



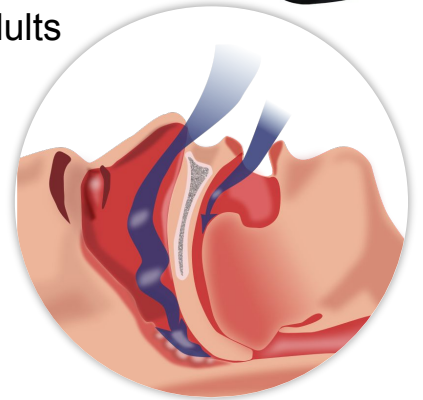
Sleep and Cardiovascular Library Obstructive Sleep Apnea (OSA) Algorithm



We enable any kind of wearable device that contains PPG optical sensor and an accelerometer to detect OSA events at night.

OSA is a common health problem affecting 10–30% of adults and is associated with sleepiness, reduced sleep quality, reduced labor and learning capacity, and increased cardiovascular disease risk.

Our algorithmic solution allow OSA detection at home just by wearing a wearable such as a watch or a ring.



How does it work?

The algorithm is processing the PPG, SpO₂, and Acc signals, and detect Apnea events in real-time.

A wearable manufacturer can use this algorithmic solution to either simply inform the user about the OSA events, or even build a therapeutic solution around it (such as gently waking the user up when an OSA event occurs and improve sleep quality).

Nohayo Sleep Stages algorithm performance

The algorithm was developed and trained based on 530 night session that were collected in sleep labs. The OSA events were labelled manually by physicians, and the models were trained accordingly.

The algorithm is implemented in embedded C and can run on wearables like a smartwatch, ring, and earbuds that has a PPG, a 3D accelerometer, and a DSP unit.

Nohayo’s OSA solution results are close to FDA requirements. We are currently working on an improved version that will meet the FDA requirements.

	AHI >= 5		AHI >= 15		AHI >= 30	
	Sensitivity	Specificity	Sensitivity	Specificity	Sensitivity	Specificity
Watch-PAT200U FDA cleared	83.3%	88.9%	76.9%	90.0%	88.9%	95.8%
NOHAYO OSA-DA	75.2%	75.5%	79.3%	81.3%	84.1%	96.2%