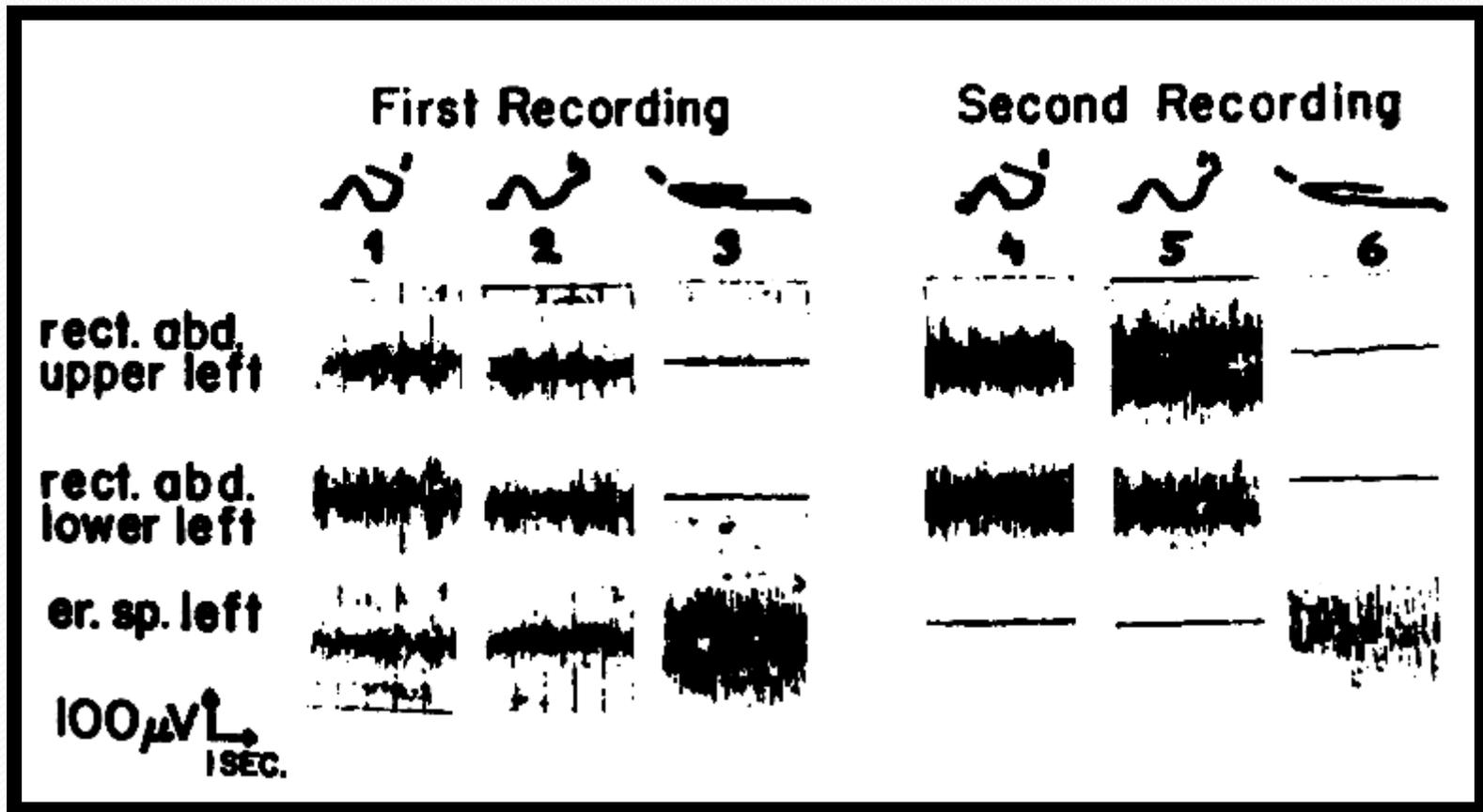
What Muscle Is Contracting?

When performing a bicep curl what muscles contract? The primary mover is the biceps & brachioradialis (going through a full range of motion). But most muscles in your body will contract isometrically as well. Your forearm flexors & extensors are acting as primary stabilizers, along with the shoulder girdle muscles (deltoids). Your postural muscles throughout your body will also be contracting at some lower level acting as secondary stabilizers, allowing you to perform the bicep curl. So at some level they are all contracting. The point being, most muscles are usually in a partially contracted state.



EMG Before & After PNF

Korr IM, Neurobiologic Mechanisms in Manipulative Therapy, 1978



In the 1st recording the pt has unbalanced muscles. With inhibited abs & overly excited erector spinae muscles. When they attempt a crunch the abs only fire part way & the erector spinae DO NOT shut off. Then after stretching, in the second recording you can see the muscle groups become balanced.

If you attempted to adjust the patient's low back after the second recording it would be much easier as the low back muscles are not overly contracted (they may shut off completely or partially).

How long would this take? That would depend upon the severity of the imbalance, muscle memory & activities of daily living. A few seconds if it's only a muscle spasm, perhaps years if it's chronic.

Relaxing Muscles

So how can we relax a contracting muscle or muscle group?

Here is the list: (some can be used before an adjustment to decrease pain and relax the muscles or after the adjustment for added benefit)

- 1. Slow deep breathing**
- 2. Ice massage**
- 3. Heat massage**
- 4. Modalities (electric stim, ultrasound etc.)**
- 5. Activator**
- 6. Ischemic compression (tendon insertions or muscle belly)**
- 7. PNF ~ Reciprocal Inhibition**
- 8. PNF ~ Contract-Relax-Passive Stretch**
- 9. PNF ~ Contract-Relax-Contract Stretch**
- 10. Soft tissue work**
- 11. Motion Therapy**
- 12. Adjustment (best for last)**

Slow Deep Breathing

Slow deep breaths are an excellent way of helping muscles relax quickly.

Try This:

Sit on the floor with your feet out in front of you. Try & touch your toes.

Now take a slow breath (2-5 secs) in and out and try to touch your toes again. Should be easier.

This of course effects all your muscles and would work for all regions of your body. This is why it's so important to have the pt take a breath before an adjustment.

What would happen if they took 2 breaths or even 3? Stop that would make the adjustment too easy!



PNF Protocols

PNF ~ Reciprocal Inhibition:

Take muscle to be stretched to tension. Have patient contract antagonist muscle.

This inhibits the agonist. Excellent for take home stretches.

Contract antagonist & hold stretch for 15-30 seconds or less based on patient tolerance/comfort.

Repeat 3-5x or less based on patient tolerance/comfort or need.

Allow 30-60 second rest between repetitions.

Try This:

Sit on the floor with your feet out in front of you.

Contract your anterior thigh & leg muscles

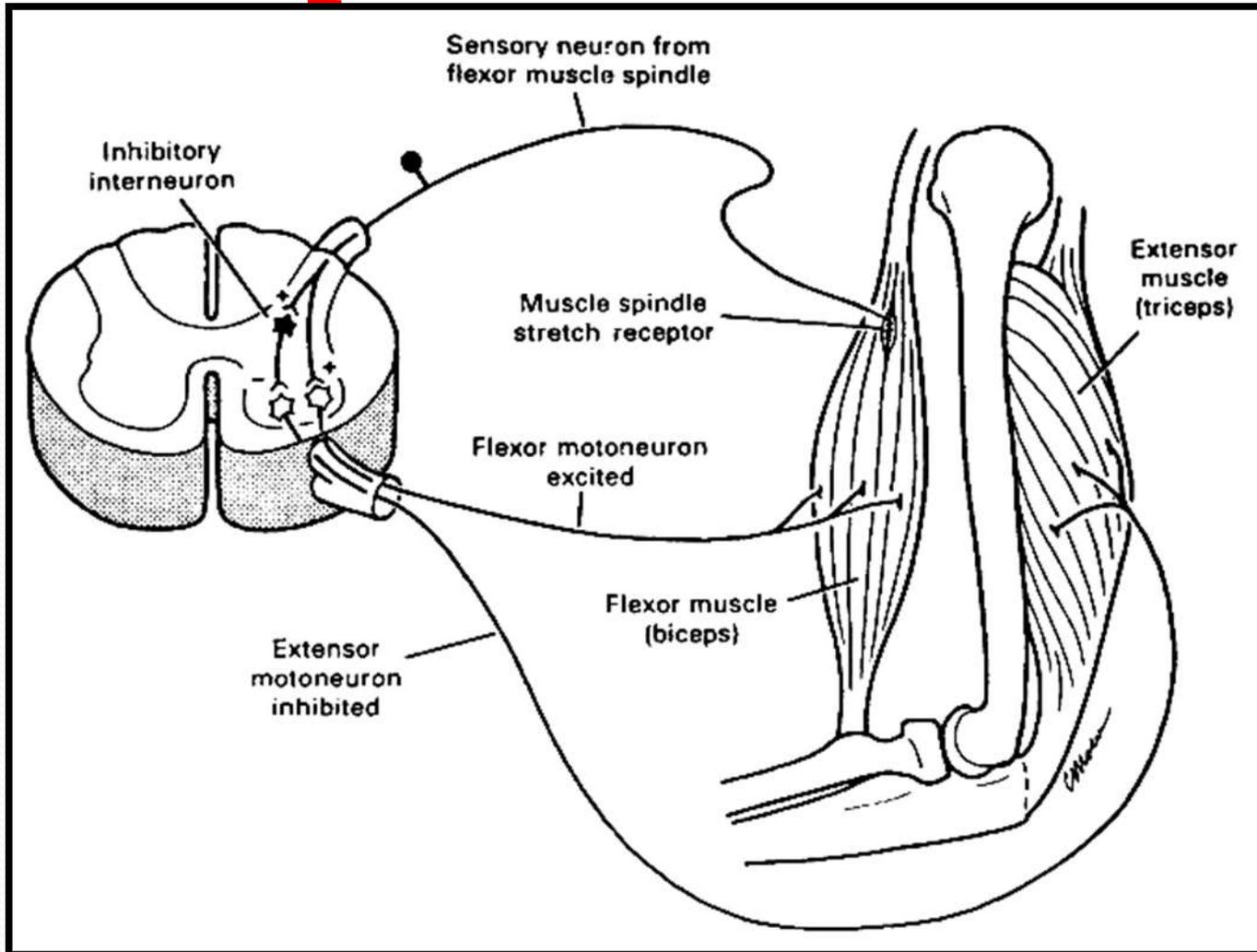
(the opposing muscle group from the hamstrings) for 2-5 secs.

Then stop contracting & try touching your toes.

You should notice an increase in flexibility.



Reciprocal Inhibition



The Rules of Reciprocal Inhibition

1. Anterior Muscles vs Posterior Muscles

When an anterior muscle contracts than the opposing posterior muscle will relax.

When a posterior muscle contracts than the opposing anterior muscle will relax.

2. Left Lateral Muscles vs Right Lateral Muscles

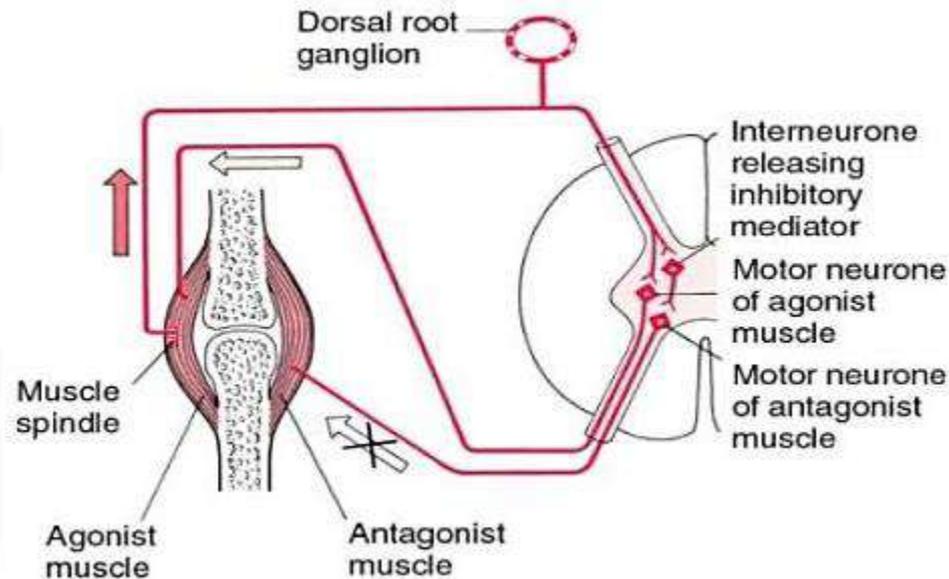
When a left lateral muscle contracts than the opposing right lateral muscle will relax.

When a right lateral muscle contracts than the opposing left lateral muscle will relax.

3. Left Rotational Muscles vs Right Rotational Muscles

When a left rotational muscle contracts than the opposing right rotational muscle will relax.

When a right rotational muscle contracts than the opposing left rotational muscle will relax.



Cross Cord Muscle Pairings

The best way to remember this is the gait pattern of walking or running. Below you can see the anterior muscles of the left upper extremity are firing, while the posterior muscles of the right upper extremity muscles are firing. In the lower extremity, the left posterior muscles are firing and the right anterior muscles are firing. Then in the next stride the opposite is true. You can use these rules in a rehab situation or working out in the gym, just keep in mind what muscles fire at the same time.

Right posterior group firing



Left anterior group firing

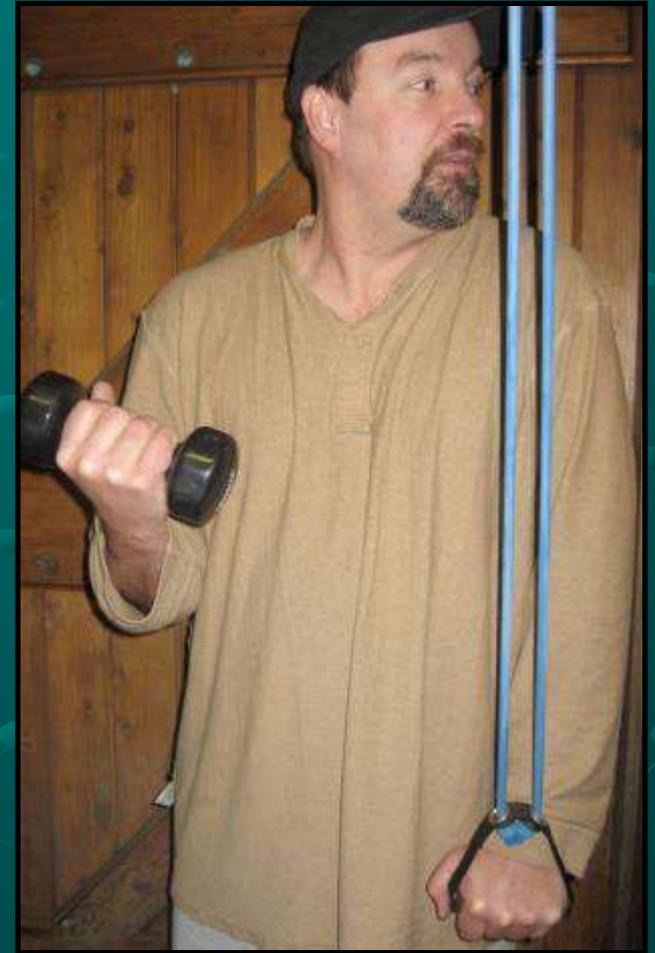
Left posterior group firing

Right anterior group firing

Cross-Cord Training

If you hold an isometric contraction with the triceps, the biceps performance will improve 10-20%.

Looking to the triceps side elicits the posterior tonic neck reflex, which will also improve performance.



