Sleep Strategy for Contesters

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(With some additional comments provided by Rick, NØYY)

A Sleep Strategy for DX Contests

We've all been there: *Why am I here? Listen to all these signals. Who are they? Wonder what they are doing? All this CW sure sounds nice. What should I do with this keyer paddle? Should I push this button? I can turn this big knob but what does it mean? Why am I here? There must be some reason, if only I could remember.*

It is the 1981 CQ WW CW Contest and my first real attempt at single op DX contesting from the station of N5AU. Sunrise on Sunday morning is only minutes away. I remember waking up, sitting in front of the radio, and experiencing a disorienting state of confusion and wonder. Later, I learn from N5AU's mother that I sat there for over 15 minutes without moving. Finally, slowly, I was able to understand what I was doing and why. The "sleep drunkenness" abated and I returned to the rhythm of the contest.

There have been lots of articles that describe contest strategy and station design, but there is little about the mental and physiological aspects of the sport. Yet we have all known of, or experienced, contest efforts that were cut short by an operator who could not wake up on Sunday morning. This article will present a strategy I use to get through DX contests with the minimum amount of sleep (and maximum score).

I have no medical experience or training. The ideas presented here are based on techniques learned in conversations with many successful contesters including N6TJ, N6AA, K5MM and others. I was also greatly influenced by an article which appeared in the November, 1988 issue of NCJ by Scott Johnson, KC1JI. Johnson was a Physician and sleep researcher at Harvard Medical School. As NCJ editor at the time, I was fortunate to have had the opportunity to talk with him and gain some additional understanding of sleep and its effects.

There is no magical or perfect technique for controlling the effects of sleep deprivation during a contest. Probably the most important aid is simply the knowledge of what sleep deprivation feels like. The more you understand the effects and how they influence your own mental and physical attitude, the better equipped you are to compensate for them.

Sleep Basics

There are a few basic aspects of sleep that are useful to know. Researchers have found that sleep is structured into approximately 90-minute cycles. A typical night's sleep typically has 4 to 6 cycles. Each cycle begins with light sleep, progresses into deep (or delta) sleep, and ends with dream or rapid eye movement (REM) sleep. The first sleep cycle has a predominance of delta sleep with a short period of REM sleep tacked on to the end. With each cycle, delta sleep diminishes and REM sleep occupies more of the 90-minute cycle. By the fifth cycle, sleep is almost totally REM.

Since REM sleep is associated with being closest to wakefulness, it seems logical that it will be easiest to wake up during this time. Since the first sleep cycle ends with a short period of REM, you want to try to time your contest naps to match the 90-minute cycle.

The body temperature falls during sleep and typically reaches its lowest point approximately 1.5 hours before the usual waking time in the morning. This minimum in body temperature coincides with the time of minimal alertness, if you happen to be awake. Lower body temperature is the reason that waking up just before sunrise during a contest often includes a period of chills and uncontrollable shivering. As you become more awake, your body warms up, and the feeling of cold goes away.

Recently, I read a military training manual that presented some information on sleep and its effects. It presented several interesting "facts."

You cannot train for lack of sleep. In other words, there is no value in "practicing" sleep deprivation as a way to train the body to live without sleep. Under sleep deprivation, highly practiced skills will deteriorate more slowly than those which require new or creative thought. This explains why we can continue to do CW, copy call signs and send exchanges at the end of a contest, but may be unable to answer a simple question from our spouse.

Before the Contest

Contesting is hard work that places both physical and mental stress on the body. You can practice the mental skills of contesting by operating in lots of contests. As for the physical aspect, I divide my preparation into two parts: fitness and sleep.

Does your family or co-workers laugh when you tell them contesting is a physically demanding activity? It takes a lot of energy to sit up straight, talk or send CW, concentrate on listening, type on the keyboard, and reach all of the switches and knobs found in your station. Dick Norton, N6AA, uses a very good example which may make it easier to understand. A 48-hour contest is the equivalent of six 8-hour workdays. Imagine sitting at your desk at work for just one work day with little or no breaks and then multiply by six!

At one point in my career, I had a sales job that involved driving about 4000 miles each month. I noticed that the longer I did this job, the easier it was to sit up straight through a contest. My body developed the muscles required for sitting up during the hours and hours of driving.

Several years ago I got a bicycle and began by just riding to the end of the street and back. Each day I would go a little farther until finally I was up to 5, then 10, then 15 miles each day. It was fun. When Fall came and there was not enough light to go for long rides after work, I tried running. The aerobic workout of the bike made running easy. Once again, I started just going down the street and back, then increasing the distance each week.

