

# High-Altitude Training: Fact vs. Fiction

<https://www.active.com/fitness/articles/high-altitude-training-fact-vs-fiction>



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## “YOU WILL SEE IMPROVEMENTS IN YOUR MAXIMAL OXYGEN UPTAKE”

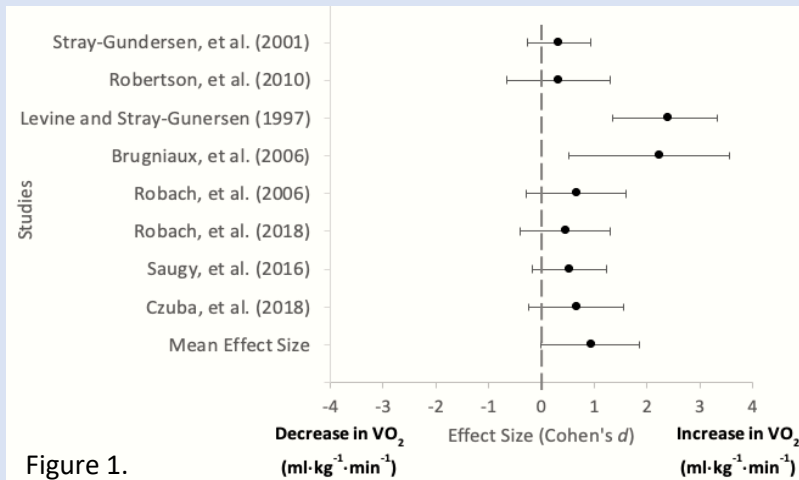


Figure 1.

### Conclusion:

- 3 studies indicated **improvements in  $VO_{2max}$**  (maximal oxygen uptake) with a **small** effect size ( $d_{mean} = 0.38$ ) and 3 with a **medium** effect size ( $d_{mean} = 0.64$ ).
- Levine and Stray-Gundersen (1997) and Brugniaux et al. (2006) both indicated **large improvements** in  $VO_{2max}$  with **6.3%** and **9.6%** increases, respectively.
- Despite significant improvements occurring, differences in these values could be associated with **variations** in the **duration** and **height of altitude exposure**.

The research indicates that all studies evidenced **improvements in  $VO_{2max}$**  from high-altitude training.

## “ALTITUDE TRAINING IMPROVES POWER OUTPUT”

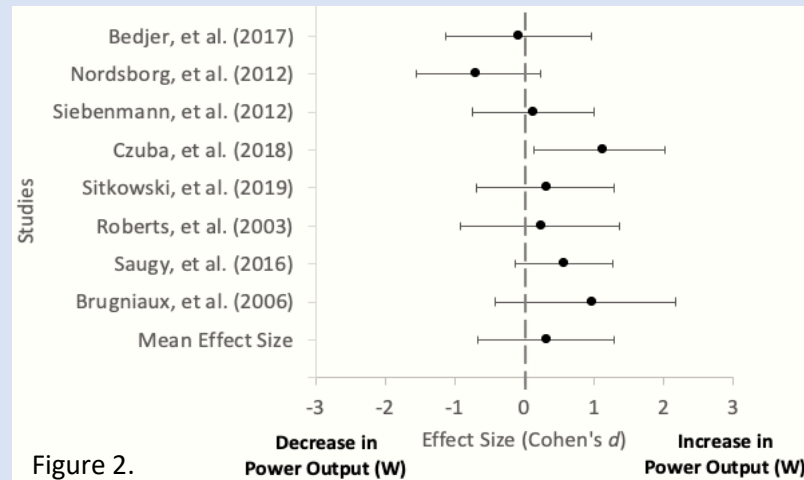


Figure 2.

### Conclusion:

- Bedjer et al. (2017) found a small **1.6%** decrease in PO (power output) with **no significant differences** after 6 weeks, with similar results of **3.4%** by Nordberg et al. (2012) after 4 weeks of high-altitude training.
- In comparison, 6 studies evidenced **improvements** in PO, with small ( $d_{mean} = 0.22$ ) and large effect sizes ( $d_{mean} = 1.05$ ) in 2 studies.
- Furthermore, **significant improvements** in PO of **5.9%** occurred after **4 weeks** (Czuba et al., 2018) and **8.4%** after **18 days** (Brugniaux et al., 2006).

The research indicates that 6/8 studies evidenced **improvements in PO** following high-altitude training.

## “THE BODY WILL GROW MORE RED BLOOD CELLS”

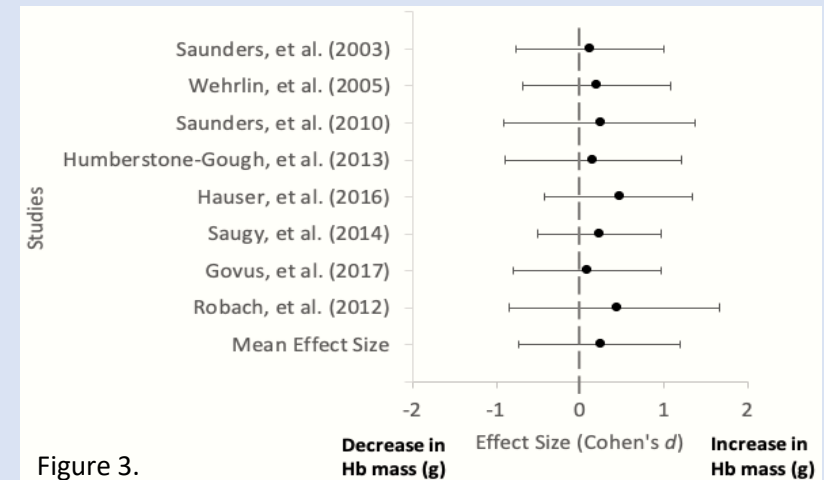


Figure 3.

### Conclusion:

- While research consistently reports **improvements in Hb mass** (haemoglobin mass), **medium** effect size ( $d_{mean} = 0.46$ ) only occurred in 2 studies, with the remainder displaying **small** effect size ( $d_{mean} = 0.21$ ).
- Interventions were typically carried out with short study durations ranging from **2 to 4 weeks**.
- Hb mass increased by **2.3%** after only **2 weeks** (Govus et al., 2017), with **greater improvements** of **4.5%** after **4 weeks** (Robach et al., 2012).

The research indicates that all studies evidenced **improvements in Hb mass** following high-altitude training.