

Supplement:

Sonographic Estimation rather than Quantification of Fluid Status using Inferior Vena Cava and other major vessel parameters in a non-bleeding fluid loss and centralization model.

Type	Variable	n	mean	sd	Both dives		First dive		Repetition dives	
					r _s	p-value	r _s	p-value	r _s	p-value
Post dive measurement	Heart Rate (/min)	298	80	13.90	-0.09	0.157	-0.19*	0.008	0.13	0.188
	BP Syst (mmHg)	198	122	16.01	-0.04	0.562	-0.05	0.595	0.01	0.961
	BP Diast (mmHg)	199	80	13.33	-0.12	0.109	-0.14	0.126	0.00	0.981
	dIVCmax (mm)	260	20.0	5.02	-0.07	0.272	0.01	0.942	-0.14	0.200
	dIVCmin (mm)	274	15.7	4.60	-0.04	0.567	-0.00	0.985	-0.05	0.637
	dIVC min insp (mm)	83	11.7	4.27	0.27*	0.017	0.30*	0.020	-0.01	0.974
	IVCmin Collapsibility Index	255	21.4	10.45	-0.05	0.460	-0.08	0.351	-0.12	0.283
	IVCminInsp Collapsibility Index	65	40.8	21.97	-0.28*	0.027	-0.31*	0.044	-0.13	0.598
	dAomax (mm)	314	17.0	2.50	-0.01	0.825	0.01	0.854	0.00	0.988
	dAomin (mm)	302	15.0	2.31	0.13	0.0342	0.21	0.004	0.054	0.614
	dIVCmax / dAomin	230	1.38	0.39	-0.12	0.066	-0.13	0.130	-0.10	0.364
	dIVCmax / dAomax	254	1.20	0.32	-0.04	0.557	0.02	0.844	-0.12	0.255
	dIVCmin / dAomin	244	1.07	0.35	-0.09	0.167	-0.11	0.163	-0.018	0.893
	dIVCmin (insp) / dAomin	79	0.82	0.32	0.16	0.176	0.16	0.227	0.04	0.876
dIVCmin / dAomax	269	0.94	0.29	-0.03	0.696	-0.01	0.859	-0.03	0.771	
Post-Pre dive differences	Heart Rate_diff	294	-3.09	13.41	0.09	0.133	0.02	0.750	0.15	0.147
	BP Syst_diff	197	-3.07	15.44	-0.01	0.917	0.08	0.388	-0.09	0.510
	BP Diast_diff	198	1.80	14.5	-0.43	0.558	-0.015	0.864	-0.07	0.574
	dIVCmax_diff	236	-0.39	4.76	-0.20*	0.002	-0.13	0.127	-0.29*	0.012
	dIVCmin_diff	248	-0.42	4.71	-0.19*	0.004	-0.17*	0.031	-0.21	0.065
	dAomax_diff	301	-0.07	2.16	0.09	0.136	0.11	0.117	0.08	0.472
	dAomin_diff	286	0.17	3.39	0.14*	0.019	0.22*	0.003	0.05	0.642
	dIVCmax / dAomin_diff	204	-0.03	0.45	-0.34*	0.000	-0.32*	0.000	-0.38*	0.001
	dIVCmax / dAomax_diff	225	-0.01	0.31	-0.22*	0.001	-0.17*	0.042	-0.27*	0.020
	dIVCmin / dAomin_diff	215	-0.06	0.41	-0.30*	0.000	-0.31*	0.000	-0.22	0.063
	dIVCmin (insp) / dAomin_diff	19	0.081	0.332	0.31	0.198	0.35	0.201	0.40	0.750
dIVCmin / dAomax_diff	237	-0.03	0.32	-0.20*	0.002	-0.19*	0.017	-0.20	0.089	

Table S1: All vital and ultrasound-derived parameters as post dive measurements and post-pre dive differences. Different measurement numbers of each parameter (n) are due to ultrasound scans that were excluded in post-hoc analysis for not optimal quality. Correlation coefficients with an uncorrected p-value lower than 0.05 are flagged with “*”.

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Model	Variable	Estimate (standardised)	Std. Error	Degrees of freedom	t value	p value
A (post)	(Intercept)	0.99	0.09	140.47	10.93	0.000
	IVC Collapsibility Index (post dive)	0.00 (-0.02)	0.00	222.77	-0.25	0.813
Marginal R² (Fixed effects) = 0.000 , Conditional R ² (Total) = 0.178, ICC = 0.25						
B (post-pre)	(Intercept)	1.02	0.05	20.10	22.04	0.000
	dIVCmax/dAomin_DIFF_post-pre	-0.35 (-0.26)	-0.09	124.03	-3.80	0.000
Marginal R² (Fixed effects) = 0.074 , Conditional R ² (Total) = 0.175, ICC = 0.13						
C (post-pre)	(Intercept)	1.02	0.05	21.15	20.30	0.000
	dIVCmin/dAomin_DIFF_post-pre	-0.34 (-0.23)	0.10	180.97	-3.37	0.001
Marginal R² (Fixed effects) = 0.054 , Conditional R ² (Total) = 0.173, ICC = 0.14						

Table S2: Mixed-Regression models for the effect of the relative weight loss (-% body weight) on sonographic vascular parameters. The Participant-ID was defined as a random effect (intercept), as there were multiple measurements per individual and the first or second dive was defined as a random slope, as it affected the relationship between the parameters. The marginal R² described the percentage of variance explained by the vascular parameter and is therefore analogous to the classical R², the conditional R² describes the explained variance by the vascular parameter and the random effect (e.g. participant). ICC is the intra class coefficient describing the similarity of measurements within groups (e.g. participant).