PNF Protocols

PNF ~ Contract-Relax-Passive Stretch

Contract agonist for 5-10 seconds.

Relax for 1-2 seconds, while patient takes a slow deep breath.

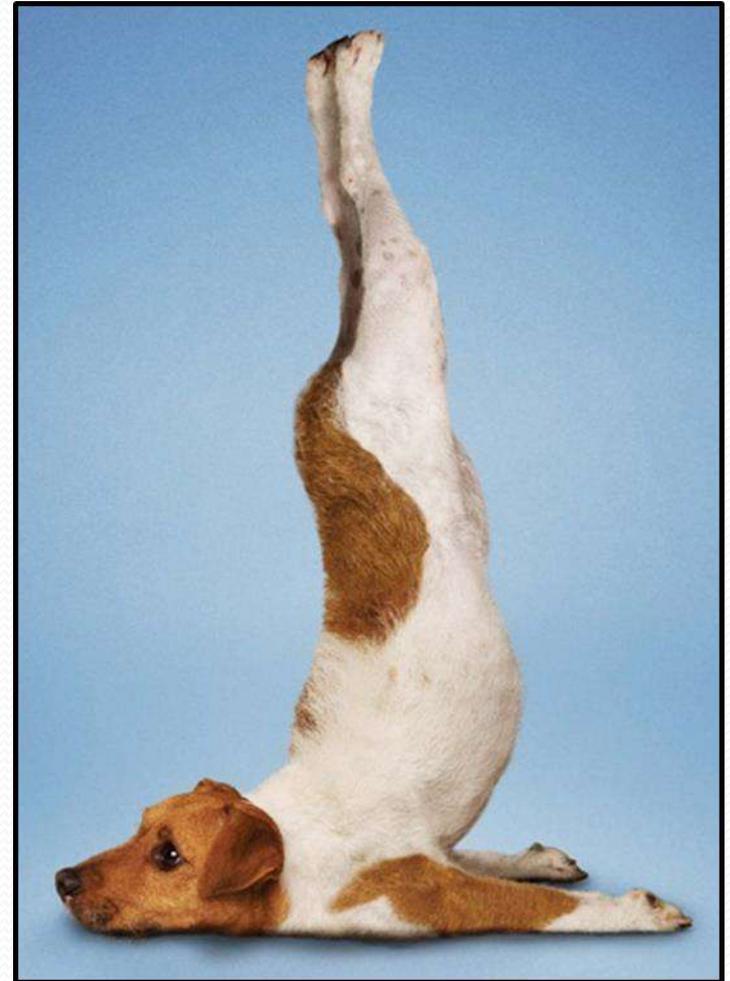
Passively stretch agonist & hold stretch for 15-30 seconds or less based on patient tolerance/comfort.

Repeat 3-5x or less based on patient tolerance/comfort or need.

Allow 30-60 second rest between repetitions.

Try This:

Sit on the floor with your feet out in front of you. Contract the agonist group (hamstrings & calves), for 2-5 secs. Then stop contracting & try touching your toes. You should notice an increase in flexibility.



PNF Protocols

PNF ~ Contract-Relax-Contract Stretch

Contract agonist for 5-10 secs.

Relax for 1-2 secs, pt takes a slow deep breath.

Contract antagonist & hold stretch for 15-30 secs or less based on pt tolerance/comfort.

Repeat 3-5x or less based on patient tolerance/comfort or need.

Allow 30-60 sec rest between repetitions.

Try This:

Sit on the floor with your feet out in front of you. Contract the antagonist group & then the agonist group for maximal gain.



PNF Protocols Summary

The PNF provides a significant change in muscle relaxation and joint motion. All the PNF protocols work well if applied **BEFORE** the adjustment, allowing for easier and more effective adjusting. Try it.

Which muscle group should I contract first?

Whether I am adjusting, training or rehabing a patient I disregard which muscle is the agonist or antagonist and I **ALWAYS** will contract the over active muscle first and the inhibited muscle second.

Why? The overactive group is inhibiting the opposing muscle. By contracting it first it will actually dampen, which allows the inhibited group to become stronger and thus more effective when it contracts.



How Much Change With PNF?

Good question. The range of motion change can be amazing, maybe 50% or better after one session!

Acute spasms may stop in just a few seconds.

Long term chronic patterns, (think pt over 40 with chronic low back tightness), can be more difficult and may never return to 100% normal.

The goal is to move away from the muscular imbalance and get closer to balanced muscles.

This will help you deliver even better adjustments.

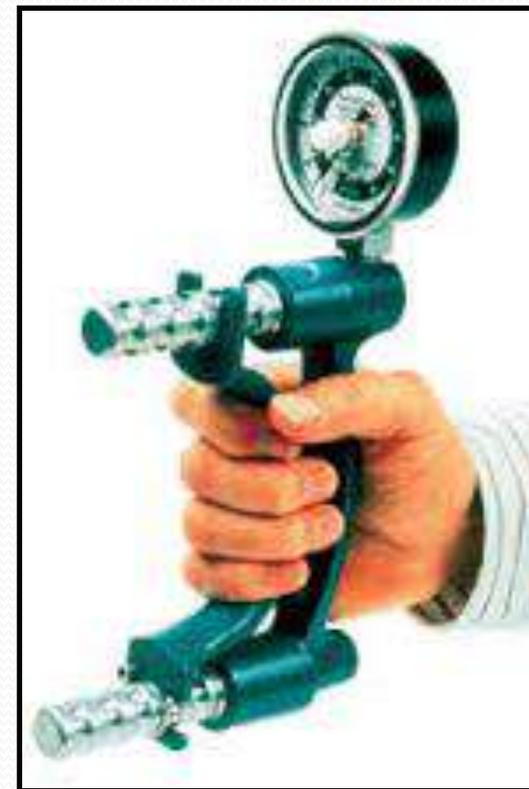


The Dynamometer Effect

Ever wonder why a pt is not the strongest on the first squeeze on a dynamometer? When a pt squeezes typically the strongest is the 2nd or 3rd squeeze.

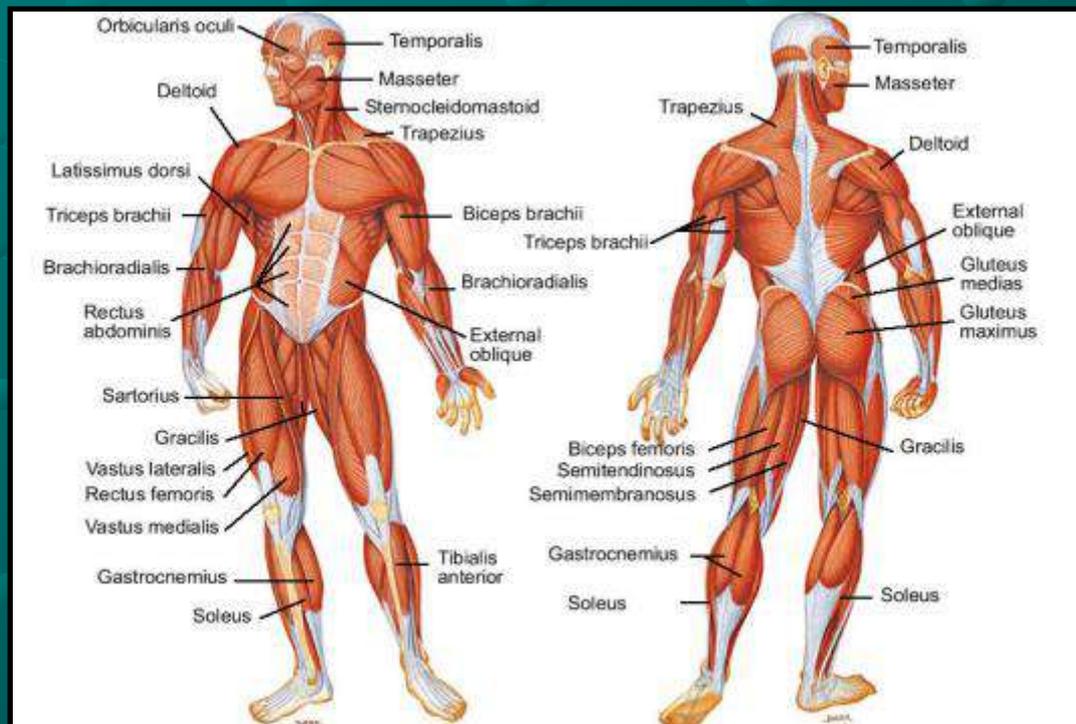
Why?

On the 1st attempt the forearm muscles are already in a shortened state & can NOT fully contract. During the 1st attempt the muscle contracts & then relaxes and becomes longer. On the 2nd attempt the muscle can contract through a more complete ROM, recruiting more muscle fibers, thus having more power. This will repeat for the 3rd attempt depending on the state of the muscle, so again increased strength and then on further attempts the muscle will begin to fatigue. This same phenomenon will occur during weight lifting as well. Weaker on the first rep and stronger on the next 2 or 3 and then the slow decline of strength from muscular fatigue.

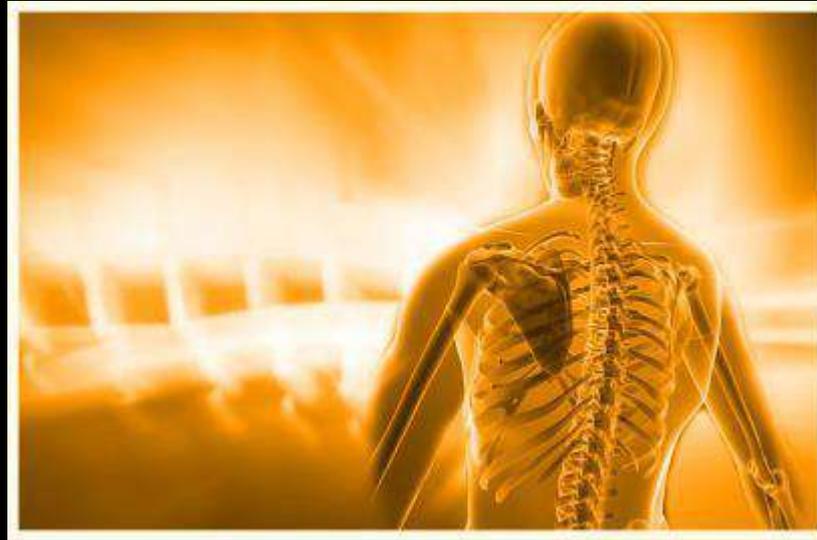


Muscle Rules

1. Muscles are rarely 100% on or 100% off.
2. Ex. when performing a bicep curl what muscles fire?
Most muscles in your body will fire as they need to act as stabilizers. So at some level they are all contracting.



Chiropractic Technique



Reverend Samuel H. Weed, selected two Greek words, ‘cheir’ and ‘praktikos’, meaning when combined, “done by hand” Chiropractic. Great to help pts identify with our title.

Adjust

(be able to do it)

**“Practice Does Not
Make Perfect.**

**Perfect Practice
Makes Perfect!”**

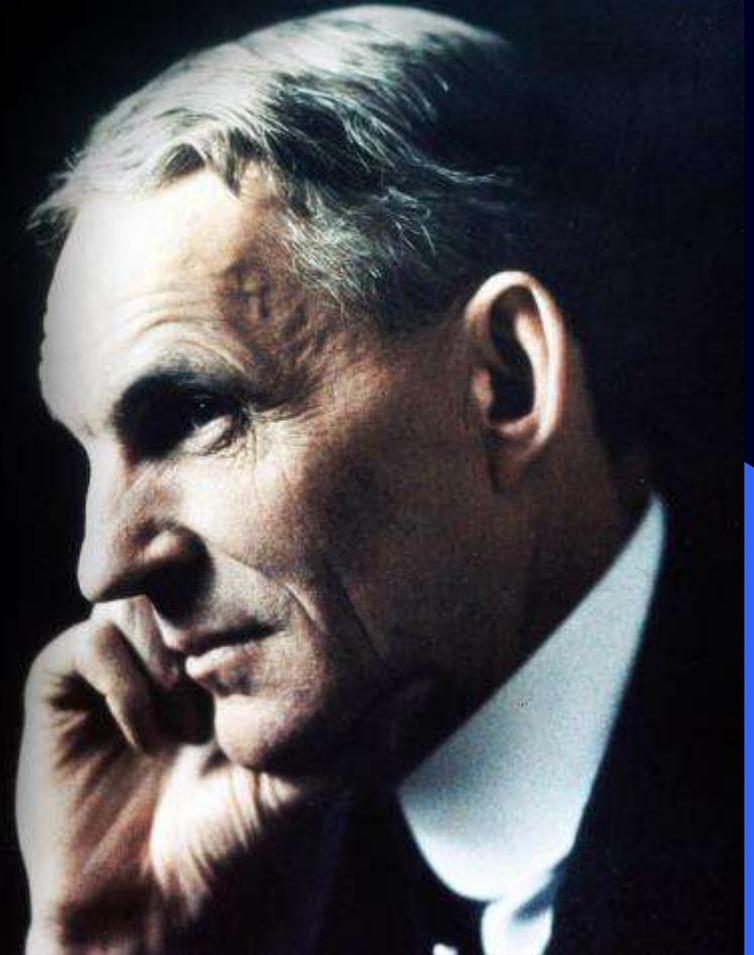
~ Vince Lombardi



Adjust (be able to do it)

“Whether you
think you can
or think you can't
you're right”

Henry Ford



Adjusting General Concepts

For all regions of the spine & extremity joints there are some basic ideas that apply to all adjustments. Let's take a look.



Myth Buster

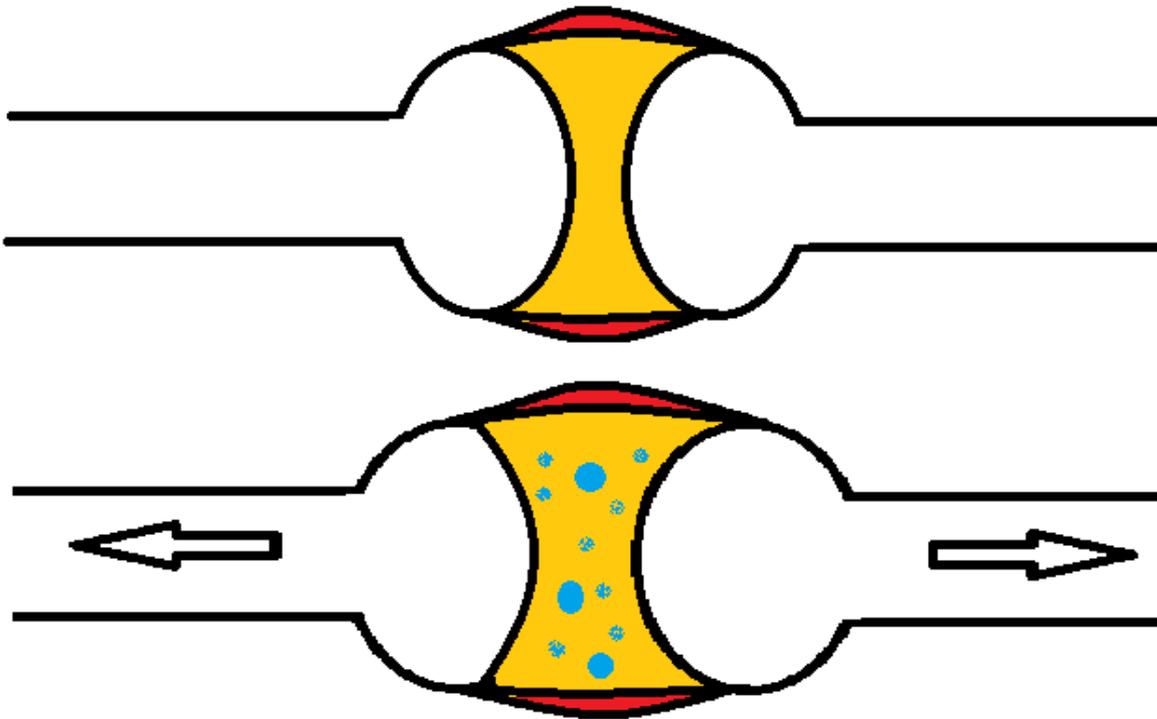
Isn't that "popping" sound bad?

