



# Adaptive Smart Neckband for Respiratory Dysfunction Monitoring

**Wearable detecting EILO with >95% accuracy, offering non-invasive, field-based diagnosis for athletes.**

Exercise-induced laryngeal obstruction (EILO) is a prevalent condition, affecting more than 1 million adolescents nationwide, but is frequently misdiagnosed as asthma in about 80% of cases. The condition is caused by episodic, inappropriate adduction of vocal folds and supraglottic structures during exercise, which can cause respiratory distress, diminish athletic performance, and in severe cases, lead to loss of consciousness. Misdiagnoses can result in prolonged symptoms and significantly reduced quality-of-life. The current diagnostic gold standard is continuous laryngoscopy during exercise, but this is invasive and difficult to implement in real-world conditions. Thus, there is a need to develop a non-invasive methodology to monitor respiratory function in real time.

Researchers at Purdue University have designed a non-invasive smart neckband wearable device that can continuously monitor respiratory function in real-time during physical activity and uses machine learning algorithms to accurately classify EILO events. This device can provide critical, field-based physiological data to enhance EILO diagnoses and management and can significantly improve overall quality-of-life for people with this condition.

## Technology Validation:

-95.87% accuracy and 97.50% sensitivity in case studies, comparable to clinical diagnostic tools

## Advantages

- Non-invasive and continuous monitoring
- More accurate in diagnosis

## Applications

## Technology ID

2025-LEE-71263

## Category

Medtech & Digital  
Health/Wearable Health Tech &  
Biosensors  
Medtech & Digital Health/Health  
Informatics

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## View online



-Diagnostics of EILO, other respiratory function disorders, or even neuromuscular diseases that require real-time monitoring

**TRL:** 4

**Intellectual Property:**

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