

**Proton magnetic resonance spectroscopy (<sup>1</sup>H-MRS) of human skeletal muscle at 1.5 Tesla: potential applications in exercise - a pilot study**

**ABSTRACT**

This research study aimed to evaluate metabolites in human skeletal muscles pre- and post-exercise non-invasively via proton magnetic resonance spectroscopy (<sup>1</sup>H-MRS). The upper legs of 6 lightly active male subjects underwent imaging pre- and post-exercise via 1.5 T MRI (TR/TE = 3500ms/100ms, FOV = 20cm, slice thickness = 6mm) and <sup>1</sup>H-MRS (TR/TE = 2000ms/31ms, VOI = 20mm x 20mm x 35mm). The researchers measured the pre- and post-exercise metabolic readings (NAA, CHO, and Cr metabolites) for the vastus lateralis and semitendinosus muscles. A paired t-test was performed. In the vastus lateralis muscle, NAA, CHO, and Cr metabolites values decreased with no significant difference after the exercise. Similarly, in the semitendinosus muscle, NAA, CHO, and Cr metabolites values were also decreased with CHO (p<0.02) and Cr (p<0.01) showed the significant difference after the exercise. Evaluating human skeletal muscles via <sup>1</sup>H-MRS at 1.5 T is feasible.

**Keyword:** <sup>1</sup>H-MRS; Muscle; Cr; CHO; NAA