




Comments of a Watch PAT Analysis

Client's data

Name: 
Gender: m
Age: 27 years
BMI: 21.5 kg/m²

Comments of a Watch PAT Analysis

Important Note

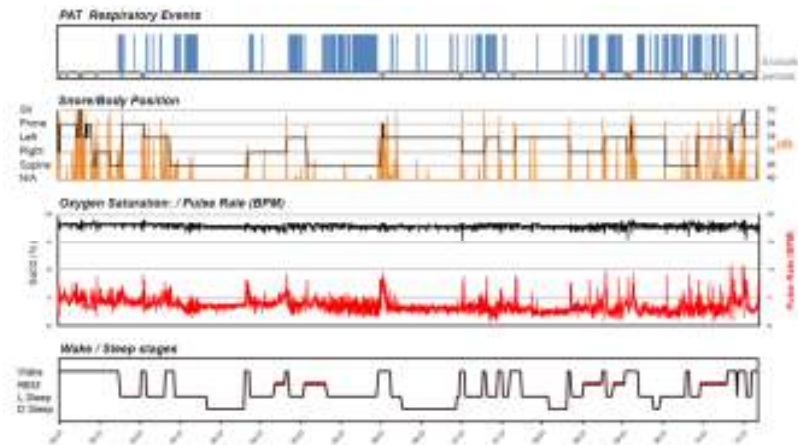
These comments are by no means a medical diagnosis, but a subjective opinion based purely on the present automatic Watch PAT Analysis. Raw data were NOT available for evaluation.

Any medical treatment or change of medical treatment should be under the supervision of a physician.

Date of recording:

09.04.2021

Overview of Sleep and Respiration



The x axis represents the recording time, the different rows show the different parameters recorded.

The **first row** shows one thin blue line for each PAT arousal. This recording showed just few periods with consecutive PAT, causing blue lines to fuse together into solid blue blocks.

The grey blocks show excluded periods, in which the PAT signal could not analysed. These times have been excluded from the sleep time to produce the valid sleep time.

The **second row** shows the body position in black and the loudness of snoring in yellow. The sleep position showed several position changes. Snoring was periodically very loud.

The **third row** shows an overview of the oxygen saturation in black and the Pulse Rate (PR) in red. The oxygen saturation showed some mild drops but not below 90%. The PR showed a high variability, at times very periodically. This could be a sign of periodic limb movements (PLM)..

The **fourth row** provides the hypnogram, the sleep stages and wake periods. In a normal adult there are wake and two main stages of sleep that alternate at about 90-minute intervals. Rapid eye movement (REM) sleep can be roughly described as a period when the brain is active and the body cannot move. In non-rapid eye movement (NREM) sleep, the brain is less active but the body can move. Non-REM sleep is composed of two major stages light and deep sleep. After first falling asleep, the person enters light and then deep sleep.

The first deep sleep may last up to an hour. After this, the first REM sleep period begins, lasting about few minutes up to 15minutes and is followed by another non-REM cycle. This alternating pattern continues throughout the night, but as the night progresses deep sleep less apparent and the periods of REM sleep grow longer. During this recording three REM cycles occurred, all of them complete, with REM and deep sleep. This was within the typical occurrence of 3 to 5 REM sleep. The sleep structure was distinctly disturbed by frequent wake periods, some of them longer in duration.

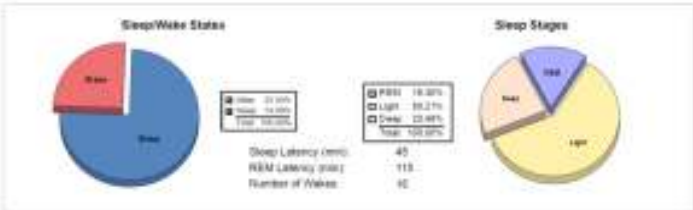


Sleep Summary (report page 2/3)

Start Study Time:	2:07:09 AM
End Study Time:	10:46:32 AM
Total Recording Time:	8 hrs, 39 min
Total Sleep Time:	6 hrs, 29 min
% REM of Sleep Time:	16.3

The **total study time** (time the Watch PAT was turned on until the time the device was removed) was 8 hrs 39 min. The **Sleep time** (total study time minus the time of wakefulness as calculated by the zzzPAT software) was 6 hrs 29 min. This was at the low end of the typical sleep time between 4.2 h and 7.1h, age and gender matched.

