

# The Importance of Proper Spinal Biomechanics During Resistance Exercise

Scott Schaeffer, D.C., C.S.C.S.

**As a chiropractor and exercise specialist, I am constantly amazed at the lack of attention paid to correct lifting posture or biomechanics of individuals at the gym. But more so, the coaches and trainers who sit back and allow it.**

Biomechanics uses the laws of physics and engineering concepts to describe motion undergone by the various body segments and the forces acting on these parts during normal daily activities. When negligent, or irresponsible lifting techniques are utilized one of a few situations can occur. The subsequent paragraphs outline an example of a biomechanical atrocity found in a gym setting, and the negative outcome that commonly follows close behind.

Beginning with a situation that most of us witness, or even have done ourselves when lifting, is performing the standing biceps curl or seated row. The purpose of these exercises, depending on your goal, is to improve the tonicity, strength or endurance of the biceps. The action of the biceps muscle is to flex the lower arm at the elbow joint and to supinate (palms facing forward or up) the forearm. Conversely, there is no mention of strengthening the lumbar musculature during these ranges of motion in any anatomy books I own. So why then do so many individuals use their lumbar region as accessory muscles during a standing curl or seated row? We have all seen the "swaying" and "rocking" that takes place. It's as simple as this, 90% of the time the weight is too heavy for the person lifting it. It is crucial that the only part moving is the elbow joint, or in the case of a seated row, adduction of the scapula. If an individual cannot perform a standing curl by solely flexing the elbow, then the weight being used should be decreased. This solution can be applied to most situations where compromising biomechanics during a lift occurs. Not only is the person training not getting the optimal benefits of the exercise, but also exposes themselves to potential injury.

Ensuing injuries resulting from improper lifting techniques can range from mild to very serious. Most commonly, straining the quadratus lumborum, iliocostalis lumborum or longissimus thoracis can occur. The main objective of the previously named musculature is spinal stabilization. Knowing this, uneven workloads are increased on the lumbar spine and range of motion is induced passed the lumbar facet joints & surrounding musculature "physiologic comfort zone". This causes an unstable situation and invites injury to your back. Instability and excessive workload also have the ability to cause intervertebral bulges or herniations. These situations can cause immense pain and immobility, sometimes causing extremely uncomfortable sciatica.

This is just a small sample of what happens when spinal biomechanics is ignored. Not only is it the responsibility of the individual who exercises to take the time to learn proper lifting techniques. But, more importantly, it is the duty of coaches and trainers to recognize situations that can potentially injure their clients or athletes.

---

Scott Schaeffer, D.C., C.S.C.S. - Dr. Schaeffer currently has a practice in New York and specializes in the training and treatment of athletes. His web site is <http://www.kiscowellness.com/>