2

Name: ..... **Form:** .....

See **pages 6 and 7** of *The Body Book*

PRACTICAL B

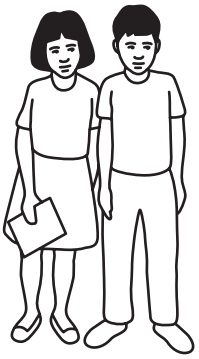
Controlling the muscles

Activity A

Take turns at this activity with other members of your group.

(1) Hold up a long pole and stand as still as possible for one minute. Keep your eyes open.

(2) Ask other members of the group to watch the top of the pole and to note how often the pole moves.



(3) Repeat (1) and (2) but this time close your eyes.

(4) Describe what happened when the pole was held with (a) the eyes open.

✎ .....

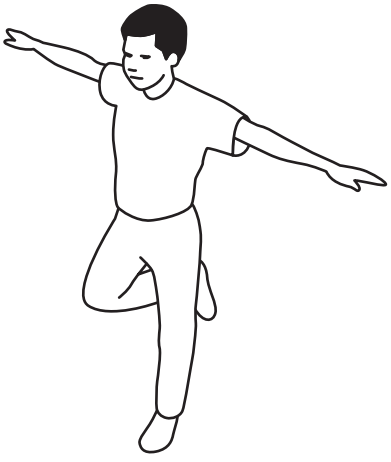
.....

(b) the eyes closed.

✎ .....

.....

Activity B



Try this activity on your own.

(1) Hold out your arms from your sides and stand on one leg. Keep your eyes open. Try to balance for a minute. Put your foot down if you begin to fall.

(2) Repeat (1) with your eyes shut.

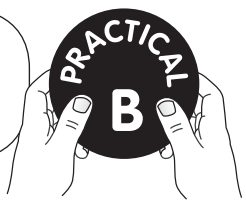
(3) Describe what happened.

✎ .....

2

Teacher's sheet: Practical

See **pages 6 and 7** of *The Body Book*



Equipment

You will need a long pole like a broom handle or a metre stick.

Introducing the work

If you have introduced the machine analogy when introducing the body, and have done Practical 2A, you may like to follow it with this activity.

If you have not used the machine analogy or Practical 2A you may wish to leave this work until the children study pages 30 and 31, or 32 and 33, in the *Students' Book*, or have studied Practical 15C on page 83. This is also a fun practical, like fingerprints, and may be useful in drawing in reluctant learners early in the topic.

Outcomes

The children:

- Can co-operate with each other in carrying out an investigation.
- Can make an accurate description of an event from their observations.
- Can control risks in the performance of an activity.

Background

Muscles are usually in a slight state of tension. When one muscle pulls on a bone the muscle that opposes its motion may relax a little, letting the muscle bring about some slight movement. Or, the muscle may contract and prevent movement or produce movement in the opposite direction.

When we are standing or sitting, the receptors in the body's muscles are sending messages to the brain and spinal cord, and the muscles are receiving messages back which control their contractions and keep the body steady. This control is done automatically by reflex actions which we do not have to think about. Consciously, if we had to think about these actions, we would not have time to think of other things, such as searching for something to eat or avoiding danger.

The movements made by the muscles in Activity A are small, but the use of the long pole helps to magnify them so the movement can be seen. The eyes also help us to maintain our position and balance. The pole will move less with the eyes open than when the eyes are closed. A person will balance comfortably on one leg for a minute with the eyes open but may soon lose their balance when the eyes are closed.

We also use receptors in our ears to help us keep our balance. The receptors work with tiny hairs inside part of the ear. If a person spins round and round then stops, the hairs keep moving for some time afterwards, responding to changes in air pressure. The receptors detect these movements and send messages to the brain which interprets them as though the body is still moving. Messages from other parts of the body inform the brain that this is not the case, and the conflicting messages give rise to the sensation of dizziness. A ballet dancer avoids this problem by looking at a single point on a wall, turning the body as far as it can go, then swing the head round quickly to look at the point on the wall again as the rest of the body continues to turn.