

Vomit Comet

Problem

To learn that motion can cause disorientation
To understand why astronauts train to live and work in space

Procedure

1. Have your partner sit in the swivel chair and put on a blindfold.
2. Ask your partner to place his arms out in front of his/her body while holding a pencil in an upright position. See the diagram.
3. Have your partner point the pencil in the direction of rotation as you turn the chair.
4. Observe the pencil.
5. Slowly stop the chair and then turn it in the opposite direction.
6. Observe the pencil.
7. Repeat steps 3-5, turning the chair in the opposite direction.
8. Remove the blindfold and let your partner sit for a few minutes to regain orientation.
9. Change places with your partner and repeat the experiment.

Materials

swivel chair
blindfold
pencil



Conclusion

1. In what direction did your partner point the pencil after the first rotation? When the chair stopped? After the second rotation?
2. How do our senses help orient us in space?
3. When living and working in space, should astronauts trust their eyes or their sense of motion?

Extension

1. Sit in the swivel chair and have your partner spin you for about thirty seconds. Once the chair comes to a stop, try tossing a ball into a wastepaper basket placed 1.5 meters away. Describe what happened and how you felt.
2. Stand facing a friend. Turn around five times fast and face the friend again. Close your eyes. How do you feel? Do you feel like you are still moving? Open your eyes and find out.

** Note: A stirred pot of liquid continues to spin even after the spoon is removed. The fluid in the inner ears also keeps spinning even after your body stops spinning. In free fall, the effect is even more noticeable.