PRIVY Episode #470

CLENCHING AND INVOLUNTARY NEURO SENSORIMOTOR CORTEX PATTERNED OVERACTIVITY

by Ron Hruska

Clenching of the hand, including the wrist and fingers, or feet, including the ankles and toes, or neck, mandible, shoulders, hips and back muscle all relates to some various degree of involuntary sensorimotor cortex control.

It often begins when the neuronal pathways become overactive and suppressive activity becomes limited because of associated and prolonged stress.

Serotonin medications suppress dopamine which can help control the relatable stress, but it can also suppress dopamine pathways that help control movement, which heightens involuntary universal muscle activity, and mesencephalic trigeminal reflexive behavior.

This mesencephalic trigeminal behavior is often associated with overactive back extensors, especially the latissimus dorsum, which decreases the distance between the upper thorax and the lower thorax. This 'clenching' of the posterior lateral thoracic muscle is often contributing to overuse of the psoas muscle that pulls the lower spine forward and toward the legs.

Clenching of the posterior mid back and anterior hip flexors also corresponds to clenching of the mandible elevators, the chest pectorals, and the hip adductors. *("Our low and mid trapezius muscle allows us to move and turn our upper torso on our lower torso. Clenching or tightening the latissimus dorsum reduces and regulates this rotation, requiring us to go to the distal component to adapt for limited back flexion and rotation, i.e. fisting, tightening up ankles through supination, and clenching." PRIVY #335)*

Those of us who are familiar with predominant cortical hemispheric differences of function will appreciate how and why the human body's right hemisphere becomes more tight, restrictive in some cases, neurologically "on guard", more so, than on the left. Our right lateral intercostals, forearm pronators, cranial rotators, lateral pterygoid and ankle supinators, while the left posterior intercostals, forearm supinators, shoulder elevators, anterior temporalis, masseter, and ankle pronators become habitually overactive, over time. Leading to both volitional and non-volitional agonistic muscle contraction, as memories of patterned neuronal connection within each cortical hemisphere contribute to this associated patterned body hemispheric lateralized "clenching".

Caffeine, alcohol, and nicotine disrupt dopamine balance and basal ganglia response, which directly affects the nervous system arousal. Obstructive sleep apnea increases nocturnal clenching of both skeletal orofacial and accessory respiratory muscle. All of which can enhance clenching cycles.

Voluntary contraction of the mandible teeth to the maxillary teeth is a common maneuver used to facilitate peripheral monosynaptic reflexes and significantly facilitate motor system activity. Clenching of the mandible has a similar effect on both the upper and lower extremities. Cortical and subcortical sites contribute to this effect in hand muscle while only subcortical sites were identified in this faciliatory effect on the lower extremity. *(Boroojerdi B, Battaglia F, Voluntary teeth clenching facilitates human motor system excitability, July 2000, Clinical Neurophysiology, 111, 6)*

The most common identifiable organic cause of clenching of any area of the body is related to limited self-regulation of our brain's 'over securing central control' system, or our preparatory response for distal muscle demands. It is an associated movement of muscle that is not directly related to the primary task.

For example, the flexors of our neck will become tight and 'clench' our upper and lower anterior neck as we 'think' or prepare to flex, pronate and adduct our forearm, wrist and hand that may require maximum effort.

The palmer grasp primitive reflex is usually integrated around 4 to 6 months; however, we volitionally will recruit these reflexive muscles when effort is not meeting the physical demand that is placed on the upper distal extremity.

<u>Associated asymmetrical movement patterns that induce clenching:</u>

1) Overpronation on hands and feet. When the foot is in pronation the CNS is altered and control of neck and appendage flexor hyperactivity is limited or reduced. For example, ground reaction eccentric and concentric force on the plantar flexors increases, as does the need to constantly keep the body moving forward when upright. *(Renan Resende et al, Effects of foot pronation, Science Direct, Feb. 2019)*

2) Forward head drive secondary to poor thoracic diaphragm opposition.

3) Repetitive forearm adduction and anterior shoulder interior rotation.

4) Overuse of hip adductors secondary to an increase in lumbar lordosis.

These patterns are often recognized in people who sit most of the day, drive vehicles for a living, talk a lot during the day, and have very stressful careers. This behavior often leads to tremors, coordination challenges and possible dystonia.

They are not necessarily placed in a ‘patterned position’ but are in a pattern of ‘over regulated subconscious cortical patterned movement of dissonance, where patterned function is being held’.

The following PRI techniques have been successful in reducing this level of cortical regulation of patterned ‘clenching’.

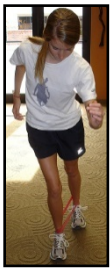
1) Long Seated Alternating Crossovers

2) Standing Resisted Low Trap Press Through

3) Forward Alternating Reciprocal Resisted Respiratory Reach

4) Short Kneeling Alternating Reciprocal Crossovers

5) Retro Walking



6) Seated Supported Left AF IR/FA IR

7) Alternating Reciprocal Figure 8 Walking