

Biomechanics and Injury

The beginning of this lecture discusses the effects of levers and spinal compression on holistic movement. Overall, more force is produced internally compared to externally. Meaning; when back squatting a barbell, your body is producing more force to move the barbell than the amount of force the barbell is producing. During this movement, the spine/back is at a mechanical disadvantage and is compressing. Commonly, weightlifters wear lifting belts to increase their intra-abdominal pressure (IAP), thus reducing compression of the spine. The Valsalva Maneuver is another common practice to increase IAP. It is noteworthy to state the thoracic to lumbar compression ratios are posture-dependent, which most movements emphasizing lumbar compression.

The latter end of the lecture begins to discuss musculoskeletal injuries and the inflammatory response. Generally, when people are injured they love to grab a bottle of NSAIDs and gulp comparable to a delicious, blue mountain Coors Light. However, NSAIDs primarily function by inhibiting an enzyme that produces pro-inflammatory mediators, such as prostaglandins. Prostaglandins play an important role in precursor cell activation, myoblast proliferation, myoblast fusion and muscle protein synthesis. It is recommended to withhold from NSAIDs during the immediate post-injury phase when the inflammatory process is at the regeneration peak. A recommended alternative includes 'RICE'; rest, ice, compress, elevate. However, the debate of right versus wrong of NSAIDs use post-injury is ambiguous with an increase of collagen synthesis.