The influence of body fat on post-dive bubble formation in recreational divers measured with precordial Doppler monitoring

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Study question
Are the BF (body fat) –VGB (venous gas bubble) relation and the BF–DCS-risk association, as found previously in various studies, co-associations due to VO\(_2\text{max}\)--BF and age--BF correlations?

Material and methods
Age, VO\(_2\text{max}\) and BF are mutually interrelated; the problem of multi-collinearity. Therefore, regular Pearson correlation coefficients are biased and MV-regression eq’s need more maths. Solution: calculate partial Pearson correlation coefficients, to compensate for "contamination". Calculate MV-regressions including VIF.

Precordial Doppler (KM) readings at 40 and 100 min, 20msw/40min 7min deco, 61 divers, large ranges of BF, age, VO\(_2\text{max}\).

KM scores were transformed to logKISS and to log(#bubbles/cm\(^2\)) = logB (with KM-EB conversion). Independent test variables: BF, age, VO\(_2\text{max}\).

Results

\[
\text{logB(A,Vm)} = -1.6 + 0.033\text{Age} - 0.038 \text{VO}_2\text{max}
\]

CONCLUSIONS/RECOMMENDATIONS
1 BF appears not to influence VGB scores.
2 Age and VO\(_2\text{max}\) do.
3 VO\(_2\text{max}\) should be used for exam of recreational divers; BF is only a clue.
4 40 mL and 25 mL O\(_2\) mL/kg.min seem to be minimal values for professional and recreational divers respectively.

Schellart et al., ASEM 2012:83;951-7.