Synovial fluid in your jts contains oxygen, nitrogen & carbon dioxide. When you adjust a jt you stretch the jt capsule, ↑ the volume by 15-20%. This creates a partial vacuum & the gas rapidly releases due to the pressure change. (similar to Boyle's Law, 1662).

The gas is about 80% carbon dioxide & takes about 20 mins to return to the synovial fluid. There are no studies that suggest "cracking" your knuckles will cause arthritis.

Myth Buster

Isn't that "popping" sound bad?



Cavitation in a joint is a result of expanding the distance between two joint surfaces when this happens pressure inside the joint capsule drops leading to the formation of gas bubbles. An audible "crack or pop" is heard when these gas bubbles expand and pop releasing the gas inside.

The Missed Adjustment

Pts feel like you failed if the jt was not gapped far enough to cavitate. This occurs because the soft tissue is too tight to allow for the cavitation **OR** the DC...

The pt wants to hear the “pop” & get that rush from the endorphins being released.

Let them know the jt still moved & muscles did relax. Typically an active ROM exam will demonstrate this.



No Audible?

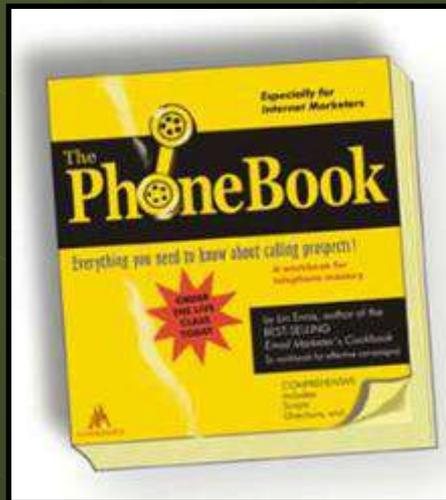
Pt: “I guess it didn’t need to be adjusted.”
or they think the jt didn’t move at all.

Try this: Crack a knuckle in your finger & show the pt how far it moved. Then do it again & show pt that the jt moves the same distance regardless if it “pops”.



Light Touch: Demonstration

Touch your forearm, the first time palpate firmly, the second time palpate lightly. Which way can you feel the most detail? Remember the hair in the phone book drill. Now try that with your spinal palpation skills! The lighter your touch is, the more comfortable the pt is & the less the pt's muscles will tighten, for an overall better experience!



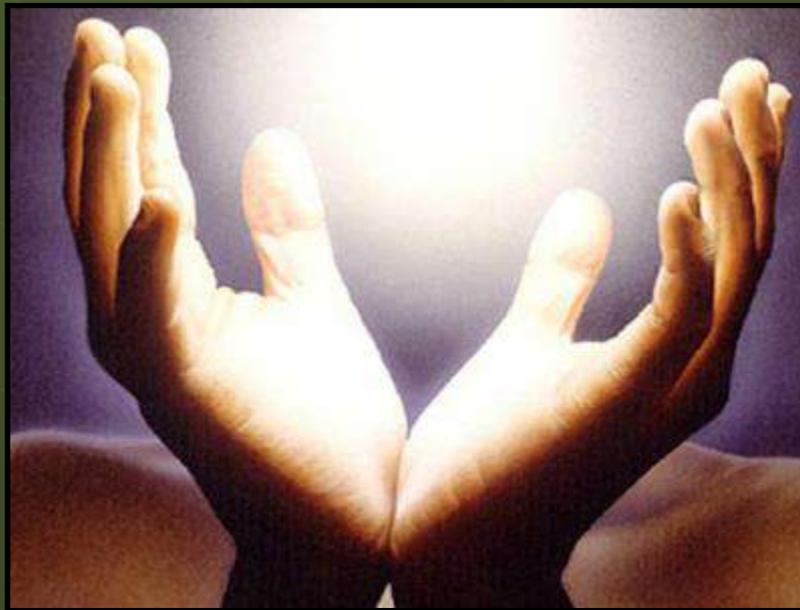
Contact: Demonstration

Use a light contact as if you are touching a child.

Your hands should be hovering around the pts body, not stabbing in.

Watch for aggressive contacts!

No digging as the pt will become tense!



Do you still need to keep your finger on the contact?



Try not contacting the pt **AT ALL until they have taken a breath.**

This decreases pt tightening, which allows for the relaxation effect of the breath & decreases low back stress for the DC!

Broad Non-Specific Contact vs. Specific Contact

With a broad contact the pt **does not** tighten up & they maximize the ability to breathe.
As you go to adjust simply move your hands so you have a specific contact.



No Specificity?



As you give the adjustment your hands shift from a non-specific to a specific contact.

Try this?



Put your hand flat on a table with your wrist straight.

Push down with equal pressure throughout your hand. Now try pushing down & have more pressure through your pinky (5th digit), but **DON'T** move your hand or bend your wrist. Now place more pressure on your fleshy pisiform, again **DON'T** bend your wrist.

This allows you to adjust with a flat wrist, while maintaining your specificity, although it will **NOT** look specific.

Tissue Pull: Demonstration

Just move the loose tissue out of the way.

No digging as the pt will become tense!

We are **NOT** trying to get bone-on-bone contact!

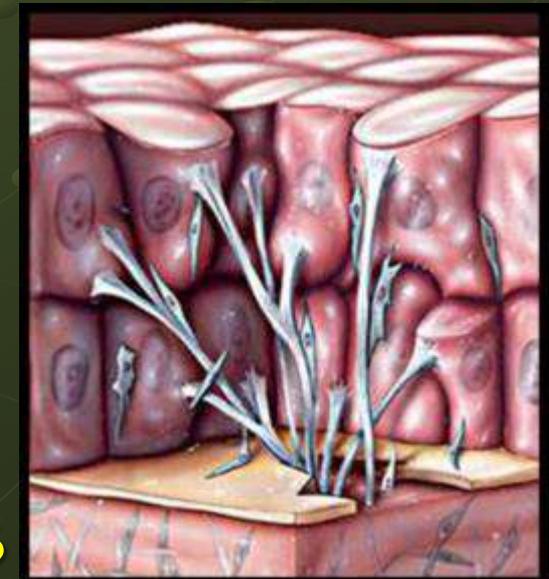
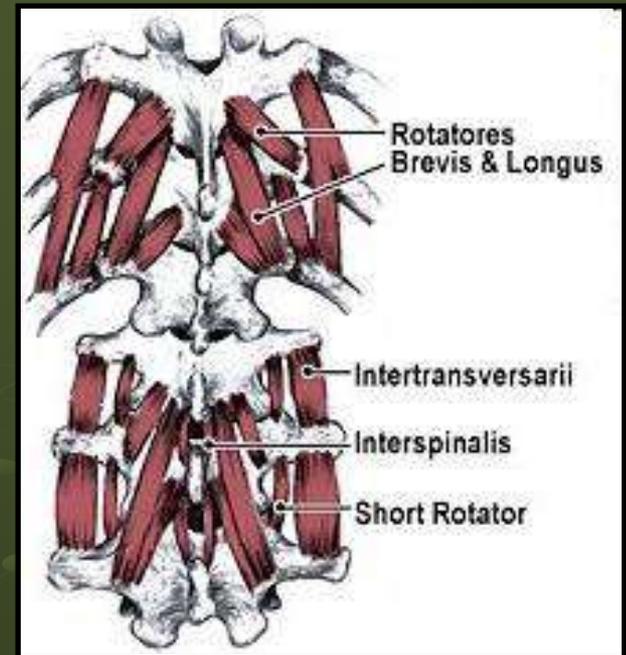


Multiple Vectors & Torque

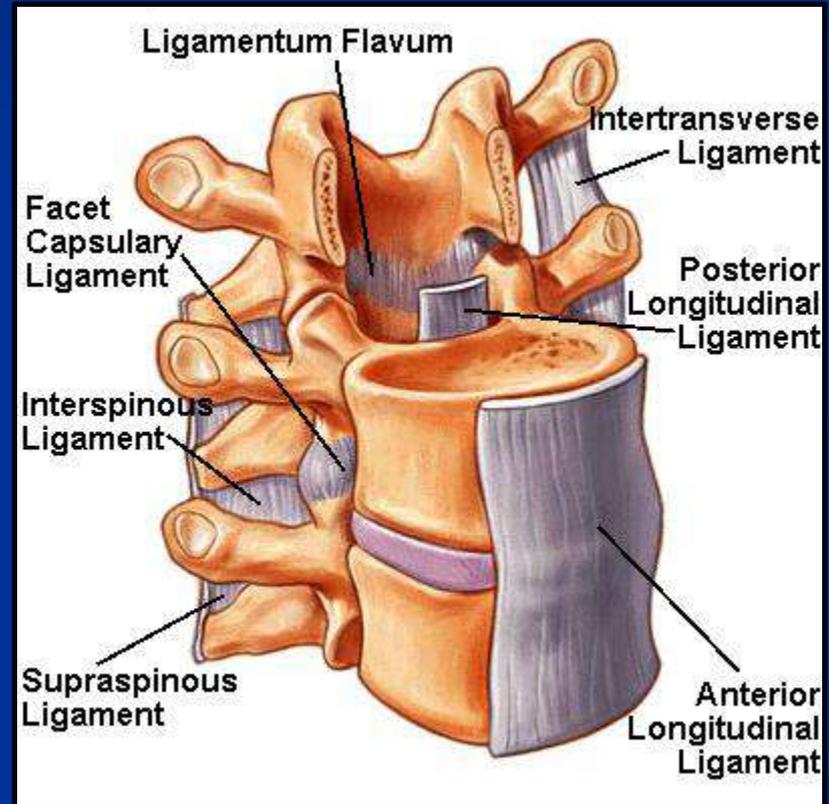
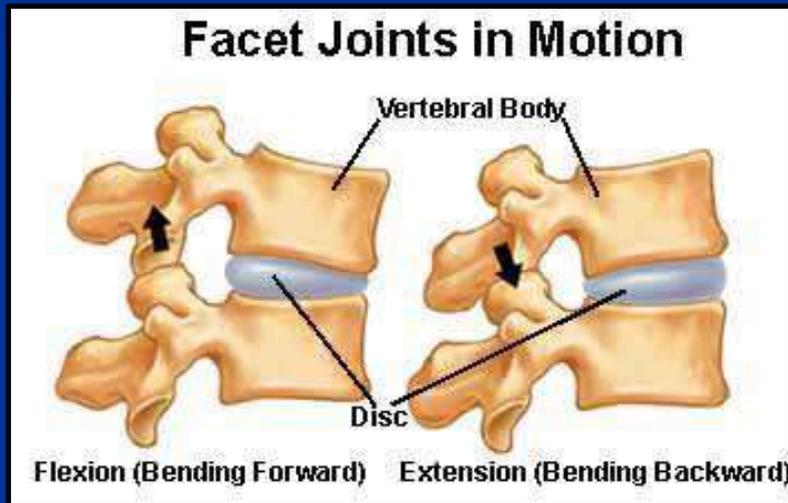
The more vectors and/or torque you can include in your adjustment the easier the jt will release.

This is true because of the biomechanics of the bony jt & that the muscle fiber angles vary for a given joint. Using multiple directions maximizes GTO firing in the highest number of muscle fibers. Also maximal adhesions are broken and/or stretched & the pt is more relaxed & comfortable.

Why do muscles have multiple actions?



Lumbar Spine Adjusting



What's Wrong With This Picture?

Please list as many things as you can that this DC is doing wrong.



What's Wrong With This Picture?

1. No pillow for pt's head.

Make sure pt is comfortable & confident that they will not fall off the table! Pillow for the pt's head. This makes them comfortable & avoids their back muscles from straining.

2. DC has broken the rule of 90° seven times.

The rule of 90°: any time a joint is bent at or close to being bent at 90° the joint is at risk of being damaged, as the energy from the thrusting motion will drive directly through that joint. In this picture his wrists, elbows, shoulders & low back are all in clear violation of the rule.

What's Wrong With This Picture?

3. The gap between his contact hand & his tie.

This is a huge mistake as this is forcing him to use all shoulder & arm & NOT his body. The adjusting hand should be directly even with the DC's sternum.

4. His stabilization hand is on pts shoulder. This causes the DC to lunge forward & again puts him in a position where he can NOT use his whole body. The correction is to have the pt place their hand on their rib cage & then the DC places their stabilization hand on top. This pushes the DC back & allows the DC to get their whole body into the adjustment.

What's Wrong With This Picture?

5. The pts bottom arm is bent at the elbow & rests on the table. **This classic position STOPS** the pt from being able to roll themselves. **The DC must now push the pt, which is too much work for the DC & can cause shoulder problems for the DC long term.**



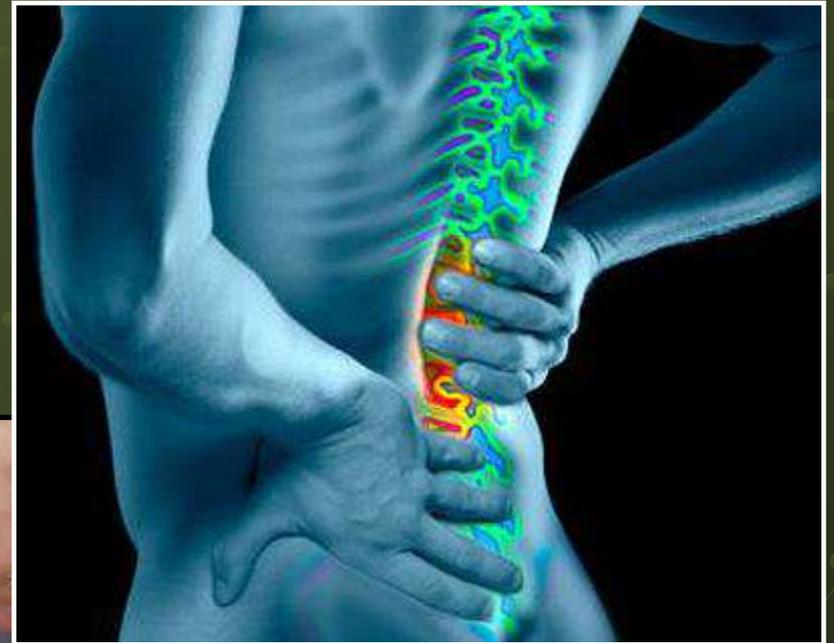


Correction: Pts bottom arm needs to be bent up towards their head not down by the pt's ribs.

This allows the pt to roll under the DC without the DC having to touch or push the pt under their body, **AT ALL!**

Lumbar Spine ~ Pt Rolls

Having the pt roll under you avoids you having to push on the pt & injuring your wrist, elbow, shoulder & low back.



Side Posture: PNF Stretch



Use PNF protocols to help pt relax before and/or after an adjustment. First have the pt contract their low back muscles by pushing into your hand. These muscles are the overactive group so this will help them relax. You can also have the pt push their knee up toward their chest against resistance, (isometrically or full ROM), to relax the hip flexors. Now you can have the pt contract the abs as the abs are now less inhibited & this will help shut off the low back muscles even more. Now adjust the pt.

