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Aeromedical Advisory

Getting Into a Good Rhythm

Despite the many instances of sophomoric humor, everyone has a biological clock. It's called our circadian rhythm. Our circadian rhythms may have originated in the very early days of single-cell life to protect replicating DNA from high ultraviolet radiation during daytime. However they started, our circadian rhythm is best described as an internal biological clock that regulates our body functions based on our wake/sleep cycle.

Circadian rhythms are not only important in determining sleep cycles, but also in feeding patterns. There are clear patterns of brain wave activity, hormone production, cell regeneration, and other biological activities linked to these daily cycles.

These activities mostly work together like a finely-tuned watch that must be maintained to operate within normal working parameters. But we often bring disruptions on ourselves with such things as self-imposed stress. Though we scramble to get everything back to normal, the act of disturbing the body's intricate clockwork can start a chain of reactions that disrupt its daily functions. A variety of negative effects can occur and some can pose safety-of-flight issues for pilots.

Circadian Rhythm Disruption

The exact duration of our circadian rhythm varies and can be slightly altered. However, recent research suggests that the ideal rhythm is actually 25 hours. Normal circadian rhythms are naturally altered as one ages, including changes in sleep patterns with respect to earlier onset of sleepiness, early-morning awakenings, and increased need for daytime napping.

Any time alteration, interruption, or disruption of the normal 25-hour circadian rhythm is likely to create some kind of physiological and/or behavioral impacts. The medical and scientific community uses the term "circadian rhythm disruption," or CRD to describe this phenomenon.

People suffering from CRD may experience one or more of the following symptoms:

- Difficulty falling and staying asleep
- Late-night insomnia
- Increased daytime sleepiness
- A general lack of energy in the morning
- An increase of energy at night
- Difficulty concentrating, being alert, or accomplishing mental tasks
- Oversleeping and trouble getting up
- Increased negative moods

CRD-induced fatigue that goes untreated or ignored will almost inevitably have both physiological and psychological ramifications that not only can jeopardize your personal health, but can also become a safety-of-flight issue. To understand what that means, consider just a few of the better-known issues that can adversely affect flight safety. The list includes: increased reaction time; decreased attention span; impaired memory; and sense of personal isolation.

Coping with CRD

Here are a few tips for dealing with CRD during your aviation activities.

- Always attempt to sleep well before any flight.
- When you're away from home, try to get as much sleep as you would normally.
- If you're changing time zones, try to stay on your original time zone for shorter stays, and try to get more sleep when possible.
- Use caffeine strategically to combat circadian rhythm sleepiness.

You can also employ the technique of strategic napping – just not while at the controls, of course. A better plan may be to just reschedule the flight if you feel tired.

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