

3.14: WHAT'S YOUR MUSCLE SUPERPOWER?

It's time to explore...

rock by rock 



Hi. I'm David.
I'm a statue!

Um.... David
has no
pants on!

What's Your Muscle Superpower?

Introduction

Have you ever wondered why some people are amazing sprinters, while others can run for miles without getting tired? Why does jumping come naturally to one person but holding a wall sit feel easier for another? Even though we are all human, it seems like we already have different athletic powers sometimes.

Today, you'll explore how your body moves—and what it might reveal about your hidden strengths. You'll try out four short movement challenges and track how each one feels. We're not competing—we're investigating. There's no "best" result—just different kinds of strengths. And while you won't know your actual genes, you'll use your performance patterns to predict which type of muscle profile might match you best.

Later, we'll dig into the science behind one specific gene that scientists sometimes call the "*sprinter gene*". But first, let's get moving and start discovering what your body can do!

Investigating Muscle Performance

Materials:

- Timer
- Masking tape or cones
- Access to a location with 1 step (to step up and down)
- 3 sticky notes
- Meter stick, measuring tape, or ruler

Directions: Complete each of the activities below, and record your results in the data table. Take a short break between each activity. After you complete all six activities, rate each activity on a scale of 1-5.

Activity 1: 10-Meter Sprint

Place a piece of masking tape on the ground as the starting line. Use the meter stick to measure 10 meters, and place a second piece of masking tape at the finish line. Sprint from one tape mark to the other as fast as you can. Have a partner use a stopwatch to time you.

Activity 2: Wall Sit

Slide your back down a wall until your knees are bent at 90°. Hold as long as you can. Time yourself.

**Activity 3: Vertical Jump**

Stand next to a wall. Reach up and place a sticky note on the wall at the highest point you can reach. Then jump as high as you can and place a sticky note on the wall at the highest point in your jump. Measure the difference.

Activity 4: Step-Ups

Step up and down continuously on a platform or step for one minute. Count how many step-ups you complete.

Activity 5: Standing Broad Jump

Stand with both feet behind a starting line. Jump forward as far as you can and place a sticky note on the ground at the back of your heels. Measure the distance from the line to your heels.

Activity 6: Plank Hold

Hold a plank position with straight arms and a flat back. How long can you hold it?



Data Table

Activity		Your Result	Rating (1-5) 1 = Felt like a strength 5 = Felt very challenging
1	10-Meter Sprint		
2	Wall Sit		
3	Vertical Jump		
4	Step-Ups		
5	Standing Broad Jump		
6	Plank Hold		

Investigation Reflection

1. Which activities felt easiest for you? Why do you think that is?
2. Muscles have two types of fibers:
 - **Fast Twitch Fibers:** Contract quickly, and get tired quickly; Used for quick bursts of strength or speed, like **Activities 1, 3, and 5** in the data table above (white rows).
 - **Slow-Twitch Fibers:** Contract slowly and don't tire quickly; Used for endurance activities like **Activities 2, 4, and 6** in the data table above (grey rows).
 - A. Do you think your strengths are more power-focused, endurance-focused, or a balance of both? Why do you think this?
 - B. Do you think you have more fast-twitch fibers, slow-twitch fibers, or a balance of both in your muscles? Why do you think this?
3. How do you think performance in these activities is related to your genes? Do you think there are other factors that could play a role in your performance?
4. Would you want to edit your own genes to be a better athlete? Why or why not?