

Joint Moments

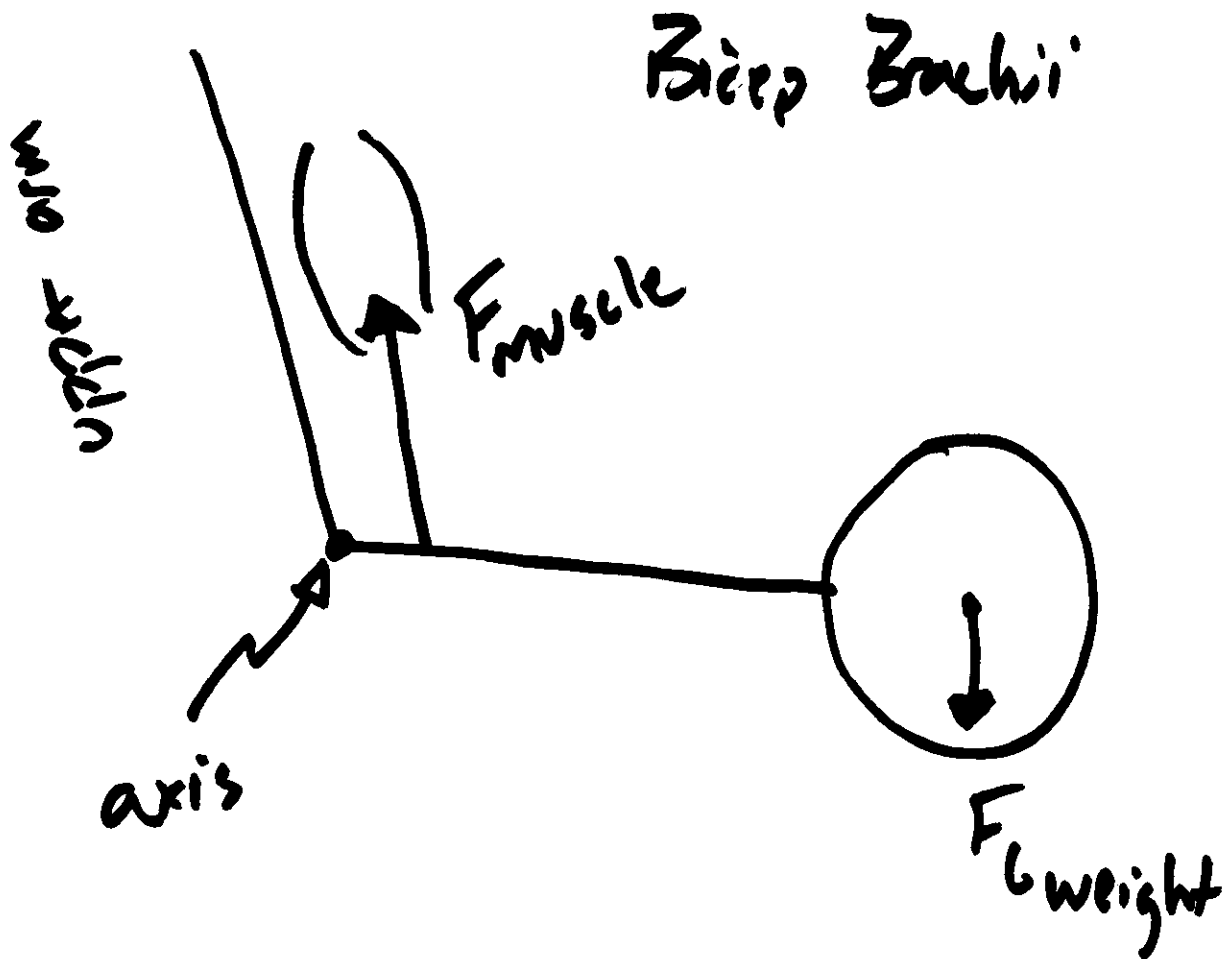
Moment $\Leftrightarrow$ Torque

$Fd_{\perp}$

$Fd_{\perp}$

"Joint Moment" }
"Joint Torque" } Tendency of muscle to cause rotation.

