# Waterslides

Some basic principles of physics can help us understand how a waterslide works.

**Potential Energy** ($E_p=mgh$)

- This means that the mass of the slider and the height of the slide are the key determinants of potential energy.

As the slider begins moving down the slide, potential energy gets transferred to:
**Kinetic Energy** ($E_k=0.5mv^2$)

- This means that kinetic energy depends on the mass of the slider and increases exponentially as the slider gains velocity.

In order for the slider to slow down or come to a stop, the kinetic energy must be dissipated by friction. There are two types of kinetic friction:

**Sliding Friction**

- The amount of sliding friction depends on the slope & curvature of the slide, and the nature of the surface. (ex. Less sliding friction if the slide is wet)

**Viscous Friction**

- Water will slow down a rider on the slide. The higher the water level, the greater the friction. For a high level of water, the slider's speed will approach the speed of the water.

High speed

| Examples: | Safety Concerns: | Common Rules: |
|---|---|---|

Moderate speed

| Examples: | Safety Concerns: | Common Rules: |
|---|---|---|

Slow speed

| Examples: | Safety Concerns: | Common Rules: |
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