Barefoot Running

1. **Important**: Students with health problems that may be exacerbated by running should not participate as the subject in this activity.

2. When students are putting on the respiration belt, it should fit snugly without being uncomfortable. If the belt is loose and bounces while the student is running, the sensor may miscount the number of steps.

3. For best results, students should be told to run at a moderate and natural pace when conducting this experiment. Sprinting should be discouraged.

4. For additional information about the Go Direct Respiration Monitor Belt, including tips and product specifications, visit **www.vernier.com/manuals** and download the appropriate user manual. See **www.vernier.com/start/go-direct** for information about how to connect your sensor.

ESTIMATED TIME

We estimate that setup and data collection can be completed in one 45-minute class period.

SAMPLE RESULTS

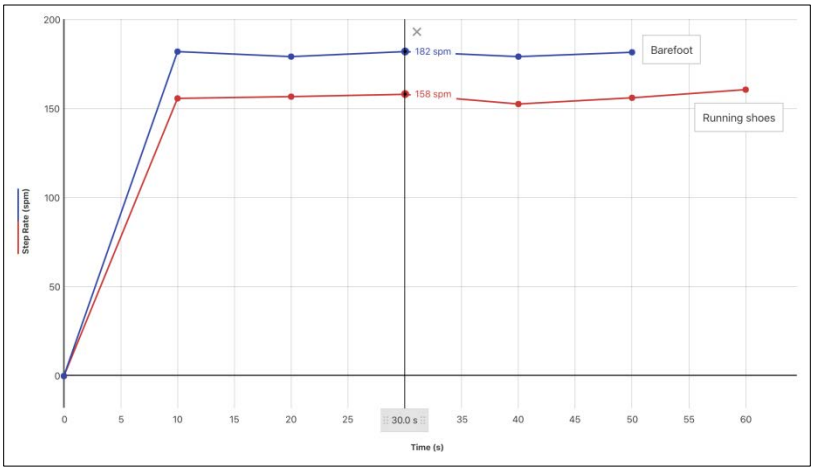

Figure 1 Cadence when running with running shoes and barefoot

Table 1 Cadence	
Condition	Cadence (spm)
Running shoes	156.81
Barefoot	180.99

ANSWERS TO QUESTIONS

1. Results will vary. Most runners will increase in cadence when running barefoot compared to running with running shoes. For the sample data, the cadence when running with running shoes was 156.81 strides per minute and the cadence when running barefoot was 180.99 strides per minute. This difference between the two conditions is greater than 20 strides per minute and appears significant.

2. Results will vary. People have different running styles. Runners that have been trained to heel strike or to have a heel-to-toe stride will see the greatest change in cadence when running barefoot. Runners that have been trained to land on their midsole may not see a large difference in cadence when running barefoot.