Academy of PHYSICAL MEDICINE

Text Summary

Respiratory Disorders
With Leon Chaitow

Leon Chaitow

- He qualified as an osteopath and a naturopath in 1960.
  - Over 55 years of experience.
- Since then he as produced something like 100 publications, 80 training leaflets and over 20 full blown reference works.
- Editor in Chief of the Journal of Body and Movement Therapies.

Interest in Breathing Disorders

- Began in 1995, whilst filming video segments for the first edition of Muscle Energy Techniques.
- After a hot, pressured day, what began as strange tingles turned into full tetanic contracture down the left side.
  - Initially considered to be a stroke.
- After having numerous tests, a neurologist suggested a voluntary hyperventilation test.
  - Resulted in a return into contracture.
  - Leon told that 'he needs to learn to breathe'.
- Therefore, spent the last 20 odd years trying to learn how to breathe.
  - Out of that came a particular interest in this topic because it is not pathology, but rather dysfunction.
  - Discovered along the way how relevant to manual therapy it is.
    - Reflects on motor control.
    - It reflects on level of pain that you perceive and a whole host of other symptoms that can emerge from a purely dysfunctional pattern of breathing.

Breathing Pattern Disorder

- It is not pathology.
  - Not chronic obstructive lung disease.
  - Not classical asthma.
- A patient will not present stating that they hyperventilate
  - Instead, they will present with back pain, neck pain in particular, chest pain or many other forms of dysfunction- gut dysfunction, irritable bowel type symptoms.
    - Such dysfunction can be a result of biochemical imbalances caused by a BPD.

- Similar to postural training, it is necessary to take the dysfunctional pattern of breathing and retrain so it is comfortable to breathe normally and uncomfortable to breathe in the current state.

- As above, nobody presents themselves as having a breathing pattern disorder.
    - There are various tests to see whether the way in which somebody breathes has anything to do with their symptoms.
        - Objective capnography.
        - Show imbalances in carbon dioxide levels.
- Working on breathing may be the long-term solution to reducing pain as opposed to treatment.
    - E.g. Pain in the neck may only be treated to short-term effect if the pain is to do with the overuse of the scalene.
- Advice to change breathing is received with mixed responses by patients.
    - Long process.
    - The younger the person, the better.
        - If they are well educated by the practitioner, it is possible to see positive effects at six weeks.
    - Work carried out at Papworth Hospital in the 80s and 90s suggested that if you're not better by six months then it's not going to be much use.

Hypocapnia

- You can easily measure the carbon dioxide levels with capnography.
- A cannula can be placed in the nose and measurements brought up onto a screen.
    - Useful to help educate the patient on what normal levels would look like.
- Can be caused in a vicious cycle: if you're stressed and/or anxious in life, it can cause heavy breathing.
    - Changes in breathing can then make you feel more anxious etc.
- Symptoms:
    - Rapid pulse
    - Sweating
    - A 'butterfly' feeling in the stomach.
    - As your upper body becomes more tense, and as the scalenes and sterna masteroid and other accessory muscles and obligatory muscles overwork commonly they'll be head, neck, shoulder type symptoms.
- When you lose too much carbon dioxide, your blood becomes more alkaline- respiratory alkalosis.
- Note that hyperventilation is useful in a number of situations where there is an acid build-up, mainly during excerise, pregnancy and in those with liver or kidney disease.

Respiratory Alkalosis

- The Bohr Effect is a product of Respiratory Alkalosis.
    - The under oxygenation as a result of alkalosis.
- Bohr was a Scandinavian scientist at the turn of the early 20th century who helped to identify how haemoglobin releases its oxygen to the tissues.

