Ex : A man stands at the center of a platform that rotates without friction at 1.5 rev/s. With arms outstretched, he holds a heavy weight in each hand. In this configuration I=6 kg·m^2. When the man pulls his arms into his body, I=1.8 kg·m^2.

a). What is the resulting angular velocity?

$$\vec{L}_i = \vec{L}_f \quad \Rightarrow \quad \omega_f = \frac{\omega_i I_i}{I_f}$$
$$= \frac{(1.5 \text{ rev/s})(6 \text{ kg} \cdot \text{m}^2)}{1.8 \text{ kg} \cdot \text{m}^2} = 5 \text{ rev/s}$$

b). What is the change in kinetic energy of the system?

$$\Delta K_{rot} = \frac{1}{2} I_f \omega_f^2 - \frac{1}{2} I_i \omega_i^2$$
$$= 0.5(1.8 \text{ kg} \cdot \text{m}^2)(5 \text{ rev/s} * 2\pi)^2 -$$
$$0.5(6 \text{ kg} \cdot \text{m}^2)(1.5 \text{ rev/s} * 2\pi)^2 = 621.8 \text{ J}$$

c). Where does the energy come from?

Answer: The internal energy of the man!!