





DESIGNING FOR HEALTH & WELL-BEING WITH DAYLIGHT

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It is no surprise that the sun has been the central entity for the sustaining, growing, and thriving of all life on earth. Humankind's innate connection to the sun has provided us the elements of life needed to develop our bodies and minds, as well as enhance our experience of the world. As buildings evolved over time, daylight has remained the primary source of light and a vital element of architectural design. Though we have seemingly adapted to spending most of its time indoors, we still have a necessary dependence on the sun and its resources. It is essential that the spaces in which we live, work, and play are designed to preserve the sun's presence, conserving our relationship with the natural world and ensuring a healthy indoor environment.

Since its genesis, the human body has intuitively relied on the sun as the integral proponent of human health and flourishing. Daylight, being the combination of all direct and indirect light originating from the sun during the day, has variations within the light spectrum not present in artificial light sources. Of the total solar energy reaching earth's surface, 40% is visible radiation, while the remaining 60% is infrared and ultraviolet wavelengths. Such light variations stimulate our body's biological master-clock on a cellular level by promoting

the accumulation and degradation of proteins in a way that coincides with the circadian rhythm. Non-visual input of daylight is needed to regulate the secretion of hormones and neurotransmitters in the brain activated by a sensory system within the human eye. Since artificial light does not possess these variations in the light spectrum, it is clearly not a good enough substitute. Research has proven that living in poorly lit environments disrupts this balance and is consequently linked to weakened mental capacity, stress, seasonal depression, and increased vulnerability to infection and disease. Even more so, greater exposure to daylight has shown to increase productivity, speed in learning, and patient pain relief and recovery. Since so many benefits accompany daylight, including our physical and emotional well-being, we must see that sunlight is truly the best thing for human health.

Natural light from the sun is amongst the most important elements of nature that can ensure our physical, mental, and emotional wellness. The sun's nutrients influence countless factors of human physiology and behaviour that are governed by the circadian rhythm. Greater exposure to daylight contributes an array of benefits, such as less eyestrain and increased productivity, alertness, and capacity

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for learning. The bodily response to non-visual input from the sun enables the body to synthesize Vitamin D into calcium, control cortisol levels related to stress, and regulate the amount of melatonin required for adequate sleep and wakefulness. Furthermore, having optimal amounts of daylight has shown to grant psychological comfort, improve social interactions, increase overall pleasantness, and heighten our mood. The sun proves therapeutic to us and is able to lift our spirits and remind us of the exuberance of life.

For centuries, architects understood the significant role that the sun plays in our daily lives and thus allowed its diversity of light and heat to penetrate the interiors of their buildings. The sun as an extremely dynamic light source varies in intensity and factors such as time of day, season, location, orientation, geometry, and weather can greatly affect its luminance and our experience of the outdoors. The thoughtful design of buildings should consider how interior surfaces, materials, colour, and the

intelligent placement of windows and skylights optimize the entrance of direct, diffused, and reflected light in order to provide effective internal illumination and passive solar gain. Angled openings in the roof avoids more obstruction than vertical windows and supplies 2-3 times more daylight while inviting in the changeability of the outside world. Our visual reception of sunlight enhances the feeling of spaciousness and depth while providing us environmental satisfaction.

There is a great need for our indoor environments to be directly connected to the natural varying levels of light for night and day to maintain a strong physiological and psychological connection to the sun. The experience of daylight is beyond moments of mere visual illumination but is a deeply intrinsic element of the human narrative. It stimulates our senses, guides our biological processes, refreshes our mental state, informs our design of spaces, and engages our outlook of the world. Daylight thus remains a key determinant of our health and happiness.