



CLINICAL APPROACHES: FACILITATED OSCILLATION

Facilitated oscillatory release—a dynamic method of neuromuscular and ligamentous/articular assessment and treatment

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Temporal coding

Abstract Facilitated oscillatory release is a method and conceptual lens for applying oscillatory force in an osteopathic treatment sequence to normalize muscle tone and articular balance. Not a free standing modality, it has been mostly integrated into the focal treatment style popular with American osteopaths, as an adjunct to high velocity low amplitude (HVLA), muscle energy (MET) or connective tissue release techniques. The concepts can complement many types of bodywork. On review of the scientific literature, it is speculated that rhythmic peripheral afferent input can enable the resetting of normal postural muscle tone. The associated neurophysiologic theory and research may help further validate osteopathic diagnosis and treatment on a wider scale.

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Background

Any method of approach in bodywork optimally should integrate art, science and clinical experience. Each element expands our capacity for enlightened intervention in patient care. In this vane, facilitated oscillatory release (FOR) blends these in using rhythmic repetitive motion of body parts to help in diagnosis and in normalization of function. Most other osteopathic methods use a minimal amount of rhythm in motion testing despite the importance of rhythmic motion in daily function. Exceptions will be noted in the paper and comparisons made with compatible methods.

Although not essential for basic application, the suggested theory of effectiveness involves a decreasing of problematic muscle tone through entrainment of the body's own rhythmically firing neuroproprioceptive system. Coordinative processing of afferent input, which is preliminary to an active response, has been modeled as a coding process. Neuronal population coding has challenged or replaced modular and line labeled coordination in much of the neurophysiological literature (Sakarai, 1999; Sanger, 2003; Doetsch, 2000).

In this trend of thought, rate, location and temporal associations of signals have been cited as key features of the functional activity of the neural system. Several researchers have seen patterns of cyclic depolarization/repolarization activity as the body's means of sensing, interpreting

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and responding to external stimuli (Farmer, 1998; Zedka, 1997). In a separate area of work, symptoms such as pain are often seen as due to the diffusion and retention of the energy of strain or traumatic contact (Upledger, 2002; Comeaux, 2002; Becker, 1985). Repetitive afferent impulses of the correct resonant frequency are suggested by another author to be therapeutic in relieving muscle tension and restoring comfort as well as function (Schalow, 1993). Consistent with this research, FOR is suggested to be a means of manually applying therapeutic rhythmic force to restore restriction of motion and reduction of pain (Comeaux, 2003).

The author was trained as an American osteopathic physician and has maintained an interest in traditional and classical osteopathic philosophy and methods. A variety of treatment models (articular, muscle energy, HVLA, counterstrain, myofascial release) have been derived from the experience of astute clinicians. Attempts at physiologic modeling have been progressive since the beginning of osteopathy, however explanations have lagged well behind clinical practice as well as research. Most models depend on properties of articular mechanics (Fryette, 1994; Hall and Wermham, 1974) and neuromuscular control (Jones, 1995; Mitchell, 1995). FOR has been formalized from the practice style of the author, as will be described in this article.

The author was exposed to the person, thought and practice of Fulford who expounded a unique expression of cranial osteopathy influenced by Stone (1987) and others. Fulford redefined the patient according to vibrational electromagnetic field theory to complement his biomechanical training. Encouraged by readings in neurophysiological research, and personal exploration, Fulford evolved a protocol using oscillatory force and described his methods in terms of an energetic model. Part of treatment for Fulford was the use of a mechanical vibratory force (percussion vibrator) to release the shock of trauma remaining in damaged or painful tissue (Comeaux, 2002). As a result of this teaching exposure, the author integrated these procedures into his pattern of osteopathic manipulative treatment. He searched further for an understanding of tissue characteristics compatible with field theory yet also compatible with more widely accepted neurophysiology. Additionally he sought a manual means for the dynamic application of vibratory force in a clinically efficient way, independent of the percussion vibrator. Besides the convenience, this would help bridge the ideological chasm between energetic and conventional manipulation.

In actual practice FOR is seen to complement other methods of diagnosis and treatment and is

used in combined treatments. The procedures described in this article are intended to be exercises to help the reader become sensitized to the means and issues in applying such force to a body with therapeutic intent. Individual implementation in practice can vary.

Universality of rhythmic motion, macroscopic and microscopic

Joggers and cyclist experience the natural function of rhythm. Babies appreciate being rocked when unhappy; many of us dance for joy. Rhythmic motion is everywhere in human experience. Just as biologists recognize diurnal and other rhythms, much of the function on the microscopic scale is rhythmic. On the level of physiologic function, respiration and cardiac function are commonly recognized to be rhythmic. But voluntary and involuntary movement are commonly seen as discrete linear processes. However on a microscopic level, movement and maintenance of postural tone reflects recurrent cyclic depolarization and repolarization of the muscle activation pathway which extends the event from one of milliseconds to the time scale of purposeful gross motion (McComas, 1996). Muscle function is, then, also biochemically rhythmic following this cycle of depolarization/repolarization.

As a clinician, the author has experienced that the approach described here works. However, having a limited ability to test the hypothesis of effectiveness through instrumentation, the following represents the author's synopsis of supportive research. Clearly there is work to be done and further literature to be used to refine, emend, or dismiss the current hypothesis.

As noted above, both the Counterstrain and muscle energy models of manipulation make mention of the hypothesis of Korr and the inappropriate balance of gamma and alpha motor neuron activity present in dysfunction (Korr, 1977). Korr's hypothesis was that the experience of dysfunction is due to the mis-coordination of the neural circuit (gamma afferent and alpha and gamma motor neuron response) that coordinates the resting length of a muscle. After strain, this mis-coordination would cause the muscle to remain in a semi-contracted state, which could cause postural imbalance or muscle pain. The hypothesis is challenged by Anderson and Winterson (1995) who infer neural coordination at the cord and brain levels to be driven by nociception or pain sensation. Pain then would be the primary cause of the

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