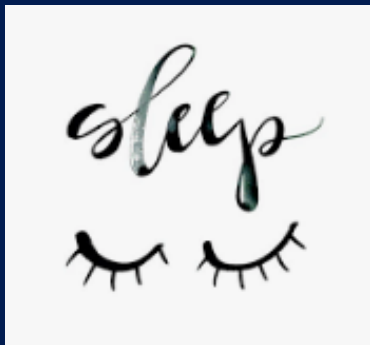


DOES OUR BRAIN SHUT DOWN WHEN WE SLEEP?



WHAT ARE NEUROMYTHS AND IMPORTANCE OF SLEEP

- **Neuromyths** are misconceptions about brain research and its application to education and learning
- **1 in 5** Australians suffer from major sleep disorder, which result in lost productivity, informal care costs, motor vehicular accidents and workplace injuries

DO THE 'LIGHTS REALLY GO OUT?'

- Unlike popular belief that our brain snoozes when we do, our brain is **most active** during sleep. This was proven by EEG or Electro Encephalography (a study of brain waves) and functional brain MRI
- Our body is taking a break while our brain is directing and co-ordinating physiologic processes and repairing and protecting our body



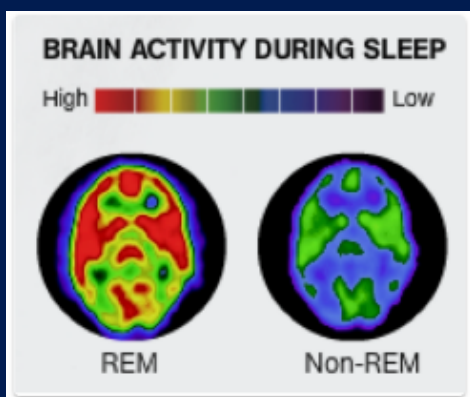
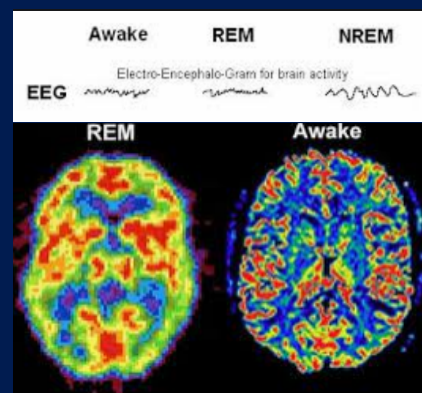
WHAT'S OUR BRAIN DOING WHILE WE SLEEP?



- Brain does take breaks to relax eg: during slow wave or **NREM** (Non Rapid Eye Movement) sleep which helps relaxation
- It sorts and moves important memories and make them last longer (**long term memory**)
- It increases spinal fluid and protects itself against degeneration and dementia

BRAIN ACTIVITY DURING SLEEP CYCLES

- **First NREM:** brain waves become slower, muscle tone relaxes, transition phase
- **Second NREM:** Brain waves slow further, some short bursts of electrical activity +, drop in body temperature, heart rate and breathing.
- **Third NREM:** brain activity, heart rate, and breathing at their lowest
- **Fourth REM: dreaming or light sleep:** brain waves, heart rate, breathing near wakeful state levels, body relaxed
- These cycles keep repeating throughout the night



BRAIN AREAS DURING SLEEP

- **Frontal lobe** and **Primary Visual Cortex** are shut down during **REM** sleep. **Amygdala** and **hippocampus** of the **limbic system** (which deal with memory and emotions) are highly active
- **Cingulate cortex**, **hypothalamic areas** and **deep grey matter nuclei** show decreased activity during **NREM** sleep

OUR BRAINS WORK WHILE WE SLEEP

Our brains hover between restful and active mode during sleep. This is mediated by a series of domino-like effect rather than a sudden event.

Memory and learning is consolidated during restful mode. Unlearning of unnecessary skills also happens during this phase



REFERENCES

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