

## Useful to Know About Sleep Stages:

**Main Stages:** Sleep is primarily divided into two types: Non-REM (NREM) sleep and REM (Rapid Eye Movement) sleep. These stages vary in depth and function, with each playing an important role in the body's and brain's recovery.

### NREM sleep:

#### a) Light sleep (N1 and N2):

- Transitional phases between wakefulness and deep sleep. The body starts to relax, and breathing and heart rate slow down.
- Usually accounts for **45-55%** of total sleep time.

#### b) Deep sleep (N3):

- Also known as "slow wave sleep" (SWS).
- Crucial for physical recovery and immune function. During this phase, most of the body's cell regeneration occurs, and muscles and tissues are repaired.
- Should account for **15-25%** of total sleep time.

### REM sleep:

- Characterized by rapid eye movements and dreaming activity.
- Important for cognitive function, memory, and emotional regulation. During REM sleep, the brain processes information and memories from the day, making it critical for mental recovery.
- Should account for **20-25%** of total sleep time.

### Sleep cycle:

- A full sleep cycle typically lasts **90-110 minutes**.
- A typical night contains **4-6 cycles**, consisting of several NREM and REM phases.

### Age-related changes:

- **Infants have more REM sleep**, which is vital for brain development.
- Older adults often experience less deep sleep, and REM sleep becomes shorter, which may impact both physical and mental recovery.

**Measurement:** The Inspiring® smart ring uses advanced algorithms to estimate sleep stages based on heart rate, movement, and other physiological factors. These measurements provide an accurate picture of sleep patterns over time.

## **Health significance:**

- A balance between sleep stages is essential for optimal recovery and cognitive function.
- A lack of certain stages, such as deep sleep or REM, can negatively affect mood, concentration, and physical health. Long-term imbalances in sleep stages can lead to chronic health issues such as a weakened immune system, cognitive decline, or increased risk of cardiovascular disease.

## **Tips for optimizing sleep stages:**

### **1. Consistent sleep schedule:**

- Go to bed and wake up at the same time every day, even on weekends. This helps regulate the body's circadian rhythm and ensures an even distribution of sleep stages.

### **2. Optimal sleep duration:**

- Aim for **7-9 hours** of sleep for adults, giving the body enough time to complete sufficient sleep cycles.

### **3. Sleep hygiene:**

- Keep the bedroom dark, cool, and quiet.
- Avoid screen time for at least an hour before bed, as blue light can disrupt melatonin production.

### **4. Physical activity:**

- Regular exercise can increase the amount of deep sleep.
- Avoid intense exercise right before bed, as it may interfere with falling asleep.

### **5. Diet:**

- Avoid large meals, caffeine, and alcohol close to bedtime.
- Consider a light, protein-rich snack before bed to support sleep quality.

### **6. Stress reduction:**

- Practice relaxation techniques such as meditation or deep breathing before bed to reduce stress and promote better sleep quality.

### **7. Exposure to daylight:**

- Get enough daylight, especially in the morning, to regulate your circadian rhythm and encourage natural melatonin production in the evening.

**8. Avoid long naps during the day:**

- If you need a nap, limit it to **20-30 minutes** to avoid disrupting your nighttime sleep.

**9. Gradual awakening:**

- Use a smart alarm that wakes you during light sleep to help you feel more refreshed and reduce "sleep inertia" or grogginess upon waking.

**10. Temperature regulation:**

- A slight drop in body temperature can promote deep sleep. Consider a warm bath before bed to prepare your body for a cooler temperature during sleep.

**11. Sleep position:**

- Experiment with different sleeping positions to find the one that provides the best sleep quality and optimally supports your body.

**12. Manage sleep disorders:**

- If you suspect sleep apnea or other sleep disorders, it is important to consult a doctor for further examination and treatment.

By understanding and optimizing your sleep stages, you can significantly improve your overall health and well-being. The Inspiring® smart ring provides valuable insights into your sleep patterns over time. Remember, while this information is useful, it is not a substitute for professional medical advice. If you have persistent sleep problems, you should consult a sleep specialist or doctor.