

Activity: Propagation Goal: Physical Populations: Rehabilitation

## TH Activity Plan – Checking Seed Germination Rates

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**ACTIVITY DESCRIPTION:** Participants will check the germination rates of seeds over the course of several days.

**THERAPEUTIC GOALS:**

**Cognitive/Intellectual:** Increase focus & concentration; work executive functioning skills; practice sequencing skills

**Physical:** Develop coping skills for pain management; strengthen fine motor skills; practice hand dexterity, hand-eye coordination

**Psychological/Emotional:** Use activities as distraction from pain

**Sensory:** Handle small seeds & moist objects with their sensory inputs

**Social:** Demonstrate ability to be & act responsibly

**STEP-BY-STEP PROCESS:**

- 1. Pre-Session Preparation:** As time and supplies permit, have several varieties/types of seed available from which participants can select; allow participants to conduct more than one seed germination experiment, as appropriate. Gather together remaining supplies and prepare the workspace. Select and prepare a place as a designated growing area to put the seeds where they will be warm (70°F), in bright indirect light (no direct sunlight), safe from accidental bumping.
2. Facilitator begins session by showing the seed packets to the group and talking briefly about each plant.
3. Explain why it is good to check the germination rate of leftover seeds. Seeds may be too old to germinate or may not have been stored properly. (See Notes below.)
4. Hand out materials to the group. Dampen a paper towel with water. Squeeze out any excess water and place the towel at the workspace.
5. Let each participant select a seed packet they want to test. Offer several different seed types from which to choose.
6. Instruct participants to fold their dampened paper towel in half, make a firm crease at the folded area, and then open the towel back up. The fold will be used for the placement of the seeds.
7. Carefully remove 10 seeds from the seed packet and spread the seeds out, evenly spaced, within the fold of the dampened paper towel.
8. Fold the paper towel in half so it covers the seeds. Then gently roll up the paper towel and set aside.
9. Hand out plastic bags and markers. Write the name of the seed and the date on the outside of plastic bag.
10. Place the rolled-up paper towel in the plastic bag and seal it up.
11. Read the growing information on the back of the seed packets to determine the estimated days to germination. The seeds should sprout within about 4-5 days or so, depending on the plant type.

**Materials**

Waterproof work surface or tray(s)

Variety of seeds in packets (at least 10+ seeds per packet; can be store bought &/or saved from previous growing season)

Paper towels

Spray bottle(s) &/or shallow bowl of water

Plastic food storage bags with zippers

Permanent markers, pencils, paper

12. Place the plastic bags, spray bottle(s), and pencils & paper in the designated growing area.
13. Check the plastic bags every 2-3 days to make sure the paper towel is still damp but not too wet. If the paper towel is too wet, the seeds will rot. If the paper towel is dried out, spray it with water from the spray bottle, taking care not to soak the paper towel completely.
14. Over the course of the monitoring period, remove any seeds that have germinated from the paper towel. Use pencils/paper to record the plant names and tally the corresponding number of germinated seeds.
15. When the sprouting time period reaches the end of the estimated time for germination (based on the seed packet information), open the paper towel rolls. Count the total number of germinated seed and calculate the germination rate. (See Notes below.)
16. Determine which seed you can use (high germination rate) and which seed to replace.

**APPLICATIONS FOR POPULATIONS:** This activity provides a myriad of opportunities for participants living with traumatic brain and spinal cord injuries to practice fine motor and executive functioning skills while handling and making observations about seeds over the course of several days. Goals focused on coping skills related to pain or frustration, and distraction from pain should be considered for this population. Adaptive devices may be appropriate depending on physical functioning for handling seeds. Larger seeds may be an option.

Participants can create a chart (or use one provided) where data, such as dates and observational notes, can be recorded as seeds germinate. Use coated seeds when available as they are easier to see and handle. If not available, use white plastic spoons, small cups, or similar adapted tools for placing and spacing seeds on paper towels. Have gloves available for participant use. Share live plants or larger-sized printed plant pictures of the seeds the group is working with for reference and additional sensory engagement. Employ task sharing, demonstrations/modeling, and other adaptive techniques for engaging participants.

**SAFETY CONSIDERATIONS:** Before using coated seeds, double check that they are coated with non-pesticide materials like clay. Coated seeds that contain pesticides are labeled as such and can be found in the commercial horticulture industry; however, these types of seeds may be feasible to use under certain circumstances, such as some vocational programs, and must be handled according to package directions. For participants who have tendencies to put non-food items in their mouths, avoid using seeds from plants with toxicity.

**NOTES OR OTHER CONSIDERATIONS:** Select seeds you want to start for the next growing season. If there are seeds leftover from the previous year, it is good to check the germination rate. New, recently purchased seeds typically have good germination rates, but it is interesting to compare new and old (last year's leftover) seeds. The goal is to get as close to 100% germination rate as possible for the most efficient use of time and resources. Germination rate is easily calculated if you use 10 seeds. For example, if you start with 10 seeds and only 3 seeds sprout, the germination rate is only 30% (low) OR if 8 out of 10 sprout, the rate is 80% (high). To determine the germination rate, divide the number of seeds that sprouted by the number of seeds you started with and multiply that by 100. For example,  $3/10 \times 100$  gives you 30% germination rate. If the germination rate is less than 70%, consider not using that packet of seeds or use 2-3 times the number of these seeds per pot in order to increase germination. Any extra seedlings can be given away. If the germination rate is above 70%, you can use that packet of seeds with 1 seed per pot. Participants can try transplanting seeds started in paper towels into a seed starting potting mix, except the likelihood that these seeds will grow on is significantly reduced due to environmental factors. It is best to start seeds from the same packet directly into a seed starting mix.

#### **REFERENCES/ RESOURCES:**

High Mowing Organic Seeds. How to do a quick germination test at home.

<https://www.highmowingseeds.com/blog/how-to-do-a-quick-germination-test-at-home/>

Stivers, L. & DuPont, T. (2012). Seed and seedling biology. Pennsylvania State University Extension.

<https://extension.psu.edu/seed-and-seedling-biology>

University of Illinois Extension. (2021). Seed viability and germination.

[https://extension.illinois.edu/sites/default/files/seed\\_viability.pdf](https://extension.illinois.edu/sites/default/files/seed_viability.pdf)

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