MIND TREKKERS
Accuracy and Power Lesson Plan

Amount of time Demo takes: 4-8 min

Materials:
1. 1-2 hockey nets (can be borrowed from TKD in DHH - ask Kevin)
2. 2 hockey pucks
3. 2 plastic safety pucks
4. 1 hockey stick
5. Football
6. Soccer ball
7. 2 radar guns (borrowed from SDC, must be returned after event)
8. Spray paint (to paint lines on puck)
9. 3 targets attached to string, and 1 extra
10. 3 foam targets
11. 3 bricks to place behind foam targets
12. 1 pack of C batteries for radar guns
13. Air pump
14. Need a non-carpeted surface to shoot puck on, long hallway or straight uncrowded space.
15. 1 Table, to place hockey net on for football throw.
16. Masking tape

Set up instructions:
1. **Hockey demo:** Place the 3 foam targets on the floor inside the net. One on the left, one on the right, and one in the middle. Each target should have a brick placed behind it so it doesn’t move when hit.
2. **Football demo:** Hang 3 targets from the top of the net with string, at 3 different levels.
3. **For both demos:** Tape safety area around the nets and where the participants will be shooting from.

SAFETY!
Keep the following areas clear, and mark off area to keep people out:
1. In front of and around participants that are hitting pucks/throwing balls
2. Around/behind net
3. Path puck or ball will travel

NO slap shots!

Lesson’s big idea
- Faster spin on an object helps keep its axis of orientation fixed in a certain direction. This also means that the object has less tendency to tumble and will help stabilize the aerodynamics affecting the object.

Background information
- **Accuracy** - how close the shot ends up hitting compared to the location of the target
- **Power** - Physical strength and force exerted by something or someone
- An object maintaining its axis of orientation in a fixed direction is known as **gyroscopic inertia**.
  
  Example: bullets

**Instructional Procedure**
1. Have participants stand about 10 feet from the net when shooting the hockey puck.
2. Have participants attempt to hit the targets in the net without spinning the puck or ball.
3. After they have tried this a few times, have participants try using spin on the puck or ball and hit the targets in the nets. Explain why it is easier to hit the targets when the ball or puck has spin.
4. Then have one of the volunteers behind the net with the radar gun and have participants see how fast they can shoot the puck (only wrist shots!)

**Assessment, Sample questions you can ask:**
1. What are other sports where spin and power are important to accuracy?
2. What is power?
3. How can we measure power and accuracy?
4. How are speed and power related?

**Clean Up**
Gather up pucks/balls and pack them away. Clean the tape up off the floor.

**References**
From University of Utah (http://library.med.utah.edu/WebPath/TUTORIAL/GUNS/GUNBLST.html)

**National K-12 Science Standards**
K-4 Physical Science, Standard B, Motion and forces of objects
5-8 Physical Science, Standard B, Motion and forces
9-12 Physical Science, Standard B, Motion and forces