Every day we need to drink 2.5 litres of water. The human body can resist only a few days without water... without food we can survive a few days more!

Our bodies are made up of water: this is why water is so important for our organism. Not drinking water or liquids for just a few days can have serious consequences on our health.

That's why it is really important to drink regularly or at least consume foodstuffs that contain a lot of water, like fruit or milk. Water is a truly amazing substance that nature offers us absolutely free of charge and it is water that allows our body to carry out all its major functions.

The quality of water is extremely important for the health and well being of all living creatures. In some countries, good quality drinking water comes from the taps in our homes; in other countries people have to get water from other sources, like local wells or rivers for example. In these cases, we have to make sure that the water is safe to drink otherwise we risk picking up nasty diseases.

What is “drinking” water? It is the water we drink every day to ensure our organism stays healthy and which we use for cooking.

Water is clean and “drinkable” when it doesn’t contain things like soil, stones and leaves, and, most importantly, viruses, parasites and other substances that are harmful for our health such as arsenic, a well known poison.

Water from our taps by law contains a certain amount of Mineral Salts (not too few, not too many). Laws decide the ways in which we can obtain drinking water through purification of the water present in nature, and determine a limit for the quantity of Mineral Salts that drinking water may contain. If our tap water goes over the limits for mineral salts set out by the laws for each country, it is “treated” so as to avoid unpleasant consequences for our organism.

What happens if the water we drink is polluted?

Drinking or washing ourselves with water that is not safe for drinking poses a serious threat to our health. Leptospirosis, for example, is a disease that is transmitted if we immerse ourselves in water that is contaminated by the urine of mice, or in waste water where feces and urine are present. Water used by industries and in the productive cycles can also contain pollutants that are harmful for human health. It is therefore vital that we are really sure about the water we drink every day, especially if it is water that comes from wells. This water has to be purified and should never contain viruses, parasites or other substances that put our health at risk.

The human body is 70% – 90% water.

The quantity of water in our body is determined in particular by our age. The body of an adult weighing 80 kilograms, for example, contains 52 litres of water. Young people have a higher quantity of water in their bodies than older people: this means that, as we grow older, the quantity of water present in our organism diminishes.
transformation can be seen by comparing the skin of a child with that of his/her grandfather. The grandfather’s skin is not supple and smooth like that of his grandchild, it is full of wrinkles! Whereas a newborn baby is composed of 85-90% water, the body of an elderly person may only have 65-70% water. A human fetus is composed of more than 90% water. That’s why we use moisturizing cream: a way of giving water back to tissues that have little left!

Illustration 2: © University of Brescia (Italy)
A human phoetus is composed by more than 90 % of water.

Different parts of the body contain different quantities of water. This depends on the function of the different parts and organs of our bodies. Would you be able to stand and walk if your bones were made of water? Would you be able to chew if your teeth were made of water?

The part of our body that contains most water is the vitreous humor, commonly known as the vitreous body, of our eyes (99%). We would soon become blind without any water intake. The part of our body that contains least water, on the other hand, are our teeth (1.8%). What would happen if we reversed these proportions? What would happen if your teeth were 99% water? Would you be able to chew? And if your eyes contained only 1.8% water, would you be able to see?

Some of the percentages of water present in our bodies and organs:

- Vitreous body of the eye: 99%
- Blood: 90%
- Heart: 79%
- Muscles and internal organs: 75%
- Brain: 75%
- Bones: 30%
- Teeth enamel: 1.8%

Illustration 3: © Centro Civiltà dell’Acqua
The concentration of water in different parts of the body.

Where does water hide in our bodies?
The water in our bodies is hidden in the cells: tiny “bubbles” mainly made up of water that can only be seen through a microscope. There are many, many cells in our bodies: they come into being, grow and then die to make way for new cells. If we don’t drink, new cells can’t grow, and those that already exist start to weaken. That is why it is so important to drink plenty and at regular intervals… water is absolutely essential for our wellbeing!