When the contests came, I noticed an incredible benefit of the exercise. It was as though the physical demands of the contest had disappeared! I was able to stay awake more easily and my muscles were not as tired during the contest. Without the physical drag, I was able to focus all of my energy to battling the mental fatigue. One result was a 48-hour effort (no sleep) from K3TUP for a win and new USA record in the CQ WW CW. In retrospect, any 3 hours of sleep would have cost me the record and possibly the contest. Another benefit of the exercise was 25 pounds of lost weight!

When my travel schedule made it impossible to maintain this exercise regimen, the weight came back and I noticed how much more difficult it was to get through the contests. You spend hours developing your station and operating skills. Can you ignore physical fitness as a component of a winning contest effort? For best results, you should begin your physical preparations a minimum of 12 weeks prior to the contest.

The sleep preparation for a contest begins five to seven days before the contest. The goal is to be as well rested as possible going into the event. I try to get as much sleep as I can each night during the week. While sleep cannot be "stored," the benefits of starting well rested are obvious.

The night before the contest I go to sleep as early as possible. I have learned that excitement, anticipation and nervousness will have me awake at dawn. Some people even take a sleeping pill Thursday evening to insure a solid night's sleep. Not knowing if there are residual effects of these pills, I have avoided this.

One questionable technique many people try is to stay up late on Thursday evening in the hope of sleeping late on Friday morning. This sounds like a good plan but there are several things at work against it. The body's natural rhythms, referred to as circadian rhythms, modulate the physiologic functions such as sleep, hunger, etc. If you normally wake up at 7 AM, there is a good chance that you will wake up at 7 AM the morning of the contest. If you stayed up late, you are just reducing the amount of sleep you are likely to get. Nerves and anticipation will increase the chance of waking early and not being able to fall back asleep.

I usually go to work on Friday morning. This keeps the mind busy (and off the contest). I try to get to the station in the early afternoon. I turn everything on, make sure it's all working, and then head off to bed for a nap. A 1.5 or 3 hour nap prior to the contest is crucial in making it through the first 24 hours without sleep. You may find it difficult to sleep with the contest only hours away, but it has to be attempted. I often practice relaxation techniques to help fall asleep. If I wake up early, I repeat the process. I want to wake up about an hour before the contest starts.

The last bit of preparation before the contest is a meal. I try to keep it light and not drink too much liquid. The goal is to have enough fuel to make it through European sunrise (0900z) without having to get out of the chair.

The First 24 Hours

For me, the first 2 or 3 hours of the contest are some of the most difficult. The nerves are on edge, adrenaline is flowing, and the body must adjust to the demands of operating. It is even harder when no one answers your CQ and all that energy must be channeled into a search & pounce effort!

I have two simple goals for the first 24 hours of the contest: operate as much as possible and maximize the score. For most contests, I am out of the chair no more than three times for a total of less than 15 minutes in the first 24 hours. I do not even consider sleeping. By pushing so hard the first night and covering all the bands, I usually have a good multiplier and understanding of the available propagation. This will be important when planning the sleep strategy during the second night.

If you do need to sleep the first night, the best time (from the Eastern USA) seems to be the hours between European sunrise and local sunrise. The 09 - 11Z hours are often very low rate multiplier chasing. You can sleep for 90 minutes at a cost of approximately 30 contacts and 10 multipliers.

If you can arrange your shack so that you can see the sun rise through a window, this can be a great lift. There is something about seeing the sun come up that energizes the body and improves alertness (remember those circadian rhythms). It also keeps you in tune with when you should make the last low band sweep for multipliers before moving to the higher bands.

I also use the full 24 hour first day effort as a form of motivation. We began noticing at the K5RC multi-single efforts that we could predict our final score based on the 24 hour score. My formula is to double my 24 hour score and add 10 percent. For example, if I have 1.8 Million points after 24 hours, I estimate my final score to be 3.6 plus 10%, which is just under 4.0 Million. My focus for the remainder of the contest is to make that formula come true!

Much of contesting is a series of mental games. Each one designed to give a short term target that maintains focus on increasing the score. Trying to maximize my 24 hour score provides a big boost for me during late Saturday afternoon when the first signs of tiredness begin.

