IMPROVING ALERTNESS LEVELS

CIRCADIAN RHYTHMS

The first switch to human alertness is the time of day on our circadian clock. We all have within us a biological clock which works on an approximately twenty-four hour cycle. It is called the circadian rhythm, meaning daily rhythm. Our body clock which is situated in the brain controls our sleep cycle, affects our hormonal levels, digestion, body temperature, and ability to think. During the day, our body temperature rises, wakefulness occurs, levels of cortisol (a hormone which helps maintain wakefulness) increase while production of growth hormone (for restoring tissue) goes down.

The greatest influence on the body is the fluctuation in actual body temperature in the course of a day. Core body temperature can fluctuate about a degree and a half Celsius. When the temperature goes down this creates a powerful physiological desire to sleep.

Body temperature begins to rise just before wake-up time. Throughout the day temperature rises till about 2:00 p.m. and we function at peak efficiency. We are most alert, digestion is working, and physical strength is at a high. Between 2:00 and 4:00 p.m. core body temperature takes a sharp drop. This “post-lunch dip” is accompanied by a drop in alertness, and increased fatigue. Following this drop, the body temperature rises again, reaching peak efficiency in the late afternoon and early evening. Later as the core temperature begins to drop, the body begins to slow down around 9:00 p.m. There is a critical time between 2:00 and 5:00 a.m. when our circadian rhythms program us to sleep.

A number of fatigue related collisions increases significantly at 2:00 p.m. and 2:00 a.m. The arousal level closely follows the body temperature curve. Biological rhythms make us less attentive in the middle of the afternoon and after 9:00 p.m. These times of decreased alertness can limit your on-the-job performance and increase the risk of an accident.

One high risk factor for employees in the petroleum industry is the evening drive home after working a long series of days. Driving when you’re tired requires extra effort. Even though you’re anxious to get home it is important in this state to drive no faster than the speed limit. You will have time to react when you drive at slower speeds.

Some other suggestions:

- Stay alert. Turn on the radio, keep the window open, chew gum or hard black licorice, sing or even talk to yourself.
- Pull over for a light snack and coffee at a cafe until your alertness improves. A brisk 5 minute walk can sometimes help.
- Stop in a safe place and take a brief power nap for twenty minutes. Set the timer on your watch or carry a small timer with you.

Phone: (780) 434-4772
Email: nadon@shaw.ca www.donmelnychuk.com 2014

SLEEP-PART A

The second switch to alertness is the number of hours of quality sleep we accumulate. This affects our sleep bank balance. Recuperative sleep makes deposits in our "sleep bank," and interrupted sleep makes withdrawals.

This section will examine the nature of sleep and present some ways of achieving high quality sleep. Our discussion of sleep will touch on other human alertness switches: environmental light, sound, temperature and muscular activity.

There are two kinds of sleep: REM sleep (dreaming sleep) and non-REM (orthodox sleep).

- ★ REM stands for "rapid eye movement" because our eyes move rapidly during that stage.
- ★ Non-REM sleep come in two variations: the light type of sleep called Stages 1 and 2 and the much deeper version called delta sleep (or Stages 3 and 4).

Going to sleep is like going down an escalator. You start going down into Stage 1 sleep, then Stage 2, then into deep sleep in Stages 3 and 4.
You then come out of deep sleep and finish with a period of REM (dreaming sleep). The REM sleep concludes one full cycle of sleep.
A full cycle of sleep takes about 90 minutes and there are about 5 or 6 sleep cycles per night.

Non-REM sleep helps the functioning of the body's immune systems. Also non-REM sleep helps the body restore energy for future performance. REM or dream sleep plays a major role in facilitating memory storage and retention.

To feel well-rested and re-energized most people need seven to eight hours of good quality sleep. Interrupted sleep does not provide the same result.

Try to follow these good sleep habits so that you can get the best possible sleep.

- Get an adequate amount of sleep every night. Identify the amount of sleep you need to be fully alert all day long, and get that amount every night.
- Develop a regular bedtime routine. Develop routines to practice before you go to sleep. Have a shower or hot bath and bring light reading material such as a favourite magazine.
- Stick to the same schedule. Try to wake up and go to bed at the same time each day.
- Get continuous sleep. For sleep to be rejuvenating, you should get your required amount of sleep in one continuous block.
- Make up for lost sleep as soon as possible. To catch up, go to bed earlier.
- Reduce caffeine intake for four hours before going to bed. Caffeine will prevent you from easily falling asleep.
- Avoid alcohol near bedtime. Both NREM (deep, restorative) and REM (active dreaming) sleep will be suppressed, and you will experience early-morning awakening if you drink alcohol within two hours of bedtime.

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Email: nadon@shaw.ca www.donmelnychuk.com 2014

SLEEP-PART B

Many employees in the petroleum industry work far from home. Next time you rent a motel or hotel room, use this checklist to help you make a good choice:

1. Check the motel/hotel:
    - Phone ahead. Reserve ahead if you can, and pick a motel chain that you know.
    - Noise. How close are heavy traffic, railroads or industry?

2. Check out the room. When you arrive at the desk, always ask to see the room before checking in. The small delay is well worth it. Here is what to look for in your potential room:
    - Ventilation: Is the air fresh?
    - Temperature: Does the air conditioner work? How is the room heated, and where is the thermostat?
    - The bed: Is it comfortable? Are there extra blankets in the closet?
    - Noise: Is the room truly as quiet as the desk claimed? Is there a parking lot outside that will be noisy later on when the bar is in full swing? Can you hear any TV sounds through thin walls when you walk through the corridors? Can they give you a room far from elevator, bars, ice machines or restaurant?
    - Security: Are you secure from fire and smoke? Does the door have a secure bolt and chain?

After going through the checklist make sure you bring earplugs or a white noise generator like a running fan or an ecologizer. Basically the constant hum baffles other sounds making them much less disturbing to the sleeper.

A somewhat cool 19 to 20 degrees Celsius room also contributes to a better sleep.

Bring some small item from home to make the room seem familiar. A photograph of your family, or your own pillow can help you sleep better on the road.

After finishing a long hard day on the rig site it is really important to wind down. Build in time during the evening to relax and recover. Learn to enjoy time with yourself by becoming involved in a hobby. Try reading, listen to music, do crossword puzzles, learn to play an instrument or coin collecting. Attend a local public sporting event (hockey or baseball game), a bingo, a church or community function.

Try to minimize stresses in your life and lay aside your worries before you do go to sleep. If you are tense at the end of the day make a short walk or swim a part of your wind-down time. Any type of light exercise two hours before bed can help you relax and improve sleep quality.

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