



# Jumping Distance

Areas of Science      Sports Science (<http://www.sciencebuddies.org/science-fair-projects/project-ideas/sports-science>)

Difficulty

Time Required      Very Short ( $\leq$  1 day)

Prerequisites      None

Material Availability      Readily available

Cost      Very Low (under \$20)

Safety      No issues

## Abstract

Mike Powell of the United States currently holds the world record for the long jump at 8.95 meters, which is almost 30 feet! How can you learn how a long jumper uses momentum from running to jump farther than the competition.

## Objective

In this experiment you will test if you can increase jumping distance by increasing the running distance before the jump.

## Credits

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## Cite This Page

General citation information is provided here. Be sure to check the formatting, including capitalization, for the method you are using and update it as needed.

### MLA Style

Science Buddies Staff. "Jumping Distance." *Science Buddies*, 12 Jan. 2020, <https://www.sciencebuddies.org/science-fair-projects/science/jumping-distance>. Accessed 6 Mar. 2020.

### APA Style

Science Buddies Staff. (2020, January 12). *Jumping Distance*. Retrieved from <https://www.sciencebuddies.org/science-fair-projects/science/jumping-distance>

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## Introduction

The long jump was one of the events of the original Olympics in Ancient Greece. The athletes carried a weight in each hand, called halteres, swung forward as the athlete jumped to increase momentum, and then thrown backwards whilst in mid-air so as to propel himself (illustration of Natural History 2006).



Here is an illustration of ancient Greek Olympians using halteres to increase their distance on the standing long jump. (illustration of Natural History)

So how can you improve your long jump? The most important things to think about in the long jump are your approach, your take to being successful at the long jump is to have a good technique at each stage of the jump. A strong approach will lead to a better and a longer jump (KidzWorld, 2006).

In this experiment, you will test how momentum can help you jump farther. Since it is tough these days to find ancient Greek halteres we will use running distance to increase momentum. Will running a longer distance before the jump make you jump farther?

## Terms and Concepts

To do this type of experiment you should know what the following terms mean. Have an adult help you search the internet, or take

- Long jump
- Ancient Greece
- Halteres
- Momentum
- Distance in meters

## Questions

- How far can you get in the long jump?
- Can using your momentum help you jump farther?
- Will running before the jump make you jump farther?

## Bibliography

- Wikipedia contributors, "Long Jump," Wikipedia, The Free Encyclopedia. Retrieved August 4, 2006, from [http://en.wikipedia.org/w/index.php?title=Long\\_jump&oldid=69618109](http://en.wikipedia.org/w/index.php?title=Long_jump&oldid=69618109)
- KidzWorld, 2006. "Quiz the Coach - I Can't Long Jump Very Far," KidzWorld.com. Retrieved August 4, 2006, from <http://www.kidzworld.com/site/p6896.htm>

## Materials and Equipment

- A long jump pit (try a local park or high school track)
- Tape measure (preferably metric)
- Sidewalk chalk
- Good running shoes
- An assistant to help mark your jump



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[https://www.sciencebuddies.org/science-fair-projects/project-ideas/Sports\\_p008/sports-science/jumping-distance](https://www.sciencebuddies.org/science-fair-projects/project-ideas/Sports_p008/sports-science/jumping-distance) ([http://www.ideas/Sports\\_p008/sports-science/jumping-distance](http://www.ideas/Sports_p008/sports-science/jumping-distance))

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## Experimental Procedure

1. For this experiment you will need to find a long jump pit. Most high schools will have one on the track field. Look for a runn
2. First, measure out different running distances on the track and mark them off with your sidewalk chalk. Measure each dist  
Try using these distances: zero, 3, 6, 9, and 12 meters.
3. Make a data table for your results. You should include space for three trial jumps at each starting distance you have meas

Running Distance (meters)	Jumping Distance (meters)			
	Trial 1	Trial 2	Trial 3	Average
zero				
3 m				
6 m				
9 m				
12 m				

4. Now try running and jumping from your different starting points. Have someone help you to mark where your feet land (not
5. After you jump into the pit, mark off and measure the distance of your jump and write the data in your data table.
6. Keep jumping! The more jumps you do, the more data you will have! Maybe even have your friend repeat the experiment.
7. Make a line graph of your results. On the left side of the graph (Y-axis) put the distance of the jump in meters. On the bottc  
distances that you measured and marked off with chalk. Now mark a dot where your data values (average jump length and  
the dots with a line.
8. Analyze your graph. Does the line increase (slope upwards) or decrease (slope downwards)? What do you think this mean  
the running distance affect your jumping distance?

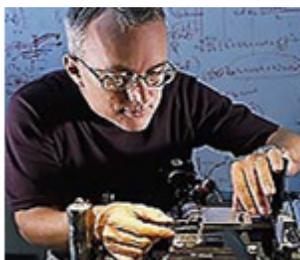
If you like this project, you might enjoy exploring these related careers:



(<http://www.sciencebuddies.org/science-engineering-careers/life-sciences/athletic-trainer>)

## Athletic Trainer (<http://www.sciencebuddies.org/science-engineering-careers/life-sciences/athletic-trainer>)

Sports injuries can be painful and debilitating. Athletic trainers help athletes, and other physical while also working to improve their strength and conditioning. Should a sports injury occur, athl determine the treatment needed, and design a fitness regime to rehabilitate the athlete so he o again. [Read more](http://www.sciencebuddies.org/science-engineering-careers/life-sciences/athletic-trainer) (<http://www.sciencebuddies.org/science-engineering-careers/life-sciences/athletic-trainer>)



(<http://www.sciencebuddies.org/science-engineering-careers/engineering/mechanical-engineer>)

## Mechanical Engineer (<http://www.sciencebuddies.org/science-engineering-careers/engineering/mechanical-engineer>)

Mechanical engineers are part of your everyday life, designing the spoon you used to eat your flip-top cap on your toothpaste tube, the zipper on your jacket, the car, bike, or bus you took to handle you grasped and the hinges it opened on, and the ballpoint pen you used to take your te around you has passed through the hands of a mechanical engineer. Consequently, their skills different products in almost every type of industry. [Read more](http://www.sciencebuddies.org/science-engineering-careers/engineering/mechanical-engineer) (<http://www.sciencebuddies.org/science-engineering-careers/engineering/mechanical-engineer>)

## Variations

- Try making your own halteres with 1 gallon milk jugs. Fill the jugs with different volumes of water and then use them for a jumping distance? Which weight works the best?
- Does height affect jumping distance? Find volunteers of different heights and have them do the long jump. Will tall people
- Does speed affect jumping distance? Have volunteers do the long jump (to measure the jumping distance) AND time their running speed). Do people who run faster also have better jumping distances?

## Ask an Expert

The Ask an Expert Forum is intended to be a place where students can go to find answers to science questions that they have be If you have specific questions about your science fair project or science fair, our team of volunteer scientists can help. Our Expert make suggestions, offer guidance, and help you troubleshoot.

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## Related Links

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