

Purpose

JAEGER® Vyntus® CPX, Sentry Suite, high/low FIO₂ option allows the user to make measurements whilst the subject breathes increased or decreased concentrations of inspired oxygen. For this, a Y-valve is connected to the volume sensor permitting the subject to inhale the prescribed oxygen concentration from a reservoir and allowing a CPET measurement to be performed simultaneously.

The SentrySuite® high/low FIO₂ software application applies the Eschenbacher transformation (Eschenbacher (2016)) for the calculations as the Haldane transformation (Haldane, (1912)) does not provide plausible and reliable data, especially at high FIO₂ values.

The aim of the present study was to provide the answer to the validation question: “Are exercise breath by breath oxygen uptake measurements measured by JAEGER® Vyntus® CPX influenced by altering inspired oxygen fraction?”.

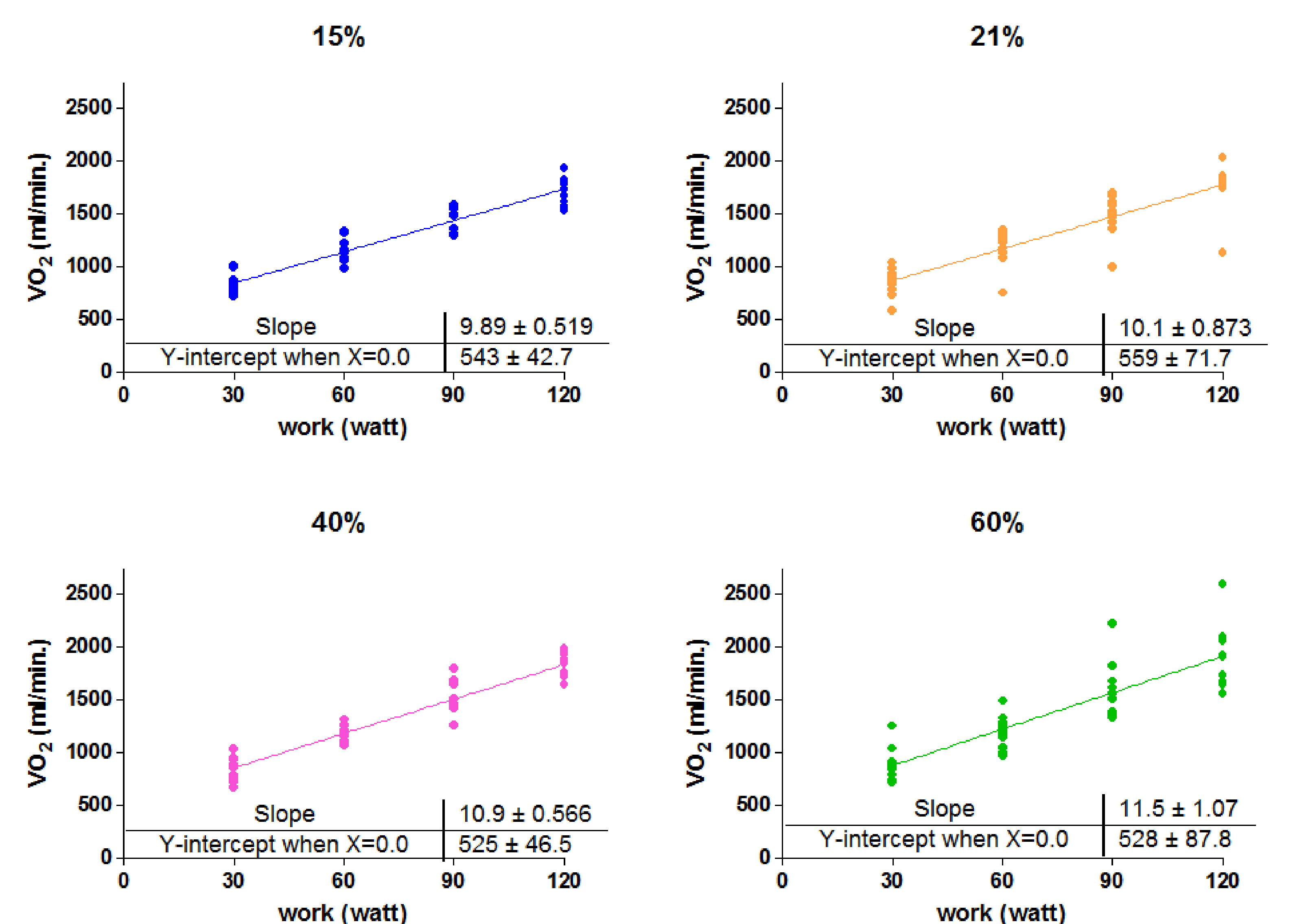
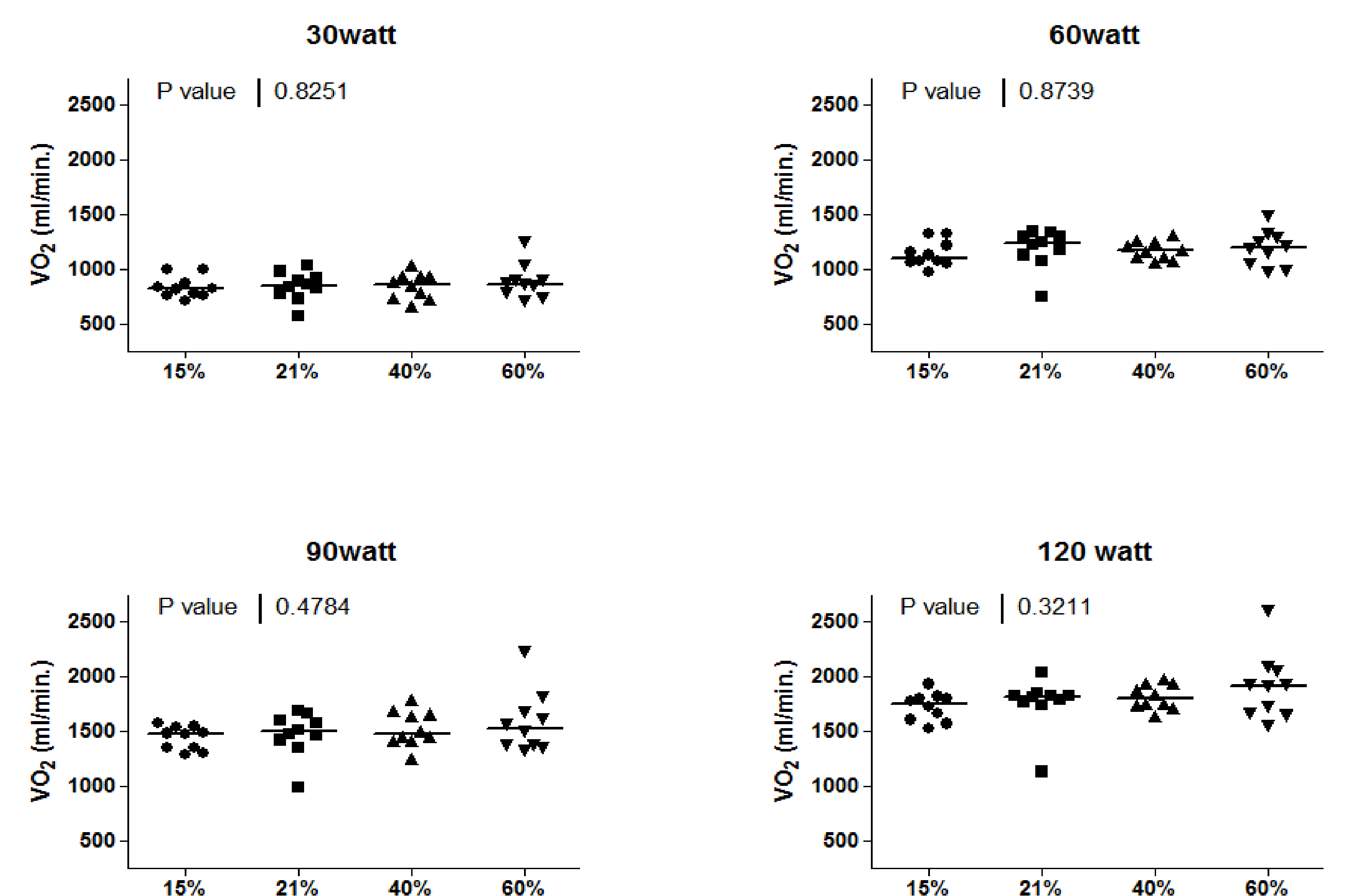
Method

Ten healthy volunteers were included to measure breath by breath oxygen uptake during exercise in a random sequence with different (0,15; 0,21; 0,40 ; 0,60) inspiratory oxygen fractions. The exercise protocol used was a stepwise (30 watt / 3 minutes) exercise protocol to a maximum of 120 watt on a cycle ergometer (Ergoselect ES 200 P, Ergoline). Oxygen uptake results were taken as the last thirty seconds average of every incremental exercise step.

Statistics The differences between the measurements are analyzed by repeated measurements one way ANOVA. $p < 0.05$ shows statistical significance

Results

mean values (ml)	15% O ₂	21% O ₂	40% O ₂	60% O ₂
30 watt	836	846	848	889
60 watt	1139	1188	1171	1187
90 watt	1441	1475	1525	1582
120 watt	1725	1760	1816	1909



Conclusions

JAEGER® Vyntus® CPX shows no difference in exercise oxygen uptake due to modification of inspired oxygen fractions

References

Eschenbacher H.: Haldane and Eschenbacher transformation. White Paper RD5693A (0716/PDF). CareFusion (2016).

Haldane J.S.: Methods of air analysis. Charles Griffin & Co.,Ltd., JB Lippincott Co., Philadelphia (1912).