



POPOVIC & KOLLEGEN

Praxis für Kieferorthopädie

## Adult treatment

8. Splints for snorers based on sleep research:

- Protrusive oral splints for
  - snoring
  - sleep apnea
  -



Sleep Apnea splint: IST-Schiene classic

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Snoring, Upper Airway Resistance Syndrome (UARS) and sleep apnea: All three diseases are manifestations of the same underlying disturbance that is called "sleep-disordered breathing".

It starts with simple snoring, at different noise levels, in which the noise is the main problem. Snoring may also be obstructive, meaning that air passage is already reduced, because the upper airways are reduced in diameter. That alone can disrupt not only your partner's sleep, but also your own. Daytime sleepiness and increased risk of accidents are a potential danger even at this stage.

If upper airway obstruction increases, we see the development of the Upper Airway Resistance Syndrome (UARS). This means that the tissues of the upper airway are a substantial resistance to airflow. Airflow in the upper airways may be reduced by 50%, but no more than that. As a result, respiratory effort is required to maintain sufficient oxygen supply. Of course, such effort will frustrate all attempts to get some real rest at night. Patients with UARS feel exhausted, they complain of headaches and muscular tension. Sleep is disrupted,

which is especially harmful if the vital deep sleep phases are affected. This is potentially harmful to the heart and inner homeostatic functions (blood pressure, hormonal regulation, metabolism, etc.)

Breathing actually ceases during sleep apnea. This is defined as “reduction of respiratory airflow by 50 % and more, for more than 10 seconds”. Phases of apnea can last over several minutes, several times per hour. Blood oxygen saturation drops considerably. The body is stressed, because it is facing a potentially lethal emergency: suffocation. Arousals can happen 10 times per hour and more. Stress hormones circulate through the body. If that is a chronic condition, this may cause severe damage to the body: hypertension, lung problems heart arrhythmia, diabetes, depression, immune deficiency and, possibly, even to dementia. Apparently, even though a causal links has not been fully establishes, patients with sleep apnea experience the onset of dementia 10 years earlier than healthy subjects. Adequate and early therapy for sleep apnea seems to counteract that problem.

All these diseases that are summarised as „sleep-disordered breathing“ have in common, that the upper airways are partially or completely obstructed. This is due to some anatomical structures being enlarged or softened, offering resistance to respiratory airflow. These structures include: the soft palate, the base of the tongue and the pharyngeal wall. These soft tissues are usually stretched and thus put under tension, by muscles that run from the lower margin of the lower jaw to the hyoid bone: the suprahyoid muscles. Pushing the lower jaw forward, we stretch those muscles and also the dependent soft tissues. If the lower jaw is too far back, the soft tissues are flaccid. They become even more flaccid with age. Soft tissues tend to store fat. This aggravates the problem in patients that are obese.

Special oral splints exist for patients with sleep apnea that push the mandible forward, thereby putting tension on the muscles and soft tissues, even during sleep. This keeps the upper airways viable at all times and may be all that is required for patients with slight to moderate sleep-disordered breathing. Quality of life is restored and daily sleepiness disappears. The ability to concentrate improves a lot, and health risks associated with sleep-disordered breathing, decrease to normal levels.

We offer you individually customized, so-called, protrusive splints, i.e. anti-snoring splints. Those splints are made by our own laboratory, especially for you. They come with the advantage that jaw joint problems will not develop – or existing jaw joint problems can be treated along with sleep apnea. TMD patients benefit from mandibular advancement just as much as patients with sleep-disordered breathing do. TMD and sleep-disordered breathing are often the side-effects of jaw malrelations or malocclusions.