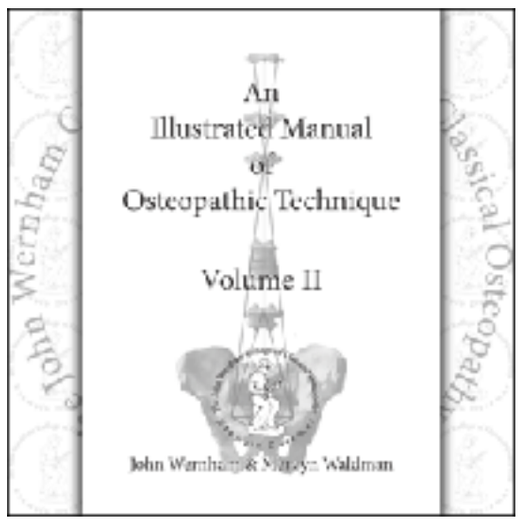
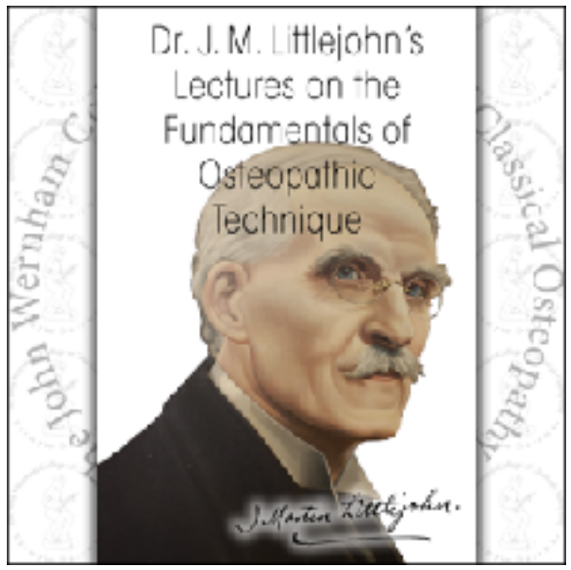


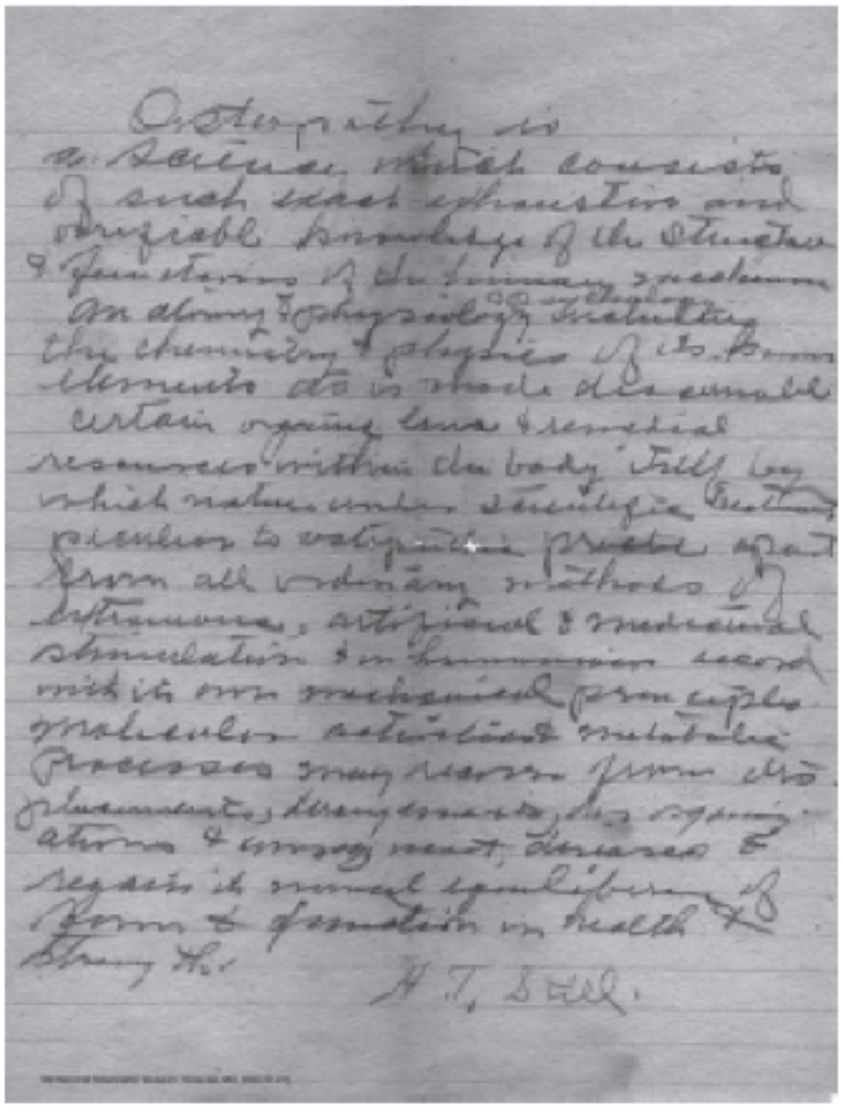


Workshop Series - OSD- kongress Berlin , June 2023

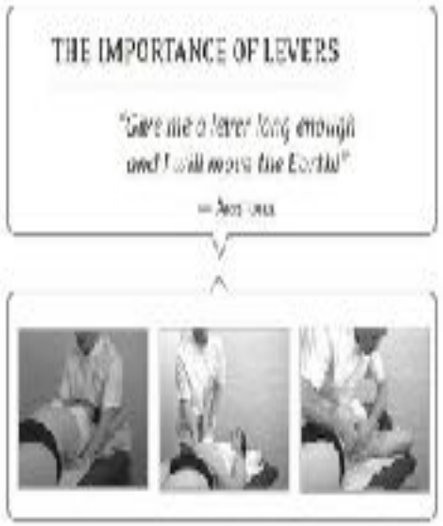
Timothy Sparrow DO , BSc (Hons) Ost. Med, UK

Workshop 1 "Re-exploring the traditional osteopathic concept of "adjustment"- Long lever adjustment and integration of pelvis, lumbar, thoracic and cervical spine"

Definitions : Osteopathic Medicine



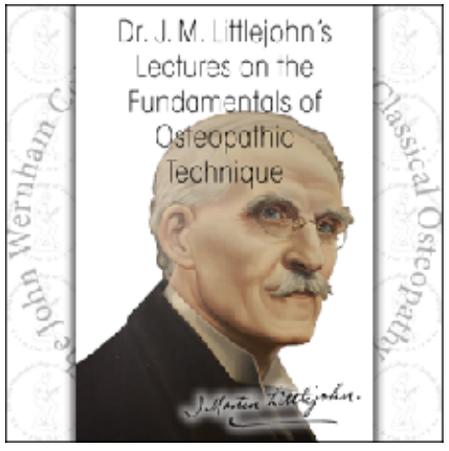
Handwritten definition of osteopathy by A.T. Still, M.D., D.O. (Still National Osteopathic Museum, Kirksville, MO.)



In his autobiography, Still gave a "technical" definition as follows:

" Osteopathy is that science which consists of … knowledge of the structure and functions of the human mechanism … by which nature under the scientific treatment… peculiar to osteopathic practice … in harmonious accord with its own mechanical principles, … may recover from displacements, disorganisations, derangements, and consequent disease and regain its normal equilibrium of form and function in health and strength."

Historical: Osteopathy was discovered by Dr. A. T. Still, of Baldwin, Kan., 1874. Dr. Still reasoned that "a natural flow of blood is health; and disease is the effect of local or general disturbance of blood -- that to excite the nerves causes muscles to contract and compress venous flow of blood to the heart; and the bones could be used as levers to relieve pressure on nerves, veins, and arteries. (A. T. Still.) 1897



Traditional Osteopathy and the General Osteopathic Treatment: A Historical Concept and a Modern Application

Pascal J. Grolaux, DO (B-UK), MOst (CH); Timothy J. Sparrow, DO, BSc(Hons) Osteopathic Medicine (UK); and François Lalonde, PhD (CA) DO (CA)

ORIGINAL RESEARCH

The AAO Journal • Vol. 31, No. 4 • December 2021

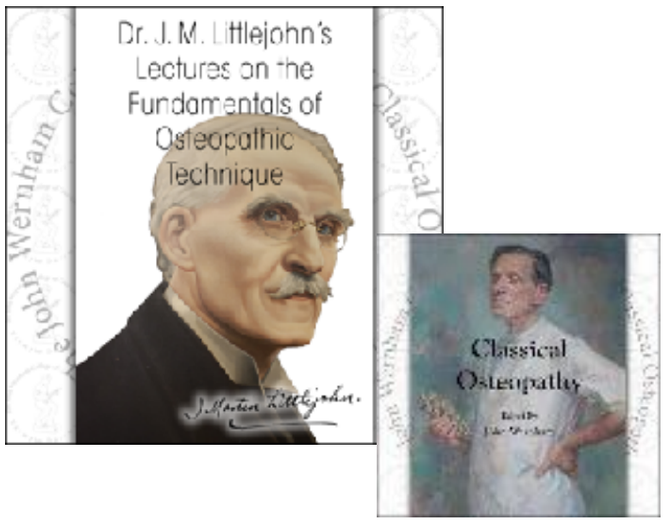
John Martin Littlejohn, defined osteopathy as follows:

"A system or science of healing that uses the natural resources of the body in the corrective field for the adjustment of structuralconditions, to stimulate the proper preparation and distribu- tion of the fluids and forces of the body and to promote coop- eration and harmony inside the body as a mechanism".

The Concept Behind the General Osteopathic Treatment

- Littlejohn considered that health rests on a three-pillared foundation, i.e., structural adjustment, function adjustment, and the adjustment of the organism to its environment

- Littlejohn defined "adjustment" as the law governing and regulating the physical conditions of the organism.Adjustment may be seen as the adjustment/coordination of part to part, organ to organ, tissue to tissue, on the basis of mobility rather than anatomical position.



Traditional Osteopathy and the General Osteopathic Treatment: A Historical Concept and a Modern Application

Pascal J. Grolaux, DO (B-UK), MOst (CH); Timothy J. Sparrow, DO, BSc(Hons) Osteopathic Medicine (UK); and François Lalonde, PhD (CA) DO (CA)

ORIGINAL RESEARCH

The AAO Journal • Vol. 31, No. 4 • December 2021

The Concept Behind the General Osteopathic Treatment

The GOT, which may include "specific adjustment'"administered along its course, is given in order to balance these 3 pillars.

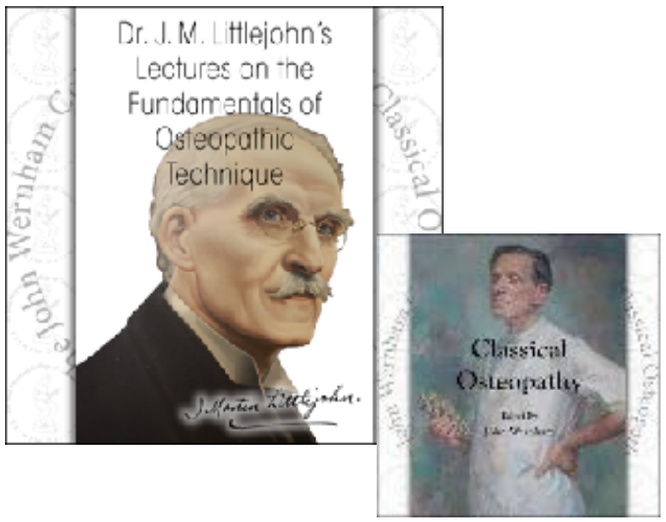
- Adjustment of the structure, i.e., spine and limbs, is given through general and specific treatment and long lever techniques are commonly applied.
- Adjustment of the function consisted of working on the lungs, the digestive and assimilative organs, as well as on the eliminative organs through the ribs and the osteopathic center.
- Adjustment of the organism to its environment is also considered on the physical, mental, emotional and spiritual planes.

Littlejohn insisted on the physiological aspect of the osteopathic lesion and treatment as he said: "The foundation of technique is the posture of the body and the physiology of the spine."

Based on this statement, Wernham developed the biome- chanical component of the first pillar, i.e., adjustment of structure, that made a link between the structure and the function. He used the term "Body Adjustment" – also named Total Body Adjustment and General Osteopathic Treatment – as a "general and specific" treatment as advocated by Littlejohn

Respecting the three- pillars foundation – that consists of a routine treatment based on the mechanics of the spine and pelvis, spinal arches, gravity lines, and osteopathic centers.

Wernham defined this kind of treatment or global approach as a "classical osteopathic treatment," therefore in line with the "classical osteopathic" approach to treatment from Littlejohn.



Traditional Osteopathy and the General Osteopathic Treatment: A Historical Concept and a Modern Application

Pascal J. Grolaux, DO (B-UK), MOst (CH); Timothy J. Sparrow, DO, BSc(Hons) Osteopathic Medicine (UK); and François Lalonde, PhD (CA) DO (CA)

ORIGINAL RESEARCH

The AAO Journal • Vol. 31, No. 4 • December 2021

The Concept Behind the General Osteopathic Treatment

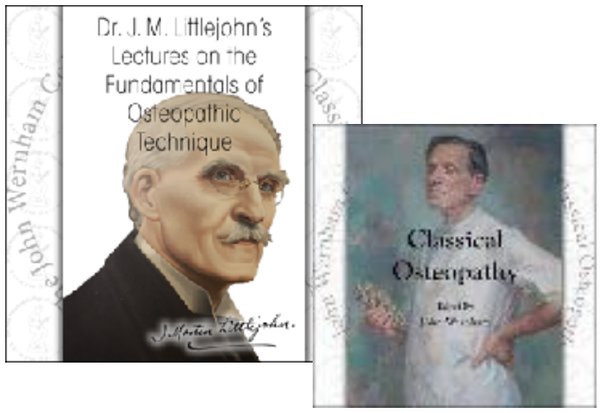
In terms of treatment philosophy, classical osteopathy has to be understood as related to "integration."

According to Wald- man, Littlejohn would have said that "the total body adjustment is an attempt to co-relate and co-ordinate the structural and functional conjoint activities of the body mechanism."

It has nothing to do with pushing or thrusting bones nor the rubbing or gouging of soft tissues, but to allowing change of functional activity throughout the body, as such physical treatment is expected to be converted into a significant physiological response.

Traditional or classical osteopathy may refer to a period from 1910 – 1950, between the Original and the Modern period. (J.E. Stark, DOM Canada)

This period coincides with when Littlejohn taught at the BSO in London and Wernham was one of its students.



Traditional Osteopathy and the General Osteopathic Treatment: A Historical Concept and a Modern Application

Pascal J. Grolaux, DO (B-UK), MOst (CH); Timothy J. Sparrow, DO, BSc(Hons) Osteopathic Medicine (UK); and François Lalonde, PhD (CA) DO (CA)

ORIGINAL RESEARCH

The AAO Journal • Vol. 31,

The Fundamentals and Principles of the General Osteopathic Treatment

Based on Littlejohn's teachings, John Wernham developed the GOT

This osteopathic treatment encompasses a series of gentle passive rhythmic long lever based appendicular, pelvic, and spinal mobilization procedures defined by three basic principles: routine, rotation, and rhythm.

The routine is to make sure that the physician or osteopathic manipulative practitioner covers all the body parts in the patient's examination

Rotation is used with a long lever on all body parts. It is important to note that the rotation originates from the physician's body toward the patient

This could be considered as a form of passive mobilization of each articulation.

When rotation is not possible on a given articulation, the technique is used on the permitted range of motion of the articulation. The rhythm imposed by the physician to the patient has two orientations: stimulation (fast rhythm) or inhibition (slow rhythm).[30] A mixture of rhythm can be used depending on the therapeutic goal.

The goals of the GOT are mainly to identify potential somatic dysfunctions, to gain range of motion (direct technique), and to soften the tissues.

