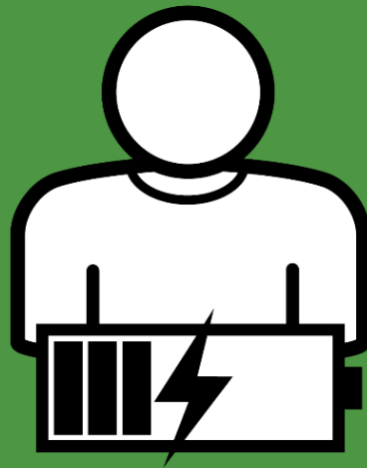


Fatigue Reduction: Stay alert. Stay Safe

A guide for all Network Rail staff and contractors.



Note:

This guide complements the Network Rail Fatigue Management Standard (NR/L2/OHS/003). Reading this is not a substitute for reading the Standard.

Fatigue Reduction

Why do I need to be alert at work?

Regardless of your role, location and/or the type of work you do, to do your job safely and efficiently you need to be alert. When you're feeling fatigued, your alertness levels and your performance suffer.

When you're fatigued, you'll struggle to...

- Concentrate
- Make decisions
- Maintain vigilance
- Control emotion
- Recognise risks
- Coordinate hand-eye movements
- Communicate effectively

By making sure you're well rested and alert for work, you are...

Helping to reduce error rates
 Ensuring you can react quickly to danger
 Reducing the likelihood of accidents and injuries

Research shows being awake for more than 17 hours can weaken your performance in a way that's comparable to being over the limit for drink driving in most EU countries. And, according to the Department for Transport's THINK! campaign, nearly a fifth of accidents on major roads are sleep related. Before getting behind the wheel, we all need to think about whether we're alert enough to keep ourselves and other road users safe.

What affects our levels of alertness?

Fatigue has a huge impact on how alert you feel. Fatigue is...

“A physiological state of reduced mental or physical performance capability resulting from sleep loss or extended wakefulness, circadian phase, or workload (mental and/or physical activity) that can impair ... alertness and ability to safely operate ... or perform safety-related duties.” *International Civil Aviation Organization (ICAO)*

Feeling tired can be fixed with a quality night's sleep but getting your fatigue level under control normally involves a mix of sleep, work and lifestyle changes.

Common Causes of Fatigue and Reduced alertness are:

Being awake for a long time
 Time of day (alertness is at its lowest 2-6am, but it dips again 1-3pm),
 Disruption of your circadian rhythm (your body clock)
 Poor sleep habits/quality
 Workload (physical or mental)
 Medical conditions

Fatigue Reduction

Physical signs of fatigue can include things like:

Early Warning Signs of fatigue	<ul style="list-style-type: none"> • Rubbing eyes • Fidgeting
Signs of Moderate Fatigue	<ul style="list-style-type: none"> • Yawning • Frequent blinking • Staring blankly
Signs of Severe Fatigue	<ul style="list-style-type: none"> • Difficulty keeping eyes open • Long blinks
Signs of Stage 1 Sleep	<ul style="list-style-type: none"> • Head nodding • Microsleeps (sleep episodes that can last as little as a few seconds)

Emotional and mental signs of fatigue are:

Emotional

Quiet
Withdrawn
Lacking in energy
Irritable or grumpy

Mental

Poor decision making
Increased risk taking
Poor judgement
Loss of concentration
Lapse in attention
Difficulty communicating
Confusion



Fatigue Reduction

How will the updated Fatigue Risk Management Standard affect me?

As a business, we need to manage alertness to reduce accidents and incidents. Improved alertness can also improve staff health, morale and performance.

The fatigue standard was republished in December 2019 to improve the way we plan work, so that the likelihood of fatigue is reduced. It also makes it clear that managing fatigue is a joint responsibility:

Network Rail (and suppliers) Responsibility

Plan work so that individuals have regular breaks during shifts, and enough time to recover between shifts.

Monitor actual working hours for trends.

Empower staff to raise their hand if they don't feel alert enough to work safely.

Individual Responsibility

Make the most of opportunities to rest; get plenty of sleep so you're well rested and fit for duty.

Speak out if you're concerned about your (or a colleague's) fatigue, especially where it may affect safety.



If you're ever worried you might not be alert enough to work safely, speak to your manager (or the person in charge). Filling in a fatigue assessment might help you both decide what kind of tasks you can safely take on. You can complete a fatigue assessment at any time, but before leaving home for your shift is best. Each route or function will have their own templated fatigue assessment form.

