

Supplementary Materials:

Table S1. Correlation statistics for all source-detector separations, including Pearson's R, concordance correlation coefficient, and associated p-value. The linear model used to describe the relationship between the NIRS-only arterial occlusion measure (VO_{2AO}) and the NIRS-only venous occlusion measure (VO_{2VO}) is described by the slope (standard error) and intercept (standard error).

Source-detector separation				
	3.5 cm	3 cm	2.5 cm	2 cm
VO _{2VO} vs. VO _{2i}	R ² = 0.16 p = 0.021	R ² = 0.052 p = 0.202	R ² = 0.056 p = 0.184	R ² = 0.024 p = 0.390
VO _{2AO} vs. VO _{2VO}	R ² = 0.31 p < 0.001 CCC = 0.40 Slope = 1.01(0.26) Intercept = 0.01(0.01)	R ² = 0.19 p = 0.008 CCC = 0.32 Slope = 0.79(0.27) Intercept = 0.02(0.01)	R ² = 0.15 p = 0.021 CCC = 0.25 Slope = 0.75(0.31) Intercept = 0.02(0.01)	R ² = 0.09 p = 0.075 CCC = 0.21 Slope = 0.51(0.28) Intercept = 0.02(0.01)
VO _{2AO} vs. VO _{2i}	R ² = 0.33 p < 0.001	R ² = 0.33 p < 0.001	R ² = 0.28 p = 0.002	R ² = 0.27 p = 0.002
BF vs. BFI	R ² = 0.61 p < 0.001	R ² = 0.58 p < 0.001	R ² = 0.61 p < 0.001	R ² = 0.62 p < 0.001

Table S2. Repeatability of oxygen metabolism and blood flow measurements for all source-detector separations. Intraclass correlation coefficients (ICC) and coefficient of variation (CV) for oxygen metabolism measured during arterial occlusion and venous occlusion (VO_{2AO} and VO_{2VO}, respectively), as well as oxygen metabolism index (VO_{2i}), blood flow measured during venous occlusion (BF), and blood flow index (BFI). Note that only one source-detector separation was used for BFI (2.5 cm).

Source-detector Separation		VO _{2AO}	VO _{2VO}	VO _{2i}	BF	BFI
3.5 cm	ICC	0.88	0.85	0.77	0.83	NA
	CV	0.19 ± 0.13	0.24 ± 0.13	0.24 ± 0.09	0.27 ± 0.12	NA
3 cm	ICC	0.81	0.84	0.76	0.85	NA
	CV	0.24 ± 0.18	0.27 ± 0.18	0.24 ± 0.10	0.29 ± 0.13	NA
2.5 cm	ICC	0.69	0.77	0.77	0.85	0.62
	CV	0.31 ± 0.22	0.31 ± 0.22	0.24 ± 0.10	0.32 ± 0.16	0.25 ± 0.11
2 cm	ICC	0.68	0.78	0.78	0.85	NA
	CV	0.34 ± 0.20	0.31 ± 0.20	0.25 ± 0.10	0.32 ± 0.23	NA