## **Position and Force Constraints in Underactuated Tendon-Driven Systems**

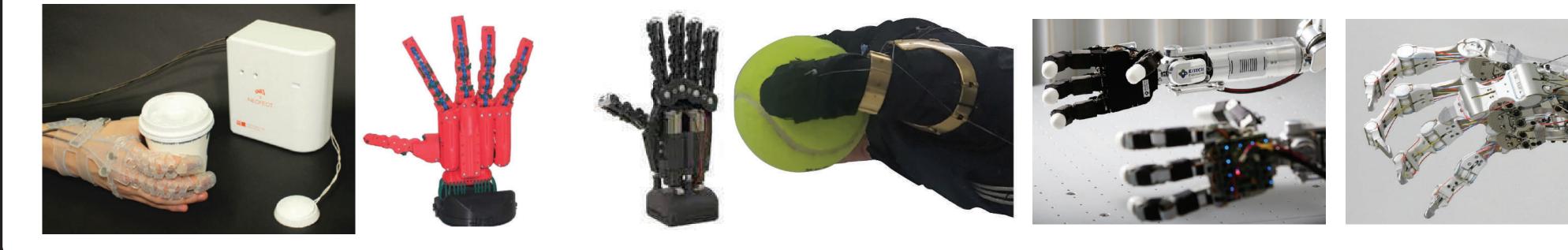
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Approach



Passive tendon routing (b)

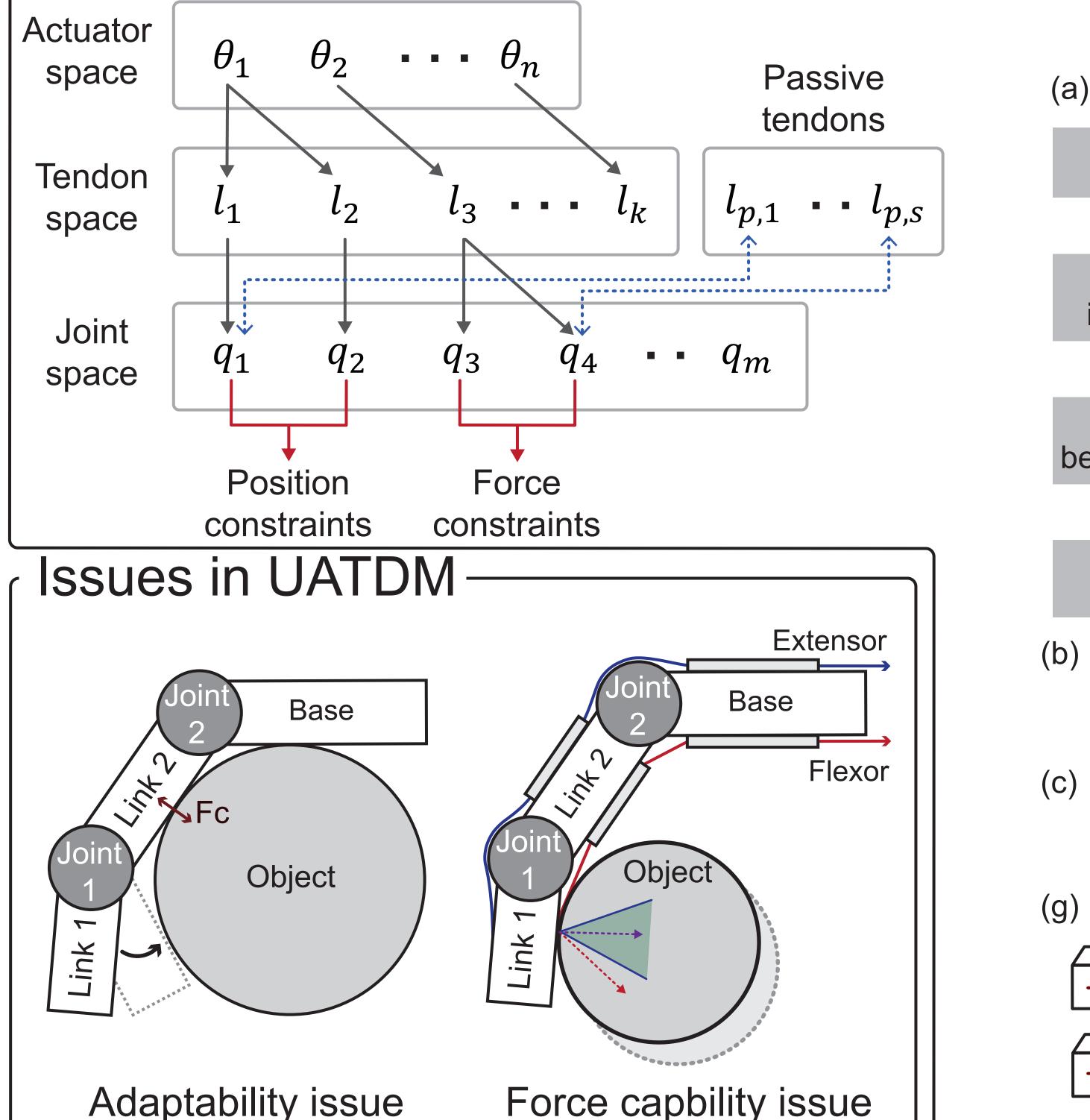
What is the "optimal" number of actuators given robotic system?

