

Changes in Hemoglobin Concentration After Two Weeks of Apnea Training

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ABSTRACT

Hemoglobin concentration has been shown to increase immediately after maximal-duration apneas in both divers and untrained individuals. Relatively few studies have examined how apnea training programs influence hemoglobin concentration in untrained individuals. **PURPOSE:** To examine how a two-week maximal duration breath-hold training program, consisting of five maximal duration voluntary apneas per day, would change hemoglobin concentration in healthy adults. This study looked at short-term changes in hemoglobin after a series of breath-holds when untrained and trained in addition to long-term changes in resting hemoglobin before and after training. **METHODS:** Fifteen healthy adults (22.4 ± 4.8 years) came to the lab and had their hemoglobin concentration measured, performed a breath-hold training session of five maximal duration breath-holds, followed by another hemoglobin concentration measurement. They performed the same training session at home for two weeks before returning to the lab for visit two, now considered trained, where the same protocol as visit one was repeated. **RESULTS:** Females (before and after training) and untrained males did not exhibit a short-term increase in hemoglobin but trained males had a statistically insignificant short-term increase in hemoglobin ($p = 0.142$) after a series of breath-holds. Resting hemoglobin concentration was not significantly different after training for females ($p = 1.000$) or males ($p = 0.071$). **CONCLUSION:** Although previous studies have shown short-term increases in hemoglobin when untrained and trained, this study opposes research by only replicating a short-term increase, to a statistically insignificant degree, for trained males. The lack of increased resting hemoglobin after two weeks of breath-hold training supports findings from the limited existing literature on the subject.