

BIORHYTHMS & TEETER-TOTTERS

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The inescapable fact is that all life is replete with and governed by cycles. Man lives according to his inward bodily cycles and according to outward celestial cycles:

And God said, "Let there be lights in the firmament of the heaven to divide the day from the night; and let them be for signs, and for seasons, and for days, and years." Genesis 1:14

Perhaps the two most studied and well-recognized human cycles are the daily and monthly cycles. The daily cycle, called the circadian rhythm, governs the sleep and wake cycle, while the monthly cycle, called the menstrual cycle, governs the monthly rhythm of female hormones. If any chemical substances could be said to be in charge of the inward cycles, it would be hormones. Interaction between these powerful protein molecules should create rhythm, which is why all body cycles are called biorhythms. Disruption of the normal physiological ebb and flow is a sign of functional illness and a cause of future disease. Therefore, the intentional preservation and maintenance of biorhythms should be a top priority when attempting to advance health.

A body without internal rhythm is an accident waiting to happen. Disordered biorhythms relate to poor memory,ⁱ increased breast cancer rates in womenⁱⁱ and increased cardiovascular disease.ⁱⁱⁱ They promote hypoglycemia and metabolic syndrome^{iv} and are the primary reason for mood disturbances, such as depression.^v

All the organs of the body have their own internal clock. There are 12 major organs or systems, and each has a special two-hour time slot. This is the time when the body provides the organs with an additional boost of energy in order to do some extra housecleaning. For instance, liver-time is between the hours of 1 a.m. and 3 a.m. This is the most common time for people to awaken during the night. If the evening meal or bedtime snack was especially junky, those with already over-worked livers can expect a wakeup call between these hours. The call will most likely come in the form of a vivid dream or a nightmare. Lung-time is between 3 a.m. and 5 a.m. Those with respiratory problems often wake during these hours. Small children with upper respiratory infections will likely have coughing fits during this time, as well.

Disruption of the body clock happens easily under prolonged stress; under the influence of artificial light, such as when staying up late watching television or working on the computer; by working the night shift; or when crossing several time zones. A person can use simple techniques to rebalance the normal energy flow and "tap" the body back into the proper time. These techniques are powerful but have no permanent effect if the person fails to change his or her lifestyle.

Restoring proper sleep patterns is the best way to begin balancing abnormal circadian rhythms. Deep, restful sleep is dependent upon several factors, but a critical one is the rhythm between two hormones: cortisol and melatonin. The outer part of the adrenal gland makes cortisol, and melatonin is a downstream product of serotonin. Each of these important hormones is discussed at length in later sections. Concerning sleep, cortisol must be at high levels in the morning and at low levels at night. Melatonin is just the opposite. It increases at night when things get dark. The absence of light causes a gland in the brain called the pineal gland to become active, encouraging additional melatonin production. Simply turning the lights down to low levels and intentionally going to sleep before 10 p.m. can help a great deal. The figure below shows what the normal pattern between cortisol and melatonin should look like.

