

ACCQ SLEEP LABS

# THE HYPNOS NEWS



## Sleep, Recovery and Performance in Athletes

**Athletes who obtain all the sleep they need may have a "secret" advantage over their competition!**

New research and studies being done on athletes and elite athletes around the country show a minimum of 2hrs. difference in your required sleep can impact your performance in such a way to cause you to perform as though you had a 0.05 blood alcohol level.

Sleep is an anabolic and recuperative process. Growth and repair of our tissues occur during deep sleep. There are 5 distinct stages of sleep. Stages 3-4 produce brain waves which have slow frequency these are "slow wave".

Slow wave sleep is critically important for athletes because its the portion of the night when growth hormone is released from the pituitary gland at the base of the brain. Growth hormone stimulates muscle growth and repair, bone building and fat burning. Growth hormone is a key hormone which helps athletes recover from tough workouts.

Sleep deprivation causes our bodies to release a stress hormone called cortisone which in turn can interfere with tissue repair and growth. Sleep deprivation can also slow glucose metabolism by as much as 30%.

Glucose and glycogens are the main source of energy for athletes. Being able to store glucose in muscle and liver is particularly important for endurance athletes.

It is alternation of adaptation and recovery (sleep) that takes the athlete to a higher level of fitness.

High level athletes need to realize that the greater the training intensity and effort the greater need for planned recovery.

*Rest, recovery and a good nights sleep is as important as your training!*

## Who needs a sleep test?

The value of the history in the diagnosis of obstructive sleep apnea.

Basing a diagnosis of obstructive sleep apnea (OSA) and its milder form, upper airway resistance syndrome (UARS), solely on a history of loud snoring is similar to diagnosing myocardial ischemia solely on a history of chest pain. Although there are some patients who can be diagnosed with OSA or UARS on the basis of history alone, most patients present more of a diagnostic dilemma.

The patient's history might be able to suggest the presence or absence of sleep disordered breathing, but are its sensitivity and specificity adequate? Because definitive testing—such as overnight polysomnography (PSG) performed in a sleep laboratory, there is a need for an accurate algorithm that would help the physician diagnose or rule out OSA/UARS based on the history alone.

In one sense, the solution to the diagnostic dilemma is easy: Simply perform a screening PSG on every patient who has a history of loud snoring and sleepiness. Many authors agree that this is the ideal

approach, but it requires no judgment and begs the question. [1] Obviously, the physical examination, particularly the examination of the upper airway, adds much to making the diagnosis.

### Key components of OSA

**Loud snoring.** Snoring of any intensity raises the possibility of OSA. Intuitively, the louder the snoring, the more likely that there is significant upper airway obstruction during sleep, although this is not always the case. I define excessively loud snoring as snoring that disturbs the bed partner's sleep.

**Witnessed apneas.** Apneas witnessed by the bed partner, particularly those of prolonged duration ([greater than]10 sec), are one of the most important parts of the history. The number of these events per night is also important, because the greater the number of events, the more likely that significant OSA exists. The history from the bed partner, if available, is

important and should be sought.

**Daytime somnolence.** The end result of OSA is usually excessive daytime somnolence. A detailed history can be obtained fairly quickly, particularly when a standard form such as the Epworth sleepiness scale is used. [2] This scale provides some quantization of the likelihood of OSA or UARS. The problem is that many of us who do not have OSA are tired during the day as well, particularly in the late afternoon. More significant is a history of falling asleep while driving or working with machinery, especially an episode that resulted in an accident or near accident.

*(continued on page 2)*

## Longitudinal Evaluation of Sleep-Disordered Breathing and Sleep Symptoms with Change in Quality of Life: The Sleep Heart Health Study (SHHS)

*From Sleep Journal—Vol. 32 Issue 8*



**SLEEP DISORDERED BREATHING (SDB) IS A COMMON DISORDER THAT AFFECTS 2% TO 4% OF THE ADULT POPULATION. (1) SDB HAS BEEN ASSOCIATED WITH** a wide range of morbidities, including obesity, hypertension, cardiovascular disease, and diabetes. (2,3) Many patients with SDB experience excessive daytime sleepiness (EDS), (4) considered to be the chief symptom responsive to SDB treatment. EDS, occurring secondary to SDB or to other factors, affects approximately 12% of the population (5) and has been associated with poor

cognitive performance, (6) proneness to accidents, (7) and poorer health-related quality of life. (8) Cross-sectional associations between SDB and reduced quality of life have been shown in several patient and community studies. (9,10) Results from clinic-based investigations (11) have shown higher associations than those from population-based samples. (12) Other studies have focused on evaluating quality of life after treatment for SDB, some of which have shown significant improvement in well being after treatment with continuous positive airway

pressure. (13) Although several studies have shown longitudinal progression of SDB, (14,15) no study has yet evaluated the associations between changes in SDB and quality of life over time.

