

$$K_f - K_i = -ive \Rightarrow \underline{\underline{K_f < K_i}}$$

#### APPLICATIONS OF LAW OF CONSERVATION OF ANGULAR MOMENTUM:

1. The speed of rotation of person standing on a rotating stool with his arms outstretched suddenly increases when he folds his hands, because moment of inertia decreases and velocity increases.
2. An ice-skater or a ballet-dancer can increase her angular velocity by folding her arms or by folding her body, as this decreases moment of inertia and increases angular velocity.
3. A diver jumping from spring board exhibits somersault in air before touching the water surface. The diver curls (folds) his body to decrease moment of inertia and thereby increases his angular velocity. As he is about to reach the water surface he again outstretches his limbs. This again increases moment of inertia and the diver enters the water surface with a gentle speed.
4. The speed of the inner layers of the whirl-wind about its axis in a tornado is very high because of small momentum of inertia of inner layers.
5. The angular velocity of a planet in its orbit round the sun increases when it gets nearer to sun, as M. I. of the planet about sun decreases and thereby its angular speed increases.

$$\text{If } \underline{\tau = 0} \Rightarrow L_f = L_i$$

$$\text{or } I_2 \omega_2 = I_1 \omega_1$$

$$\text{if } I_2 < I_1 \Rightarrow \omega_2 > \omega_1$$

$$\text{if } I_2 > I_1 \Rightarrow \omega_2 < \omega_1$$

