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

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Tribute to a great man:
George Goodheart DC
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 elegant 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?
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.

Also......ensure nutritional and psychosocial issues are considered

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.

<table>
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<tr>
<th>Box 7.3 Nijmegen questionnaire</th>
<th>Never</th>
<th>Rare</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very often</th>
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<td>Chest pain</td>
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<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<td>Feeling tense</td>
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<td>Blurred vision</td>
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<td>Dizzy spells</td>
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<td>Faster or deeper breathing</td>
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<td>Short of breath</td>
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<td>Tight feelings in chest</td>
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<td>Blated feeling in stomach</td>
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<td>Tingling fingers</td>
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<tr>
<td>Unable to breathe deeply</td>
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<td>Tight feelings around mouth</td>
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<td>Cold hands or feet</td>
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<td>Palpitations</td>
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<td>Feelings of anxiety</td>
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</table>

**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

Hyperventilation (usually due to habit)

Stress and problems of life
Traumatic events
Unconscious fears

Panic attacks

Symptoms are frightening

Body goes on alert (the ‘fight or flight’ response)

Rapid pulse, sweating, butterflies in the stomach, tense muscles, ‘twitchiness’

Upper body tension; breathing becomes more rapid

More carbon dioxide lost through overbreathing

Psychological effects:
tiredness, sensory disturbance, dizziness
Physical effects: exhaustion, tingling, cramps, weakness, etc.

Nociceptors more sensitive – increases pain perception

Aching shoulders, head and neck pain

Increased swallowing rate and bloating

Blood pH becomes more alkaline as carbonic acid is mobilized

Calcium lost in urine

Low calcium causes nerves and muscles to function poorly

Smooth muscles constrict, reducing arterial blood supply to the brain and tissues, leading to fatigue and ‘brain fog’

Integrating Complementary Therapies in Primary Care

A Practical Guide for Health Professionals

A Practical Guide for Health Professionals
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”

“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”

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

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
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.

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)

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
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.

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


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 oblique externus activity, overcoming pelvic floor muscle activity, and resulting in incontinence (Smith 2007).

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.
Releasing/stretching Obturator

Manual stretching of the gemelli–obturator internus and piriformis muscles

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


NOT IN HANDOUT NOTES
Example of Load Transfer Failure

(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.

Breathing disorders and cranial features
Yoga assanas for respiratory and pelvic floor balance?

**Figure 1** Iyengar yoga pose 1, Thunderbolt. Note: Pose 1 is repeated as pose 1, 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.

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

Ling Ong¹,²

*ANATOMY & PHYSIOLOGY FROM A BUDDHIST PERSPECTIVE*