Following the assessment your manager might decide to complete a fatigue management plan with you. This document will detail what controls or mitigations the two of you agree to put in place to keep you and your colleagues safe.

Another time you might need to fill in a fatigue assessment or fatigue management plan is if you exceed one of the fatigue triggers detailed in the updated standard. However, if work is being planned to minimise the risk of fatigue, these trigger points should rarely be exceeded.

Fatigue Risk Management Triggers

Everyone

- Working more than 60 hours in a rolling seven-day period
- Working more than 72 hours in a rolling seven-day period
- Working more than 12 hours in one shift or period of duty
- Working more than 13 consecutive turns of duty in 14 rolling days
- More than 14 hours door-to-door
- Less than 12 hours break between booking off from a shift/period of duty and booking on for the next shift/period of duty

Rostered individuals

- A Fatigue Risk Index (FRI) fatigue score of more than 35 for daytime shifts or 45 during night-time shifts
- An FRI risk score of more than 1.6

Fatigue Reduction

A fatigue management plan should also be created when:

- A member of staff is returning to work after an extended absence
- Working hours are changing as part of reasonable adjustments
- An occupational health referral has highlighted a fatigue related condition, which could affect the health and/or wellbeing of a member of staff
- Someone is on call (as defined in NR/L2/OHS/003/05)

How can I improve my alertness?

Making sure you are getting enough sleep, eating a healthy diet and staying hydrated will reduce fatigue and maximise your alertness.

Prioritise sleep

Our brains are highly active during sleep, performing tasks that keep us alert and high performing the following day; most adults need between 6 and 9 hours sleep every night (according to the NHS).

Napping is a great tool you can use to boost your alertness. The key is to keep the nap short (20 mins) so you don't feel groggy when you wake up; this delay between waking up from sleep and feeling wide awake is called sleep inertia.



Safety First:

Before taking a nap at work, you need to talk to your manager or the person in charge to make sure they are comfortable with you napping, and know when and where you're planning to nap

Get light right

When it's dark, your body produces a hormone called melatonin that helps you sleep; this means we can use light as a tool to improve alertness and manage our circadian rhythm (the body clock).

When you need to stay awake, keep your environment as bright as possible; get as much daylight as you can and keep the lights bright if it's night-time. If your role allows it (and it's safe to do so), setting up a light therapy lamp where you work, or in your break area, may help improve alertness.

Reducing your light exposure in some situations might be helpful too. For example, wearing sunglasses driving home the morning after a night shift (as long as you feel alert enough to do so), might make it easier to fall asleep when you get to bed.

Fatigue Reduction

Stay hydrated:

Try to drink water before you feel thirsty; thirst is a sign that you are already dehydrated. Some surprising signs and symptoms of dehydration are reduced vigilance, increased tension or anxiety, headaches, and fatigue. It's recommended that men drink 2 litres of water a day, and women drink 1.6 litres. Some of this fluid can be found in the food you eat, like soup, milk on cereal and fruit. One thing to be aware of is while a small amount of caffeine can boost your alertness, it also makes it harder to get to sleep. The NHS recommend you avoid it within 4 hours of bedtime.

Eat a healthy diet:

Eat a balanced and varied diet that includes at least 5 portions of a variety of fruit and vegetables every day. The NHS have lots of useful advice about healthy eating on their [website](#).

Exercise regularly:

The NHS recommend 19-64 year olds do at least 150 minutes moderate intensity activity, or 75 minutes of high intensity activity, a week.



Expert Health Advice:

For more information on healthy living, visit the [NHS Live Well website](#).

What should I do if I already feel, or am at risk of becoming, fatigued?

The first thing you need to do is talk to your manager. Being open and honest with them will help them to support you in managing your fatigue effectively.

If they feel it's needed, or if you ask them to, they'll work with you to complete a fatigue assessment. If you work to a roster or on call, your roster clerk, section admin or planner may also run an FRI (Fatigue Risk Index) calculation.

Talking about your levels of alertness (and reasons for it), the Fatigue Assessment and FRI score will help you both decide whether a fatigue management plan is needed. These tools will also be used if you hit or exceed one of the triggers in the updated Fatigue Risk Management standard. Discussing your personal situation is key to you and your manager creating a fatigue management plan that's suited to your needs.

If you're ever worried that your fatigue concerns are not being taken seriously, please get in touch with your local HR representative.

