

Work out your breathing muscles to improve fitness

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Credit: University of Portsmouth

Training your breathing muscles can significantly improve physical performance when exercising in oxygen-poor environments, according to a new study.

Inspiratory [muscle training](#) (IMT), which trains the muscles used when we breathe in, can improve [breathing](#) efficiency in hypoxic environments such as at altitude, where less [oxygen](#) increases the strain of exercise on the body. The benefits could be significant for mountaineers, hikers and people who run cycle and train at altitude.

The research, by the University of Portsmouth, found that IMT can increase muscle strength resulting in the body breathing more efficiently to do the same amount of exercise. Dr Mitch Lomax, who carried out

the research, said that the training helps to compensate for the effects on the body caused by lower oxygen.

"When oxygen is reduced your breathing rate increases. The 'cost' of breathing goes up and the demand placed on the lungs is higher so it's not surprising that it takes less time to become exhausted. IMT can reduce the strain enabling people to go further or at a faster rate without feeling as tired."

Dr Lomax, from the Department of Sport & Exercise Science said that the breathing muscles respond just as well to being trained as our other muscles but people don't always realise the benefits. "When you exercise in lower oxygen environments, your perceived level of effort can go down after such training so you feel less tired overall."

Training is done by breathing into a small hand-held gadget, similar to an inhaler, which is inserted into the mouth. The user must breathe in slowly and deeply to release a valve inside that allows air to flow through. Dr Lomax recommends doing this for around five minutes twice a day over a period of six weeks to improve the strength of the [breathing muscles](#).

The research was carried out in healthy non-smoking men who cycled in normal and hypoxic conditions in the University's extreme environments laboratories, which can replicate different climatic conditions.

Participants cycled in a simulation of 3000 metres and researchers measured their heart rate, oxygen saturation, perceptions of breathing effort, and oxygen uptake and ventilation. Those who had undergone the six week training programme saw better results and reported feeling less strain while exercising.

She suggested that further research could demonstrate that IMT would benefit people with [breathing problems](#) such as asthmatics or those with

reduced lung capacity due to illness.

"A pilot study has shown some encouraging signs that IMT can improve asthma control in adults who struggle to manage their condition and we hope to research this further. Another [pilot study](#) demonstrated that training both inspiratory and expiratory muscles can benefit patients with chronic [obstructive pulmonary disease](#) and may improve anxiety and depression. Again more research in these areas is needed before we can draw meaningful conclusions."

The research is published this week in *Aerospace Medicine and Human Performance*. (June volume 88, number 6).

More information: Inspiratory Muscle Training Effects on Cycling During Acute Hypoxic Exposure. [www.ingentaconnect.com/search/ ... &pageSize=10&index=2](http://www.ingentaconnect.com/search/...&pageSize=10&index=2)

Provided by University of Portsmouth

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