Martin Eriksson Crommert  On the role of transversus abdominis in trunk motor control

A vast majority of people are struck by low back pain, at least once in their life time. A minority of these people get persistent troubles with individual suffering, problems returning to work and long term sick-leave as consequences. So besides the agony of the afflicted, low back pain poses an enormous burden on the whole society, demanding enormous economic resources. There are several perspectives, each equally important, from which to address this troublesome epidemic. From a pure biomechanical point of view, it is imperative that the spine is stable in order to stay healthy and functional. During the last decades, researchers have debated the importance of a correct coordination pattern of the trunk muscles in order to keep an optimal stability of the spine. The individual muscle probably receiving most attention in this debate is our deepest abdominal muscle, transversus abdominis.

This thesis presents new findings regarding the role of transversus abdominis in trunk motor control. In an experimental setting the activation of this muscle is studied, with intramuscular fine-wire electromyography, in different body positions and with different kinds of perturbations to the trunk. A central aspect of the work is the activation of transversus abdominis in relation to the postural demand of keeping the trunk upright against gravity.