Lumbar Spine

Side Posture: PNF Stretch



This position uses a nice longer lever.

Lumbar Spine ~ Line Of Drive



The sequence of the line of drive is critical.

It **MUST** be:

1. S to I down the spine
2. then into posterior pelvic tilt
3. and finally lumbar spine rotation

If you rotate first you jam the lumbar facets.

Lumbar Spine ~ Contact



Traction down the pt's spine to open facets.
Slide your pisiform to segmental contact position.

You now can have a specific contact without bending your wrist & jamming your pisi into the pt.
So it will **NOT** look specific, but it is. Pt is more comfortable & you are not killing your wrist.

Lumbar Spine ~ Pt Rolls

Now have the pt roll underneath you. As the pt rolls under you vs you pushing them, they should bring their knee up.

This induces posterior pelvic tilt & continues to traction the low back & open the facets. This will maximize the ability to rotate the lumbar spine. Bringing the knee up will actually cause the hip flexors to fire, but once the pt reaches their own end range they will stop & the hip flexors will relax. This is PNF!

This also takes the guess work out of the DC trying to take the low back to tension as the pt will “feel” when it is to tension & stop on their own!



Lumbar Spine

Lift back leg
& use as a long lever.

The inside of the DC's thigh should be up against the backside of the pt's thigh. Now just drop your body down & around following the natural opening mechanics of the facets of the lumbar spine! Often moves with set-up!

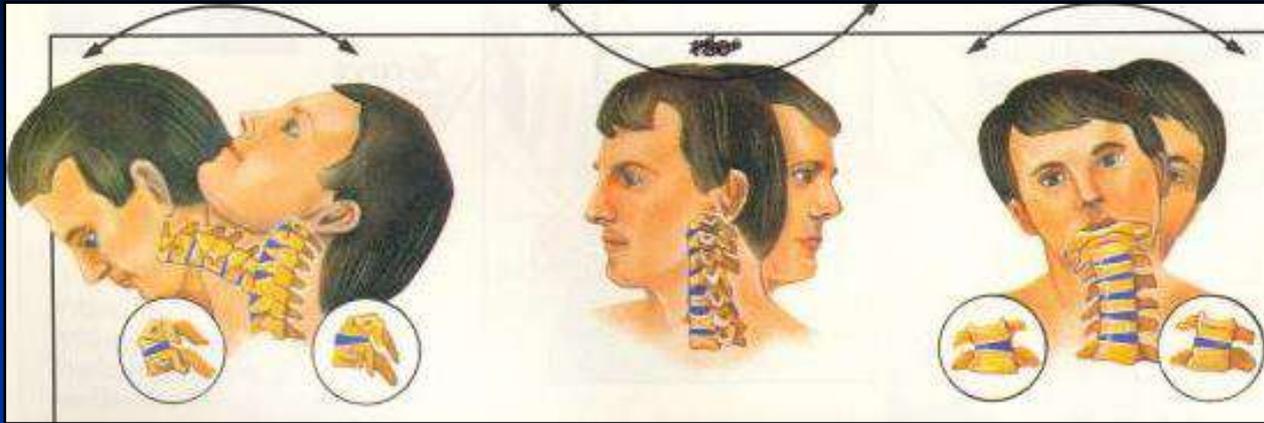


Patient Education:

(public has no idea what we are selling)



Pt Education Subjective ROM: Neck



Have your pt go through all 6 neck motions.
(can be done on low back too)

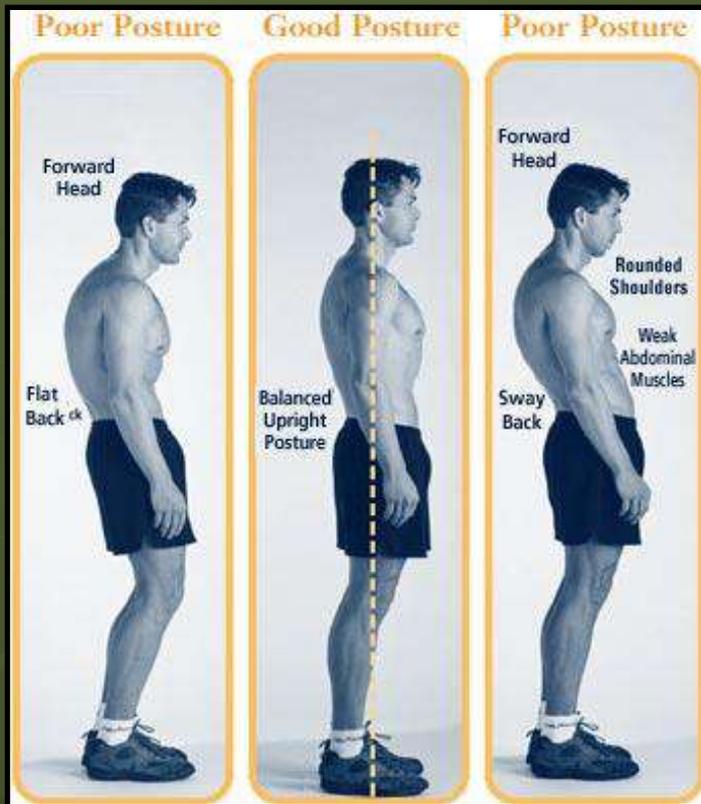
Ask them if they move symmetrically, smooth,
with no obstructions or pain.

**Notice how many DC's fail this! So they need an
adjustment. The big question is if you did pass would
you still want an adjustment? Of course!**

DC challenge, why?

Stop & make your list & post it in your office!

Posture is #1



Posture affects & moderates:
spinal pain
headache
mood
blood pressure
pulse
respiration
sympathetic function
homeostasis
autonomic regulation
breathing
hormone production

American Journal of Pain Management, 1994

Pts may not understand the terms in this list. Idea: Have term or concept of the week. Post on your website or in your office, or email it to pts.

Don't Believe Me? Take A Look

Have your pts
observe the posture of
people over 50.

Typically people with good
posture appear healthy &
people with bad posture
look ill.



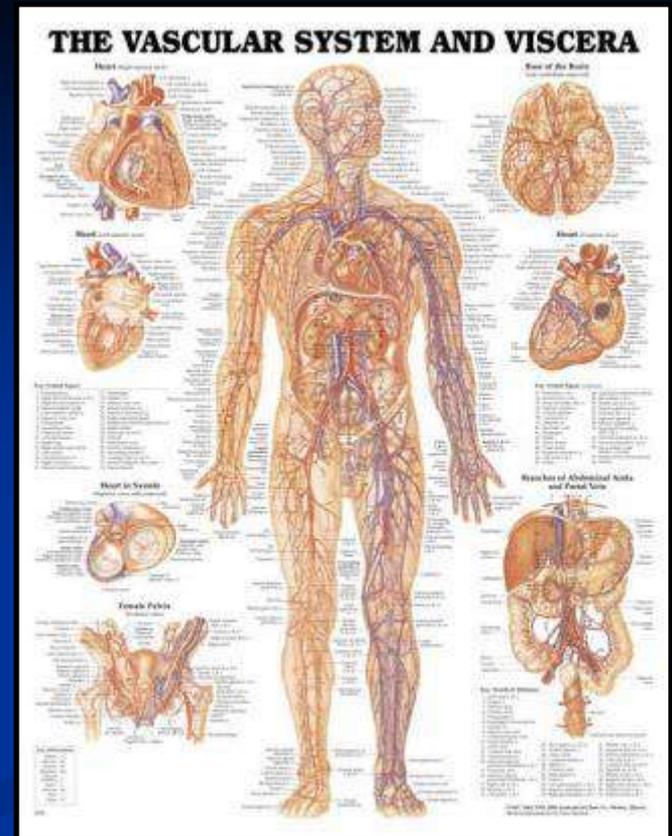
Power of Posture

- All measures of health status showed significantly poorer scores as C7 plumb line deviation increased forward of the sacrum.
- Even minor forward head/body sagittal balance is detrimental.
- The severity of symptoms increases in a linear fashion with progressive increase of forward head/body sagittal imbalance.
- There was clear evidence of increased pain and decreased function as the magnitude of forward head/body sagittal balance increased.

Spine Volume 30(18), September 15, 2005 pp. 2024-2029

Patient Education

Pain Relief & Blood Flow



Squeeze your forearm & let go. Ask the pt why the skin turns white. Ask your pt what they think happens when their muscles are tight. That's right - decreased blood flow & trapped chemicals which cause pain. What would happen if you got adjusted & the muscles relaxed? ⁸³

Why Don't You Die When You Sleep?
Great question for your pts, they actually
don't know. Now we can talk about the
autonomic nervous system!



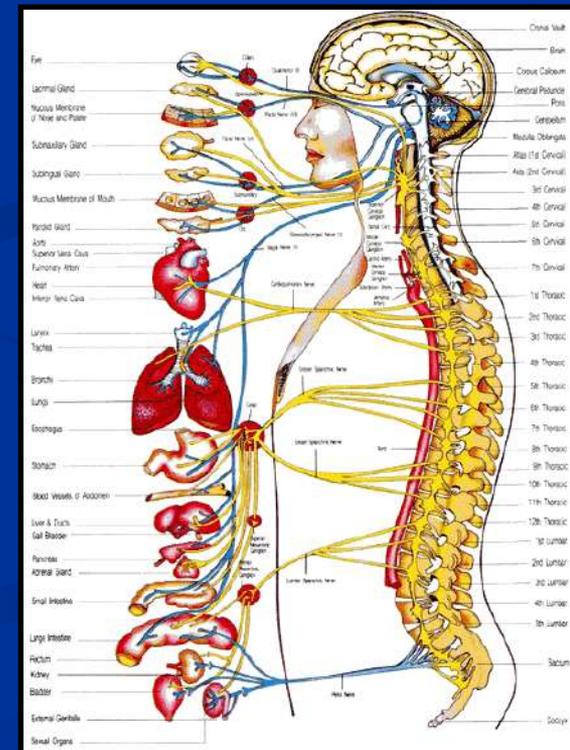
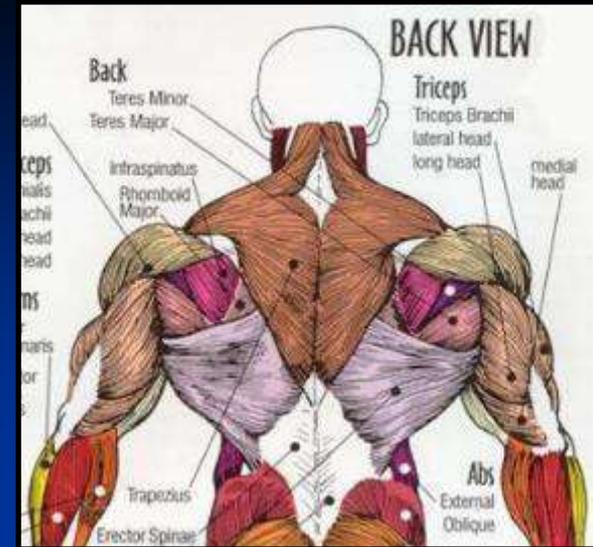
Wellness:

Nervous System

AK Posture Check

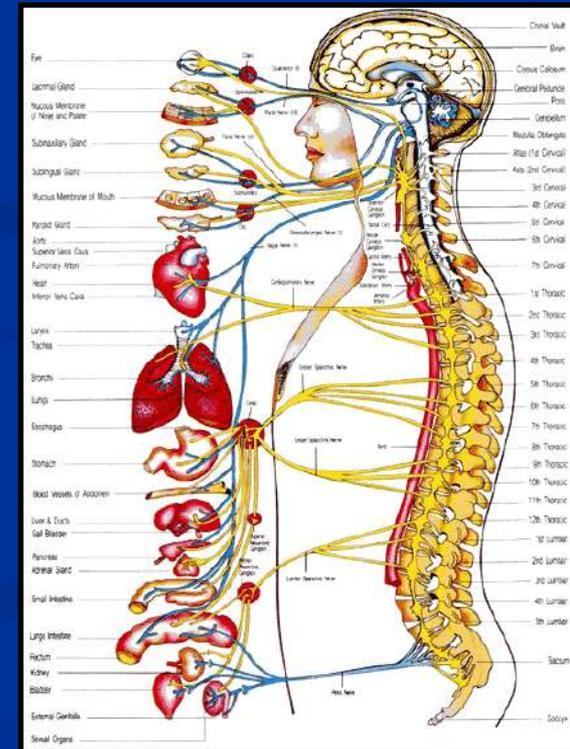
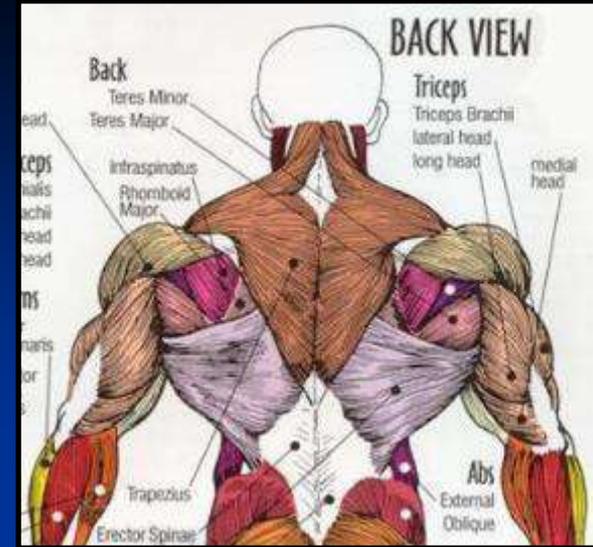
Stand up straight & put your arm out at 90° to your side then have someone push down on it. It should be strong.

Now slump over (anterior head translation & flexion) with bad posture & push down again, your arm should be weak.



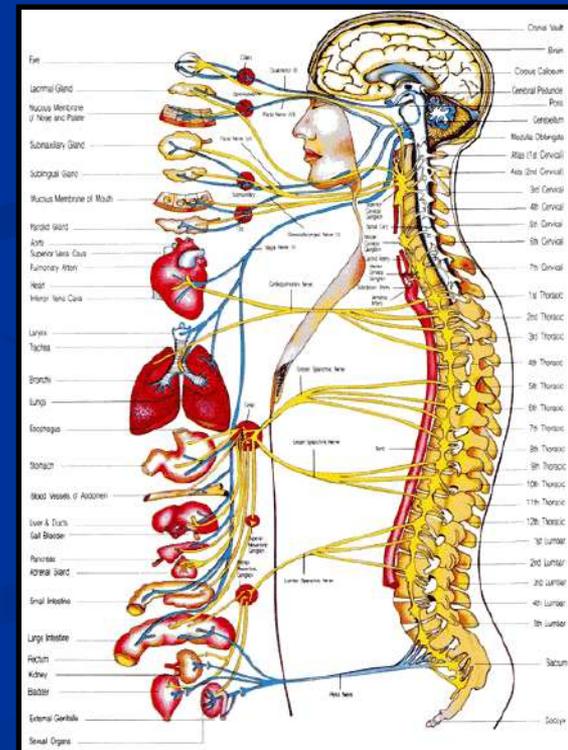
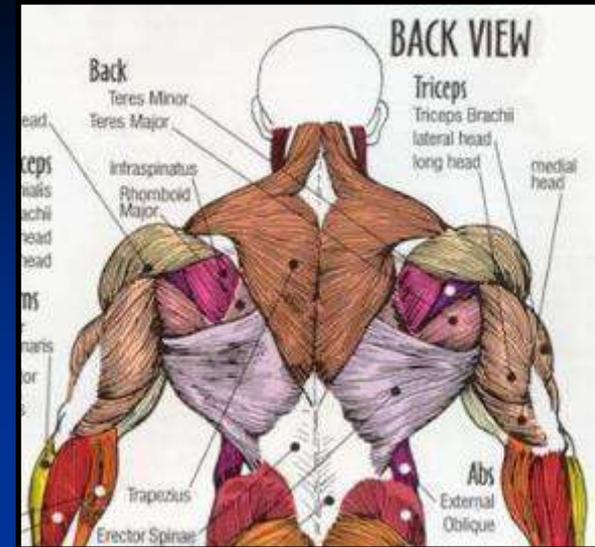
Explanation:

Review with pt. So with good posture your shoulder was strong? Yes. With bad posture it was weak? Yes. So do you think that only the shoulder muscle was affected or do you think it affects your entire nervous system as well? Entire system.



