Park Physics and Physiology Fun!

Let's head to the park for some exercise and science exploration! Today, we'll see how science is all around us, even when we're just playing.

Part 1: Getting Ready (Warm-up - 5 mins)

Before we start playing hard, let's warm up our muscles!

- Arm circles (forward and backward)
- Leg swings (forward and side-to-side)
- High knees (marching in place)
- Butt kicks (marching in place)
- Torso twists

Part 2: Swing Science (15 mins)

Find a swing!

1. **Observation:** Sit on the swing without moving. What force is keeping you down? (Gravity!)
2. **Experiment 1:** Have the student start swinging by only moving their legs. How do they get started? What forces are they using?
3. **Experiment 2:** Give the student a gentle push. Then give a harder push. What happens? (Discuss push force and how greater force affects speed and height).
4. **Discussion:** Talk about how the swing slows down. What force might be slowing it? (Air resistance/friction). Notice the back-and-forth motion - like a pendulum!

Part 3: Slide Science (10 mins)

Let's go down the slide!

1. **Observation:** What force pulls you down the slide? (Gravity!)
2. **Experiment:** Slide down normally. If there are different types of slides (metal vs plastic) try both if safe. Does one feel faster? Why? (Discuss friction - the force that resists motion when surfaces rub together).
3. **Optional Timing:** If you have a stopwatch, time how long it takes to go down.

Part 4: Heart Rate Hustle (15 mins)

Time for some running or energetic play (like tag or running races across a field)!

1. **Measure Resting Heart Rate:** Before starting, find the pulse (wrist or neck). Count the beats for 15 seconds and multiply by 4. Record this number.
2. **Activity Time:** Run, play tag, or do jumping jacks for 5-10 minutes.
3. **Measure Active Heart Rate:** Immediately after stopping, measure the heart rate again using the same method (count for 15 seconds, multiply by 4). Record this number.
4. **Discussion:** Why is the heart rate higher after exercise? (The body needs more oxygen delivered to the muscles, so the heart pumps faster). Talk about how exercise makes the heart stronger.

Part 5: Cool Down & Wrap Up (10 mins)

Time to cool down and talk about what we learned.

- **Stretches:** Gentle static stretches (hold each for 15-20 seconds), like touching toes (or reaching towards them), quad stretch, arm stretches.
- **Review Questions:**
    - What force pulls things down towards the Earth? (Gravity)
    - What force slows things down when they rub together? (Friction)
    - What happened to your heart rate after running? Why?
    - Where did you feel forces working the most at the park today?