



# The WINTER BLUES and LIGHT THERAPY

By Joe Ronn, Co-founder, *Northern Light Technologies, Inc.*

*"...And God saw the light, that it was good: and God divided the light from the darkness." — Genesis 1:4*

Since the dawn of time man has recognized not only the therapeutic effects of light but its life-sustaining qualities. From plant photosynthesis to the sleep-wake cycle of animals, all living things are vitally affected by the absence, presence and type of light exposure. Indeed, light and its personification have played a pivotal role in our mythologies, beliefs and legends.

In the absence of light, all life shrivels and dies. Some of us are even badly affected when daylight levels begin to decline in the late summer and autumn. We begin to gain weight, sleep too much, become withdrawn, lose interest in sex, are constantly fatigued, lack alertness and become irritable. We are unable to cope with everyday life. At its severest, some of us become completely dysfunctional.

This is winter-depression, the "winter blues" or as it's known by its clinical name, Seasonal Affective Disorder, and its apt acronym, "SAD". In our latitude this condition affects 15% of the population, of which 1/3 suffer severely. Three times as many women suffer from SAD, as men.

Historically, this disorder was indistinguishable from other depressions. Only within the last 25 years have researchers observed that its seasonality suggested some sort of pathological or physiological disorder. A lot of the work has and continues to be done at the National Institute of Mental Health (NIH) in Bethesda, Maryland and at many other research labs and clinical facilities.

## WHY LIGHT?

When researchers realized that this seasonal depression was more prevalent in northern latitudes they surmised that it was indirectly caused by light deprivation. The discovery that bright light falling on the eyes will suppress the secretion of melatonin in humans led to the discovery of light treatment for SAD. After this hypothesis was advanced clinical studies to test it yielded mixed results.

Today, there is less consensus and a lot more debate about what causes SAD. So, the good news is that light therapy works; the bad news is nobody is too sure why. Although melatonin levels are commonly accepted as an effective indicator of the biological effects of light (ie. suppression of melatonin), it is not at all clear what effect, if any, melatonin has on mood and behavior.

The most promising research relates to the study of serotonin. Serotonin is responsible for passing electrical signals from one nerve cell in the brain to the next. There are many indications that abnormalities in brain serotonin may be at the basis of SAD. Serotonin concentrations in the hypothalamus have been shown at their lowest concentration during the winter months. Dietary carbohydrates increase the production of brain serotonin. SAD sufferers crave carbohydrates and feel energized when they consume them. Antidepressant medications called selective serotonin reuptake inhibitors (SSRI) such as Prozac, Zoloft and Paxil, all of which increase the amount of serotonin available, for nerve signal-transmission - appear to reverse the symptoms of SAD ... as does light therapy.

## EVOLUTION OF LIGHT THERAPY

When SAD was first identified, clinical studies tested the efficacy of light therapy with banks of fluorescent lights and crude "lightboxes" of 2,500 to 5,000 lux, intensity. Patients would sit in front of these lightboxes for 2 to 4 hours. Later research demonstrated that 30 minutes of exposure to 10,000 lux lightboxes provided comparable relief to SAD-sufferers. Whereas so

called "full-spectrum" lighting (mimicking the spectral distribution of natural sunlight) was formerly thought to be important, is now widely dismissed as being unnecessary. Some recent studies have pointed to wavelengths around 467 nanometers as most actively suppressing melatonin production. What appears to be most effective is that the level of light produced, matches that of light outdoors shortly after sunrise or before sunset. Light intensity is critical for adequate therapy.

As effective as lightboxes were in treating SAD, they were commonly regarded as cumbersome, expensive obtrusive and unattractive. Today, light therapy devices such as the SADelite and TRAVelite, from NORTHERN LIGHT TECHNOLOGIES, are much more affordable, comfortable to use, attractive, and unobtrusive while putting out the requisite 10,000 lux of light.

A few companies have begun offering light emitting devices using LED's (light emitting diodes). Although offering novelty appeal, they are inefficient compared to fluorescent light technology, evidenced by the amount of heat they produce, as a byproduct. Their greatest liability, however, is the discomfort caused by the after image of looking into a matrix of pinpoint lights.

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Although the purchase of a phototherapy device does not require a prescription, it is a good idea to consult with a psychiatrist, psychologist or therapist, before submitting to light therapy. Only a healthcare professional can distinguish between SAD symptoms and similar symptoms caused by other problems that may not be alleviated by light therapy.

There is a cultural footnote to this engaging new field of chronobiology. We have begun to fathom the mysteries of our bodies' clockworks, only to realize that we are rediscovering ancient truths.

Celebrating the winter solstice, the shortest and darkest day of the year, December 21st, predates the Roman Saturnalia, which predates Christmas. We celebrate the return of light by lighting candles, dancing, singing and welcoming the incipient new life that dwells in the darkness. This primordial call has found expression in Christmas among Christians, Hannukah among Jews and Diwali, all festivals of light that celebrate rejuvenation and rededication.

Above all, these festivals promise us ever brighter days ahead and infuse us with hope in our darkest hours.

## About the Author

Mr. Ronn holds a BS Degree in Architecture from McGill University. He is a co-founder of Northern Light Technologies and has been able to apply his experience and design skills in the development of numerous products over the last twenty years. Joe is a very active outdoorsman, and when possible can be found mountain biking, winter skiing and snow-shoeing.