

Jupiter's Belle: Article

Chronobiology: The Rhythm Method for Overall Health

For better health, groove to the beat of your own body

By Cynthia BeMent, December 18, 2000

locks. We're always answering to them -- they tell us when to wake, when to eat, when to go to work, and when to fall exhausted into bed at night. These oft-cursed timekeepers set the rhythms to which our bodies and minds dance daily. Or do they?

A new field of science called chronobiology suggests that it's really a clock within our body that produces the rhythms that rule our lives and our health. Chronobiologists and doctors who practice chronomedicine are discovering that the key to better managing illnesses ranging from the common cold to cancer lies within this timepiece inside the brain.

Big concept, little awareness

Chronobiology is the science of "body time" -- the way our internal clock, a tiny bundle of cells in the hypothalamus, controls the hundreds of regular bodily functions that sustain life. Called the suprachiasmatic nucleus (SCN), the internal clock works with information from light receptors in your eyes' retina to render body time each day.

The SCN conducts the orchestra of biological life, controlling daily fluctuations in functions such as heart rate, blood pressure, body temperature, and hormone secretion. Its rhythms do things like regulate your sleep/wake patterns, make you a morning person or a night owl, control concentration, and give you your best physical coordination in late afternoon. These rhythms also produce longer body cycles, such as the female menstrual cycle and reproduction.

If chronobiology is news to you, chances are it's news to your doctor too. A 1996 Gallup survey conducted for the American Medical Association found that over half of the 320 physicians asked were unfamiliar with chronobiology, and that only one in three had been taught chronobiology in medical school.

Why aren't most doctors tuned in to body time? "The prevailing concept [taught in medical schools] is one of homeostasis, meaning that the body is held constant," says Michael Smolensky. "Today with improved technology, we've been able to see that the body is anything but constant."

Why aren't most doctors tuned in to body time? "The prevailing concept [taught in medical schools] is one of homeostasis, meaning that the body is held constant," says Michael Smolensky, Ph.D., co-author of *The Body Clock Guide to Better Health* (Henry Holt, 2000). "At the turn of the twentieth century, when most modern concepts of medicine were established, doctors didn't have the technology to run tests more than once a day," says Smolensky, who directs the Chronobiology Center at Herman Hospital, in Houston, Texas. "Today with improved technology, we've been able to see that the body is anything but constant."

The timing of disease

Body rhythms have been shown to affect not only daily, weekly, monthly, and yearly functions, but also the prevalence of disease symptoms, medical test results, and even the way the body responds to drug therapies. "The occurrence of disease is not a random process," says Smolensky. "There is a biological time structure to it."



Skipper Chong Warson

Symptoms You Can Set Your Clock By

In *The Body Clock Guide To Better Health*, co-authors Michael Smolensky and Lynne Lamberg list more than 30 conditions and diseases affected by body rhythms. The worst times of day for certain symptoms are as follows:

Midnight-6:00 a.m.

Asthma
Migraines
Gallbladder attacks
Heartburn

6:00 a.m.-noon

Hay fever
Rheumatoid arthritis
Depression
Heart attacks

Noon-6:00 p.m.

Osteoarthritis
Fibromyalgia
Blood pressure

6:00 p.m.-midnight

Backache
Menopausal hot flashes
Skin irritability

Chronobiologists have found that for conditions ranging from depression to heart disease, the severity of symptoms varies throughout the day (see sidebar). Heart attacks, for example, are "40-50 percent more common during the first 6 hours of daily activity than during sleep," says Smolensky, adding that "even chronic conditions such as arthritis, asthma, hay fever, and headaches show marked variations in their symptom severity [throughout the day]."

By keeping track of these variations, Smolensky says, we can schedule doctors' appointments and daily activities, like exercise, at optimum times.

On the flip side, a lack of awareness about these rhythms can aggravate symptoms and hinder early diagnosis. Franz Halberg, M.D., who is known as the father of chronobiology and who in 1959 coined the term *circadian rhythms*, says blood pressure readings, which vary throughout the day, provide an example. "[At a yearly doctor visit] a single blood pressure reading can be perfectly normal. You can be completely asymptomatic at the time, but still be at high risk for stroke," says Dr. Halberg.

Setting body rhythms to therapeutic music

One of chronobiology's most significant impacts on medicine is chronotherapy, the synchronization of drug delivery with body rhythms. This involves both restructuring the times of day existing medications are taken and developing a new breed of "body time-savvy" drugs called chronotherapeutics. "Certain ones have special drug-delivery technology -- their release is synchronized to the peaks in the disease symptom cycles to help manage symptoms more effectively," says Smolensky.

One such drug already on the market is verapamil hydrochloride (Covera-HS), introduced in 1996 for the treatment of high blood pressure. Taken at bedtime, verapamil hydrochloride releases nothing for about four hours, then kicks in and begins to release medicine just before the waking hour, when blood pressure rises most sharply in its effort to rouse the body from sleep. The amount of medicine released tapers down as the day goes on.

"Patients should talk with their doctors and pharmacists to make sure they know the recommended times to take medications during the 24-hour sleep/wake cycle," notes

Smolensky.

Chronotherapy has also proven effective in treating women with ovarian cancer. Researchers in the United States, Canada, and Europe are aiming to recruit 884 women with breast cancer by 2002 in order to study how the timing of breast cancer surgery during a woman's menstrual cycle affects her chances for survival.

Keeping better body time

Chronobiology isn't just a disease thing, though. "Any person can be in touch with his or her own body rhythms," says Lamberg.

Women can begin by tracking their menstrual cycles, and both Smolensky and Halberg recommend frequent self-assessment for early detection of potential problems. "We should get these baseline measurements before disease sets in," says Smolensky. You should share your findings with your doctor to create an open dialogue about body rhythms and disease.

"We should be tracking our moods, our alertness, and even our children's sleep cycles," says Smolensky. "Body rhythms are part and parcel of our existence." By staying in tune with the most important clock of all, we can lead a healthier, more harmonious life.