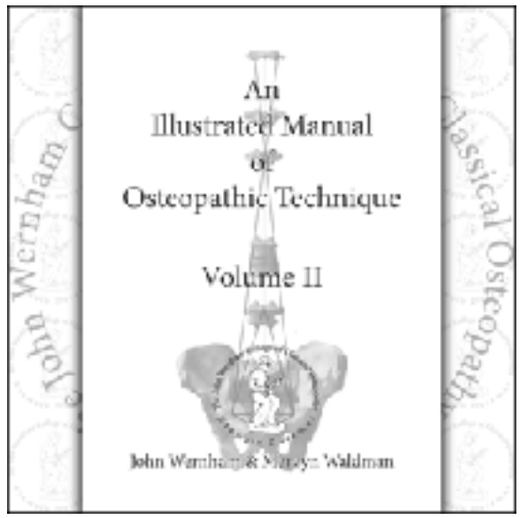
Repetitive passive movements are known to improve range of motion and to promote motor function in patients by modulation corticospinal processes.

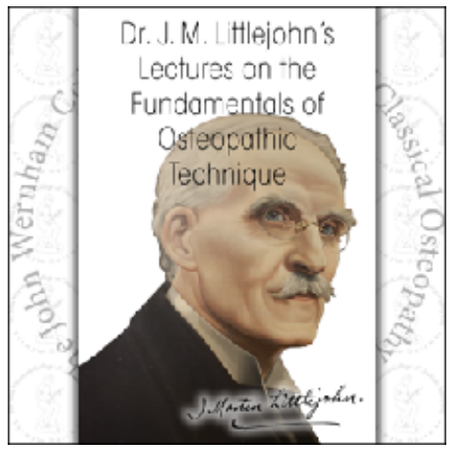
Passive rhythmic mobilization procedures possibly stimulate the intrafascial mecha-noreceptors of tissues involved leading to altered proprioceptive input to the central nervous system and therefore tonus regulation of motor units associated with these tissues.

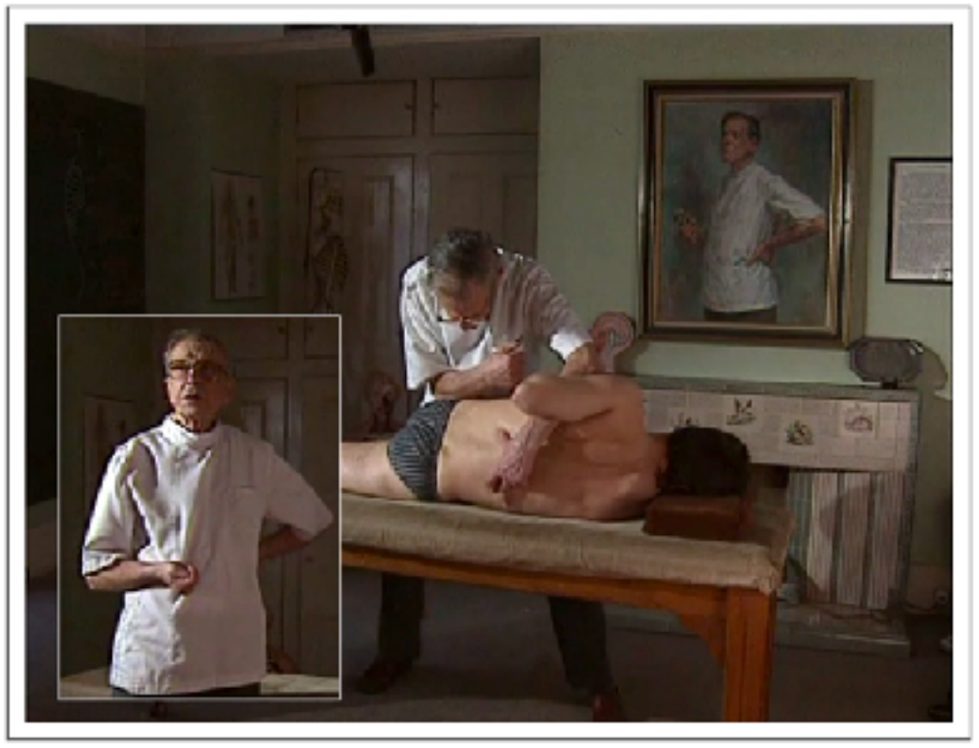
An impact on heart rate variability (HRV) and the sympathovagal balance could pos- sibly also be induced by the GOT, as standard OMT like balanced ligamentous and membranous techniques have been shown to influence HRV and the autonomic nervous system activity, increasing parasympathetic activity.[3]

C. Campbell, DO, summarized the body adjustment, as Wernham insisted to call it:

...as a precise approach to the body architecture and physiol- ogy. Each movement in it has a precise aim not only for the individual part that is being approached, but also in relation to how that part relates to every other part within the body. This includes not only the architectural structure but also the nervous system both cerebral spinal, sympathetic and the arte- rial ,venous and lymphatic systems, amongst others.

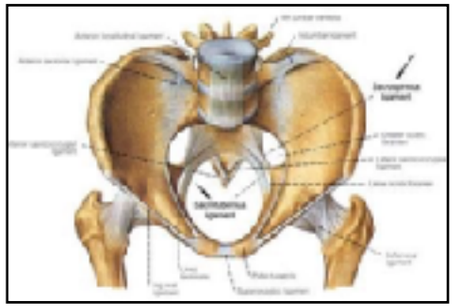


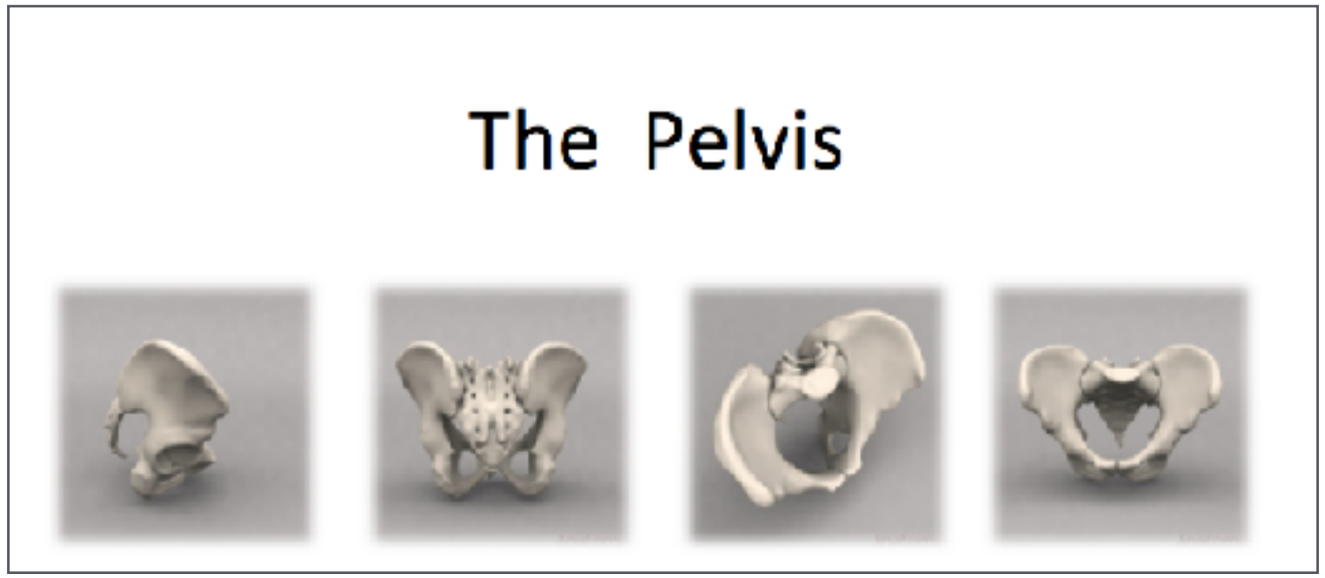




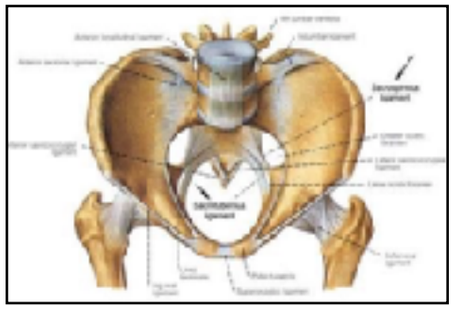
"The principle of osteopathy is not boney adjustment but body adjustment " JML-JW

"Classical Osteopathic treatment has nothing to do with pushing or thrusting bones from one place to another (as if dislocated), nor the rubbing or gouging of soft tissues. In addition, vertebral adjustment is not the priority. It is recognized that in the manipulative treatment of living tissue 'correction' is a change of functional activity requiring integration throughout the body if such physical treatment is expected to be converted into a significant physiological response. "

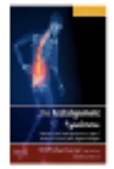


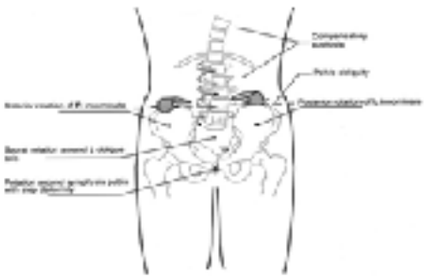


Adjutment - “long lever” - approach

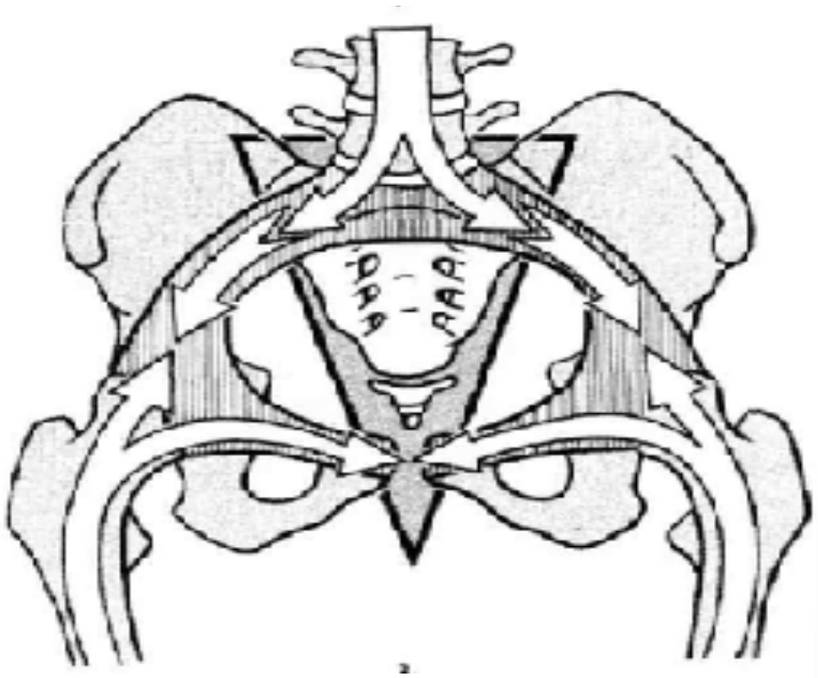


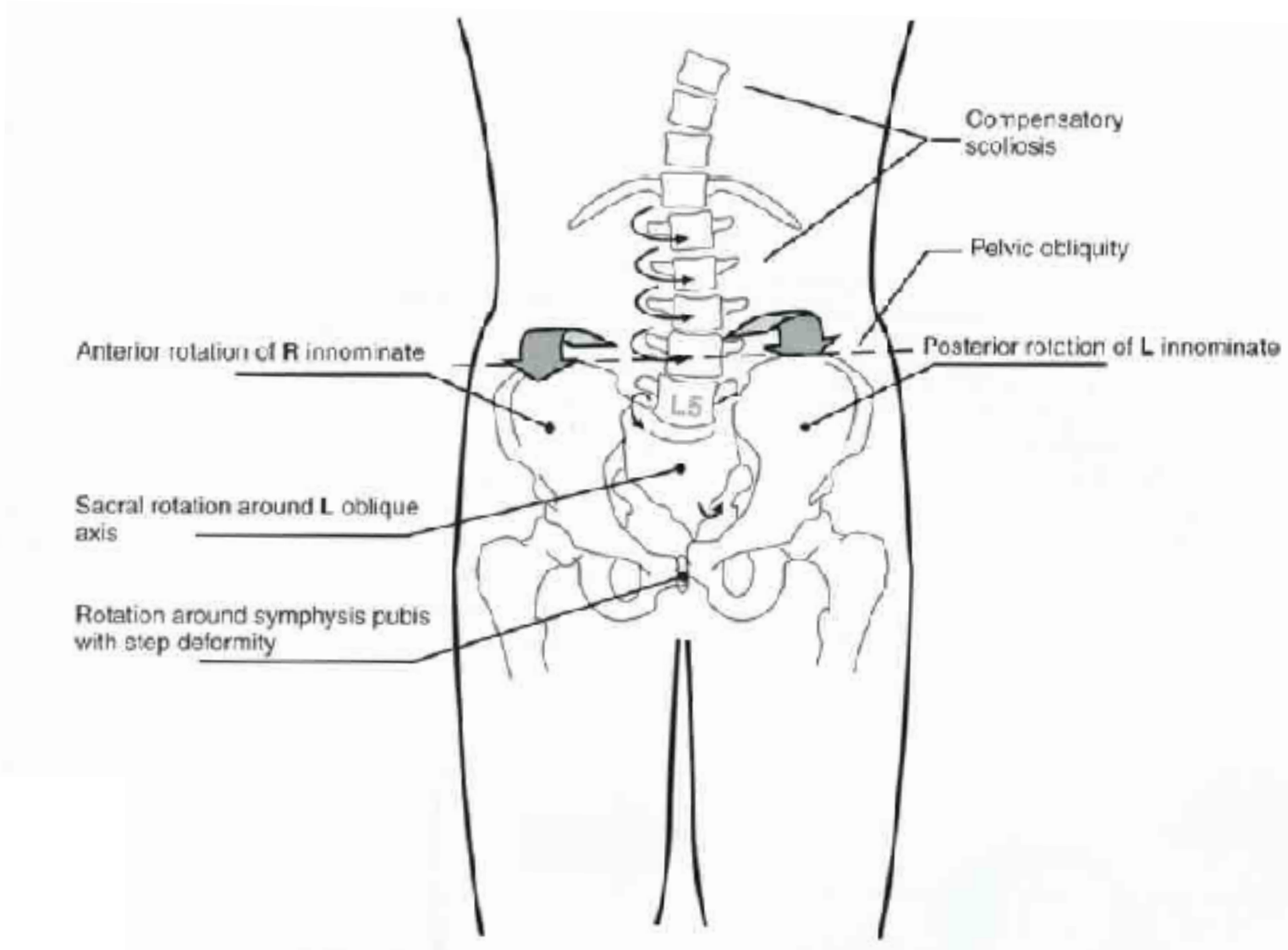
Common Lesion Patterns





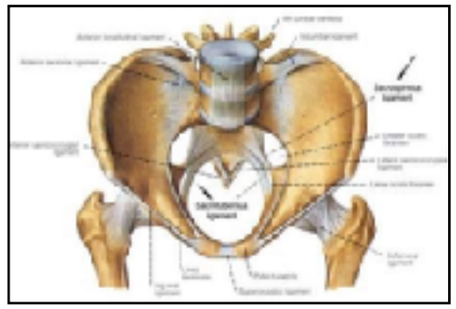
- Schambergers Malignment Syndrome





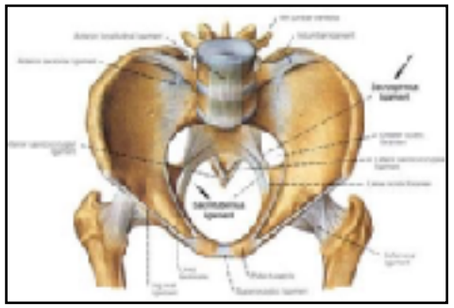
Typical distortion of the pelvic ring associated with rotational malalignment: right innominate anterior, compensatory left posterior, and sacrum in torsion around the left oblique axis.

