



A newsletter by TST Cognitive Development Centre

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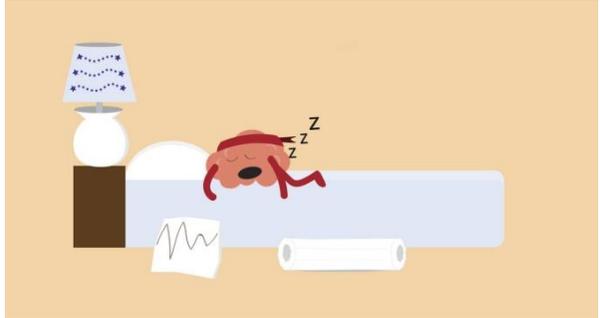
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Sleep & the Brain

Previously, it was unknown to the scientists why we sleep. There are numerous theories such as evolutionary. For example, sleep keeps us out at night and protects us from animals that hunt after the sun goes down. Some theories are physiological. For example, sleep lets us conserve precious energy. In reality, the brain does more work while we are sleeping.

Recent research has shown some of the reasons why we need sleep, and all the functions that brain seems to perform while we are sleeping. There is more research to be done, but here are a few reasons why the brain needs sleep and why things will go downhill without sleep.

1) Sleep helps strengthen memory

Sleep helps consolidate long-term memory. Sleep strengthened neural connections and pruning back unwanted ones. The brain develops a lot of connection during the day, but not all of the connections are worth saving. Sleep is the time in which the brain streamlines the connections that it needs.

2) Toxins are cleared during sleep, including those associated with Alzheimer's disease

Brain clears out toxins much more rapidly when we are asleep than when we are awake. The lymphatic system of the brain opens up at night and removes toxins while we are asleep. The space between brain cells expands significantly during sleep, which facilitates the clearing of "gunk" through cerebrospinal fluid. The precursor to the plaques in Alzheimer's disease makes up most of this gunk. These proteins and other toxins seem to accumulate during the day and are cleared during sleep. *(Continue next page..)*

3) Sleep is important for cognition

Sleep deprivation has been shown to have negative impact on cognitive functions like attention and working memory. Sleep is necessary for higher cortical function, such as multi-tasking. One example of multitasking is driving, as it uses hands, feet, vision, and awareness of surrounding. When there are sleep deprivation, it strongly affects the ability to multi-task. This explains why there are more accidents with cars as sleep deprivation drains executive function.

4) Sleep loss and depression are intertwined

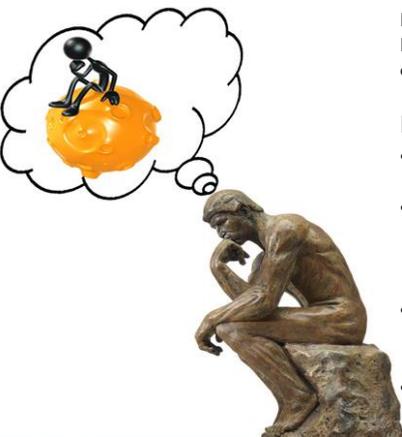
Depression and sleep problems are connected. People with depression often have a hard time sleeping, or, they may sleep a lot. It also seems to be true that sleep deprivation can, if not cause depression, certainly worsen it. People who sleep less than eight hours per night or more than eight hours per night are likely to have depression and anxiety. This may be due to the disruption in the circadian rhythm which is the daily sleep-wake cycle that the body need to function properly.

5) Sleep influences creativity

Sleep promotes creativity. One study conducted had participants learn a task involving numbers, in which they had to find the pattern hidden in the questions. People who got a night of sleep performed better than those who were sleep-deprived. Other than the studies, experiencing creative insights during sleep, or after one is waking up from it, has been documented for many years.

6) Physical health and longevity

A recent study found that when health professionals got an average of three hours of sleep during a 24 hour shift, their heart suffered for it. The participants had increase in blood pressure, heart rate and levels of thyroid hormone and the stress hormone cortisol. Other studies have linked lack of sleep to overweight and obesity.