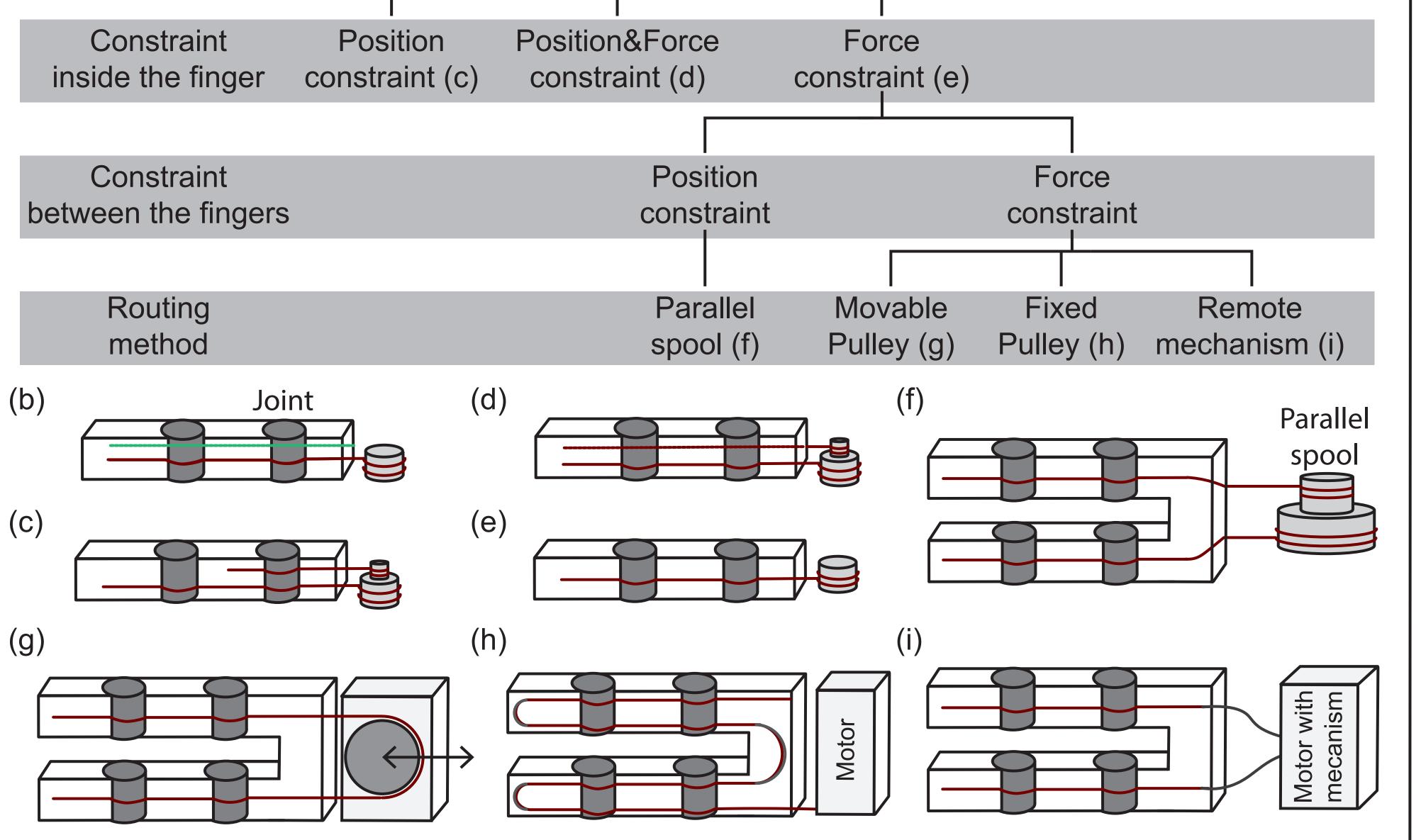


Actuator increases costs, complexity, volume, and weight.

