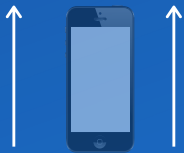# Visualized and quantified the muscular architecture of a 6-year old with SMA Type 1 using Quantitative Musculoskeletal Ultrasound Analysis

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Musculoskeletal Ultrasound Technique:

- A SonoSite Edge II UTZ machine with a 13.6 MHz linear array transducer was used
- System settings were kept constant
- The scanning site was determined by bisecting the point midway between the anterior superior iliac spine and the superior pole of the patella on both thighs.
- Acquisition of the ultrasound images were done and analyzed using ImageJ.
- The region of interest (ROI) for echogenicity was determined using the square and polygon tool. The mean echo intensity was determined by a gray-scale histogram.
- The region of interest (ROI) for muscle thickness was determined using the straight tool. Ventral fascia of the rectus femoris and superior border of the femoral bone were the landmarks used.

Post-Image Acquisition Analysis using ImageJ:
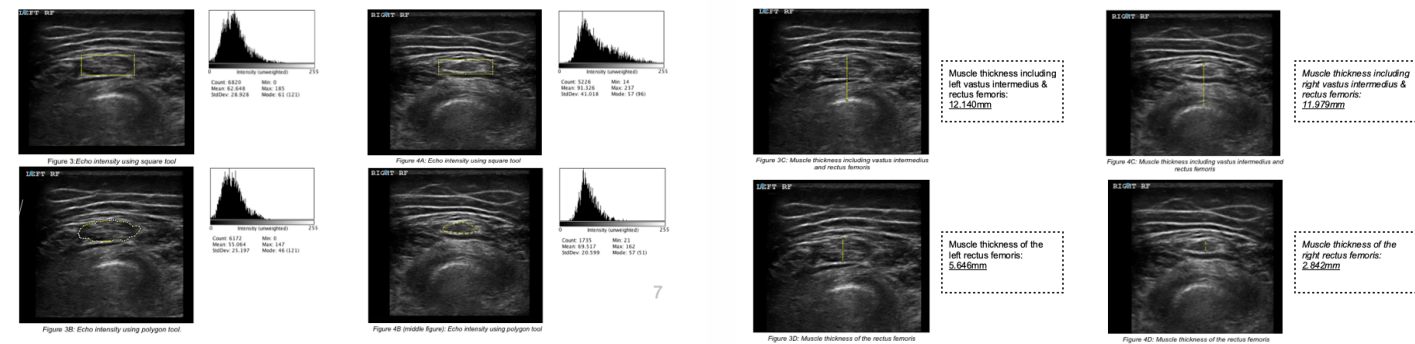
ECHOINTENSITY

	Square	Polygon
Left	62.648	55.064
Right	91.326	69.517

MUSCLE THICKNESS

	VI+RF	RF
Left	12.140mm	5.646mm
Right	11.979mm	2.842mm

Conclusion:

- This report provides objective measurement in the muscular architecture of the rectus femoris in a 6 year old with SMA Type 1
- We recommend applying the same ultrasound techniques in monitoring this patient
- This study is a spring board for the use of echogenicity as a biomarker for research in neuromuscular disorders