The Second 24 Hours

I am convinced almost anyone can get through 24 hours of contesting just on their love of the game. But the second day requires a solid commitment, desire, and preparation. The fact that contesting is a solitary pursuit both helps and hinders the participants. It helps because the scores of other participants are not known, which makes it easy to justify continuing. The enemy is fatigue which will cause doubts and questions on whether it is even worth continuing! Or, as Vince Lombardi once said, "Fatigue makes cowards of us all."

The top competitors have committed themselves to the contest. They know they must go on no matter what. It's not easy, but this little fact will help them ride through all but the worst problems. Everyone feels the same pain and effects of sleep deprivation. It's really a question of how bad you want to win.

I notice that my commitment to a contest often starts many weeks before the contest. As the contest approaches, I become more focused and more committed to doing a full effort. The buildup and motivation gained over the weeks makes it almost impossible to give up or stop.

Maybe it is just a mental let down, but it always seems as if the propagation and activity take a dive immediately after 0000z. Rates are slow because many Europeans have gone to bed and the South Americans have all been worked before. By 01 or 02z, it is becoming a battle to stay awake.

Stu Santleman, KC1F, recommends that this is an excellent time to catch some sleep. "Sleep when the Europeans sleep," he suggests. I disagree with this since it is also the last opportunity to catch many Europeans on 160 and 80 meters. However, I do feel it is a good chance to take some time to recharge your batteries. I usually take 30 to 45 minutes during the 01 or 02z hours to take a shower and eat dinner. The shower wakes me up enough to get through the crucial hours of European sunrise. I eat sitting at the radio tuning for multipliers.

After European sunrise, about 0900z, the contest really slows down. Attention is split between random CQing and tuning for new multipliers. Here is where commitment will be really tested!

I base my sleep strategy on the activity and propagation that was available during the first night. I know what multipliers I am missing on the low bands and can decide if sleep is more important than taking the chance of finding them.

Once the decision to sleep is made, it is important to get right to bed. Don't waste time trying to think about the contest. When you lay down, clear the mind and fall asleep as quickly as possible. Set the alarm for either 90 or 180 minutes later to take advantage of the natural sleep cycle. If you try to wake up from deep sleep, a form of disorientation I call sleep drunkenness may result. Worse than the hallucinations and disorientation is the real possibility that you will go back to sleep without ever waking completely up. This has happened to me twice. One time I even had a conversation with a local multi-op on two meters (so they said, I can't remember it at all) and woke up four hours later in another room of the house. This fear of not waking up is usually the real reason I try to stay awake and keep going!

When you wake up, you will probably feel very cold. Be prepared for this by having something warm to drink available and a sweatshirt or sweater you can pull on. Take a few minutes to get fully awake and eat something. Once you sit down at the rig, you must plan to be there until the end of the contest (with only short breaks). As soon as the sun comes up or you pass your normal wake up time, it is easy to stay awake. The battle is in the minutes or hours before dawn.

The last 12 to 13 hours of the contest coincides with my normal rhythm for being awake. The only difficulty is fighting the effects of sleep deprivation. These are not usually obvious at the time. However, there is an easy way to see just what the loss in mental sharpness is. During the next DX contest, tape record a run during the first morning. Then tape record a similar time the second morning. After the contest, play the two tapes back to back. You won't believe how much your call sign recognition and ability to get calls on the first try is degraded! Unfortunately, there is not much you can do except recognize the problem and work through it.

More Tips

There are a number of other techniques that you may wish to use as part of your sleep strategy. One suggested by W2SC is to try taking very short 10 minute naps when you feel sleepy. This appears to offer some rest yet does not allow you to fall so far asleep that you cannot wake up easily.

Notice that I did not mention the use of caffeine in my strategy. I am not a coffee drinker so I can't speculate on its effects. As I get older I am finding it much more difficult to fight through the need for sleep. As a result, I have occasionally taken a caffeine pill (such as No-Doze) to help stay awake. I take 100 mg of caffeine at the lowest point of each night. Caffeine can upset your stomach so it is a good idea to eat something at the same time.

I have had some success with combining caffeine with the short nap technique. I take the caffeine and then sleep for 10 minutes. The effect of the caffeine and the nap seem to complement each other as a way of getting some rest and yet waking up with a clear head.

I think it goes without saying that drugs and alcohol should not be used during the contest. Alcohol is a depressant and will cause you to fall asleep (not to mention interfering with the mental energy you need to win).

