

Physical pendulum

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Solution: *The inertial moment of a thin bar is,*

$$I = \frac{1}{3}mL^2 .$$

The center-of-mass is in the middle of the bar, $L = 2D$. Hence,

$$\omega_0 = \sqrt{\frac{Dmg}{I}} = \sqrt{\frac{3g}{2L}} .$$