Human tissue tolerance data is widely used to provide a basis for acceptable limits in ergonomics and guidelines for rehabilitation. Variability in tissue tolerance is inherently accepted in population estimates but concerns arise with applications involving individuals during rehabilitation, return to work, or forensics. Due to the destructive nature of testing, tolerance estimates based cadaveric tissue samples are the norm. Some tissues, such as the lumbar spine, have been heavily studied and, in spite of considerable variability, show strong relationships with age and sex. Anatomical regions such as the carpal tunnel are comprised of many different tissues including ligaments, osseous complexes, and tissues running through the tunnel (nerve, tendon and sub-synovial connective tissue). The mode of injury differs for each of these tissues and because disorders of the wrist tend to develop over time, ultimate strength is rarely tested. However, stiffness of the carpal tunnel has been determined in vivo and in more detail with cadaveric wrists. Perhaps the most studied aspect of the carpal tunnel is carpal tunnel pressure which is dependent on the properties of the transverse carpal ligament and the properties of its contents. Interpreting the tissue properties as they relate to injury mechanisms relies on understanding the sources and magnitudes of variability.