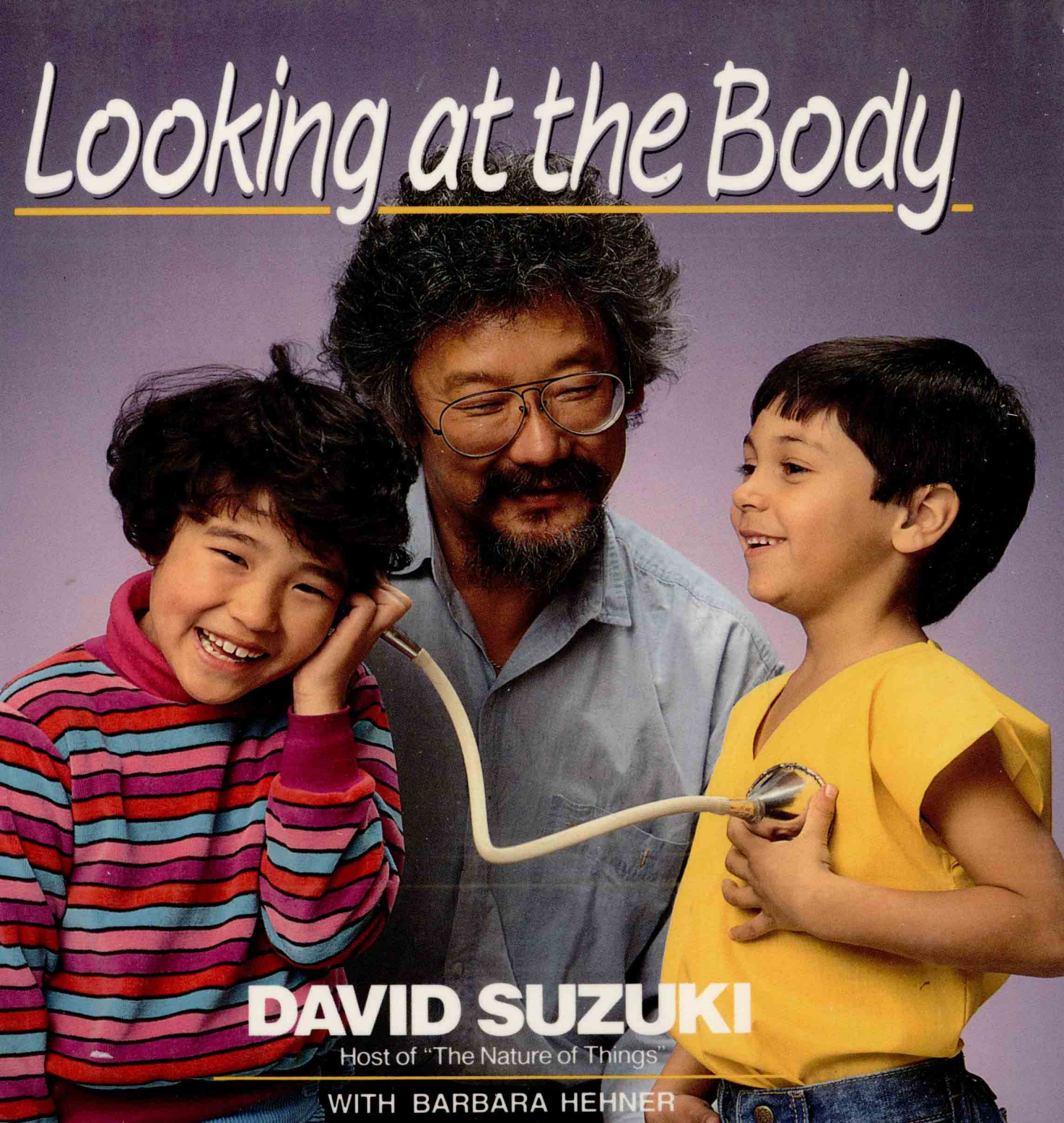
Looking at the Body



DAVID SUZUKI

Host of "The Nature of Things"

WITH BARBARA HEHNER

Looking at the Body

David Suzuki

with BARBARA HEHNER

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AN IMPORTANT NOTE FOR KIDS AND GROWNUPS

You will see this  warning sign on some of the **Things to Do** in this book. It means that an adult should help out. The project may use some boiling water or something might need to be cut with a knife. Everyone needs to be extra careful. Most grownups will want to get involved in these projects anyway—why should kids have all the fun?

