

## Touch with your hands and mouth

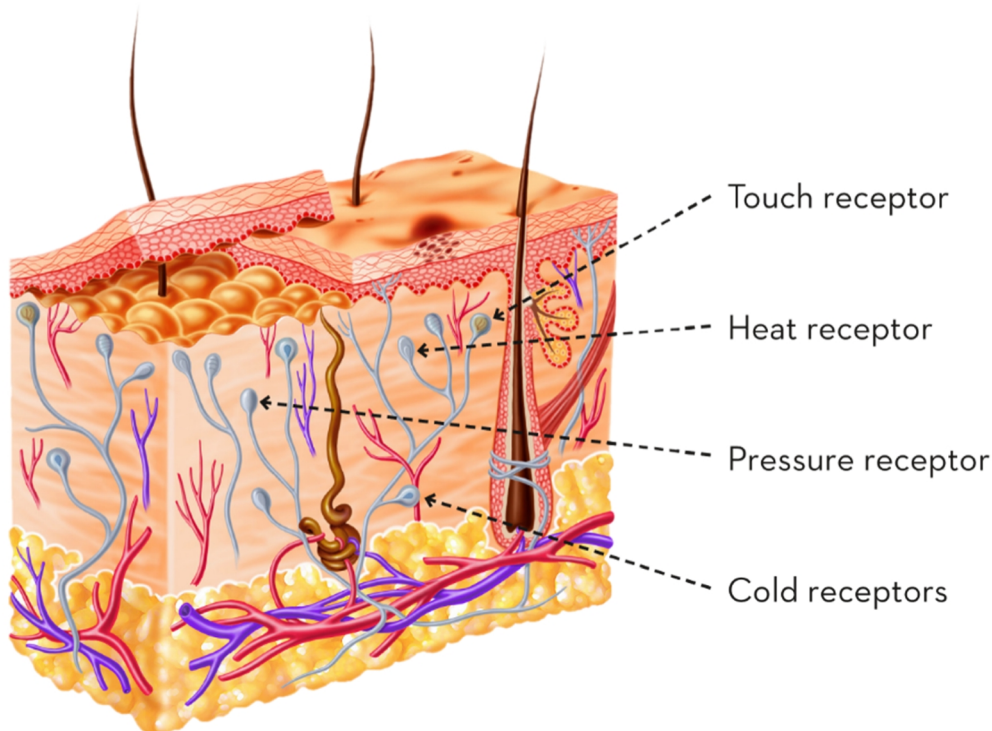
### PHYSICAL STIMULI

Just like sight and hearing, **touch** is a sense of **physical** perception.

When your body enters into contact with food, your sense of touch gives you information about some of its characteristics. Some of these characteristics are also perceived by your sense of sight. Nevertheless, if you feel food with your hands while keeping your eyes closed, you will still be able to tell its **shape**, **size** and **texture**.

### MECHANORECEPTORS

Touch receptors are known as 'mechanoreceptors'.

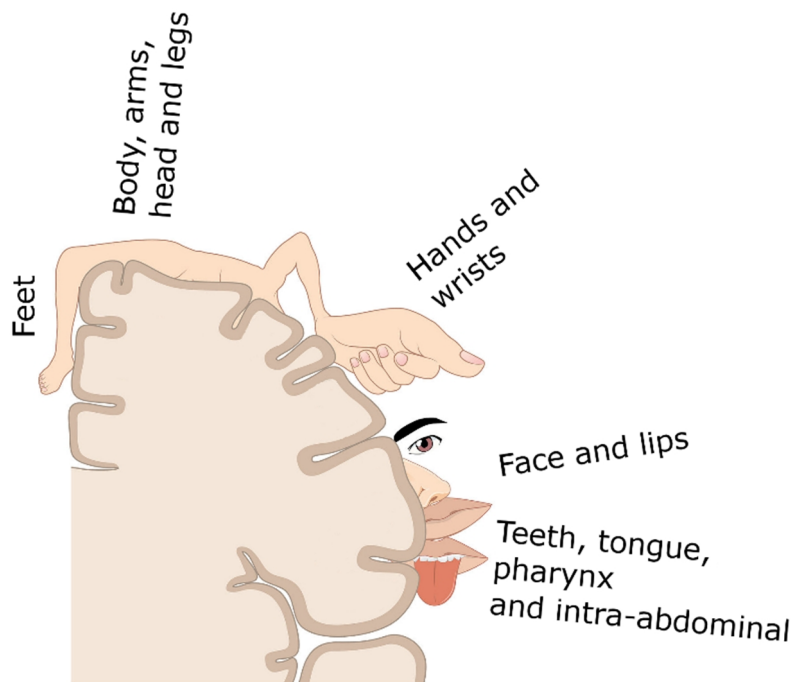


These turn physical stimuli into information which is transmitted to the brain.