Why do we feel the need to drink?
We feel the urge to drink when the quantity of water our body has lost is greater than that which we have drunk. For example, when we sweat a lot, we feel a greater urge to drink. The water we introduce into our bodies through eating and drinking is only partially used and the rest is expelled.

For every 2.5 litres of water we drink, various quantities are expelled through sweating (100-500ml), urine (1000-1500ml) and breathing out (100-200ml)

How do we know when we are thirsty?
Our cells have receptors which perceive lack of water and let us know about this. The receptors in our veins know when there is a smaller amount of blood in them
and therefore that our blood contains less water. Our mouth, larynx and throat are composed of mucous. Mucous cells realize very quickly when water is in short supply. The cells in the organs of our body know when they contain less water and our need to drink is their way of letting us know!

**What happens to our body if we don’t drink?**
If the water our body loses is equal to 2% of its weight, our organism can keep its temperature constant. Our body perceives cold, and after a short while, as a reaction, it perceives heat. Thermoregulation is an ongoing and alternating process. If the water our body loses is equal to 5% of its weight, our muscles start to cramp. If we have cramps in our leg, then our tense muscles are unable to move our legs. If the percentage of water loss reaches 7% we will become unconscious. If we lose more than 20% of our water we actually risk dying because our vital mechanisms will seize up!

**To avoid catching diseases, wash often and ... wisely!**
It is really important to wash frequently to stop the proliferation of harmful bacteria in our organism and to prevent their transmission to others. Regular washing is fundamental for our organism and our health. Washing our hands, for example, is a common sense habit that prevents transmission of bacteria and disease to those around us. The importance of washing and bathing is emphasized as from the most ancient tales and mythologies.

**Water never stays the same but transforms itself continuously!**
The longer water travels in nature (through soil and rocks) the greater the quantity of Mineral Salts it contains. Water loves travelling, running through rocks and coming into contact with different types of soil and vegetation. That is why every single environment, every place and territory, has water with very distinctive characteristics including different percentages of Mineral Salts. If a territory or place changes over the years, its water will change too. If, for example, a particular environment becomes more polluted, it is very probable that the properties of the water which flows through it will radically change too, eventually becoming unsafe to drink or for other human uses.

**What are Mineral Salts?**
Our body requires water containing Mineral Salts in order for it to function well. Crossing through rocks, soils and plants, water becomes rich in Mineral Salts. Water that has just burst out from a mountain spring contains very few Mineral Salts, as its journey has only just begun. Groundwater, on the other hand, which has come down from the mountains and now runs in the subsoil,
**Drops of Water 3**

Contains a higher quantity of Mineral Salts. It is very thirst quenching. Water that runs alongside a volcano has even more Mineral Salts, more so than groundwater.

**Some Mineral Salts contained in water help purify our organism.**

Sodium, Bicarbonate, Sulfur and Magnesium assist in the elimination of substances our body doesn't need. What is more, Sodium and Magnesium favor digestion and diuresis. But let's not forget about Sulfur and Bicarbonate, two mineral salts which kill the bacteria present in foodstuffs and reduce the acidity in everything we eat and drink. Thanks to these four Mineral Salts, water can purify our bodies of bacteria and other unnecessary substances, getting rid of all forms of excess waste.

**Do you want to help your digestion? Drink water that is rich in Sodium!**

Sodium is a mineral salt contained in water which helps digestion and improves our metabolism. Water may be defined as sodium rich, if the quantity it contains is greater than 200mg/l. People with digestive problems should drink water rich in sodium. However, sodium can have negative consequences on our blood pressure. Elderly people frequently have high blood pressure and so should avoid drinking sodium rich water. Water that is not sodium rich may also be useful for those who tend to have problems of water retention because it helps eliminate the excess liquid in our bodies.

**Do you want to strengthen your bones? Drink water rich in Calcium!**

Calcium is a mineral that strengthens our bones and teeth. Water may be considered calcium rich if the quantity it contains is greater than 180mg/l. Drinking calcium rich water aids correct bone formation in the young. It is also indicated for adults who suffer from osteoporosis. Osteoporosis means "weakening of the bones", an illness which makes our bones more prone to fractures. Calcium rich water is not, however, suitable for people who suffer from kidney stones. In fact, kidney stones form in our livers when we introduce too much calcium into our system.

