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Diving Into the Deep (of Sleep)

I have recently been monitoring my sleep stats on my smartwatch, particularly the length of time that I spend in each stage of sleep. This led me to wonder about the percentages of sleep time per night that are ideal for each stage. Here is what I found.

Defining the Stages

Your nightly sleep cycle is divided into two main stages: non-rapid eye movement (non-REM) and rapid eye movement (REM).

Non-Rapid Eye Movement (REM) sleep has three stages:

- Stage one occurs right after you fall asleep, and is very short, usually less than 10 minutes. It is the lightest stage of sleep where you can be awakened easily, and makes up about 5% of your sleep time.
- Stage two is still light sleep, but deeper than stage one. This is the stage where you spend the most time, about 45% of your night's sleep. Your brainwaves slow down, and there are noticeable pauses between short, powerful bursts of electrical activity. Experts believe these bursts are your brain organizing memories and information from your day. During this stage, your muscles become more relaxed, and you may begin to have slow-wave (delta) brain activity. We have multiple rounds of stage two sleep, each longer than the last.
- Stage three is the deepest stage of non-REM sleep, and makes up about 25% of your total sleep time. It is very hard to wake someone up when they are in stage three. During this stage, delta brain activity increases, and you may have some body movements. Without enough stage three sleep, you feel tired and drained even after sleeping for a long time.

Rapid Eye Movement (REM) sleep is the stage where most dreams happen. Your eyes move rapidly behind your eyelids, thus the name! When you are in REM sleep, your brain activity is very similar to when you are awake. During REM sleep, your breathing becomes irregular, and it is normal to have short episodes – known as apnea – when breathing stops. The good news is that during this time, your brain paralyzes your muscles, so you do not “act out” your dreams (particularly important if you dream you are flying!)

REM sleep is approximately 25% of your total sleep time. Each subsequent REM cycle per night is longer, ranging from about 10 minutes to one hour.

The Wonders of Deep Sleep

Armed with this information, and comparing it to my smartwatch sleep summary, it was evident that I *do not* get enough non-REM, stage three deep sleep.

This could be due to several factors:

- **Weakened sleep drive:** Taking naps or spending too much time in bed can weaken your sleep drive.
- **Sleep disorders:** Some sleep disorders can affect your ability to sleep more deeply at night. Examples include sleep apnea, restless leg syndrome, or periodic limb movements of sleep (PLMS) where you may involuntarily move your legs while asleep.
- **Substance use and medications:** Caffeine, benzodiazepines, alcohol, and opioid pain medications can all affect deep sleep.

What does it mean for our health if we are not getting enough deep sleep? I learned that deep sleep supports both the mind and body.

- **Deep sleep helps your body repair and regenerate:** It is during the stage three non-REM sleep that your body works on regeneration and strengthens your immune system. It is also during this stage that growth hormones, which play a crucial role in tissue repair and healing, are released.
- **Deep sleep helps you process memory and learning:** During this phase, your brain consolidates memories by taking the new data from the day and sorting it into long-term memory.
- **Deep sleep may contribute to creativity:** Creativity and problem-solving can be heightened as the deep sleep stage allows your brain to reorganize and restructure.

- **Deep sleep is associated with emotion regulation and processing:** Enjoying deeper sleep often helps us better regulate our emotions. Being tired may make it more challenging to recognize important social cues and accurately process emotional information.
- **Deep sleep supports your metabolism and glucose control:** Deep sleep plays a critical role in managing your body's glucose levels, which help to keep your metabolism running smoothly. Research indicates that a lack of deep sleep can lead to reduced insulin sensitivity, potentially increasing the risk of developing type 2 diabetes.

If you rarely wake up rested and recharged, here are some ways you can increase your stage three sleep:

It is critical to follow your internal clock, as sleep happens according to a circadian rhythm pattern.

You get more deep sleep earlier in the night: irregular sleep patterns may interfere with your circadian timing, and result in less deep sleep. Try to keep a regular sleep and wake schedule, including on the weekends.

Get morning sunlight as soon as you wake up. Natural light is a cue for your circadian rhythm. Research also shows that exposure to bright morning light causes you to get sleepy earlier in the evening, and wake up earlier in the morning.

Avoid naps during the day. The longer you stay awake, the more you want to sleep; when you do sleep, you will sleep deeper.

Be active during the day. Exercise and daytime physical activity may help you sleep better.

Relax at night. Taking a warm bath or shower about 90 minutes before you go to bed and having a cooler bedroom may improve deep sleep. Make sure your bedroom and bed create a relaxing environment. A supportive mattress and pillows can help you sleep comfortably. Your room should be dark and quiet.

Avoid caffeine. Drinking or eating things that contain caffeine before bed can affect your ability to fall asleep or get deep sleep once you do.

Drink alcohol in moderation. Drinking alcohol may momentarily relax us and cause sleepiness, but it also disrupts sleep by causing a person to wake up throughout the night and earlier in the morning.

Check your medications. Certain medications interfere with sleep including:

- Some antidepressants
- Beta-blockers
- Loop diuretics
- Corticosteroids
- Benzodiazepines
- Opioid pain medications

If you are taking a new medication and are having trouble sleeping, talk to your healthcare provider. They may be able to adjust your dose or switch you to a different medication.

If you are still having trouble sleeping, see a healthcare provider to rule out any sleep disorders. They may send you for sleep apnea testing, prescribe medication, or even send you to a sleep clinic for assessment.

You can also access a sleep therapist who uses cognitive behaviour therapy for insomnia. These practitioners may be covered through your extended health benefit plans. [Contact me](#) for more information.

Getting Better ZZZZ's

Getting deeper sleep is a goal for me, which will mean cutting out weekend naps, trying to keep my sleep window constant all week, and increasing my exposure to sunlight in the morning.

What will you do to enhance your ability to get deeper sleep?

Check out this informative chart: [How Much Deep Sleep Do You Need?](#)

Sources

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A handwritten signature in black ink, appearing to read 'R. Morandini', with a stylized flourish at the end.

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If you would like to contribute or have ideas about what you would like to see in the ReFresh series, we would love to hear from you: contact rochelle@bcpvpa.bc.ca.