



# HEALTHY BODY



A Practical  
Guide to Body Care

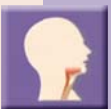
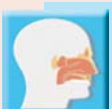
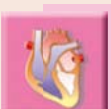
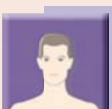
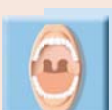


DR. GEORGE D. PAMPLONA-ROGER



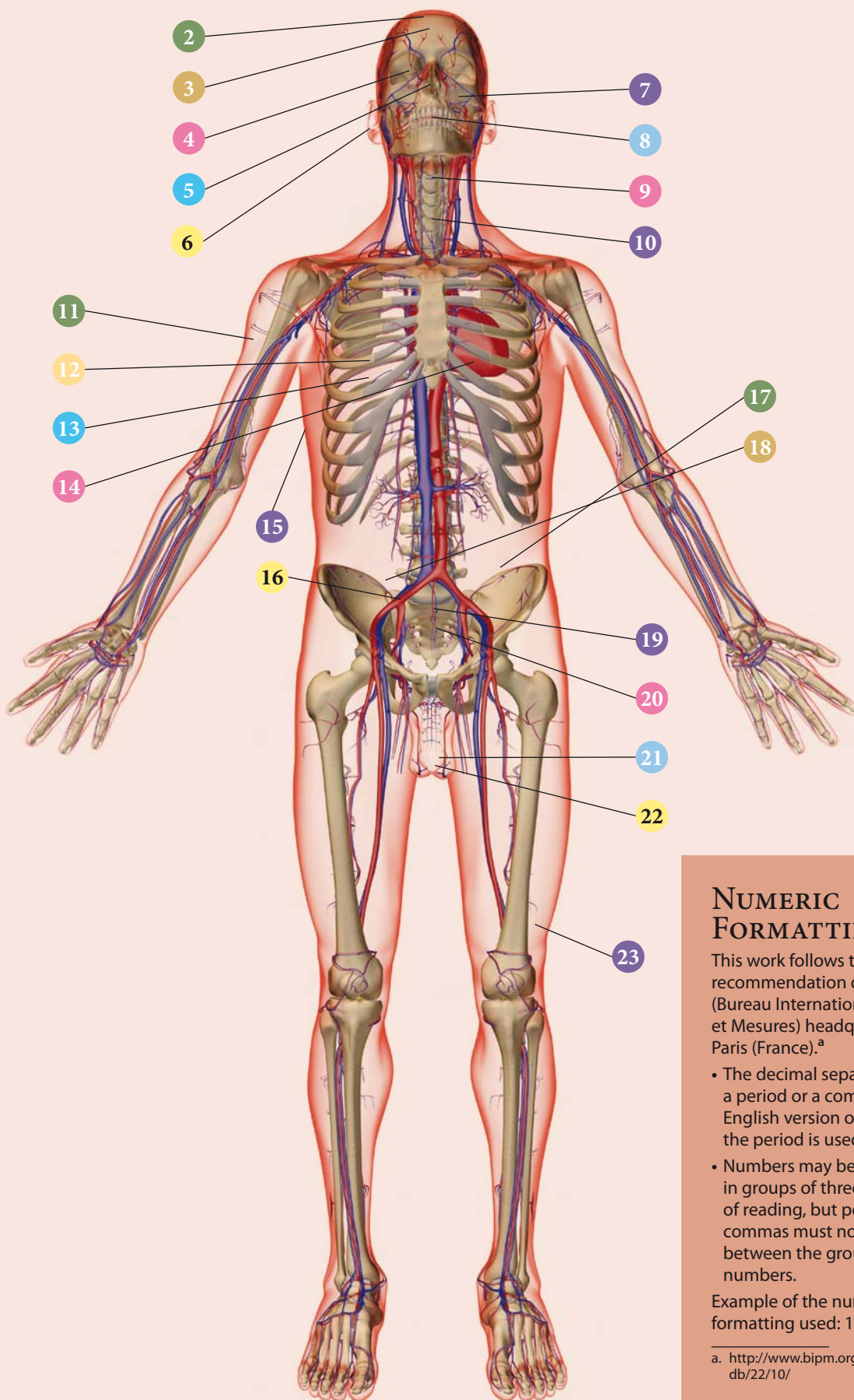
# LAYOUT OF THIS WORK

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## NUMERIC FORMATTING

This work follows the recommendation of the BIPM (Bureau International des Poids et Mesures) headquartered in Paris (France).<sup>a</sup>

- The decimal separator may be a period or a comma. In the English version of this work, the period is used.
- Numbers may be separated in groups of three for ease of reading, but periods and commas must not be added between the groups of numbers.

Example of the numeric formatting used: 123 456.789

a. <http://www.bipm.org/en/CGPM/db/22/10/>



# Body and Health

Human beings do not just "have" bodies, rather they "are" bodies. Health and wellbeing depend primarily on knowledge about those bodies, and how to care for them.



In the entire universe, no known system is perfect and at the same time as beautiful. Familiarity with its unique characteristics is essential to caring for it and enjoying it for a long time.

- **Organization:** The human body is organized on different levels. They refer to a living being, specifically resulting from intelligent planning.
- **Continuous Renewal:** Human body is in a state of transformation, continuously changing its chemical components. In spite of this, its characteristics remain constant.
- **Self-Healing:** The human body has the ability to repair itself. With the right care, it can become healthy again after an injury, illness, or condition.
- **Individuality:** No two human beings are even identical twins. In addition to the veins of the retina at the back of the eye, the voice, the face, and facial expression are being unique, and therefore different.
- **Integration:** The mind and the body are inseparable functional units. Because the human body is so fascinating, it is well deserved the utmost care.

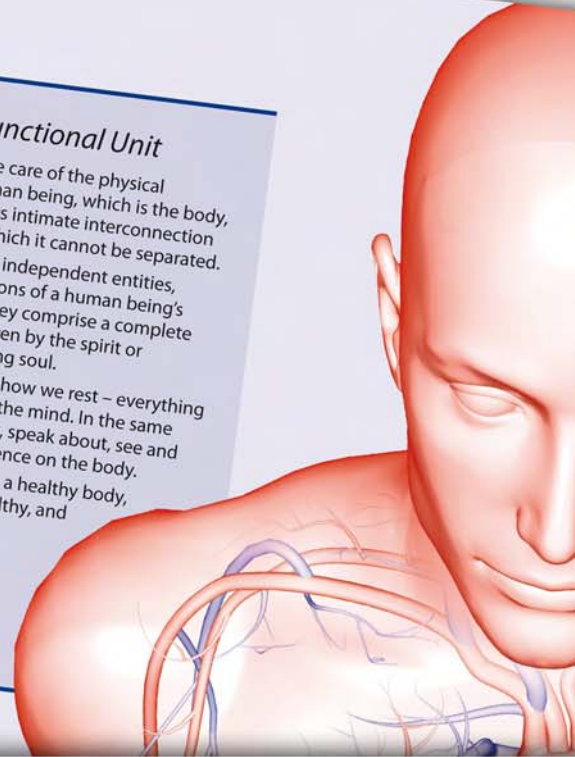
## Facts and Figures About the Human Body

|                                       |                                                                         |
|---------------------------------------|-------------------------------------------------------------------------|
| 120 days                              | Time it takes for erythrocytes (red cells) in the blood to be replaced. |
| 206                                   | Number of bones in the body.                                            |
| 30 000                                | Number of dead cells that slough off the skin each day.                 |
| 96 500 km                             | Combined length of all of the blood vessels in the human body.          |
| 75 000 000 000 000<br>(= 75 trillion) | Number of cells in the human body.                                      |

This work shows the extraordinary worth of the human body. It explains the function of each part and organ, offering valuable advice for keeping it healthy and in shape.

