

Comparative Assessment of Healthy Tissue Oxygenation Using Near-Infrared Imaging, Transcutaneous Oxygen Measurement, and Plethysmography

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Running Title: Tissue Oxygenation in Healthy Human Volunteers

Trial Registration: ClinicalTrials.gov ID: NCT05784103

Table S1. Subject demographics

<u>Record ID</u>	<u>Gender</u>	<u>Skin color</u>	<u>Skin type</u>	<u>Age</u>	<u>Weight (Kg)</u>	<u>Height (cm)</u>	<u>BMI</u>
1	F	white	2	51	86	178	27
7	F	brown	3	29	59	165	22
8	F	light brown	3	35	75	165	28
11	F	brown	4	44	67	160	26
17	F	brown	3	30	58	163	22
18	F	brown	3	36	54	157	22
19	F	brown	4	24	58	163	22
2	M	brown	4	34	75	180	23
3	M	brown	3	35	88	180	27
4	M	brown	4	34	79	168	28
5	M	brown	3	38	78	171	27
6	M	light brown	3	26	83	173	28
9	M	brown	3	34	66	175	22
10	M	dark	4	33	83	173	28
12	M	light brown	3	29	53	161	20
13	M	brown	4	35	66	170	23
14	M	brown	4	33	70	170	24
15	M	light brown	3	29	73	168	26
16	M	light brown	3	39	69	167	25
20	M	brown	3	36	92	175	30

Table S2A. Measurement of oxygen saturation in male and female at baseline, before, during and after hyperemic events using multi-device techniques. Median (IQR) are reported.

	Female (n=7)	Male (n=12)	p-value*
	<i>SFDI</i>		
Baseline	65 (59-71)	63 (61-73)	0.87
Occlusion	45 (42-52)	46 (40-52)	0.83
Reactive hyperemia	75 (71-77)	76 (68-82)	0.73
Recovery	65 (64-72)	71 (63-78)	0.45
	<i>TCOM</i>		
Baseline	81 (76-93)	97 (86-101)	0.13
Occlusion	52 (49-67)	70 (68-85)	0.11
Reactive hyperemia	79 (68-98)	90 (78-97)	0.65
Recovery	74 (70-86)	88 (76-95)	0.20
	<i>Wearable device</i>		
Baseline	98 (97-98)	97 (97-98)	0.31
Reactive hyperemia	98 (98-98)	97 (97-99)	0.63
Recovery	98 (98-98)	97 (97-98)	0.05
	<i>Pulse Oximeter</i>		
Baseline	98 (98-98)	98 (98-98)	0.93
Reactive hyperemia	100 (99-100)	100 (99-100)	0.51
Recovery	99 (98-99)	98 (98-98)	0.02

*p-values obtained from Wilcoxon rank-sum test.

Table S2B. Measurement of oxygen saturation in skin type II&III and skin type IV at baseline, before, during and after hyperemic events using multi-modal techniques. Median (IQR) are reported.

	Skin type II&III (N=13)	Skin type IV (n=6)	p-value*
<i>SFDI</i>			
Baseline	66 (62-80)	60 (52-62)	0.04
Occlusion	49 (43-63)	36 (30-44)	0.03
Reactive hyperemia	77 (71-84)	70 (60-77)	0.12
Recovery	73 (66-80)	60 (53-68)	0.04
<i>TCOM</i>			
Baseline	94 (85-101)	84 (78-94)	0.29
Occlusion	69 (66-75)	56 (50-78)	0.25
Reactive hyperemia	93 (77-98)	82 (69-91)	0.45
Recovery	84 (74-96)	82 (74-87)	0.45
<i>Wearable device</i>			
Baseline	97 (97-98)	98 (97-98)	0.44
Reactive hyperemia	98 (97-98)	98 (97-99)	0.30
Recovery	97 (97-98)	98 (97-99)	0.15
<i>Pulse Oximeter</i>			
Baseline	98 (97-98)	98 (98-99)	0.05
Reactive hyperemia	100 (99-100)	99 (99-100)	0.28
Recovery	98 (98-98)	98 (98-99)	0.66

*p-values obtained from Wilcoxon rank-sum test.

Table S3A. Measurements using SFDI in males and females at baseline, before, during, and after hyperemic events using multi-device techniques. Median (IQR) are reported.

