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Lung sounds intensity: can we rely on recordings at spontaneous airflow?

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Abstract

Lung sounds intensity (LSI) is a non-invasive measure to assess lung function that has a linear relationship with airflow. Clinicians often assess LSI asking subjects to breathe deeply with open mouth, while researchers use target airflows. For clinical practice, it would be easier to rely on lung sounds acquired without airflow measurements. Thus, this study determined if there were differences in LSI between spontaneous deep breathing and breathing at a target airflow of 1.5L/s.

A total of 264 recordings from 22 adults aged 40 or over were used. Lung sounds were recorded consecutively at 6 chest locations (right and left: upper posterior, lower posterior, upper anterior) using a stethoscope with a microphone in the tube. Recordings were first performed at spontaneous airflow and then at a target airflow. Breathing phases were manually annotated and inspiratory LSI in the 100–2000Hz band was determined.

LSI at a target airflow was found to be significantly higher than at spontaneous airflow at all locations ($p < .004$), except at right upper posterior chest. Differences between right and left were only seen at lower posterior chest at target airflow ($p = .001$).

Table 1.[View inline](#)

LSI at spontaneous (S) and target (T) airflow (dB).

Overall, LSI was higher at a target airflow of 1.5L/s than at spontaneous airflow. Despite differences in LSI were minor, its clinical significance is still unknown. This knowledge gap should direct future research.

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