They are sensitive to pressure and contact with food. By applying pressure you can, for example, tell how ripe a piece of fruit or cheese is, and by touching a piece of fruit, you can tell how soft its skin is.

Your hands play an important role in touch, but other parts of the body also have touch receptors – especially your mouth.

## THE IMPORTANCE OF YOUR MOUTH AND TONGUE



This diagram shows the surface of the primary somatosensory cortex, which is the area of the brain dedicated to tactile information coming from the various parts of the body. It demonstrates the importance of the mouth and the tongue for the sense of touch.

## TEXTURE

The mouth gives a large amount of information about food. It gives us details about the shape, size and texture of the food. We can also perceive food as being mostly smooth, grainy, soft or hard.

**Keywords > Smooth, grainy, soft, hard, slippery, rough, fibrous, sandy, crumbly, melting, brittle, puffy, juicy, viscous, rubbery, sticky, gluey, crunchy, etc.**

The texture is a determining factor in how we enjoy some food such as meat, where tenderness is an essential criterion.

Texture is also cultural. In Western countries, **viscous food** and **rubbery food** may be none too appealing. In some parts of Asia **sticky rice** is prized, which is not the case in Europe. Inuits and Argentinians prefer their food **chewy**, requiring lots of mastication. Mexicans and many Africans prefer a **softer** consistency. In Europe, every region has its own type of bread. Northern Europeans prefer their bread **soft**, while in the South, people enjoy a **crusty** loaf – hence the success of French baguettes.

## Touch with your hands and mouth

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Touch is a....sense of perception.

- chemical
- physical

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What are the physical senses of perception?

- Touch, hearing, taste
- Touch, sight, hearing
- Touch, sight, taste

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Which sense does not allow us to judge the size of food?

- Hearing
- Sight
- Touch

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What do we call the receptors that perceive what we touch?

- Mechanoreceptors
- Metareceptors
- Microreceptors

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The information perceived through the sense of touch is transmitted to...

- the salivary glands
- the brain
- the heart

---

Sensitivity to touch varies over the body and stimulates different areas of the brain.

- True
- False

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The Inuit like to eat tender meat.

- True
- False

---

Which continent does sticky rice come from?

- America
- Oceania
- Asia

---

Northern Europeans are known to like soft bread.

- True
- False

---

People in western countries really appreciate viscous food.

- True
- False

## Answers

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Touch is a....sense of perception.

- chemical**  
*Wrong! Try again!*
- physical**  
*Well done! Your sense of touch enables you to perceive temperature, texture, shapes, etc.*

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What are the physical senses of perception?

- Touch, hearing, taste**  
*Wrong! Taste responds to chemical stimuli.*
- Touch, sight, hearing**  
*Well done! That's correct!*
- Touch, sight, taste**  
*Wrong! Taste responds to chemical stimuli.*

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Which sense does not allow us to judge the size of food?

- Hearing**  
*Well done! That's the right answer!*
- Sight**  
*Wrong! Try again!*
- Touch**  
*Wrong! Try again!*

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What do we call the receptors that perceive what we touch?

- Mechanoreceptors**  
*Well done! They are sensitive to pressure and contact.*
- Metareceptors**  
*Wrong! Try again!*
- Microreceptors**  
*Wrong! Nice try, though!*

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The information perceived through the sense of touch is transmitted to...

- the salivary glands**  
*Wrong! Salivary glands produce saliva.*
- the brain**  
*Well done! Your brain collects all the pieces of information you receive, one by one, to make up a complete picture.*
- the heart**  
*Wrong! Try again!*

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Sensitivity to touch varies over the body and stimulates different areas of the brain.

- True**  
*Well done! Specific areas of your brain collect and process specific pieces of information.*
- False**  
*Wrong! That's not the correct answer.*

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The Inuit like to eat tender meat.

- True**  
*Wrong! Try again!*
- False**  
*Well done! That's right!*

---

Which continent does sticky rice come from?

- America**  
*Wrong! Try again!*
- Oceania**  
*Wrong! That is not the right answer.*
- Asia**  
*Well done! Sticky, glutinous rice is very popular in some parts of Asia.*

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Northern Europeans are known to like soft bread.