## A Complete Functional Unit

This work portrays the care of the physical expression of the human being, which is the body, without overlooking its intimate interconnection with the mind, from which it cannot be separated. Body and mind are not independent entities, but rather two expressions of a human being's life activity. Together, they comprise a complete functional unit that, driven by the spirit or lifebreath, result in a living soul. Eating, physical exercise, how we rest – everything has a direct influence on the mind. In the same way, what we think about, speak about, see and even believe, has an influence on the body. Therefore, in order to have a healthy body, the mind must also be healthy, and vice versa.



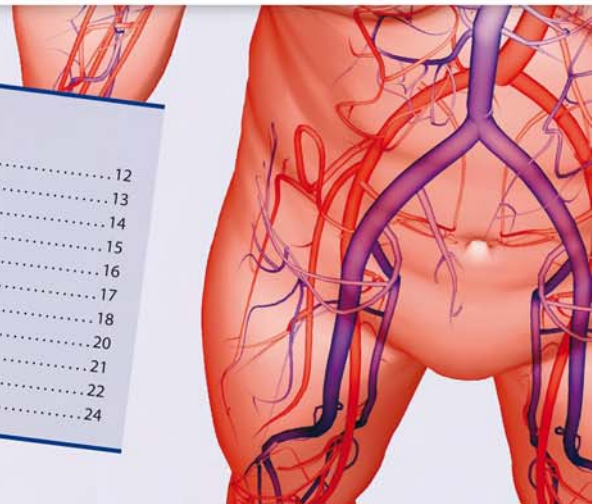
The explanations are accompanied by many graphics, photographs, illustrations and charts, which make them easier to understand and help the knowledge stay with the reader.

## WONDROUS BODY PARTS

Only a body that is a product of intelligent design would be able to survive in such a hostile world as ours. Thousands of adaptation mechanisms work in a simultaneous and coordinated fashion for the preservation of life.

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# Scalp

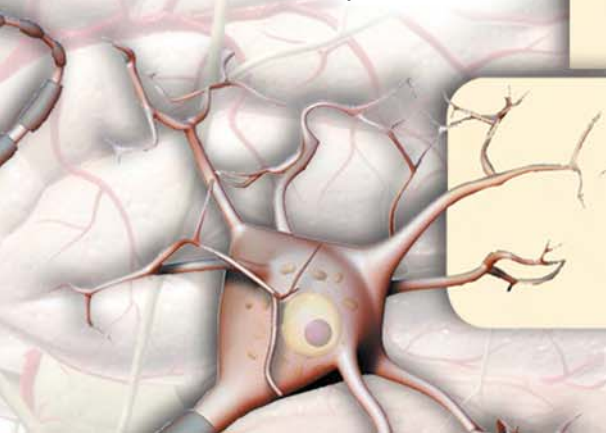
*The skin on the head where hair begins to grow, functioning as its physical and nutritional support.*



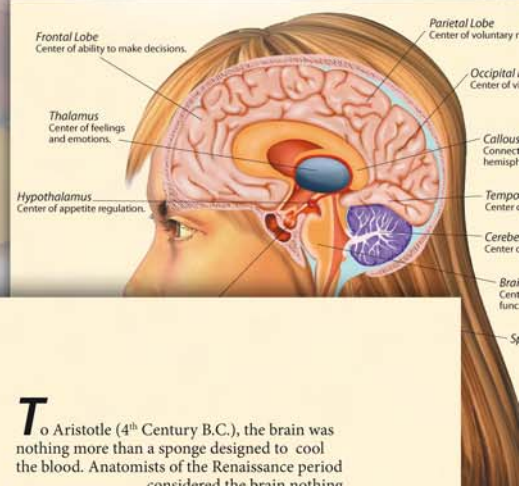
## Facts and Figures About the Scalp

|                                                                       |                                                                            |
|-----------------------------------------------------------------------|----------------------------------------------------------------------------|
| 0.25 to 0.5 mm per day<br>(9 to 18 cm or 3.54 to 7.09<br>in per year) | Growth rate of a single hair.                                              |
| 2 to 6                                                                | Average lifespan of a hair, in years.                                      |
| 40 to 80                                                              | Number of hairs lost each day, and that are usually<br>regrown.            |
| 1 000                                                                 | Number of hairs that, when braided, can support a<br>weight of 100 pounds. |
| 90 000 to 140 000                                                     | Number of hairs on the head.                                               |
| 540 000                                                               | Number of sebaceous glands on the scalp (500-600<br>per square inch).      |

The human brain, its needs and habits are also studied, and suggestions are offered for the right nutrition for disease prevention.



The first chapters discuss the head



# Brain

To Aristotle (4<sup>th</sup> Century B.C.), the brain was nothing more than a sponge designed to cool the blood. Anatomists of the Renaissance period considered the brain nothing more than a motor for moving the body. But today, we know that the brain is the control center for all bodily functions, not just movement; more importantly, it is the center of the mind and higher functions that are specific to humans.

*The human brain is the most complex object in the known universe, and, at the same time, the least understood.*



The human brain is so complex, so efficient in energy use, and so powerful, that evolutionist theories cannot explain its origin. If a "simple" neuron, the body of which measures less than a tenth of a millimeter, surprises us by its organization and intelligent design, how much more surprising is the brain, being made up of millions of interconnected neurons which are capable of making decisions, thinking, loving and believing?

