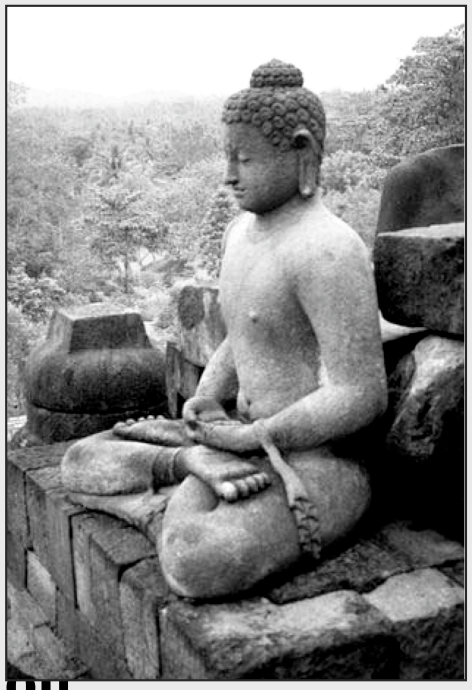
Recognising, understanding & rehabilitating breathing pattern disorder (BPD) influences on low back and pelvic pain



ICAK 2007

Leon Chaitow ND DO
University of Westminster, London

www.leonchaitow.com

Tribute to a great man :
George Goodheart DC

APPLIED KINESIOLOGY

1985 WORKSHOP PROCEDURE MANUAL

LETE PROCEDURAL ANALYSIS AND THERAPY OUTLINE:
P BY STEP DIAGNOSTIC AND PROCEDURAL METHODS
FROM PATIENT ENTRANCE TO PATIENT EXIT

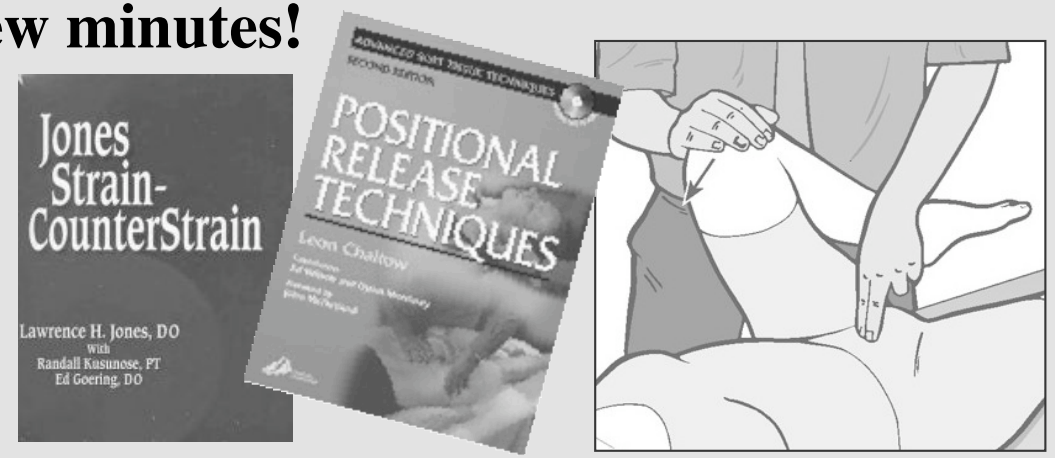
ental chiropractic concept of dural torque and subsequent dural sleeve impingement
method of diagnosis and treatment that not only immediately relieves patient's pain,
ent proof of spinal length change on a before and after basis during patient visit.
validated method of removing interference with the nervous system that is effective,
sitive effects on range of motion and standard orthopedic test values.
allows you to reverse dural torque (spinal nerve dural sleeve)
lown and from the bottom up in the office with or without x-ray evidence.
opment in the strain-counterstrain concept of vertebral neutral anatomical set point
oint which now includes the remarkable effect of the main sacro-lumbo-iliac ligament
the easy hands only correction to relieve chronic and acute pain.
cludes the chiropractic diagnosis and the chiropractic treatment
culoskeletal and viscara caused pain with consistently good results

Greatest Influence?

Reflecting on Dr Goodheart's influence on my work I realise how his example has taught me to look wide, to keep an open mind, to synthesize and - above all - to simplify.

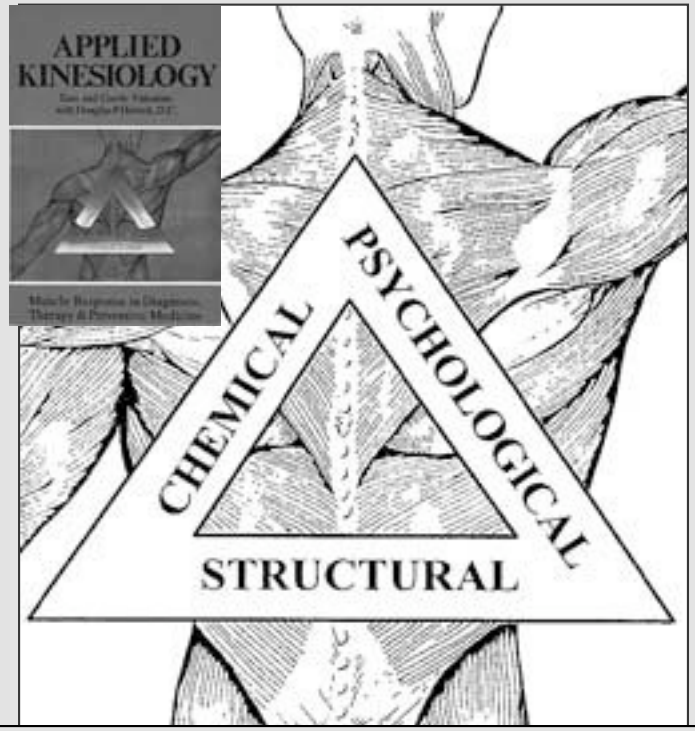
The example that most clearly illustrates this relates to Jones' *Strain/Counterstrain*, which he turned from an brain-numbing exercise, calling for the memorizing of hundreds of possible point locations in relation to particular strains - by offering in its place a formula of such elegent simplicity that it is possible to teach it to patients for home care in a few minutes!