Introduction

Has your family ever bought a car or house or boat? Remember how carefully all of you looked everything over? After a while, though, you probably started taking your car or house or boat for granted! Well, that's the way it often is with our bodies.

When you skip or catch a ball, shiver in the winter or sweat on a summer day, your body is doing all kinds of complicated things. Most of the time, you're not even aware of it.

Every time I accidentally cut myself and watch my blood harden and the wound slowly heal over, I'm amazed. My digestive system turns cereal, toast, and juice into energy for my muscles to use — and I don't even have to give it a thought. A child's baby teeth come loose one by one, as if they "know" when to make way for permanent teeth.

Some people talk about the body as if it's a machine. They think of the heart as a pump, the bones as a framework, the eye as a camera, the brain as a computer, and so on. It's a simple way of thinking about our bodies, but we mustn't forget that they are far more complex than any machine.

Let's see what we can learn about the many parts and organs that add up to such a wonderful result — your amazing body!

DAVID SUZUKI

Looking at You

In the whole history of the world, there has only been—there will only ever be—one *you*. Even if you have a twin brother or sister who looks just like you, he or she is still a little different. For instance, twins don't have exactly the same patterns of skin on their fingertips.

Each person is different from every other one. Look around as you walk down the street or sit on a bus. People can be tall or short, fat or thin, or anywhere in between. Their hair and skin can be many different colors. They may have curly hair, straight hair, or almost no hair at all. Not only are you different from everybody else—you're also changing all the time. Look at the family photo album. Is that *really* you in the playpen? Look back farther. There's your mother as a teenager. There's your grandfather before his hair turned gray. How you've all changed!

Yet, while human beings are different from each other, there are many ways in which we're all the same. For instance, each of us has a heart to keep blood pumping, lungs to breathe air, a brain to control things, a digestive system to take in food. And all our bodies are made out of cells. Cells are the basic building blocks of living things.

Have you ever seen an *amoeba* under a microscope, or maybe on a TV science show? An amoeba is a tiny living creature that is just one cell. It eats by stretching part of itself out and surrounding a bit of food. The amoeba makes more amoebas by dividing itself in two.

Human bodies are made out of cells, too—about 75,000,000,000,000 (75 trillion) of them. Like the amoeba, these cells can be seen only under a microscope. Some of them—the white blood cells that cruise in our blood gobbling up bacteria—even look quite a bit like the simple amoeba. But human bodies have many different kinds of cells. For instance, muscles cells are long and thin. Red blood cells look like little round saucers. Nerve cells, which carry messages through our bodies, are spidery looking.

Cells group together to make *tissues*. For example, muscle cells are gathered in bundles to form muscle tissue. Body organs are groups of tissues working together on some job your body needs done. Your lungs, heart, liver, and brain are all organs—and there are many others.

Organs, in turn, work together in body *systems*. For example, your mouth, esophagus, stomach, intestines, and other body parts break down food so that your body can use it. They form your digestive system. There are lots of other body systems. Here are just a few of them: The respiratory system specializes in breathing. The excretory system gets rid of wastes. The skeletal system holds you up. Your body, in fact, is an amazing example of co-operation (working together), with each body part doing the right task at the right time.

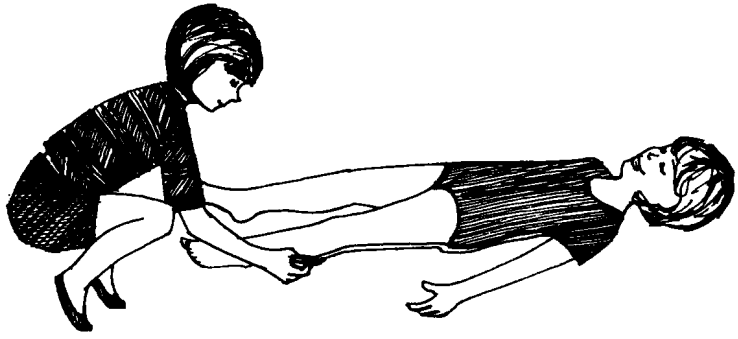
SOMETHING TO DO

The Inside Story

Put it together and what have you got? The inside story on you!