Uniform lumbar and pelvic weight bearing and loading & Integrity of pelvis dependendent upon interroseous ligaments function and osseous functional symmetry

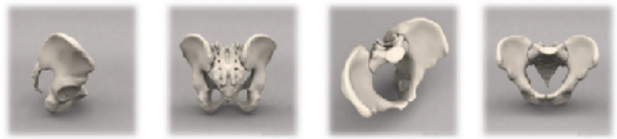


Red Flags for Potential Serious Conditions in Patients with Pelvic, Hip, or Thigh Problems

Red Flags for the Pelvis, Hip, and Thigh Region		
Condition	**Red Flag Data obtained during Interview/History**	**Red Flag Data obtained during Physical Exam**
Colon Cancer[1]	Age > 50 years old Bowel disturbances (e.g., rectal bleeding, black stools) Unexplained weight loss History of colon cancer in immediate family Pain unchanged by positions or movement	Later stages: may have hypo-or hyper active bowel sounds from obstruction Possible tenderness to palpation of abdomen in area of cancer May have ascites First sign may be of metastases to liver, lung, bone, or brain
Pathological Fractures of the Femoral Neck[2,3]	Older females (>70 years) with hip, groin, thigh or knee pain History of a fall from a standing position	Severe, constant pain – worse with movement A shortened and externally rotated lower extremity
Osteonecrosis of the Femoral Head[4] (aka Avascular Necrosis)	History of long-term corticosteroid use (e.g., in patients with RA, SLE, asthma) History of AVN of the contralateral hip Trauma	Gradual onset of pain; may refer to groin, thigh, or medial knee; worse with weight-bearing Stiff hip joint; restrictions primarily in IR, flexion, adduction
Legg-Calve-Perthes Disease[5]	5-8 year old boys with groin/thigh pain	Antalgic gait Pain complaints aggravated with hip movement, especially hip abduction and internal rotation
Slipped Capital Femoral Epiphysis[6]	Overweight Adolescent History of a recent growth spurt or trauma	Groin aching exacerbated with weight-bearing Involved leg held in external rotation ROM limitations of hip internal rotation
Septic Hip Arthritis[7]	Child or older adult with vague hip aching who had a recent bacterial infection	Unwillingness to weight bear on or move the involved hip
Inguinal hernia[8]	Pain in groin, and/or scrotum in males Consider "sports hernia" (internal disruption of the inguinal canal) in an athlete with unresolving groin pain	Sx's exacerbated by coughing, sneezing or resisted sit-up Tenderness in area of inguinal canal
Appendicitis[9]	RLQ pain, then nausea and vomiting Retrocecal appendix may refer pain to right thigh or testicle	Abdominal rigidity, rebound tenderness Positive McBurney's point Positive Psoas and Obturator sign
Ovarian Cyst[10]	Female of childbearing age Sudden, severe abdominal or pelvic pain Menstrual irregularities and pain	

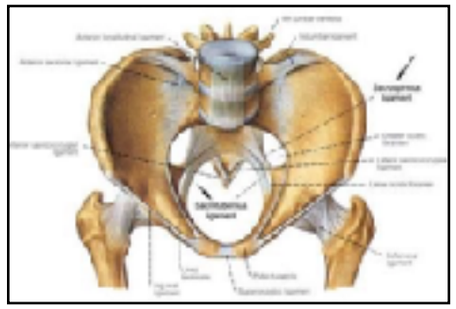


The Pelvis



TECHNIQUE	SIDELYING S.I.'S	LEG TUG
TISSUES TO EFFECT	Movement of innominate on sacrum. release of S.I. joint 'WHEEL LIKE TECHNIQUE.'	Pulling movement to direct innominate in relation to sacrum. 'INERTIA TUG TECHNIQUE.'
TYPES OF LESIONS TO EFFECT	Ant Rot of Innom (Up post) Post Rot of Innom (Up ant) Torsion of Pelvis Restricted S.I. joint	Ant Rot of Innom Post Rot of Innom Upward slip of Innom
DIAGNOSIS OF SAID LESIONS	- Standing examination : Position of P.S.I.S., A.S.I.S. & Iliac crests. - FB Test - tendency for lesion problem to exaggerate (restricted joint may rise first!) - Supine A.S.I.S. position - Leg lengths : Ant Innom - longer leg Post Innom - shorter leg - Prone position of P.S.I.S. - Restricted joints, leg rotations & alternate pressure through innominates supine	SAME AS UNDER SIDELYING S.I.'S. And: - Upward slip - increase height of iliac crest. A.S.I.S. & P.S.I.S. both high. - history of injury.

TECHNIQUE POSITIONS & INTENTIONS	Ant Innominate - A line of tension maintained between corresponding axilla & crest of innom. - Thrust given in downward direction, midway between the ischeal tuberosity and greater trochanter. Post Innominate - Same line of tension between corresponding axilla & crest of innom. - Thrust is directed just below the crest of the iliac in order to turn the innom anteriorally like a wheel.	Traditionally to adjust post innom. Ant Innom - Leg is elevated 45 degrees and tension held on hamstrings with ext. Rot of leg to relax 'Y' ligament. - Again with rhythmic tug you direct innom post. (may want to stand on stool to get a post shift.) Post Innom - leg supported in mid line, with internal rotation to tense ilio femoral 'Y' ligament. - Leg elevation is approx. 35 degrees. With a rhythmic leg tug you look to direct innom anteriorally.



Long lever- Treatment of Innominate L+R

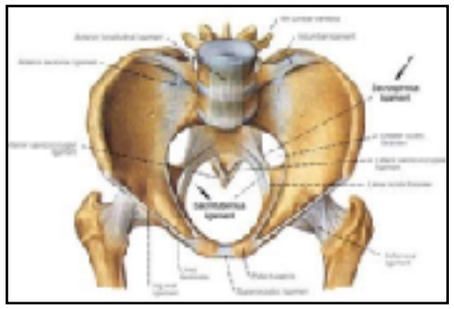
Posterior Ilial presetation - Lateral recumbent (sideline) position

- A line of tension maintained between corresponding axilla & crest of innom.
*Thrust given in downward direction, midway between the ischeal tuberosity and greater trochanter.

Anteriorterior Ilial presentation - Lateral recumbent (sideline) position

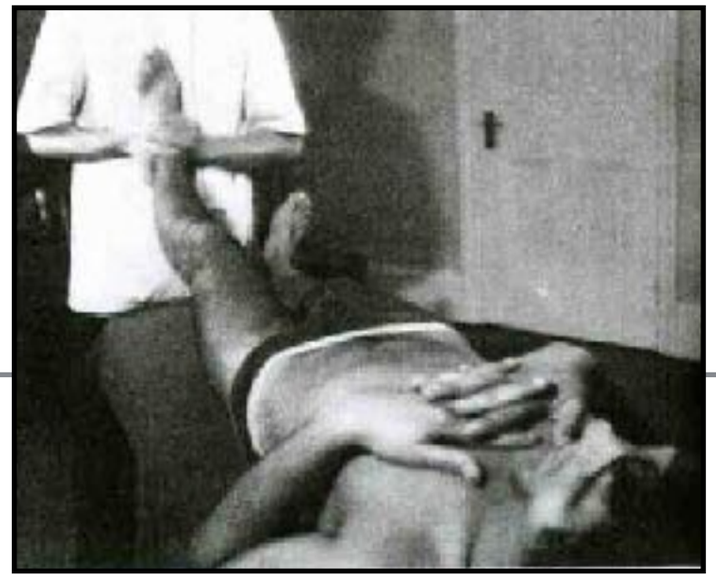
- Same line of tension between corresponding axilla & crest of innom.
*- Thrust is directed just below the crest of the iliac in order to turn the innom anteriorally like a wheel.

* The term “Vector impulse” is a preferable term to that of thrust

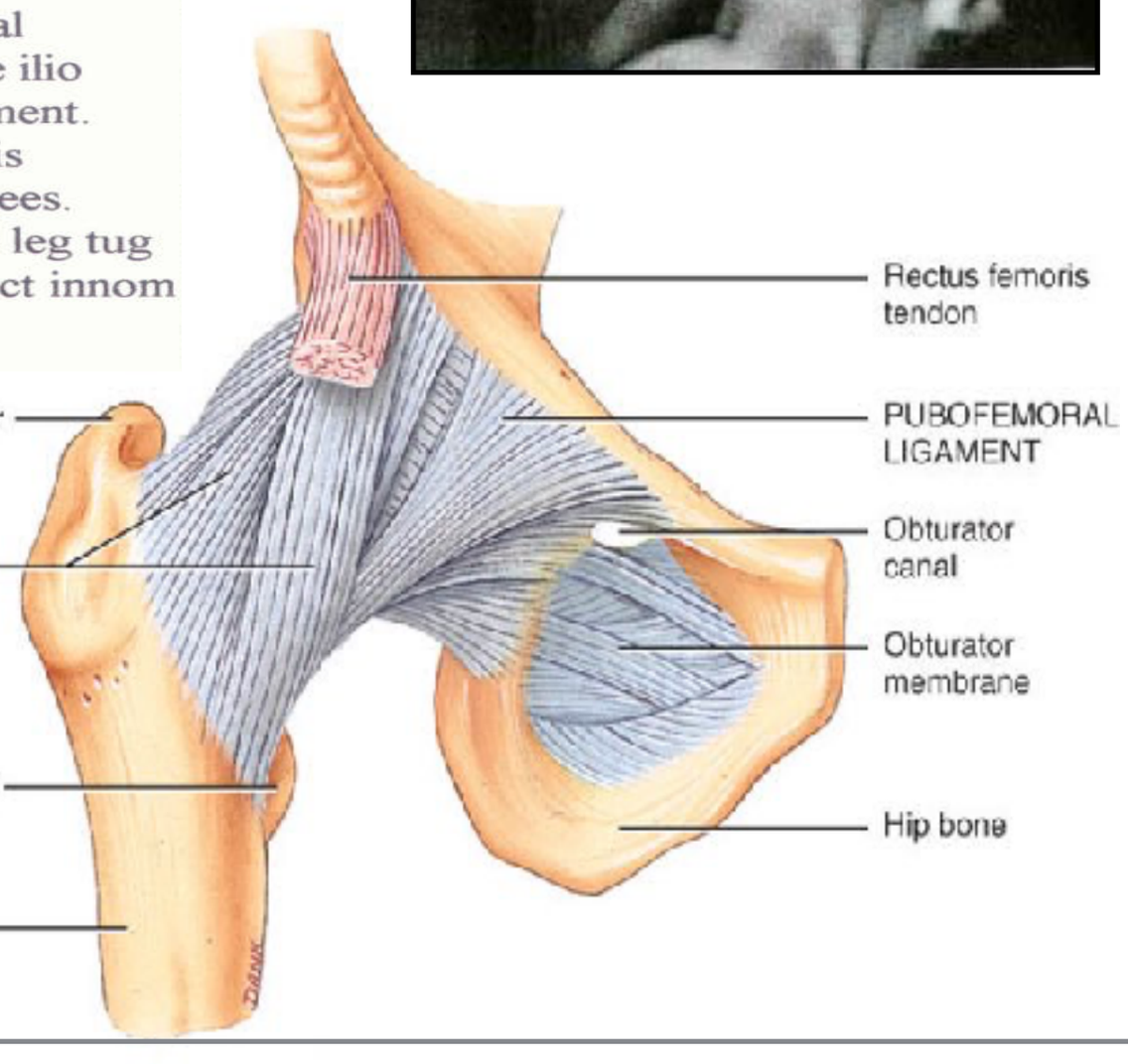


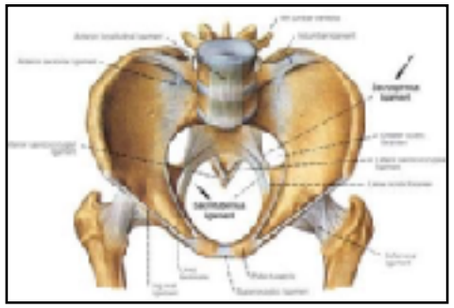
Posterior Ilial presentation - Supine - Leg tug

- Supine - Leg tug



Post Innom
- leg supported in mid line, with internal rotation to tense ilio femoral 'Y' ligament.
- Leg elevation is approx. 35 degrees.
With a rhythmic leg tug you look to direct innom anteriorally.

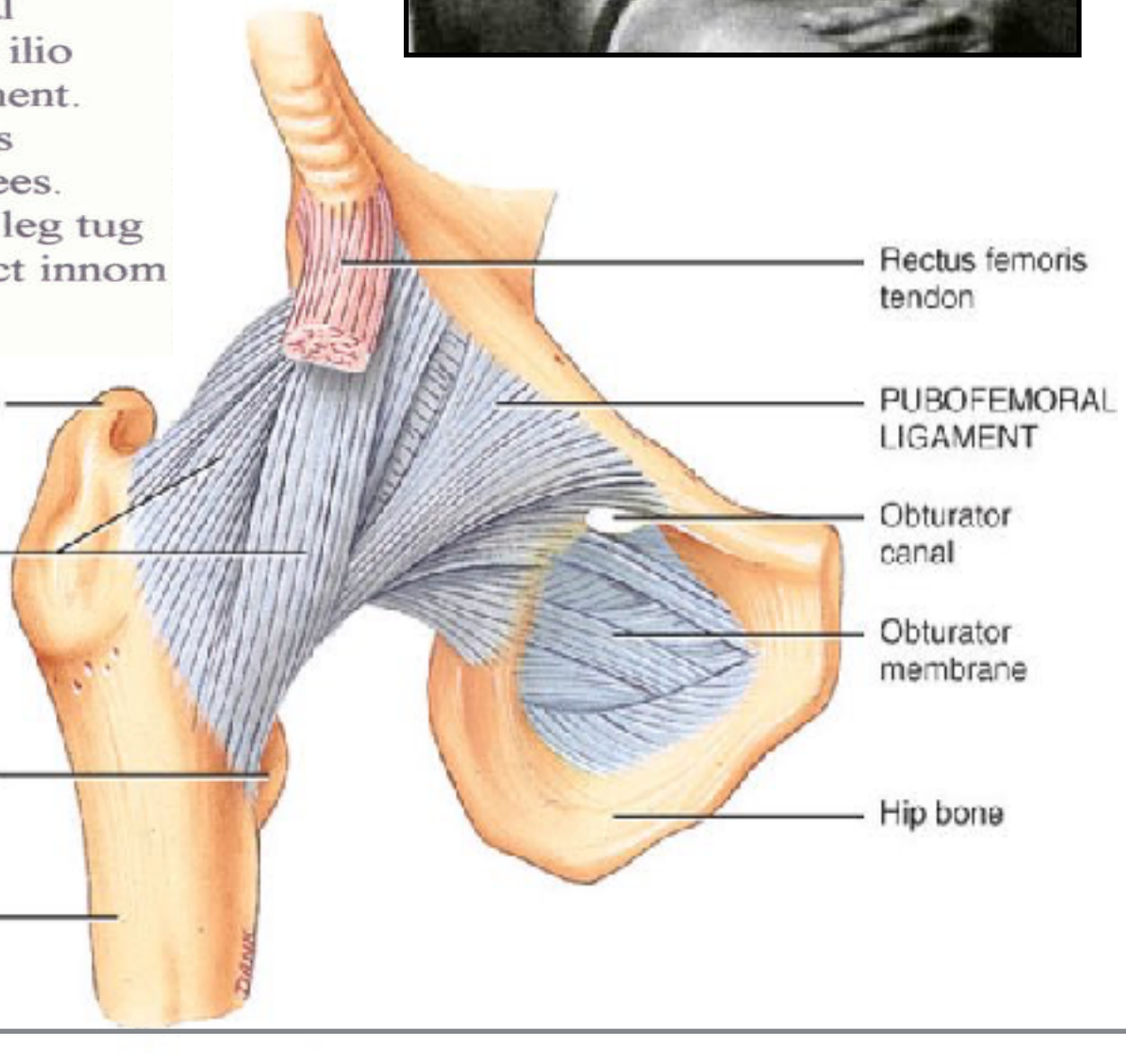


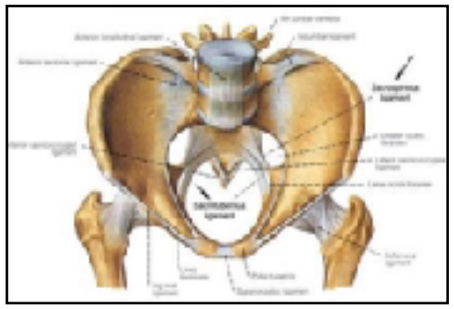


<u>Anterior</u> Ilial presentation - Supine - Leg tug

- Supine - Leg tug

Post Innom
- leg supported in mid line, with internal rotation to tense ilio femoral 'Y' ligament.
- Leg elevation is approx. 35 degrees.
With a rhythmic leg tug you look to direct innom anteriorally.





