

Michelle Qwan Ice Skating Example

$$\omega_1 = \frac{2\pi}{0.83} = 7.57 \text{ rad/s} \quad \omega_2 = \frac{2\pi}{0.50} = 12.57 \text{ rad/s} \quad \frac{\omega_2}{\omega_1} = \frac{12.57}{7.57} = 1.66$$

So, the final angular velocity is 1.66 times the initial.

$$H = I\omega \quad I = mk^2$$

With ω being 1.66 times greater, I will be the inverse or $\frac{1}{1.66} = 0.60$ times the initial value.

Consider the following table:

k increases by a factor of:	I increases by a factor of:
4	16
3	9
2	4
1	1
0.5	0.25

Since I becomes 0.60 times its initial estimation, k becomes $\sqrt{0.60} = 0.77$ of its original length.