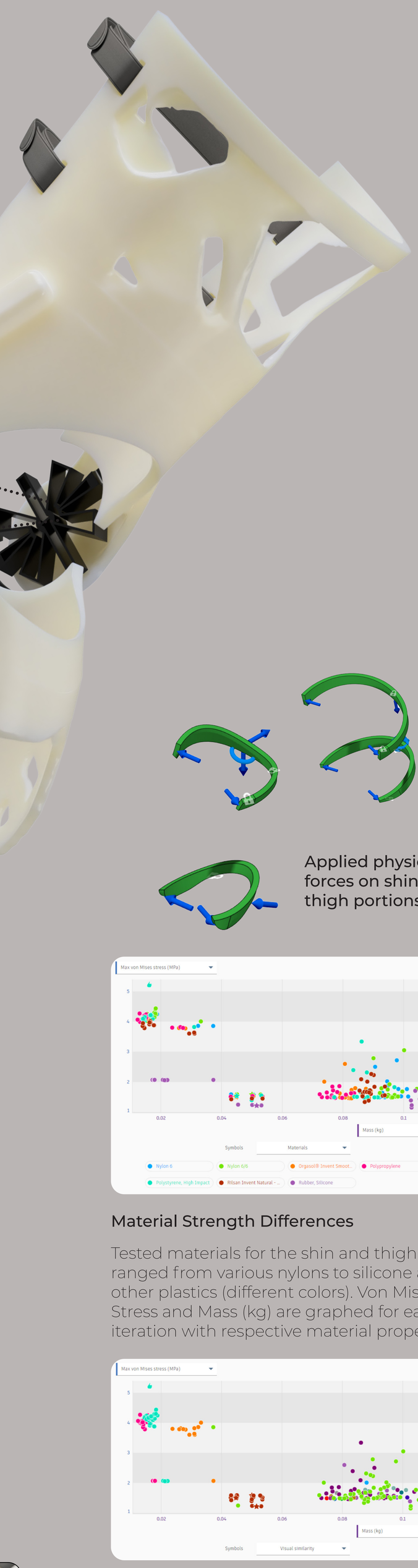
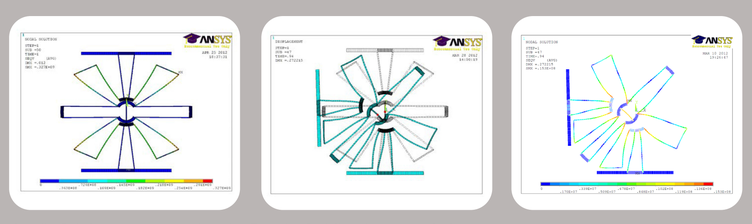
# Sunu Brace

