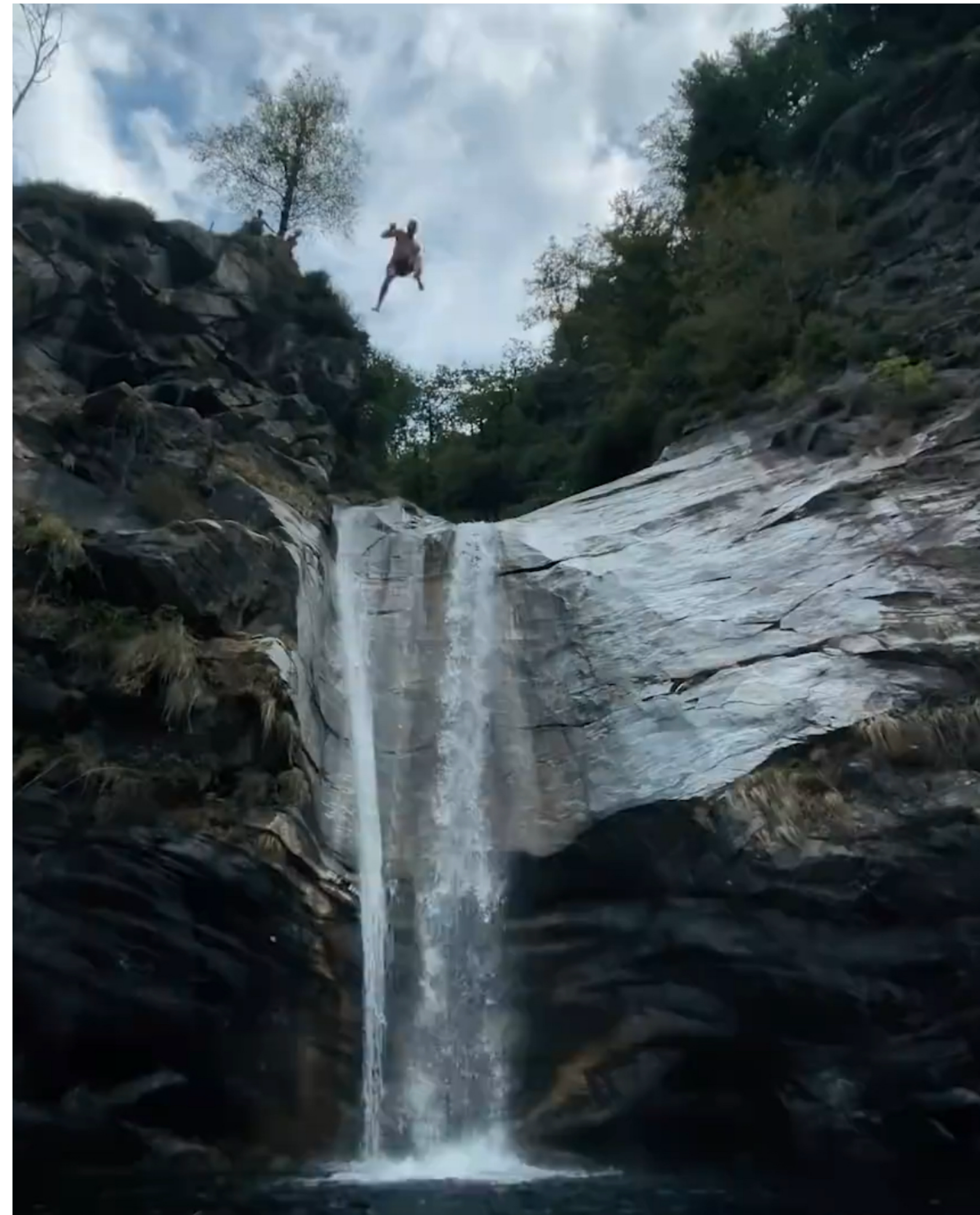


# General Physics: Mechanics

**PHYS-101(en)**

**Lecture 9b: Potential energy,  
energy conservation**

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# Tension in a pendulum

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Calculate the tension in a massless string of a pendulum.

# Example: Cliff jumping

You're on vacation and want to jump from a cliff into water. If humans can temporarily withstand about 10  $g$ 's of force without much discomfort, how high can you jump from? How deep must the water be? Neglect gravity when you're in the water and ignore *air* resistance, but assume your drag coefficient in water is  $\beta \approx 15 \text{ kg/m}$ .

## Cliff jumping safety

1. Be a good swimmer
2. Never go alone
3. Make sure the water is deep enough
4. Prepare for intense water pressure
5. Wear shoes
6. Don't jump headfirst
7. Keep your body streamlined
8. Blow out through your nose
9. Be of sound mind
10. Confidence is key

# Example: Cliff jumping

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If humans can temporarily withstand about 10  $g$ 's of force without much discomfort, how high can you jump from?

# Example: Cliff jumping

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How deep must the water be? Neglect gravity when you're in the water and ignore *air* resistance, but assume your drag coefficient in water is  $\beta \approx 15 \text{ kg/m}$ .

# Example: Cliff jumping

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