**Do you want to purge your organism? Drink water rich in Magnesium!**

Magnesium is a mineral salt which purges our organism and helps diuresis. Every day our body requires 500mg of magnesium in order to function correctly. Drinking magnesium rich water is a way to fight arteriosclerosis, a disease which attacks our arteries and veins making them smaller and tighter.

Does anyone in your class ask the teacher if they can go to the bathroom every half hour? You maybe? Here is a word of advice: don't drink magnesium rich water! Otherwise you will be asking to go to the bathroom every 10 minutes! As you will have understood, magnesium rich water is not for those with marked diuresis.

**What is salinity?**

What we call "salinity" is the total quantity of Mineral Salts that water contains. If we fill a pan with water and allow it to evaporate, a whitish crust forms around the inside of the pan, and what we are seeing here is the salinity, in other words the Mineral Salts in the water which do not evaporate. The Mineral Salts present in water have a significant effect on its quality and on our health. In general, our bodies need an average daily intake of Mineral Salts to keep functioning in an optimum way. Depending on its salinity, four different types of water may be classified:

- Water which contains less than 50mg/l of Mineral Salts is not very thirst quenching and is defined as having a Minimum Mineral Content.
- Water classified as having a Low Mineral Content has a quantity of mineral salts between 50 and 500 mg/l. This type of water contains a balanced amount of mineral salts and therefore favors the correct functioning of our organism.
- The salinity of water with a Medium Mineral Content is between 50 and 500mg/l. This is mineral rich water which should only be used on medical advice.
- The salinity of High Mineral Content water is greater than 5000 mg/l. This refers mainly to “thermal” water which may be used medicinally to treat certain health conditions.

**Water with “health enhancing properties” exists: so called hot spring or thermal water.**

Thermal water can help solve respiratory and circulatory problems and heal skin conditions. This type of water has been well known to human beings since prehistoric times and can often have immensely beneficial effects on our health. How is it different to tap water? Well, in comparison, it contains a much higher quantity of Mineral Salts. More specifically, each type of thermal water contains a high quantity of a particular Mineral Salts. That is precisely why each different type is used to treat a certain condition. Sulfur rich water, for example, is used for the treatment of skin conditions, whereas Carbon Dioxide rich water may be used to treat the circulation of blood in our veins. Ways of enacting these cures can be through drinking the water, breathing in its vapor or through sauna, hydro-massage and mud packs. Many ancient civilizations were well aware of the healing properties of thermal water. Can you think of any examples?
“The human body is a temple, and as such must be cared for and respected at all times!”
This is one of the famous sayings of Hippocrates, the father of modern medicine. Do you know of any other maxims about “water and our health” in your own culture? If so, let us know!: comunicazione@civiltacqua.org

Why should we not drink sea water?
Sea water is full of salt and if we drink it we don’t get rid of our thirst, on the contrary it makes us even thirstier! Why is this so? Salt is like a magnet for water. If we drink salt water, we introduce more salt into our bodies than our bodies need. Salt absorbs water, just like a magnet, and this principle is known as “osmosis”. Osmosis causes dehydration, that is to say a reduction of the water in our bodies. So, drinking salt water actually dehydrates us! That is why Samuel Taylor Coleridge, in his famous Rhyme of the Ancient Mariner, used the expression “Water, water everywhere, and not a drop to drink!” to describe this terrible condition.

Swimming and Aquagym are some of the sports that are practiced in water: they favorably influence the harmonious development of our bones and muscles. Practicing a sport in water has many positive effects on our health. Swimming is particularly indicated for the young because it helps develop muscles and strengthens bones. It is useful for those who have back problems and scoliosis. It helps correct posture and straightens the spine. Aquagym means gymnastics in water, carrying out specific movements in water along to music: it improves our body awareness and strengthens our muscles without damaging the joints.

Dossier compiled by:
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References