One last thing to remember: you might spot symptoms of fatigue in others that they're unaware of. Look out for your team-mates by asking them to talk to their manager or supervisor immediately, if you are worried about their alertness levels.



Warning:

If you ever feel your fatigue, or that of a colleague, is putting anyone's safety at risk, you should follow the Worksafe Procedure. If it's a less immediate safety concern, you can raise a Close Call by calling 01908 723500, or using the Close Call app on a Network Rail mobile.

Fatigue Reduction

Useful links

- Fatigue Reduction site: <https://networkrail.sharepoint.com/sites/FatigueReduction/>
- Health and Wellbeing hub: <https://safety.networkrail.co.uk/healthandwellbeing/>
- RSSB Fatigue and Alertness: <https://www.rssb.co.uk/en/Insights-and-News/Industry-Topics/Fatigue--Alertness>
- ORR fatigue guidance: <https://orr.gov.uk/rail/publications/guidance/health-and-safety/working-patterns-fatigue>
- HSE – Human Factors: Fatigue: <http://www.hse.gov.uk/humanfactors/topics/fatigue.htm>

References

Problems caused by fatigue:

- Sleep Loss and Hypertension: A Systematic Review - Palagini, Laura; Maria Bruno, Rosa; Gemignani, Angelo; Baglioni, Chiara; Ghiadoni, Lorenzo; Riemann, Dieter, *Current Pharmaceutical Design*, Volume 19, Number 13, 2013, pp. 2409-2419(11)
- Knutson KL, Van Cauter E. Associations between sleep loss and increased risk of obesity and diabetes. *Ann N Y Acad Sci*. 2008;1129:287–304. doi:10.1196/annals.1417.033
- Too Little Sleep Gradually Desensitizes the Serotonin 1A Receptor System, Viktor Roman, Irene Walstra, Paul G. M. Luiten, Peter Meerlo, *Sleep*, Volume 28, Issue 12, December 2005, Pages 1505–1510
- Ali, Tauseef et al. "Sleep, immunity and inflammation in gastrointestinal disorders." *World journal of gastroenterology* vol. 19,48 (2013): 9231-9. doi:10.3748/wjg.v19.i48.9231
- Multidimensional Fatigue Symptom Inventory-Short Form, Moffitt Cancer Center and University of South Florida, Tampa

Why is the fatigue standard changing?

- Dembe AE et al, (2005). The impact of overtime and long work hours on occupational injuries and illnesses: new evidence from the United States. *BMJ*. 62. 588-597
- Folkard, Simon & Tucker, Philip. (2003). Shift work, safety and productivity. *Occupational medicine*. 53. 95-101
- Hänecke K et al (1998). Accident risk as a function of hour at work and time of day as determined from accident data and exposure models for the German working population. *Scandinavian Journal of Work and Environmental Health*. Vol 24, Suppl 3. 43-48.

How can I improve my alertness?

- Effects of low doses of caffeine on cognitive performance, mood and thirst in low and higher caffeine consumers, H.J. Smit, P.J. Rogers, *Psychopharmacology*, October 2000, Volume 152, Issue 2, pp 167–173
- Drake C; Roehrs T; Shambroom J; Roth T. Caffeine effects on sleep taken 0, 3, or 6 hours before going to bed. *J Clin Sleep Med* 2013;9(11):1195-1200.
- Water, Hydration and Health, Barry M. Popkin, Kristen E. D'Anci, and Irwin H. Rosenberg, *Nutr Rev*. 2010 Aug; 68(8): 439–458.
- Mild dehydration impairs cognitive performance and mood of men, Matthew S. Ganio, Lawrence E. Armstrong, Douglas J. Casa, Brendon P. McDermott, Elaine C. Lee, Linda M. Yamamoto, Stefania Marzano, Rebecca M. Lopez, Liliana Jimenez, Laurent Le Bellego, Emmanuel Chevillotte (a3) and Harris R. Lieberman, Published online by Cambridge University Press: 07 June 2011
- About Sleep's Role in Memory, Björn Rasch and Jan Born, *Physiol Rev.*, 2013 Apr; 93(2): 681–766.
- Sleep Preferentially Enhances Memory for Emotional Components of Scenes, Jessica D. Payne, Robert Stickgold, Kelley Swanberg, Elizabeth A. Kensinger, *Psychological Science*, Vol 19, Issue 8, 2008, p. 781–788
- The effects of napping on cognitive functioning, Nicole Lovato and Leon Lack, 2010, 185:155-166