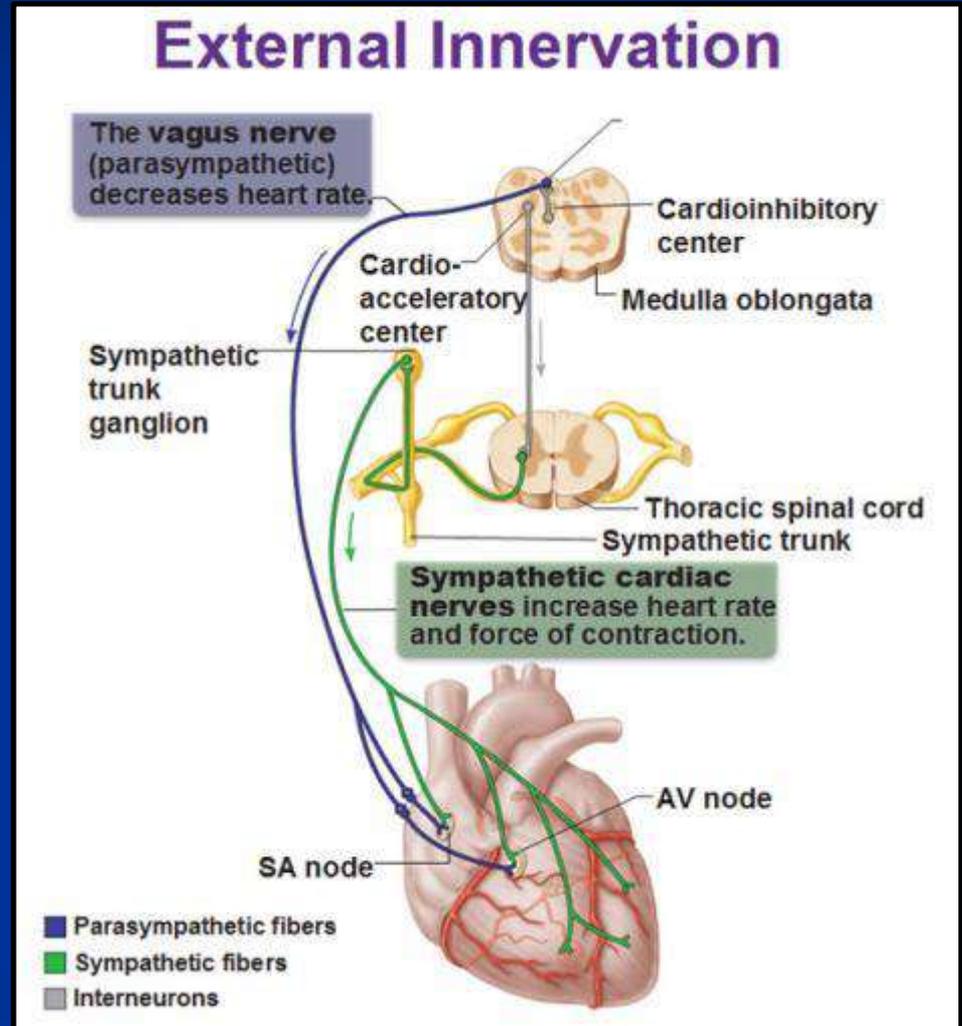
Final Part

So if we adjust your neck & upper back, getting your shoulders & head back in a good postural position, what do you think will happen to your nervous system? Wait for the pt to answer, way more effective than you telling them!



Wellness: Nervous System

If you cut the nerves that go from the brain to the heart what would happen?
What if those nerves were compressed?



Wellness: Respiration & Cardiovascular Health



Have your pt sit-up straight & breathe. Then have them hunch over & breathe. Ask them the difference - it's obvious. **Try breathing through a straw.** Let them know chiropractic helps maintain proper breathing & explain the importance of oxygen & decreased pressure on you heart. Also perform a pre/post adjustment breathing test, or use a spirometer.

Wellness: Respiration & Cardiovascular Health



Video them with THEIR phone pre & post adjustment so they can see the changes.

Seeing IS believing!

Again ask the pt what they think will happen to the cardiovascular & respiratory systems with chiropractic care & postural restoration.

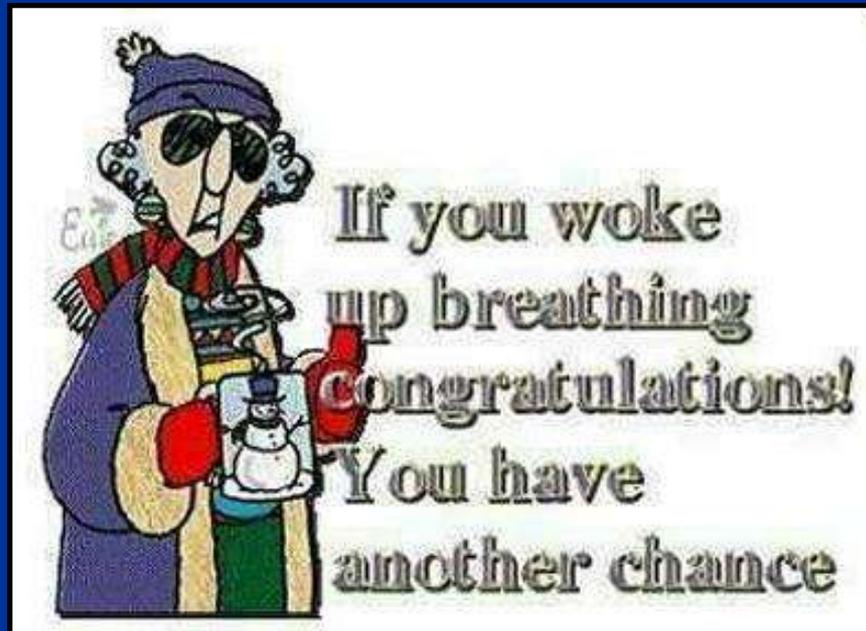
*Respiratory System

After age 20 vital capacity

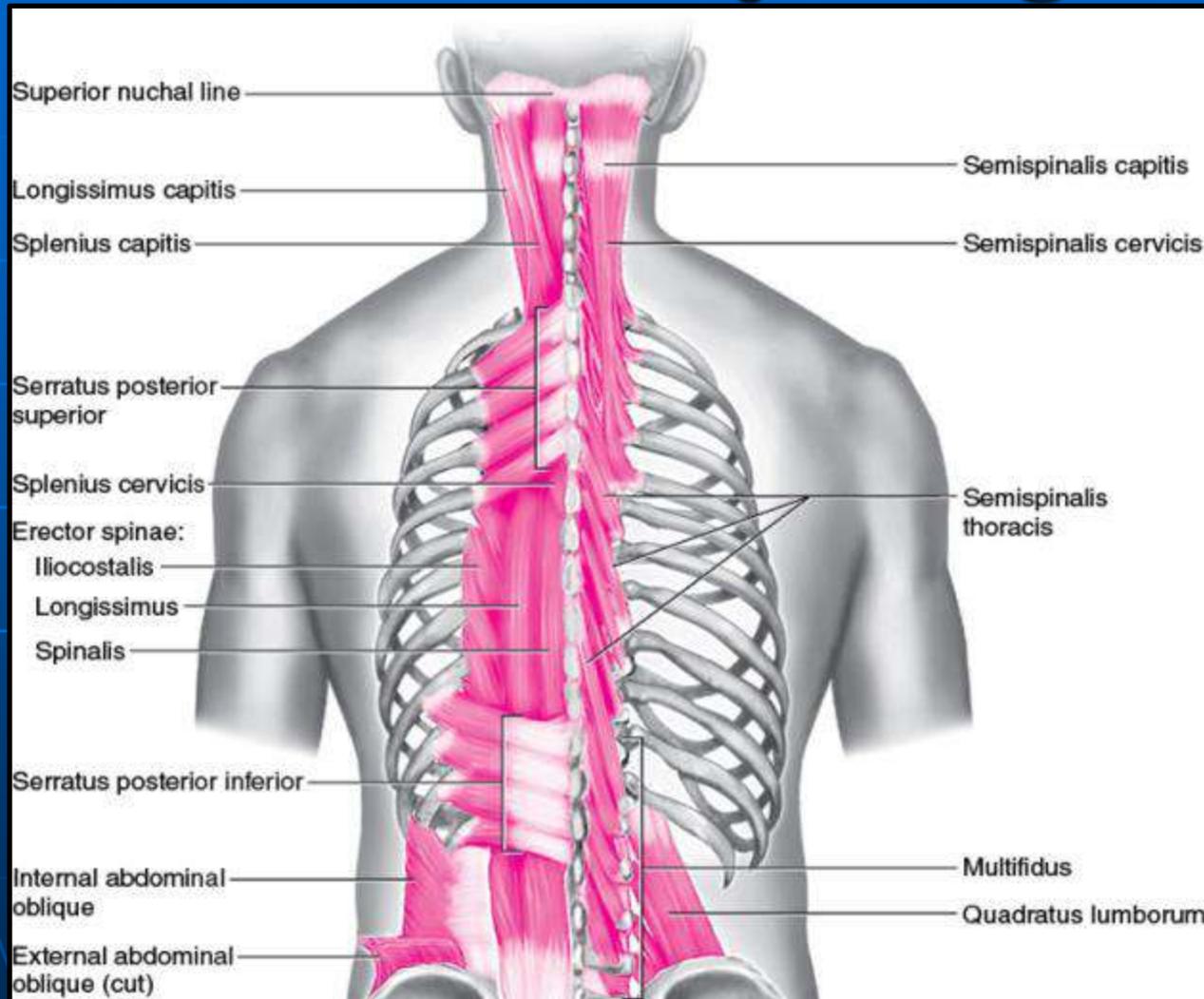
↓ 5-20% per decade

(maximum volume of air that a person can exhale after maximum inhalation)

Brian K Ross MD, University of Washington



Thoracic Adjusting



More PNF In The Thoracic Spine

Spine

Before you adjust the pt, have them retract their scapulae & lift their head for 2-5 seconds.

This helps relax the pt's thoracic spine.

Now adjust.



PNF in Thoracics



Before you adjust the pt, place your hand on their back where you are about to adjust. Apply downward pressure & have the pt inhale. This will force the muscles of inspiration to contract & then relax, (PNF). You will actually notice that the pt breaths better after this. So the pt will be more relaxed. Now adjust.

Tissue Pull Demonstration



Find the segment you want to adjust & take your tissue pull. Once you have the contact point, move & shake your hands around. This also fires the GTO's, inhibiting the involved muscles. The pt will get a much smoother, more comfortable adjustment.

This can also help distract the pt.

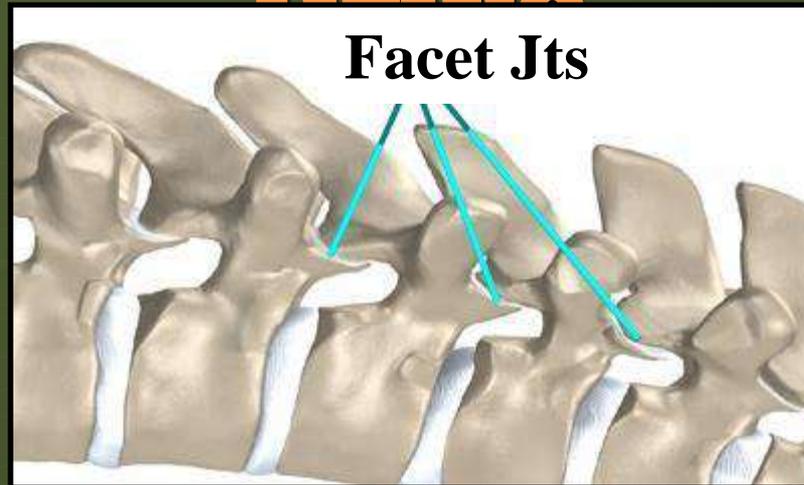
The point is you do NOT have to dig in.

Thoracic Spine ~ Contact



Traction up the pt's spine to open facets.
Use a double knife edge & **NON-specific set-up** to allow for maximal pt breathing & comfort.
Then torque the proper direction & finish P to A.
Bridging the table (seen above) will open the jts **BEFORE** you adjust.

Thoracic Spine ~ Line Of Drive



The sequence of the line of drive is critical.

It **MUST** be:

1. I to S up the spine
2. then rotation
3. and finally P to A

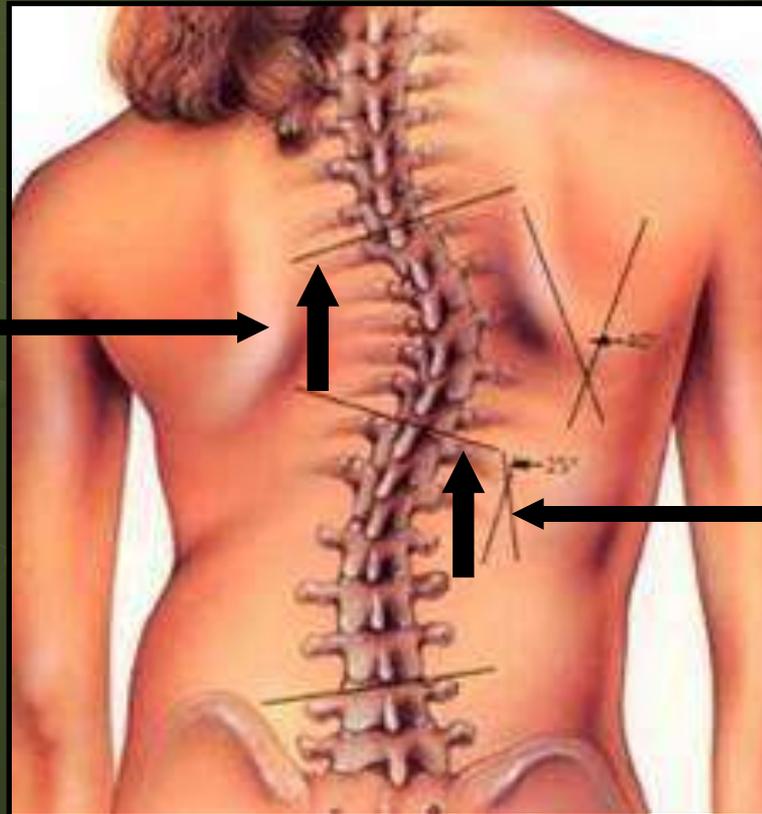
This biomechanical sequence maximizes gapping the facets & pt comfort as there is no jamming.

Sequence Of Events

Important to open facets before you thrust.
Ex. For scoliosis if you only torque you will likely **NOT** get the facets to gap efficiently.