## Facts and Figures About the Brain

|                                                  |                                                                                                                                                               |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.1 volts                                        | Average voltage of the electrical current between neurons.                                                                                                    |
| 2%                                               | Percentage of the brain in relation to the rest of the body.                                                                                                  |
| 2 a 4 mm (0.08 to 0.16 in)                       | Weight of the gray matter of the cerebral cortex, where neurons are located.                                                                                  |
| 4 minutes                                        | Time that the body can continue living after becoming separated from the brain.                                                                               |
| 4.8 grams (0.17 oz)                              | Glucose consumed by the brain in one hour.                                                                                                                    |
| 15%                                              | Percentage of blood flow from the entire body going to the brain.                                                                                             |
| 20%                                              | Percentage of oxygen breathed going to the brain at rest.                                                                                                     |
| 45 liters (95.1 US pt)                           | Blood volume traveling through the brain in one hour.                                                                                                         |
| 120 meters per second<br>(= 430 km/h or 267 mph) | Speed of transmission of nerve impulses.                                                                                                                      |
| 1 300 grams (2.87 lb)                            | Average weight of the brain (1 450 g in men and 1 250 g in women)                                                                                             |
| 2 300 cm <sup>2</sup> (356.5 sq in)              | Surface of the cerebral cortex, equivalent to a square with sides measuring 48 cm.                                                                            |
| 10 000                                           | Number of connections of each neuron has with the rest of the neurons.                                                                                        |
| 1 600 000 km (994 194 mi)                        | Length of all of the nerve fibers in the brain.                                                                                                               |
| 100 000 000 000<br>(one hundred billion)         | Number of nerve cells in the nervous system (brain, cerebellum, spinal cord). Of these, about 20 billion are neurons and the rest are glial or support cells. |

## Psychological and Spiritual Care (pg. 74)

*For good functioning, the brain also needs psychological and spiritual care. All humans need to love and be loved, and in this way, brain performance improves.*



# Eyes

They supply up to 80% of all the information that enters the brain.

The shape of the human eye is approximately that of a sphere with a 24 mm diameter. Concentrated within it is the greatest anatomic complexity of our entire body, due to the smallness and precision of its structures. Although it could be compared to a photograph

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A simple look can express more than a thousand words.

## CARING FOR THE EYES - 1

*Wearing glasses, not only sunglasses but also protective glasses for certain jobs, is the simplest and most effective way to care for the eyes*

selection, seems, a pretty woman, totally absurd.

More excellent in their own right than other sensory organs, which are nothing more than a differentiation of the epidermis, our eyes are an extension of the brain.

a. DARWIN, Charles. *The Origin of Species*. Oxford University Press, p. 152.

### Facts and Figures About the Eyes

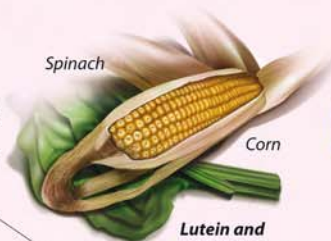
0.07 mm (= 70  $\mu$ )

Resolution power of the human eye. It is the minimum distance that must exist between two points

### Vegetable Pigment Antioxidants: Protectors for the Eyes

#### Retina

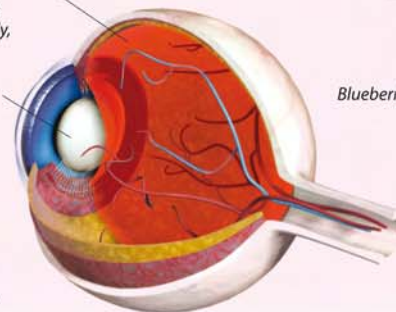
This suffers macular degeneration when it is attacked by free radicals. Lutein, zeaxanthine, and other natural vegetable pigments protect against retinal degeneration.



Lutein and Zeaxanthine

#### Lens

Especially sensitive to free radicals. It becomes cloudy, leading to cataracts. Antioxidants delay the appearance of cataracts.



Colorful fruits and vegetables, and antioxidant supplements act as protective shields for the eyes against the attack of free radicals.



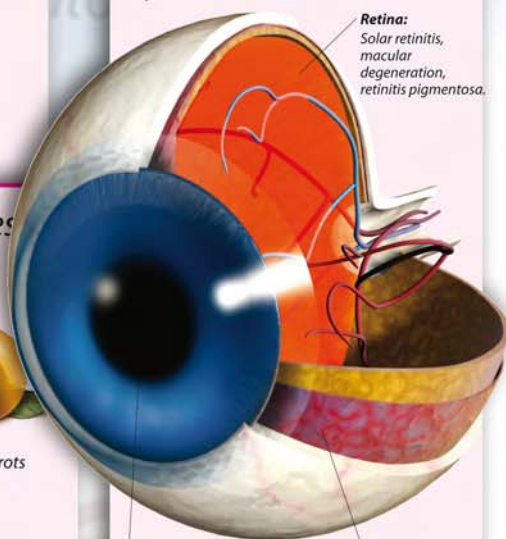
Beta-Carotene



Antocyanines

Strawberries

### Damage Caused by Excessive Solar Radiation



Retina:  
Solar retinitis,  
macular  
degeneration,  
retinitis pigmentosa.

Lens:  
Cataract

Choroid:  
Melanoma

Cornea:  
Photokeratitis,  
pterygium

Eyelids:  
Basal cell carcinoma

This work offers a detailed scientific study of each part of a man and a woman, providing a natural response to potential diseases



# Nose

*Filters infectious agents and senses aromas that are capable of stirring emotions.*



## Love enters through the nose

Olfactory sensations influence the nerve centers related to feelings and sexuality.

### Facts and Figures About the Nose

|                                |                                                 |
|--------------------------------|-------------------------------------------------|
| 3 cm <sup>2</sup> (0.46 sq in) | Surface area of the pituitary membrane          |
| 1 000                          | Number of chemical receptors in each nostril    |
| 4 000                          | Number of different scents that can be detected |
| 10 000 000                     | Number of olfactory neurons.                    |

**W**hen a virus gets into the body, the first line of defense that tends to confront it is contained in the mucosa inside the nasal passages. That is where antibodies and secretions capable of eliminating infectious agents are produced. This is why it is so important to keep the nasal mucosa in good condition.

The nose and paranasal sinuses make up a single anatomical and functional unit. The sinuses are cavities inside the facial bones. They are called paranasal because they are found at the sides of the nose.

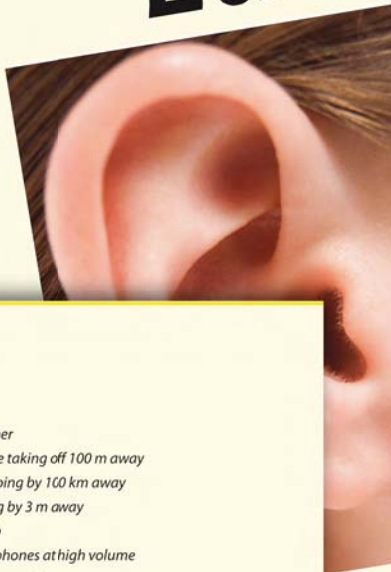


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# Ears

*The organs of hearing and balance*



**T**he ears stand out for their sensitivity, not only to the pressure of sound waves transmitted through the air, but also to minor head movements. The ear's range of sensitivity to pressure is extremely broad, varying from 20  $\mu$ p (micropascals, a unit of pressure) which is equivalent to a sound at 0 dB (decibels), up to 20 000 000  $\mu$ p, which is the pressure of a sound at 120 dB. In other words, the ear is capable of detecting not only a very soft sound, but also one that is 2 million times louder.

