

P R E S S R E L E A S E

Special Beds for a better Sleep of Patients in Need of Care

Optimal sleep surfaces are essential for restorative sleep that yields physical and psychological rejuvenation. This is particularly true in rehab and nursing care, where patients often suffer from sleep problems caused by old age or illness. This article explores the processes of healthy sleep, its' potential disorders and indicates measures to improve sleep. Hospital beds and mattresses are presented for different basic and concomitant diseases that often occur in the care sector, like dementia or pressure ulcers.

Introduction

Approximately 40 percent of people over age 65 suffer from sleep problems – more than eight million in Germany alone. The share with age related illness who have sleep problems is even greater. Probably the largest group consists of people with dementia: The IGAP Institute (Institute for Innovations in Health Care and Applied Nursing Science) estimates that 70 percent of persons with dementia suffer from serious sleep problems.

Sleep

The average daily amount of sleep needed by a person for well being is about 7 hours. A continuous change of activity and rest takes place during sleep. The body virtually repairs itself and recharges energy spent during the day. Spent cells are replaced. The brain stores new experiences during sleep, so we do not make the same mistake twice, for example. The body seals itself off from its external surroundings in this process, because it is completely busy repairing itself. During this time, the person does not produce any external output. The immune system is strengthened and nutrients absorbed during the day are digested. Ideas learned during the day are consolidated. During this entire process the body spends almost as many calories as in the daytime.

Lack of sleep results in fundamental drawbacks:

- Health and well being are affected
- Potential negative effects on concentration and cognitive abilities
- Permanent poor sleep may reduce the life span

Our inner clock tells us when it is time to sleep. It also sets the pace for the daytime structure. The peak of our performance is reached in the period between ten and twelve o'clock in the morning. Around two o'clock in the afternoon our physiological performance curve drops. We experience this dip in energy after lunch.

The absolute performance low, however, takes place at night between three and four o'clock. If awake in this time, perception is distorted, concentration is low, and we do not feel well. The person is extremely unstable and functions quite ineffectively. [4].

The different sleep phases

Sleep is comprised of different phases of rest and activity. Hence, sleep is not a consistent state of rest. It rather resembles an up- and downhill ride, with alternating phases of light sleep, light deep sleep, deep sleep, and REM sleep. A sleeping person experiences two to three deep sleep phases within the first half of the night. These deep sleep phases are interrupted by four to five dream sleep phases, recurring every 90 minutes and lasting even longer in the course of the night. Towards morning only light sleep takes place between the dream phases. During the light sleep phase the person can easily awaken. Waking up at night is absolutely normal. Most of the time, we do not remember it. Thus, on average, a person wakes up approximately 28 times a night without remembering it later on.

Movement during sleep

In order to fall asleep, we need to be completely relaxed. Once we fall asleep, we barely move. From time to time we turn during sleep to change contact pressure, or we stretch an arm or leg out of the blanket to regulate temperature. Mostly, we do this prior to or following a dream sleep phase. During the dream sleep phase we do not move at all, we are virtually paralyzed. Also in deep sleep we barely move at all. Muscle tension decreases and the body regulates pressure by micromotions only. This definitely has a deeper meaning:

1. The body regulates its temperature. If it is too warm, arms and legs reach out from under the blanket. If too cold, arms and legs move back underneath the blanket.
2. Changing body position results in regular pressure relief of the single body parts and thus prevents pressure ulcers.
3. Alternately tensing and relaxing the muscles, stretches them and prevents pain.
4. The movement of muscles, ligaments, and joints and contact of the body surface during regular position changes sends feedback to the brain, providing a secure body perception. In this way, sleep becomes restorative and we can start into the day refreshed.

Most people consider a sleep duration of 7 hours restorative and sufficient. This, however, is not a strict guideline; moreover, the duration considered sufficient varies individually. Those feeling well rested and powerful generally have slept sufficiently.

Changes in sleep at old age

In advanced age the sleep/waking rhythm changes. It shifts forwards, i.e. elderly people wake up earlier in the morning. In return they tire earlier in the evening. Sleep duration at night is shorter for the elderly, since it is interrupted often and for longer periods during the night. However, by taking an afternoon nap, the elderly often reach the same amount of sleep as younger persons.

Endogenous causes of sleep problems

Pain

Pain caused by illness and inflammation is always worse at night than in the daytime. Thus, pain therapy is of higher importance at night than during the day. At night, perception is somewhat introspective because of the external tranquillity and pain perception is sharpened. However, some pain decreases at night, such as wound pain or pressure pain. This makes people sleep in positions that cause pain during the day. [4]

Sleep alteration in old age

Sleep phases change less in old age – phases of light sleep increase. Deep sleep phases decrease. Even quiet sounds may interrupt sleep or hinder falling back to sleep. The total sleep duration over a period of 24 hours, however, barely changes since several naps are taken in the daytime. [3]

Sleep alteration in dementia

Even in the early stages of dementia, awake phases at night increase and the share of deep sleep decreases. As a consequence, the dream sleep phases also decrease. Alteration in sleep pattern runs parallel to the progression of dementia. Ten percent of persons with dementia sleep more in the daytime than at night. (day/night reversal) [3].

What to do, if sleeping through at night is disturbed?

A caregiver cannot influence all areas of sleep. However, they can create conditions to provide the person with the best possible sleep.

