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The massage therapist is no stranger to the sequelae of musculoskeletal involvement following trauma, as in the case of whiplash injury. You comprehend the anatomic origins – insertions and the mechanical function that the muscular system exerts on the skeleton. Applied techniques for reducing muscular fascial tensions improve mobility and reduce pain symptoms. For some clients, relieving these tensions may be all that is needed for tissues to regain homeostasis. But for others, the symptom relief is temporary, despite your best efforts. What more can be done? Enhancing your understanding of tissue response to applied forces and the propagation of their resulting shock wave throughout the body will prepare you for the more complicated, traumatic whiplash cases.

FORCE can be defined as “any agency or influence which changes a body’s state of movement or rest” (<https://byjus.com/physics/force/#What-is-Force?>). In mechanics, forces of external origin are called loads or applied forces. Forces of internal origin are called stresses. A stress is the internal resistance of a material (i.e., body tissue) subject to an external load. We recognize several principal types of stress: traction (stretch), compression, and shear (offset forces of divergent direction). Any body tissue can be subject to deformation or change of its original length through stretch or compression. Tissue elasticity is the ability of tissues to regain their original shape once the force that deformed them has ceased. If a tissue is deformed (stretched, compressed, or sheared) beyond its elastic limitation, the altered tissue length becomes set. Tissues then do not regain their exact original shape. This is referred to as plasticity. Once the internal tissue stress exceeds the limits of plasticity, the tissue reaches its breaking point (rupture or fracture).

With traumatic events, such as whiplash, kinetic energy is applied to the diverse tissues of the body, along varying axes, or vectors. Some of this energy

Visceral Manipulation Application FOR TRAUMA AND WHIPLASH

causes deformation of tissue, some is dispersed as heat, and the remaining energy is stored in the tissues as residual energy. This residual energy can be responsible for latent, secondary tissue lesions, or sequelae. Trauma may also be viewed as a mechanical incident. Two major types of mechanical trauma include: 1) effects of contact: the body hits or is hit by an object, and 2) effects of inertia: the body is subjected to forces of acceleration/deceleration. The body experiences the effects of inertia any time a trauma directly or indirectly produces acceleration or deceleration of all or only part of the body. We experience this when riding an elevator. As the elevator accelerates upward, blood and other fluids accumulate in the lower parts of our body. With downward acceleration, fluids accumulate in the upper body. Our abdominal organs are composed of semi-fluid mass, and they respond to the effects of inertia.

Duration of impact is also important in trauma. The shorter the duration of impact (50–90 milliseconds), the greater the force impulse will be, increasing the likelihood of lesion. When traumatic forces are applied over an extended duration (1–2 seconds), the body has time to bring its compensatory mechanisms into play. The musculoskeletal system may offer resistance to the propagation of the energy wave produced. Palpation skills provide keen awareness of which muscles absorbed this energy. But what of the other associated structures within the area, such as the viscera, the neurovascular and lymphatic connections? The same spinal nerves (CNS) innervating the affected muscles, send communicating branches to local ganglion and nerves of the autonomic nervous system (ANS). Communication between the CNS and ANS links all structures; and forces propagate along these structures, and along the enveloping fascial system. By means of such interrelationships, forces impacting the head can reach as far as the pelvic

floor, or even into the lower extremities.

Thus, lesions produced by mechanical trauma are diffused globally. The concept of global lesions incorporates the viewpoint that nothing is isolated in a living organism. All tissue structures and physiological systems are interdependent; any tissue can be affected by the propagation of the energy wave produced by traumatic force. The concept of global lesions is fundamental to osteopathic visceral and neurovascular manipulation developed by Jean-Pierre Barral, DO, MRO(F), RPT and Alain Croibier, DO, MRO(F).

Exploring the soft tissue connections between muscles and nearby visceral and neurovascular structures allows the massage therapist to apply gentle and specific techniques for releasing possible associated restrictions. Evaluation of mobility, posture and functional abilities gives the therapist insight as to which structures are restricted. Your palpation skills are enhanced as you explore the relationships of tissue restrictions.

The Barral Institute invites you to discover new applications of visceral manipulation principles and techniques for helping your clients with symptoms of whiplash injury and other conditions involving trauma.

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