Balanced and Unbalanced Forces

Considering the size and the direction of all the forces acting on an object allows you to predict changes in the object’s motion. When more than one force acts on an object, the result is a cumulative effect of all those forces. The overall force acting on an object when all the forces are combined is called the net force.

If the net force on an object is zero, the forces acting on the object are balanced. Balanced forces have the same effect as no force at all. That is, the motion of the object does not change. For example, think about the forces on the basketball when one player attempts a shot and another blocks it. In the photograph below on the left, the players are pushing on the ball with equal force but from opposite directions. The forces on the ball are balanced, and so the ball does not move.

Only an unbalanced force can change the motion of an object. If one of the basketball players pushes with greater force than the other player, the ball will move in the direction that player is pushing. The motion of the ball changes because the forces on the ball become unbalanced. Even if the ball is already moving, only an unbalanced force will change the ball’s motion.

**COMPARE** Compare the net force on the balls in these two photographs. Which photograph shows a net force of zero?