The balance organ located in the inner ear is able to make a geometrically precise determination of the head's exact position. Such sensitive organs should not be subjected to the rough sound stimuli of modern technology, such as amplifiers with hundreds or thousands of watts, or to headphones set at a loud volume. Just as ear hygiene is important to its care, so much more is preventing the wear caused by loud sounds and the continuous noise of modern life.

## Decibels: The Intensity of Sound

The decibel is the unit of measure for sound intensity.

Decibels follow a logarithmic scale. For example, an increase of 10 dB means a tenfold increase in sound intensity.

**dB**

|        |                                    |
|--------|------------------------------------|
| 130 dB | Jackhammer                         |
| 120 dB | Jet airplane taking off 100 m away |
| 110 dB | Airplane going by 100 km away      |
| 100 dB | Truck going by 3 m away            |
| 90 dB  | Dance club                         |
| 80 dB  | MP3 headphones at high volume      |
| 70 dB  | Quiet car motor 2 meters away      |

Soft human voice 1 meter away

Inside of a home in the countryside

Leaves swaying in a light breeze

A very soft sound, barely audible



## About the Ear

- Measurement of the middle ear (height x length x depth)
- Number of vibrations per second (Hertz) that a child can detect with his ear. In an adult, it is up to 4 000.
- Weight of the 3 tiny bones in the middle ear that transmit sound vibrations.
- Number of wax-producing glands in the auditory canal.
- Number of nerve fibers that make up the auditory nerve.

55 mg (0.002 oz)  
4 000  
30 000



# Face

Capable of expressing as much or more with gestures than the mouth can with words.



## Beauty comes from within

For a beautiful face, it is just as or even more effective to take care of the body's inner health than apply creams onto it.

The human face evokes a special interest in oneself and in others. A newborn, despite his visual limitations, already shows a special interest for his mother's face. It is known that there is a specific area of the brain and recognizing faces. If the brain is altered, facial expressions are affected. This disorder is known as prosopagnosia. Without a doubt, the human face is it.

singular or  
However,  
the most  
of a perso  
diseases

## Facts and Figures About the Face

|           |                                                                                                         |
|-----------|---------------------------------------------------------------------------------------------------------|
| 5 to 6    | Normal pH facial skin (pH under 7 is acidic). Soaps and creams should help maintain this level of skin. |
| 10 to 13% | Proportion of water that should be in the outer layer of skin.                                          |
| 14        | Number of bones that make up the face.                                                                  |
| 30        | Number of muscles that participate in all of the face's expressions.                                    |

## Chapter Contents

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# Mouth

Those wishing to eat, speak and kiss well should know their mouths, and how to take care of them.



The joy of a smile is enough to make taking care of the mouth worthwhile.

The mouth may well be the most versatile part of the human body, as it is capable of the most functions. First, the mouth is for eating and drinking, but it is also for speaking, breathing, gesturing and even kissing.

The mouth is a very special body part, due mainly to the following three characteristics:

- **Almost Constant Activity:** Throughout the day, the mouth is always doing something, due to the variety of functions it carries out. This constant activity requires high efficiency.
- **High Sensitivity:** The tongue, teeth and lips are, along with the cornea of the eye as well as the hands, the body parts that have the greatest number of sensitive nerve endings. Any injury or change in the mouth can cause severe pain.
- **Risk of Infection:** Due to its level of moisture and temperature, the mouth is an ideal place for the growth of all kinds of germs, due to which it is constantly under threat of infection. Despite its surprising design and its defense mechanisms, the mouth is where the most common infection originates, but promoted by today's bad eating habits.

The mouth, therefore, needs to be given special care. There are people who go their whole lives without needing to see a cardiologist or a urologist; but all of them, and surely more than once over their lifetimes, must see a dentist.

## Facts and Figures About the Mouth

|                                       |                                                     |
|---------------------------------------|-----------------------------------------------------|
| 5                                     | pH in the mouth after eating candy (acid).          |
| 7                                     | pH in the mouth when it is empty (neutral).         |
| 20                                    | Different types of bacteria found in the mouth.     |
| 20                                    | Number of times saliva is swallowed every hour.     |
| :2                                    | Number of teeth in a normal set.                    |
| 32 to 37°C (89.6 to 100.4 °F)         | Temperature inside the oral cavity.                 |
| 200 cm <sup>2</sup> (31 sq in)        | Surface of the oral mucosa.                         |
| 100 000 000 (one hundred million)     | Number of bacteria in one milliliter of saliva.     |
| 100 000 000 000 (one hundred billion) | Total number of bacteria living in the oral cavity. |



Essential Oils

Clove



# Throat



*A complex, bidirectional transportation system for gases, liquids and solids, that is able to differentiate each from the other.*

cause asphyxia.

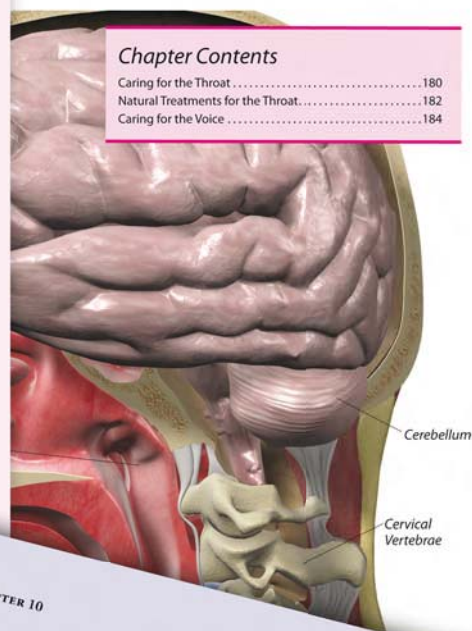
The throat is also the entrance into the body. The tonsils guard the entrance, preventing the entry of infectious agents.

A few decades ago, the tonsils were considered an evolutionary leftover—a vestigial organ that should be removed as soon as it became enlarged and inflamed. Today, however, modern medicine recognizes that more respiratory infections occur after removal of the tonsils than before. Fortunately, their removal is now less common.

Through the air we breathe and the food we eat, the throat is in constant contact with the outside world—agents—true invaders that must be eliminated.

When we speak of the throat, we are referring to the anatomical space extending from the uvula all the way to the trachea. It has an upper part, the pharynx, and a lower part, the larynx.

