## STEM Lesson Plan

### Sport and Physical Activity for All

**Quick summary:** Students will understand how prosthetic limbs can increase physical activity participation for people who live with different physical abilities, and collect data on Olympic and Paralympic running records in order to draw informal comparative inferences about two populations.

The students will research how prosthetic limbs work and how they are made.

The students will plot sprint records on a chart to assess the visual overlap of two numerical distributions with similar variables.

**How long will it take:** Two 45 minute lessons

**What do I need:**
- Internet access
- Graph paper

**How does it work:**

**Day 1:** The teacher will lead a brief class discussion on the different needs related to physical activity and different abilities. Explain that everyone has unique challenges when participating in physical activity.

- It is important that we all find ways to overcome these challenges in order to gain short- and long-term health benefits from regular physical activity. While some people live with different physical abilities, it is important that everyone works together to help provide access to participation in physical activity.

- The Paralympic Games use a classification system for track and field athletes so that athletes can participate fairly.

- To ensure competition is fair and equal, all Paralympic sports have a system in place which ensures that winning is determined by skill, fitness, power, endurance, tactical ability and mental focus - the same factors that account for success in sport for able bodied athletes.

Students research how different prosthetic limbs are made, and how they work for different sports (e.g., running, softball). The following websites can be used to help students with their research:


**Common Core Standard**

CCSS.Math.Content.7.SP.B3 Draw informal comparative inferences about two populations

**ISTE Standards**

**ISTE: Technology Standard 2C Communication and collaboration.**

**ISTE: Technology Standard 4D Critical thinking, problem solving, and decision-making.**
Day 2: Divide the class into groups of two or three. Students will gather medalist data from five different Olympic (http://www.olympic.org/athletics) and Paralympic Games (http://www.paralympic.org/athletics/results) for three different running distances.

Note: The Paralympic Games running events results start with the 1976 Games. Also, the Paralympic Games have several races for the same distances due to the classification system. For the purposes of the lesson, tell students to only pick one classification for each Paralympic running event (for example: Men's 100 m T12).

Students will graph the results and discuss any similarities and differences in the times between Olympic and Paralympic medalists. They will determine how prosthetics used for running have influenced Paralympic running times (if at all) over the years, and hypothesize why this is the case by answering the following questions.

1. How has the technology of prosthetic limbs impacted individuals with different abilities’ physical activity participation?

2. What are the different types of prosthetic limbs available for different types of physical activities?

3. Do you think technology advances in prosthesis has helped individuals with different physical abilities get faster? Do the records in Paralympic running events support your answer?

Upon completion, students present their group’s findings to the class.

Extension:

GEOGRAPHY/ SOCIAL STUDIES: Analyze your local community on its access for individuals who live with different physical abilities to be physically active. What are the benefits to making a community accessible? And what suggestions would you make to the Mayor to improve your community’s infrastructure?