

## Supplemental Material

**Supplemental Table I.** Microdialysis perfusion protocol

	Equilibrate 0-60 min	Phase 1 (3 samples) 60-90 min ‡	Phase 2 (3 samples) 90-150 min	Phase 3 (3samples) 150-210 min	Equilibrate 210-270 min	Phase 4 (3 samples) 270-300 min‡
Probe 1	Control	Control	Control‡	Control‡	SNP	SNP
Probe 2	Control	Control	Control*	Control**	ACh	ACh
Probe 3	Apocynin	Apocynin	Apocynin*	Apocynin**	ACh + Apocynin	ACh + Apocynin

\* 100  $\mu$ M amplex ultrared, 1 U/mL HRP added to perfusate. \*\* 100  $\mu$ M amplex ultrared, 1 U/mL HRP, 10 U/mL SOD added to perfusate. ‡ Ethanol o/i ratio measured to assess microvascular nutritive blood flow.

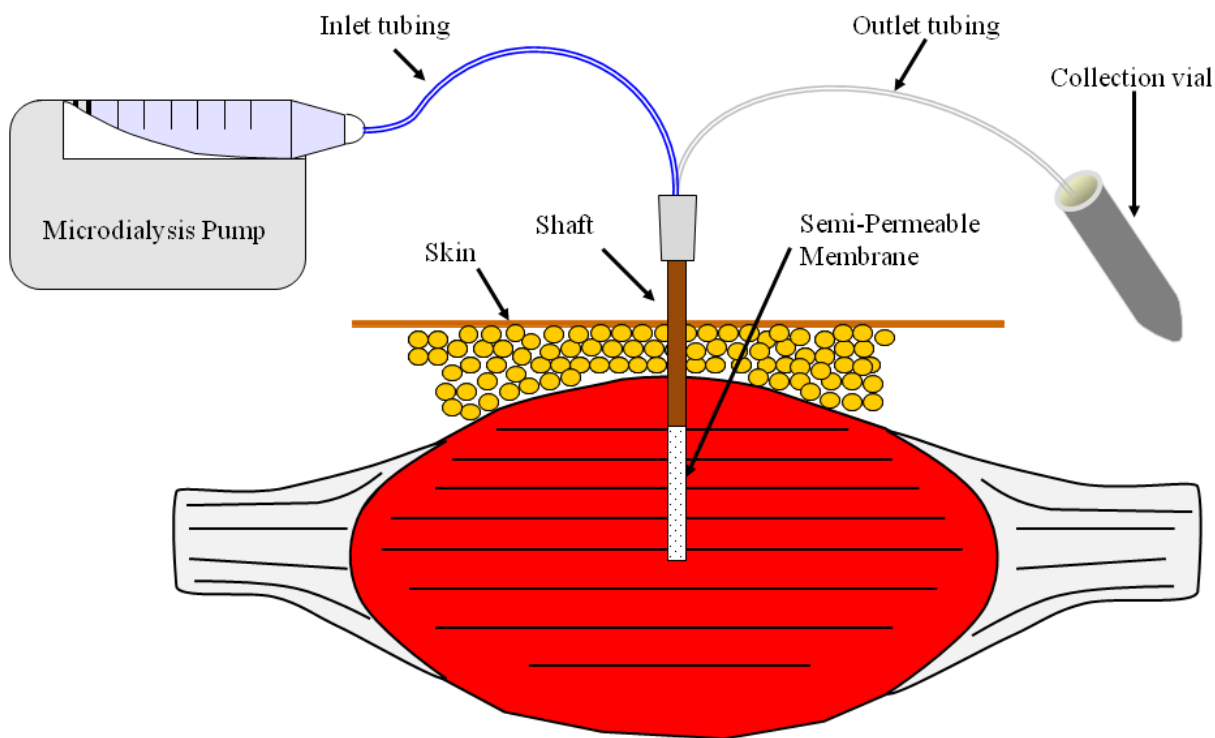
**Supplemental Table II.** Effect of Exercise Training on Metabolic Parameters. \*P<0.05 vs. Pre-training.

	Lean-Pre	Lean-Post	Int-Pre	Int-Post	Obese-Pre	Obese-Post
Weight (kg)	61.9±6.1	61.0±5.8	88.0±4.4	88.7±4.5	107.2±5.0	106.8±5.1
BMI (kg/m <sup>2</sup> )	21.1±1.4	20.9±1.5	30.1±0.5	30.3±0.6	36.6±0.9	36.5±1.1
Body Fat %	24.0±4.2	23.4±4.3	39.0±1.9	38.6±1.8	46.7±1.4	46.7±1.4
Glucose (mg/dl)	83.0±3.8	84.3±3.3	91.3±2.0	87.3±1.9	91.4±2.9	96.9±3.1*
Insulin (μIU/ml)	6.2±1.2	5.5±1.2	10.6±1.8	10.7±1.4	20.2±5.1	21.8±3.9
HOMA-IR	1.30±0.31	1.19±0.29	2.37±0.39	2.32±0.32	4.66±1.26	5.26±1.00
Trigs (mg/dl)	83.0±7.3	89.7±19.8	72.0±11.4	82.9±19.4	99.3±15.6	119.1±19.0
Chol (mg/dl)	167±13.4	149±5.7	162±8.2	166±10.5	161±11.2	164±9.4
HDL-C (mg/dl)	59.5±7.1	56.7±5.9	46.8±4.9	48.8±4.5	47.5±4.6	47.3±5.6
LDL-C (mg/dl)	93.6±8.9	74.6±8.6*	100.9±8.8	100.9±12.3	93.9±1.8	92.4±10.4
VO <sub>2peak</sub> (l/min)	2.05±0.26	2.19±0.20	2.53±0.24	3.14±0.42*	2.57±0.20	3.10±0.19*
VO <sub>2peak</sub> Rel	33.0±2.3	36.1±2.2	28.6±2.1	32.4±2.1*	24.1±1.5	29.0±1.7*