The throat is located between the head and the neck. Its extremely sensitive interior protects the airways, preventing solids or liquids from getting into the lungs, which



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### Facts and Figures About the Throat

|                       |                                                                              |
|-----------------------|------------------------------------------------------------------------------|
| 15 mm (0.59 in)       | Length of a woman's vocal cords.                                             |
| 20 mm (0.79 in)       | Length of a man's vocal cords.                                               |
| 70 to 200             | Number of times the vocal cords move every second in order to produce sound. |
| 320 km/hour (200 mph) | Speed of expelled air and saliva droplets during a cough.                    |

# Neck

*Strong, yet flexible.*

The neck's strength and resistance are surprising. The cervical vertebrae are not in straight columns; they have a curvature called lordosis. The weight of the head better than if they were simply each other. Many consider this natural neck curvature of intelligent design, since mathematically an arch is more resistant than a straight line.

The neck needs this curve, and it disappears due to the muscle strain that goes along with stress, pain and aging.

A healthy neck is both strong and flexible and can painlessly perform a wide range of movements. The neck has four main functions:

- Supports the weight of the head.
- Allows the head to move.
- A passageway for arteries and veins feeding the head and neck, for lymph vessels; for the trachea, which carries air to the lungs; for the esophagus, which carries food to the stomach; and for the spinal cord, which connects the brain to the rest of the body.
- Physical protection for the spinal cord passing through the cervical vertebrae. Together with the brain, the spinal cord is part of the nervous system. Numerous motor and sensory nerves extend from it.

In addition to all of this, the neck is the anatomical site of an important endocrine gland: the thyroid. The hormones produced in the thyroid gland regulate metabolism for the entire body as well as promote a child's intellectual development.

### Facts and Figures About the Neck

|                          |                                                                            |
|--------------------------|----------------------------------------------------------------------------|
| 4 to 5 kg (8.8 to 11 lb) | Weight of the head, supported by the neck.                                 |
| 6                        | Number of movements that the neck can carry out.                           |
| 7                        | Number of cervical vertebrae.                                              |
| 12                       | Number of joints between the cervical vertebrae (2 between each vertebra). |
| 15                       | Number of muscles on each side involved in neck movement.                  |
| 20 g (0.7 oz)            | Weight of the thyroid gland.                                               |
| 100 kg (220.5 lb)        | Weight in kilos that the neck can support.                                 |



Left ear-to-shoulder movement stretching (repeat toward the right).



Left rotation movement stretching (repeat toward the right).



# Upper Limbs

*Serving the hands, from shoulder to wrist.*

The upper limbs make up a functional unit endowed with the shoulder joint stands out among these, with its ability to perform the skeleton's most ample and varied movements; the arm, with its powerful biceps and triceps; the elbow, with its strength and the wrist, with its flexibility and resistance. All of these work in harmony to allow each hand to have a broad range of motion to reach nearly anything within a shoulder sphere measuring about 120 cm (3.9 ft). The arm also contributes to the hand being a precision instrument of touch with a sensitivity



What is amazing about the hands is all that can be done with them.

that are most special from animals, not from humans. Cancer is not common inflammation at inflammation chapter.

## Facts and Figures About the Upper Limbs

|                  |                                                                          |
|------------------|--------------------------------------------------------------------------|
| 5%               | Percentage of left-handed people                                         |
| 9                | Number of muscles acting in conjunction between the thumb and forefinger |
| 19               | Number of precision muscles in the hand                                  |
| 20 cm (7.87 in)  | Average length of the palm of the hand fully extended                    |
| 30               | Number of bones in each upper limb                                       |
| 40 kg (88.19 lb) | A man's average grip strength                                            |
| 25 000           | Number of sweat glands in each hand                                      |

## Most Common Causes of Asthma-Related Food Allergies



### Cow's Milk

This is the main cause of food allergies in children,<sup>a</sup> as well as a significant cause in adults. Therefore, without specific testing, the first foods that should be eliminated from the diet for asthma are milk and dairy products. It is interesting to note that breastfeeding reduces a child's risk of asthma and other manifestations of allergies in later years.



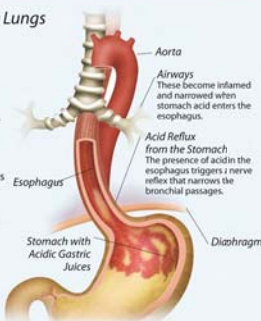
a. The natural history of IgE-mediated cow's milk allergy. Skripak JM, Matsui EC, Mudd K, Wood RA. J Allergy Clin Immunol. 2007 Nov;120(5):1172-7. Epub 2007 Nov 1. PMID: 17935766

## Acid Reflux from the Stomach Attacks the Lungs

The sensation of heartburn is caused by reflux of acidic stomach juices upward, that is, toward the esophagus. When stomach acid irritates the nerve endings in the esophagus, a nerve reflex is produced toward the bronchial passages. These react by narrowing their lumen, which can cause asthma, promote asthma and make breathing difficult. If the acid goes up the esophagus and enters the airways, which can happen when lying down, aspiration pneumonia ensues.

To prevent the consequences that acid reflux in the esophagus has for the lungs, the following is recommended:

- Skip the late-evening meal, or have something very light.
- Go to bed at least two or three hours after having last eaten.
- Raise the head of the bed with bricks or stands.
- Decrease intake of fat, white flour and sugar.
- Take medication to reduce stomach acid secretion.



## Tobacco: A Poisoned Gift

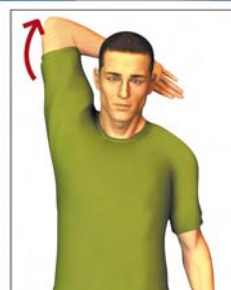
Smokers well know that inhaling cigarette smoke relieves a cough. This is a strange paradox that some smokers consider as the gift of smoking. It is true that tobacco smoke can relieve a smoker's cough. But it is a poisoned gift because it eventually destroys the lungs.

Cough is relieved because the nicotine in smoke paralyzes the movements of cleansing cilia. When mucus does not enter the upper airways, no coughing reflex is triggered.

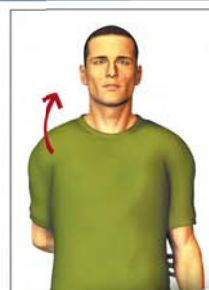
But when the cleansing hairs stop working, mucus loaded with impurities begins to accumulate in the bronchial passages and also in the alveoli, destroying them and causing pulmonary emphysema.



of the unaffected other hand.