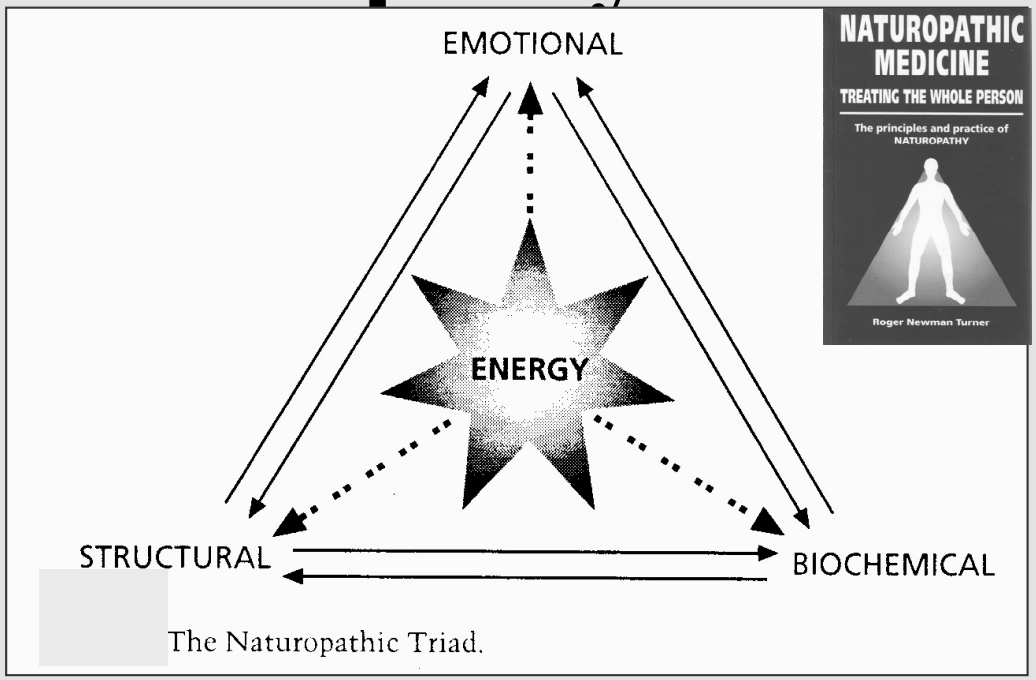
That takes pure genius.



In *Positional Release Techniques*, I offer Jones's approach - and also 'Goodheart's Guidelines'. Guess which most people choose to use?

AK and Naturopathy





The Naturopathic Triad.

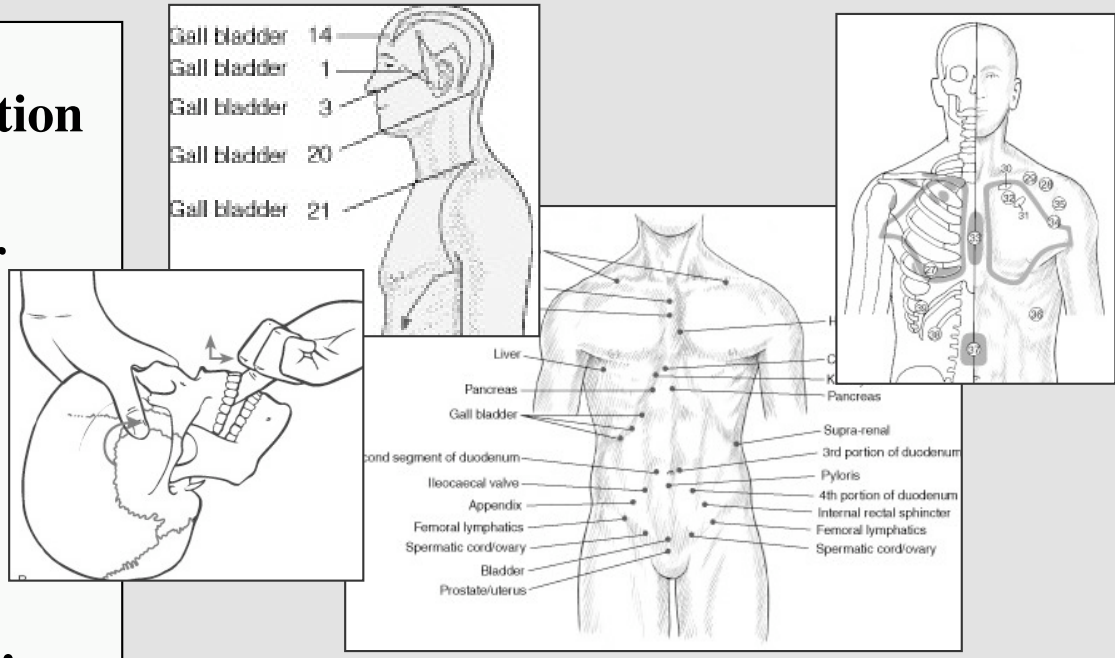
Both systems attempt to focus on the whole person - their inherited, acquired and current features & characteristics - as well as the context out of which dysfunction emerges

This is true integrated health care, and despite differences in methodology they have a great deal in common, both in practice, and certainly in theory and understanding of the processes involved in health, disease, and our self-regulatory systems.

‘Eclectic & inspirational’ are the key words I think of in association with Dr Goodheart’s work.
In many ways his thinking is as much naturopathic & osteopathic, as chiropractic (and I can offer no greater compliment). His assiduous ability to see to the heart of therapeutic concepts, along with his talent for synthesizing elements from osteopathy, TCM, chiropractic and more, have been an inspiration. **Thank you Dr Goodheart !**

AK
Osseous and soft tissue normalization
Posture/gait
Neurolymphatic & Neurovascular reflexes
Craniosacral system
Meridian balancing
Jones’s Strain/counterstrain
Neural receptor treatment
etc etc etc etc …… and more…….

!



To achieve better oxygenation under normal conditions does NOT require deep breathing - it requires optimal retention of CO2.

Hyperventilation is normal when running, during states of acidosis, during late pregnancy.

A major key to better oxygenation is an inhalation:exhalation ratio of about 1:2

BPD Rehab Essentials

Recognise BPD (including Nijmegen test &/or capnography) and help patient realise that :
a. His/her BPD is real b. His/her BPD is a habit that can change, …. but only if c. Homework is done at same time that structural mobilization/stabilization is being achieved.
<u>Also……ensure nutritional and psychosocial issues are considered</u>
1. Where does breathing occur - Observe, Palpate, HiLo test etc
2. Identify what's short/what's tight (?use functional tests?)
3. Release what's short, facilitate (tone) what's weak (?TrPts?) - including: Diaphragm, Scalenes, SCM, Pectorals, Upper traps, QL, Psoas
4. Identify spinal and rib restrictions - mobilise or manipulate (HVLA, MWM, PRT, Pulsed MET, MET, MFR etc etc)
5. Utilise specialised methods (e.g. rib raising)
6. Simultaneously commence breathing rehab including :

- **Pursed-lip breathing/antiarousal breathing**
- **Breaking link between inhalation & activation of accessory respiratory muscles**
- **Use capnotrainer if available…….**
- **Suggest appropriate activities - Tai chi, Chi Gung, Yoga…….**
- **Move from retraining when calm to doing so in challenging situations.**