The Custom, Stimulatory Orthotic Brace for Children

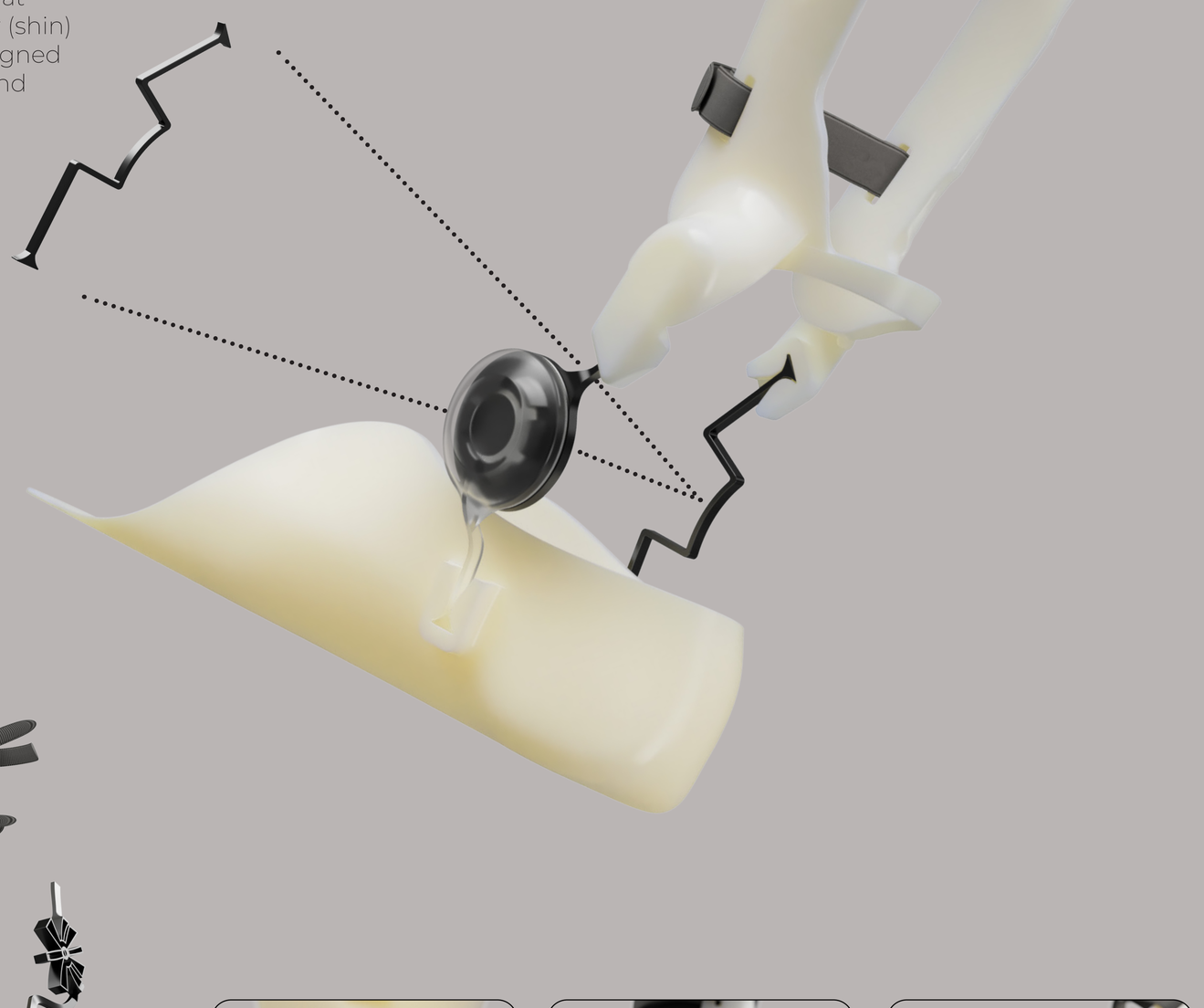


Compliant Rotational Hinge Mechanism - developed by BYU Mechanical Engineering Department for NASA, capable of 90 ° bi-directional rotation with minimal center shift



*Credit: Brigham Young University Faculty Publications, ANYSYS*

Medium-displacement butterfly hinge mechanism, designed to provide resistive force at ankle for Tibialis Anterior (shin) muscle stimulation, designed with standard-shaped end fixtures