2. Raise the affected arm above the head and touch the back of the unaffected shoulder. Then touch the back of the head.



3. Touch the

# Lungs

Two organs in continuous contact with the outside and with the air we have them breathe.

most important part of its primary function is to filter the air, and incorporate it into the body's cells. Those hardest at work are the heart's muscle and the heart's muscle supply of oxygen. After this gas, they die without

primarily on the lungs to supply of oxygen keeping the organs carry enormous minutes without their

responsibility function results in death. In addition to taking in the necessary oxygen supply, the lungs carry out another equally important function: elimination of the gas waste produced by cells as a result of their vital activity. If the lungs do not eliminate this carbon dioxide gas, the self-poisoning that occurs is just as incompatible with life as the resulting lack of oxygen. Taking in oxygen with every inhalation: eliminating carbon dioxide with every exhalation: two life-sustaining functions that the lungs must carry out continuously from the moment a human enters this world.



## Facts and Figures About the Lungs

|                                      |                                                               |
|--------------------------------------|---------------------------------------------------------------|
| 0.2 - 0.5 µm                         | Thickness of the alveolar wall.                               |
| 0.1 - 0.3 mm                         | Diameter of a pulmonary alveolus.                             |
| 2 liters (4.23 US pt)                | Volume of air inhaled per minute, at rest.                    |
| 12 liters (25.36 US pt)              | Volume of air inhaled per minute, while running.              |
| 140 m <sup>2</sup> (507 square feet) | Surface area of all of the alveoli in both lungs, spread out. |
| 500 ml (1.05 US pt)                  | Volume of air entering the lungs with every breath.           |
| 23 040                               | Average number of breaths in 24 hours.                        |
| 300 million                          | Number of alveoli in both lungs.                              |



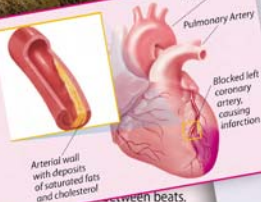
# Heart

*The engine of life.*



## Heart Health Includes the Stomach

Up until a few decades ago, science had not discovered the close connection between food and cardiovascular health. We now know how much our diet affects the condition of the heart and arteries. Coronary artery blockage due to cholesterol deposits can be prevented with a diet rich in antioxidant fruit and seeds.



|                    |                                                               |
|--------------------|---------------------------------------------------------------|
| 70 ml (2.37 fl oz) | Percentage of blood flow supplied by the heart between beats. |
| 2 500 000          | Blood volume pumped through each ventricle.                   |
| 37 000 000         | Liters pumped by the heart in a year.                         |
|                    | Number of times the heart beats in a year.                    |

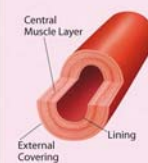
The heart's never-ending, rhythmic pumping begins long before birth. At the moment of birth, it has already pumped more than 40 million times.

The heart is much more than a pump. It is truly a super-muscle made of contracting fibers that can work without rest over an entire lifetime. The heart's ability differentiates the heart from the body's muscles, which need to rest.

In order to beat without rest for its entire life, the heart requires a constant supply of blood for itself. This blood comes from the coronary arteries, which are the heart's own arteries. When coronary artery blood flow is blocked, the heart muscle begins to die.

## Progression of Arterial Damage

### 1. Normal Artery



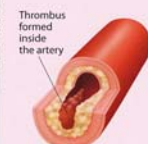
### 2. Early Damage to Arterial Lining

LDL cholesterol oxidizes due to a lack of antioxidants, then attacks and tears the lining that comes in contact with blood.



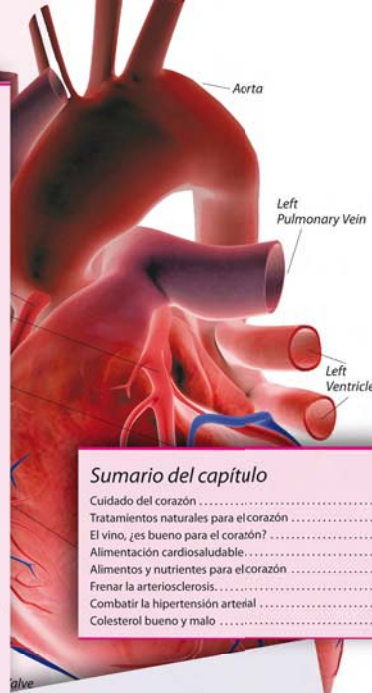
### 3. Fat Deposits and Formation of Atheromatous Plaque

Saturated fats and calcium first build up in the damaged area, narrowing the arterial lumen and making it difficult for blood to pass through it.



### 4. Thrombosis and Complete Blockage

The slowed blood flow forms a clot or thrombus, blocking the arterial lumen almost completely. The result is a heart attack.



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## CHAPTER 15

# Back

An extraordinary combination of stability and flexibility.

The backbone is centered around the spine, the body's axis. The spine itself is a true marvel of structural design. The physiological curves of the spine make it better able to withstand weight than if it were completely straight; the hundreds of muscles and ligaments in the back act in conjunction to achieve stability and flexibility; and as a whole it is evidence of careful planning to achieve the goal of an upright posture.

This all leads to the conclusion that the human back is not the result of a progressive transformation away from the horizontal posture of mammals, but instead of intelligent design from the beginning. Thanks to this, the back defies the force of gravity and withstands mechanical stressors that come with an upright posture; and unlike any animal, it allows us to raise our heads to look into heaven.

Work, sports and the activities of daily living often place too many demands on the back: staying in or forcing uncomfortable positions, as well as turning, twisting, stretching or flexing movements. Add to this inadequate or lacking resting periods, and it is understandable that four out of every ten people suffer back pain at some point in their lives. Learning to care for the back should be part of the school of life.

## Locations of Back Pain



Wearing a lumbar support brace is an effective way to relieve and prevent back pain.

## Facts and Figures About the Back

|                   |                                                                                  |
|-------------------|----------------------------------------------------------------------------------|
| 24                | Number of mobile vertebrae in the spine (7 cervical, 12 thoracic, and 5 lumbar). |
| 31                | Pairs of nerves branching out from the spinal cord.                              |
| 35%               | Percentage of sick leave taken due to back pain.                                 |
| 400               | Number of muscles in the back.                                                   |
| 700 kg (1,543 lb) | Weight that the vertebrae can support.                                           |
| 1 000             | Number of ligaments in the back.                                                 |



# Belly

An indicator of lifestyle,  
and of cardiovascular risk.

**B**elly refers to the anterior wall of the abdominal cavity, from the lower part of the ribs in the chest to the coxal bones of the pelvis.

Fat accumulation on the belly and inside the abdominal cavity gives rise to what is known as central obesity. This type of obesity is closely related to cardiovascular disease. Abdominal size is therefore very important to health, as it is a reliable indicator of the risk of:

- Heart disease.
- Hypertension.
- Metabolic syndrome.
- Insulin resistance and type 2 diabetes.

Even more important than waist size is its proportion as compared to hip size.