Nijmegen questionnaire

Rare=less than monthly. **Sometimes = more than monthly, less than weekly.**

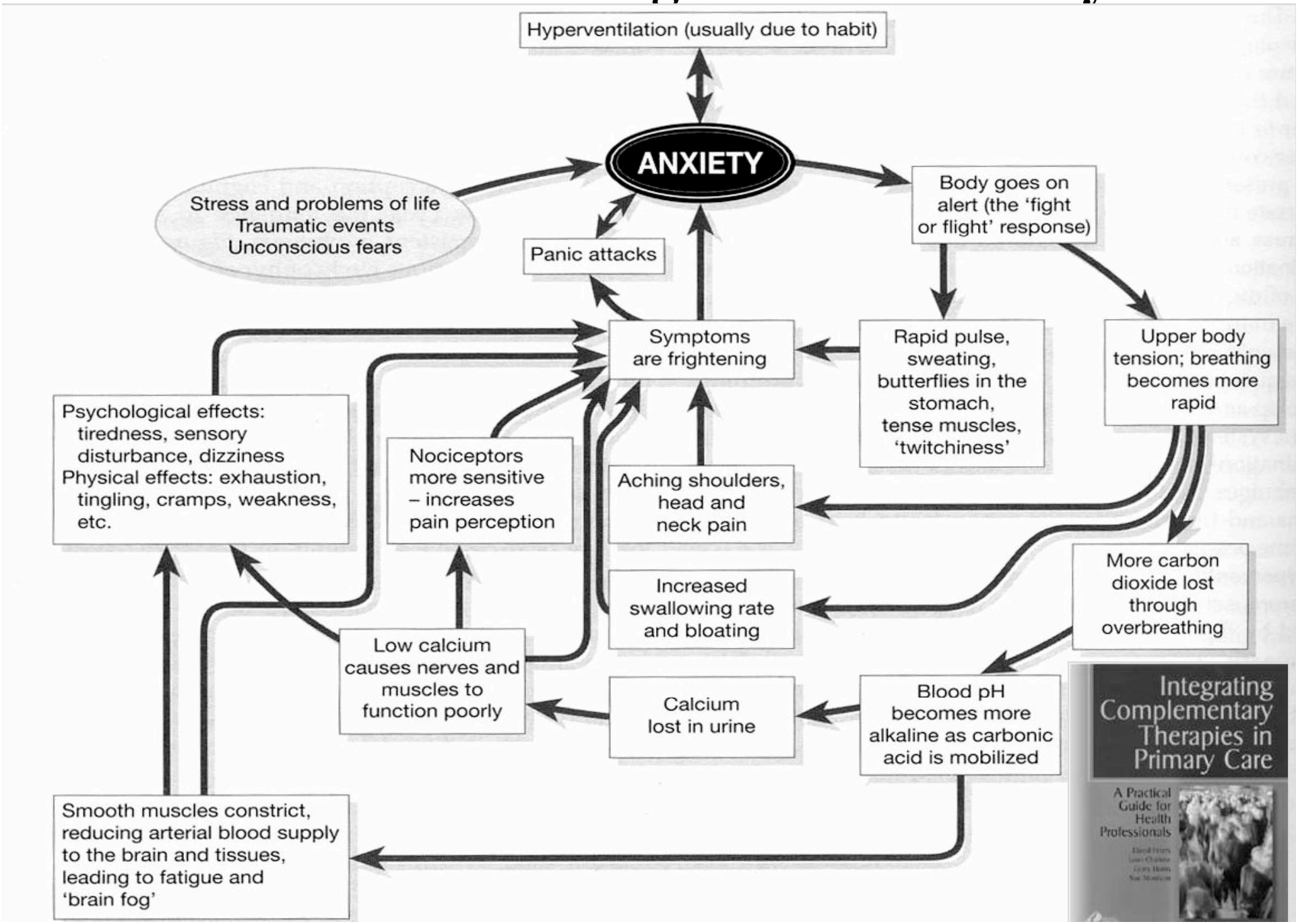
Often = at least weekly, but not daily. **Very often = at least daily.**

Box 7.3 Nijmegen questionnaire

	Never 0	Rare 1	Sometimes 2	Often 3	Very often 4
Chest pain					
Feeling tense					
Blurred vision					
Dizzy spells					
Feeling confused					
Faster or deeper breathing					
Short of breath					
Tight feelings in chest					
Bloated feeling in stomach					
Tingling fingers					
Unable to breathe deeply					
Stiff fingers or arms					
Tight feelings round mouth					
Cold hands or feet					
Palpitations					
Feelings of anxiety					
		Total:	/64*		

* Nijmegen. Patients mark with a tick how often they suffer from the symptoms listed. A score above 23/64 is diagnostic of hyperventilation syndrome.

Contextual thinking: BPD & Anxiety



Thyroid - Hyperventilation Connection

"In patients with severe hypothyroidism, the ventilatory control system may be altered at the neural level."
Duranti R 1993 Control of breathing in patients with severe hypothyroidism American Journal of Medicine 95(1):29-37

"In patients with hypothyroidism, diaphragmatic dysfunction occurs more frequently than has been suspected and might be of varying severity"
Martinez F et al 1989 Hypothyroidism. A reversible cause of diaphragmatic dysfunction Chest (96)5:1059-1063

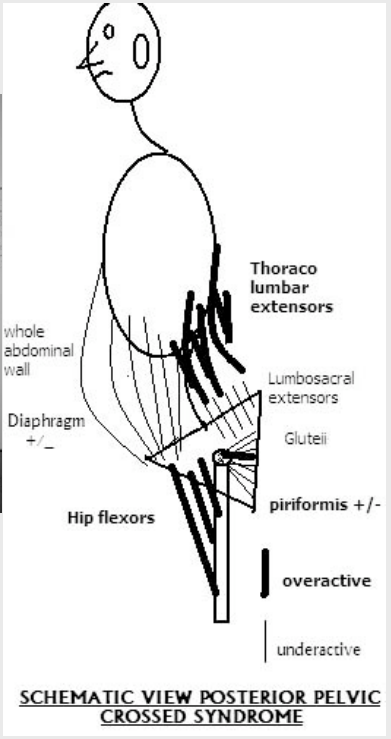
"Severely hypothyroid patients are at risk for adverse events around the time of surgery …. more sensitive to anaesthetics, higher incidence of surgery-related cardiovascular disease, increased risk for ventilatory failure following surgery"
Lee H Levine M 1999 Acute respiratory alkalosis associated with low minute ventilation in a patient with severe hypothyroidism. Can. J. Anaesth., 46(2):185-189

NOT IN HANDOUT NOTES

Posterior Crossed Pattern & Pelvic Floor Dysfunction

Characterised by:-

- Pelvis - posterior shift + increased anterior sagittal tilt.
- Trunk - anterior translation of thorax
- Increased lordosis at thoraco-lumbar junction



SCHEMATIC VIEW POSTERIOR PELVIC CROSSED SYNDROME

Hypoactivity/ lengthened:-

- Entire abdominal wall and pelvic floor
- Lumbosacral multifidus
- Inefficient diaphragm activity

Hyperactivity / adaptive shortness:-

- Thoraco lumbar erector spinae +++
- Anterior hip flexor groups primarily **psoas**.
- Piriformis.
- Hip internal rotators › external rotators

Trunk extension reduced

Thoraco-lumbar region hyperstabilised

Poor pelvic control

Decreased hip extension

Abnormal axial rotation

Dysfunctional breathing patterns

Pelvic floor dysfunction

NOT IN HANDOUT NOTES

Anterior Crossed Pattern & Pelvic Floor Dysfunction

Characterised by:-

- Pelvis - anterior shift + increased posterior tilt
- Trunk (thorax) backward loaded –lumbar spine flexed
- Hips in extension - tight posterior hip structures
- No buttocks, head forward, kyphosis, knees extended

