INFOSHEET

Concussion aftercare: Sleep

Sleep is an important part of our daily routine which helps our bodies restore. Disturbed sleep is one of the most common complaints following a concussion. This is because sleep and concussion share neurophysiologic underpinnings with sleep affecting your recovery from concussion.

The sleep cycle

During sleep our heart rate drops, our body temperature falls and we experience complex changes in brain activity.

There are two main phases in the sleep cycle: Non Rapid Eye Movement (NREM) and Rapid Eye Movement (REM).

When we are in NREM, we go through three stages:

NREM1 – we transition between being awake and sleep.

NREM 2 and 3 – our eye movements stop, our body temperature falls and with each stage and we progress towards deeper sleep.

When we are in REM sleep, our eyes move rapidly, our blood pressure and heart rate increase and our brain becomes very active. It is during this phase, which occurs every 1.5 hours during sleep that we dream.

What controls sleep?

Sleep is largely controlled by sleep pressure and the circadian rhythm (our body clock), which is a 24 hour cycle that regulates our biological and physiological processes. It predicts environmental changes around us so that our bodies can adapt to them. In ideal situations, the circadian rhythm will naturally rise in the early morning, promoting wakefulness and alertness, and will reach a peak in the evening. After a waking period of around 15 hours the pressure to sleep becomes greater and we get tired. With the onset of darkness, the circadian rhythm drops to the lowest level and helps to maintain sleep.

Certain body chemicals also have an effect on our sleep patterns, including: growth hormone releasing hormone (GHRH), growth hormone, prolactin, and adenosine, all of which cause sleepiness as levels build up. The most important brain chemical that is helps with sleep is melatonin. This is a hormone which is produced by the pineal gland. As daylight fades and night falls, levels of melatonin increase, giving the body the signal that it's time to sleep. It is produced in the body from protein foods, and is important for good sleep so that you feel rested and refreshed when you wake.

How much sleep do you need?

On average most adults need around 7-8 hours of sleep per night, although this can vary from person to person. As we grow older our sleep patterns change, and as we go through our life stages we tend to get less and less sleep.

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On average:

- Newborn babies need 18-21 hours of sleep per day
- 3-5 year olds need 11-13 hours of sleep per day
- Pre-teens need 11 hours of sleep per day, and
- Teenagers need 9-11 hours of sleep per day

What is insomnia?

Insomnia is simply being awake when you want to be asleep. It is defined as the following occurring three or more times per week on a regular basis:

- Taking more than 30 minutes to fall asleep despite being tired (known as Sleep Latency Insomnia or Onset Insomnia)
- Waking up frequently during the night and not getting back to sleep easily (known as Sleep Interruption Insomnia, Sleep Maintenance Insomnia or Middle Insomnia)
- Waking up in the early hours and finding it difficult to get back to sleep (known as Terminal Insomnia)

As a result, people with insomnia tend to:

- Rely on sleeping pills or alcohol to fall asleep
- Wake up feeling tired and un-rested from the night's sleep

All of the above can result in daytime drowsiness, fatigue, or irritability. On average women are more likely to experience insomnia and sleep disturbances than men.

Don't be too bothered by interrupted sleep.

Often we think that a good night's sleep is seven or eight hours of uninterrupted sleep, waking in the morning refreshed, rested, and ready to face the day. It can however be perfectly natural to sleep for around four hours, wake for a short period, and then go back to sleep. Many sleep problems may have their roots in the human body's natural preference for segmented sleep, and this could be the link to sleep interruption insomnia, where people wake during the night and have trouble getting back to sleep, or terminal insomnia, when they wake in the early hours and cannot get back to sleep.

So if you do wake during the night it is important that you don't become anxious and worried that you won't get back to sleep and will therefore suffer with tiredness and fatigue the next day. You may be experiencing a throwback to the bi-modal sleep pattern of ages past. So rather than seeing it as a problem, look upon it differently, don't panic, relax, and you may soon drop back off to sleep. It's only a problem when it happens regularly and you can't get back to sleep.

