



Performance



EFFECTS OF SLEEP LOSS

Sleep loss results in significant performance impairment. Some aspects of our performance are affected more than others, as are our abilities to understand and react to the world around us. When we have had less sleep than we need, we struggle with problem solving, concentration, focusing our attention, performing simple calculations, processing and remembering information. Sleep-deprived people are also poor communicators, irritable and find it more difficult to control their emotions. If the situation continues, sleep-deprivation can lead to reduced morale, increased sickness rates and lower job satisfaction. All of us differ slightly in the time of day at which we will perform best in demanding mental or physical tasks, a large fraction of this depends on whether we are a 'morning' or 'evening' type (also known as 'larks' and 'owls'). Morning types have been demonstrated to be less suited to the nightshift than evening types, but they perform better on a morning shift. For most people, we perform best in the middle of the day, and least well in the early morning or late evening.

WHAT IMPACT DOES THIS HAVE ON MY WORK?

While the most serious consequences of this reduced performance are increased error and injury rates (workplace accidents are 17% more common by the fourth day shift), fatigue also has pervasive 'low level' effects that really add up, for example, reduced efficiency, lower productivity, more mistakes, and more variable performance. This 'presenteeism' can impair our ability to meet targets on time, and reduce our ability to meet physical job demands. When we make decisions, we do so based on evidence accumulated from our senses. If we make a decision quickly, we must do so on less evidence, and are more likely to make an error – the 'speed-accuracy trade-off'. When we are fatigued, our judgement is further impaired, making

these errors more likely, particularly if it is not a task that we are well practiced at. Where work is machine-paced, and workers are unable to take their time to reduce errors, a fatigued individual will find it difficult to keep up, and make more errors. In oil workers, a study has found that higher levels of stress and fatigue are associated with lower levels of 'work situation awareness' (WSA, a scale specifically developed to measure awareness of the work environment on drilling rigs). Lower levels of WSA are associated with increased participation in unsafe work behaviours, and higher accident risk.

WHAT CAN I DO?

Sleep: Try to make sure that you are sleeping between 7-9 hours per night – the average sleep need for most people. When working nightshifts, it may be difficult to get this much sleep in one block, so consider napping, for example in the early afternoon siesta window, to top up your sleep. A 20-minute power nap provides an immediate boost in alertness. This should be followed by 10 minutes to recover from sleep inertia. A 90-minute sleep in the afternoon has been shown to improve performance on the night shift by about 30%. In offshore workers, sleep disruption was found to impair situational awareness, with loss of situational awareness being linked to unsafe work behaviours such as taking short-cuts, or not following procedures (as opposed to these being due to deliberate violations).

At work: Natural light can help improve alertness – try to get out into the daylight, particularly in the early morning and mid-afternoon, to raise alertness levels and help reset the body clock, which will benefit your night-time sleep.

Use caffeine strategically to reduce the impact of fatigue on performance, but avoid drinking it too close to bedtime. Caffeine also improves memory (but not in those who drink a lot of it), and can improve focus.



If you have a break of at least 30 minutes, and your section of the business allows, take a 'caff-nap', drink 150mg of caffeine (approximately 1-2 coffees), set an alarm for 20 minutes, and lie-down to nap. After waking, walk around for 10 minutes before returning to work to ensure that you are not experiencing sleep inertia, which can affect your performance. You will get the dual benefit of the caffeine and the nap. This will be particularly helpful during the night shift.

Brief your work colleagues and / or supervisor that your performance may be impaired due to sleepiness. Where possible, rotate to a task that is more forgiving of potential errors, and ask a colleague to check your work.

Make sure that you eat and keep hydrated – performance decrements linked to fatigue can be made significantly worse if you also have low blood sugar or are dehydrated.

If you can, undertake the most mentally demanding tasks during a time of peak performance and alertness – for example mid-to-late morning.

WHAT CAN THE COMPANY DO?

Reduce the likelihood of sleepy people performing safety critical tasks or making mistakes

- Use the Company Fatigue Management Plan to help mitigate against performance decrements
- Schedule task rotation and regular mandated breaks to reduce time on task
- 'Buddy system' to check work and detect performance impairment early
- Check-in with all workers at the beginning of the shift
- Where possible, match working schedules with individual physiology (morning vs evening types) by allowing for flexible starting / finishing times which may help to increase sleep, and enhance performance
- In countries with very hot summer months, implement 'seasonal' flexibility in work schedules by reducing working hours to cope with the heat, particularly where workers are outside. If safe to do so, working hours could be increased during the winter months to make up for the summer reduction – however, companies should be aware that alertness decreases in the workforce as a whole when shift duration is increased from 8 hours to 12 hours

Encourage an open culture

- Emphasise that it is ok to report reduced alertness, and that managers should rotate tasks for those reporting as such
- Implement a napping policy, particularly for those on night shifts who would most benefit from naps, and encourage workers to use it. The policy should consider:
 - Facilities for napping (cool, quiet, dark, comfortable, flat surfaces to lie on)
 - Minimum duration – 20 minute nap plus 10 minute recovery from sleep inertia
 - Contact with the napping worker – aiming to avoid unnecessary disturbance, but maintaining the ability to contact in an emergency
 - Use alarms to prevent oversleeping

Increase awareness of the risks of sleepiness

- Understand that performance impairment begins long before the point that we feel really sleepy (e.g., eyes closing, head nodding etc.)
- Awareness of the early signs of sleepiness and impairment, in self and colleagues, and what to do about it
 - Strategies when fatigue is identified include task rotation, closer checking and cross-checking of performed tasks, and being even more careful to follow procedures
- Provide opportunities for breaks, ensure that workers take and use them effectively
 - Breaks in a different environment have been shown to boost performance
 - Where possible, especially at night, napping is incredibly beneficial
 - If napping is not possible, change activity levels (for example resting for those involved in physical tasks, light exercise / stretching for sedentary workers)
- Promote safe, strategic caffeine use at areas where workers obtain coffee
 - Tea and high-caffeine energy drinks also contain sufficient caffeine to have an alerting effect, but should also be used strategically. High-caffeine energy drinks can also be very high in sugar, so should not be used too often.

Key references

Snedon A, Mearns K, Flin R. "Stress, fatigue, situation awareness, and safety in offshore drilling crews". *Safety Science* 56. 2012. p80-88.

Parkes KR. "Human factors, health and safety in the offshore oil/gas industry". Paper presented at the annual conference of the Human Factors and Ergonomics Society of Australia, Perth, Australia. 2013.

National Safety Council (2017) Fatigue in the Workplace: Causes and Consequences of Employee Fatigue