
Validation of Aidlab for measuring Respiratory Rate

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Aim. The purpose of this study was to validate Aidlab physiological monitor's accuracy of respiratory measurements. **Methods.** To validate the respiratory measurement of Aidlab device it was compared to Alice NightOne Philips Respironics, a device approved by the medical community to measure sleep apnea. It measures respiration by measuring changes in chest circumference and respiratory flow. The tests were carried out on 5 volunteers (4 men, 1 woman). 6 measurements were collected (10 minutes each).

1 Introduction

Aidlab is a physiological monitor mounted on a chest strap, equipped with a set of sensors. Aidlab uses a transthoracic impedance measurement method to determine the respiratory rate. During respiration, the electrical properties of the chest tissues change, so by measuring the changes in thoracic impedance, the respiratory rhythm can be determined [1].

2 Methods

A total of 5 apparently healthy adults aged 21-40 volunteered to take part in the study. Taking into account the fact that subjects' physical condition may differ, individual measurements were taken one subject after another as opposed to a single group session in order to achieve desirable respiratory ranges.

1. Alice Night One and Aidlab chest straps are put on the subject's chest, or below if not possible, and adjusted to fully adhere to the body and not collide with each other. (see 1)
2. Both monitors are paired with recording devices and checked for signal propriety
3. Subject are sitting relaxed.

3 Results and conclusion

The results are presented in figures 2, 3, 4, 5, 6, 7. From the obtained results it can be concluded that the signals collected from both devices overlap. The respiratory peaks in both cases are highly consistent in the same places, so that an overlapping respiratory rhythm can be determined from them.