Tips for better sleep

1. Your bedroom setting

- Keep your room completely dark. If you need to, use blackout curtains or an eye mask.
- Make sure your room isn't too hot or too cold, keep it slightly cool around 16-18°C.
- Keep clutter out of your room – put the laundry basket in the spare room, bathroom or on the landing.
- Do not have a television or computer in the bedroom.
- Turn off your mobile phone and anything with an LED display (including clocks).
- Don't treat your bedroom as an extension of your living room or a study. Use it for sleeping only.
- Decorate your bedroom with beautiful things like photographs of loved ones, artwork that you like, plants and flowers. It will help you feel more connected to the room and help you look forward to going to bed.
- Try to avoid bright colours such as reds which are less restful and quite stimulating, and less helpful a good nights' sleep. Use muted and pastel colours, which are much more calming.
- Some smells can affect your mood, making you more relaxed and calm. Sprinkle a pot pourri with essential oils of lavender or geranium, though not during pregnancy or in rooms of young children.
- Take a long hard look at your room and see what it says about you. Remember that you have a duty to care for yourself, your sleep area and your general health and wellbeing.

2. Daily routine

Keeping a regular and consistent sleep schedule helps your body get into a natural rhythm. Go to sleep and wake up at the same time each day. When you do this, you will begin to naturally fall asleep and wake up at the same time each day. Waking up will feel more natural and you will fall asleep more easily.

You should also:

- Reduce the brightness of light in your home in the evenings by using dimmer switches or lamps with low wattage bulbs.
- Have a bedtime routine and keep a regular sleep pattern.
- Go to the toilet and empty your bladder before going to bed.
- Avoid stimulants and alcohol.
- Avoid napping during the day. Do not use technology in the hour before bedtime (including computers, mobile phones and televisions). If you are glued to your devices, their bright light can block your recovery.
- The standard white light emitted from these devices is referred to as 'blue light'. Blue light suppresses melatonin, the hormone that tells our bodies that it is time to sleep. Power down devices at least an hour before bed and keep them out of the bedroom. You mobile phone and other devices are also very noisy, and can cause feelings of anxiety or excitement at a time when you should be quietly settling down to sleep. These devices also emit "Blue light".

If you are trying to go to sleep but still feeling restless after about 15-20 minutes you should try:

- Reading a book or magazine
- Gently stretching to relax your mind and body
- Thinking about everything you did that day – even the boring stuff
- Putting on some gentle music
- Meditating

3. Exercise

Exercise can help you lower your body temperature and enjoy better quality sleep.

- The important thing is to exercise because it makes you feel fitter and better. If you are having trouble sleeping, the more you exercise, the more likely you are to improve your sleeping patterns.
- Try to exercise in the day, but if you haven't been able to, it is still better to exercise in the evening than not at all. There is no evidence to prove that working out too close to bedtime can disturb sleep.
- Do not overdo it. Wearing yourself out physically does not always create sleepiness. In fact, it can sometimes do the opposite and make you more awake when you are trying to sleep.

4. Nutrition

- Eat when you wake up, not before going to bed. Try to eat balanced meals that combine protein, carbohydrates (with a low to medium glycaemic index) and vegetables. It is important to optimise your tryptophan levels. Tryptophan converts in your body into a molecule which then makes serotonin and melatonin, both of which are important for sleep. Changes in diet can help you sleep but it takes a little longer than the quick fix pill.
- Avoid stimulants such as caffeine and cigarettes.

5. Medication

- If you have been prescribed sleep medication, do not suddenly stop taking them. The best approach is to speak to your doctor and develop a strategy to slowly wean yourself off them.
- Avoid sedatives such as sleeping pills and alcohol to help you sleep. The effects are usually short-term, have counter effects, and with sustained use possibly leading to dependency.
- Avoid buying melatonin supplements from the Internet (they are only available on prescription in Australia). Only take these if prescribed by a physician who is trained in the management of concussion. If these are used incorrectly, natural melatonin release may be suppressed.