Sleep biography

To begin monitoring, first the sleeping habits should be examined. If they have changed seriously, this could be one cause for the sleep problems. Therefore, the following individual sleep preferences should be considered [1]:

- Differentiation between day and night people (“larks” and “owls”),
- Brightness in the room,
- Closed or open door,

- Bedding and pillows; heavy or light,
- Individual sleep position,
- Compilation of personal sleep rituals.

Sleep supporting measures

Structuring the daily routine and its activities is helpful. Adjusted activities prevent boredom and passivity. Taking an afternoon nap is normal for most elderly and provides relaxation. Any daytime sleep exceeding this should be avoided, since it reduces the amount of sleep needed at night. Exciting activities should be scheduled for the morning or early afternoon, so the day can end calmly. Causes should be investigated, ideas gathered and tried. As an example, a late night snack could be offered; milk and bananas are a good choice because of the protein and serotonin content. They control the development of the sleep supporting hormone melatonin in the body.

Warm chest pads, relaxing body washing, or similar may be an alternative for sleep medication. Finally, immobile persons should be positioned individually [1].

Optimal sleep conditions with MiS Micro-Stimulation

Many sleep problems, known in the care sector with, e.g. dementia, Parkinson's, or in the rehab sector with special needs children or wheelchair users, can be solved by using a sleep surface suited optimally to the individual clinical picture.

Mattresses particularly can make a significant difference. Unsuitable mattresses often cause pain or worsen existing pain. Super soft mattresses often are too soft and "swallow" natural micro motions. This, in the long run, results in less movement during sleep.

Alternating pressure mattresses, on the other hand, offer little lying comfort, provide a poor bed climate and disturb the already light sleep of elderly persons with noise.

Mattresses used especially for persons with reduced mobility should support micro motions and thus promote healthy sleep.

MiS Micro-Stimulation systems for different illnesses

The efficacy of MiS Micro-Stimulation systems is due to the combination of a soft mattress and an under frame that reacts to natural micro motion and returns it to the person's body. The patient lies softly, and yet dynamic. In this way, micro motions are supported and body perception is preserved.

The lying posture is ergonomically correct, which prevents pain, as well. This makes MiS Micro-Stimulation systems suitable not only for pressure ulcer prevention and treatment, but also for persons with dementia or neurological diseases.

Dementia

Adequately perceiving their own body provides people a feeling of security. In people suffering from dementia body perception is disturbed in many ways. Healthy people unwittingly use their movements at night to maintain body perception. When people are ill, they try to get feedback and information in order to sense their own body by moving with intensity. However, body perception of people with dementia changes after lying still for only ten minutes. They lose their orientation and become anxious. The results are sleepless and uneasy nights.

The MiS Micro-Stimulation integrated in the “dementia mattress”, ThevoVital provides gentle, barely perceivable movement of the patient. This stimulates better body perception, reduces anxiety and promotes restorative sleep. People using this mattress can often sleep better without dangerous medication.

Pressure ulcers

Movement is the key to successfully treating and/or preventing painful pressure ulcers. Conventional treatment methods are often not successful and the risk for new complications is very high. MiS Micro-Stimulation reacts to even the slightest movements of a person, such as breathing, and returns micro sized counter movements. This encourages the patient for more activity, helping to prevent bedsores. As a consequence, the chance of healing grows.

Parkinson's

People with Parkinson's suffering from depression and sleep problems benefit from MiS Micro-Stimulation as well. The mattress ThevoCalm, developed especially for Parkinson's patients, helps improve body perception and orientation.

ThevoFlex – for active wheelchair users

A mattress with two-zones is optimal for wheelchair users, since they need both movement support and pressure ulcer prevention. For the active upper body, the system must have a firm zone for back positioning and support. The firm zone also helps the person move to an upright position, facilitating transfers. For pressure ulcer prevention a soft zone is needed for the paralyzed part of the body.

Bed system for children with special needs

There are special mobility beds available for children, as well, providing a more relaxing sleep with MiS Micro-Stimulation. The ratio between relaxation and movement required for restorative sleep, is often unbalanced in children with special needs.

As a consequence, they often have sleep problems. A mobility bed helps balance this ratio. Gently swaying wing suspensions support and promote the child's movement. Each movement of the child is influenced positively by the dynamic under frame. These movement possibilities reduce muscle pain and spasms and provide skeletal support. Now different systems and mattresses with MiS Micro-Stimulation are available, perfectly suited to the needs of the individual clinical picture. The mattresses and bed systems support physiological movement and thus restorative sleep.

The author:

Marion Saller, Diploma in Care/Health Management
Institute IGAP, Stader Str. 8, 27432 Bremervörde, Germany

Literature:

[1] Huhn, S.: *Gute Nacht, in Heilberufe Spezial: Demenz, München, Urban & Vogel, München, 2009*

[2] Morgan, K., J. S. Closs: *Schlaf, Schlafstörungen, Schafförderung; 1. Auflage, Bern, Huber Verlag, 2000*

[3] Schultz, H. Hrsg.: *Altern und Schlaf; 1. Auflage, Bern, Huber Verlag, 1997*

[4] Zully, J.: *Mein Buch vom guten Schlaf, 1. Auflage, München, Verlag Zabert Sandmann, 2005*