HVLA Treatment of Innominate Dysfunction

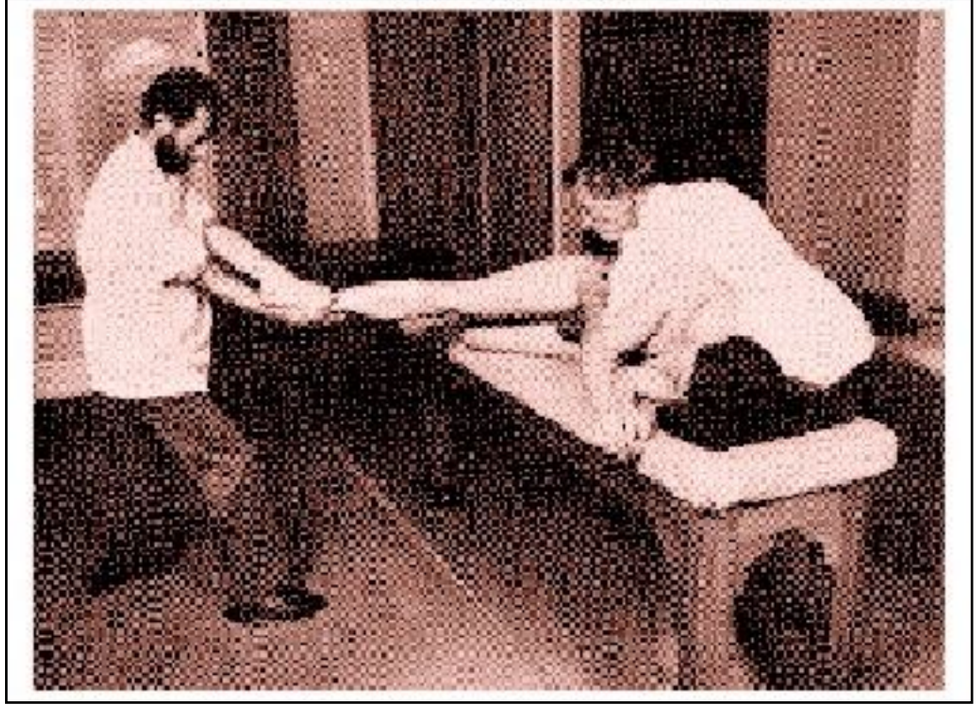
Sideline 2 operator leg tug technique with assisted pelvic stability provided by second operator.

Two-operator Tug Technique". Therefore assuming a lesion of the right ilium the patient is placed in the left side lying position. Standing at the back of the patient the trunk man places his flexed left arm over the patient's flexed arms, and approximates the lateral side of his body to the patienes chest.

The operator is now in a favourable position to control, or hold in fixation, the patient's right innominate, and this can be done most conveniently by placing the left hand over the iliac crest with the palm over the anterior superior spine, while the palmar surface of the right hand is fitted firmly and snugly over and below the posterior superior splle.

At this stage in the preparation the "Tug Operator" assumes his position on the opposite side of the table and takes up the patient's right leg.

The knee is flexed with the right hand supporting the tibial head, and the left hand supporting the ankle. The leg is then gently flexed until the trunk operator signals that muscular and ligamentous tension is accumulating under his right hand,



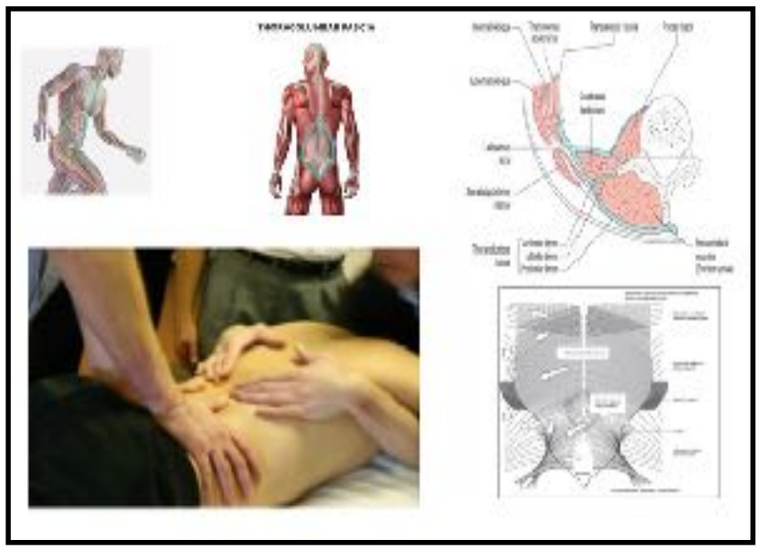
Sideline leg tug technique for pelvis

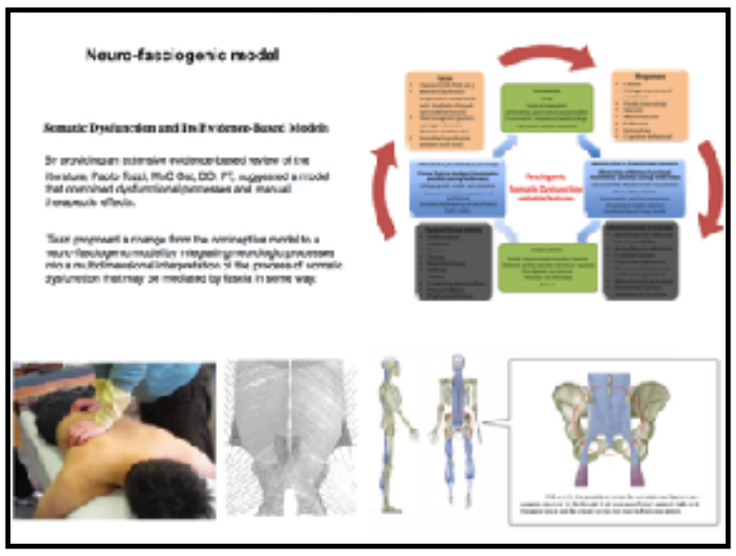
At this point, and without any change of angle, the leg is fully extended, and from this position is slowly abducted and add ucted until the trunk operator again signals a reaction under his right hand, which, for the want of anything better may be described as a "gapping strain" at the articulation.

The successful completion of the "Tug Technique" demands a degree of balanced co-operation which is even more important than in the rotatory method. In the majority of cases it is necessary to induce relaxation in the patient: by means of deep regular breathing, or by gently moving the extended leg, and when sufficient relaxation has been gained the' leg is then externally rotated and placed under mild, but sustained and increasing traction.

The correction is finally made by a slight but sharp tug which is applied without releasing the traction. The trunk operator is not required to thrust but merely to guide along the plane of the articulation, although he should be aware of movement in the sacro-iliac joint.

Spinal Oscillation and Prone thoraco - lumbar - treatment application and fascial considerations , Neuro-fasciogenic model





Spinal Oscillation

Oscillation with assessment of ds spine and rib angle

Oscillation with assessment of Sps and ST of Ds spine

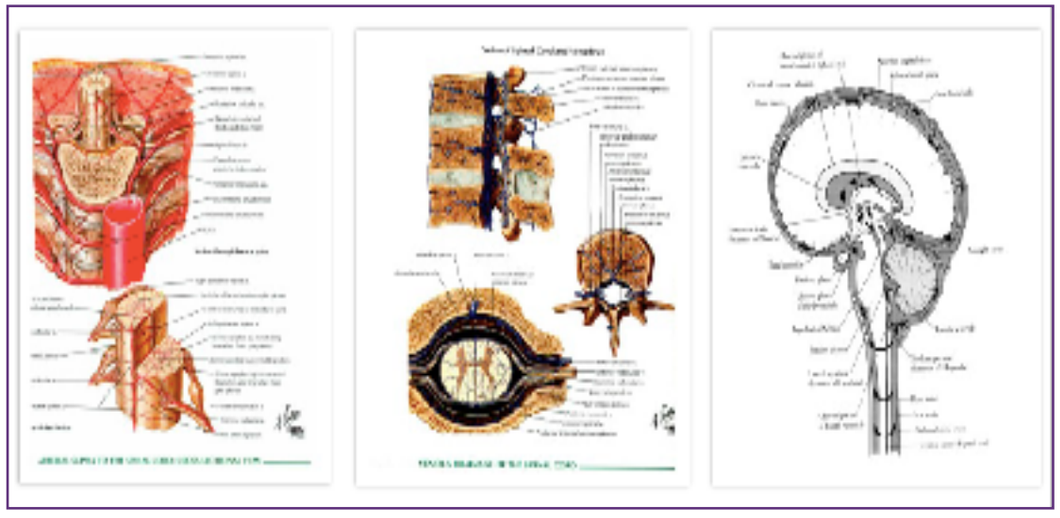
Oscillation assessment with mild longitudinal compression of D-l junction

Oscillation with mild P-A compression of D-l junction to re- establish / encourage D-L curve

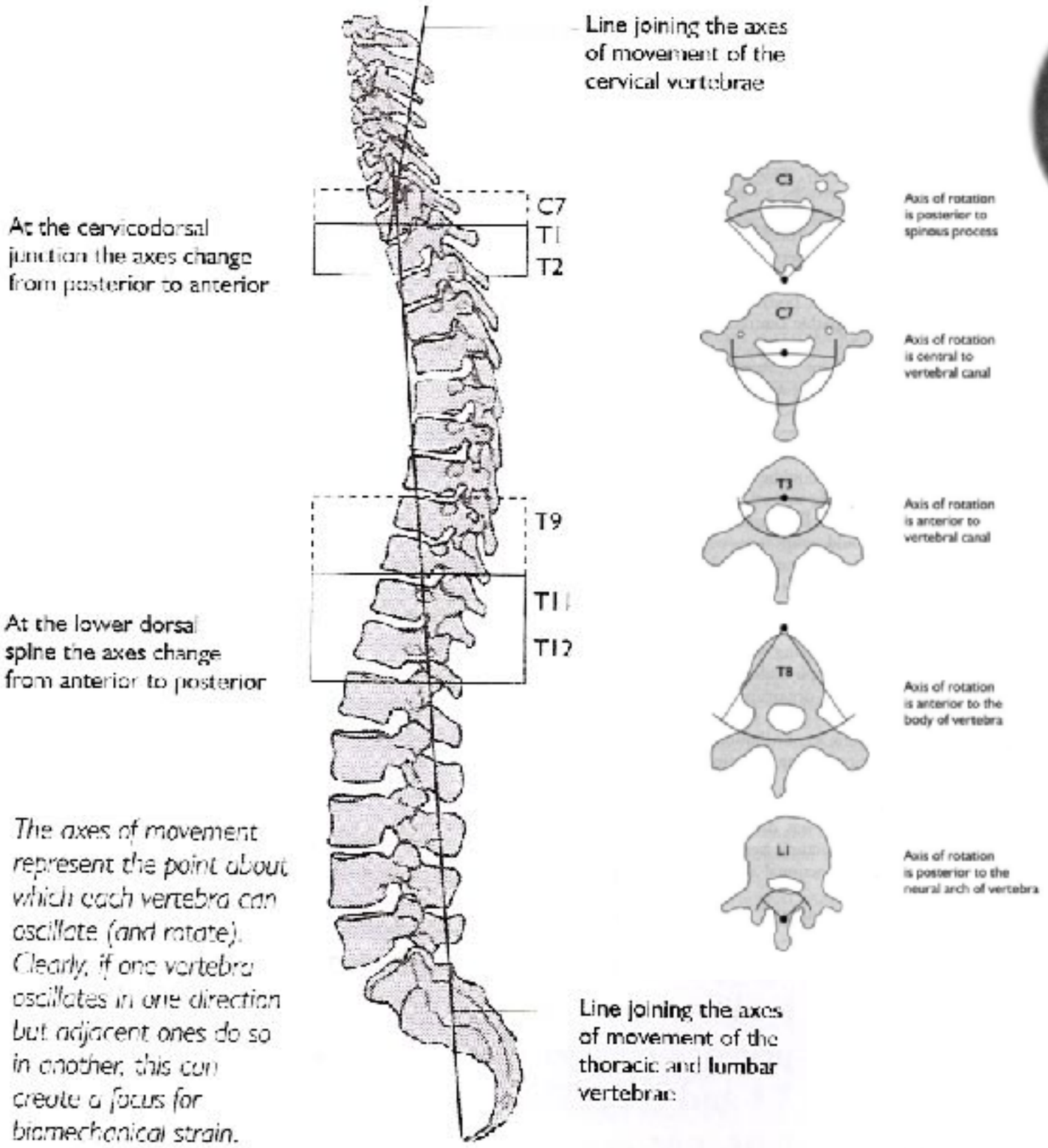
Oscillation with mild P-A compression Of lateral rib margin to encourage rib compliance

Localised Oscillation focussed at mid ls to encourage Ls -mobility

…. within the articular parameters applied within spinal oscillation , various components of flexion and extension , side bendin and axial rotation ,compression and traction can be modified to provide articular freedom throughout the spine and thence provide denticular suspensory freedom and dural flexibility … this also includes vascular supply and venous drainage and CS circulation .



Spinal Oscillation



Images C.Stone DO Science in art of Osteopathy

The ***centres of oscillation*** of the ***individual vertebrae*** and the ***spine as a unit*** are ***areas of influence***, a ***"still point"*** from which ***all movement*** in the ***normal spine*** is ***initiated,*** and which, ***once a particular movement sequence is started , acts*** as the ***centre of energy*** which ***controls, augments. counterbalances*** or ***inhibits*** that movement ***as is necessary*** to ***maintain the integrity and health of the spine*** (and body) as far as is possible.