Elbow Flexion



Angular Kinetic Analysis

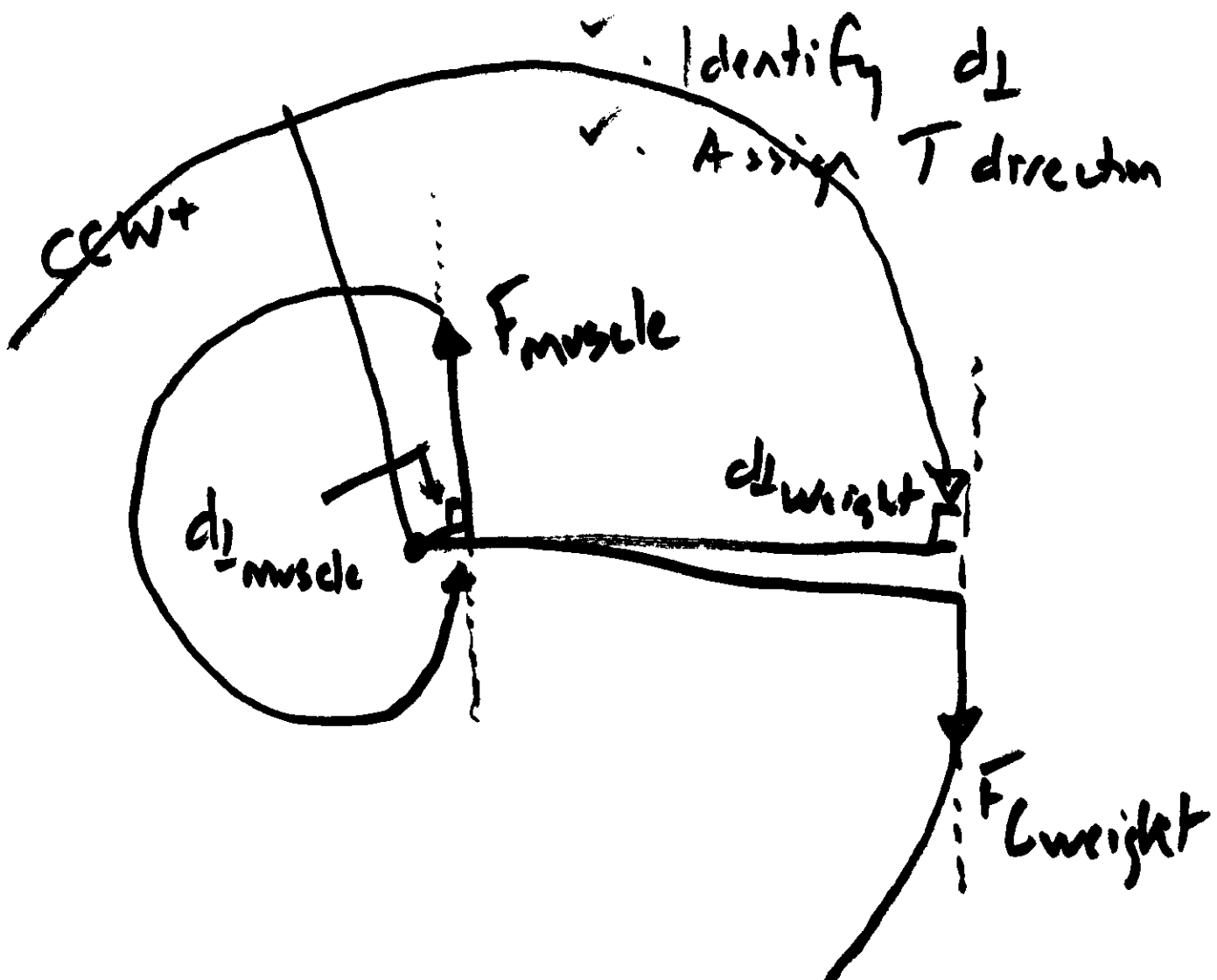
- Identify torques acting about axis of rotation
 - Identify forces
 - $T = Fd_{\perp}$
 - Assign direction of Torques
- Use $\sum T = I\alpha$

Angular
Kinetics

Angular
Kinematics

Elbow Flexion

- + $T_{\text{muscle}} = F_{\text{muscle}} d_{\perp \text{muscle}}$
- $T_{\text{weight}} = F_{\text{weight}} d_{\perp \text{weight}}$



$$\sum T = I\alpha$$

$$T_{\text{muscle}} + (-T_{\text{weight}}) = I\alpha$$

or

$$F_{\text{muscle}} d_{\text{muscle}} - F_{\text{weight}} d_{\text{weight}} = I\alpha$$

if

$$T_{\text{muscle}} > T_{\text{weight}} \quad +\alpha$$

$$T_{\text{muscle}} < T_{\text{weight}} \quad -\alpha$$

$$T_{\text{muscle}} = T_{\text{weight}} \quad \alpha = 0$$