An Automatic Segmentation Method for the Thigh Muscles and Adipose Tissue of Spinal Cord Injured Patients

**Abstract**

In the event of a spinal cord injury (SCI), individuals are often subject to skeletal muscle deterioration and adipose tissue gain in paralyzed muscles.  These negative impacts can limit motor functions and lead to secondary complications.  A novel framework was proposed to automatically segment the MRI volumes of human thigh into fat and muscle volumes.  Additionally, within the muscle volume, three main muscle compartments: quadriceps femoris, hamstrings and adductors were segmented.  The proposed method for fat segmentation has been shown previously to have a high accuracy (95.511.61).  Further, muscle group segmentation has too been shown to have high accuracy (94.761.70).  The accuracy measures were based on dice similarity percentage calculated on 10 spinal cord injured (SCI) and 10 non-disabled (ND) individuals.