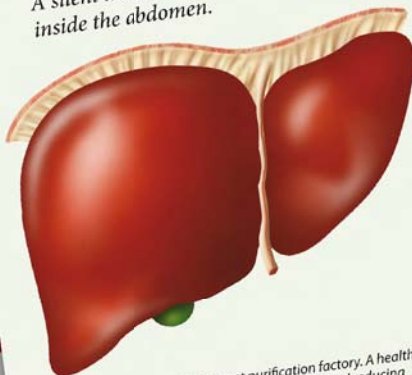
There is a direct relationship between abdominal circumference and the risk of having a heart attack.

## Facts and Figures About the Belly

|                      |                                                 |
|----------------------|-------------------------------------------------|
| 12 mm Hg             | Normal intra-abdominal pressure                 |
| 88 cm (about 35 in)  | Maximum recommended waist circumference         |
| 102 cm (about 40 in) | Maximum recommended waist circumference for men |

# Liver

A silent laboratory  
inside the abdomen.



The liver is the body's great purification factory. A healthy diet promotes its detoxification function and reducing or eliminating alcohol consumption and intake of other toxins that overwork it, are the best help for its numerous functions.

**T**he liver is the largest organ in the body, and quite possibly the one that performs the most functions. Some of the most significant of these are:

- Filtration of the blood that it receives through the portal vein coming from the intestine.
  - Production of bile, the digestive juice required for digesting fats and absorbing vitamins A, D, E and K.
  - Elimination of medications and toxins from the blood, including alcohol and many other drugs. The liver performs this detoxification function by way of thousands of chemical reactions with which it neutralizes and deactivates foreign substances circulating in the blood. Were it not for the liver, alcohol consumed would stay in the blood for days and days, perpetuating its toxic effects. But the liver is subjected to overburdening and damage each time it has to eliminate alcohol or other toxins from the blood.
  - Storage of glucose from foods, and release of glucose when energy is needed for muscle activity or other bodily functions. In the absence of glucose, the liver can obtain it from the amino acids in proteins and the fatty acids produced by fats.
- The liver works a great deal, although in silence, and requires special care.

## Facts and Figures About the Liver

|                         |                                                             |
|-------------------------|-------------------------------------------------------------|
| 1.5 liters (3.17 US pt) | Volume of blood that passes through the liver every minute. |
| 2 liters (4.23 US pt)   | Volume of bile produced                                     |
| 20%                     | Percentage of Western population with liver disease         |
| 90%                     | Percentage of alcohol consumed in the Western world         |

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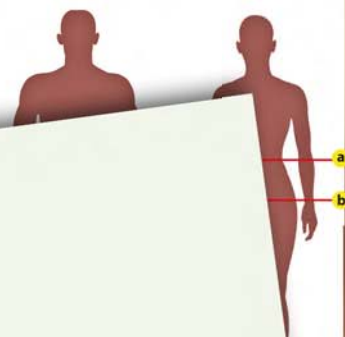
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## Waist-to-Hip Ratio

This is calculated by dividing waist circumference by hip circumference.

|       | Normal         | Moderate Risk | High Risk |
|-------|----------------|---------------|-----------|
| Men   | Less than 0.95 | 0.96-1        | Over 1    |
| Women | Less than 0.8  | 0.81-0.85     | Over 0.85 |





# Stomach

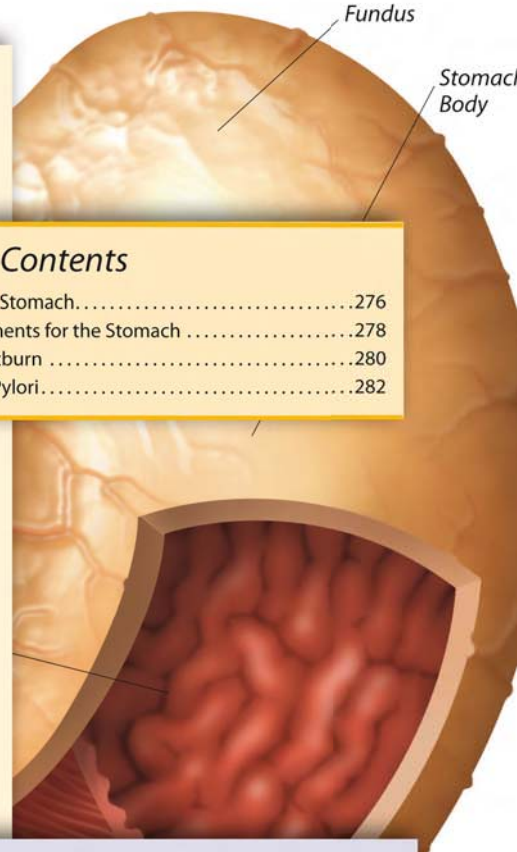
**T**he primary function of the stomach is to mix consumed food with gastric juices, thereby beginning the complex process of digestion.

The inside of the stomach has the peculiarity of being able to reflect mood. Anger makes it turn red; fear, pale; excitement, it begins to contract; stress, it starts to secrete juices. All of this is due to the fact that there is a direct connection between the brain and the stomach, by way of the autonomic nervous system. Any anxiety or emotion affects stomach function.

Because the stomach can break down and digest proteins, it is worthwhile to question why it does not digest itself, being that it is primarily made up of proteins. This does not occur in normal conditions, thanks to the stomach's true mucus barrier that wraps around it like a film and protects its inside from the acidic juices. When this mucus barrier is breached, stomach juices attack the stomach's own wall, causing gastritis (irritation of the mucosa) and stomach ulcer (erosion and substance loss in the mucosa).

The stomach needs special care in order to preserve the protective mucus barrier. This care includes regular meals, respecting the stomach's needed rest periods.

*Food storage area and digestive juice factory.*



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### Facts and Figures About the Stomach

|                       |                                               |
|-----------------------|-----------------------------------------------|
| 2 liters (4.23 US pt) | Stomach capacity.                             |
| 2.5                   | pH of gastric juice (very acid).              |
| 3 days                | Time it takes to completely renew the lining. |
| 3 liters (6.34 US pt) | Volume of gastric juices secreted daily.      |



# Bowels

**T**he small intestine is the connection between the food coming from the outside world and the environment of the inside world. This section of the bowels works as a complex chemical processing system, designed to break down food and prepare it to enter the bloodstream and become part of us. If food were to enter the bloodstream directly without first being processed in the bowels, it would cause a severe allergic reaction and turn out to be a deadly poison.

The large intestine (cecum, colon, sigmoid)

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Viscous Mucus Layer



## Reasons You Must See a Doctor

- Persistent stomach pain accompanied by cold sweats and general malaise: This could be a heart attack.
- Vomiting blood (usually black in color).
- Black stool (could be due to blood coming from the stomach or bowels).

...s to them, food from outside world becomes part of us.



# COLON CANCER PREVENTION

Although some cases of colon cancer are hereditary, the majority can be prevented by following these recommendations.

200 to 300 g  
(7 to 10.6 oz)

Number of different bacteria living within the large intestine, making up the bacterial flora.

