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Thought Leadership: Vicious cycle or full circle? ***Sleep drives your physical, brain and mental health***

If you were placing odds on your health, you'd want good sleep in your corner. Your chances of heart disease, diabetes, depression and obesity are much worse if you have poor sleep. But improving the quality and quantity of your sleep immediately tips the odds back in your favour for a healthier body and mind.

Sleep matters. If you regularly don't get enough sleep or sleep poorly over long periods, you are five times more likely to have depression, three times more likely to have cognitive decline and your chances of developing dementia are doubled. The risk of obesity increases by 50 per cent and your odds of cardiovascular disease are also much greater.

Sleep is fundamental to good physical, brain and mental health because your body performs vital functions in sleep it cannot perform when awake. For example, in sleep the body clears your brain of a toxin linked to dementia.

As sleep expert Dr Carmel Harrington explains, "we have three neurobehavioural states: wakefulness, Rapid Eye Movement – or REM – sleep and non-REM sleep. In each of these states, we perform physiological and biological tasks that we can't perform in the other states.

"We don't doubt wakefulness is essential to our survival. This is when we eat, get rid of our waste products, exercise – all those sorts of things. If we didn't do that, we wouldn't survive very long.

"Having enough non-REM sleep and enough REM sleep is also essential to our survival but in many different ways."

REM sleep is critical for cognitive function. If you're finding it hard to think today, you probably didn't get enough REM sleep. This is the period of sleep where memories and learning are consolidated.

Non-REM sleep – the stage where we have our deepest sleep – is the time we build muscle and also when the body rests and restores the cardiovascular, nervous and respiratory systems.

"If we're deprived of deep sleep, we are more likely to develop metabolic dysfunctions like type 2 diabetes and obesity," Carmel says. "And when we don't get enough deep sleep we don't get the chance to rest and restore our body and its vital organs so we're much more likely to develop cardiovascular disease as well.

"We need all the stages of sleep. We need deep sleep for good physical health and we need REM sleep for good brain health and mental health. Every time we don't give ourselves the required amount of sleep we prevent our body from doing what it needs to do."



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Turning night into day

Just as our quality of sleep affects us the next day, what we do during the day has a direct impact on how we sleep. For example, if you've been learning something new during the day, your brain wants time to consolidate this new information, so your body will increase the amount of REM sleep.

In a similar way, exercise is associated with an increase in deep sleep because after exercise our body has a greater need to rest and restore.

While that can be a challenge for those who work in the transport industry, exercise does not have to mean an hour at the gym. For example, Carmel suggests a brisk 20-minute morning walk before drivers get into the truck, as this will help attain good quality sleep.

A vicious cycle

Poor quality sleep can become a vicious cycle for our health.

Lack of sleep makes the body feel hungrier, so we eat more when we're tired. Even though we know exercise is critical to good physical health, we're much less motivated to exercise when we are sleep deprived. That means when we're tired we eat more but exercise less, bringing weight gain and obesity into play.

As to our mental health, it has been known for some time that one of the symptoms of clinical depression is poor sleep but it has only recently been recognised that chronic poor sleep increases our vulnerability to developing depression. One of the many reasons for this is that when we don't get sufficient sleep we don't get enough time to consolidate all the memories of the day. The brain then has to choose what to commit to memory and our survival instinct makes it more likely to remember negative events.

We're more irritable and impatient when we're tired because we act from our emotional centre rather than the higher functioning part of the brain. This is stressful for our body so it produces more of the stress hormone, cortisol. The more cortisol we produce the more on alert our body becomes. The more alert we are the less we sleep. The less we sleep, the more stressed we become and the more cortisol we produce.

So it's easy to see how poor sleep and bad health can become a vicious cycle. But the good news, Carmel says, is it's never too late. Just like stopping smoking can bring immediate health benefits for a 20-year, pack-a-day smoker, good sleep habits translate immediately into better health. And exercising or taking up a new pursuit or hobby can also improve the quality of both your health and sleep.

So are you on the road to poor sleep and bad health, or are you going to break the cycle and make sleep your health priority, starting from today?

We acknowledge the assistance and expertise of Dr Carmel Harrington in putting this article together.

Why am I so distracted today?

When you're behind the wheel, the ability to concentrate and limit distraction is critical. So why is it harder to pay attention and stay alert when you're tired?

"When we're thinking and doing a task, we need to access our pre-frontal cortex, which is the part of the brain that makes us smart, and we also need to be able to focus on the task at hand," Carmel Harrington explains.

"When we're sleep deprived, we find it very hard to activate our pre-frontal cortex because we haven't allowed it to rest. REM sleep is the only time our pre-frontal cortex gets rest and can restore. If we don't get enough sleep we find it very difficult the next day to activate our pre-frontal cortex, which is why we don't think very well and are easily distracted when we're tired."