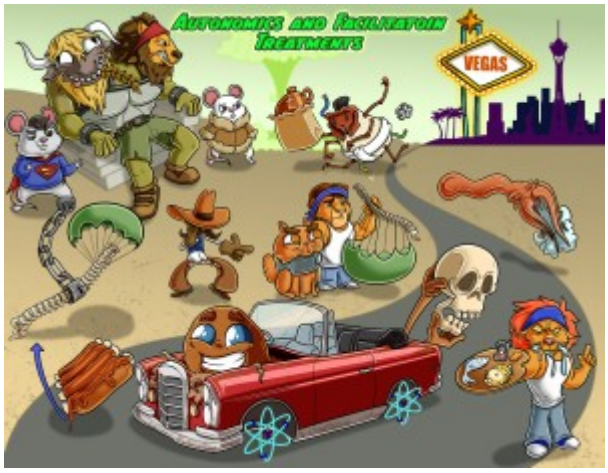
Autonomics and Facilitation: Treatments

The autonomic nervous system plays a vast role in treating several somatic and visceral dysfunctions. When a patient suffers from one of these dysfunctions, the afferent neurons from the local tissue are constantly firing along their neural pathways. Because these neurons are now partially excited, they maintain a state of sub-threshold excitation levels and require less additional stimuli to trigger an action potential. This concept is known as facilitation. Sometimes, facilitation may also arise from changes within the afferent neuron themselves or even in their environment. As a result, patients may develop a reflexive dysfunction over the facilitated tissue segments. Commonly tested are the viscerosomatic reflexes and somatovisceral reflexes of the different organs and tissues of the body. In this Picmonic, we will go over some osteopathic treatments that can be used to decrease facilitation and influence the effects of the autonomic nervous system. Here, disease processes tend to elicit a net sympathetic response. Thus, manipulating the nervous system to normalize sympathetic activity and enhance parasympathetic activity can help treat different disease states.



PLAY PICMONIC

Sympathetic Nervous System

Rib Raising

Rib Raised

Rib raising is a technique used to improve the sympathetic nervous system response. This treatment can be used to balance the sympathetic autonomic system, improve rib movement during respiration, and improve lymphatic drainage. It involves gentle traction to the paravertebral tissues, leading to a stretch and myofascial release. While the patient is in a seated position, the physician applies anterior and lateral traction at the bilateral rib angles while pulling the patient towards themselves. The physician first starts at the upper ribs, then proceeds down to the lower ribs and cycles back upwards to complete the motions. This technique can also be performed with the patient lying supine if they are unable to sit in an upright position, such as a postoperative patient. Don’t forget that the initial response stimulates the sympathetic system, but if rib raising continues greater than 90 seconds, it will decrease sympathetic outflow, leading to a net parasympathetic response. Contraindications include rib fractures, spinal cord injury/surgery, or malignancy.

Paraspinal Inhibition

Parachute-spine with Inhibiting-chains

Paraspinal inhibition can be used to normalize sympathetic activity. This technique is frequently used in surgical patients to decrease the sympathetic response and prevent postoperative ileus. It is used in conjugation with rib-raising treatment. Here, physicians apply anterior and lateral force on the erector spinae muscles located over the T1-T12 segments for greater than 90 seconds to decrease the sympathetic response. Contraindications to performing this technique include recent spinal surgery, rib fractures, and spinal fractures.

Celiac Ganglion, Superior Mesenteric, and Inferior Mesenteric Release

Silly-yak Gang-lion with Super Mouse and In-fur Mouse

Physicians can target the celiac, superior mesenteric, and inferior mesenteric ganglions to treat patients with GI/GU symptoms. Patients with upper GI dysfunctions involving the liver, gallbladder, stomach, duodenum, and pancreas will have viscerosomatic reflexes ranging from T5-T9. Also, patients with GI dysfunctions from the jejunum to the mid-transverse colon and some GU dysfunctions have viscerosomatic reflexes ranging from T10-T11. Lastly, patients with Lower GI, GU, and Pelvic dysfunctions will have viscerosomatic reflexes ranging from T12-L2. With this treatment, the goal is to normalize the sympathetic activity elicited by these reflexes. Physicians will apply pressure over the respective ganglia until a palpable release is noted from the overlying fascia. Contraindications to performing ganglion releases are nearby surgical wounds or aortic aneurysms.
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Chapman’s Points