Hypoactivity/lengthened:

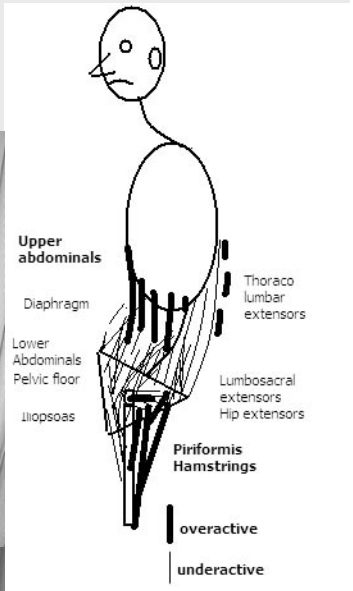
- Lower abdominal group and pelvic floor
- Lumbar multifidus – particularly over lower levels.
- Diaphragm – reduced excursion ++
- Iliacus; Psoas.
- Glutei

Hyperactivity / adaptive shortness:

- Hamstrings
- Piriformis
- Upper abdominal group + lateral internal oblique
- Hip external rotators › internal rotators

Flexors tend to dominate
Loss of extension through spine
Thoraco lumbar junction hyperstabilised in flexion
Poor pelvic control
Dysfunctional breathing Patterns

NOT IN HANDOUT NOTES



SCHEMATIC VIEW ANTERIOR PELVIC CROSSED SYNDROME

STRATIFICATION or LAYER SYNDROME. (Janda 1987)

Observed from **behind** - 'banding' of the extensor system:-

- ***Overactive and / or tight***: - cervical erector spinae; upper trapezius; levator scapulae; thoraco lumbar erector spinae; piriformis, hamstrings.
- ***Underactive:*** - lower scapular stabilisers; lumbosacral multifidus; gluteus maximus.

NOT IN HANDOUT NOTES

Observed from **front** - 'banding' in flexor activity as:-

- ***Overactive and / or tight***: - sternocleidomastoid; pectorals; oblique abdominals;
- ***Underactive***: - Deep neck flexor group; abdominal weakness particularly transversus and rectus abdominis

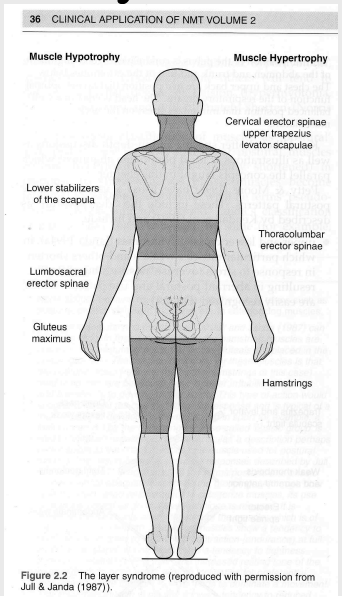
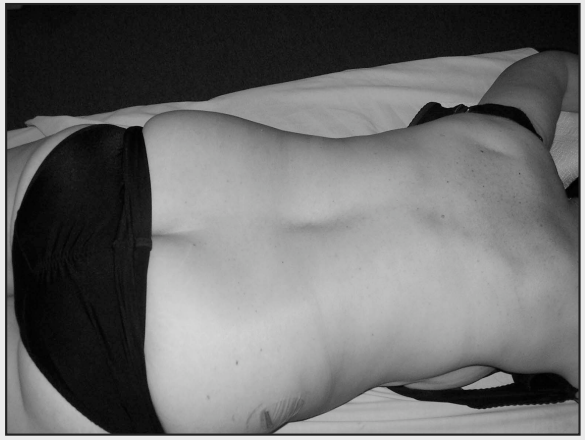
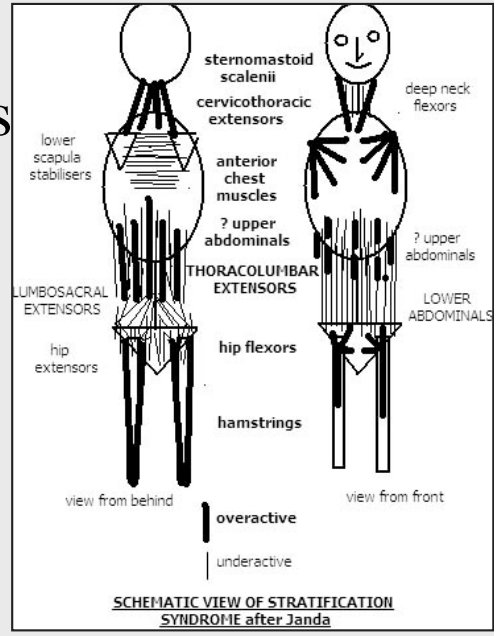


Figure 2.2 The layer syndrome (reproduced with permission from Jull & Janda (1987)).





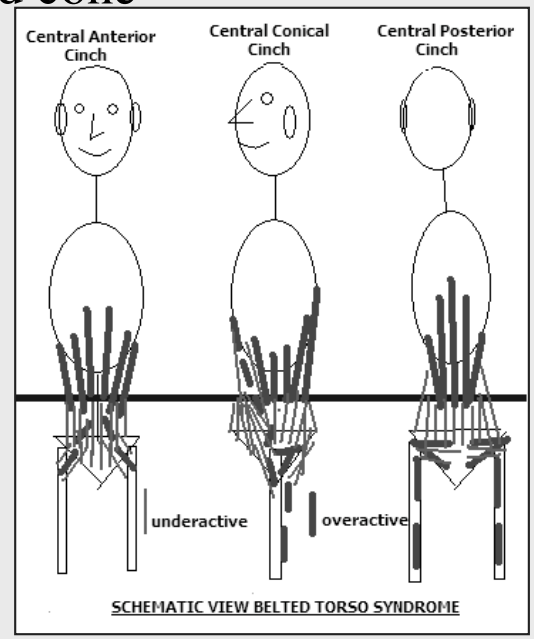
SCHEMATIC VIEW OF STRATIFICATION SYNDROME after Janda

Janda V. 1987. Muscles and motor control in low back pain – assessment and management In: Twomey L. editor. Physical Therapy of the Low Back (first edition), Churchill Livingstone 253-278

Belted Torso Syndrome

Muscle hypoactivity/poor control of posture & movement above belt

- Posteriorly - Central Posterior Cinch (CPC)**
- Central - Anterior Cinch (CAC)
- Combination - inferior thoracic cage becomes apex of inverted cone (Central Conical Cinch - CCC)



SCHEMATIC VIEW BELTED TORSO SYNDROME

Hypoactivity/poor control of posture & movement below belt

Anteriorly:-

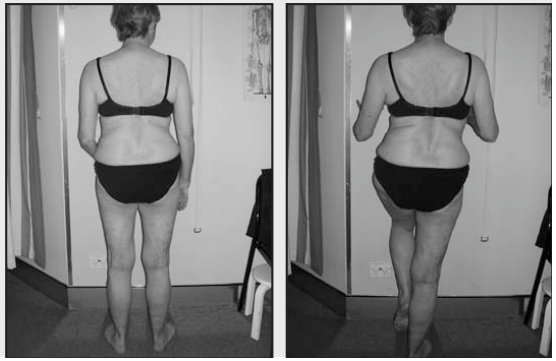
- Whole abdominal wall in PPXS##; lower abd. wall in APXSxx

