Component 1 Lever Systems

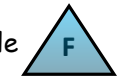
Lever Systems:

Lever systems help you to move. They can increase the amount you can lift or the speed in which you can move something. You need to be able to:

- Draw the three classes of lever
- Describe the lever
- Give examples in sport

Key Words

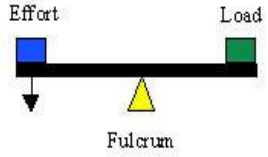
Lever: Is a bone and is shown as a straight line

Fulcrum: Is a pivot or joint and is shown as a triangle 

Effort: Is a force provided by muscles and is shown by an arrow 

Load: Is the weight of the body/object being moved, it is shown as a square 

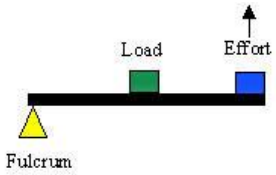
Levers:



1st Class Lever
The fulcrum is surrounded by the effort and the load

Sporting Example

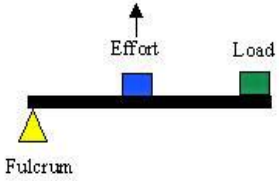
Header in football



2nd Class Lever
The load is surrounded by the fulcrum and the effort

Sporting Example

Calf raises



3rd Class Lever
The load is surrounded by the fulcrum and the effort

Sporting Example

Bicep curl

Mechanical advantages and disadvantages

Lever	Advantage	Disadvantage
2nd class	Provides force to lift heavy loads	Small range of movement and cannot move a load quickly
This is due to the load being closer to the fulcrum than the effort		
3rd class	Provides speed and a wide range of movement	A greater force is needed to move the load
This is due to the effort closer to the fulcrum than the load		

Each lever system can be identified by the component in the middle:

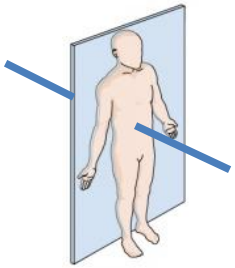
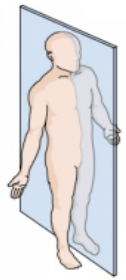
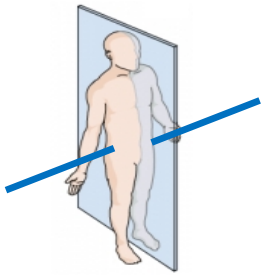
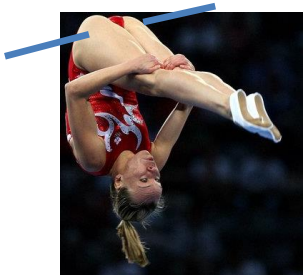
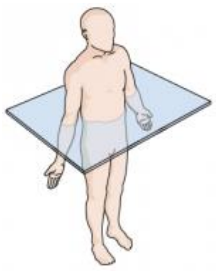
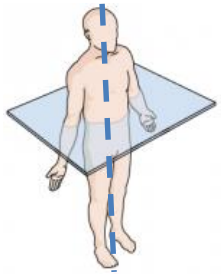
One	Two	Three
F	L	E
(fulcrum)	(load)	(effort)

Component 1 Planes & Axes of Movement

Planes and axes of movement

We move in planes around axes. You need to be able to identify and describe the three different body planes and axes

- A plane is an imaginary line that movement direction occurs in
- An axis is a line about which the body or body part can turn

Plane of movement	Axes of movement	Sporting example
		
Frontal plane Separates the front and the back of the body	**Sagittal axis** Goes from the front to the back of the body	**Cartwheel** The only movements are abduction and adduction
		
Sagittal plane Separates the left and the right side of the body	**Frontal axis** Does from one side to the other side of the body	**Somersault** The only movements are flexion and extension
		
Transverse plane Separates the top and the bottom of the body	**Vertical axis** Goes from the top of the body to the bottom of the body	**Full twist (diving)** The only movements are rotating and twisting