



Wellbeing and natural light

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Sunlight is an underestimated resource for improving your physical health

In the spring our days become longer, brighter, and warmer. The sun may encourage you to spend more time outside buildings, strolling in nature and exposing your body to natural light. Scientists generally agree that sun derived light helps to maintain good mood but may also help enhance learning ability (due to boosted alertness), lower depression and reduce insomnia. There is no need to explain the key role of sun rays in Vitamin D synthesis since popular science has done this effectively. On the other hand, the scientific link between light exposure and general mood is not as widely discussed.

How does it work? – “Unconscious” photoreceptors

Our eyes have more purpose than just enabling us to see! You would likely have heard of rods and cones, the photoreceptor cells in the retina that gather visual signals which are processed by the brain. Less widely discussed are the Intrinsically Photosensitive Retinal Ganglion Cells (ipRGC) which also sit within the retina. While rods and cones are based in the outer edges of the retina, the former are responsible for vision during low light levels, and the latter for vision during high light levels during the day and colour vision.

In the front of the retina, we can recognise the ipRGC which take part in measuring light intensity in the environment. Briefly speaking, the ipRGCs are composed with light-sensitive protein melanopsin (mostly reactive at the blue light ~ 480nm). The photon signal is transformed and transported via a retinohypothalamic tract to our brain, to the region of Suprachiasmatic Nucleus (SCN) located in the hypothalamus, our master circadian regulator. The SCN orchestrates circadian rhythms which are tweaked in response to light information arriving via the retinohypothalamic tract. In addition, the amygdala and habenula are both brain regions linked with negative feelings and depressiveness, and they are also the recipients of messages from ipRGCs¹. All of this is happening within our brains without us even realising!

Natural light and Circadian rhythm

Every living organism on our planet has an ‘inner clock’ that is synchronised with the solar system telling us where we are in time frame. For instance, we generally eat, sleep and show fluctuations in body temperature at set times each day. These near 24hr patterns in behaviour and physiology are termed ‘circadian Rhythms’. The maintenance of such rhythms are crucial for healthy metabolism, quality of sleep and immune responses². Unfortunately for humans, artificial light exposure at night from watching tv, reading on a tablet, or even looking at your phone causes disruptions to circadian rhythms. As a result of this we can experience poor sleep quality which ultimately leads to tiredness, low mood and may even contribute to depression and inability to concentrate.

“Sun-bath” routine - 15 minutes in the sun a day

At some point, everyone has experienced “feeling down” during the autumn/winter seasons, in relation with short and gloomy days. However, spending more time outside even during rainy days could be beneficial,

because the sun is still delivering enough light for our retinal ganglion cells to “make a profit”³. Scientists and doctors recommend going out during the morning daylight hours when the sun provides short-wavelength light. Having your morning coffee at a nearby cafe or walking your dog would be great, as 15-minutes of sun exposure makes a significant impact.

Obviously not everybody has the chance to implement such a routine. Nevertheless, any time throughout the day spent outside – even if just sitting outside in the garden or a park - has been proven to be advantageous and contribute to improving your health generally. For that reason, it is worth encouraging ourselves and others to take at least a 15 minute walk each day.

References

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