Since, in life, the ***spine is in constant motion these centres of oscillation*** are ***constantly active***. JML, Wernham,Campbell

Spinal Oscillation

Oscillation with assessment of ds spine and rib angle

Oscillation with assessment of Sps and ST of Ds spine

Oscillation assessment with mild longitudinal compression of D-l junction

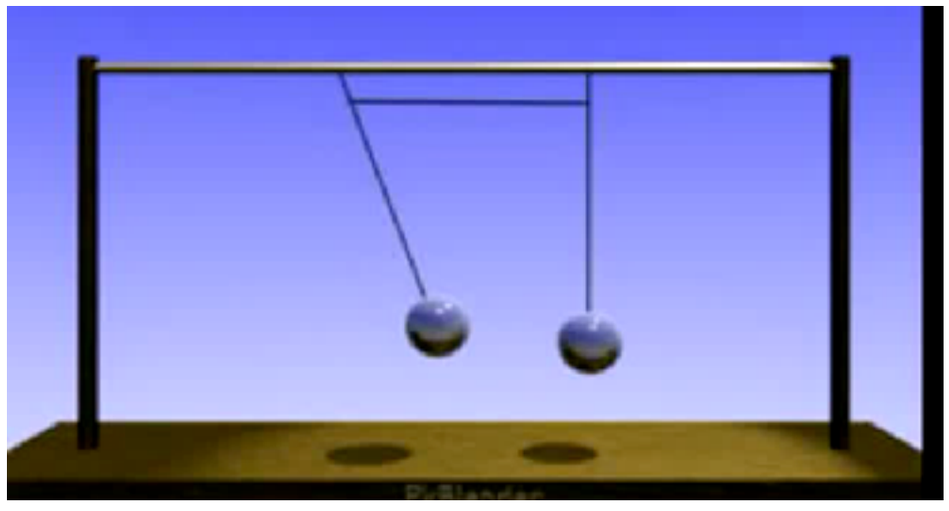
Oscillation with mild P-A compression of D-l junction to re- establish / encourage D-L curve

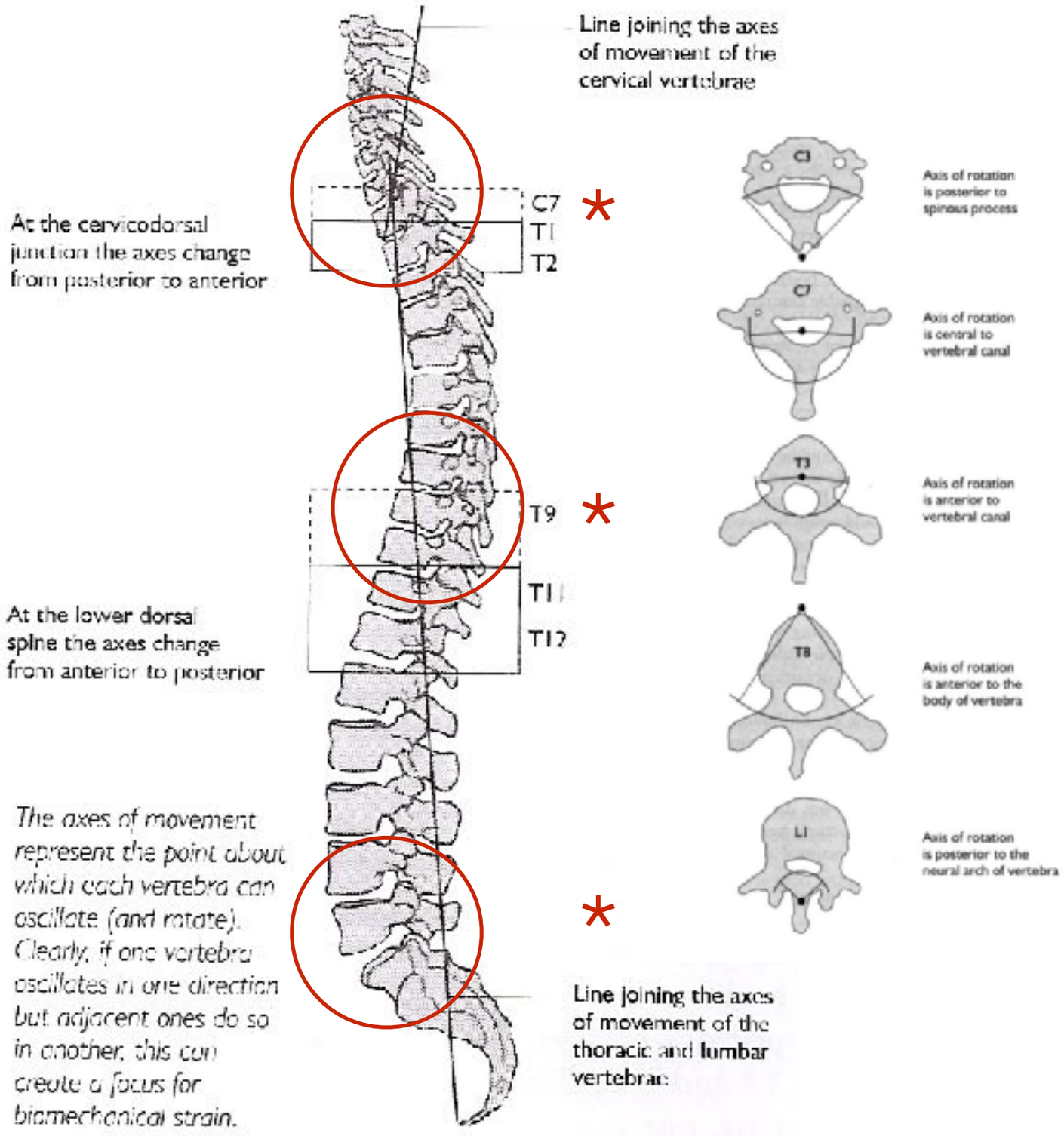
Oscillation with mild P-A compression Of lateral rib margin to encourage rib compliance

Localised Oscillation focussed at mid ls to encourage Ls -mobility

Centres of oscillation /regulation C7,D7,L5 *

C***ontrols, augments. counterbalances*** or ***inhibits motion***

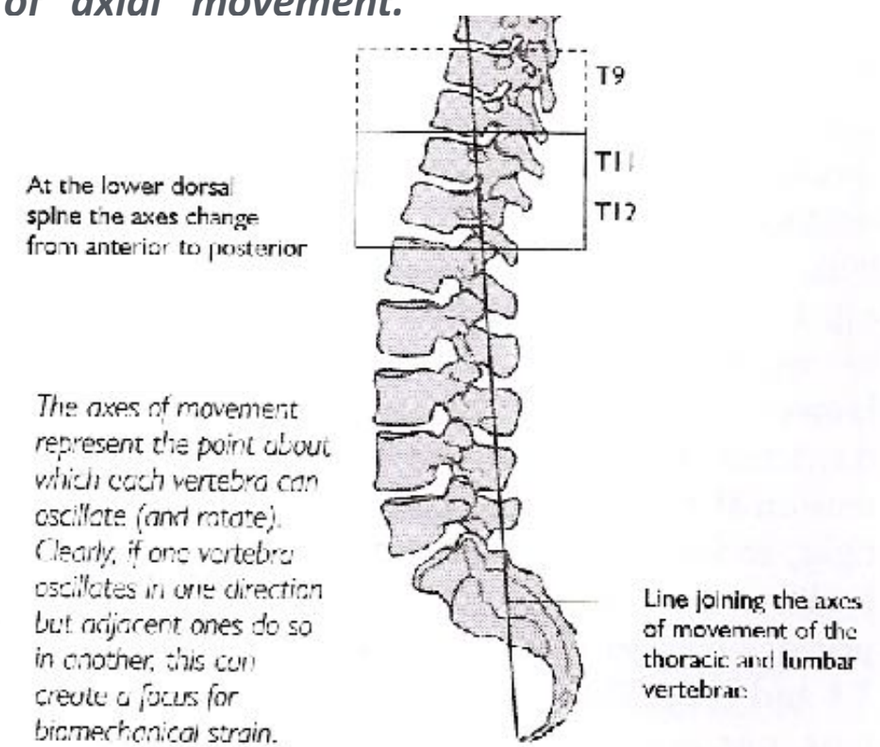


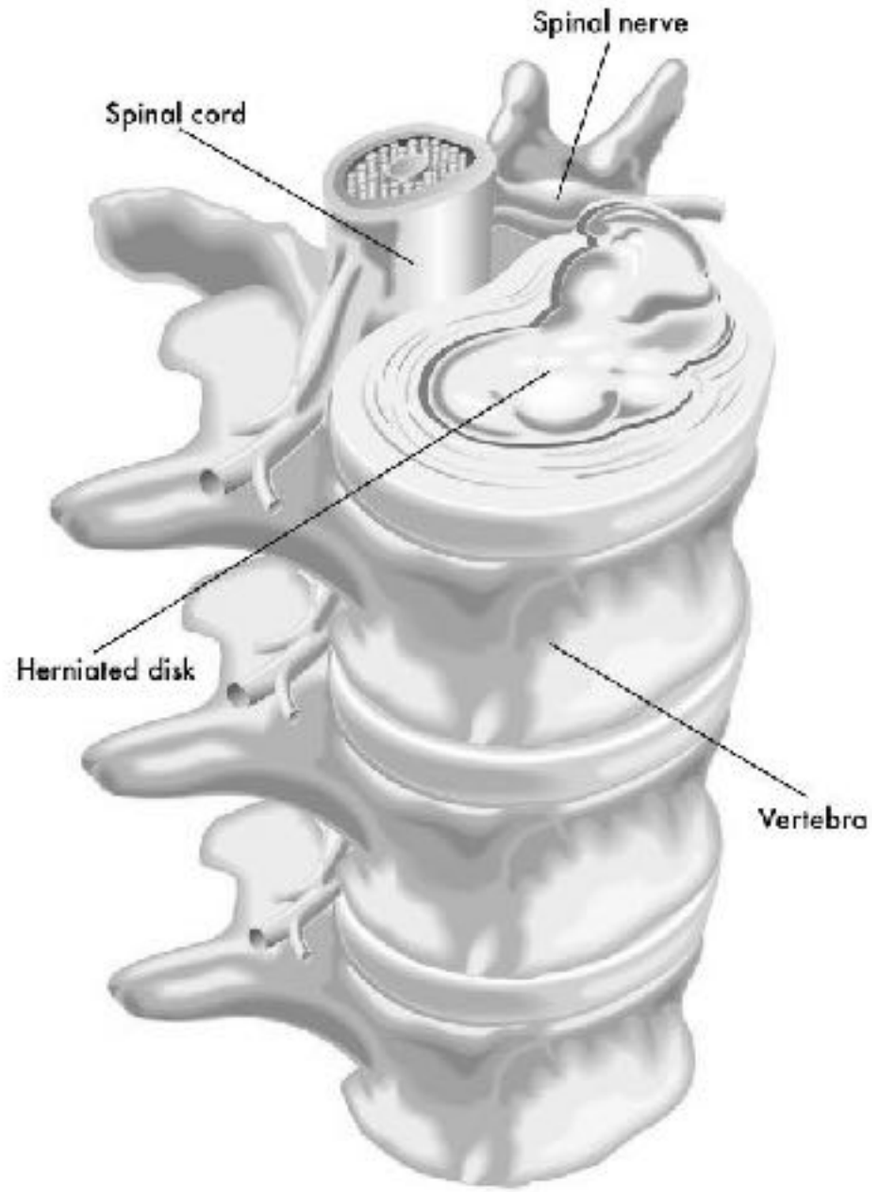


centres of oscillation act in harmony and resonance with each other

Spinal Oscillation

The histological centre (disc nucleus) is not the centre of oscillation, and as the different vertebrae in the column are all mobile, or should be, the centre of oscillation is the centre of "axial" movement.





Function of oscillation (centres)

To provide protection for the disc by changing or modifying the physiological movements of the spine in response to stresses, strains and lesioned conditions. Dr. Littlejohn stresses that any modification of the disc is secondary to afflictions of the centres of oscillation. The discs in their turn act as balance wheels between the centres of oscillation.

Work Recovery in Response to Osteopathic Treatment after Hemilaminectomy for Lumbar Disc Herniation; A Prospective Clinical Study with Comparison Group

Authors: Pascal Grolaux

Keywords: Osteopathy,Low Back Pain,Disc Disorders,Surgery,Manipulative Treatment

Type of Publication: Thesis/Dissertation

Institute: JWACO (B) - MCO (UK)

ORIGINAL RESEARCH 1995

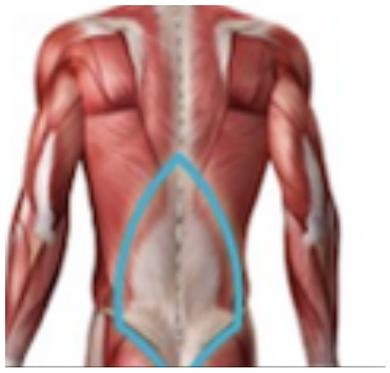
Entry date: 2007 August, 27

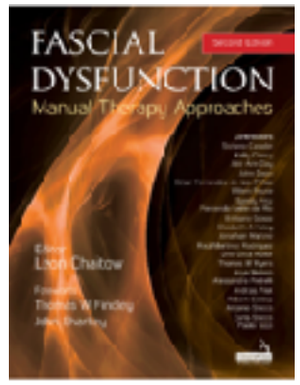
Status: Finished

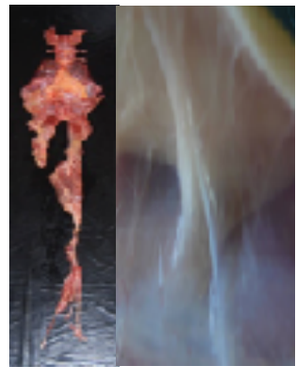
Country: Belgium **Language:** English

Abstract

Study design: Twenty one patients, who never undergone spinal surgery, were assessed, by the author and the medical team of department of Neurosurgery of the Centre Hospitalier Universitaire Vaudois in Lausanne (Switzerland), after indication for hemilaminectomy and discectomy was established for a single one-level mediolaterally lumbar disc herniation. Objective: The aim of this study was to assess the effectiveness of a classical osteopathic treatment on work recovery, at 6 weeks and three months follow-up. Methods: In addition to symptoms, signs, and sociodemographic data, we included, in a clinical form, questionnaires on pain and disability, and a rating scale to assess work recovery. Standard mobility tests were also performed. Results: The osteopathic group had a significantly low level of pain and disability, and a significantly better work recovery at 6 weeks, and it were the most important factors differentiating the groups, compared with the objective results which showed only significant difference in improvement of mobility in sidebending. At three months, there was no major statistical differences between the groups both for the subjective and the objective findings. However, the group treatment showed more clinical improvement in term of pain, disability and work recovery. Conclusion : We show short-term and a relatively long term benefit of osteopathy, as a useful and safety therapy, in the rehabilitation of patients after lumbar disc surgery. Rehabilitation is superior than just advicing patients on posture, and to performe a daily self-adimistrated standard exercices program. Osteopathy should be recommended for patients who underwent lumbar disc surgery, and used with more collaboration of orthodox medicine.





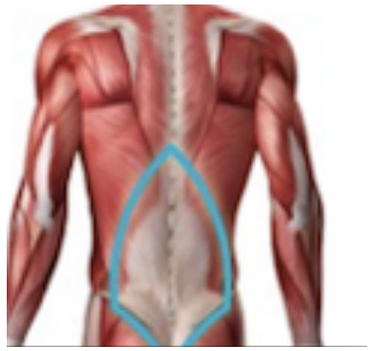


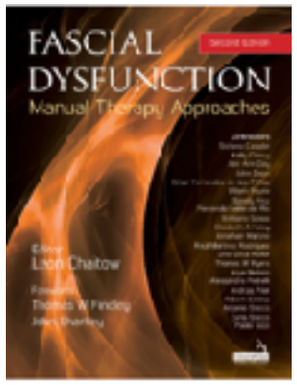
Spinal Oscillation in the Fascial domain

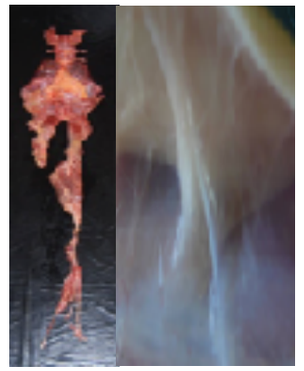
- *Fascia ,therapeutic objectives within treatment - direct,indirect modalities ,therapeutic load ……*

Key Point
Compressive load – vibration/oscillation or additional stretching – has variable mechanical, proprioceptive and other neurological effects (depending on degree, direction, duration etc. of load); as well as hydraulic and circulatory effects, together with enhanced lubrication

Also significant is the suggestion that lighter contacts may be more effective than heavier ones in many instances, if the objective is to influence superficial mechanoreceptors and to avoid defensive tissue responses. It is possible to increase the depth of digital penetration over time via slow moving, steadily sustained, pressure.







