To whom it may concern,

The purpose of this letter is to provide the justification for purchasing a specific ultrasound system in order to measure musculotendon behavior during functional movement in stroke survivors.

Product name
We are requesting the purchase of the following items from TELEMED:
- LogicScan 128 EXT-12 system
- LV7.5/60/128Z-2 transducer
- LV3.5/180/96Z transducer

Why the product is needed
Our grant entitled “Application of Ultrasound Technology to Enhance the Quantitative Measurement of Post-Stroke Behavior and Function” was recently selected by the COBRE Executive Committee for consideration of funding. In order to carry out the proposed work, we need to have the ability to collect ultrasound images of musculotendon units during functional movement. We do not currently have equipment which would allow us to do this.

Why the specific product from this manufacturer is needed (sole source)
To reliably quantify musculotendon mechanics during dynamic tasks, an ultrasound system must: 1) have a probe which is able to securely lie flat against the body so distortion from probe movement does not occur; 2) have a large enough field of view to image an entire muscle fascicle; 3) have a relatively high sampling rate so fascicle length can be quantified at many points in a movement cycle. The proposed system from this manufacturer is the only available system which meets all of these criteria. The device uses a unique probe shape which is able to lie flat against a muscle, has a 60 mm field of view, and can sample at 80 Hz.

Additionally, the available automated software for analyzing ultrasound musculotendon mechanics (http://www.mathworks.com.au/matlabcentral/fileexchange/32770-muscle-fascicle-tracking-ultrasound) was validated for experimental data collected with this system. This important step in allowing valid, reliable measurement of musculotendon mechanics has not been completed for any other available ultrasound system.

Other manufacturers
No other manufacturers offer ultrasound systems which meet the three criteria listed above, or have associated automated analysis software.

Existing equipment
No existing equipment could meet our requirements.

Sincerely,
Your Name & Signature, PhD