Chaps-man

Chapman's Points are believed to be a visceral-somatic reflex from the organs of the body. They are 2-3 mm small, smooth, firm nodules that can be palpated, similar to tiny pearls of tapioca in bubble tea. A majority of the points are paired anteriorly and posteriorly on the body and can be located below the skin and subcutaneous tissue. They also elicit a pinpoint, non-radiating pain in a fixed anatomical location. Looking for Chapman's Points can help localize a physician's differential to provide support if a visceral disease is present. Typically, anterior points are for diagnosis, and posterior points are for treatments. Treatment includes applying a light, circular motion over the respective posterior point for about 30 seconds until the nodule can no longer be palpated. As a result, this will decrease the afferent input that the visceral structure sends to the spinal cord, thus decreasing the facilitation involved. Don't forget to review our Chapman's Point Picmonic to dive a little deeper into the breakdown of these reflex points!

Cervical Paraspinal Sympathetic Ganglia

Cervix-cat Parachute-spine Simba Gang-lion

Treating the cervical paraspinal sympathetic ganglia can influence the sympathetic response in the head and neck. Physicians can specifically target C1-C3 superiorly, C6-C7 middle, or C7-T1 to elicit specific responses of the head and neck.

Parasympathetic Nervous System

Cranial Manipulation

Cranial Manipulation

Physicians can utilize cranial osteopathy to alter the tone of the parasympathetic nervous system. Remember that CN III, VII, IX, and X contain parasympathetic nerve fibers. Therefore, targeting the dural strains with cranial manipulation can improve the function of the structures in the head that are directly affected by these cranial nerves.

Sphenopalatine Ganglion Release

Seafood-palate Gang-lion

The Sphenopalatine Ganglion Release is targeted to patients with xerostomia and thick nasal secretions. Specifically, this ganglion is innervated with parasympathetic fibers of the facial nerve and sensory fibers of the trigeminal nerve. Here, physicians apply manual pressure within the oral cavity upon the sphenopalatine ganglion located in the superior, posterior lateral area of the pharynx. As a result, a parasympathetic increase of thin watery secretions will dilute the overall consistency of the fluid.

Occipital Decompression

Octopus Decompressed

Occipital decompression is a technique used to normalize parasympathetic vagal tone and release the posterior cervical soft tissues. It can be used to improve headaches, dizziness, concentration, fever, and swallowing. In addition, it is commonly used in infants with difficulty breastfeeding to improve suckling and swallowing. This technique includes placing even pressure under the suboccipital region bilaterally. As the soft tissue slowly begins to relax, the weight of the head will slowly drop down closer to the table. Subsequently, the physician will apply a gentle cephalic force to disengage the occiput from the atlas and further decompress the occipital bone.

Vagal Nerve Stimulation

Vegas-sign

Stimulating the vagus nerve can help balance the parasympathetic response that it has on the visceral tissue. Manipulation over the OA, AA, or C2 joints will influence the vagus nerve and minimize the parasympathetic tone.

Treat Sacral Somatic Dysfunctions

Sack-rum and Sumo-tic Dysfunctioning

Treating the sacral somatic dysfunctions can assist in normalizing the parasympathetic ganglion that impacts the nearby anatomical structures. One treatment frequently tested is Sacral Rocking. Specifically, physicians use this treatment modality to normalize the parasympathetic response affecting the left colon and pelvic structures in order to influence colonic motility. It can also be used to improve sacroiliac joint mobility due to sacroiliac dysfunction, pelvic congestion syndrome, or visceral reflexes such as those seen in dysmenorrhea. With the patient prone, physicians apply a rocking motion over the sacrum synchronous with their respiration. As the patient exhales, they augment sacral counternutation. As the patient inhales, they sacral augment nutation.