In a Lab demonstration a small metal ball (solid sphere) is rolled down a track of height $H$. The track practically reaches the floor level ( $h \simeq 0$ ), and then makes a vertical circular loop of radius $R=0.5 \mathrm{~m}$. Find the minimal $H$ for the ball to make the loop without falling off the track. Ignore friction and kinetic energy of rotation of the ball.