Posteriorly:-

- Lower lumbar multifidus underactive in PPXS & APXS
- Upper levels underactive in APXS

Centrally:-

- **Diaphragm inefficient**
- Iliacus and Psoas underactive in APXS; imbalanced in PPXS (psoas over, iliacus underactive).
- **Pelvic floor muscles dysfunctional**



** A cinch is a wide strap that attaches a saddle to a horse

PPXS = posterior pelvic crossed syndrome

xx APXS= anterior pelvic crossed syndrome

NOT IN HANDOUT NOTES

Over-emphasis on core control = core regidity

Clinically there is relationship between pelvic floor dysfunction syndromes and CPC and CCC muscle activation patterns which hyperstabilise thoraco-lumbar region, creating segmental joint dysfunction and resultant autonomic effects.

Overemphasis on abdominal strengthening can lead to misapplied "core control". Particularly in those with APXS where it can lead to loss of the lordosis as well as disturbed breathing.

NOT IN HANDOUT NOTES

Over- applied core stability training can become 'core rigidity training' -inducing central fixing behaviour around the body's centre of gravity + associated dysfunctional breathing patterns

- **O'Sullivan P. 2005. Diagnosis and classification of chronic low back pain disorders: Maladaptive movement and motor control impairments as an underlying mechanism. Manual Therapy 10: 242-255**
- **Comerford M. 2001. What comes first – the pain or the dysfunction? – Integration of local and global stability systems in rehab. In: Proc. 1st International Conference on Movement Dysfunction, Edinburgh**
- **Hanna T. 1988. Somatics – reawakening the mind's control of movement and flexibility and health Publ. Da Capo Press.**
- **Thompson J et al 2004. Motor control strategies for activation of the pelvic floor. Proc. 5th Interdisciplinary World Congress on low back and pelvic pain. Melbourne**

NOT IN HANDOUT NOTES

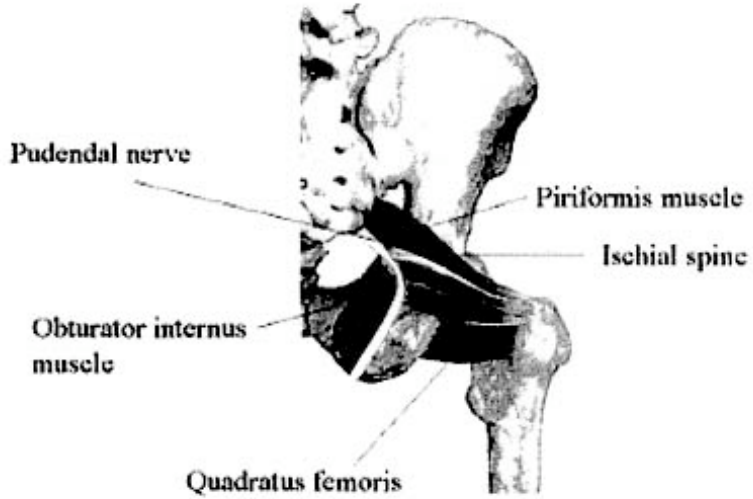
Pelvic floor influences

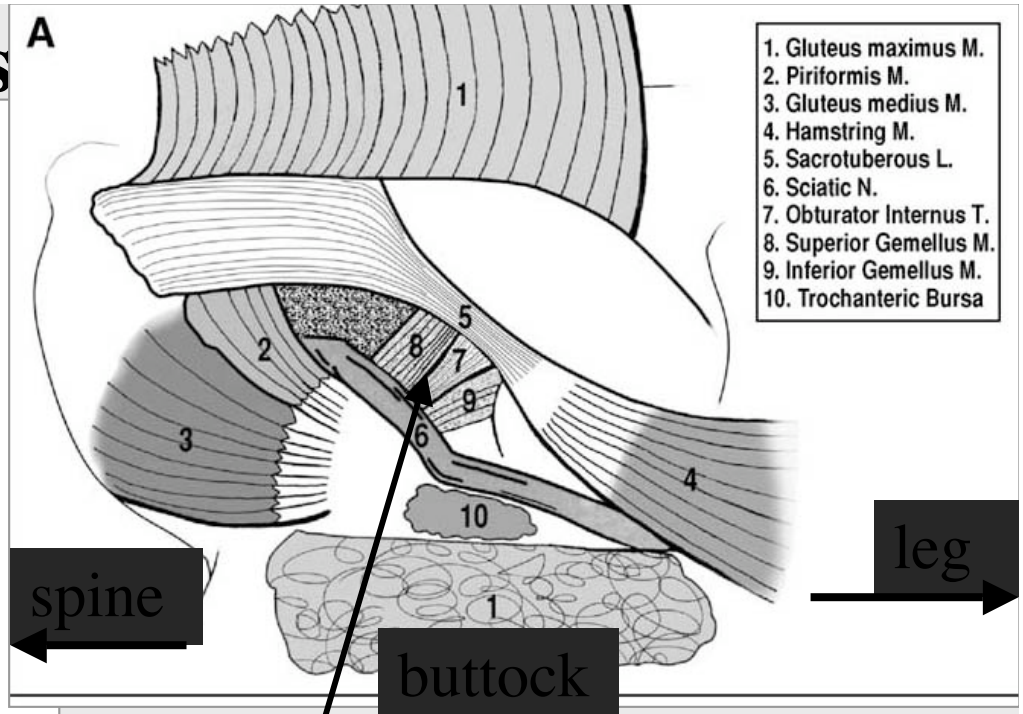
Hodges & Cholewicki (2007) observe that the pelvic floor muscles indirectly contribute towards spinal stability via pressure and tension in the thoraco-lumbar fascia, as well as contributing to SIJ stability, particularly in women. If pelvic floor muscles are dysfunctional, spinal support may be compromised, increasing oblquus externus activity, overcoming pelvic floor muscle activity, and resulting in incontinence (Smith 2007)

