METhOds: Ten healthy young adults (25 ± 5.5 yrs) were recruited, and shear PurPOsE: To investigate the capability of ultrasound shear wave elastography (SWE) in measuring muscle stiffness.

RESULTS: Shear wave speed significantly increased with passive dorsiflexion from 2.62 m/s to 5.61 m/s when the knee was in an extended position, with little effect on shear wave speed noted during dorsiflexion when the gastrocnemius was shortened in a flexed knee posture. Active contractions in the extended knee posture also caused an increase in shear wave speed to 8.28 m/s when maximally contracted. A linear correlation between shear wave speed and normalized load was noted for both the active and passive conditions, with a steeper slope of shear wave speed to normalized load for the data collected during the passive trials.

CONCLUSION: SWE shows promise as a method for quantitatively measuring in vivo muscle loading, however, our results suggest that loading conditions are relevant to consider when using SWE to characterize in vivo muscle mechanical properties. Supported by NIH AR056201.

Additional data and analyses show that SWE may provide a promising tool for assessing muscle stiffness in clinical settings.

Table 1: Summary of velocities and stiffness values for the individual muscles

<table>
<thead>
<tr>
<th>Condition</th>
<th>Velocity (m/s)</th>
<th>Stiffness (kPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>5.61 ± 0.37</td>
<td>1.94 ± 0.23</td>
</tr>
<tr>
<td>Passive</td>
<td>2.62 ± 0.15</td>
<td>1.28 ± 0.10</td>
</tr>
</tbody>
</table>

**RESULTS:**
- Significant increase in shear wave speed with passive dorsiflexion.
- Linear correlation between shear wave speed and normalized load.
- SWE shows promise for assessing muscle stiffness.

**CONCLUSION:**
- SWE provides a promising method for measuring muscle stiffness in vivo.
- Relevant loading conditions should be considered in SWE analyses.
- Further research is needed to validate SWE in clinical settings.