- Minimal number of actuation reduces controllability.

## Under-actuated Tendon-driven Mechanism (UATDM)

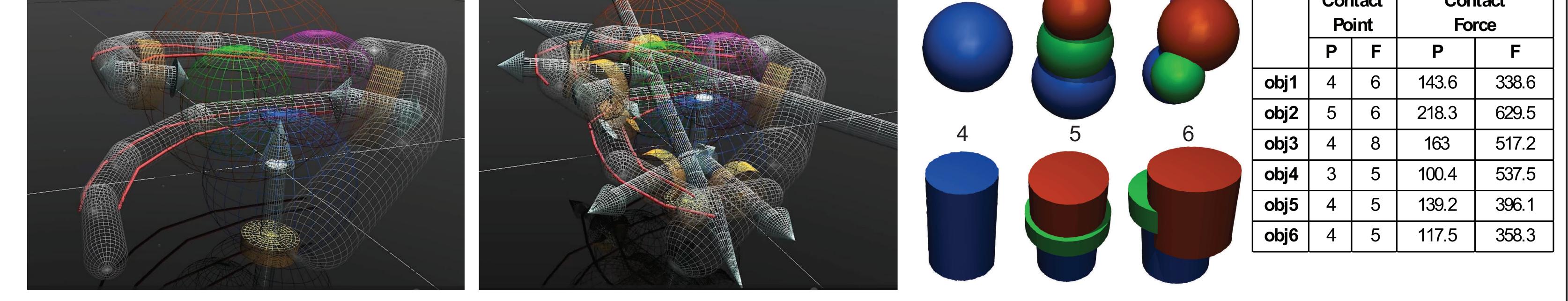


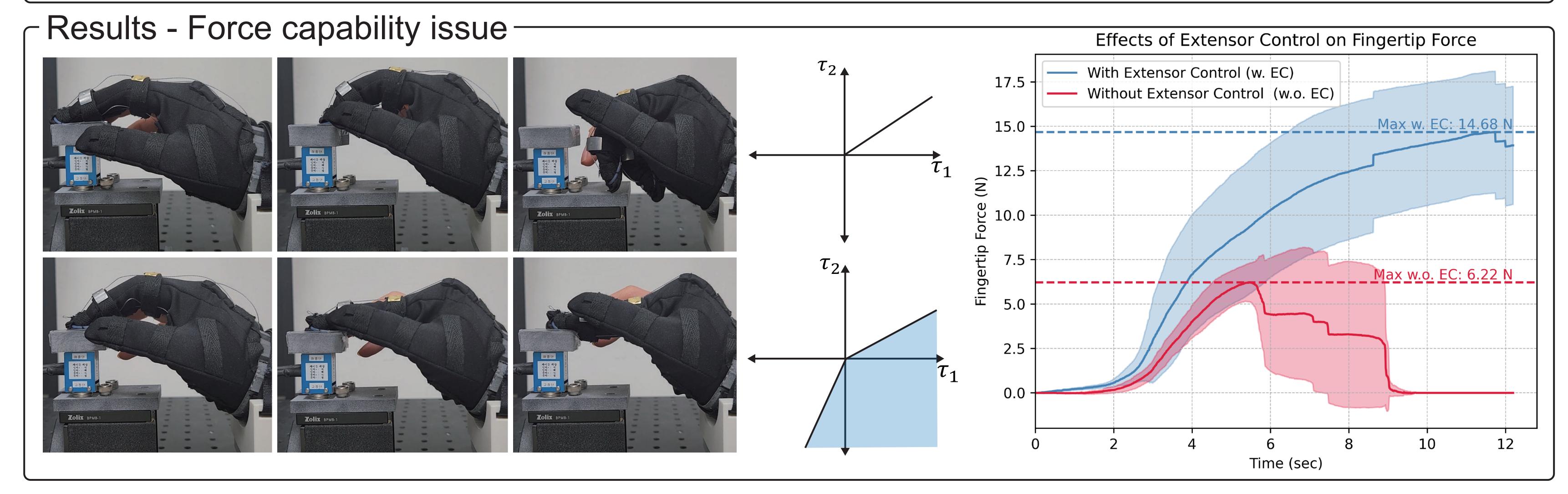


**Tendon Routing Used to Reduce the Number of Actuators** 

Constrained routing

## Adaptability issue Force capbility issue Results - Adaptability issue Image: second contact Im





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