Use multiple vectors & torque!

1. I to S
2. Torque Up
3. P to A



1. I to S
2. Torque Up
3. P to A

DC Position



1. Stand on side of pt by their pelvis.
2. Use double knife edge.
3. DC should then lunge into pt using their entire body, instead of just upper extremities.
4. DC should have their back leg kick up acting as a long lever to gain energy.

Myth Buster ~



I don't need a Chiropractor, my pain is gone. Pain is often the first thing to go in the healing process; think broken arm. Cancer & diabetes can develop for years before you're aware of symptoms. If you're feeling good couldn't you feel even better? Think dental care, oil change & proactive health! **Wellness care, adjusting areas that don't hurt?**



Patient Education: Sprained Ankle

Pts often have a hard time understanding a sprained low back or neck, so use a sprained ankle as an example, as these are the same.

(most pts have sprained an ankle),

Ask the pt what they think is happening inside their low back (area of pain) on the initial intake form, it's likely they will not know.



Pt Education: It may hurt!

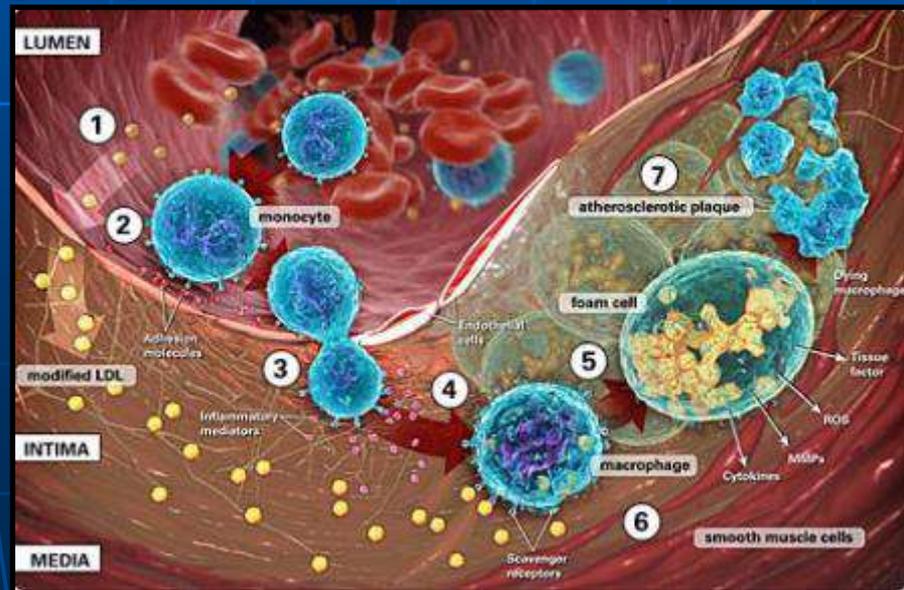
Inform pt after an adjustment they may be sore regardless of the stage of healing. This can last 1-3 days & is NORMAL. Why? During the acute stage due to ↑ inflammation, during the chronic stage by releasing trapped chemicals & starting new inflammation. This chemical flow (old-out, new-in) is essential for tissue healing. If you don't explain this, pts will leave thinking you hurt them.

Differentiate between hurt & injured so you & the pt are talking about the same thing. The last DC hurt me? Was something broken/torn or were you just really sore?

Inflammation & Pain:

Does the pt think they are good or bad?

Remember the acute inflammatory process is what helps heal the tissue. If we could remove all the inflammatory chemicals the tissue would **NOT** heal. Have pt pinch themselves then release. Severity of pain does not always correlate with severity of injury. Ex. Calf cramp, paper cut, bumping your elbow.



Functional Care

Bend your finger back until it's painful. A biopsy won't reveal a tumor, infection or any lesion. But releasing the finger & letting it return to its "position of comfort" will allow the pain to subside. We need to think about low back pain in a similar way -functionally. 97% of back pain seen by primary care physicians is mechanical in origin -there's something wrong with the muscles, ligaments or connective tissues.

Physician & Sports Medicine, 1997.

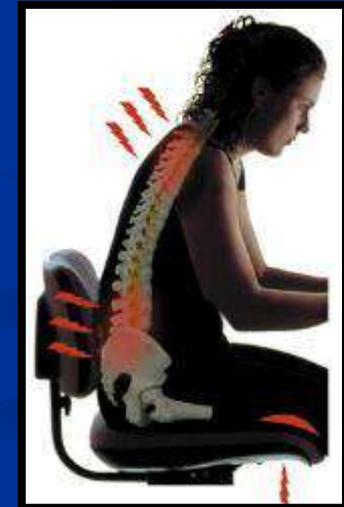
Pt Education: Trapezius Tension

Have your pt palpate your traps as you pretend to: drive, cook, brush your teeth, use a mouse, read, etc.

Ask the pt if they only work 30 seconds a day!

Ask them what **THEY** think would happen after an entire day, week, month, year or lifetime of this tension. This is why they hurt even though “nothing happened”!

Try this on the low back too!



Myth Buster ~

I can crack my own spine so I don't need to go?

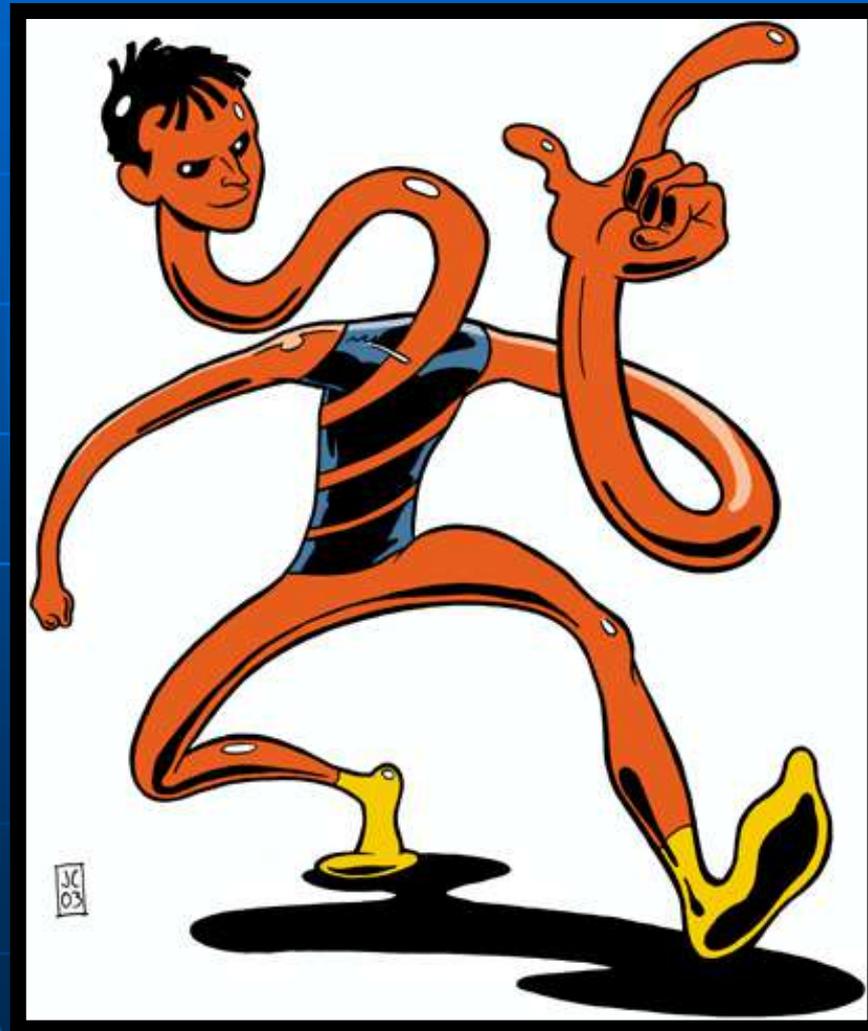


When you self adjust you're likely moving the jts that are easy to move or hypermobile.

Typically you aren't adjusting the correct joint, it feels good for a moment (endorphins release & muscles relax) but you'll have to repeat the process multiple times in a day.

Fact: DC's choose to get adjusted by another DC instead of doing it themselves.

Tissue Properties of The Joint Complex



What Pts Think!



“Truth will always be truth, regardless of lack of understanding, disbelief or ignorance.”

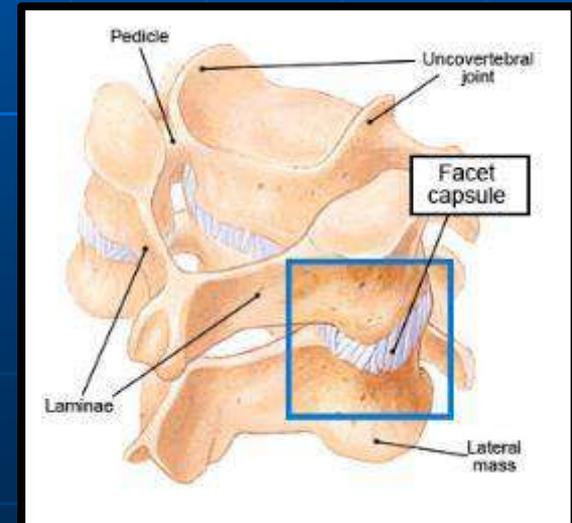
~ William Clement Stone

Always remember that pts may interpret things you say differently than you intended.

Did you get “It”? “I got it”

Pts **DO NOT** know what “it” is, so be careful what you say! They likely have no idea what a jt complex is or how it functions.

A small word like “it” needs to be defined in your office so when we do use the word the pt knows what we are referring to.

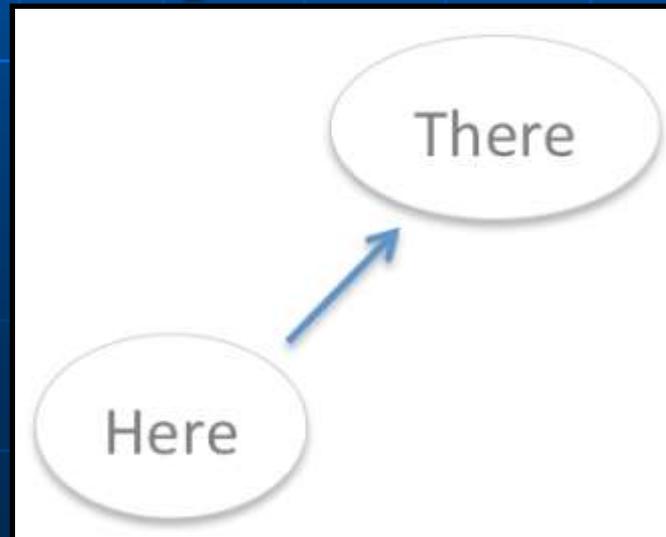


Watch What You Say!

Did “it move”? Is “it” in? These phrases imply that the bone moved from “here to there”. When in fact the bone moved from “here to here”.

Few things in society move from here to here!

The bone has **NOT** moved to a new location. Instead the jt can now move through a more complete ROM.



I was tying my shoes and...

If you tie your shoes every day & your back goes “out” once, then it can’t be from tying your shoes—otherwise it would happen every day.

What happened? Your muscles slowly fatigue over time from routine activity, inflammatory chemicals building-up & muscles going into spasm. It’s the “straw that broke the camel’s back”.



Myth Buster

My back is out, can't you just put it in?

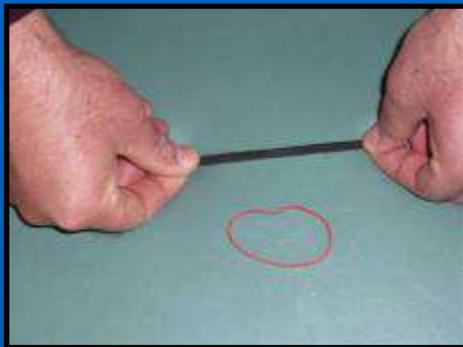
Backs **DO NOT** go in & out. Chiropractors **DO NOT** realign the spine, we increase the range-of-motion. An x-ray would show your spine in the exact same place before & after an adjustment.

Why? The spine is held together with ligaments, that **DO NOT** instantly change length.

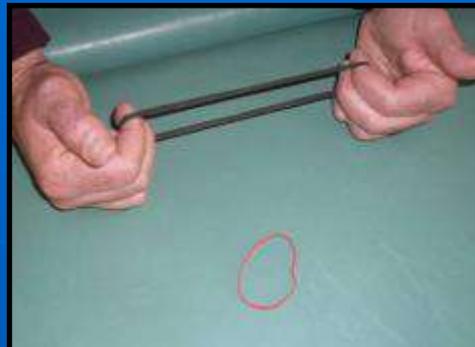
Chiropractors adjust “subluxated/fixed” jts, which allows the jt to move through a greater ROM.

Imagine how many pts you would have injured in your Chiro college clinic days if the bones did change position.

Rubber Band Demonstration



Relaxed, no tension



Normal tension



Excess tension, band will fatigue & become lax

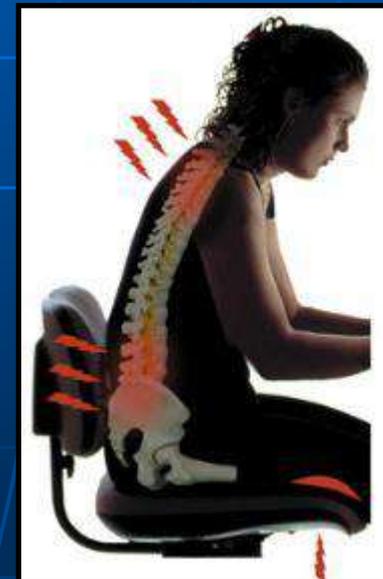
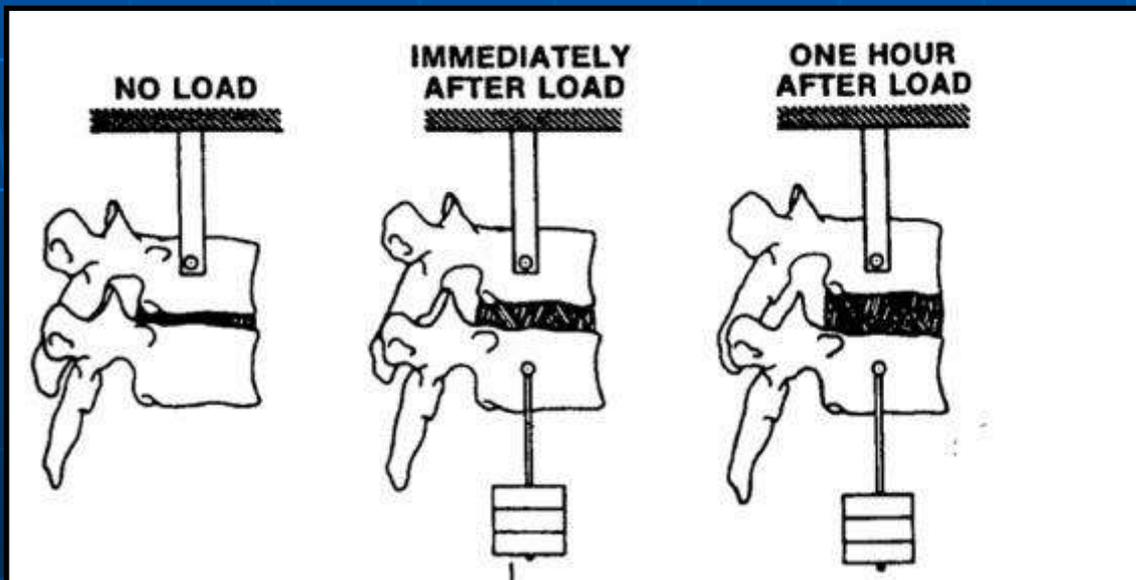
Elasticity: the springiness or resilient property of a tissue that causes it to resist deformation (permanent length change) by recovering to the original shape & size.

