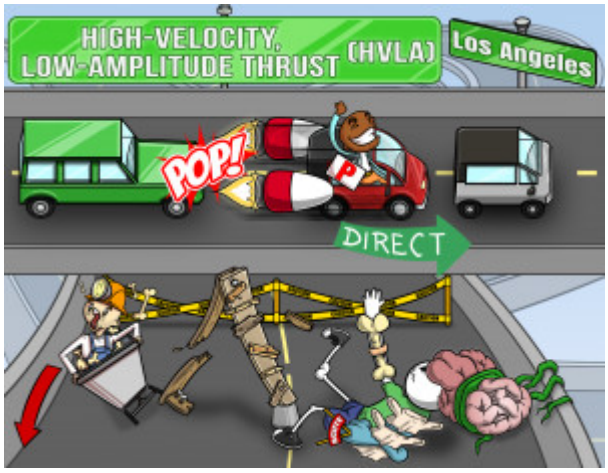
High-Velocity, Low-Amplitude Thrust (HVLA)

High-Velocity, Low-Amplitude Thrust (HVLA) is an osteopathic manipulative treatment technique that has long been used by osteopathic physicians, chiropractors, and other manual medicine providers. HVLA is a direct, passive technique, meaning the patient remains relaxed while the physician moves the dysfunctional tissues through the restrictive barrier. The technique itself involves approaching the direct barrier, then proceeding through the barrier with a thrust, a quick movement over a short distance. The thrust is sometimes accompanied by a pop or click, and improvement in physiologic motion should be noted immediately. Contraindications to HVLA include low bone mineral density, fractures, joint instability, vertebrobasilar insufficiency, and acute herniated disc. These contraindications are intended to protect the patient from sustaining injury during the HVLA techniques. With practice and experience, HVLA can be a quick and useful tool for treating somatic dysfunction.



PLAY PICMONIC

Characteristics

Direct
Direct-route
A direct technique takes the tissues towards their restrictive barrier. HVLA is always a direct technique. Before the thrust towards the restrictive barrier, the practitioner should slowly bring the tissues as close to the barrier as possible. This is called “locking out” the tissues or “taking up the slack”.

Passive
Physician-forced
A passive technique involves no participation from the patient other than relaxation. During HVLA, it is important for the patient to remain relaxed and not contract their muscles. The thrust itself is carried out by the practitioner.

Basics

Thrust
Engine-thruster
An HVLA thrust is, as the name suggests, a rapid movement (high velocity) over a short distance (low amplitude). The thrust passively and quickly moves the dysfunctional tissues through the restrictive barrier. The thrust is the therapeutic motion of the HVLA technique. After successful application of a thrust, there should be an immediate increase in range and quality of motion.

Pop
Pop
Application of HVLA often, but not always, results in an audible pop or click. This pop often signals a successful treatment, but is not necessary. The mechanism behind the pop is not well-understood, though cavitation (formation and collapse of gas bubbles) in the synovial fluid has been studied.

Contraindications

Low Bone Mineral Density
Down-arrow Bone Mineral-miner
HVLA should be avoided in patients with low bone mineral density. Diagnosis of osteoporosis or osteopenia should lead the practitioner to consider other techniques. Consideration should also be given to co-morbidities that compromise bone mineral density. Chronic systemic glucocorticoid use and malignancy in the bone, for example, should prompt the consideration of other techniques.

Joint Instability
Joint Instability
Patients with joint instability lack the ligamentous and musculotendinous integrity to protect their joints from excessive, unsafe mobility. Application of HVLA on an unstable joint puts the patient at risk for injury. Joint instability has a variety of causes, but two classic causes of joint instability in the cervical spine are rheumatoid arthritis and Down syndrome. Patients with these diagnoses should not receive HVLA until joint instability is ruled out.

Fractures

Fractured-bone

Fractures require immobilization for healing. Application of HVLA may disrupt an unhealed fracture. HVLA is contraindicated when acute fracture is diagnosed or suspected.

Vertebrobasilar Insufficiency

Back of Brain bound by Vines

Patients with vertebrobasilar insufficiency have poor blood flow through the vertebral arteries. The vertebral arteries pass through the transverse foramina and then supply the basilar artery, which nourishes posterior brain structures. Application of HVLA to the cervical spine in patients with vertebrobasilar insufficiency can result in neurovascular complications.

Acute Herniated Disc

Acute-angle Herniated Disc

Herniation of the nucleus pulposus, especially accompanied by radiculopathy, should make a practitioner cautious when using any manipulative technique. HVLA could theoretically worsen an already injured joint. However, it has also been postulated that HVLA can improve local inflammation associated with disc herniation. Practitioners should proceed with caution in any patient with injured or disrupted vertebral joints, and should use HVLA only after carefully weighing the risks and potential benefits for the individual patient.