* Definition of a manifold
* Definition of a group
  + Bring up the importance of what it is we are defining as our configuration space
  + Does our configuration space represent a group (let alone a lie group)
    - Closure
    - Associativity
    - Identity
    - Inverse
      * Wouldn’t most of these neuromechanical systems fail here…?
      * Activation has no negatives so how can you return to zero input?
      * Could maybe consider lengths of muscle ABOVE/BELOW optimal so that it is possible to have a negative action.
      * Even still though, SO(2) can be defined with an inverse (negative rot) that could be used to describe a single joint angle, even if that joint angle is not allowed to experience those angles outside the ROM.
      * Maybe we defined the structure using the building blocks and place the constraints of the system on later…
* Review left/right action and left/right lifted actions (both derivations and representations)
  + What is a left/right action for the configuration space () ?
    - First need to define the action of q is on another element in Q. (See second bullet).
* Reviewing Tangent spaces
  + State of the system (
    - What is the time derivative for these neural drives.
      * Are they related to the differential equations that govern them.
  + Left/Right lifted actions
* Geodesics
  + Constant velocity w.r.t.:
    - Group action
      * Still need to define the group action!!
    - Manifold structure
      * What would this look like for neural drive?
* Full configuration space of all muscles would be direct product of the individual muscles configuration spaces (whether that be in joint space, muscle length space, or activation space)
* What are the holonomic constraints of the configuration space/system?
  + What is the accessible manifold of the system???!!
  + do not remove the dependence of the system dynamics on the actual physical positions of the rigid bodies – inertial and collision effects cannot be ignored!
* Could the length of the muscle also be a coordinate??
  + How do length, activation, SPINDLE LENGTH, gamma static/dynamic relate and could this be represented (even if locally linear) as a matrix operation?