Sleep Stages Chart (report page 3/3)



The percentage of sleep (sleep efficiency) was 75 %, the percentage of wake 25%. The sleep efficiency was at the lower end of the typical range of age matched males (73 – 93%). The REM latency (time from sleep onset to the start of REM sleep) was 115 min, which was at the upper end of the typical 43 to 122 min. The number of wake periods in total was 16, which was far above the typical number of below 10.

The sleep percentage for REM was 16%, light NREM 60% and deep NREM sleep was 23%. All sleep stages were within the typical ranges (REM sleep 15-28%, light NREM sleep 43-77% and deep NREM 6-32%, respectively). All typical ranges were gender and age matched.

Respiratory Indices (report page 2/3)

	Total Events	REM	NREM	All Night
pRDI:	168	27.8	25.9	26.2
pAHI:	5	2.0	0.6	0.8
ODI:	3	1.0	0.4	0.5
pAHSc:	0	0.0	0.0	0.0
% CSR:	0.0			

Indices are calculated using technically valid sleep time of 6 hrs, 24 min.

pRDI/pAHI are calculated using oximetry/airflow < 10%

The AHI (Apnea Hypopnea Index), includes all apneas, hypopneas per hour of sleep, was 1 event/h. An Apnea is an episode of fully occluded breathing of more than 10s. A hypopnea event is an episode of partial occlusion. The normal range is less than 5 events/h.

The RDI (Respiratory Disturbance Index), includes all apneas, hypopneas and snoring events followed by a PAT Arousal per hour of sleep, was 26 events/h. The score is calculated in a very similar way as the AHI, but an additional type of respiratory events named RERA are also counted. RERA stands for Respiratory Effort Related Arousal and is essentially a very short arousal for a few seconds that follows partial occlusion of the airway. No scientifically valid and normal ranges can be provided.



The ODI (Oxygen Desaturation Index) is the number of drops in oxygen saturation (of at least 3%) per hour of sleep. The ODI was just 0.5 events/h. The more the client's oxygen drops the harder the heart must work. The normal range is generally considered to be less than 5 events/h.

Both, AHI and ODI were within normal.

The RDI showed additional arousals due to snoring activity (RERA, Respiratory Effort Related Arousal), increasing the sleep fragmentation.

Snoring Statistics (report page 3/3)

Snoring Level (dB)	>40	>50	>60	>70	>80	>Threshold (45)	Mean: 40 dB
Sleep (min)	10.7	3.7	1.1	0.0	0.0	6.5	
Sleep %	2.7	0.9	0.3	0.0	0.0	1.7	

The mean snoring level was 40dB with snoring present for only 3% (11min) of the sleeping time.

Louder snoring (above 45dB) was present during 2% (7 min) of sleeping time. Loud snoring (above 50dB) was present during 1% (4 min) of sleeping time and there were few spikes of very loud snoring (above 60dB) during 0.3% (1min) of sleeping time.

Oxygen Saturation Statistics (report page 2/3)

Mean:	95 Minimum:	93 Maximum:	98		
Mean of Desaturations Nadir (%)					
94					
Oxygen Desatur. %:	4-9	10-28	>28	Total	
Events Number:	3	0	0	3	
Total	100.0	0.0	0.0	100.0	
Oxygen Saturation:	>96	<=96	<95	<90	<70
Duration (minutes):	0.0	0.0	0.0	0.0	0.0
Sleep %	0.0	0.0	0.0	0.0	0.0

The mean SaO2 was 95%, the minimum 93%, max 98%. The mean of desaturations Nadir was at 94%, which can be regarded as very mild. The client showed just 3 oxygen desaturations, all of them ranged between 4-9%.

Conclusion:

- ✓ Normal AHI and ODI.
- ✓ Some additional arousal activity most likely due to snoring (RERA).
- ✓ Snoring over just 3% (11min) of sleeping time with few spikes of very loud and disruptive snoring above 60dB.
- ✓ PR showed a high period variability, which hints to periodic limb movements (PLM). The client should be asked, if he experienced any movements in wake – sleep transitions or if a bedpartner reported such movements.
- ✓ In general sleep structure and sleep hierarchy within gender and age range. However the client showed frequent wake transitions, some of longer duration.