	Female (n=7)	Male (n=12)	p-value*
		<i>StO₂</i>	
Baseline	65 (61-71)	64 (61-73)	0.97
Occlusion	45 (42-51)	44 (38-52)	0.77
Reactive hyperemia	74 (71-77)	75 (68-81)	0.90
Recovery	65 (64-72)	68 (62-78)	0.65
		<i>HbO₂</i>	
Baseline	32 (29-35)	52 (47-55)	0.07
Occlusion	26 (22-27)	37 (29-42)	0.07
Reactive hyperemia	38 (33-49)	65 (56-78)	0.02
Recovery	35 (29-36)	55 (48-68)	<0.01
		<i>dHb</i>	
Baseline	20 (15-23)	29 (18-32)	0.20
Occlusion	33 (27-37)	45 (35-56)	0.07
Reactive hyperemia	14 (11-19)	23 (14-28)	0.12
Recovery	13 (12-20)	27 (13-35)	0.11
		<i>HbT1</i>	
Baseline	37 (31-46)	51 (46-63)	0.08
Occlusion	44 (42-58)	74 (52-80)	0.06
Reactive hyperemia	50 (41-56)	64 (56-76)	0.03
Recovery	41 (34-43)	60 (46-69)	0.01
		<i>HbT2</i>	
Baseline	86 (65-93)	128 (113-147)	0.05
Occlusion	75 (66-99)	134 (101-149)	0.12
Reactive hyperemia	68 (56-106)	146 (105-166)	0.03
Recovery	72 (60-85)	142 (105-149)	<0.01

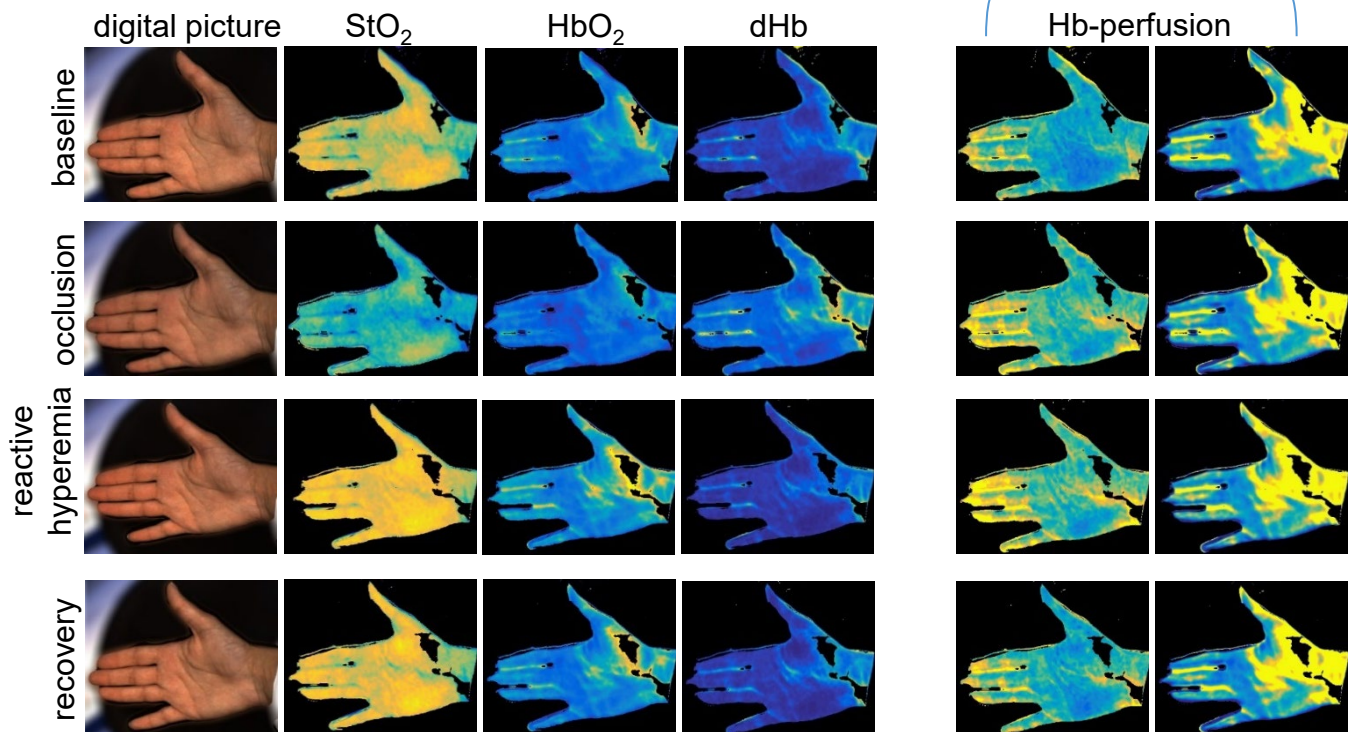
*p-values obtained from Wilcoxon rank-sum test.

Table S3B. Measurements using SFDI in skin type II&III and skin type IV at baseline, before, during, and after hyperemic events using multi-modal techniques. Median (IQR) are reported.