What You Need:

a sheet of paper big enough for you to lie on (if you can't find this in an art store, tape some smaller sheets together)
colored marker pens
construction paper
scissors
red and blue yarn
white glue
leotard or shorts and T-shirt
reference books and pictures about the body
a friend to work with



What to Do:

1. Visit the library and find books with drawings of body parts. The librarian can help you. (You can also use the drawings in this book.)

2. Before you make your body drawing, put on a leotard or shorts and a T-shirt. (If you wear bulkier clothes, your friend can't make a good outline of your body.) Lie on your back on the piece of paper. Hold your arms a little out from your sides.

3. Ask your friend to trace all around you. Then you'll have a life-size outline of your body.

4. Now, with construction paper, make some body parts that you can put on your body outline. You might like to include some important organs: brain, lungs, heart, stomach, liver, large and small intestines. You could also include some bones: collarbone, ribs, vertebrae (backbone), pelvis, arm, hand, foot, and leg bones.

5. If you can find a good drawing to guide you, you can also show some of your main blood vessels. Use blue yarn for veins and red yarn for arteries. Draw them on with pencil first. Put a thin line of glue along the pencil lines. Then stick the yarn down.

6. Here are some problems to solve as you do this activity: Where do the body parts go on the outline? How big should they be? It's pretty easy to feel your bigger bones. That tells you where they should go on your drawing. You can also measure them with a string or a tape measure, and cut paper bones the same size.

Organs can be trickier. Try to find drawings that show where they go. Read the text to see if it says about how big the organs are. For instance, your heart is about the size of your clenched fist.

Try to make as good a picture as you can, but don't worry about making some mistakes. You're bound to learn a lot more of your "inside story" than you knew when you began.

Keeping in Touch

How many ways can you make two of your body parts touch each other? This is a good way to exercise and to find out how many different ways you can stretch, bend, and twist.

Let's start with some easy moves:

1. Thumb touch thumb.
2. Nose touch wrist.
3. Finger touch nose.
4. Knee touch elbow.
5. Ear touch shoulder.

Harder:

1. Forehead touch knee.
2. Sole of foot touch sole of foot.
3. Hand touch shoulder blade (shoulder bone in your back).

There are hundreds of different combinations. You could make this into a game with a friend. Your friend calls out move, and you try to do it. Every time you do move, you get a point. What keeps your friend from calling out impossible moves—like lips to elbow or tongue to ear? If you try a move and can't do it, you and your friend trade places. The first move your friend has to try is the last one he or she called out. If your friend can't do it, you get 2 points. If your friend *can* do it, though, your friend gets the 2 points.

AMAZING FACTS

Lifespans

What's the longest any human being ever lived? Perhaps it was a man who died in Japan in 1986 at the age of 120. Other people have claimed to be older. However, they didn't have any proof, such as a birth certificate. This man did. It is very rare, though, for someone to live more than 100 years.

A baby girl born in North America now can expect to live to be 78. A baby boy can expect to live to 70. (These are *averages*. Some people will live longer lives; some will live shorter ones.) Why is there an 8-year difference between males and females? Some people who study lifespans think that women live healthier, less tense lives. Others think there is something built right into women's bodies that makes them stronger. Nobody knows for sure.

Games for Each and Every Body

Most kids have run races or played tag. Here are some body workout games that are a little more unusual.

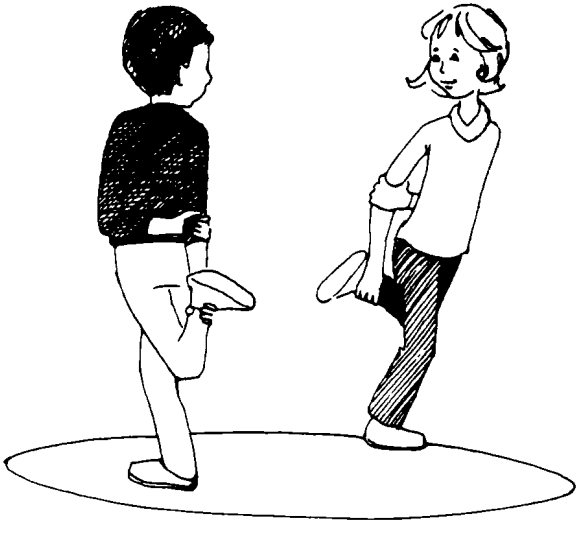
I. Tangled Hop and Push

What You Need:
a friend about your size

What to Do:

