Energy - The Pole Vault

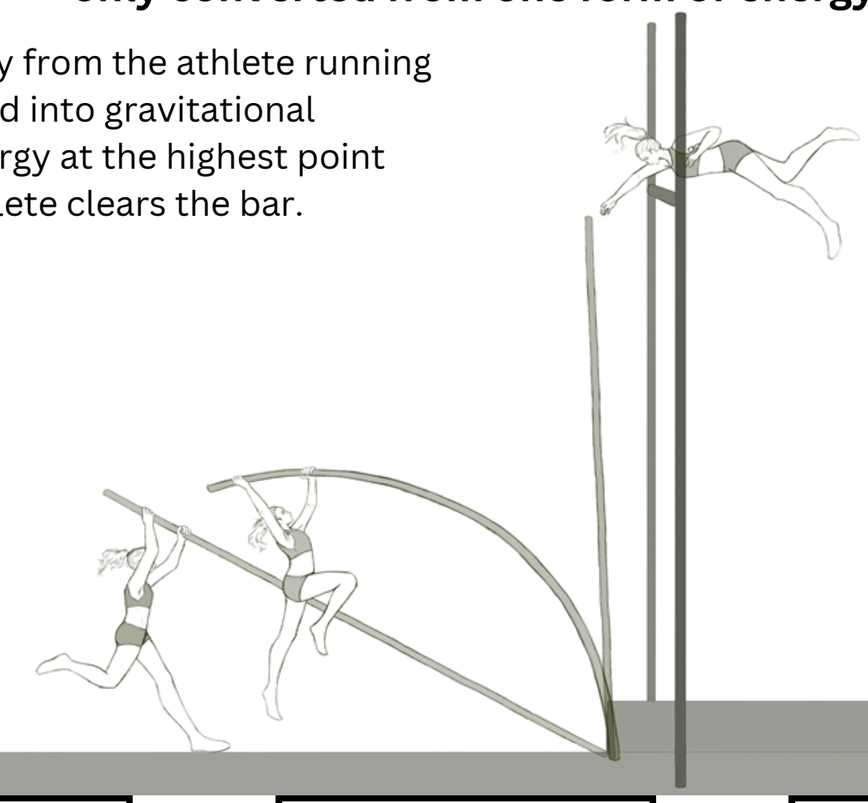
The concepts of physics can be used to help an athlete increase their chance of winning a medal!

The athlete needs to run fast, this is when the athlete has maximum **kinetic energy**. The kinetic energy is transformed into **elastic potential energy** stored in the pole and then into **gravitational potential energy**.

Energy is conserved

Energy can neither be created nor destroyed - only converted from one form of energy to another.

Kinetic energy from the athlete running is transformed into gravitational potential energy at the highest point when the athlete clears the bar.



Kinetic energy	Elastic potential energy	Gravitational potential energy
The athlete running	The pole bending	The pole bending

The length of the pole, the material it is made out of and the height of the athlete and their strength and technique all contribute to the height of the jump.

References and useful sources:
https://www.sciencelearn.org.nz/concepts/energy
Video on the energy transformations Bodies in space: The physics of pole vaulting

Photo by Bo Zhang on Unsplash

In real life

- some energy is transferred to the surroundings.
- athletes transfer more kinetic energy through their muscles bending the pole as they jump and push themselves off the pole.
- keeping their centre of mass below the bar allows the athlete to clear a higher bar .

Key words

Energy- The ability to do work. Energy is when something is happening (kinetic energy) or has the potential to make something happen (potential energy).
Energy transfer -When energy is moved from one place to another.
Energy transformation - Energy changing from one form to another.
Energy transfer diagrams – Use arrows to represent the transfer and transformation of energy and the direction of the transfer.
Conservation of energy - new energy cannot be formed, and energy cannot be lost. It is just moved from place to place and/or changed from one form of energy to another.