Normal Circadian Rhythm

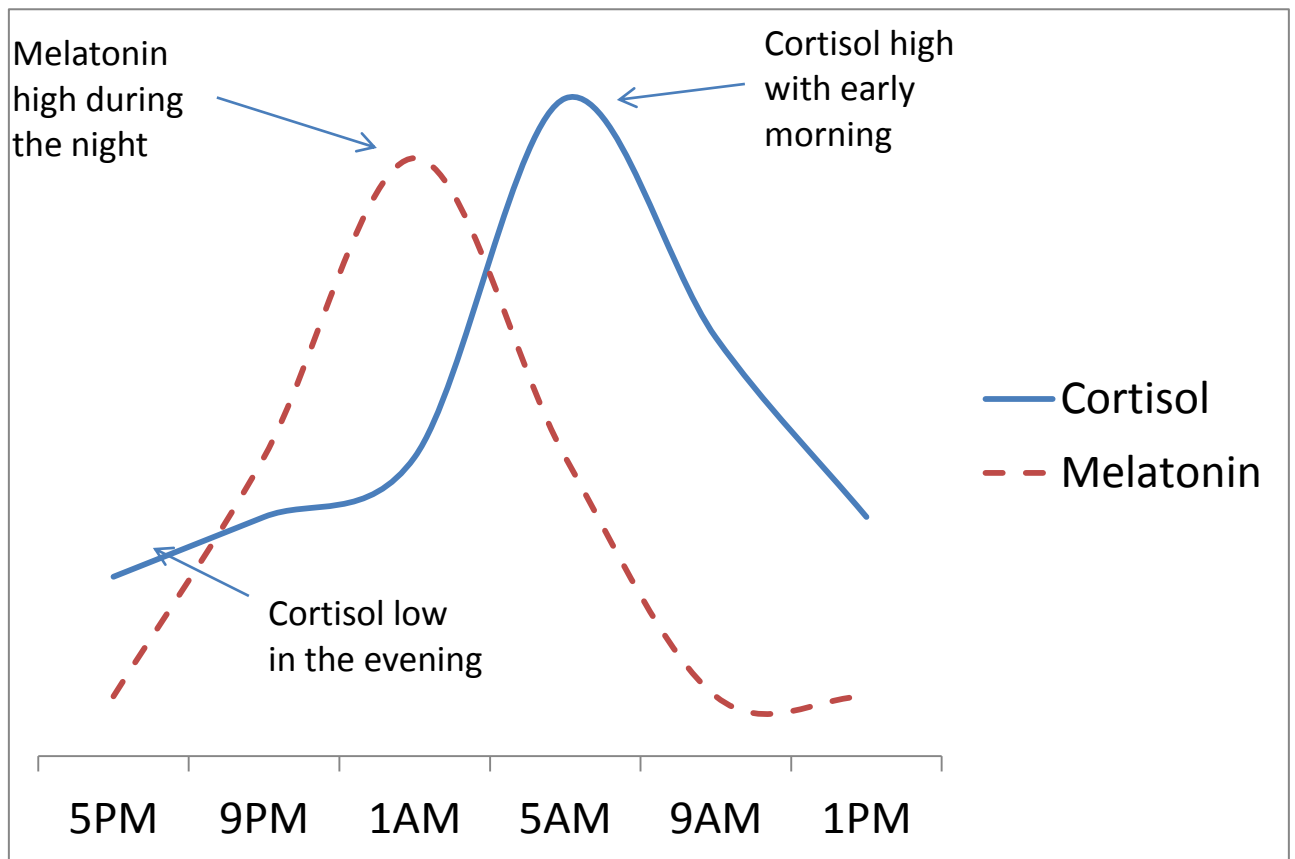
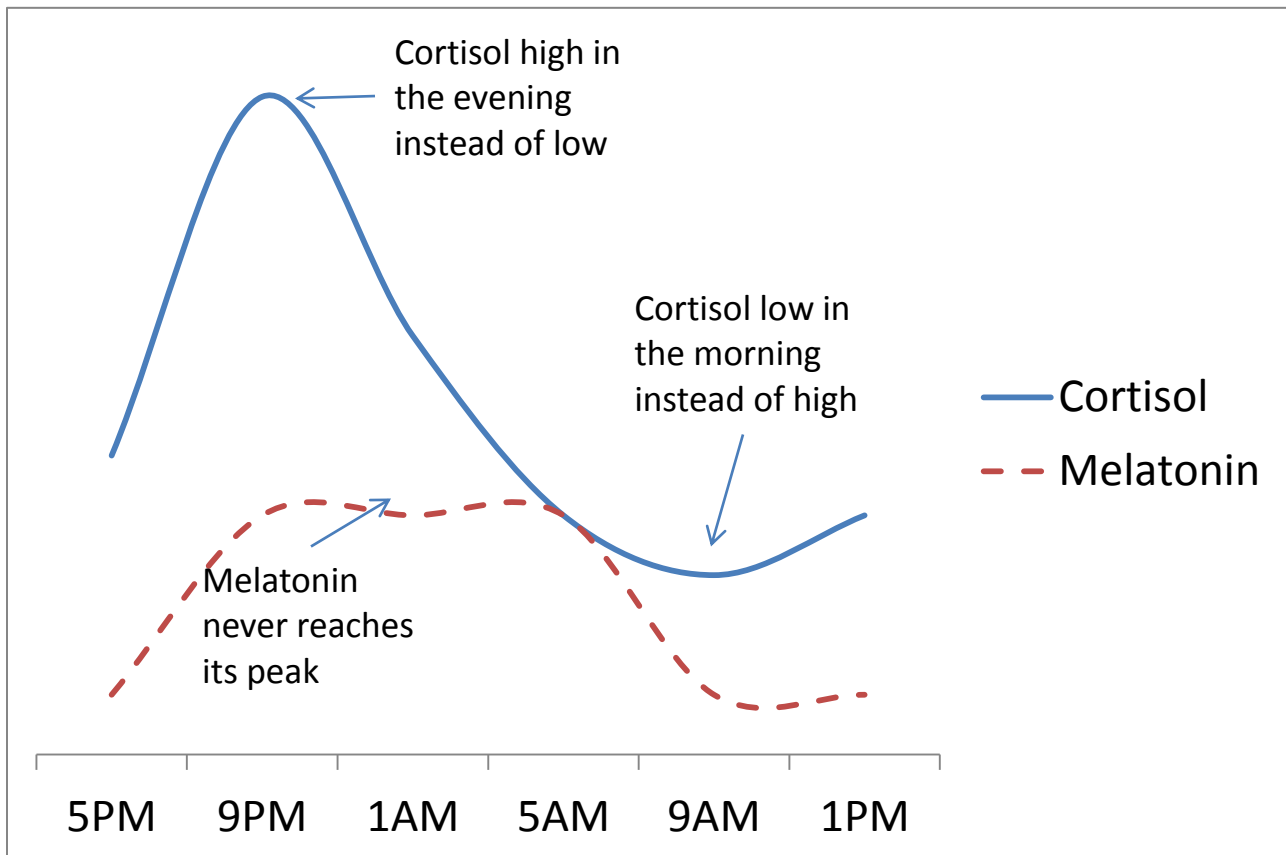


Figure 1: Normal Circadian Rhythm

As one might guess, this is not the pattern of most people with functional problems. They are much more likely to have an abnormal circadian rhythm. This means the levels of cortisol are the inverse of what they should be, while melatonin never reaches a sufficient level for deep sleep. Signs related to

disrupted circadian rhythms include the inability to fall asleep or stay asleep, difficulty waking up in the morning, not feeling rested after sleep, a drop in energy between 4 and 7 p.m., and headaches in a daytime, or what is called a diurnal pattern.