The present study assessed the associations among changes in SDB, sleep quality, daytime sleepiness, and health-related quality of life in participants from a multiethnic cohort study. We hypothesized that increases in severity of SDB and worsening of sleep symptoms would be associated with a decrease in quality of life.

**For full article go to**  
[www.accqsleeplabs.com](http://www.accqsleeplabs.com)

### Things you may not know about sleep

#### Sleepiness can be cured with blue light

Waking up drowsy and sleepy may be caused by delayed sleep phase syndrome (your internal clock and the time people have set do not match) The solution: fast forward your internal clock! By exposing yourself to blue light right when you wake up you can reset your circadian rhythm so that you are more alert when you need to be.

When you get enough blue light exposure you feel sleepy at the right time. Expose yourself to enough blue light during the day, Blue LEDs will do the trick.

#### Sleepy is just like drunk!

If you lose two hours of sleep, you can impair your performance equal to a .05 blood-alcohol level.

#### Sleep or be sick

Sleep deprivation produces higher levels of corticosterone, a stress hormone and fewer brain cells are produced. Also the nerve cell production (neurogenesis) is severely disturbed and may be what produces the cognitive deficits with people with prolonged sleep deprivation.

It seems that the body processes sugar while in deep sleep, if you don't sleep well sugar levels in your body will rise dramatically.

### OPTIMAL SLEEP=OPTIMAL PERFORMANCE

In our next issue we will be discussing "sleep hygiene" habits that may help in aiding a good nights rest. This may be helpful to athletes and professionals who need to perform at their optimal while training and traveling.

## The value of the history in the diagnosis of obstructive sleep apnea

(Continued from page 1...)

A person who has experienced this type of event has a more severe problem that stresses the need for a workup.

**Obesity.** Although factors concerning weight are usually considered as part of the physical examination, a history of weight gain and excessive weight suggests the presence of OSA. A large collar size is also suggestive.

**Male gender.** OSA is more common in men than in women.

**History of hypertension.** Because hypertension is one of the sequelae of OSA, its presence can be helpful in making the diagnosis.

**History of coronary artery disease.** Awareness of a history of coronary artery disease is important in making sure that the diagnosis of OSA is not missed. The combination of OSA and hypoxia is more likely to lead to a serious cardiac event in a patient who has coronary artery disease than in a patient whose heart is normal.

**History of nasal obstruction or mouth breathing.** Loud snoring usually requires that the mouth be open during sleep. This also might contribute to airway obstruction by the tongue base in the prone position.

**Other factors.** There are four less

important clues that might be helpful when gleaned from the history: 1) a slow awakening from a general anesthetic, which suggests central apnea; 2) a parent's report of the presence of nightmares and enuresis in children or a history of narcolepsy or restless legs syndrome, any of which might lead to the diagnosis of other sleep disorders; 3) morning headache, a nonspecific symptom that is regularly found in patients with OSA; and

4) a history of alcohol ingestion in the evening or the use of short-acting hypnotics or sedatives at bedtime, which can be contributing causes of OSA.

#### Treatment without testing

Several effective office surgical procedures are available to treat snoring, including laser-

assisted uvulopalatoplasty (LAUP), uvulectomy, and radiofrequency palate-tightening procedures. The elimination of snoring resolves a major symptom of obstructive sleep apnea, but at the same time it can give the patient and physician a false sense of security. The absence of snoring does not necessarily mean the absence of sleep apnea; in fact, apnea only becomes more difficult to detect. The elimination of daytime sleepiness and nighttime snoring suggests that a "cure" was achieved, but this might not be the case unless the cure is validated by testing.