Weight of stool with a diet rich in vegetable fiber (50-100 g in a meat diet).



# Kidneys and Bladder

The body's filtration and waste elimination system

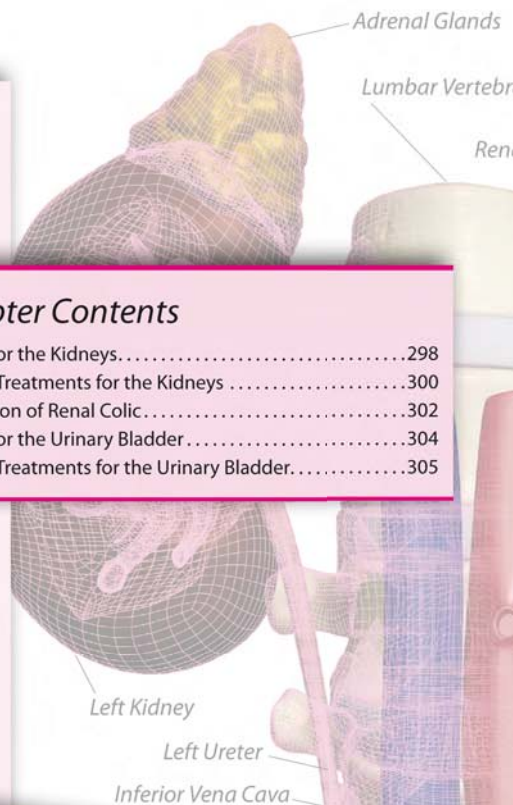
**A**long with the liver, the kidneys are the body's great purifiers, due to their ability to eliminate waste products and neutralize toxins. Kidneys are able to eliminate potentially deadly poisons, such as urea. When the kidneys are not working, the buildup of urea in the blood can result in death after just a few days.

The kidneys work around the clock to maintain a constant water ratio in the body and avoid pooling or dehydration. They have three main functions:

- **Excretory Function:** Consists of filtering the blood to eliminate water-soluble toxic metabolic waste through urine.
- **Regulatory Function:** Kidneys control the level of potassium, sodium and of other electrolytes in the blood.

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# Male Genitalia

Reproductive cell factory and conduit for urine elimination.

**T**he male genital organs are designed to produce and deposit sperm cells into the female ovum. In addition, they are responsible for the passage of urine.

The prostate is the gland in charge of secreting fluid in which sperm swim and which provides energy and nutrients for their journey through the Fallopian tube.

Seminal fluid is a mixture of sperm cells and prostate secretions. It is slightly acidic, but becomes alkaline after passing through the urethra. Sperm production occurs in the testes. In a healthy man, sperm production continues throughout his life.

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Sperm swimming in semen, trying to reach their target: The female ovum.

## Facts and Figures About the Male Genitalia

|              |                                                       |
|--------------|-------------------------------------------------------|
| 35°C (95°F)  | Temperature required for the testes to produce sperm. |
| 25 to 35     | Age of highest production of sperm.                   |
| 18 cm (7 in) | Distance a sperm cell can travel.                     |
| 50 000 000   | Number of sperm produced per day.                     |



# Female Genitalia

The anatomical site for the miracle of life.

**T**he female genital organs are varied and complex, requiring a great deal of special care. The vulva and vagina are continually subjected to the threat of infection. Because of their humidity and temperature levels are an ideal location for the development of many germs, the vulva and especially the vagina always need systems ready to protect against infection.

The most significant and effective system for preventing vaginal infections is keeping an acidic environment that inhibits bacterial development. This vaginal acidity is achieved thanks to the lactic acid produced by Döderlein's bacilli (*Lactobacillus acidophilus*), rod shaped bacteria normally found in the vagina. Any foreign product, such as soaps or contraceptive foams, or any local irritation, makes the vagina lose its acidity and promotes infection by bacteria such as *Gardnerella vaginalis*, or by fungi such as the *Candida* family, which manifests as abnormal vaginal discharge.

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Caring for the female genitalia is more than just a healthy delicate organ.

## Facts and Figures

|                   |                                                                                                 |
|-------------------|-------------------------------------------------------------------------------------------------|
| 4.5               | Space inside a non-pregnant uterus, equivalent to a spoonful of coffee.                         |
| 5 ml (1 teaspoon) | Average number of menstrual cycles a woman has throughout her lifetime.                         |
| 10 l (21 US pt)   | Number of ova present in each ovary at birth, of which about 200 become mature over a lifetime. |
| 400               |                                                                                                 |
| 200 000           |                                                                                                 |

the known causes of a human reproductive cells. For some women, these can also end in common cancers.



# Lower Limbs

The body's support columns.

Stability, strength

330

## POSSIBLE DESTINATIONS FOR THE BODY

At some time or another in life, all human beings must face death. Although one does not want to think about it, the body must have a destination, whether foreseen or unforeseen. Here are some of them:

- **Burial or Interment:** A lifeless body goes through a process of decay due to the action of bacteria, fungus and worms, and eventually turns to dust. The body returns to the earth – the origin of its prime matter.
- **Cremation:** The body is subjected to high temperatures, up to 1 000 °C (1 832 °F) or more, for about two hours. Water vaporizes, proteins, fats and carbohydrates become oxidized, and eventually only minerals remain in the form of ashes, which do not evaporate or disappear. The calcium in bones is the primary component of ashes.

## Epilogue

No matter how well the body is cared for, it eventually becomes weak and ceases to live. What will be its destination?

The proven, documented, eye witnessed fact of the resurrection Jesus is, for believers, the promise and the basis of resurrection of their body for eternal life.

### Facts and Figures

2 mm (0.08 in)

15 mm (0.59 in)

26

100 000 km  
(62 137 mi)

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# HEALTHY BODY

A Practical Guide to Body Care

DR. JORGE D. PAMPLONA ROGER



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# HEALTHY BODY

*Healthy Body* showcases the extraordinary worth of the human body, explaining the function of each body part and each organ and offering valuable advice for keeping it healthy and in shape.

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- 
- 
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  - Natural treatments for a variety of body parts and organs.
  - How to prevent disease.
  - How to achieve the ultimate in body beauty.
  - The major attacks endured by the body.
  - What can be done with it.
  - The body's history and destiny.



GEORGE D. PAMPLONA-ROGER is a Physician and Surgeon and an expert in Public Health. Through his professional life as a surgeon, he has come to know the human body well, both inside and out. And with his broad-ranging experience as an educator in the field of healthcare, he has an excellent ability to communicate and reveal scientific knowledge, making its many complexities easy to understand. Dr. Pamplona-Roger authored the *Encyclopedia of Medicinal Plants* and the *Encyclopedia of Foods and their Healing Power*, which have been translated into major languages from all over the world and published by Editorial Safeliz, in addition to other printed works.

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