

Answer #311

The answer is (d): The chair will rotate more rapidly, as seen in an mpeg video by clicking your mouse on the photograph below.



This experiment demonstrates the concept of conservation of angular momentum. Angular momentum is defined as the product of moment of inertia and angular velocity. Conservation of angular momentum in this case says that in the absence of significant frictional torque in the chair or other torque on me as I rotate, my angular momentum will be conserved. When I reduce my moment of inertia by pulling my arms in to a smaller radius, I reduce my moment of inertia. If my moment of inertia is reduced and there is insignificant friction in the bearing under the chair so the bearing provides no frictional torque, my angular velocity will increase, as seen in the video. [Click here](#) to see the same phenomenon happening while rotating in the opposite direction.

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