# Sleep Quality

### What is it?
Sleep quality is a measure of how effectively the body restores function, both physically and cognitively, during long periods of rest. Total time asleep and proper cycling between sleep stages are important components of sleep quality.



### Why is it important?
During sleep, the body performs a myriad of vital, restorative functions. These include the release of hormones to perform muscle and bone repair, memory consolidation, appetite regulation, and tissue growth. Sleep deprivation, whether from inadequate

length or poor quality, severely impairs the body's ability to perform these functions and can quickly accumulate into a chronic problem. Sleep disorders, including sleep deprivation and insomnia, are significant health concerns affecting 50 to 70 million American adults, yet most sleep disorders are undiagnosed and untreated.  Average sleep duration has steadily declined from 8 hours per night in the 1950s to 7 hours per night in recent years. Sleep deprivation adversely affects physiological functioning, causing impaired autonomic tone, increased blood pressure and deleterious effects from inflammation and hormone imbalances.

Collectively, these alterations are recognized to contribute to increased risk of musculoskeletal injury, impaired cognition, development of depression or other mood-related disorders, diabetes, obesity, and the development of cardiovascular disease, especially atherosclerosis, along with other adverse health outcomes.

### How is it assessed?
1. **Questionnaires:** Sleep questionnaires are self-report measures that assess factors such as sleep quality (Pittsburgh Sleep Quality Index), sleep apnea (Berlin Sleep Apnea Questionnaire), insomnia (Athens Insomnia Scale), sleep hygiene, and restless legs syndrome. A nightly sleep diary app that assesses your sleep habits and routines will also be assessed. All of these self-report measures can be completed and subsequently scored through the online UCLA EPRL's Digital Health Network (DHN).

2. **Wrist Actigraphy:** A wrist actigraph fits similarly to a watch and measures movement and illumination exposure. Based on the timing and amount of body movement throughout the night, wrist actigraphy is used to provide objective estimates of sleep duration, efficiency and fragmentation.

3. **Heart rate variability (HRV):** The beat-to-beat variations in heart rate, called heart rate variability (HRV), can provide a quantification of physiological mechanisms and patterns of autonomic modulation that occur during various stages of sleep. This will be measured throughout the night using a physiological status monitor affixed to a chest-strap (BioHarness-3™, Zephyr Technologies, Annapolis, MD).

### What to expect during the assessment:
1. Subjects will complete a series of sleep questionnaires and a nightly diary online through the UCLA DHN. Questionnaires should be completed soon after waking, to allow for the most accurate responses
2. Subjects will wear a actigraphy watch on their non-dominant wrist for 3 consecutive days
3. The HRV will be measured for two consecutive nights using the above mentioned bio-harness.

### Participant preparation:
Test validity and data accuracy are greatly improved by adhering to the following guidelines prior to your assessment. Your test(s) will be given on the assumption that you have followed these recommendations:
1. Refrain from ingesting <u>heavy</u> meals, alcohol, caffeine and tobacco products within 5 hours of going to sleep

2. Avoid significant exertion or exercise 6 hours prior to going to sleep
3. Drink ample fluids over the 24-hour period preceding the assessment to ensure normal hydration