Is the relief of symptoms enough reason not to test? What about other practitioners—dentists, family physicians, etc.—who prescribe antismoking devices without conducting a sleep study? These types of circumstances support the argument that every patient should undergo a sleep study before any attempt is made to correct snoring.

With a careful history and physical examination, there is no need to study every patient who snores. However, those patients who are not studied should be informed that they do have a risk of OSA or UARS. Furthermore,

the surgeon should be aware that postoperative swelling after a snoring correction procedure such as a LAUP can temporarily worsen a preexisting sleep apnea condition.

[3]Patients whom might not need a sleep study are those who have not witnessed any apneas, who do not have excessive daytime sleepiness or heart disease, who are not obese, and whose physical evaluation is not consistent with OSA—that is, there is no large tongue, long uvula, recessive jaw, or short, fat neck, etc.

Many experts believe that a polysomnogram to screen for obstructive sleep apnea should be performed on every patient who has a history of loud snoring and sleepiness.

*From the Division of Otolaryngology-Head and Neck Surgery, Stanford (Calif.) University Medical Center, and the Palo Alto (Calif.) VA Healthcare System.*

#### References

- (1) Tami TA, Duncan HJ, Pflieger M. Identification of obstructive sleep apnea in patients who snore. *Laryngoscope* 1998;108:508-13.
- (2) Johns MW. Daytime sleepiness, snoring, and obstructive sleep apnea: The Epworth Sleepiness Scale. *Chest* 1993;103:30-6.
- (3) Terris DJ, Clerk AA, Norbash AM, Troell RI. Characterization of postoperative edema following laser-assisted uvulopalatoplasty using MRI and polysomnography: Implications for the outpatient treatment of obstructive sleep apnea syndrome. *Laryngoscope* 1996;106:124-8.



## Intelligent therapy

Philips Respironics Sleep Therapy System takes a smarter approach to the entire sleep management process.

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## Sleep Diagnostic info at ACCQ SLEEP LABS

Sleep diagnostic testing is available at the ACCQ SLEEP LABS seven nights a week. Sleep testing is also performed during the day – Monday through Friday. Testing will generally coincide with your patient's normal sleep hours.

Sleep studies are performed to evaluate snoring, breathing, arousals, movements, and certain behaviors during sleep. In addition, studies are performed to assess sleepiness or one's ability to stay awake.

### Types of Sleep Studies:

Polysomnography (EEG, EOG, EMG, ECG, Airflow, Respiratory Effort, O2 Sat, and Co2)

Polysomnography with Positive Airway Pressure

Multiple Sleep Latency Test (MSLT)  
Maintenance of Wakefulness Test (MWT) – a test performed usually on transportation professionals to assess efficacy of therapy.

During any sleep study, the registered sleep technologist stages sleep and then is scored by a scoring technician. When the sleep test is completed, the sleep physician can review "scored" raw data and have a sleep report ready for interpretation. This type of efficiency allows the sleep physician to follow up quickly with the patient and establish a diagnosis and treatment plan. This also means that the referring physician will receive a report in a timely manner.

### Sleep Disorder Titration Diagnostic Equipment

ACCQ SLEEP LABS has a full suite of titration equipment including CPAP, BiPAP, and Adaptive Servo Ventilation.

### Continuous pressure devices - CPAP (Continuous Positive Airway Pressure)

Obstructive sleep apnea occurs when the upper airway becomes narrow as the muscles relax naturally during sleep. This reduces oxygen in the blood and causes arousal from sleep. The CPAP machine stops this phenomenon by delivering a stream of pressurized air via a hose to a nasal pillow, nose mask or full-face mask, splinting the airway (keeping it open under air pressure) so that unobstructed breathing becomes possible, reducing and/or preventing apneas and hypopneas. It is important to understand, however, that it is the air pressure, and not the movement of the air, that prevents the apneas. When the machine is turned on, but prior to the mask being placed on the head, a flow of air comes through the mask. After the mask is placed on the head, it is sealed to the face and the air stops flowing. At this point, it is

only the air pressure that accomplishes the desired result. This has the additional benefit of reducing or eliminating the extremely loud snoring that sometimes accompanies sleep apnea.

