

Newsletter

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Cumulative Trauma Disorder

Recent scientific research indicates that microtrauma throughout life may be the precursor to low back pain in the majority of cases.

Cumulative Trauma Disorder is a group of neuro-musculoskeletal syndromes resulting from the Cumulative Injury Cycle.

The injury cycle may result from acute injury, repetitive motion, and/or constant pressure/tension injury.

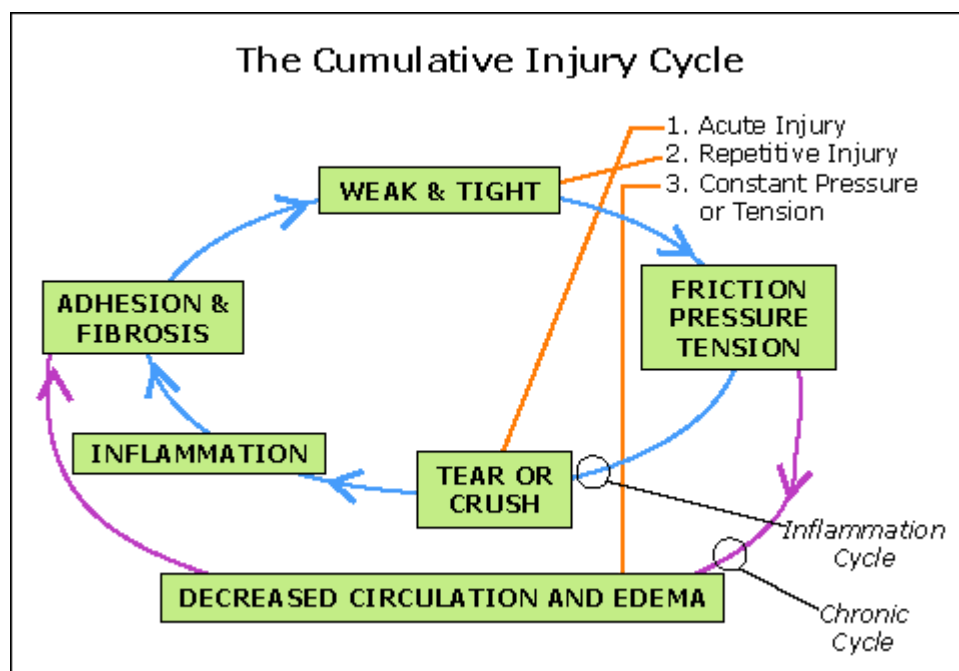
Acute Injury; Muscle tearing from an injury causes immediate inflammation. White-blood-cell proliferation, fibrinogen secretion, and adhesion formation start. If not treated correctly, the injury cycle begins.

Repetitive Motion Injury is a function of specific physical factors that can be measured. The model of repetitive motion describes how these injuries occur.

[Leahy MP, Mock LE Myofascial Release Technique and Mechanical Compromise of Peripheral Nerves of the Upper Extremity 6:4 ChiroSports Med; Leahy MP Improved Treatments for Carpal Tunnel and Related Syndromes 9:1 ChiroSportsMed]

$I = NF/AR$, where

- I= Insult to the tissues
- N= Number of repetitions
- F= Force or tension of each repetition
- A= Amplitude of each repetition
- R= Relaxation time between repetitions



Two examples of the Model of Repetitive Motion are;

- Vibration which results in high Number of repetitions with low Amplitude and low Relaxation time, causing Injury.
- and Poor, Static Posture which produces high Force with nearly zero Amplitude and Relaxation time, causing Injury.

Constant Pressure / Tension Injury

These two factors decrease circulation and compromise cellular recovery. This type of injury does not require motion; the muscle tension of poor posture, is a good examples of this.

The cumulative injury cycle, is self-perpetuating, therefore simply alleviating the pain symptoms is not enough; to fully correct the problem you must evaluate and treat the cause of the problem.

Components of the cycle are:

- Weak and Tight Tissues; repetitive effort tends to make muscles tighten. A tight muscle tends to weaken; a weak muscle tends to tighten.
- Friction - Pressure - Tension; as a result of weak and tight tissues,
- Decreased Circulation - Edema; the result of increased forces on the tissues is decreased circulation (if pressure is applied over lymphatic channels the result is edema)
- Adhesion - Fibrosis; cellular hypoxia, from restricted circulation causes fibrosis and adhesions to occur in and between tissues.