    - Haemoglobin leaves the heart, goes to the lungs and picks up oxygen and it attaches to it because the lungs are the most alkaline part of the body.
    - It is meant to deliver it to the brain or the tissues as needed.
        - However, if the bloodstream has become more alkaline, it will hold on to the oxygen.
- Also with alkalosis, smooth muscles constrict, various smooth muscles around the blood vessels, around the gut, around the bladder tubes.
- In addition, problems are created as the body tries to combat alkalosis.
    - As part of the homeostatic rebalancing, the kidneys start to try and get the pH back to normal and they start to excrete bicarbonates.
        - Begin to get calcium and magnesium imbalances.
        - Leads to neurological issues starting up.
        - Low calcium causes nerves and muscles to function poorly, motor control is reduced, pain threshold is changed.
- Many more resulting problems:
    - Fatigue, sensory disturbance, dizziness, impaired balance, cramps, tingling.
    - Motor control, myofascial effects diaphragm weakness, pelvic floor trigger points, gut, cardiac, allergic and glucose supply to the brain would be decreased.
    - In females, it can cause rising progesterone levels prior to a period.
- The above should be taken into account when being are being tested for diabetes but to claim that this is the actual alternative would be too borderline.
- In relation to any symptoms that could relate to an emergency such as a heart attack, it is still vital that the practitioner calls an ambulance rather than first testing for breathing disorders etc.

Premenstrual Syndrome

- Enough evidence is around to claim that premenstrual syndrome may be attributed to hyperventilation.
- As carbon dioxide levels decrease, other symptoms kick in and premenstrual symptoms largely.
- The menstrual cycle, fibromyalgia and chronic fatigue symptoms are all *related* to breathing.
    - Perhaps not always the direct cause, but you can do more to change your breathing than other things.

Chronic Fatigue and Fibromyalgia

- Studying breathing will not cure such highly complex conditions but if you don't work on the breathing in chronic fatigue or in fibromyalgia, you're missing out on a huge opportunity.
- Mostly common in women but not uncommon in men.

Athletic people

- 41% of elite female athletes stress urinary incontinence.
    - That is often related to pelvic floor dysfunction which is related to breathing dysfunction.
    - This is a greater rate than in the normal population.

- Women with chronic pelvic pain typically display upper chest breathing pattern with almost no movement to the thorax or the abdominal area.
- There is evidence which suggests that this is a habitual pattern which, like posture, has become ingrained.
    - The respiratory center at the base of the brain to be comfortable at a certain level of carbon dioxide and you breathe to that level.
    - Dr. Lum at Papworth estimated that a younger patient could begin to retrain their breathing pattern in six weeks, whilst an older, chronic case may take six months.
        - Again, if not effect is reached at this point, it is unlikely that it will get better.
        - This is the reality for 1/20 people.

<u>Screening Process</u>

- A patient that could be a candidate for the advice/training could be restless.
- Air hunger is a symptom to look for.
- Sighing and yawning are other symptoms because that's another way the body tries to rebalance the carbon dioxide levels.
- Swallowing rate- the more rapidly you breathe, the more you'll swallow and what you'll be swallowing often is air.
    - People with bloated bellies are often simply blown up with air they've swallowed, aerophagia.
- The practitioner tests the comfort of the patient.
    - The patient has to breathe out and hold their breath for as long as possible.
    - Difficult to gauge what a normal start point for this would be as nobody is 'normal'.
        - Under 50s with no other pathologies should manage 25 to 30 seconds.
    - One can train to make this last longer which keeps carbon dioxide levels up.
- Evaluate the thoracic movement.
    - Where do the shoulders move on inhalation?
- Very often, it is possible to see sternomastoids.
- Breathing rate may not be obvious.
- The Nijmegen Test is a very well validated questionnaire.
    - *(You can view this questionnaire from the main Leon Chaitow recording page)*
    - Consists of 16 questions with a tick box system.
    - If the patient scores 19 or more, there is a 95% chance that they're hyperventilating.
    - Developed by Van Dixhoorn in the '80s, obviously in the Netherlands.
    - The objective for the practitioner and patient would be to bring the score down over time.

Treatment

- Treatment intervals would vary on discussion.
- Lum and Nixon from Papworth pioneered breathing retraining as well as physical therapy alongside.
- The practitioner would aim to mobilize the thoracic cage, to try and normalize the machinery of breathing while the patients learned to breathe using different techniques.
    - A combination of patient and practitioner.
    - Through this system, the intervals may begin fortnightly and then get further apart.

- If the patient's score on the Nijmegen Test is coming down, they are improving because it is symptom-based.

