

Measurements of Body Systems

Nervous System-Reaction time:

Computer simulations

www.mindbluff.com/reaction.htm

<http://www.topendsports.com/testing/reaction-timer.htm>

www.exploratorium.edu/baseball/reactiontime.html

www.getyourwebsitehere.com/jswb/rttest01.html

www.fetchfido.co.uk/games/reaction/reaction_test.htm

Ruler Drop. Get a ruler (or a meterstick). Hold the ruler near the end (highest number) and let it hang down. Have another person put his or her hand at the bottom of the ruler and have them ready to grab the ruler (however, they should not be touching the ruler). Tell the other person that you will drop the ruler sometime within the next 5 seconds and that they are supposed to catch the ruler as fast as they can after it is dropped. Record the level (inches or centimeters) at which they catch the ruler (you can convert the distance into reaction time with the chart below). Test the same person 3 to 5 times (vary the time of dropping the ruler within the 5 second "drop-zone" so the other person cannot guess when you will drop the ruler).

Here is a table to convert the distance on the ruler to reaction time. For example, if you caught the ruler at the 8 inch mark, then your reaction time is equal to 0.20 seconds (200 ms). Remember that there are 1,000 milliseconds (ms) in 1 second.

Distance	Time
2 in (~5 cm)	0.10 sec (100 ms)
4 in (~10 cm)	0.14 sec (140 ms)
6 in (~15 cm)	0.17 sec (170 ms)
8 in (~20 cm)	0.20 sec (200 ms)
10 in (~25.5 cm)	0.23 sec (230 ms)
12 in (~30.5 cm)	0.25 sec (250 ms)
17 in (~43 cm)	0.30 sec (300 ms)
24 in (~61 cm)	0.35 sec (350 ms)
31 in (~79 cm)	0.40 sec (400 ms)
39 in (~99 cm)	0.45 sec (450 ms)
48 in (~123 cm)	0.50 sec (500 ms)
69 in (~175 cm)	0.60 sec (600 ms)

Nervous System-nerve receptors in skin

2 point discrimination exam. Bend a paper clip into the shape of a U with the tips about 2 cm apart. Make sure the tips of the U are even with each other. Lightly touch the two ends of the paper clip to the back of the hand of your subject. Your subject should not look at the area of skin that is being tested. Do not press too hard! Make sure both tips touch the skin at the same time. Ask your subject if he or she felt 1 or 2 pressure points. If your subject reported 1 point, spread the tips of the clip a bit further apart, then touch the back of the subject's hand again. If your subject reported 2 points, push the tips a bit closer together, and test again. Measure the distance at which the subject reports "I feel 2 points".

Muscle Strength or endurance-grip meters or tennis balls

Grip meters or number of squeezes on a tennis ball until muscle fatigues.

Skeletal-bone scan (will involve out of class work)

Students must locate a machine that does bone scans.

Respiratory-lung volume

Lung Volume bags measure the amount of air breathed out by the lungs.

Respiratory-breath control

Breath control devices measure how long you can exhale air in a controlled manner.

Respiratory-breath rate

Count the number of breaths per minute

Circulatory-heart rate

Take the pulse or number of beats per minute of the heart.

Circulatory-blood pressure

Will require a blood pressure cuff or visit to pharmacy with one.

Muscular/nervous-balance and coordination

<http://www.brianmac.demon.co.uk/agility.htm>

Standing Stork Test

To undertake this test you will require :

- * Stop watch
- * An assistant

How to conduct the test

- * Stand comfortable on both feet
- * Hands on your hip
- * Lift one leg and place the toes of that foot against the knee of the other leg



On command from the assistant:

- * Raise the heel and stand on your toes
- * Assistant starts the stop watch
- * Balance for as long as possible without letting either the heel touch the ground or the other foot move away from the knee.
- * Assistant records the time you were able to maintain the balance.

Repeat the test for the other leg.

Body temperature

Oral thermometer measures body temperature.