The CPAP machine blows air at a prescribed pressure (also called the titrated pressure). The necessary pressure is usually determined by a sleep physician after review of a study supervised by a sleep technician during an overnight study (polysomnography) in a sleep laboratory. The titrated pressure is the pressure of air at which most (if not all) apneas and hypopneas have been eliminated and sleep quality improved. It is usually measured in centimeters of water (cm H<sub>2</sub>O). The pressure required by most patients with sleep apnea ranges between 6 and 14 cm H<sub>2</sub>O. A typical CPAP machine can deliver pressures between 4 and 20 cm H<sub>2</sub>O. More specialized units can deliver pressures up to 25 or 30 cm H<sub>2</sub>O.

CPAP treatment can be highly effective in treatment of obstructive sleep apnea. For some patients, the improvement in the quality of sleep and quality of life due to CPAP treatment will be noticed after a single night's use. Often, the patient's sleep partner also benefits from markedly improved sleep quality, due to the amelioration of the patient's loud snoring.

Given that sleep apnea is a chronic health issue and doesn't go away, ongoing care is needed to maintain CPAP therapy. Based on the study of cognitive behavioral therapy (referenced above), ongoing chronic care management is the best way to help patients continue therapy by educating them on the health risks of sleep apnea and providing motivation and support.

### Bi-level pressure devices – BiPAP

BiPAP (Bi-level Positive Airway Pressure) provides two levels of pressure: Inspiratory Positive Airway Pressure (IPAP) and a lower Expiratory Positive Airway Pressure (EPAP) for easier exhalation. (Some people use the term BPAP to parallel the terms APAP and CPAP.)

#### Modes:

S (Spontaneous) - In spontaneous mode the device triggers IPAP

when flow sensors detect spontaneous inspiratory effort and then cycles back to EPAP.

T (Timed) - In timed mode the IPAP/EPAP cycling is purely machine-triggered, at a set rate, typically expressed in breaths per minute (BPM).

S/T (Spontaneous/Timed) - Like spontaneous mode, the device triggers to IPAP on patient inspiratory effort. But in spontaneous/timed mode a "backup" rate is also set to ensure that patients still receives a minimum number of breaths per minute if they fail to breathe spontaneously.

### What is BiPAP used for?

A BiPAP unit is very similar to a CPAP unit in terms of look and size. As mentioned above, the main difference between a CPAP and a BiPAP machine is that a BiPAP unit delivers two different pressures – one pressure for inspiration and a second lower pressure for expiration. By providing the patient with these two pressures, it reduces the work of breathing (which results in higher than normal carbon dioxide levels) for patients suffering from conditions such as COPD, neuromuscular disorders, restrictive disorders (ie.

Kyphoscoliosis) and obesity hypoventilation, to name a few. It does so by assisting the patient with a high pressure upon inspiration and then dropping the pressure to allow the patient to exhale easier. BiPAP can also be used in situations where a patient is having a difficult time adjusting to high CPAP pressures (> 15 cm H<sub>2</sub>O).

### What is Adaptive Servo Ventilation Used for?

An adaptive servo-ventilator is designed specifically to treat central sleep apnea (CSA) in all its forms, including complex and mixed sleep apnea.

Unlike conventional sleep-disordered breathing (SDB) therapies such as continuous positive airway pressure (CPAP), adaptive servo-ventilation:

- treats complex sleep apnea syndrome and central sleep apnea
- normalizes breathing, completely suppressing CSA and/or Cheyne-Stokes respiration (CSR)
- improves sleep architecture (the amount of time the patient spends in slow-wave and REM sleep increases).

Peer-reviewed literature shows that adaptive servo-ventilation enhances quality of life for patients with CSA.

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ACCQ SLEEP LABS are licensed Independent Health Facilities (IHF) specializing in the diagnosis and treatment of patients suffering from a wide variety of sleep disorders, including Obstructive Sleep Apnea Syndrome (OSAS), Periodic Limb Movement Disorder (PLMD), Narcolepsy, Parasomnias (Sleepwalking, Sleep Terrors, Nightmares, etc.), Chronic Fatigue Syndrome (CFS), and Fibromyalgia.

We offer medical consultative, diagnostic, and treatment services for patients of all ages (adult and pediatric). We perform both overnight sleep studies as well as daytime Multiple Sleep Latency Test (MSLT) and Maintenance of Wakefulness (MWT) studies.

