

Levers in the Human Body

Levers confer mechanical advantage.

The application of mechanical advantage applies to the musculoskeletal system.

The skeletal and muscular systems work together to move your body parts. Some of your body parts can be thought of as simple machines or levers. There are six classes of simple machines. A lever is one of them. Other simple machines in the lever's family are the wheel and axle and the pulley.

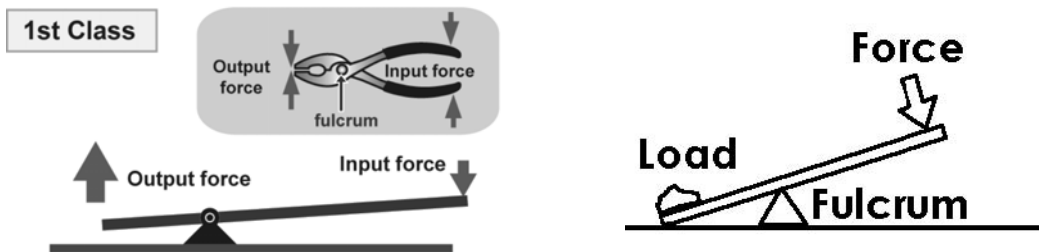
A lever is a bar that turns on an unmoving point called a fulcrum. When you push or pull on one end of the bar that pressure is called the force. The object that is lifted on the other end is called the load.

There are three parts to all levers:

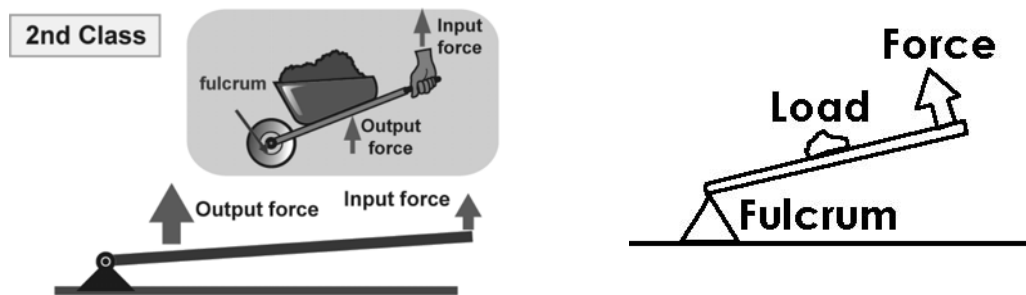
- **Fulcrum** - the point at which the lever rotates.
- **Input force** (also called the **effort**) - the force applied to the lever.
- **Output force** (also called the **load**) - the force applied by the lever to move the load.

There are three types of levers: first class, second class and third class. The difference between the three classes depends on where the force is, where the fulcrum is and where the load is.

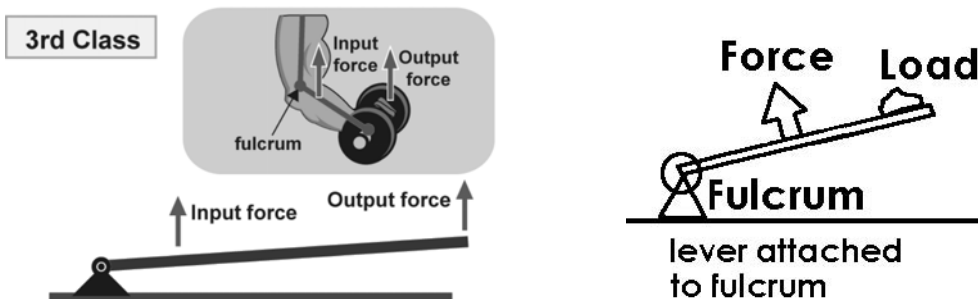
In a **first class lever**, the fulcrum is located between the input force and output force.










In a **second class lever**, the output force is between the fulcrum and the input force.



In a **third class lever**, the input force is between the fulcrum and the output force.



For the following pictures of simple machines, **draw a circle around the fulcrum** and **write the class of lever**.

Simple Machine-draw a circle around the fulcrum	Class of Lever
1. Scissors 	
2. Nutcracker 	
3. Wheelbarrow 	
4. Crowbar 	
5. Tongs 	
6. Seesaw 	
7. Staple 	

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The three classes of levers can be found in your body. Use diagrams A, B, and C to **answer the questions** below.

Also **label** the **effort** (input force), **fulcrum**, and **load** (output force) on each diagram.

LEVER A

15. Type of Lever: _____

16. How is this lever used in the body? (2 pts.)

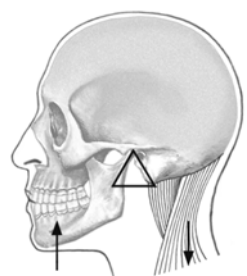


A

LEVER B

17. Type of Lever: _____

18. How is this lever used in the body? (2 pts.)

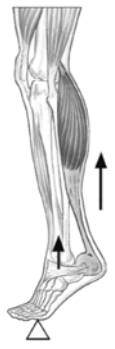


B

LEVER C

19. Type of Lever: _____

20. How is this lever used in the body? (2 pts.)



C