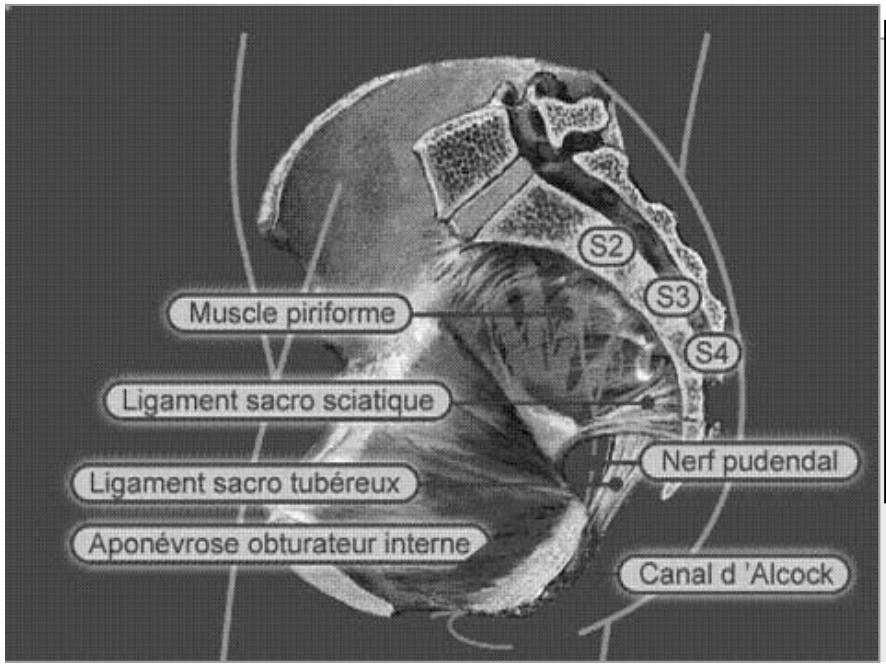
Hodges P Cholewicki J 2007 Functional control of the Spine. IN:Vleeming A Mooney V Stoekart R (Eds) Movement stability & lumbopelvic pain. Churchill Livingstone/Elsevier. Edinburgh.

Smith M et al Postural response of the pelvic floor and abdominal muscles in women with and without incontinence. Neurourology and Urodynamics (in press)

Obturator trigger points



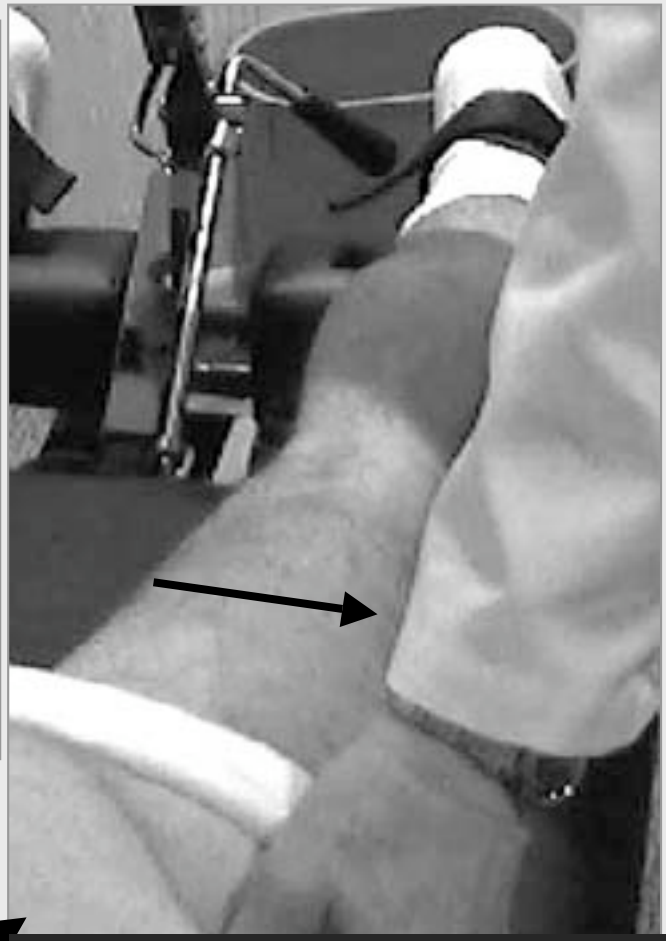




Line drawing of a dissection of the ***left*** gluteal region with the gemelli superior, gemelli inferior, and the obturator internus muscles intact. **Superior is to the left of the figure and medial is to the top of the figure**

NOT IN HANDOUT NOTES

Releasing/stretching Obturator



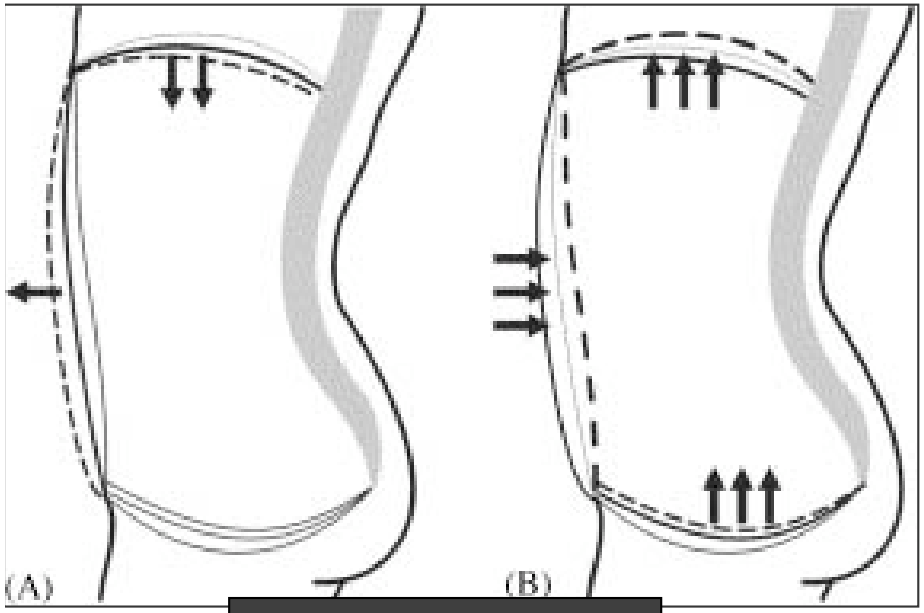
Manual stretching of the gemelli–obturator internus and piriformis muscles

NOT IN HANDOUT NOTES

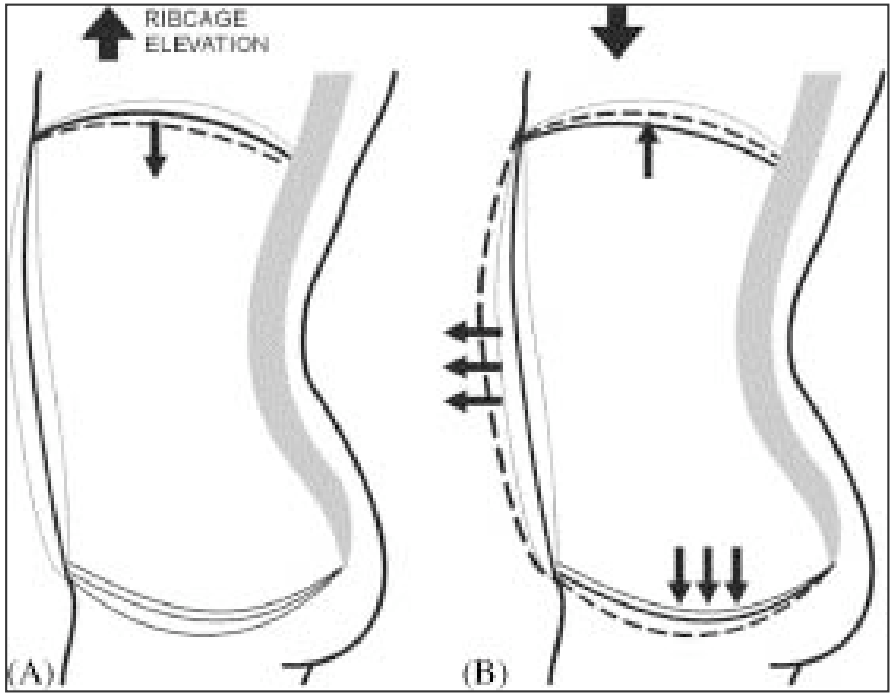
Mechanical stretching of the tendons and muscles of the gemellus inferior and superior, piriformis, and obturator internus at their insertion into the greater trochanter of the femur: compression together with abduction

