Tap into sleep’s restorative potential and counteract the impacts of sleeplessness to supercharge skin health.

How did you sleep last night?

For many of us, getting a solid eight hours rest is a rarity. When time is precious and pressured, it is easy to forget or disregard sleep’s vital role preserving health and wellbeing: skin included.

While the mind is at rest, the body is in overdrive, performing crucial regulatory and restorative functions. These processes mean skin repairs and renews at its fastest rate overnight.

If we don’t get enough sleep, the body’s opportunity to reset is compromised – with knock on effects for health and skin.

#### ****Why aren’t we getting enough?****

According to The Sleep Council, 40% of adults in the UK do not get enough sleep. The optimum level of sleep is highly individual, but seven to nine hours of good quality (restful and undisturbed) sleep per night is an ideal.

Circumstantial factors, such as shift work or our surrounding environments, play a role in how long and how soundly we sleep, but sex, age and mental wellbeing are also influential.

In general, women are generally more likely to experience poor sleep and insomnia, and peri-menopausal or menopausal women are most likely to have trouble sleeping.

This connection is partly because of the link between sleep and hormones, and there is thought to be a specific link between oestrogen, progesterone and sleep. Sex related disparities in sleep begin around puberty, and continue throughout adulthood.

When women begin perimenopause or menopause, disrupted sleep with “lower sleep efficiency and more sleep complaints” becomes an even more common occurrence. Fluctuating and falling levels of oestrogen and progesterone in the body, plus a gradual decrease in the production of the sleep hormone melatonin are thought to be behind this.

Mature, female clients may particularly see the impact of sleeplessness, compounding other natural skin ageing processes.

#### ****Sleep’s central functions****

Understanding how sleep is connected to skin requires a deeper understanding of its overall role within the body. “Sleep is when the body and brain repair and reset,” explains Dr Gaby Prinsloo, medical director at the iiaa.

Among other functions, sleep has important roles in memory, performance and hormone regulation, helping the body and brain to physically refresh and cleanse.

“Waste is cleared by the glymphatic system, which is a network of vessels in the brain,” explains Dr Gaby. “The glial cells retract and cerebrospinal fluid flows through the brain, clearing metabolites and toxins accumulated during the previous day.”

These regulatory processes are vital to maintaining overall wellbeing. Without adequate sleep, the body is unable to fully carry out these restorative functions – compromising health.

#### ****A skin health superpower****

The reparatory processes that happen during a good night’s sleep are the ultimate skin health boosters. Our internal systems work in overdrive, and many activities essential for skin health peak while we slumber.

Blood-flow to the skin increases – delivering essential nutrients which support the regular, healthy functioning of the skin. The circadian rhythm of our hormones impacts skin’s night-time processes: for example, growth hormone, which plays a role in the synthesis of collagen and elastin, is produced at its highest rate as we sleep.

For the skin, this means processes such as cell mitosis – how the body creates new cells – are fastest during the night, and several studies show that cell renewal peaks as we sleep.  Several hormones secreted while we sleep, including growth hormone, stimulate protein synthesis: increasing collagen and elastin production. Studies note that type 1 collagen – beloved for its structural properties and anti-ageing benefits – is synthesised in particularly high levels overnight.

#### ****Melatonin: the anti-ageing, skin protection powerhouse****

Among many regulatory functions, hormones are one system heavily influenced by sleep. Recent studies have revealed that sleep related hormones, particularly melatonin, are crucial protective factors for skin.

Alongside adenosine, melatonin helps regulate the “sleep-wake” cycle: helping us to fall asleep. While its role in sleep is well established, emerging evidence suggests melatonin has powerful skin health benefits – particularly relating to UV damage.

Melatonin is an ultimate antioxidant.Alongside its own antioxidant properties, it stimulates the production of other antioxidant enzymes – including Superoxide Dismutase (SOD). When exposed to UV, melatonin metabolises into AFMK\*, which is another powerful antioxidant.

These properties mean melatonin works overnight to heal free radical damage from the previous day – and it has been shown to be particularly effective repairing UV induced damage.

Melatonin is also strongly photo-protective. In-vitro experiments show that melatonin has a protective effect on fibroblasts and keratinocytes, when the cells are exposed to the molecules before exposure to sunlight. Good sleepers, with correlated higher levels and more regular exposure to melatonin, experience less damage from UV to skin cells and to recover more swiftly from erythema (skin redness).

Clients experiencing poor sleep may need additional support to adequately protect from UV damage. In addition to broad spectrum sunscreen, supplementary antioxidants, such as vitamin C, applied topically and introduced into the diet are vital, replenishing protective properties that may be being lost due to a lack of sleep.

Dr Gaby adds that levels of other antioxidants also fall with a lack of sleep, while at the same time, sleep deprivation promotes free radical damage. “Sleep deprivation leads to decreased antioxidant levels, including glutathione (found in skin), and increases systemic oxidative stress,” explains Dr Gaby. “This impacts all cells in the body as well as leading to epigenetic [DNA] changes.”