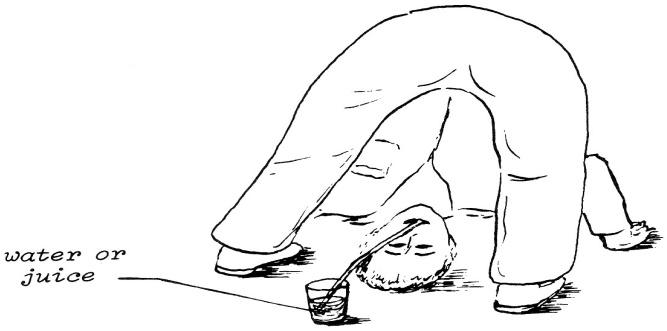
17.28. TRY DRINKING WHILE STANDING ON YOUR HEAD

Materials: 1. A glass of drinking water or juice.
2. A bent drinking tube or flexible drinking straw.



Procedure:

1. Ask one of the students to assist you, to put the straw in your mouth as soon as you are ready to drink.
2. Try to stand on your head against the wall (if this is not possible, bend from your waist down until your head touches the floor).
3. Have your student assistant bring you the glass and straw so that you can drink from it.
4. Suck through the straw while your body (or upper body) is upside down, and empty the whole glass.

Questions:

1. Is gravity needed to make fluids come down the esophagus?
2. Can we drink water while we stand on our head?
3. How does food go down the esophagus into the stomach?
4. Is the esophagus like a glass or rubber tube going in the stomach?
5. Why did the fluid not flow out of the mouth when drinking upside down?
6. What is the muscle action called, which pushes food into the stomach?

Explanation:

After food is swallowed, it enters the **esophagus.** Here it is pushed along by **muscle action,** which is called **peristalsis.** This movement of the food is carried out by **involuntary muscles.** There are two layers of muscles: the inner layer forms a series of circles around the tube, and the outer layer is longitudinal. When the inner layer contracts, the tube becomes smaller at that point, and when they relax the longitudinal muscles contract. This **alternate contraction and relaxation** of the two sets of muscles push the food along the tube in **peristaltic waves.** This is the reason why food, whether it is in solid or liquid form, may be swallowed with the body positioned in any rection. Gravity has little or no influence on this.