Smokers

- There are no particular patterns of breathing dysfunction in smokers.
- Nor is there any sign of a greater frequency of hyperventilation in smokers.

Examination in the Studio- Nick (smoker)

- First tests look for movement during breathing.
    1. One hand is placed in the upper belly just below the ribs and the other is rested above the ribs.
    2. The next one observes the patient's breathing with their hands on their legs.
       Aim to palpate but without any real pressure.
       Fingertips touching the clavicles, the practitioner wants to get a sense of what the clavicles are doing- they should not be moving at all.
       Attention should be paid to the scalene and sternomastoid.
       The practitioner then draws the upper trapezius towards them and sinks their fingers to hit something bony.
        - This can reveal where ribs are elevated etc.
- Following test examines the thoracic spine whilst the patient is slumped.
    - Ideally, you would want to see a curve as the patient is positioned like this.
    - When there is no curve at all, that means the ribs in certain areas are going to be particularly restricted.
    - These flat areas mean that the thoracic cage needs to be mobilised.
- Another test to establish whether mobilisation is required involves the patient lying flat on the bed.
    - The spine should respond by creating a 'wave' which begins at the sacrum.
    - In spines that aren't as flexible, it will move up and down in one piece as a flat area.
        - This is further evidence that mobilisation is needed.
    - Very rare to see a 'normal' breathing wave.

Examination of the Chest

- The practitioner's thumb is placed on the 10th rib alongside the spine.
- As they breathe, any lateral expansion should be observed.
- In this test, it is possible to find scoliosis.
    - This is a sign that releasing or normalising the rib function might be more difficult.
- The fingertips are placed on the superior surface of the second rib.
    - Here, it is possible to observe whether the ribs are misbehaving or not rising and falling.
    - Little movement may suggest that there is a depressed rib.

Teaching the Patient to Breathe/Manual Therapy

- Patient sits up.
- They carry out pursed lip breathing (lips in a 'puckered up' position).
    - Blowing out a thin stream of air for as long as it is comfortable.
    - When the need to breathe hits, the lips are closed briefly.
    - Then, the patient breathes in through their nose before restarting the cycle.

- For the first week or two, the patients should train themselves to do this for 30-40 cycles every morning.
    - Smokers may feel light-headed at first as there will be more oxygen in the brain than they are used to.
- After this period, it is possible to add more elements to the technique.
- The first progression is to slowly count the cycle.
    - Breathing out should slowly count in 100s up to 500/600.
    - The pause should last for a single count.
    - Finally, inhalation should last up to a count of 300.
    - This equates to a 10 second cycle, making six cycles a minute.
        - Results in a positive effect on the parasympathetic nervous system.
- Meanwhile, the practitioner aims to get some mobilisation release.
    - No high-velocity techniques used.
    - Focus on variations of muscle energy technique or positional release.

Rib mobilisation (*1 hour 12 minutes into the recording*)

- Prior to rib mobilisation, the practitioner would want to relax the pectorals with soft tissue methods as much as possible.
- Then, lying on their back, the patient tilts their head to the side and rests their hand on their head, similar to a 'dying swan' ballet position.
- The practitioner's hand (in the instance of the recording) is hooked onto the superior surface of the third rib.
- The patient breathes in and holds their breath, their arm comes across slightly and they lift and tilt their head back sideways very slightly- here, there will be an isometric contraction.
    - At this point, the practitioner draws the rib inferiorly.
    - Normally, this will release the rib and also the others that are associated with it.

Elevated Rib

- The practitioner places one hand between the shoulder blades and one on the superior surface of the elevated rib (with females, places their hand there with yours on top).
- Roll the patient into flexion until the segment where the ribs attach at the back is engaged.
- The patient breathes in fully and rolls their head and shoulder back against the practitioner's arm. After this extension, the patient relaxes.
- Finally, as the patient exhales, take them into a bit more flexion.

Diaphragm

- To release the diaphragm, work can be done on the psoas as it merges with the diaphragm as well as the quadratus.
- With one knee flexed, the other leg is slowly, eccentrically stretch.
- Just above the ankle, take out the slack and apply slight external rotation and traction to the leg. Hold for about 10 seconds.
- Following this, the patient gently and slowly pulls their leg back into their hip whilst the practitioner maintains their load.