1. Make a circle on the ground, with a diameter of 4 to 5 feet (1 to 1.5 m). Do you know what the diameter of a circle is? It's a straight line that goes right across the circle, from one side to the other, passing through the center.

2. You and your friend should both stand inside the circle. Both of you reach behind your back and grab your left foot with your right hand. Now reach behind your back with your left hand and grab your right arm. (This sounds a lot harder than it is. Look at the drawing for help.)



3. The idea now is to hop over to the other person and push him or her out of the circle. You can't be too rough about this, or you'll start to fall over.

4. You win if you push the other person out of the circle, without letting go of your foot and arm.

II. The Great Toes and Elbows Race

What You Need:
some friends to race with
someone to start the race (take turns)
old clothes to wear

What to Do:

1. Mark a starting line. Then mark a finish line about 10 feet (3 m) away. Play on grass or soft ground—this hurts too much on pavement. (You *could* try it with elbow pads, if everybody has a pair.)

2. Lie face down with your friends behind the finish line. Put your hands over your ears. Now lift yourself up on your toes and elbows.

3. When the starter shouts: "GO!" race as fast as you can for the finish line. If you rest your body on the ground or fall over, you have to start over.

Six Impossible Tricks

Human bodies are pretty well built—but there are some things they just can't do.

1. Kiss Your Elbow
Well, can you? I can't—and I never met anyone else who could, either. (No cheating, now—I mean the very tip of your elbow, not the inside of your arm.)

2. Gasp!
Breathe in through your nose. (If you have a cold, you may have to quit right now!) Swallow. Easy? Now breathe in through your nose and swallow *at the same time*. (Nobody can do this. It's a way of keeping breathing separate from swallowing food.)

3. Balance Challenge
Stand beside a wall with your right side against it. Press the edge of your right foot against the wall. Now try to lift your left foot without falling over. (It can't be done. To lift your left foot without losing your balance, you'd have to lean right—but the wall keeps you from doing this.)

4. Sticky Fingers
Press your hand flat against a table with the fingers spread a little. Now lift your hand a bit, and tuck your middle finger under, so that its first two sections are also pressing against the table. Keeping all your other fingers pressed against the table, lift your thumb. No problem? One at a time, lift your baby finger and then your forefinger. Last of all, lift your ring finger. Oh-oh! It's stuck to the table!

Another way to do this one is to press the fingertips of your two hands together. Bend the two mid-

dle fingers so that their first and second joints are pressed together. Now try to separate the two ring fingers. They seem glued together.

5. Hey, Your Eyes Are Stuck!
Look straight ahead. Now roll your eyeballs up as if you were trying to roll them back in your head. Don't tilt your head back. Close your eyelids. *With your eyes rolled up*, try to open your eyes again. (Your eye muscles won't let you do it. They're already keeping your eyes rolled up—and they'd have to work in the opposite direction to let you raise your lids.)

6. Wiggle Your Ears
Are you getting tired of trying to do impossible things? Well, this one *isn't* impossible—it's just hard. Everyone has ear-wiggling muscles, but most of us have no idea how to work them. Practice while looking in a mirror.

Useless Bits?

Some body parts don't seem good for much. For instance, there's that little floppy piece of tissue hanging down at the back of your throat. It's called the *uvula*. People who draw cartoons like to show it wobbling when their characters open their mouths to sing or shout. The uvula has no use that anyone knows about.

We have another seemingly useless bit called the *vermiform* (worm-shaped) *appendix*. It's a "dead end" near one end of your large intestine. In some animals, an appendix may help to digest food, but it doesn't seem to help humans. Sometimes it causes a big pain. A person's appendix can get so sore and puffed up that it has to be removed by a doctor. And the person never misses it.