



# VITALS

A Weekly Safety Newsletter For Medical Transport Professionals

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## Lifting and Engineering Controls-Part 2



We know that not all back injuries are sudden and dramatic. The wear and tear of repetitive lifting is exacerbated by the size of the load and the circumstances under which we lift and move. The size of the load is what it is. The media are filled with all sorts of data about the “epidemic of obesity”. Almost a quarter of the adult population may be described as obese. Obesity has become “super-sized”. About 1 adult man in 80 weighs over 300 pounds, while “only” 1 woman in 200 reaches the 300 pound mark. We’ll take it for granted that our clients are getting heavier. We move clients in a variety of ways every day. It’s impossible to predict all of them, but some have been shown to be clearly hazardous. Let’s consider transporting a patient down stairs using a stair chair.

Where do we start? What’s our goal? We want to start at a place where we can get the most useful, scientifically validated information with the least effort to achieve our goal of moving clients down stairs with nobody getting hurt. The place turns out to be a scientific discipline called ergonomics. I thought I knew what ergonomics is, but I was wrong.

In 2007, the International Ergonomics Association defined ergonomics as “the application of scientific information concerning objects, systems and the environment for human use.” We’re interested in physical ergonomics which tries to determine the human body’s responses to physical (anatomic) and physiological stress. In other words, how can the use of a stair chair hurt somebody? What can we do to prevent it? How do we re-design our workplace to eliminate system failures?

In a series of elegant studies using four video cameras and a device called a Lumbar Motion Monitor (LMM) Fredericks et al, analyzed the biomechanical stresses placed on the backs of stair chair users at the initial entry onto the stairs, the mid-point of the stairwell, and the carry through a 90 degree turn. They also looked at three different carrying positions: follower, leader facing forward and leader facing backwards. After some fancy math they showed who was at risk for developing a lower back disorder, why they were at risk, and how the risk can be decreased. More to come.

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