Prone thoraco - lumbar - treatment application

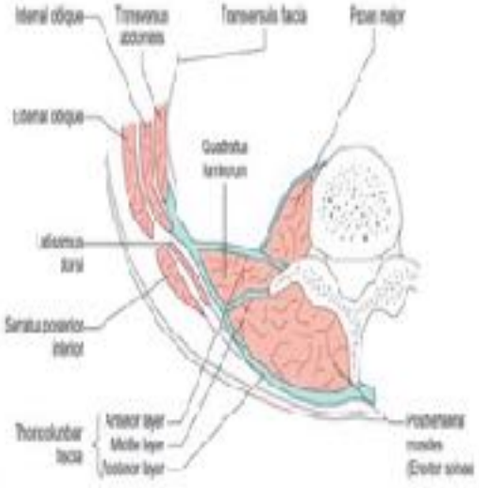
- *Fascia ,therapeutic objectives within treatment - direct,indirect modalities ,therapeutic load ……*

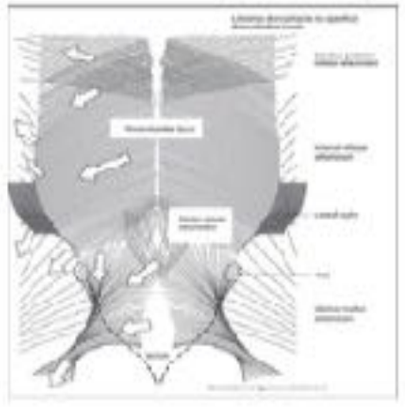
Direct or indirect: two possible intervention models

Direct and indirect approaches defined

According to Tozzi (2012):

1. ***'Direct Approach to Fascia:*** *requires tissue restrictions to be engaged and maintained until release is gained. Occasionally, as the affected tissue is brought against the functional barrier, a tridimensional compression or traction is applied and held (generally for 60–90 seconds) until tensions melt (Pilat 2011). When the first barrier is released, the procedure is repeated for consecutive barriers, adjusting the compressional force according to each barrier's vectors, up to a point when a release is felt. Pressure is reduced when there is any increase in pain. This is variously known as myofascial release, or myofascial induction*
2. ***'Indirect Approach to Fascia:*** *requires the exaggeration of the pattern of dysfunctional tissues, bringing the restricted fascial tissue into its position of 'ease' (balanced tension), maintaining it until tensional forces relax (Ward 2003).'*



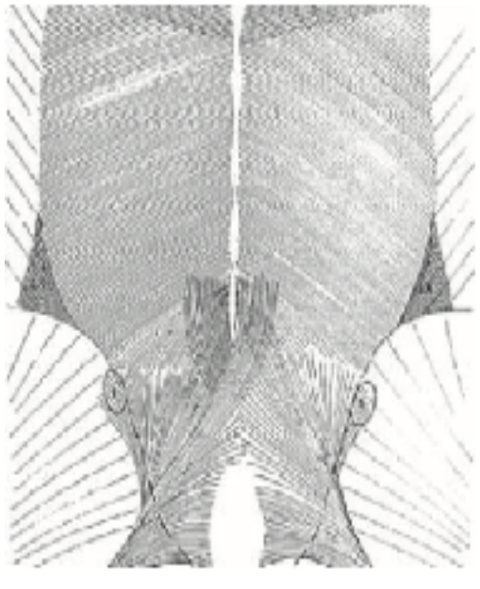


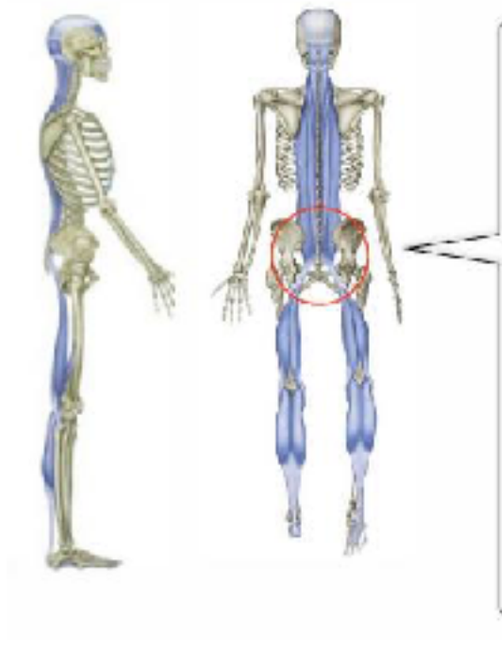
Neuro-fasciogenic model

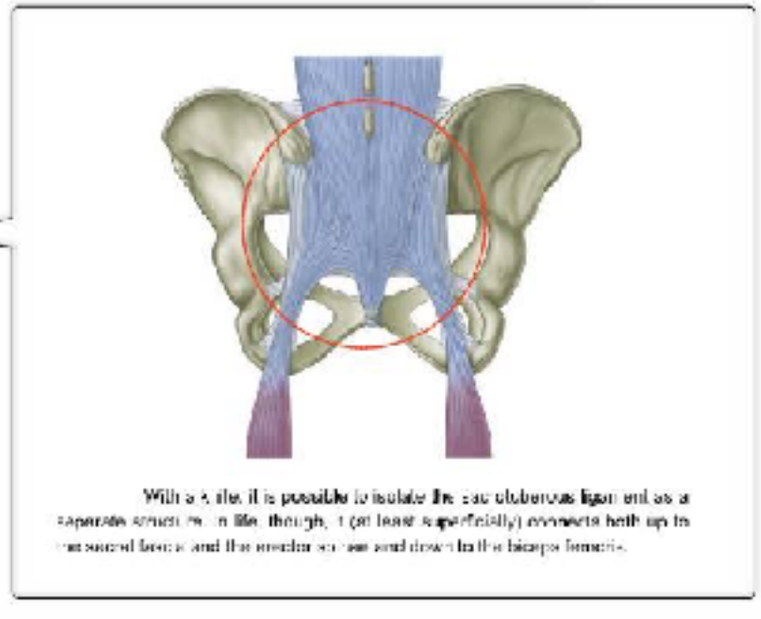
Somatic Dysfunction and Its Evidence-Based Models

By providing an extensive evidence-based review of the literature, Paolo Tozzi, MsC Ost, DO, PT, suggested a model that combined dysfunctional processes and manual therapeutic effects.

Tozzi proposed a change from the nociceptive model to a neuro-fasciogenic model by integrating neurologic processes into a multidimensional interpretation of the process of somatic dysfunction that may be mediated by fascia in some way.







Journal of Bodywork & Movement Therapies (2014) 18, 164–168
Available online at www.sciencedirect.com
ScienceDirect
journal homepage: www.elsevier.com/jbmt
ELSEVIER

HYPOTHESIS

The biomechanical model in manual therapy: Is there an ongoing crisis or just the need to revise the underlying concept and application?

Christian Lunghi, DO, ND [a,b], Paolo Tozzi, MSc Ost, DO, FT [a,b,c], Giampiero Fusco, DO, FT [a,b]

Neuro-fasciagenic model

Forces
- Chemical (TGF, PGE, etc.)
- Mechanical (tension-compression-shear/static-cyclic load/ also through hydrostatic pressure)
- Electromagnetic (proton-hydrogen-electron-phonons-photons etc.)
- (Including transduction between each level)

INFLUENCES
Aging
Genetical-Epigenetical
pH: breathing patterns/physical exercise/diet
Environmental: temperature/radiations/drugs
Psychosocial-cognitive-behavioral

Responses
- Cellular
- Collagenous-ground substance
- Fluidic (interstitial)
- Vascular
- Neuromuscular
- Endocrine
- Immunitary
- Cognitive-Behavioral

STRUCTURAL/ANATOMICAL CHANGES
(Tissue Texture-Positional Asymmetry-possibly causing Tenderness)
Cell type, growth, number and connections
Gross and micro ECM composition and architecture
Viscoelasticity (thickening and densification)
Fluidic content

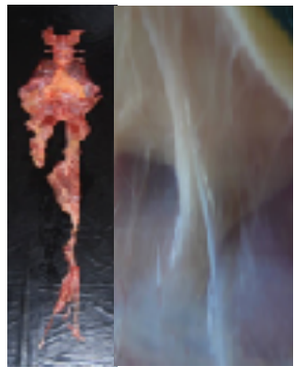
Fasciagenic
Somatic Dysfunction
-palpable features-

PHYSIOLOGICAL/FUNCTIONAL CHANGES
(Restriction of Motion-Functional Asymmetry- possibly causing Tenderness)
Cell contractility –Myofascial tone-Tissue tension
Tissue sliding potential
Proprioception and Force transmission
Viscoelasticity (plastic behavior)
Piezoelectricity and Energy transfer

Dysfunctional events
- Inflammation
- Infection
- Disease
- Trauma
- Repetitive Injury
- Overuse
- Surgery
- Congenital abnormalities
- Postural deficits
- Psychosocial factors

INTERACTIONS
Somatic nervous system (muscular response)
Autonomic activity (vascular and immune response)
Fluid dynamics and pressure
Hormonal and Immunitary
Postural

Dysfunctional processes
- Abnormal cross-links and tissue remodelling
- Active fibrosis/adhesions
- Colloidal changes
- Fluid flow impairment
- Neural sensitization and cortical reorganization
- Altered muscle activation
- Immunitary reaction
- Maladaptive behaviour



Mathematical Analysis of the Flow of Hyaluronic Acid Around Fascia During Manual Therapy Motions

Max Roman, PhD; Hans Chaudhry, PhD; Bruce Bukiet, PhD; Antonio Stecco, MD; and Thomas W. Findley, MD, PhD

Context: More research is needed to understand the flow characteristics of hyaluronic acid (HA) during motions used in osteopathic manipulative treatment and other manual therapies.

Objective: To apply a 3-dimensional mathematical model to explore the relationship between the 3 manual therapy motions (constant sliding, perpendicular vibration, and tangential oscillation) and the flow characteristics of HA below the fascial layer.

Methods: The Squeeze Film Lubrication theory of fluid mechanics for flow between 2 plates was used, as well as the Navier-Stokes equations.

Results: The fluid pressure of HA increased substantially as fascia was deformed during manual therapies. There was a higher rate of pressure during tangential oscillation and perpendicular vibration than during constant sliding. This variation of pressure caused HA to flow near the edges of the fascial area under manipulation, and this flow resulted in greater lubrication. The pressure generated in the fluid between the muscle and the fascia during osteopathic manipulative treatment causes the fluid gap to increase. Consequently, the thickness between 2 fascial layers increases as well. Thus, the presence of a thicker fluid gap can improve the sliding system and permit the muscles to work more efficiently.

Conclusion: The mathematical model employed by the authors suggests that inclusion of perpendicular vibration and tangential oscillation may increase the action of the treatment in the extracellular matrix, providing additional benefits in manual therapies that currently use only constant sliding motions.

J Am Osteopath Assoc. 2013;113(8):600-610
doi:10.7556/jaoa.2013.021

Oscillation with assessment of ds spine and rib angle

Oscillation with assessment of Sps and ST of Ds spine

Oscillation assessment with mild longitudinal compression of D-l junction

Oscillation with mild P-A compression of D-l junction to re- establish / encourage D-L curve

Oscillation with mild P-A compression Of lateral rib margin to encourage rib compliance

Localised Oscillation focussed at mid ls to encourage Ls -mobility

We have found that the fluid pressure of HA increases dramatically as fascia is deformed during manual therapies. In addition, there is a greater increase in pressure during oscillatory and vibratory manipulation treatment compared to constant sliding.

Our model suggests that inclusion of vertical and tangential oscillations may be beneficial in manual therapies which currently use only constant velocity sliding

Spinal Oscillation , nociceptive drive and palpation considerations

Somatic dysfunction: An osteopathic conundrum

Gary Fryer [a,b,*]

[a] Centre for Chronic Disease, College of Health and Biomedicine, Victoria University, Melbourne, Australia
[b] A.T. Still Research Institute, A.T. Still University, Kirksville, MO, USA

Received 19 October 2015; revised 23 February 2016; accepted 29 February 2016

Somatic Dysfunction and Its Evidence-Based Models

Gary Fryer, PhD, BSc, has reviewed and updated this somatic dysfunction based on nociceptors concept theory over time, ; His most recent model proposes that tissue injury leads to inflammation and activation of nociceptors, resulting in neurogenic tissue inflammation due to dorsal root reflexes

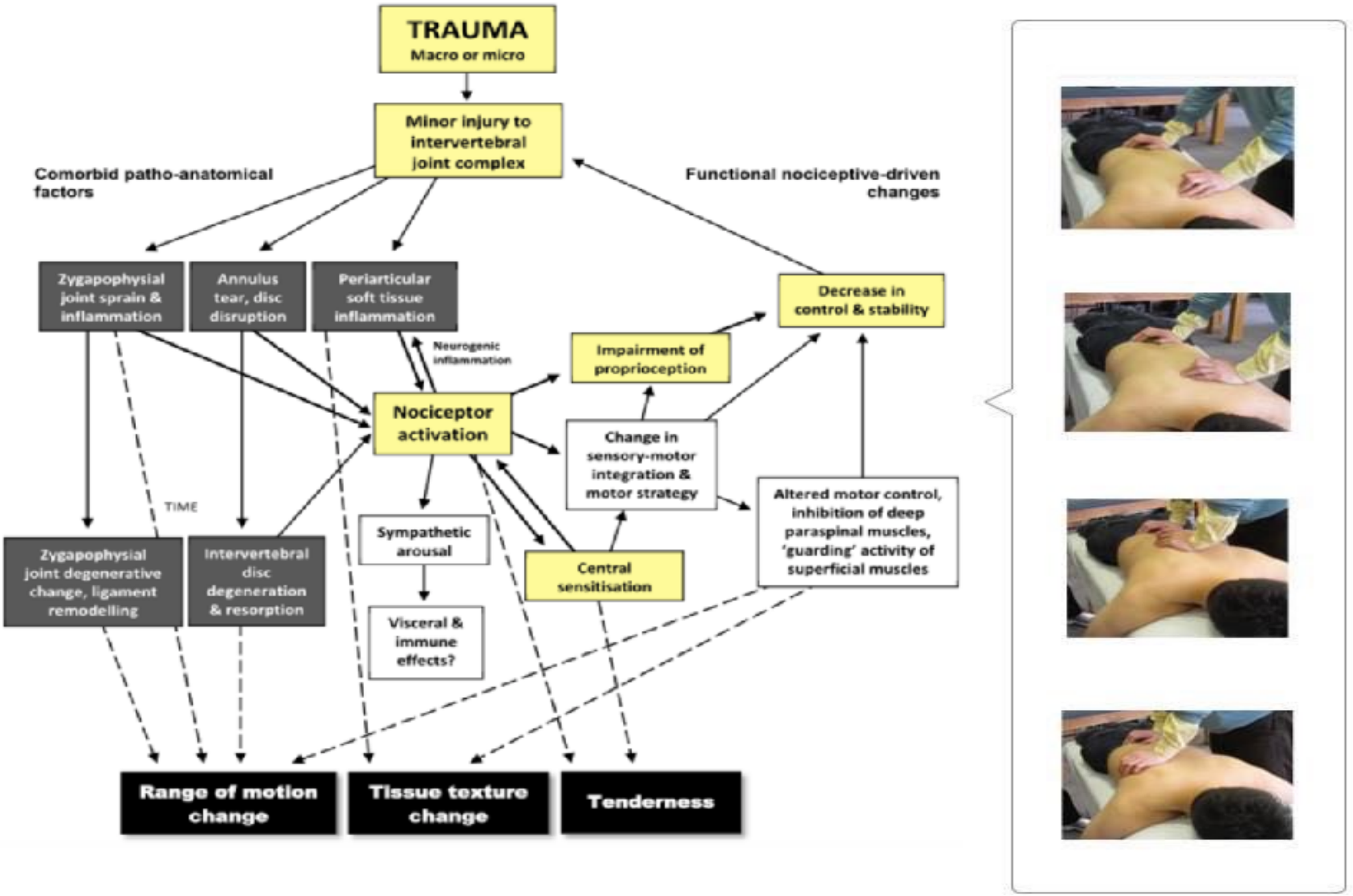
This **nociceptive drive** may inhibit the activity of the deep segmental muscles while increasing the activation of superficial musculature, resulting in guarding activity of the musculature

Pain causes impairment of proprioception and motor control, leaving the segment more vulnerable to further injury.