What is *Metacognition*??

Metacognition is, to put simply, thinking about one's thinking. It refers to the processes used to plan, monitor, and assess one's understanding and performance.

How to encourage metacognition?

- Give your child some space to reflect on his thinking: Can you tell me more about why you think that?
- Asking the kids to think about their behaviour can help them learn to manage difficult situations in a better way: Why do you think you got so upset when Dad changed the channel?
- Encourage him to think about how he can use his understanding to change things in the future: How could you handle that differently next time?
- Ask questions that help your child get a better idea of how his thought process works: How will you know when this drawing is finished?

Learning Disability and *Red Flags* to Look For



Learning disability is a neurological disorder which results from the difference in the way a person's brain is "wired". Children with learning disabilities are as smart as or even smarter than their peers but they may have difficulty reading, writing, spelling, reasoning, recalling and organizing information if they are taught in conventional ways.

The earlier you suspect your child may have a learning disability, the sooner you can seek professional help. Here are some weaknesses to look for.

A learning disability is a lifelong issue. With the right support and intervention, children with learning disabilities can succeed in school and go on to be successful and have great careers later in life.

In Preschool:

Parents can aid children with learning disabilities gain such success by encouraging their strengths, knowing their weaknesses, understanding the educational system, working with professionals and learning about strategies for dealing with specific difficulties.

- Communication problems such as slow language development, speech difficulty, problems understanding what is being said or in communicating thoughts.
- Poor motor coordination such as delays in learning to walk, colour, and use scissors.
- Problems with memory, routine and understanding multiple instructions.
- Delays in socialization, such as playing and interacting with other children.

In Primary School:

Dyslexia is a language-based disability in which a person has trouble understanding written words. Dyscalculia is a mathematical disability in which a person has a difficult time solving arithmetic problems and grasping math concept

- Problems with recognizing similar words by sight. Difficulties learning phonemes and sounding out words.
- Problems forming letters and numbers, which leads to basic spelling and grammar.
- Difficulty in mathematical skills.
- Difficulty in remembering facts.
- Difficulty in organizing materials, information and concepts.
- Difficulty in oral instructions and problems in expressing oneself.
- Difficulty with reading and retaining what was read.

In High School:

Auditory and visual processing disorders are sensory disabilities in which a person has difficulty understanding language despite having normal vision and hearing. Nonverbal learning disabilities are neurological disorder which originates in the right hemisphere of the brain, which causes problems with visual-spatial, intuitive, organizational, evaluative and holistic processing functions.

- Increased difficulty retaining what was read, organizing and writing papers, and difficulty in mastering more advanced mathematical concepts.
- Increased difficulty with organizing, planning and developing learning strategies.

If your child has some of these difficulties, discuss your concerns with teachers and other professionals that can help. Once your child is found to have learning disability, it is important to get help and develop necessary strategy for the child to learn better.

Student's *Shoutout!*



"The training has helped me in my studies as well as daily life. I'm able to process complicated information and turn it into knowledge that is easy to understand and remember. Also my mental calculation has improved and it's a skill that is convenient to have in my life."

- **Melissa Wee, 19 years old**

Quinoa -
Brain food of the volume



Originally from the Andean mountain regions of South America,

Quinoa is often called a "supergrain" for good reasons. It contains so many vitamins, minerals, and nutrients. Quinoa is usually considered to be a grain (similar to rice and barley), however, it's actually a seed. Even though it's a seed, you still cook and eat quinoa the same way as you would any other grain. Here are 10 reasons why quinoa is considered to be a superfood:

- ✓ High in Iron
- ✓ High in Manganese
- ✓ High in Protein
- ✓ High in Magnesium
- ✓ High in Fiber
- ✓ High in Phosphorus
- ✓ Contains Lysine
- ✓ High in Folate
- ✓ High in Vitamin B2
- ✓ High in Copper

Visit our website www.tstlearningcentre.com/newsletter for healthy quinoa recipes!

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