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SCIENCE OF SLEEP: HOW DOES IT WORK?

Nowadays, people are more and more interested in the aspects of sleep. Answer the question: why are you falling asleep? Why do you have dreams?

Objective: to determine the sleep process and the main factors affecting it.

Chemical process of sleep

Everything lies in the neurochemistry of a living body, because the body produces its own chemical compounds, hormones and drugs. Physiological changes (sleep) are based on neurochemical reactions. The key substances that regulate sleep are melatonin, serotonin, acetylcholine and norepinephrine. Melatonin plays the role of “switch-off”, and serotonin plays the role of “switch-on”. At night, during sleep, serotonin is produced in our brain. Further during the day, the level of serotonin decreases. It is responsible for feeling vigor and buoyancy during the day. If a person slept little, then serotonin in the body is not enough. That is why after a sleepless night, it seems to us that everything is bad, and at the same time we constantly want to eat. And melatonin causes drowsiness. It is known that the main peak in the synthesis of this substance (up to 70%) falls on the night period. And the darker the room in which the person sleeps is, the more melatonin is produced. Even a small light of the alarm clock significantly reduces hormone synthesis. That is why it is important to go to bed on time and sleep in total darkness [2].

Partial insomnia can be caused by the suppression of the synthesis of serotonin by some chemical agents, and the introduction of the serotonin precursor can be eliminated [1].

Stages of Sleep:

When your neurons feel that it's time to go to sleep, your body experience 4 stages of sleep, as well as REM (rapid eye moment) sleep.

Stage One is the stage when you can easily wake up and where you may feel the *falling into the hole* effect or have sudden muscle twitches.

Stage Two – all your body functions go back to normal as you prepare to go into deep sleep.

Stages Three and Four – the deep sleep phases begun, where your brain waves slow down, and it becomes more difficult to be woken up.

REM – your body functions speed up and your brain becomes more active, processing things that you've learned during the day to help you form memories.

Reducing overweight

When you sleep the metabolism increases, which leads not only to healing, but even to rejuvenation of the body. Sleep helps to reduce overweight as a natural regulation of body weight with the participation of the brain. In a dream, the brain regulates all the body fat that is used and which is left for future times.

Clearing Out Waste

Your brain is truly overdriven during sleep, as it is working to get rid of toxic products. Many neurological diseases are associated with a lack of sleep, perhaps because when you don't get your normal amount of sleep, your brain doesn't have this chance to cleanse itself.

Cooling Down

The process of conserving energy is one of the most important - your body temperature lowers by about 10 percent.

Repairing Muscle

At nighttime growth hormones are released to rebuild muscles and joints that have been stressed during day-to-day activities. The more sleep you get, the better equipped your body will be to repair itself.

Breathing Slowly

During sleep, your breathing slows down and becomes very regular when while awake your breathing can vary greatly [3].

Reducing Heart Rate

Your heart works hard during the day, so at night during sleep it reduces heart rate, as well as blood pressure to take some rest.

Conclusion: sleep is an integral part of normal life. Now there is no doubt that not only the activity of the body during wakefulness, but also the life expectancy depends on its quality.

Keywords: sleep, science, brain, serotonin, melatonin, processes.

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