Ligaments don't permanently change length after an adjustment, it takes long term care: adjusting, rehab, stretching and/or traction.

Ask your pt what **they think** happens when you pull the rubber band apart & let go once vs 1,000 times.

Viscoelasticity is a time dependent property of tissue sensitive to loading rate. All tissues (bone, ligaments, discs, tendons & muscles) have a loading rate where a slow, gradual pull will produce considerable deformation before failure.

Ask the pt what will happen when a load is added to the disc (below) immediately & then in an hour, or a week!



Is Every Super Ball Created Equal?

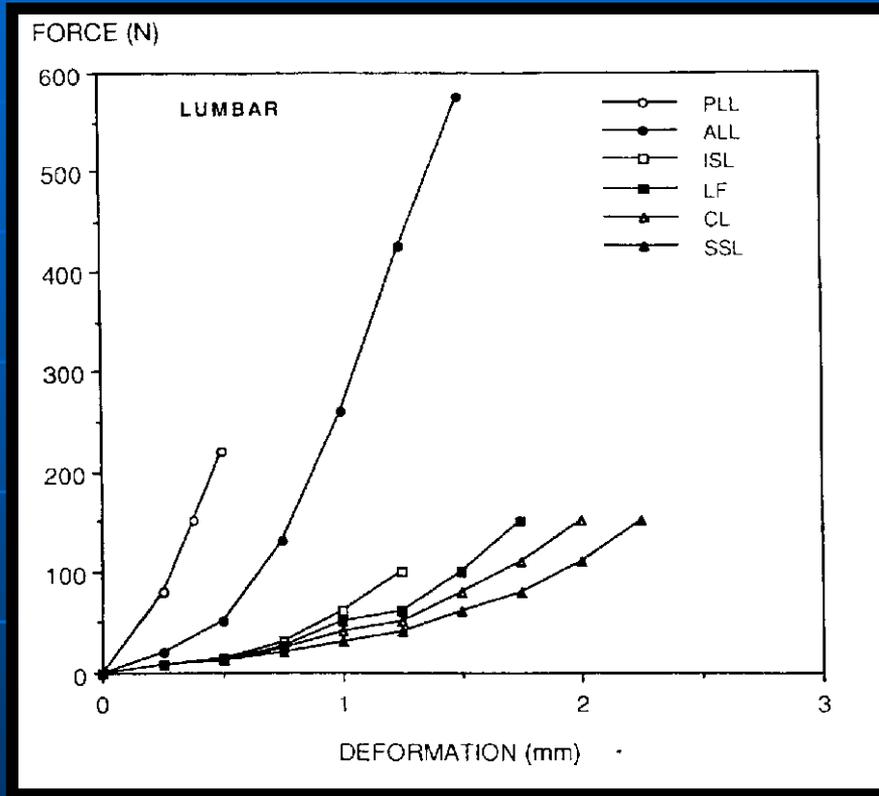


**Not every ball bounces the same.
Some have more elasticity than others.**

Why?

Same goes for ligaments, some have more elastin fibers than others giving them more elasticity.

Force-deformation curve of the spinal ligaments

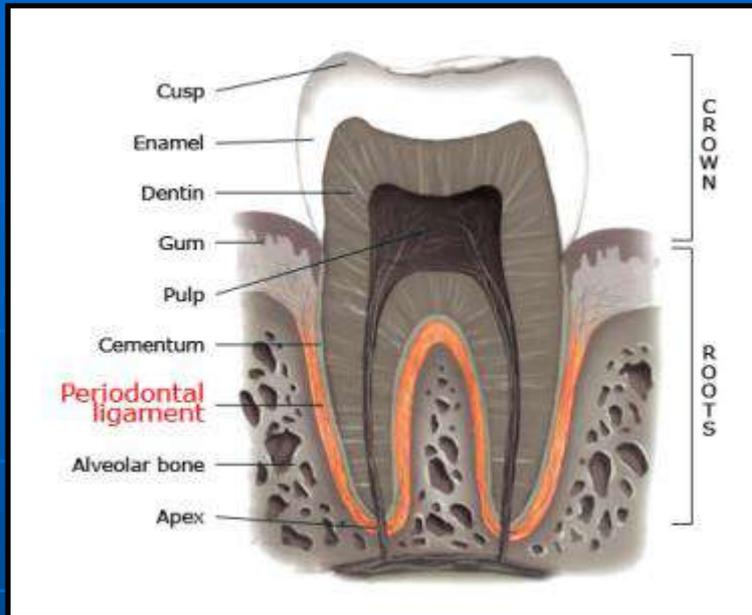


Forces exerted during an adjustment, (short duration) are not sufficient to cause a change in the viscoelastic component of the ligaments.

To do this requires sustained forces: muscle tone, gravity or traction.

The further from the axis of rotation a ligament is, the more elastic it needs to be to allow for motion.

Are All Ligaments Created Equal?

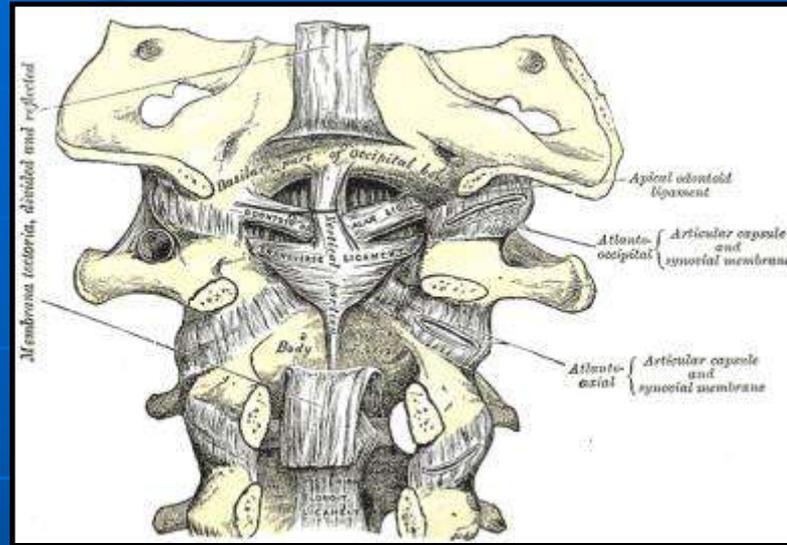


Braces may be needed for 1-4 yrs & then afterwards you need to wear a retainer. Why?

The periodontal ligament is **NOT** elastic & is **VERY** difficult to change its' length.



Are All Ligaments Created Equal?



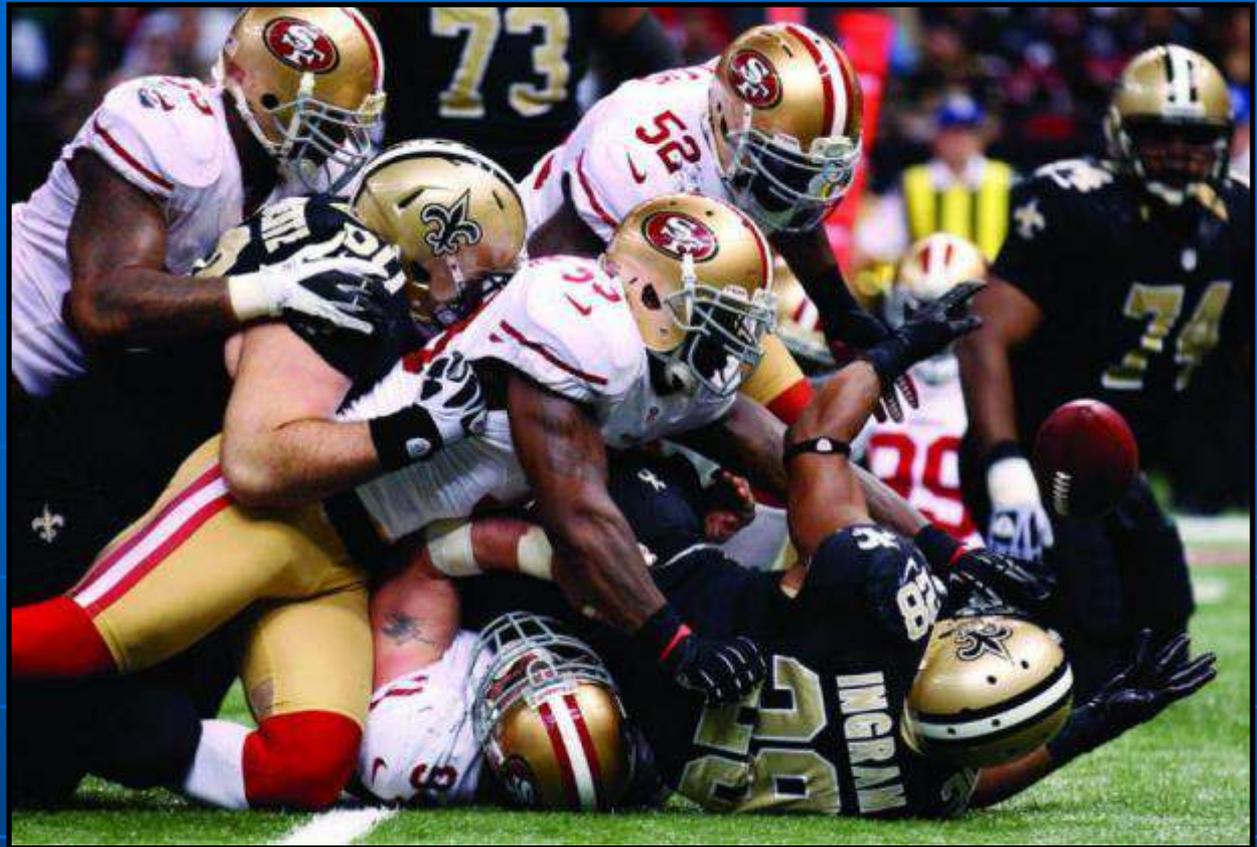
50% of the rotation in the neck comes from the upper cervical complex. The ligaments have lots of elastin fibers to allow this motion. Due to the small muscles (sub-occipital triangle) that are prone to acute spasm from holding up the head we **CAN** get change on film if we release those muscles, as the spasm is the **ONLY** factor causing the misalignment.¹¹⁹

Bend your finger & let it go. Does it stay misaligned? NO! Why not?

Soft tissue does NOT change length instantly after an adjustment! The pt needs to understand this, so they do NOT continue to think the bone is moving back “in”!

Crack all your knuckles. Do they become misaligned?



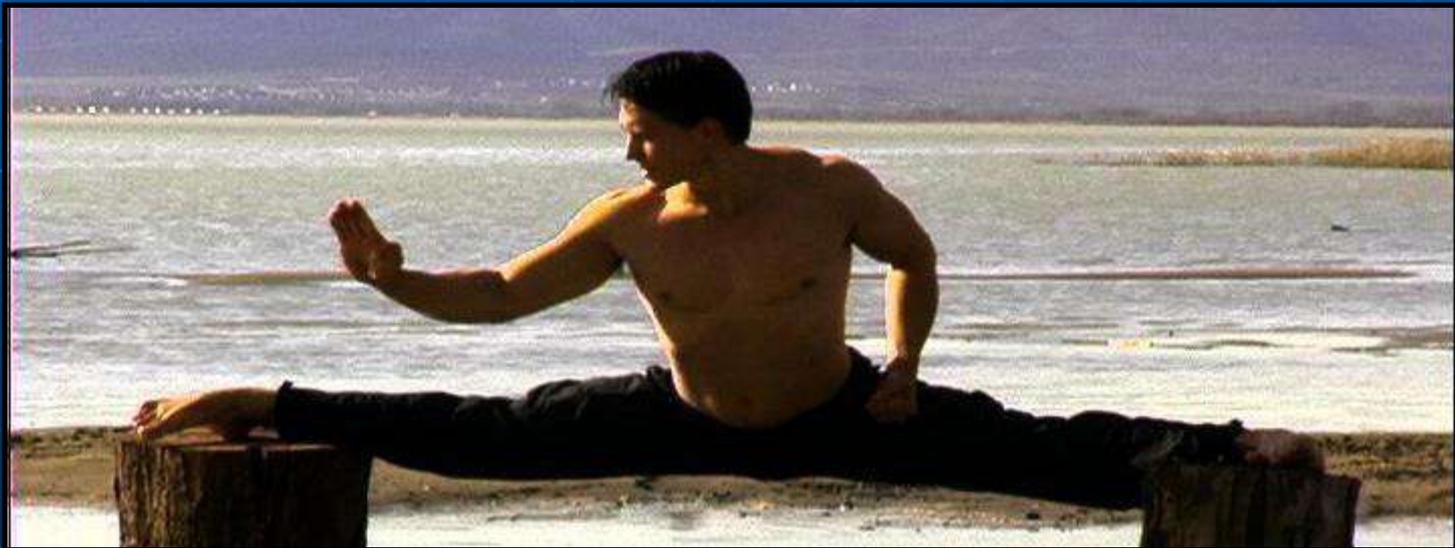


Great example for pts: NFL Players X-rays are identical before & after games!
Retired players just have major spinal degeneration, but **NOT** scoliosis!

How Long Does It Take To Lengthen A Ligament?

Or For You To Do The Splits?

Ask your pt why it takes so long to do the splits.
It's the same reason we **can't** realign the spine.
Soft tissue takes a long time to lengthen!



Motion Studies

Why are motion studies performed after a MVA? Because even after gross trauma that causes ligamentous instability we can **NOT** see it on film.



Misalignment on X-ray

Which area is most likely subluxated?

Which area are you most likely to adjust?

Which pt is in the most pain?

Did the pt on the right get hit by a car?

Could you realign them with one adjustment? Why not?

Would you adjust the pt on the left? What are the listings?



Motion vs Realignment

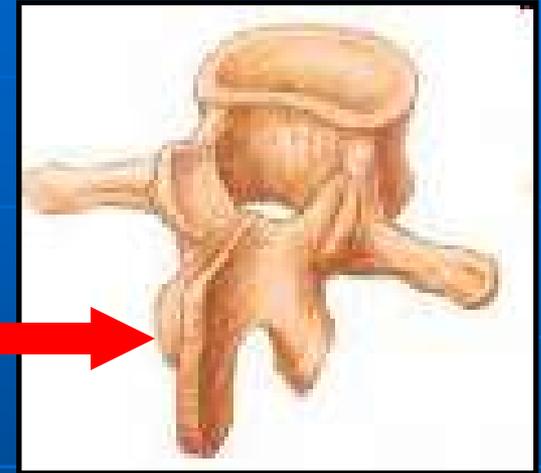
Are we moving the bone?

If we adjust this spinous to the right what happens?

1. It stays to the right
2. It goes to neutral, (realigned)
3. It returns to where it started
4. It rebounds to far left

Answer: #3 returns to where it started. There are some exceptions we will look at in a bit.

This is a great question to have on your initial intake form! Helps establish what the pt thinks.



Motion vs Realignment

Are we moving the bone?