Cox J Bakkum B 2005 Possible generators of retrotrochanteric gluteal and thigh pain: the gemelli–obturator internus complex Journal of Manipulative & Physiological Therapeutics 28(7):534:53

Example of Load Transfer Failure



Normal sneeze



Stress urinary incontinence sneeze

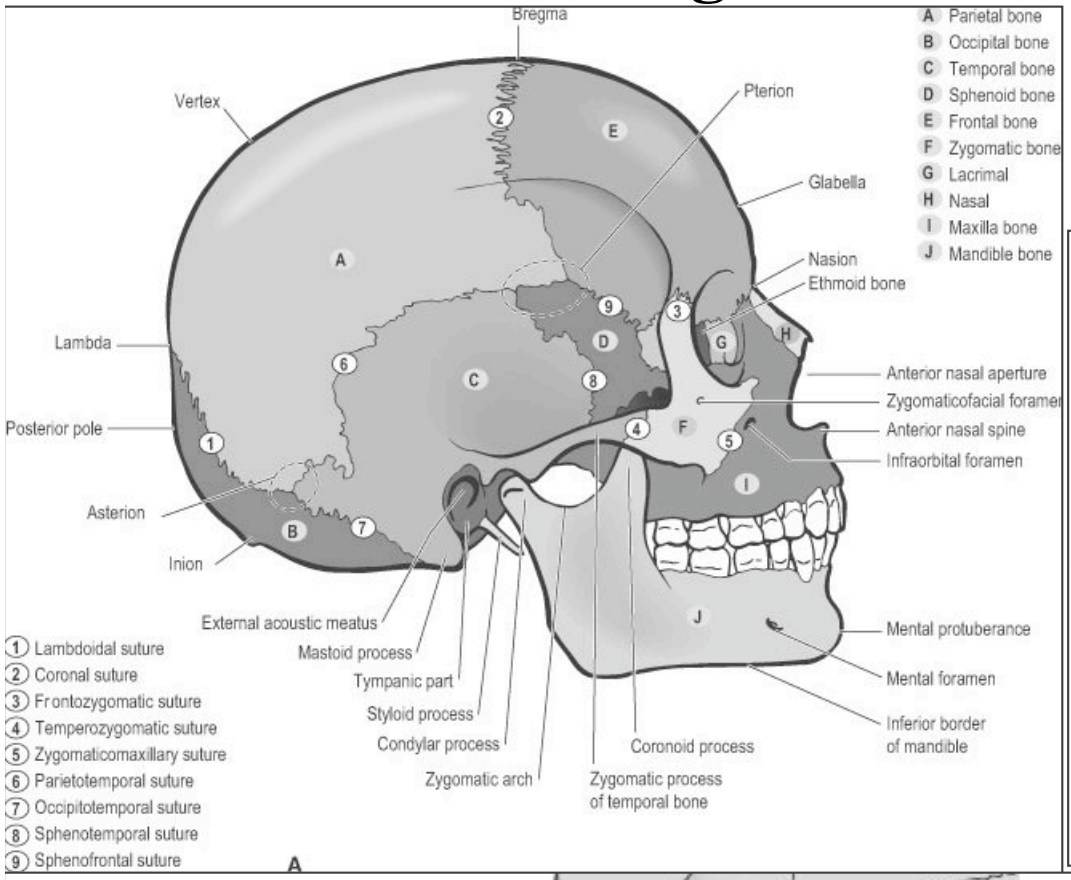
(A) In patients with SUI who have weak abdominal muscles, the sneeze inspiratory effort may be similar to that in healthy subjects. There is often less abdominal wall excursion and more rib cage movement.

(B) During the expiratory phase, the abdominal wall bulges forward and the PFM are forced down.

Sapsford R 2003 Rehabilitation of pelvic floor muscles utilizing trunk stabilization. Manual Therapy 9(1):3-12