Fryer stresses that confounding factors for palpation of tissue tenderness and texture change could be consequences of central sensitization, such as **hyperalgesia and allodynia,** which occur as a result of increased excitability of neurons in the central nociceptive pathways.

Regarding signs of somatic dysfunction, tissue texture changes may be produced by soft tissue inflammation and guarding activities. Tenderness will most likely occur because of nociceptor activation and **central sensitization processes**, and change in range of motion would be the result of degenerative changes caused by sprain and inflammation

Spinal Oscillation , nociceptive drive and palpation considerations

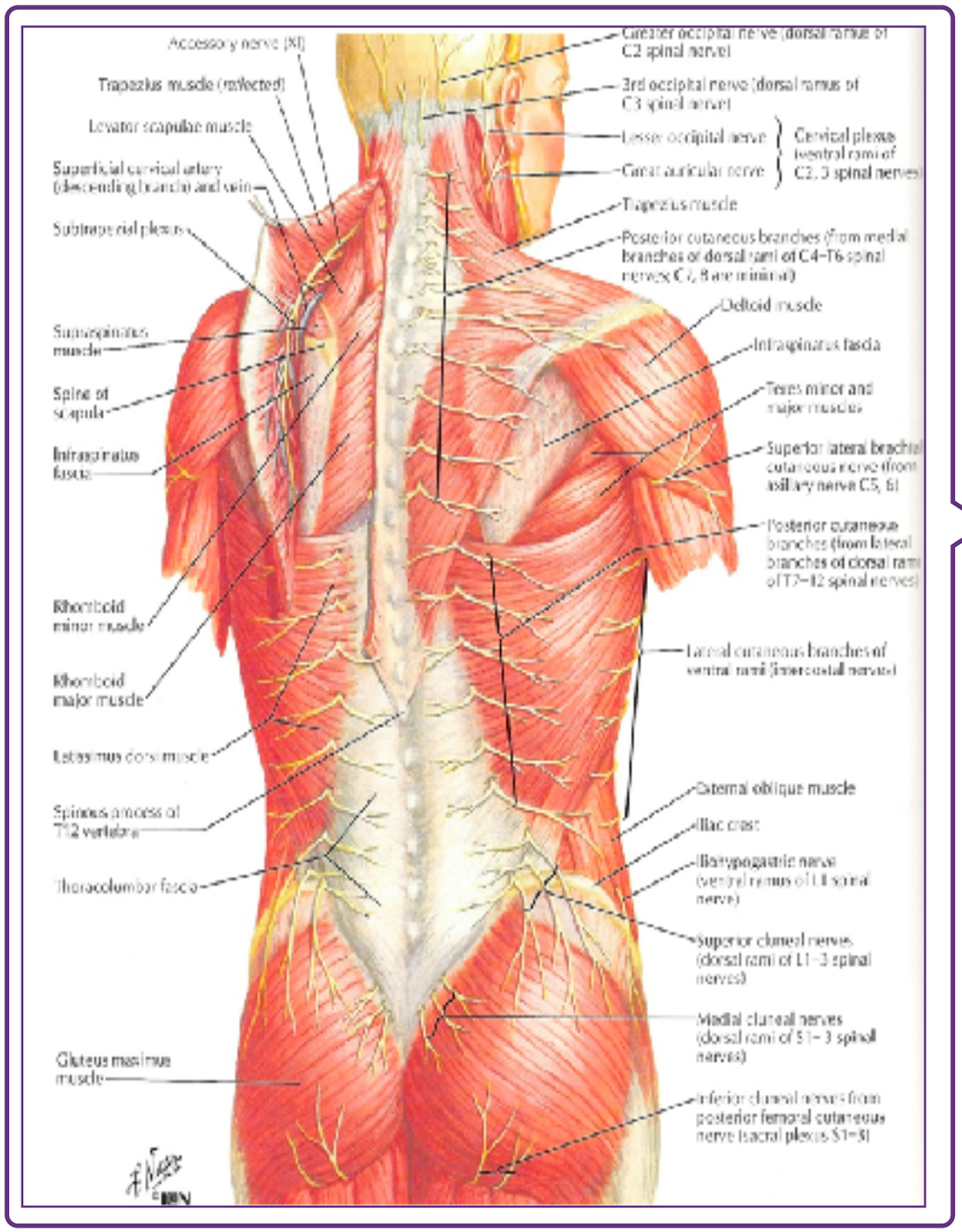


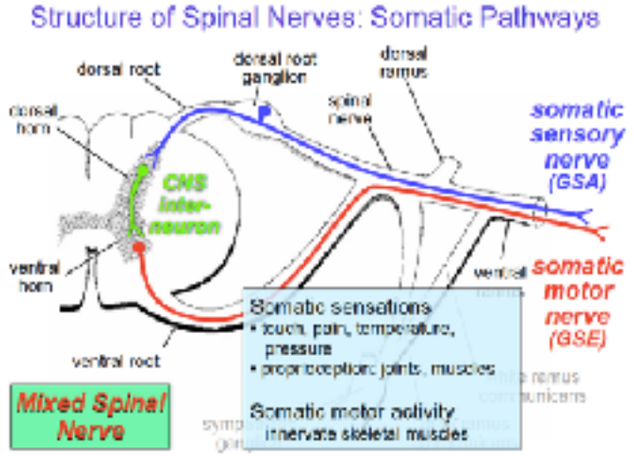
Spinal Oscillation , nociceptive drive and palpation considerations

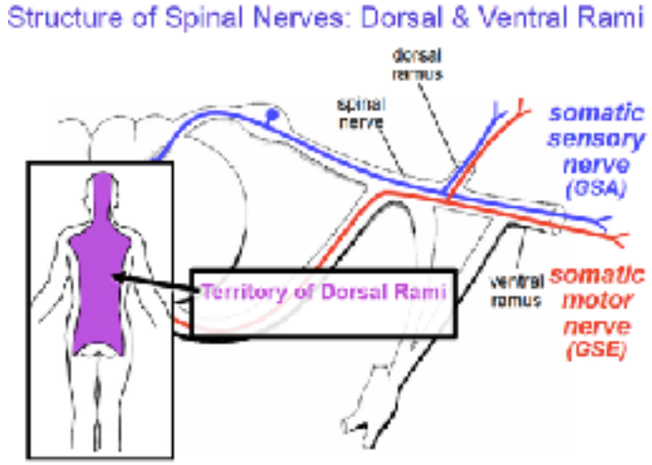
Acute	Chronic
History: recent; often an injury	**History:** long-standing
Pain: acute pain, severe, cutting, sharp	**Pain:** dull, achy. Paraesthesias (crawling, itching, burning, gnawing)
Vascular: vessels injured, release of endogenous peptides = chemical vasodilation, inflammation	**Vascular:** vessels constricted due to sympathetic tone
Skin: warm, moist, red, inflamed (via vascular and chemical changes)	**Skin:** cool, pale (via chronic sympathetic vascular tone increase)
Sympathetics: systemically increased sympathetic activity but local effect overpowered by bradykinins so there is local vasodilation due to chemical effect	**Sympathetics:** has vasoconstriction due to hypersympathetic tone. Regional sympathetic hyperactivity. Systemic sympathetic tone may be reduced toward normal
Musculature: local increase in muscle tone, muscle contraction, spasm, increased tone of the muscle spindle	**Musculature:** decreased muscle tone, flaccid, mushy, limited range of motion due to contracture (see tissue changes)
Mobility: range often normal, quality is sluggish	**Mobility:** limited range, with normal quality in the motion that remains
Tissues: boggy oedema, acute congestion, fluids from vessels and from chemical reactions in tissues	**Tissues:** chronic congestion, doughy, stringy, fibrotic, ropy, thickened, increased resistance, contracted, contractures
Adnexa: (moist skin) no trophic changes	**Adnexa:** pimples, scaly skin, dry, folliculitis, pigmentation (trophic changes)
Visceral: minimal somatovisceral effects	**Visceral:** somatovisceral effects are common

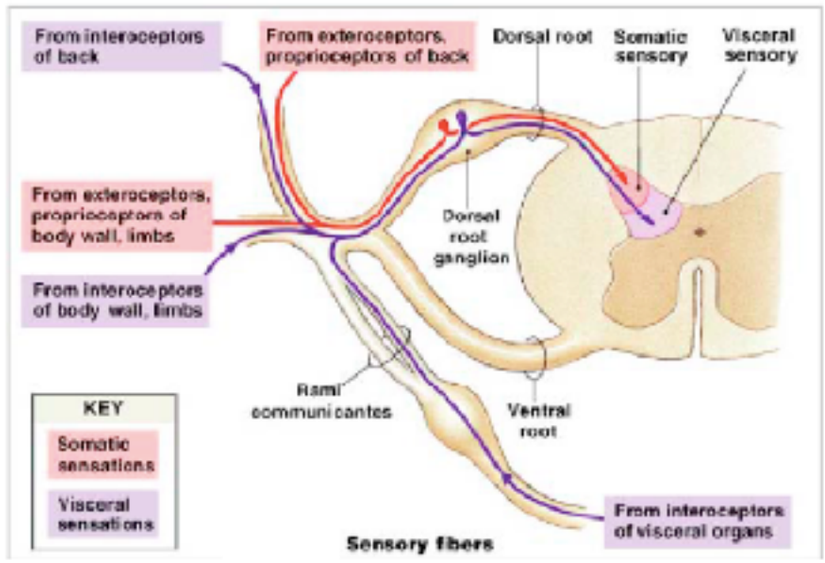
Neuro trophic changes in tissue fields - dynamic palpatory

Spinal Oscillation ,dorsal rami and interoceptive pathway (simplified)









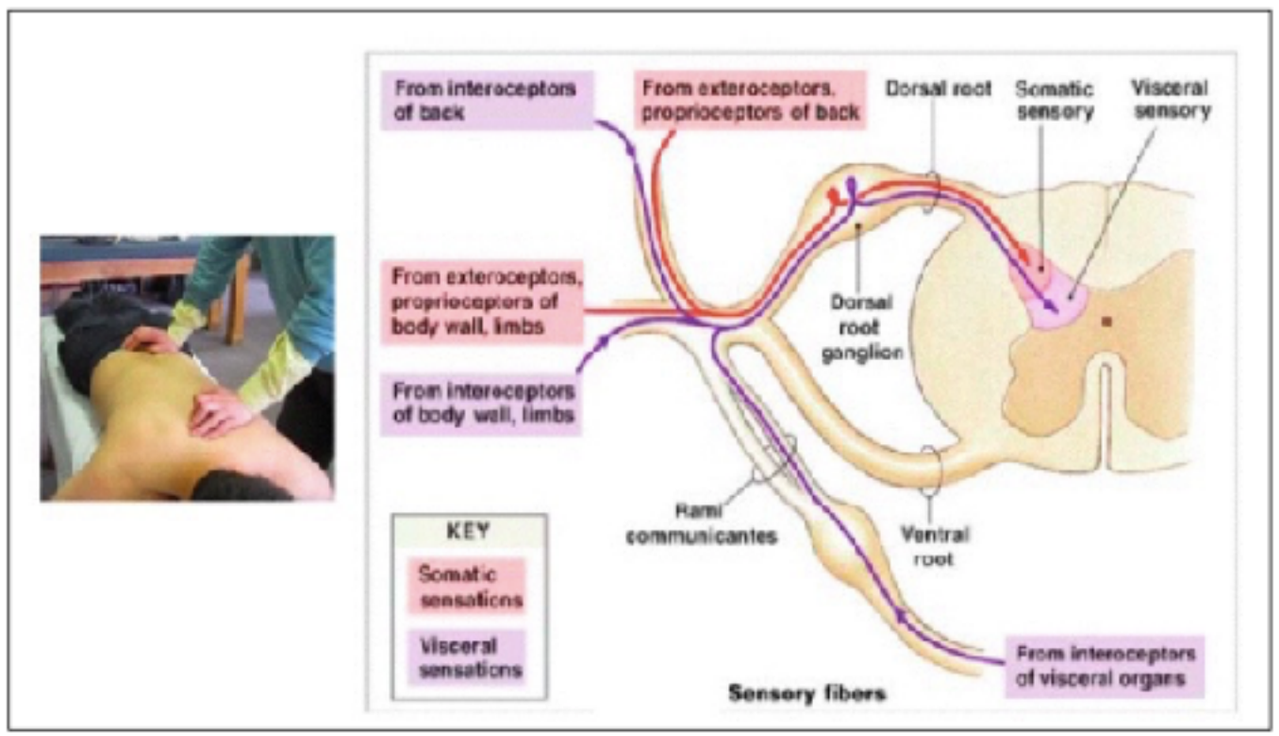
“Interoception" can be described as the moment-to-moment representation process of body sensations coming from the body itself (Craig, 2002).

Spinal Oscillation ,dorsal rami and interoceptive pathways as a mean to facilitating hypothetical treatment gateway ?

Sensitization and Interoception as Key Neurological Concepts in Osteopathy and Other Manual Medicines

Giandomenico D'Alessandro [1,2], Francesco Cerritelli [1,3,4] and Pietro Cortelli [5,6]*

[1] Clinical-based Human Research Department, Centre for Osteopathic Medicine Collaboration, Pescara, Italy; [2] Accademia Italiana Osteopatia Tradizionale, Pescara, Italy; [3] Department of Neuroscience, Imaging and Clinical Sciences "G. D'Annunzio" University of Chieti-Pescara, Pescara, Italy; [4] ITAB-Institute for Advanced Biomedical Technologies, "G. D'Annunzio" University of Chieti-Pescara, Pescara, Italy; [5] Department of Biomedical and Neuromotor Sciences, Bellaria Hospital, University of Bologna, Bologna, Italy; [6] IRCCS Istituto delle Scienze Neurologiche di Bologna, AUSL di Bologna, Bologna, Italy



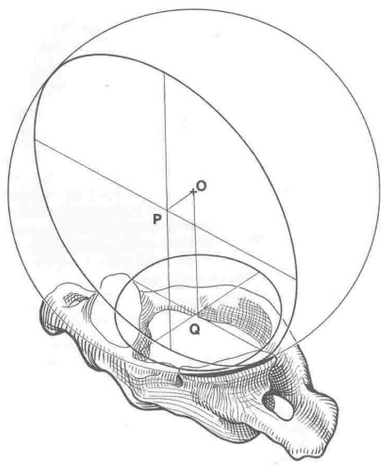
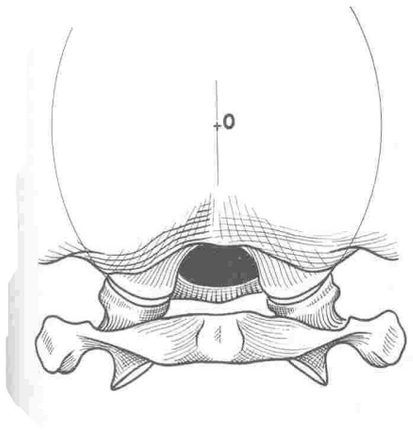
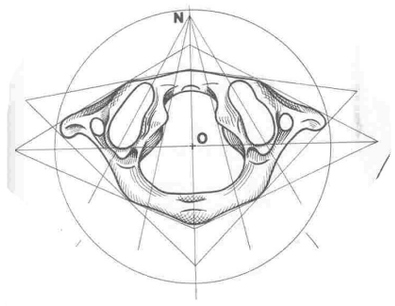
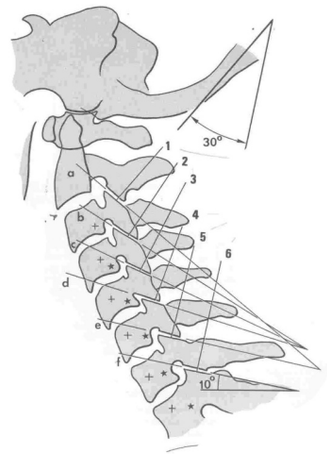
Sensitization is defined as the neurologically-based amplification response produced by repeated stimuli. To date, evidence consistently highlights that several subgroup of patients, with or without pain-related syndromes, exhibit a documented sensitization

Sensitization is generally defined as a non-associative learning process in which repeated stimuli bring to a progressive amplification of a response (Ursin, 2014). Sensitization has been considered a form of "nociceptive" memory because of similarity between its mechanisms with memory mechanisms (Ji et al., 2003).

