

Dexterity

Three Activities

The Science

One of the key concepts and skills to becoming a good surgeon is understanding manual dexterity. Manual dexterity is the ability to effectively use your hands and fingers with precision.

It is an important skill to have in medicine, especially for surgeons who must be able to carry out delicate procedures. For example, correct suturing (stitching up surgical incisions) can lead to proper healing and decrease in number of complications like infection. It is also important for dentists who carry out delicate dental procedures on a daily basis.

Many of the surgical robots and machines being developed today are helping surgeons and their teams do less evasive, more precise procedures and improving patient outcomes.

Activity One – Cereal transfer

Materials

- 2 bowls (any size)
- Chopsticks or tweezers
- Cereal - Honey loops or cornflakes are good
- Timer/Stopwatch

Instructions

1. Prepare all items on a table. Place cereal in one bowl (any amount) and place the other empty bowl next to it, preferably a distance of 15-20cm.
2. Place a stopwatch/timer in front of you for recording the time duration.
3. Use chopsticks or tweezers and place them securely between your fingers. Please make sure you use your dominant hand first.
4. Start the timer, transfer one piece of cereal at a time using the chopsticks/tweezers from one bowl to the other.
5. Check how many you can transfer within a minute. This checks your skills based on dexterity, efficiency, accuracy, and speed.

Additional investigation

To make it challenging, you can reduce time limit to 30 seconds or use your non-dominant hand and compare the results. To make it fun compare results with friends and family.

Activity Two – Knots on bananas

Materials

- Banana or solid cylindrical object (e.g. courgette, cucumber, pringles can)
- Ribbon/string threads (multiple threads cut long enough to tie knots around your object)

Instructions

1. Place five or more of the threads on the table sequentially within a gap of 10 centimetres.
2. Place the banana over the placed threads.
3. Try making a bow over the banana with the first threads and understanding how your fingers would work around the same. The idea is to make a KNOT over the object.
4. Once confident about the knot, try tying the other ribbons over the object.
5. Once you untie them and feel confident, you can place the stopwatch to time the activity.
6. Start the timer, see how many knots you can tie within a minute. This checks your skills based on dexterity, efficiency, accuracy, and speed.
7. To make it challenging, you can reduce time limit to 30 seconds and compare results based on the same activity. You can even compare results with friends and family, making it fun and interesting.

Additional investigation

To make it challenging, you can reduce the time limit to 30 seconds or try to increase the number of knots in the minute. Compare results with friends and family. You can also try some of the exercises below and see if your dexterity improves over time.

MANUAL DEXTERITY EXERCISES

- Squeeze playdough or clay to strengthen hand muscles.
- Pick things up with a clothespin.
- Use tweezers to pick up small objects.
- Use kitchen tongs to pick up larger balls.
- Ball up a piece of paper with one hand (using only one hand the entire time, crumple up a piece of paper into a ball and then smooth it back out again).
- Stretch 2-3 rubber bands between your index finger and thumb.

Hobbies are a more natural way to improve your manual dexterity such as

- Crocheting
- Drawing and painting
- Knitting
- Learning an instrument, such as the violin or piano
- Origami
- Soap carving or wood carving
- Sewing