One area of contest physiology that I have not studied is the effects of diet. I find that I eat and drink very little during the course of the contest. Working stations is like potato chips for me -- I can't stop! Several times during the contest I will suddenly realize I am starving, and yet I keep wanting to work just one more station before taking a break. And one more. And another!

Not drinking very much has the benefit of reducing the number of trips to the bathroom. However, this must be balanced against the danger of dehydration. I have lost as much as 5 pounds during the course of one contest! If you have discovered a successful contest diet, share it with me!

After the Contest

One thing I have always been amazed by is the adrenaline generated by the excitement of the end of the contest. The pressure of the last two hours is trying to push the score on the computer screen over the next milestone. Should I call CQ or tune? Or a combination of both. When it's over, I am tired and almost incoherent. Afterwards, I can't fall asleep for several hours. If only we could bottle that feeling!

Expect any contest effort of more than 44 hours to require several days of recovery. I usually sleep for 12 to 15 hours after the contest. And I still feel sleepy until about Wednesday!

I hope the ideas presented here are of help to you in your next serious DX contest effort. As long as DX contests are 48 hours, the serious single operator entrants must deal with the effects of sleep **deprivation**. Good preparation, serious commitment, and a well-tuned sleep strategy may be just the edge you need to beat your competition.

Summary

Within this paper, Sleep Basics presents the critical characteristics for a sleep strategy.

1. Each 90-minute cycle has three stages
    a. Light sleep
    b. Deep or Delta sleep
    c. Ends with dream or Rapid Eye Movement (REM) sleep
2. The first cycle is predominantly Delta sleep with a short period of REM sleep
3. With each cycle Delta sleep diminishes and REM sleep occupies more of he 90-minute cycle
4. By the fifth cycle sleep is almost total REM sleep.
5. REM sleep is closest to wakefulness – this is the easiest phase from which to wake
6. Waking after 4 to 6 cycles finds the body temperature at its minimum.
7. You cannot train for lack of sleep.
8. Lack of sleep manifests itself as “sleep deprivation”.
9. The critical characteristics of sleep deprivation include:
    a. Reduced decision-making capabilities

b. Reduced productivity

10. Highly practiced skills will deteriorate more slowly than those which require new or creative thought – this is why we can continue to do CW, copy call signs and send exchanges at the end of a contest, but may be unable to answer a simple question from our spouse. Contesters call this – being in the Zone.

Some Additional Observations and Insights by Rick NØYY

I put the understanding of the sleep cycle into practice when developing operator schedules at PJ2T. We settled on 4-hour schedules as operating shifts. This way we kept operators rested and "fresh" for the next operating session. The basis of our 4-hour strategy was a three-hour sleep period (consisting of two 90-minute sleep cycles) and a cool down (relaxing enough to fall asleep) and warm up period, each 30 minutes long – for a total of 4-hours. The warm up period was a quick shower, something to eat and drink and to look over the shoulder of the operator you will be relieving to get a feel for the current rhythm.

There were other physical issues that we recognized and sought some real understanding in order to resolve them:

1) Bright Light – as evening approaches and light levels drop the body produces Melatonin. This is part of the natural "sleeping pill". One way to avoid the body producing Melatonin is to keep artificial light bright in the operating area. This is not a bright desk light – but room light.
2) Flickering Lights – lights that follow CW characters or voice peaks create a level of fatigue. Consider that your amp and desk light are plugged into the same circuit in the breaker panel. Even a well-designed AC circuit will match current pulses. This may not be noticeable during day one – but it is a huge impact the second night when rates decline. The flickering creates a "hypnosis" effect that dulls your responses that are already taxed.
3) You can't "bank" sleep. Trying to get 10 hours of sleep, each night the week before a contest is likely less restful because of the REM sleep cycle. When you try to access that "bank" you are likely to find that you get tired easier.

The concept of sleep deprivation was introduced in Randy's discussion. Here are a few specific characteristics offered by research:

Sleep deprivation impacts your:

- Decision making: If you work 18 hours, you perform cognitive tasks as well as someone who's legally drunk.
- Productivity: there is a measurable decline in performance without proper sleep
- Health: Lack of sleep makes you three times more likely than an eight-hour sleeper to catch a cold.
- Mood: In a survey, 44 percent of respondents said they were likely to be unpleasant without enough sleep.

[Note: The sleep deprivation impacts were presented in a paper by the **Nonprofit Risk Management Center** in a paper prepared by Erin Gloeckner titled: *"Risks of Sleep Deprivation: Get Your Beauty Sleep for Safety "*]