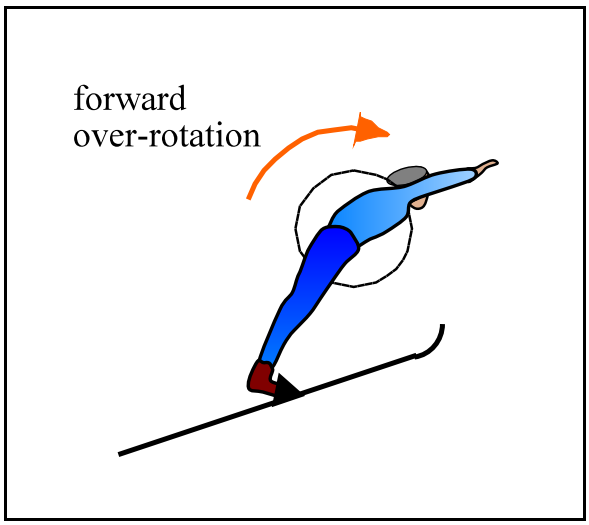

Figure 7.13 Ski jumper compensating for over-rotation

What if a person is experiencing conservation of angular momentum and has zero total body angular momentum, is it possible to turn the body around? The answer is yes. Excellent examples of such a feat are available in the animal world. Cats, rabbits and squirrels can turn themselves around if they happen to fall upside-down. This manoeuvre called the **cat twist** or **half-twist** can also be done by humans; although not as effectively as performed by cats. Figure 7.14 show sequences of a cat performing a half-twist while falling.

The manoeuvre begins with a bend at the waist to produce two different axes of rotation—one through the long axis of the upper body, the other through the lower body. By twisting the upper body about its long axis the lower body will react by rotating in the opposite direction. But since the lower part of the body is considerable farther away from the axis than is the upper body it will counter-rotate very little. Simultaneously, the lower body will twist in the same direction as the upper body about its own axis. Similarly, the upper body will counter-rotate in response but with very little rotation due to its relatively higher moment of inertia about this secondary axis.

Such manoeuvres may become commonplace if we ever move into a zero-gravity environment. In such an environment

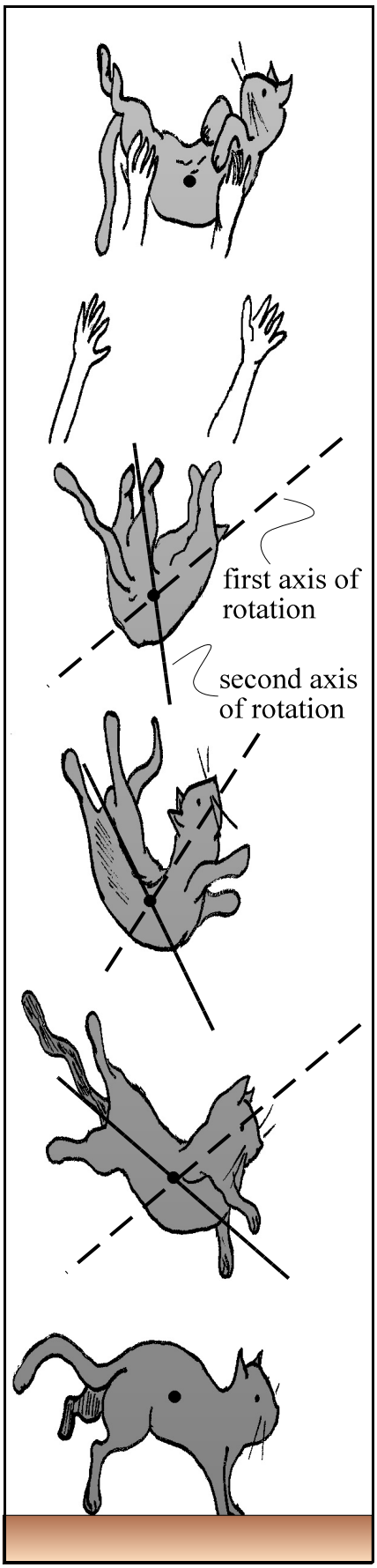

Figure 7.14 The “cat twist”