Abnormal Circadian Rhythm



Teeter-Totters

Non-cyclic balance in the body is just as important for health maintenance as cyclic biorhythms. Just as there are hormones pushing and pulling each other in a cyclic fashion, entire systems of the body and individual nutrients do the same thing but in non-cyclic manner. Their give and take looks more like the action of a teeter-totter. When a non-cyclic imbalance is a disruptor of health, the phenomenon is called the Teeter-Totter Effect. Fewer symptoms and a higher level of function are the result of balanced teeter-totters. Below is a list of common teeter-totter pairs regularly evaluated with FBA:

- Serotonin and Dopamine.
- Estrogen and Progesterone.

- The immune system (TH-1 vs. TH-2).
- The nervous system (sympathetic vs. parasympathetic).
- Calcium and Vitamin D.
- Calcium and Magnesium.
- Iron, Zinc and Copper (a three-way teeter-totter).
- Vitamins B1 and B2.
- Sodium and Potassium.

When symptoms of any kind are present, it is likely the Teeter-Totter Effect is in play. For example, serotonin and dopamine, two neurotransmitters essential for proper brain function, are on the same teeter-totter. If serotonin is high, dopamine will most often be low, and vice versa. Migraine headaches, for example, are a sign of too much serotonin in the brain. However, “too much” is relative to dopamine. Therefore, a person suffering from migraines could have high serotonin with normal dopamine levels. Or, he or she could have normal serotonin with low dopamine levels. Either way, the teeter-totter looks the same, and the migraine symptoms are the same. However, in one case the goal is to lower serotonin, while in the other case, the goal is to raise dopamine (sometimes a person will need both). Choosing the wrong treatment will have no effect or could even make things worse.

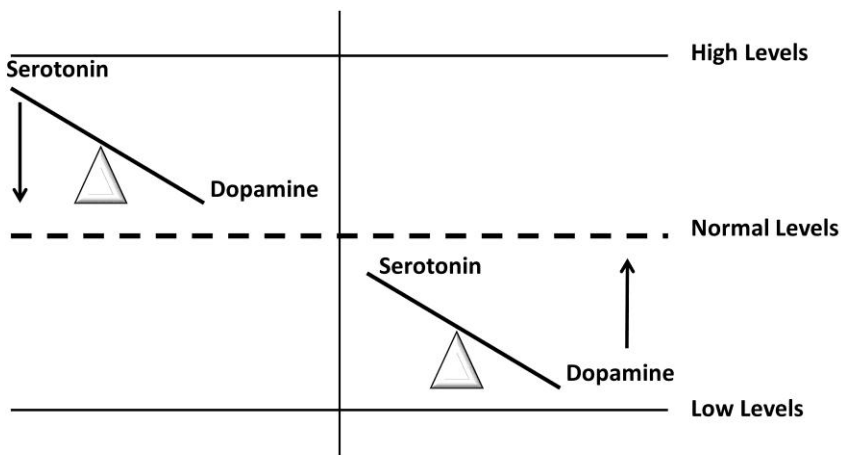


Figure 2: Types of Teeter-Totter

At present, no diagnostic test is available through traditional medicine that can inform a patient as to whether he or she has high, normal or low serotonin. It is an educated guess. [Functional Bio-Analysis](#), however, can correctly identify the problem. Simply by exposing the patient to a sample of the neurotransmitter serotonin and evaluating the response via the muscles, a practitioner can obtain

an instant data point and determine the direction the teeter-totter needs to move. Understanding biorhythms and teeter-totters is extraordinarily helpful to the FBA practitioner as he follows the body's revealed hierarchy, searching for the best hormetic nutrients to restore health. Before FBA testing can begin and be reliable, the practitioner must prepare the patient's body for testing.

ⁱ The Relation of Salivary Cortisol to Patterns of Performance on a Word List Learning Task in Healthy Older Adults. *Psycho Neuro Endo*. 2008 Oct;33(9):1293-6

ⁱⁱ Circadian Stage-Dependent Inhibition of Human Breast Cancer Metabolism and Growth by the Nocturnal Melatonin Signal: Consequences of Its Disruption by Light at Night in Rats and Women. *Integr Cancer Ther*. 2009 Dec;8(4):347-53

ⁱⁱⁱ Circadian Clock and Vascular Disease. *Hypertens Res*. 2010 May 7.

^{iv} Melatonin-Insulin Interactions in Patients with Metabolic Syndrome. *J Pineal Res*. 2008 Jan;44(1):52-6.

^v Circadian Misalignment in Mood Disturbances. *Curr Psychiatry Rep*. 2009 Dec;11(6):459-65.