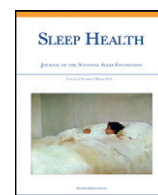




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Commentary

Breathe well, sleep well: avoid the supine and adopt the lateral posture[☆]

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Sleep posture in the general population

Many health professionals and advisors have been wondering for years which is the best and healthiest sleep position. Surprisingly, there is no simple answer to such fundamental question. First of all, we begin our sleep in a certain body position and usually shift to other postures as sleep evolves, either spontaneously or intentionally, to shift our sleeping body to a comfortable position. Adults tend to change their sleep positions quite frequently (from 11–13 changes per night^{1,2} up to 20–45 times during a typical 8-hour night³). Moreover, there are significant differences between individuals in addition to the night-to-night personal variability. Factors such as the definition of the movement, that is, minor, subtle, or gross movements, and the impact of age, health, and comfort contribute to the complexity of the issue of best and healthiest sleep posture.

Many health advisors, physiotherapists, physicians, and laymen state that the best sleep position to prevent neck and back pain is the supine sleep posture. Many feel that this sleep position is the best for body rest. Nevertheless, in a telephone survey including 812 people from 3 age groups,⁴ most of the responders (female 72.6% and male 70.9%) reported that they sleep mainly on their sides and that this position protects them from cervical, scapular, and arm pain and thus promotes high sleep quality ratings. Women were less likely to sleep supine, and no other sex differences were found. Interestingly and similar to a previous report,⁵ with aging, the prevalence of reported prone sleep position decreased, whereas that of side sleep position increased.⁴ In a study of 16 young adults (8 poor sleepers and 8 good sleepers) that documented sleep posture in the sleep laboratory during 2 consecutive nights, the poor sleepers spent more time on their backs with their heads straight.⁶ Thus, in spite of the absence of consensus in regard to the best sleep posture, sleeping in the lateral posture appears to have more advantages over the supine posture, all without even taking in account the worsening effect of the supine posture on breathing function during sleep.

The worsening effect of the supine posture during sleep

The detrimental effect of the supine posture on breathing during sleep is clearly demonstrated in subjects who regularly do not snore but may snore eventually when adopting the supine posture, when they go to sleep very tired and fast enter into deep sleep, or when they have “flu.” The bed partner of a simple snorer knows that he/she snores loudly when sleeping on his/her back and, by adopting the lateral posture, the snoring loudness may decrease considerably and sometime is even eliminated. Moreover, when we question spouses about the snoring and obstructive sleep apnea (OSA) of their bed partners, they frequently report, “At the beginning he used to snore only when he slept on his back. But now, since he gained weight, he snores loudly, in all body positions, and when he sleeps on his back he seems to have frightening breathing pauses lasting a few seconds.”

Gravity is most probably the dominant factor that affects the anatomical and physiological changes that impair air flow across the upper airway (UA) in the supine sleep position.⁷ The effect of gravity on breathing during sleep was elegantly demonstrated in 5 healthy astronauts either at normal or microgravity environment. Both the severity of sleep apnea and the severity of snoring decreased significantly in zero-gravity conditions.⁸

Several studies have suggested that sleep and posture may act synergistically to compromise the UA in OSA patients and, by adopting the supine position, one major physiological change occurs, that is, an increase in the UA resistance.^{9,10} The direct consequence of this change is an increase in breathing difficulties during sleep associated with an increase in breathing effort and episodes of partial UA obstruction (manifested as snoring and/or hypopneas) and/or complete UA obstruction (manifested as apneas). The critical pressure at which the pharynx collapses (Pcrit) is an objective measure of upper airway collapsibility. The fact that Pcrit decreases in the lateral posture compared with the supine posture indicates that shifting from supine to lateral body posture significantly decreases passive pharyngeal collapsibility.