NOT IN HANDOUT NOTES

Breathing disorders and cranial features



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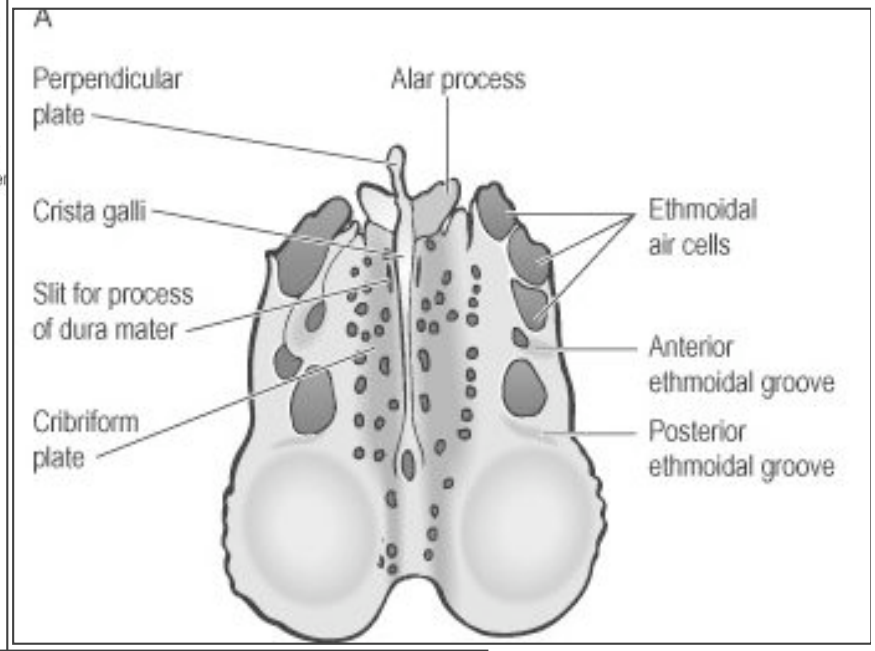
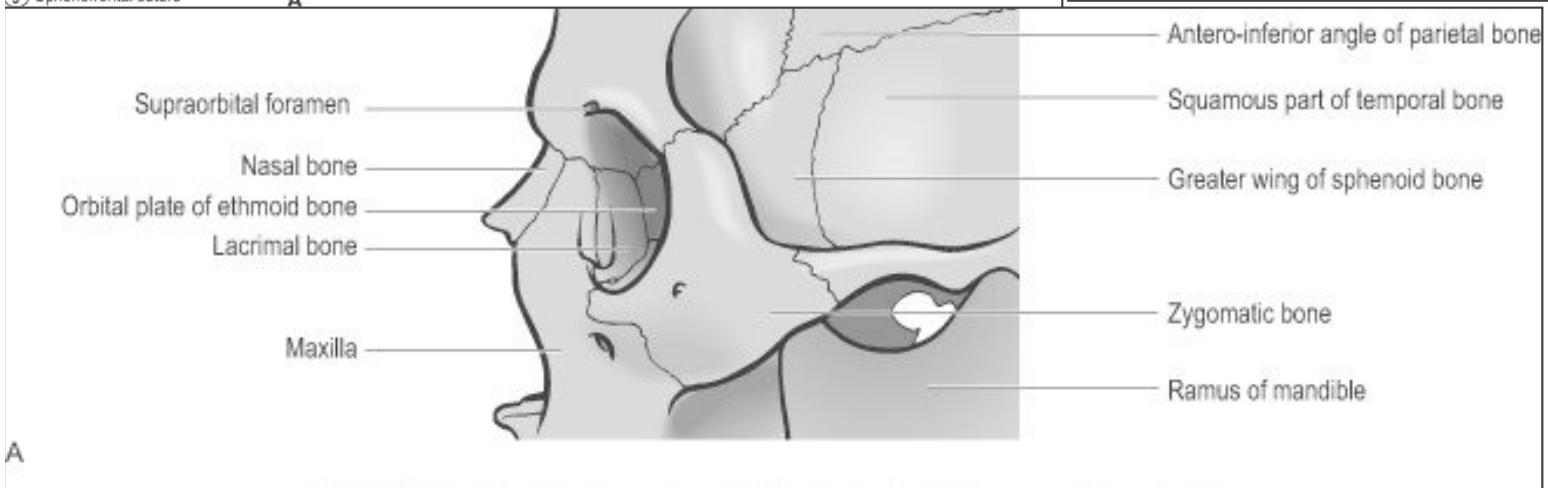
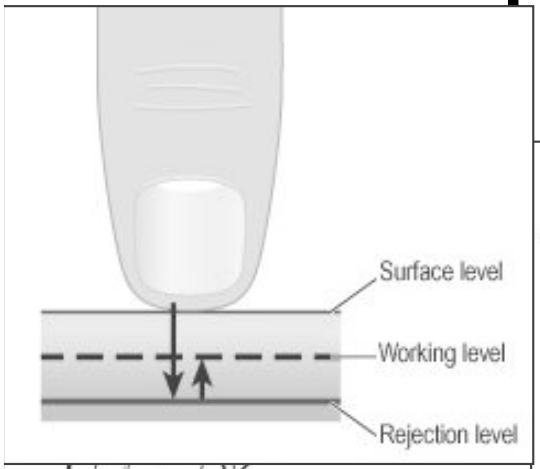
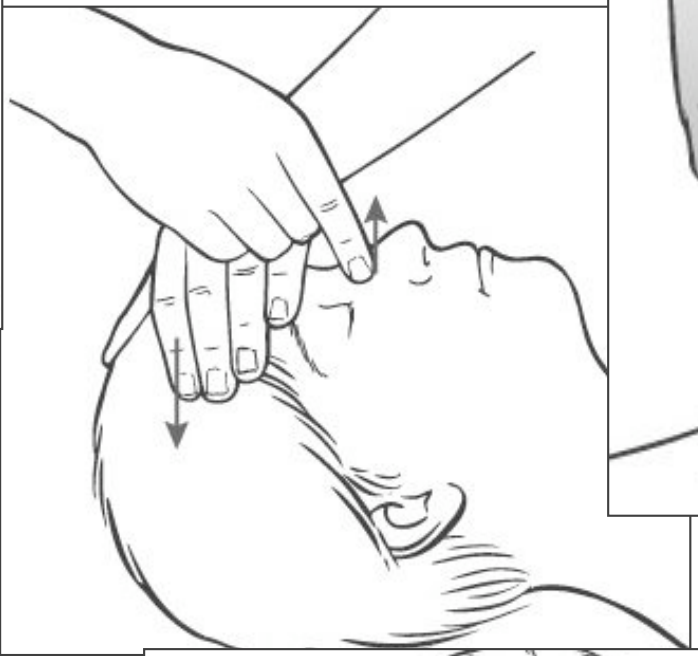


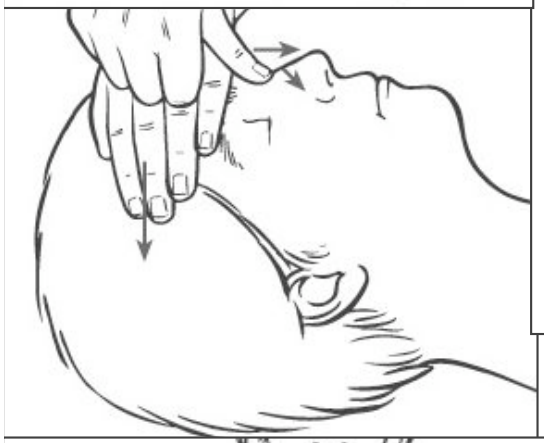


Cranio-facial approaches

NOT IN HANDOUT NOTES







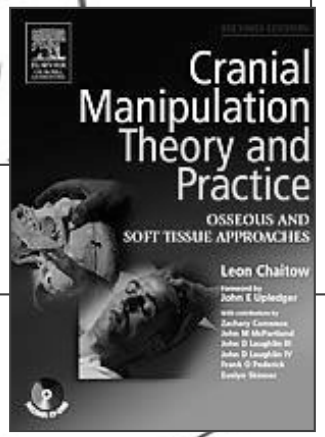


Figure 1 Iyengar yoga pose 1, Thunderbolt. *Note*: Pose 1 is repeated as pose 9, immediately before pose 10.

Figure 2 Iyengar yoga pose 2, Hero.

Figure 3 Iyengar yoga pose 3, Head-knee.

Figure 4 Iyengar yoga pose 4, Half Restrained Lotus.

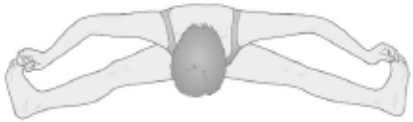


Figure 5 Iyengar yoga pose 5, Seated Triangle.

Figure 6 Iyengar yoga pose 6, Restrained Triangle.

Figure 7 Iyengar yoga pose 7, Extended Side Angle.

Figure 8 Iyengar yoga pose 8, Downward Face Dog.

Figure 9 Iyengar yoga pose 9, Thunderbolt.

Figure 10 Iyengar yoga pose 10, Lotus.

Yoga assanas for respiratory and pelvic floor balance?

NOT IN HANDOUTS

ANATOMY & PHYSIOLOGY FROM A BUDDHIST PERSPECTIVE

The kinesthetic Buddha, human form and function—Part 2: The preparation for lotus

Ling Ong[1,2]

Journal of Bodywork and Movement Therapies

IN PRESS