Technical Differences in VO_2 Max Technology

Lab vs Field Testing

Oxygen consumption data during exercise holds limited value unless it can be compared against workload.

Workload cannot be controlled in the field.
It can only be reliably reported by means such as treadmill speed/grade, cycle watt/rpm, etc.

A controlled workload is required to...

Standardize Assessments
Track Improvement
Measure Workload
Assess the Body's Efficiency

According to the ACSM and the AHA, consistant laboratory protocol is required for accurate interpretation of ventilator gas exchange responses.*

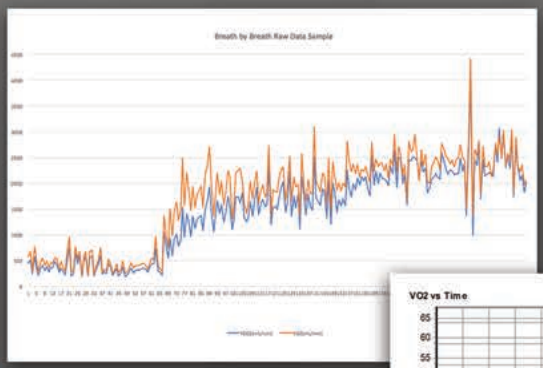
Breath by Breath vs Mixing Chambers

The Gold Standard is the Douglas Bag method, which literally captures all expired air in a large bag to mix then sample the gases,

The traditional method employed by the most expensive and most trusted metabolic analyzers utilize **mixing chamber technology.**

In recent years, the technology of "breath-by-breath" sampling has emerged. The data produced tends to be a bit erratic and requires significant smoothing.

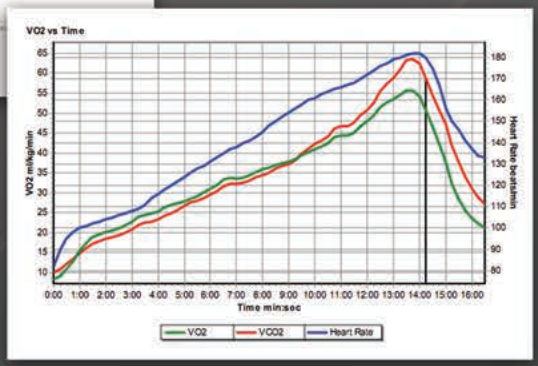
"Data derived from small sampling intervals should be interpreted with caution, and one should resist the tendency to use breath-by-breath data simply because the technology is available. Breath-by-breath sampling can be invaluable for certain research applications... but it is inappropriate for general clinical applications." **



< Sample breath-by-breath data sample

Courtesy of :
mypnoe.com/pnoe-key-features/

Sample mixing chamber > data sample



* Myers, J., & Bellin, D. (2000). Ramp Exercise Protocols for Clinical and Cardiopulmonary Exercise Testing. Sports Medicine, 30(1), 23-29.
** Myers, J. N. (1996). Essentials of cardiopulmonary exercise testing. Champaign, IL: Human Kinetics.

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