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Cross-over Study about the Effects on Snoring and Sleep by Using a Head Position Changing Pillow

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Introduction

Snoring is disruptive on a social level although it is not defined as an illness. A therapy should therefore be at the lowest possible risk as well as well-tolerated. A first empirical study with 157 patients sleeping on the anti-snoring pillow showed an reduction in snoring of about 67% (Cazan et al. 2014). Based on these positive results we performed a controlled cross-over study in order to objectify the effect on snoring.

Material and Methods

Fig. 1

Inclusion criteria
- Age > 18 u. < 78
- BMI ≤ 30 kg / m²
- No daytime sleepiness
- Snoring (exclusion of OSAS use of PG or PSG)
- Existing bed partner

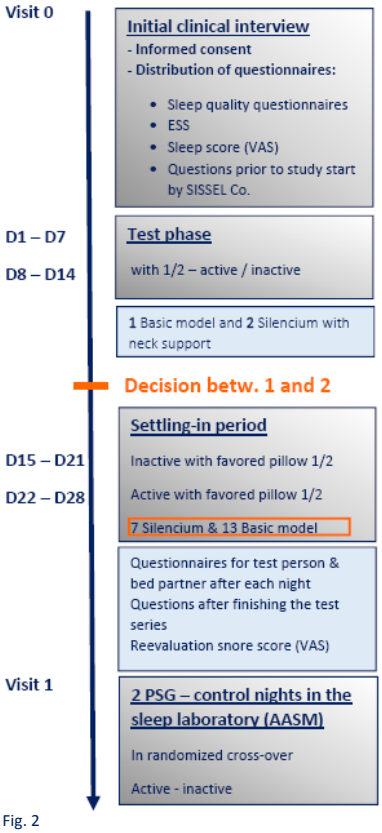


Fig. 2

The pillow contains a control unit, a head recognition system, inflatable air chambers and 2 built-in microphones. It is activated by noise patterns up to a frequency of 500 Hz within 2-3 respiratory periods. The head is going to be kept in the mostly reduced sound position or in the position of no sound.

Results

The study sample consisted of 22 snorers (4 ♀, 18 ♂), 1 left before the study began and 1 had to be excluded due to the loss of the bed partner. During the settling-in period, the test person and bed partner had to answer different questions concerning: ***"Falling asleep easily", " Lying down and sleeping as usual", "Being tired the next morning, exhausted, irritable", "Being disturbed by the pillow while sleeping", "Sleeping through", "Did the partner snore less"***. The possible answers ranged from 1-5 points and showed results of good and better with a value ≤ 3 points.

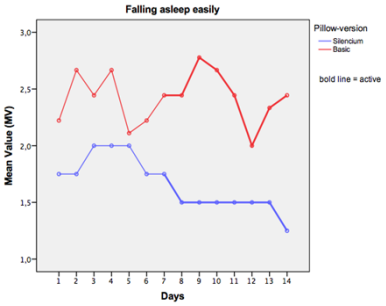


Fig. 3

Fig. 3 shows a mean of 1.66 for the Silencium and 2.42 for the Basic model. Regardless of the model, the mean value was 2,19.

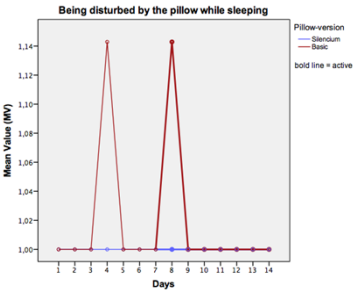


Fig. 4

A sleep disturbance by the pillow showed a mean value of 1.02 (Fig. 4)

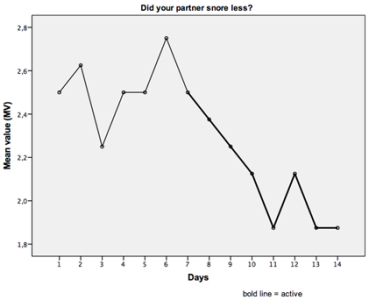


Fig. 5

The initial mean value of 2.8 with inactive pillow decreased to 1.9 with active pillow in the second week (Fig. 5). This result correlates with the snoring score provided by the bed partners.

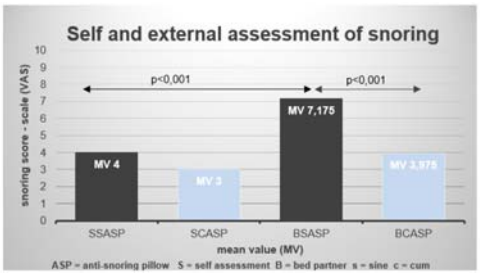
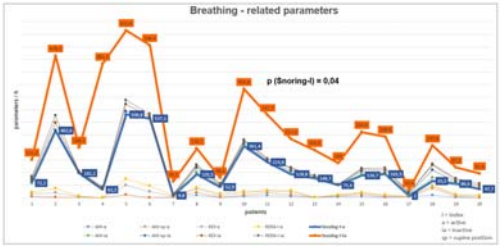


Fig. 6

Bed partners reported a significant change in snoring as seen in the visual analogue scale (p<0,001) (Fig. 6). Sleep-related parameters (AHI, supine AHI, RDI und RERA) showed no significant change.

Fig. 7



The snoring index decreased significantly while using the pillow in the active mode (p=0,04). (Fig. 7) The snoring index was determined using internal signal processing technologies of the PSG-system after manually adjusting snoring thresholds for each night by the aid of the PSG audio files. The time spent in supine position doesn't change by pillow activation. (Fig. 8).

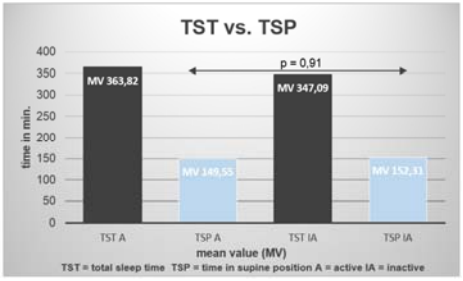


Fig. 8

Conclusion

The active head position change leads to **no deterioration** of the respiratory parameters but does lead to a **significant reduction** in snoring.

Furthermore, there seems to be no impact on the supine position with the activated anti-snoring pillow.