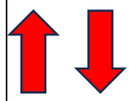
Movement Analysis

What do you need to know?

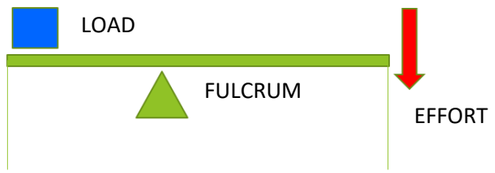
F	L	E
1	2	3
+	+	-
EA	EA	LA

***F**ulcrum in the middle = 1st class*
***L**oad in the middle = 2nd class*
***E**ffort in the middle = 3rd class*

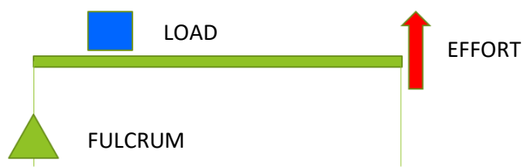
See below.

AXIS	_____	An imaginary straight line around which a body or object rotates.
FULCRUM		The point around which the lever rotates. The PIVOT of Movement, your JOINT.
LOAD		The force that is applied by the lever system. The body's own weight or sporting equipment. What you want to move
EFFORT		The force that is applied by the USER of the lever system. The Muscle used to move the load.

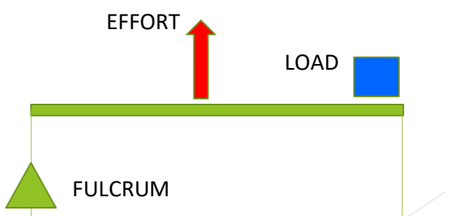
1st Class



2nd Class



3rd Class



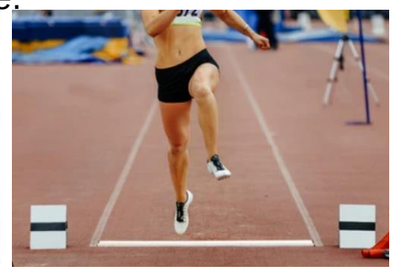
Plane	**A**xis	**M**ovement	
Sagittal **S**exy	**F**rontal **F**lippin	**S**omersault **S**nakes	
Frontal **F**lippin	**S**agittal **S**exy	**C**artwheel **C**ats	
Transverse **T**otally	**V**ertical **V**ertical	**T**wist **T**urtles	

How do you know which lever class is in each picture?

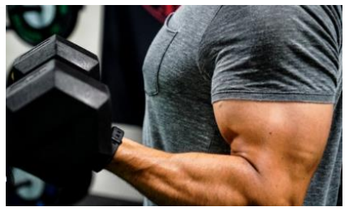
1st class – rower, neck, extension at the elbow.



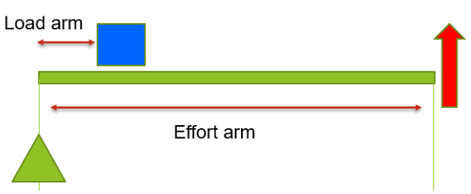
2nd class – ankle.

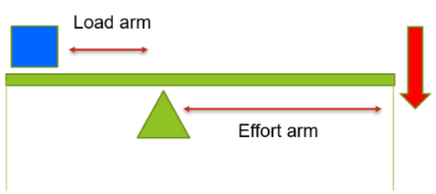



3rd class – *everything else!*

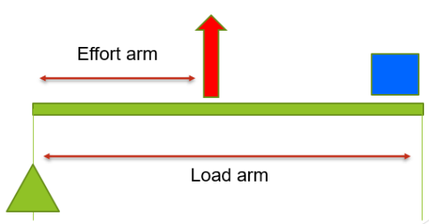



Mechanical advantage = the effort arm longer than load arm and you can lift a relatively large load with a small amount of effort. 1st and 2nd class levers.





Mechanical disadvantage = the load arm longer than effort arm and the input (effort) is greater than the output (load). 3rd class levers.



Have you ever noticed how much easier it is to perform a calf raise with 25kg (2nd class lever) than it is to perform a bicep curl with 25 kg (3rd class lever)?