

# Circadian Rhythm –Powered by Light

By Judy Sarnowski

The circadian rhythm is commonly referred to as the internal body clock based on a 24 hour time period that regulates biological processes in most living things. Circadian Rhythm light fixtures replicate the variable light we are exposed to during the light/dark cycle of a typical 24 hour day, ranging from the cool muted light in the morning, to the bright light of the afternoon, followed by the warm hues of a sunset.

Additional factors that influence our body clocks include stress, diet, work schedule, travel, exercise, and medications. The extent of exposure to bright light can intensify or diminish the effects many of these factors have on our biological systems.

Negative effects of diminished periods of light include:

- Decline in frontal and parietal lobe functions involved in working memory
- Increased risk for depression
- Irregular sleep-wake cycle
- Decreased metabolism
- Increased production of melatonin
- Sundowning

Bright, full spectrum light can reset the circadian rhythm in people suffering from sleep disorders associated with Alzheimer's. Daily exposure to this type of bright light helps dementia patients reset their body clock resulting in longer periods of deep sleep at night by delaying the release of Melatonin, the hormone associated with the onset of sleep until night time, thereby reducing the occurrence of daytime napping and agitation associated with Sundowning.

Insomnia, daytime sleeping, and Sundowning are common sleep disorders experienced by people with Alzheimer's and other types of dementia as a result of the deterioration of brain cells located in the suprachiasmatic nucleus (SCN) which plays a major role in the sleep/wake cycle. The SCN is located in the hypothalamus, the part of the brain usually affected first by the onset of Alzheimer's disease.

Biological processes and aspects of a daily regimen that can be altered through light therapy:

- Memory and learning
- Sleep disorders
- Behaviors
- Body weight
- Productivity
- Mood
- Bodily functions
- Cardiovascular system

The amount of blue light found in standard electric lighting is typically uniform throughout the day. Lighting based on the Circadian Rhythm provides an optimal indoor environment by regulating the intensity, color, and brightness of the environment to mirror the natural light produced by the sun in a typical 24 hour period, thereby reinforcing the body's natural rhythm or body clock.