    - As the patient slowly releases, take some more slack and hold for another 10 seconds.
    - Then the cycle is repeated, meaning that there is intermittent eccentric stretching.
    - After approximately 10-15 cycles, the quadratus, psoas and the diaphragm would be released.
- Possible to work more directly on the diaphragm as you can reach its attachments but this would not be comfortable at all for the patient.
    - The above method via the psoas is adequate in most cases.

Flat Areas of the Spine

- With the patient sat, slumped with their arms crossed onto the opposite shoulder, the practitioner can carry out a rapid rhythmic resistive duction pulsed muscle energy.
- The flat area is located and the patient held at the side-flexed, rotated barrier.
- The practitioner's thumb is rested on the flat area, and with that segment only, the patient pushes against the pressure. Intermittently they push back and stop.
    - Rapid rhythmic movement.
- Following this, the practitioner could ask the patient to try and extend backwards over their hand.
- That will release everything and it works the intrinsic muscle of the spine.
    - High velocity is not necessary.

- When mobilisation is in progress and the patient is happy with their counting, the next step can be added.
    - This progression is a way of reducing the over activity in these upper fixator muscles.
    - There are up to four/five variations that can be added to the technique.
        - e.g. Interlocking finger and placing them in the lap. During the inhalation phase of the pursed lip cycle, press with a 'few grams' of forse against the back of the hand. This partially deactivates the accessory breathing muscles.
        - e.g.-2 With either hand, hold the wrist of the other. Upon inhalation, pull the wrist down lightly. Again, this inhibits the upper muscles as you inhale.
        - e.g.-3 'Beach Position'. Lying on their back, the patient places their hands, relaxed, behind their neck. The knees are flexed and they carry out the cycle.
        - e.g.-4 'Bruegger's position'. Sat, perched on their ischial tuberosities, the patient pivots forward slightly upon inhalation. Arms are hung, palms facing forward. As the patient inhales, the hand turns slightly so that the thumb is facing backwards. As the patient exhales, they pivot back.
- Frequently during the whole process, the patient is to retake the Nijmegen questionnaire.
- In addition, the patient should continue to test how long they can hold their breath for.
- Progression is key as making the patient uncomfortable with too much will make them lose interest.
    - Warn the patient that they may feel light-headedness initially.
        - This is caused by taking in more nitric oxide and oxygen through nasal breathing than the brain is normally used to.
        - If this should happen, the patient should immediately stop and rest.

- Panic attacks can also occur whilst somebody is learning the techniques.
  - Advise the patient to breathe into their hand, and inhale back in; do not use a brown paper bag. This reclaims the carbon dioxide. In addition, a small battery-operated fan could be useful for breathing.

Nitric Acid

- Nitric oxide is released when there's any form of vibration.
  - The sinuses respond to vibration from nasal breathing.

Fees

- Can be discretionary should the patient need to come back on a frequent basis.
- Either a fee is charged or nothing, no in-between.
  - Dependent on whether treatment is dealt or whether it is just leaving a patient in a room with a capnograph for 15 minutes for biofeedback.

Importance of a capnograph in clinic?

- No question that a clinic should consider investing in one.
- http://www.betterphysiology.com/capnotrainer/ - Information by the manufacturer of the CapnoTrainer can be found here (US based).
  - Measures heart rate variability.
  - Can be used as a biofeedback unit.

Lifestyle

- All of these symptoms of upper chest breathing pattern are very similar to hypoglycemia.
- Lum and Nixon discussed the exacerbation of borderline breathing when somebody has a tendency to have low-blood sugar.
  - Ensure such a person eats regular meals and takes in adequate protein.
  - Keep blood sugar stable.
  - Take chromium supplements.

Tai Chi, Yoga and Pilates

- The distraction provided by certain activities can be useful as you do not want the patient to always be thinking about their breathing.
  - Tai Chi is particularly useful as trying not to fall over distracts somebody, whilst entraining breathing into their movement.
- Slow, virtually pursed lip breathing is involved in pranayama Yoga.
- Good Pilates is taught with a slow breathing rhythm.

First Draft