It depends on what's causing the misalignment:

1. **Shortened ligaments**

(vertebra will not change position)

2. **Chronic muscle contraction & adhesions**

(vertebra will not change position, due to muscle memory)

3. **Inflammation**

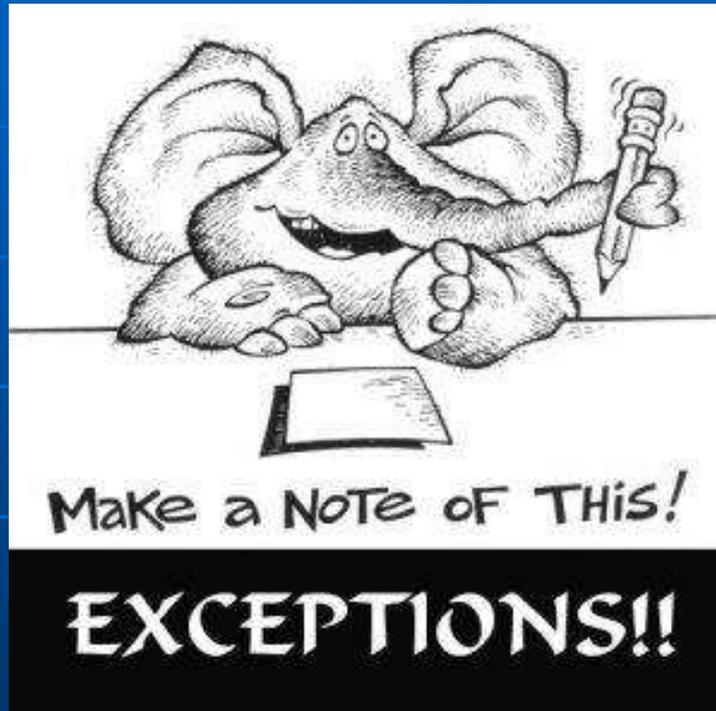
(vertebra will not change position until swelling dissipates)

4. **Acute muscle contraction**

(vertebra will change position as long as this is the major over riding factor causing the misalignment, which is rarely the case)

When Does The Vertebra Move?

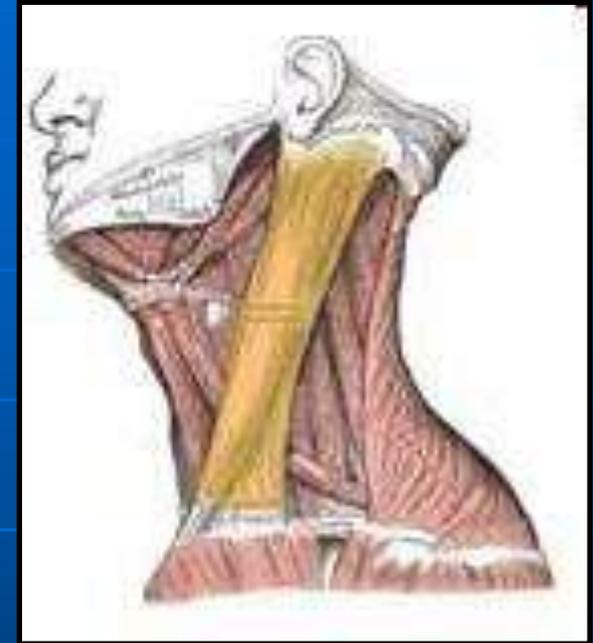
Answer: if the only thing happening is a muscular spasm.



Let's look at more examples. We already saw the upper cervical complex as one.

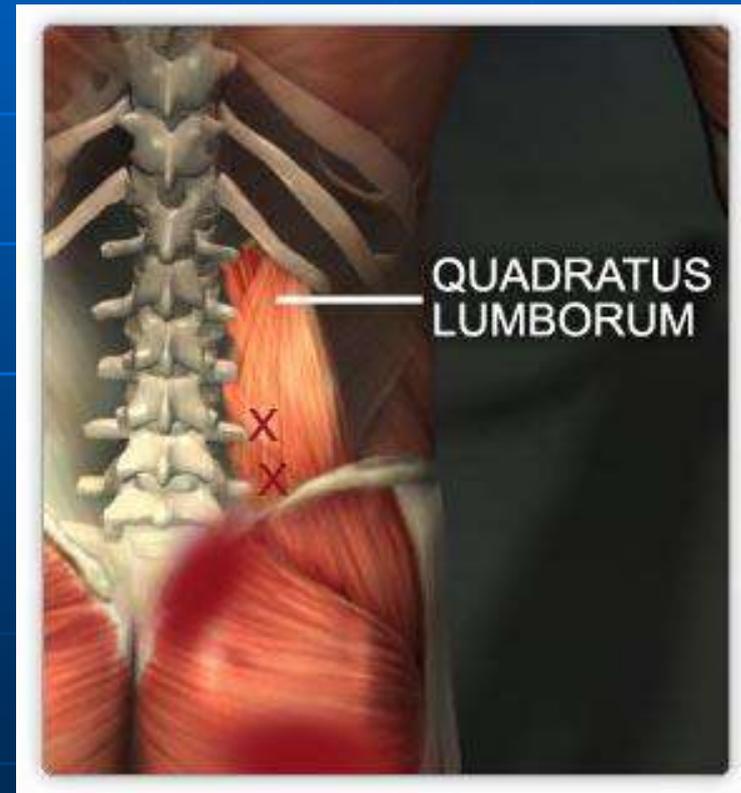
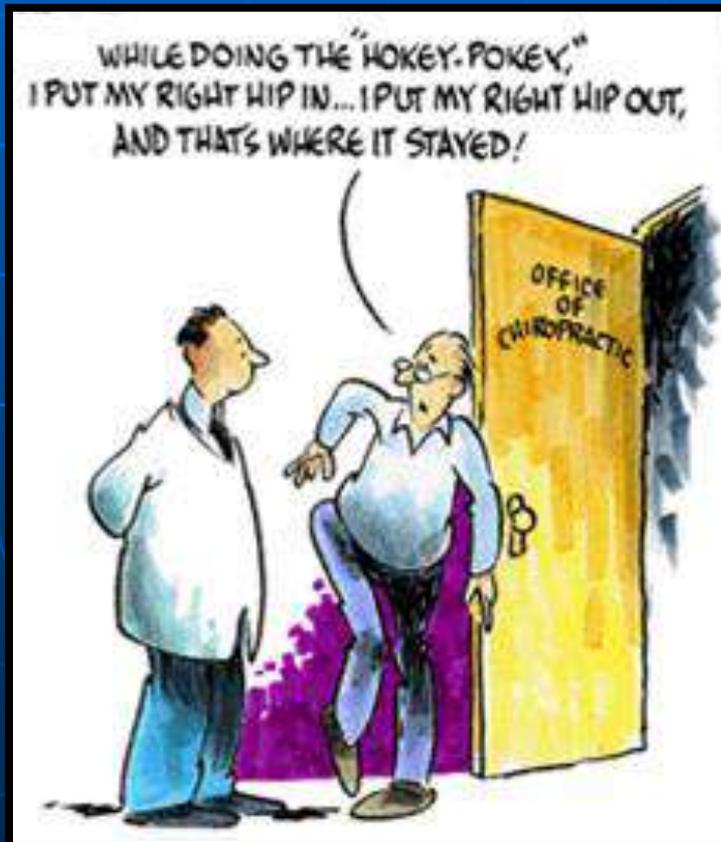
Acute Torticollis SCM Spasm Protocol

1. History, X-ray & exam to rule out fracture & torn tissue
2. O'Donoghue's Test to DDX muscle vs ligament, also to calm pt down
3. Ice, spray & stretch, ischemic compression on attachment site away from pain
4. PNF stretching
5. Adjustment (don't miss)



This **IS** an example of a misalignment that **CAN** be realigned as the only factor causing the misalignment is an acute muscular spasm.

Quadratus Lumborum spasm **IS** an example of a misalignment that **CAN** be realigned as the only factor causing the misalignment is an acute muscular spasm with minimal inflammation.



Cervical Adjusting



Cervical Spine ~ Contact



Super light! With the contact & tissue pull we are only trying to get the loose skin, slight layer of fat & loose superficial muscles out of the way. Any more than that & we are digging in, causing the pt to be apprehensive & guard.

Cervical Spine ~ Setting Up



The sequence is critical, follow the steps in this order:

1. Have table/pillow hold head in flexion, **Don't Lift It**
2. Traction the neck out I-S to open the facets
3. then laterally flex & rotate simultaneously

This biomechanical sequence maximizes gapping the facets & pt comfort, as there is no jamming.

Head & Neck In Flexion?

To keep flexion in the adjustment without having the pt strain their neck muscles use a support, (pillow or towel), or use the headpiece on the table. This allows the pt to have relaxed anterior compartment muscles & gaps the facet jts **before** the adjustment.



DON'T Lift The Pt's Head!

If you lift the head to get flexion the pt will likely tighten & guard.

You can see the pt's (to the left) anterior muscles contracting.

Also if you lift the head & hold it up too long you may begin to shake, as your muscles fatigue!

Now the pt thinks you're nervous.

Not good!

Challenge: at the end of your set-up can you take your adjusting hand off the pt? If not there is likely a lot of pressure going into the pt's neck. Check it out next time you adjust.



Coupled Motion Of The Neck: Demo

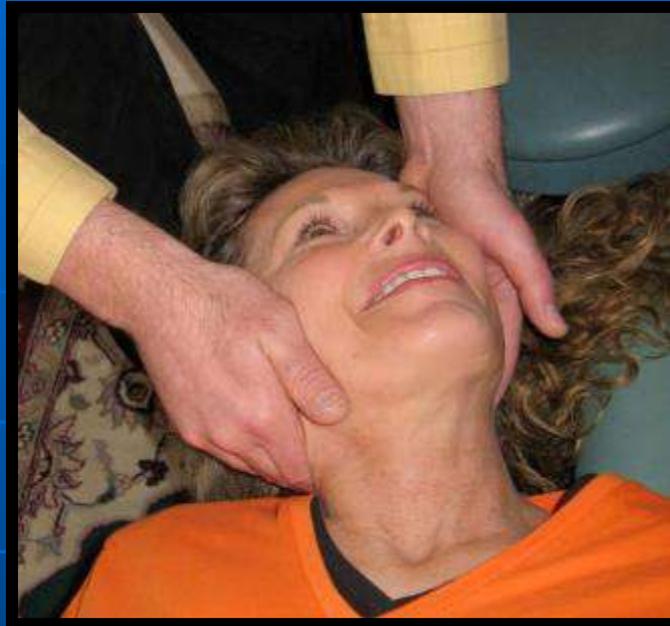
Try all 3 possibilities, see which one feels best!

1. first rotate & then laterally flex
2. first laterally flex & then rotate
3. rotate & laterally flex simultaneously

The neck moves easiest when both motions are done at the same time, **try it.**

This is due to the concave & convex nature of the facets. Adjust with this motion & the pt will have a much better experience & the jt will open more efficiently.

Center That Nose ~ Proper Position



Keep the nose centered, so it lines up with the sternum. This allows for maximum patency of the vertebrobasilar artery & better facet motion!

DC Hand Motion & The Set-up

Upon setting up **DO NOT** push in toward the midline of the pt's neck. This causes jts on that side to jam & the pt will likely tighten. **Instead:**

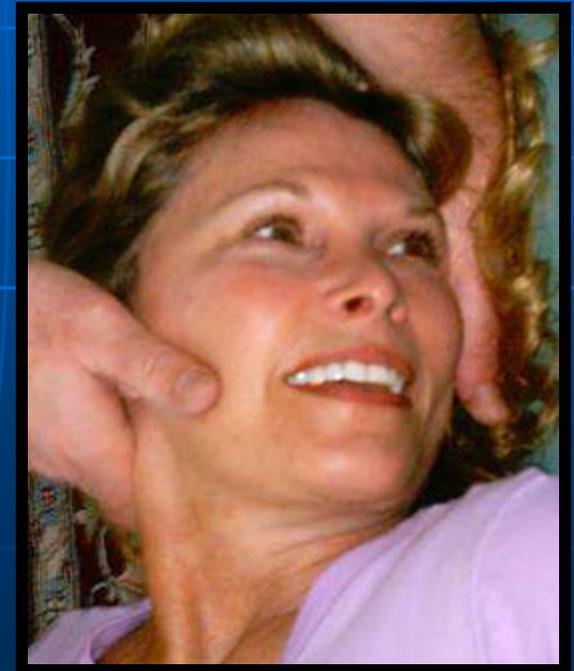
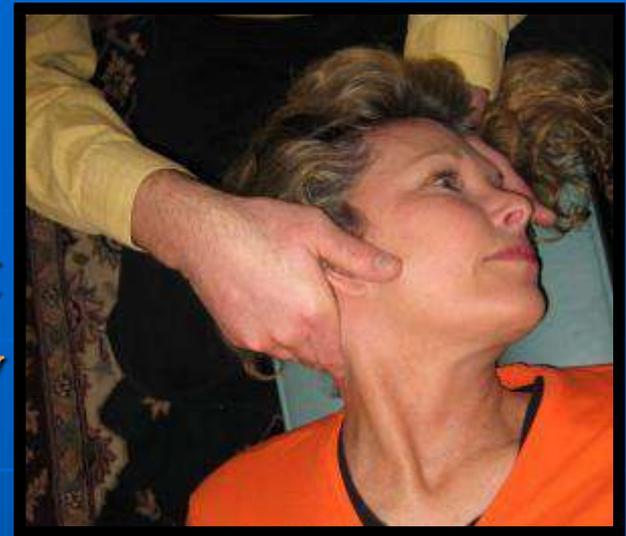
1. find the vertebra you want to adjust
2. fulcrum pt's neck & head over your adjusting hand
3. Set-up hand should glide **AWAY** from the midline

Try it. This causes no stress to the pt's neck.



Rotation Only?

This will cause a cavitation, but **without** coupled motion we only get muscle fibers & adhesions that are elongated in that rotational direction. We do **NOT** affect fibers that are oriented in other directions. **Pure rotation often causes pt soreness & increases chance of stroke!**



Neck Adjustment & The Guarding Pt

Your pt wants to move their head & won't relax. 1st make sure they are not scared of the neck adjustment. Explain to them how safe the adjustment is, what the audible is, etc.



The Guarding Pt

1. In a neutral position tap the pt's face on the side you are going to adjust.
2. Ask the pt to bring their ear into your hand - they get to move their head & **can't guard!**
3. Use your hands as “guides”, pushing the pt's head & neck into proper coupled motion.
4. Once the neck reaches the end ROM the pt stops contracting & their muscles relax.
This is PNF! The pt contracts & then relaxes.
5. At that instant you adjust.

This works great! Try it!

Physiological Response To A Chiropractic Adjustment



Get some motion in that spine!

Benefits of Chiropractic in Asymptomatic Pts

- ✦ Studies reported improvements in neurocognitive function, visual field blind spot analysis, visual acuity, salivary cortisol levels, muscle strength & savings in health care costs.
- ✦ Improved: ROM, muscle strength, surface EMG, immune response, endorphin levels, BP, heart rate & spirometry.
- ✦ Significant changes: agility, balance, kinesthetic perception, power & speed reaction in asymptomatic athletes.

The Benefits of Adjustments

All tissues of the back: muscles, ligaments, jt capsules & discs - respond & heal well when adjusted.

1. Restores motion - symmetry & ROM
2. Normalizes biomechanics & load distribution
3. Pumps out waste products & edematous fluid
4. Improves discs & articular cartilage nutrition
5. Relaxes tight muscles
6. Normalizes proprioception

7. Stimulates sensory-motor reflexes improving dynamic muscular stabilization of jts
8. Accelerates healing - as movement:
 - ↑↑ metabolic rate
 - ↑↑ collagen & protein production
9. Improves alignment of new connective tissue

Malik Slosberg, DC

**Negative Effects of Immobilization-
Deconditioning Syndrome**

Craig Liebenson, DC

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