**How Is Impulse Oscillation System Useful in Diagnosis and Differentiation of Interstitial Lung Disease?**

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**Abstract**

**Background:** The current study aimed to evaluate IOS findings and compare with body plethysmography in ILD to find and offer ways to determine the disease as well as predict lung tissue changes in addition to estimate the severity of lung parenchymal involvement.

**Materials and Methods:** Through a cross-sectional design, ILD patients above 18 years old enrolled the current study between Feb 2021 and March 2022 who had been absolutely diagnosed based on clinical manifestations and physical examination as well as chest X-ray and CT-scan in before admitted for body plethysmography and impulse oscillation test (IOS) through the current research.

**Results:** The percent of the predicted R5 was in strong indirect correlation with the percent of the predicted FEV1/FVC and MMEF but direct correlation with the percent of the predicted SRAW. Likely, R5-R20 had the same relationship with the named parameters. AX showed indirect correlation with FVC and the percent of the predicted DLCO and X5 directly correlated with FVC.

**Conclusion:** Our body box and IOS findings matched more or less to finally conclude that IOS may compete with body box in diagnosing and severity definition of ILD. Furthermore, the current study showed bigger absolute values of X5 in ILD but a final positive value of ΔX which is explained by higher X5 Inspiratory in ILD unlike emphysema. This discrimination between the named diseases is hopefully another strength point of IOS although the fact that more studies will be needed.

**Keywords:** Interstitial Lung Disease**,** Impulse Oscillometry System, Forced Oscillation Technique, Chronic Obstructive Pulmonary Disease, Body box