



CHASKI

Non-Invasive respiratory activity monitoring system for sports



INSTITUTE OF BIOLOGICAL
AND MEDICAL ENGINEERING



INDUSTRIAL SECTOR
HEALTHCARE



DEVELOPMENT LEVEL
TRL 5

PROBLEM



A growing number of people participate in endurance sports such as running, cycling, and triathlon and need well-designed training programs to improve performance efficiently and safely. Professional athletes use cardiorespiratory assessments at specialized laboratories, but these are difficult to access. Most people therefore use devices that measure heart rate (HR). Heart rate alone, however, has several disadvantages compared with laboratory testing and produces suboptimal results.

SOLUTION



CHASKI is a non-invasive sports-monitoring system for respiratory activity. It consists of a small wearable positioned beneath the nose that captures airflow and converts it into signals sent to an external device, such as a smartphone. Software processes the data, records and performs a personalized analysis of respiratory activity, precisely determines training zones and performance statistics, and recommends sporting goals.

MARKET



The target users are endurance athletes who need to improve their training design to optimize performance, particularly serious or competitive athletes (15% of all athletes). The largest markets and those most likely to adopt the solution are the United States and Europe. An estimated 60 million athletes actively participate in endurance competitions worldwide.



Professor
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Intellectual property
PCT application filed; national-phase applications pending in the United States and China.

Development status
CHASKI has a functional prototype comprising a 3D-printed enclosure, electronics, and a working Android application. Testing has been conducted in a sports laboratory and outdoors.

ADVANTAJES



Comfortable, lightweight device suitable for regular use.



Makes a comprehensive sports assessment and guidance - as accurate as a sports laboratory - accessible to athletes at every level.



Determines personalized training zones.



Measures performance under real training conditions.