

Climate change makes metabolism test invalid, scientists find

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Scientists from the Department for Health have shown for the first time how climate change is having a major impact on tests to measure metabolism.

The researchers found that changes in the atmosphere mean the metabolic assessment could be inaccurate by up to seven per cent.

The assessment, known as 'indirect calorimetry' is the most widespread 'gold standard' method of metabolic assessment. It was developed over a 100 years ago based on assumptions about the amount of oxygen (O₂) and [carbon dioxide](#) (CO₂) in the air we breathe.

The test is used by researchers and [clinicians](#) to determine resting metabolic rate which is the amount of energy required to maintain vital

functions at rest.

But now Dr James Betts and his team have found that an increase in CO₂ in the atmosphere means the original assumptions are incorrect.

Dr Betts said: "While the change in our atmosphere is, rightly, best known in terms of the impact it is having on our climate and the environment, it seems rising CO₂ and, moreover, the lesser known fall in O₂ have never been accounted for when considering how our bodies process the air we breathe."

As well as measuring the amount of energy we need the metabolic assessment is also used to monitor how much [carbohydrate](#) and fat the body uses and also the maximum amount of oxygen that a person can use when applied as part of exercise tests.

The tests can have implications for obesity, diabetes and [heart disease](#) as well as giving a good estimate of capacity for [endurance exercise](#).

The assessment is carried out by measuring breath to see how much CO₂ is produced and how much O₂ is used.

In a clinical setting the tests are used to tell if someone has an unusually fast or slow metabolism, which can sometimes be used to determine their energy requirements and how much they are fed such as by a tube feed.

It can also help identify certain [metabolic disorders](#) in terms of carbohydrate or fat metabolism or a person's level of cardiovascular fitness.

Dr Betts suggested that researchers and clinicians take a measurement of the atmosphere before taking a metabolic assessment of their patients.

He said: "A simple solution would be for scientists and clinicians to always measure the composition of the air nearby their patients and correct for those values, otherwise [energy requirements](#) can easily be overestimated by up to seven per cent."

More information: The full article: "[Thinking outside the Bag](#)", is published in the journal *Medicine & Science in Sport & Exercise*.

Provided by University of Bath

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