	Skin type II&III (n=12)	Skin type IV (N=7)	p-value*
<i>StO₂</i>			
Baseline	66 (62-80)	60 (52-64)	0.06
Occlusion	49 (43-62)	36 (31-44)	0.02
Reactive hyperemia	76 (71-84)	67 (60-74)	0.03
Recovery	72 (66-80)	60 (53-64)	0.01
<i>HbO₂</i>			
Baseline	66 (62-80)	60 (52-64)	0.06
Occlusion	49 (43-62)	36 (31-44)	0.02
Reactive hyperemia	76 (71-84)	67 (60-74)	0.03
Recovery	72 (66-80)	60 (53-64)	0.01
<i>dHb</i>			
Baseline	20 (12-29)	31 (26-40)	0.04
Occlusion	36 (27-38)	57 (48-69)	0.05
Reactive hyperemia	15 (11-21)	27 (26-30)	0.04
Recovery	13 (12-23)	33 (29-41)	0.02
<i>HbT1</i>			
Baseline	44 (37-49)	58 (53-71)	0.13
Occlusion	52 (44-73)	75 (66-81)	0.18
Reactive hyperemia	54 (47-61)	64 (63-75)	0.11
Recovery	44 (41-53)	65 (58-76)	0.07
<i>HbT2</i>			
Baseline	44 (37-49)	58 (53-71)	0.13
Occlusion	52 (44-73)	75 (66-81)	0.18
Reactive hyperemia	54 (47-61)	64 (63-75)	0.11
Recovery	44 (41-53)	65 (58-76)	0.07

*p-values obtained from Wilcoxon rank-sum test.

A. Females



B. Males

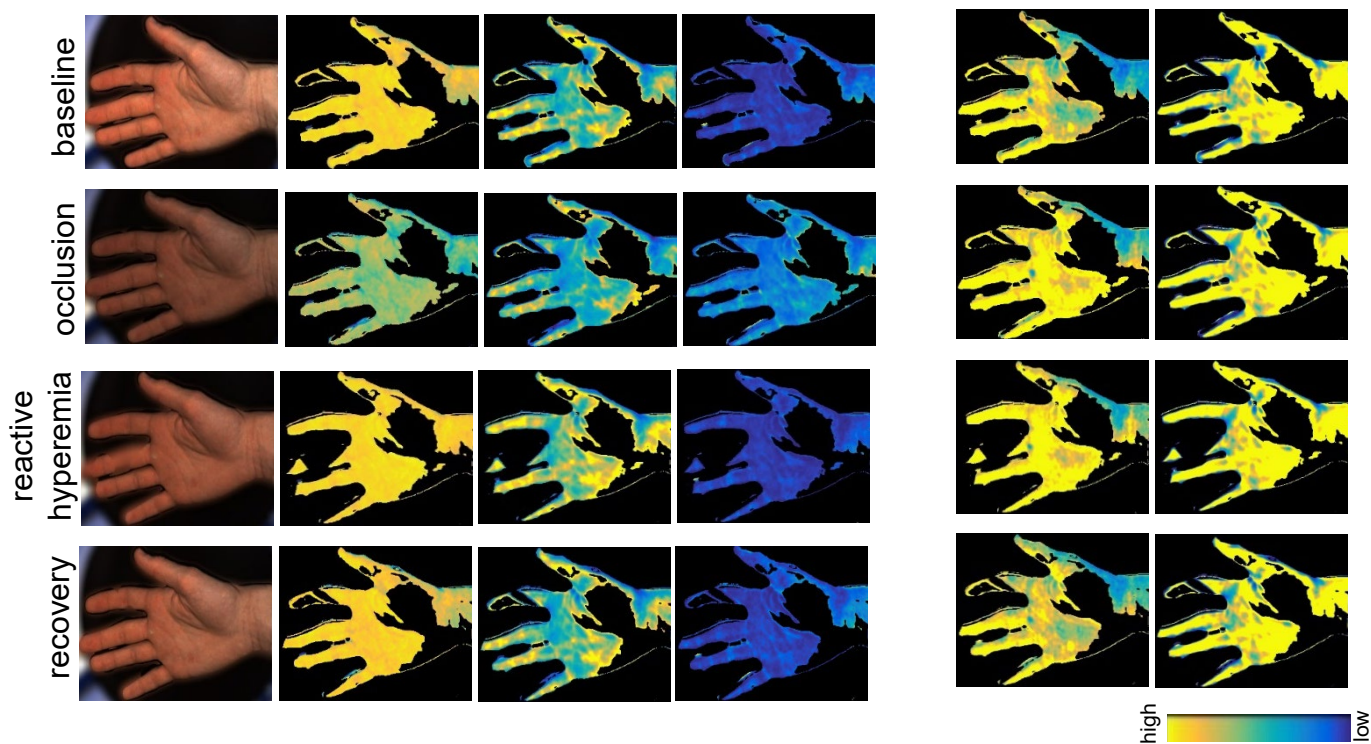


Fig. S1. Representative tissue biomarker maps compared between males and females. Compared between baseline, before and after the hyperemic events are shown **A**) females (1st four rows) and **B**) males (last four rows). Image panels depicting digital pictures (1st column), and StO_2 , HbO_2 , dHb , (2nd, 3rd, 4th columns) and tissue Hb-perfusion (5th superficial and 6th deeper) respectively.