- True**  
*Well done! That's right!*
- False**  
*Wrong! Try again!*

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People in western countries really appreciate viscous food.

- True**  
*Wrong! That's not the right answer.*
- False**  
*Well done! This kind of food is often rejected in western countries.*

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What does it feel like?

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[8-10 years old and 11-13 years old]

Give an example of food for each of the following characteristics you can feel in your mouth.

<i>crunchy:</i>	
<i>crispy:</i>	
<i>sticky:</i>	
<i>stretchy:</i>	
<i>thick:</i>	
<i>rough:</i>	
<i>dense:</i>	
<i>crumbly:</i>	
<i>grainy:</i>	
<i>puffy:</i>	

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## Touch receptors

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*[11-13 years old and 14-16 years old]*

### Instructions:

Ask someone to hold out their arm and close their eyes.

Hold two pens together and put them tops facing down on one of their fingertips.

How many pen tops do they feel?

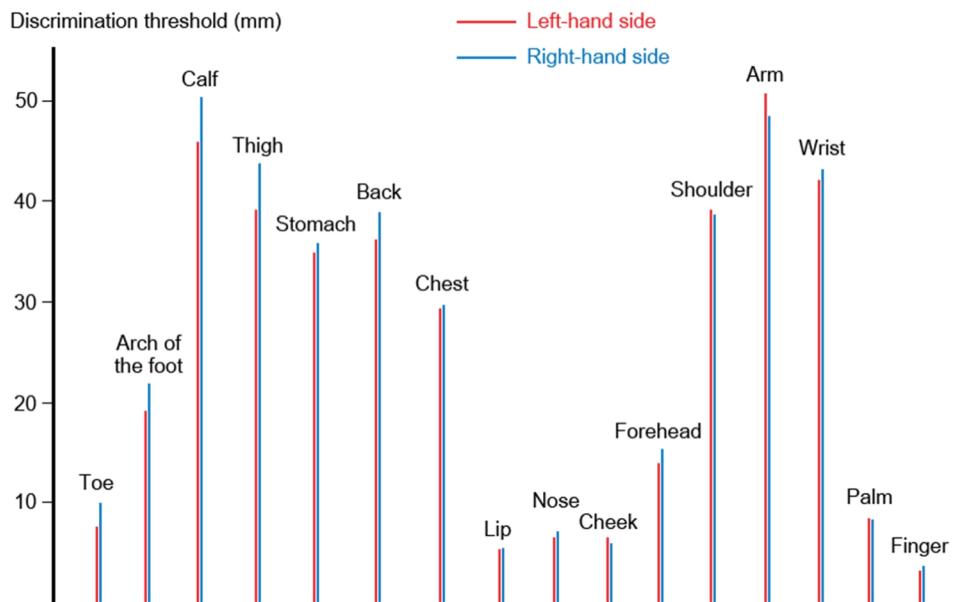
Still with their eyes closed, repeat the experiment on the person's forearm.

How many pen tops do they feel this time?

### Explanation:

Your fingertips are very sensitive, as they contain lots of mechanoreceptors. Your forearm is less sensitive as the nerve network is less dense there, which explains why you need to move the pens away from each other in order to tell them apart.

Studies on hands show that our fingertips can distinguish two points only 2 mm apart. On the palm, this distance is 5 to 10 mm and on the forearm, you need a gap of at least 40 mm to be able to distinguish between two points.



Note: The spatial discrimination threshold is the minimum gap required between the two points of dividers to be able to tell them apart. It varies according to the part of the body being stimulated.

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## Perception of temperature

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*[8-10 years old and 11-13 years old and 14-16 years old]*

### Instructions:

Pour cold water into a glass and add an ice cube.

Pour hot water into a second glass. Be careful! Add some cold water if the water is so hot that it could burn.

Pour warm water into a third glass (by mixing hot and cold water). Be careful not to burn yourself!

Dip one finger into the hot water and another finger into the ice-cold water. Wait for one minute.

Then dip your hot finger into the warm water.

Does the warm water feel hot or cold?

Dip your cold finger into the warm water.

Does the warm water feel hot or cold?

### Explanation:

We perceive heat in relation to the temperature of our skin. When you go from hot water to warm water, the warm water feels cold, because it is cooler than your skin. Conversely, when you go from cold water to warm water, the warm water feels hot as it is warmer than your skin. The same thing takes place in your mouth.