Interoception has been recently reinterpreted by Craig as "the sense of the physiological condition of the entire body" (Craig, 2002), not merely the input coming from the viscera as historically described by Sherrington. This system is an ongoing homeostatic afferent pathway, argued as the sensory complement of the ANS (Craig, 2013)

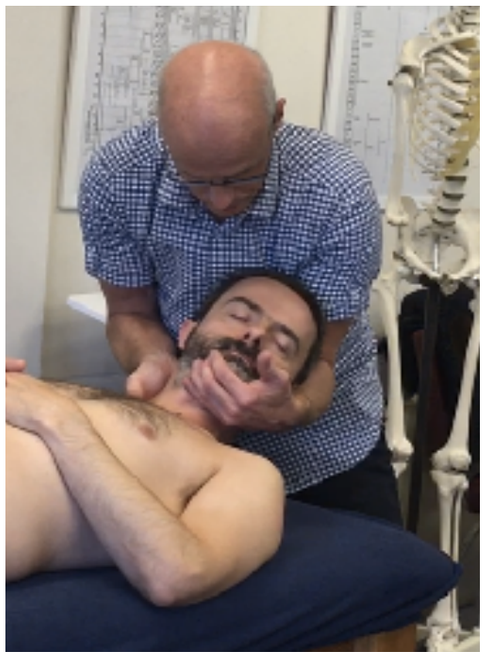
Adjustive Osteopathic Treatment

Cervical Spine


Atlanto -axial Joint , C3-C7 - Push and Pull techniques , OA-AA rocking articulation/ mobilisation






Adjustive Osteopathic Treatment

Cervical Spine

Red Flags for Potential Serious Conditions in Patients with Neck and Shoulder Problems

Red Flags for the Neck and Shoulder Region		
Condition	**Red Flag Data obtained during Interview/History**	**Red Flag Data obtained during Physical Exam**
Cervical Fractures or Ligamentous Instabilities[1-6]	Major trauma such as a motor vehicle accident or a fall from a height with associated immediate onset of neck pain Rheumatoid arthritis or Down's syndrome	Midline cervical spine tenderness Positive ligamentous integrity tests: Sharp-Purser test Alar ligament integrity test Apprehension with or inability to actively rotate head < 45°
Cervical Central Cord Lesion[7-9]	Older age History of a trauma (esp. MVA or fall) Incontinence	Gait disturbances due to hyperreflexic lower extremities Upper extremity (especially hand) sensory and motor deficits, and atrophy
Pancoast tumor[10-12]	Men over 50 with a history of cigarette smoking. "Nagging" type pain in the shoulder and along the vertebral border of the scapula – often progressing to burning pain down the arm into the ulnar nerve distribution.	Wheezing with auscultation when tumor obstructs bronchus May have Horner's syndrome Ptosis (drooping eyelid) Constricted pupil Sweating disturbances
Septic Arthritis (A-C Joint)[13]	Insidious onset of chest pain localized in the S-C joint History of IV drug use, diabetes, trauma, infection (especially of central venous access)	Tender S-C joint Limited shoulder movement Swelling over S-C joint Fever

Adjustive Osteopathic Treatment

Cervical Spine

Red Flags for Potential Serious Conditions in Patients with Head and Neck Problems

Red Flags for the Head and Neck Region		
Condition	**Red Flag Data obtained during Interview/History**	**Red Flag Data obtained during Physical Exam**
Subarachnoid Hemorrhage – Ischemic Stroke[1,2]	Sudden onset of a severe headache History of hypertension	Concurrent elevated blood pressure Trunk and extremity weakness, Aphasia Altered mental status Vertigo, Vomiting
Vertebrobasilar Insufficiency[3-5]	Dizziness Headaches Nausea Loss of consciousness	Vertigo that lasts for minutes (not seconds) Visual disturbances Apprehension with end range neck movements Unilateral hearing loss Vestibular function abnormalities
Meningitis[6,7]	Headache Fever Gastrointestinal signs of vomiting and symptoms of nausea	Positive slump sign Photophobia Confusion Seizures Sleepiness
Primary Brain Tumor[8-11]	Headache Gastrointestinal signs of vomiting and symptoms of nausea	Ataxia Speech deficits Sensory abnormalities Visual changes Altered mental status Seizures
Mild Traumatic Brain Injury – Post Concussion Syndrome – Subdural Hematoma[12,13]	Dangerous injury mechanism Headache Nausea/vomiting Sensitivity to light and sounds	Loss of consciousness/dazed – an initial Glaslow Coma Scale of 13 to 15 Deficits in short term memory Physical evidence of trauma above the clavicles Drug or alcohol intoxication Seizures

Adjustive Osteopathic Treatment

Cervical Spine

NECK CORRECTION EASE AND SAFETY CONSIDERATIONS

1 NEVER TAKE CERVICAL SPINE OUT OF MID LINE

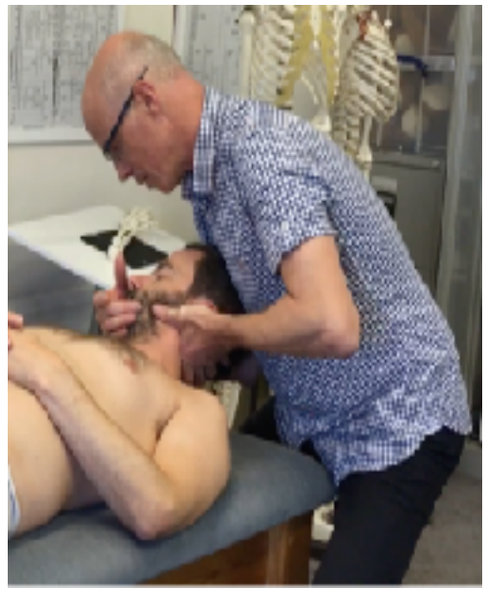
2 THE TECHNIQUES INVOLVE MAINLY ROTATION THEREFORE AVOID EXCESSIVE USE OF SIDEBENDING (except lower cervical push technique)

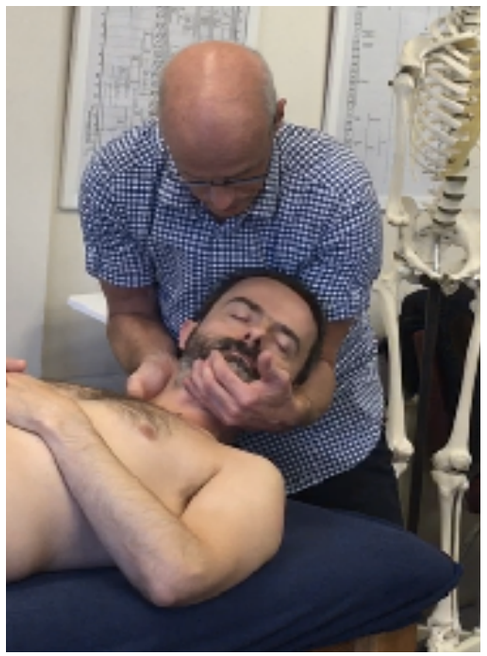
3 USE OF LONG LEVERAGE PROVIDING MORE CONTROL AND LESS FORCE

4 FEEL FOR SOFT TISSUE TENSION NOT PHYSIOLOGICAL LOCKING

5 USE A NEUTRAL POSITION OR MORE TO THE SIDE OF EXTENSION AS THIS PREVENTS MID CERVICAL STRAIN ONCE ROTATION IS INTRODUCED

ALSO THE FACET ANGLES C2/3 C7 ARE MORE ON THE HORIZONTAL PLANE ALLOWING AN EASE OF ROTATION





Adjustive Osteopathic Treatment

Cervical Spine

'PUSH TECHNIQUE' UPPER CERVICAL

FOR CORRECTION OF C2/3 S.B. RIGHT, ROT. RIGHT

CONTACT POINT	left facet between C2/3
APPLICATOR	Web between thumb and index fingers
PATIENT POSITION	supine with neck in a neutral relaxed position and
OPERATOR STANCE	head of couch, to the left, feet spread
PROCEDURE	Rotated head atlas and axis to the right as a unit along a straight vertical axis
CHIN HOLD	allow the head to fall onto the operator's right forearm and gently wrap 3rd 4th 5th fingers around the chin Do not allow patient's right ear to drop towards the plinth as this will result in strain A small amount of S.B. can be introduced to this level via the operator's forearm
POSITION FOR CORRECTION	Feel for an S.T. tension around this articular level and then apply a rapid but slight exaggeration of rotation with a hint of lateral 'push' from the left hand. (Towards the corner of the patient's mouth)

Adjustive Osteopathic Treatment

Cervical Spine

'PULL' TECHNIQUE UPPER CERVICALS FOR CORRECTION OF C2/3 S.B. RIGHT ROT. RIGHT

CONTACT POINT	S.P. of C2
APPLICATOR	Pad of 3rd right finger, right thumb over angle of the jaw
PATIENT POSITION	supine with neck in a neutral relaxed position and in midline
OPERATOR STANCE	head of couch, to the right , feet spread
PROCEDURE	Rotated head atlas and axis to the left
CHIN HOLD	Same as previous correction
POSITION FOR CORRECTION	Again soft tissue tension is felt and then apply rapid but slight exaggeration of rotation on the S.P. of C2 around an axis of the right thumb over the jaw. This is the 'pull' element of the technique and deals with the component of rotation.

Adjustive Osteopathic Treatment

Cervical Spine

'PUSH' TECHNIQUE LOWER CERVICALS

FOR CORRECTION OF C6, 7 OR C7, D1 S.B. RIGHT ROT. RIGHT

CONTACT POINT	line of articular facet, left, C6 7 C7, D1
APPLICATOR	typically of left hand between thumb and index finger
PATIENT POSITION	supine with neck held in fuller forward bending to bring leverage to lower cervicals
OPERATOR STANCE	head of couch, to the left, feet spread
PROCEDURE	Rotated head and cervical spine down to lower articulations and close in on the patient.
CHIN HOLD	Same as previous correction
POSITION FOR CORRECTION	while maintaining head in mid line direct a 'push' a line of force towards the right nipple while applying a rotation of the head and neck downwards to this level.

Adjustive Osteopathic Treatment

Cervical Spine

'PULL' TECHNIQUE LOWER CERVICALS

FOR CORRECTION OF C6, 7 OR C7, D1 S.B. RIGHT ROT. RIGHT

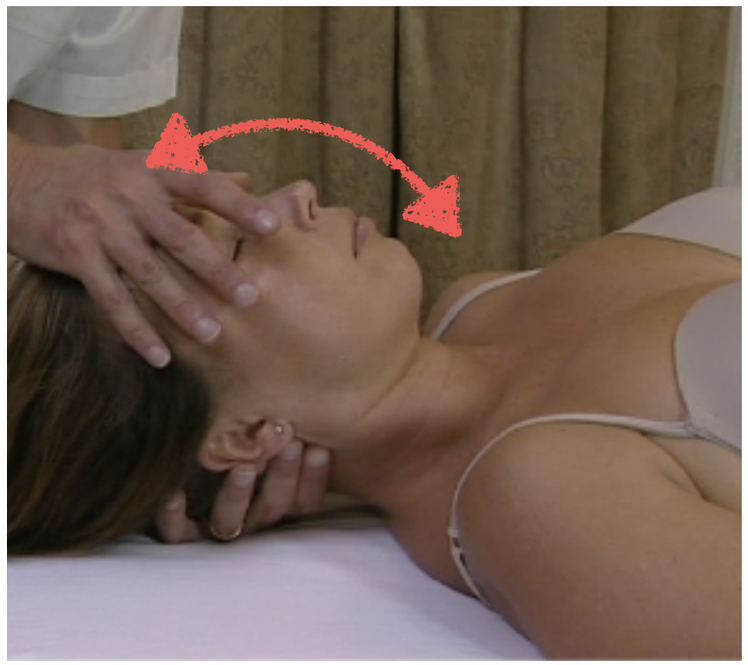
CONTACT POINT	S.P.s of C6 or C7
APPLICATOR	3rd finger typically right hand. Right thumb rests on the clavical and acts as a still point/axis during the technique
PATIENT POSITION	supine with neck held in fuller forward bending to bring leverage to lower cervicals
OPERATOR STANCE	head of couch, to the right, feet spread
PROCEDURE	same as previous correction
CHIN HOLD	same as previous correction
POSITION FOR CORRECTION	involves almost pure rotation applying a 'pull' of your 3rd finger around the lower cervical S.P. The correction deals with the rotation element of the lesion around the anteriorly positioned thumb hold.

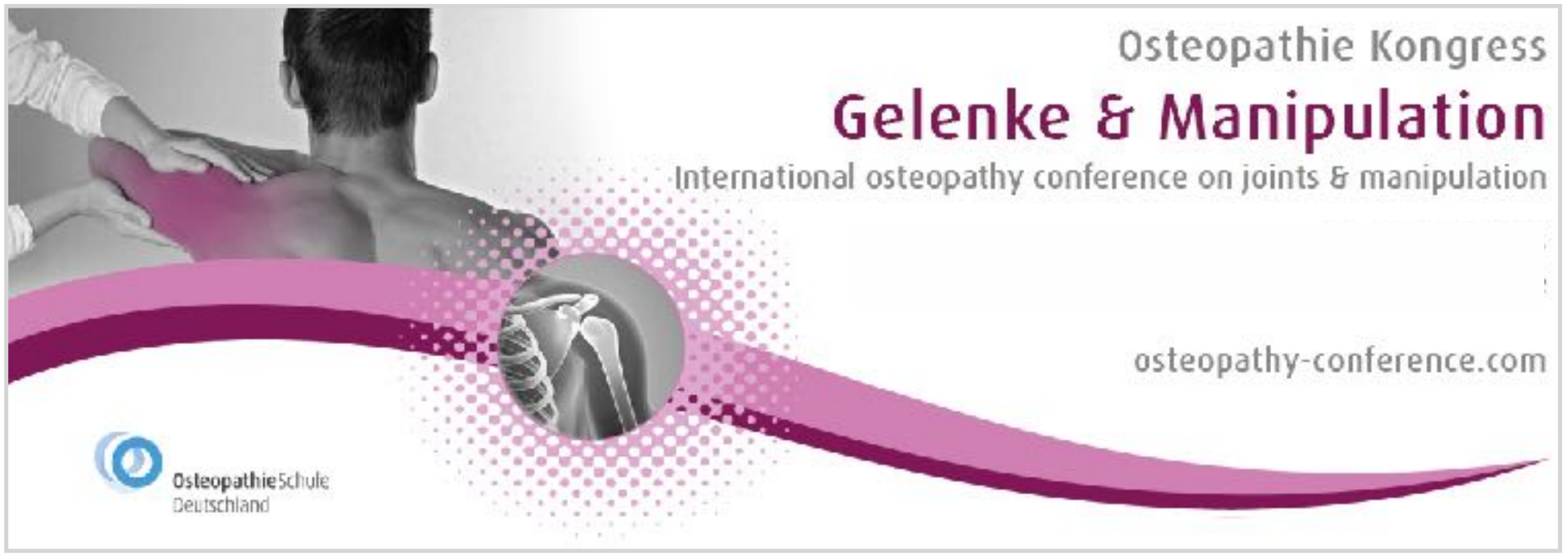
Adjustive Osteopathic Treatment

Cervical Spine

OA-AA rocking articulation/mobilisation

Positioning of hands - rocking flexion / extension then with degrees of combined circumduction with modified cradle and frontal hold of hands





Bedankt , thank you for your attendance and invitation

Resources page - respective QR - codes will be placed here