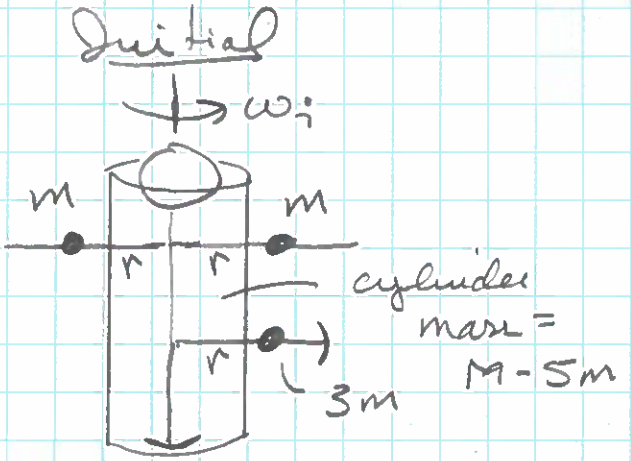
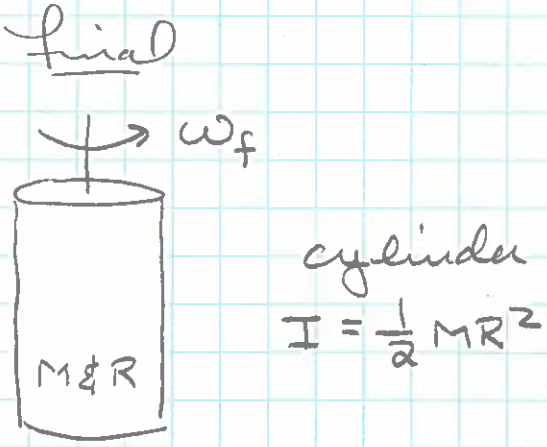
My estimate:

Model the skater as a cylinder and arms and leg as point masses at the center of mass of arm & leg.





Skater mass = $M \sim 120\,lb \cong 55\,kg$
Body (cylinder) radius, $R \sim 15\,cm$

Arm mass, $m \sim \frac{M}{20}$; leg mass $\sim 3m$

Arm length $\approx$ leg length $\sim 75\,cm$

r = distance to CM of arm & leg $\sim \frac{\text{arm length}}{2} = \frac{75\,cm}{2}$

So, $\frac{r}{R} = 2.5$

from video: $\omega_i \sim \frac{4\,rev}{3s} \approx 80\,rpm$

Conserve angular momentum $i \to f$:

$$L_i = L_f$$

$$\left[\tfrac{1}{2}(M-5m)R^2 + mr^2 + mr^2 + 3mr^2\right]\omega_i = \tfrac{1}{2}MR^2\omega_f$$

$$\frac{\omega_f}{\omega_i} = \frac{\frac{1}{2}MR^2 - \frac{5}{2}mR^2 + 5mr^2}{\frac{1}{2}MR^2} = 1 - 5\left(\frac{m}{M}\right) + 10\left(\frac{m}{M}\right)\left(\frac{r}{R}\right)^2 = 3.875$$

$\therefore\ \omega_f \approx$ 310 rpm