Applied physics forces on shin and thigh portions



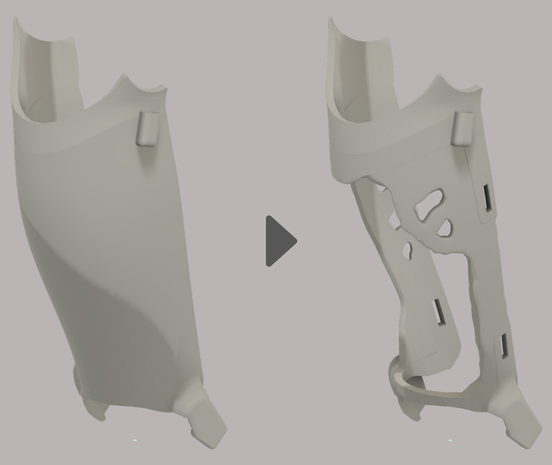

## Material Strength Differences

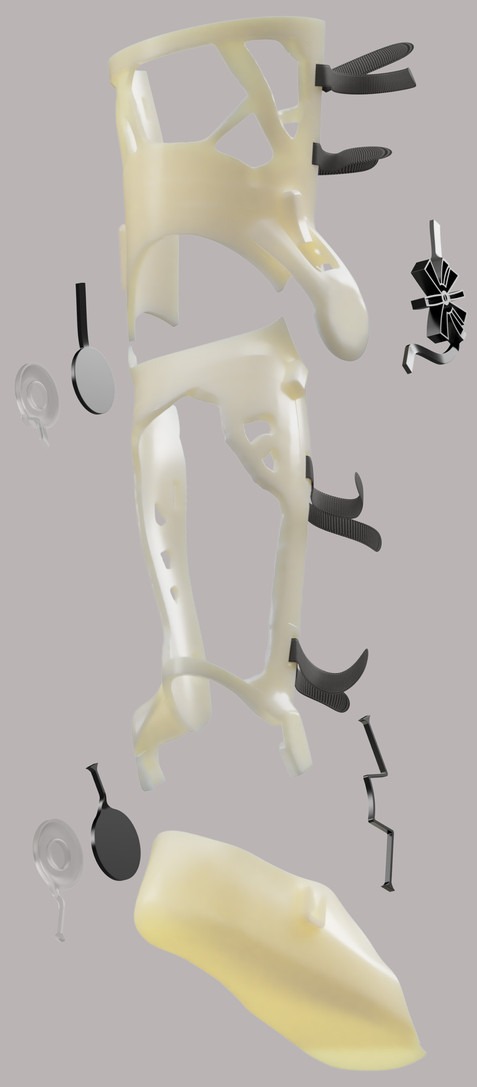
Tested materials for the shin and thigh ranged from various nylons to silicone and other plastics (different colors). Von Mises Stress and Mass (kg) are graphed for each iteration with respective material properties

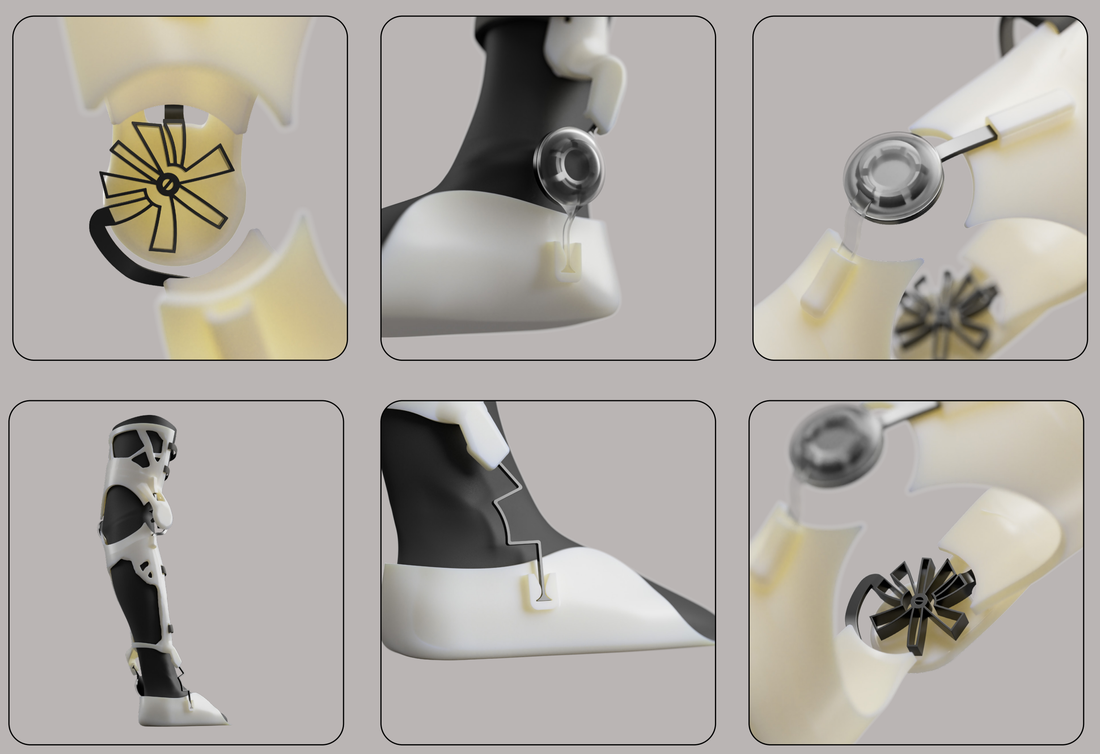



## Visual Iteration Similarities

In the same graph, different colored dots this time represent AI-grouped physical form similarities for the iterations. The left-right separation in clusters can be attributed to several failed iterations vs. successful ones







Miles Bailey | INDS 4501 Thesis | Aaron McEuen, Jeff Feng | May 2022

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