Figure 1: Aidlab and Alice Night One placement

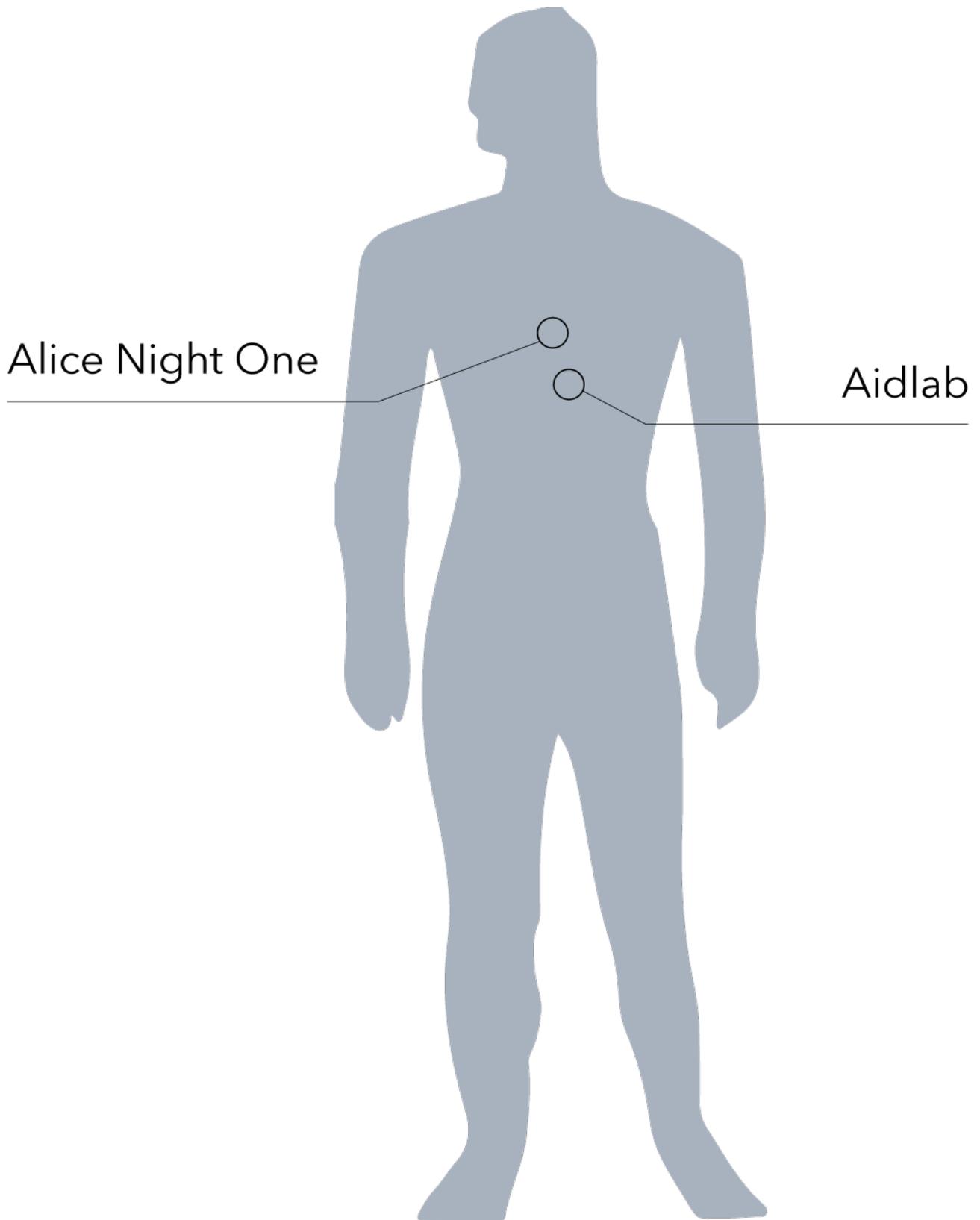


Figure 2: Respiration comparison 1

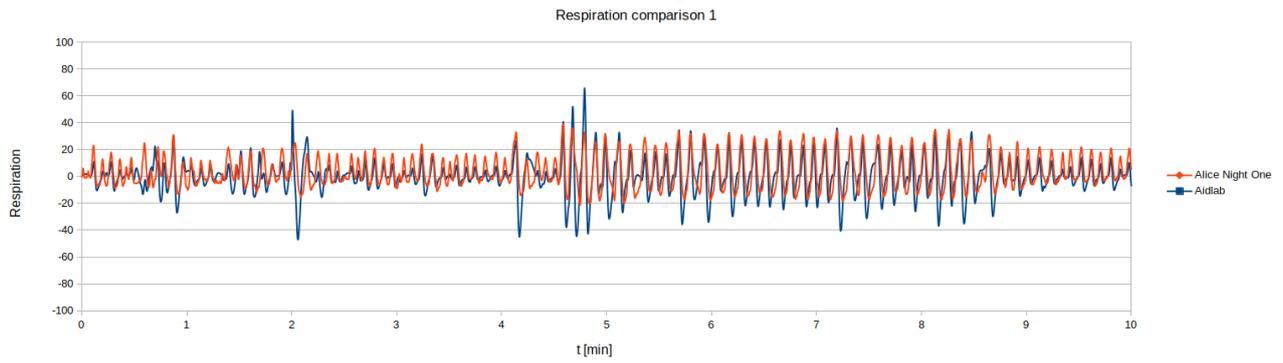
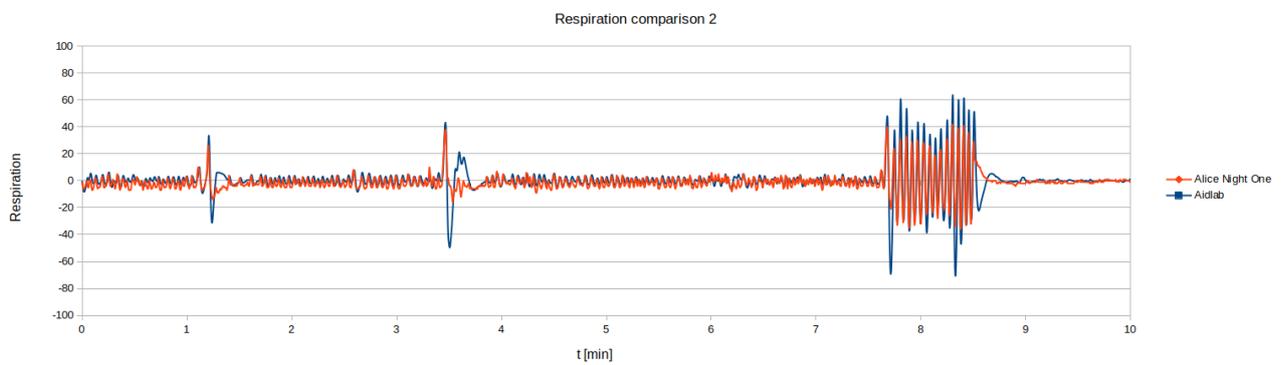


Figure 3: Respiration comparison 2



4 Bibliography

References

- [1] Catherine Redmond. "Transthoracic Impedance Measurements in Patient Monitoring". In: (2013).

