



Fruit Flies, Circadian Rhythms, and Fatigue Risk Management



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Recently, it was announced that this year's Nobel Prize for Medicine was awarded to three scientists for their research on biological clocks and 24-hour circadian rhythms. Although their experiments were done on fruit flies, their discoveries are directly applicable to our understanding of how humans are affected by fatigue.

Our circadian rhythms ensure that everything in our bodies happens in a coordinated manner at just the right time. They up-regulate us during the day and make us sleepy at night. They are what make us a daytime species. Nocturnal species like bats also have circadian rhythms but they work in the opposite way. Humans are not nocturnal. It is a biological fact.

Working at night is challenging because our circadian rhythms can make us sleepy when we are on duty and need to be alert, and then promote alertness when we try to get our sleep during the day.

However, our circadian rhythms are only half the story, the other factor that contributes to fatigue is related to how much sleep we get. We all need around eight hours of sleep each day to be fully rested. Some need a little more and some a little less. Each day that we do not get the sleep that we need we build a sleep debt. When we have a sleep debt, we experience elevated fatigue and when we work at night with a sleep debt, that fatigue gets amplified by our circadian rhythm.

When we are fatigued we are impaired. The more fatigue the worse the impairment. Our reactions are slowed, we experience lapses of attention, we become impulsive, we lose situational awareness, and become prone to distraction.

Fatigue is a dangerous condition in the workplace and on the commute. Fatigue has been identified as a contributing factor for accidents in transportation, industrial operations, and many other occupational settings that involve shift work, night work, crossing time zones, and restricted sleep opportunities.



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The good news is that fatigue is a solvable problem. As a community we understand the biology of fatigue and its causes in occupational settings. We have developed practical approaches to monitor for and mitigate fatigue risk in the workplace. We have demonstrated that adopting fatigue risk management procedures results in fewer accidents, healthier workers, and cost savings.

We have come a long way since the first experiments were done on fruit flies to understand how our body systems maintain perfect timing. We have technologies like Fatigue Meter™ to quantify fatigue risk associated with our work schedules and tools like PVT WorkFit™ to measure the stability of our alertness and assess fitness for work.

Given that we now know where fatigue comes from, how to measure it, and how to mitigate it, it behooves us to become proactive and manage it. If you are considering when is the best time for your organization to embrace fatigue risk management, sleep on it, and you will likely find that now is just the right time.



Pulsar Informatics, Inc.

Pulsar Informatics is an IS-BAO I3SA certified company specializing in systems that help organizations reduce fatigue-related risk and achieve peak performance. Fleet Insight enables safety managers and schedulers to proactively evaluate fatigue across their entire operation's schedule and formulate mitigation strategies. Fatigue Meter Pro Planner is used by pilots, flight attendants, and maintenance personnel to evaluate their individual flight and duty schedule.

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