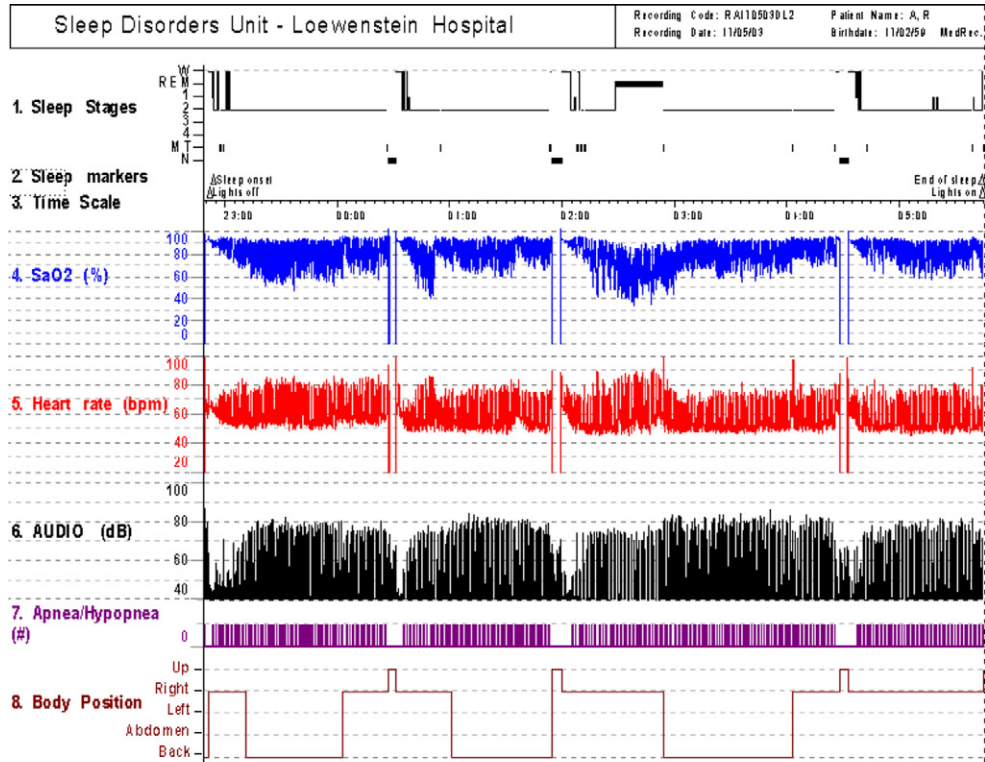
The supine posture in OSA

It becomes more and more evident that not all OSA patients are alike. OSA patients are heterogeneous and differ not only in regard

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A) The Non-Positional Patient (NPP)



B) The Positional Patient (PP)

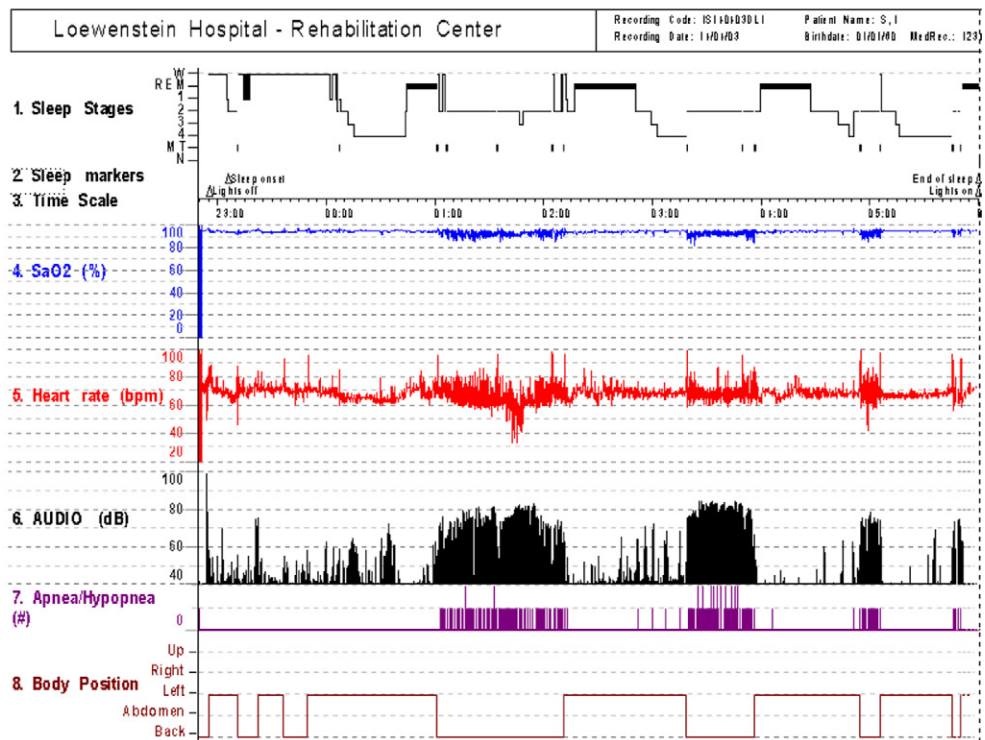


Figure. A) The NPP OSA patient: continuous and severe desaturations, significant cyclic variations in heart rate, constant and loud snoring, and a high number of apneas/hypopneas appear independent of body position. B) The PP OSA patient: desaturations, cyclic variations in heart rate, loud snoring, and apneas/hypopneas appear almost exclusively in the supine position. Reproduced with permission from *Sleep Med.* 2005;6:377-378.

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