The K-W Sleep Lab, Owen Sound Sleep Lab, and Paris Sleep Lab are Ontario Ministry of Health, ADP (Assistive Devices Program) Registered Facilities.

We are dedicated to providing the highest quality of care to each patient assessed in our facilities. Our goal is to make your experience in the sleep laboratory as pleasant and as comfortable as possible.



1-877-275-5262  
accqsleeplabs.com



180 King St. S. Suite 290  
Waterloo, ON N2J 1P8  
Tel: 519-745-2621  
Fax: 519-745-7174



139 Grand River Street N.  
Paris, ON N3L 2M4  
Tel: 519-442-6389  
Fax: 519-442-7983



945 3rd Avenue  
Owen Sound, ON L3K 2K8  
Tel: 519-371-5217  
Fax: 519-371-5736

## About Sleep Studies and Medical Coverage

### What is a Sleep Laboratory?

A sleep laboratory is set up to investigate and treat sleep disorders and disorders of wakefulness.

ACCQ SLEEP LABS require a referral from a physician for a sleep study; otherwise OHIP will not cover the costs without one. You may obtain a copy of this form by downloading it from [www.accqsleeplabs.com](http://www.accqsleeplabs.com) at "Physicians Corner". Laboratory tests may be preceded by a clinical evaluation including a medical history, physical examination, and a review of your medications and careful analysis of the sleep related questionnaires.

### Types of Sleep Studies

1. Overnight Sleep Study (Polysomnography)
2. Daytime Sleep Studies:
  - A) Multiple Sleep Latency (MSLT) or
  - B) Maintenance of Wakefulness Test (MWT)
3. CPAP titration study

The labs include independent bedrooms with comfortable beds and a monitoring room. All bedrooms have a home-like atmosphere.

There are two types of day studies:

### Overnight Sleep Study

The overnight Polysomnogram (PSG) is used to help pinpoint the cause of excessive daytime sleepiness and to diagnose some sleep disorders such as sleep apnea and restless legs syndrome. In most cases, you will be asked to come to the lab at 8:30pm. It will take the technologist about an hour to prepare a patient for the procedure. This is a simple process of attaching electrodes using removable cream/gel

and tape. The electrodes do not pierce the skin. In the morning, the patient will be able to leave from a night study in time for your usual daily activities.

### Daytime Sleep Study

The daytime study is usually given immediately after an overnight study while the patient is still connected to the electrodes. The day study is usually finished around 3:00pm. However, if a patient has to stay for a fifth nap, it will be closer to 5:00pm.

#### *1. Multiple Sleep Latency Test (MSLT)*

A patient will have at least four, 20-minute nap opportunities during the day to determine the severity of sleepiness and the onset of the dream state during sleep. The latter is used to diagnose a sleep disorder called narcolepsy, along with the overnight study.

#### *2. Maintenance of Wakefulness Test (MWT)*

You will be seated in a darkened room and will be requested to stay awake for 40-minute time periods. This will occur every two hours, four times during the day. This test measures patients' ability to remain awake.

### CPAP Titration Study

A patient will be set up for a sleep study with a CPAP mask. They will be monitored for the quality of sleep, oxygen levels, heart activity, body position and movements, breathing problems, awakenings and snoring. The airflow will be increased gradually until these events are normalized. The optimal pressure is determined and if effective, a prescription is written based on the specialists analysis of the results.



### Quality of Sleep

It is normal to encounter some discomfort the first time a patient uses a CPAP machine and it may take a few weeks, sometimes longer, to get used to sleeping with a mask on your face.

There is no single mask that works the same for everyone, so finding the right mask for a patient may be a challenge, and takes time. Some masks are more suited to sleeping on the sides; others are better for less pressure on the face or persons with claustrophobia; and others are suitable for persons with abnormal nasal passages requiring a full face mask.

### Medical Coverage

Patients are allowed two sleep studies per year and are fully covered by OHIP. We encourage that any patient once diagnosed with a sleep disorder and on CPAP should be re-assessed annually. CPAP pressures tend to fluctuate with stress levels and weight. So it is important for the patient to be re-assessed to get the maximum benefit from their CPAP.

### CANCELLATION POLICY

ACCQ SLEEP LABS has a 48 hours(2 business days) notice of cancellation or the patient will be charged \$100 for a missed appointment.