This study examines the prospect of thin, needle-sized robotic tubes with M-DOF hinge-joints as a medical delivery platform.

**Joint Strength**

Physical connections are absent between the socket and pin, hence, there are concerns about joint strength. We dispel this perceived demerit by studying the load thresholds on the joint.

1. Two measures for strength: (i) axial, and (ii) lateral strength.
2. Specimen: (i) machined tube, and (ii) instrumented prototype.
3. Material: SS-316 (thick, thin-walled), and super-elastic Nitinol.
4. Hinge configurations: 40, 50, and 60 %

**Kinematic Comparison**

The hinge relies on fewer simplifying assumptions related to its behavior, when compared to its flexure counterpart, and hence proffers better kinematic controllability, and precision.

**Path Tracing Demonstration**

- Simple projection tracing experiment using a custom instrument manipulator.
- Utilizes kinematic model introduced in preceding sections, enables precise tip-positioning.
- RMS error was approximately: 0.368 mm, for the paths so depicted.

**Conclusion**

The rotational hinge joint offers an intuitively simple model under fewer simplifying assumptions, it (i) enables compact articulation, and smaller tool sizes, (ii) is sufficiently robust for in-vivo use, and (iii) is demonstrably capable of precise tip-positioning.