Figure 4: Respiration comparison 3

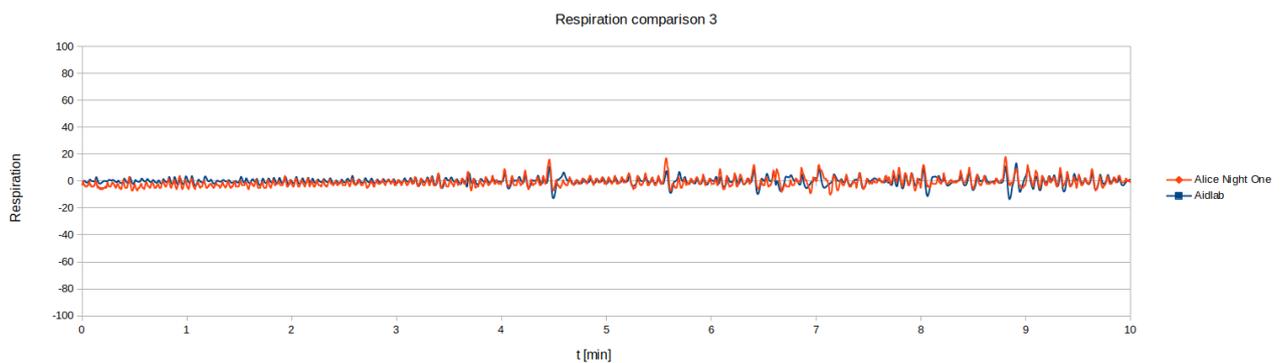


Figure 5: Respiration comparison 4

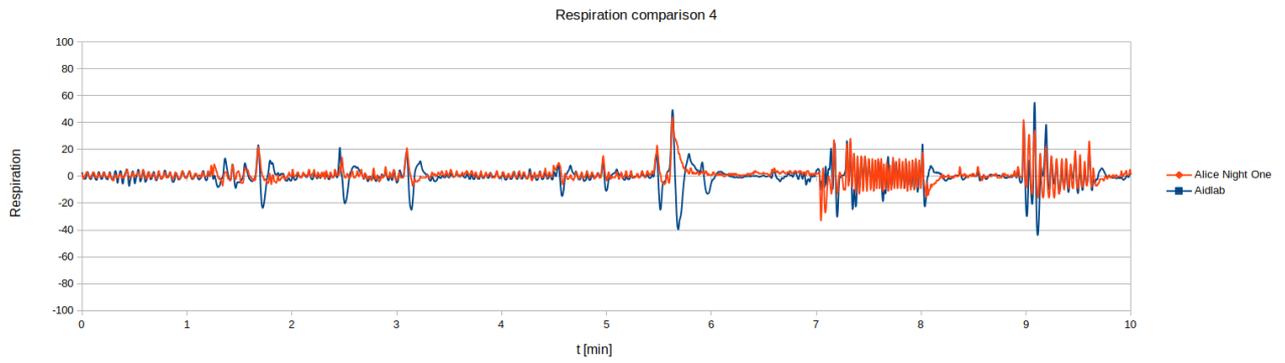


Figure 6: Respiration comparison 5

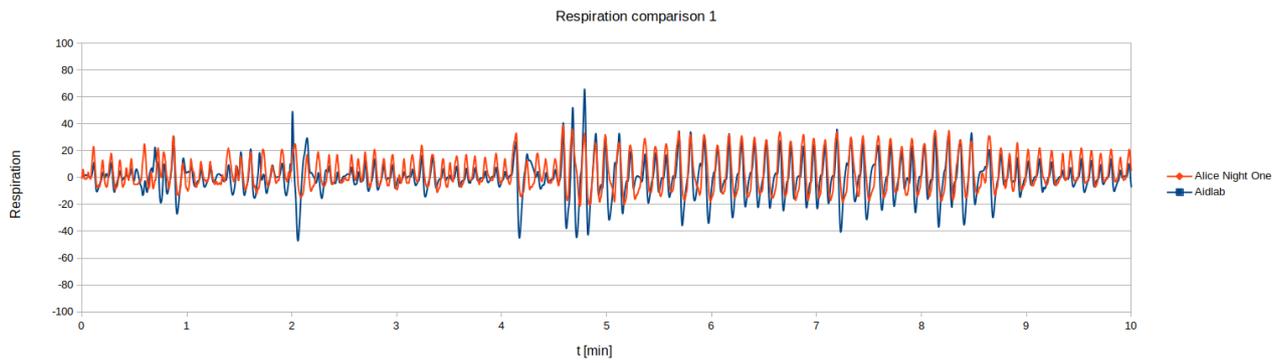


Figure 7: Respiration comparison 6