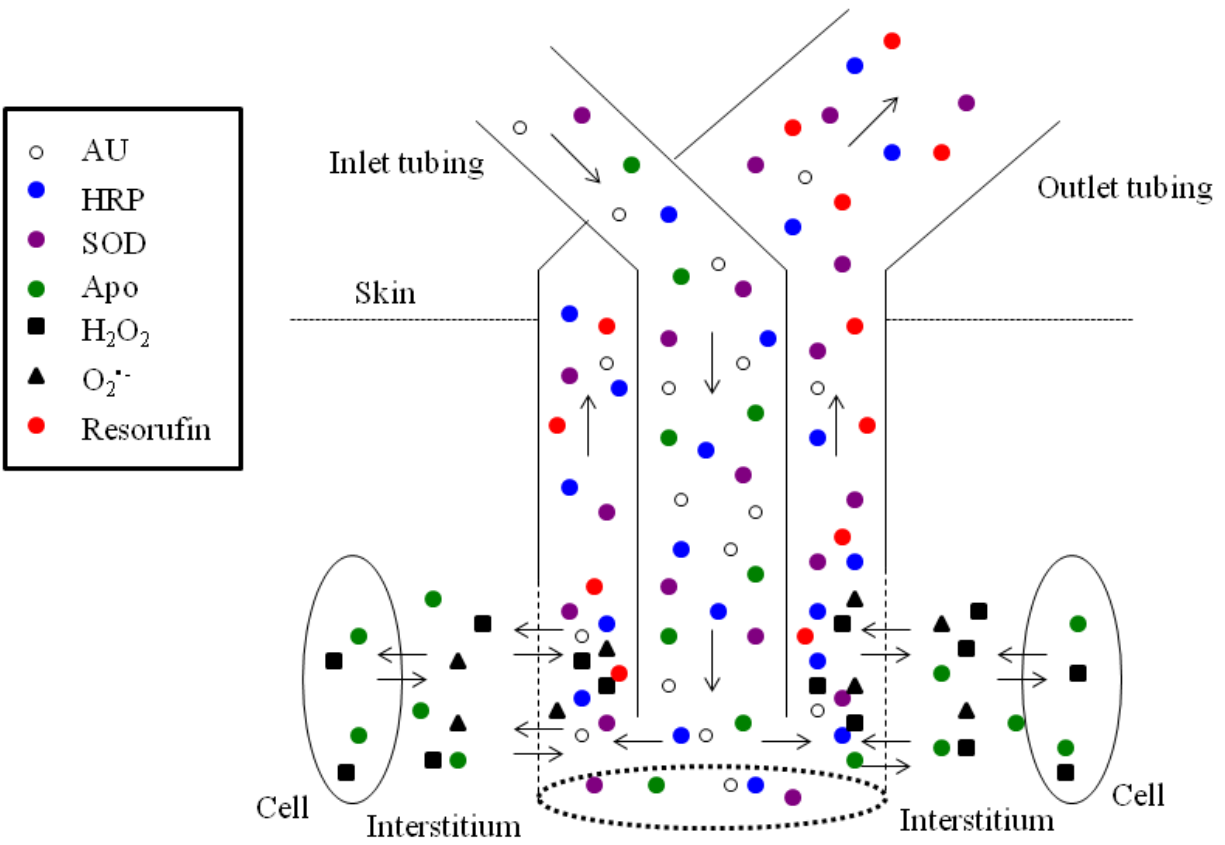
**Supplemental Table III.** Effect of Exercise Training on Vascular Injury Markers

	Lean-Pre	Lean-Post	Int-Pre	Int-Post	Obese-Pre	Obese-Post
CRP (ng/ml)	7.7±3.4	11.4±6.4	13.9±10.7	9.4±5.0	33.7±7.4	36.0±10.8
VCAM-1 (ng/ml)	1.05±0.14	1.05±0.19	1.14±0.17	1.26±0.10	1.47±0.15	1.26±0.13
ICAM-1 (ng/ml)	0.60±0.09	1.78±1.24	0.87±0.28	0.82±0.09	0.95±0.10	0.89±0.08
sICAM-3 (ng/ml)	0.64±0.07	0.79±0.34	0.58±0.07	0.59±0.06	0.86±0.06	0.80±0.06
E-Selectin (ng/ml)	3.8±3.6	2.7±2.4	11.0±2.6	13.2±2.1	19.1±2.1	19.4±1.7
P-Selectin (ng/ml)	64.4±13.0	64.9±4.1	57.2±7.6	59.5±4.4	64.3±6.8	61.4±8.3
Thromb-1 (ng/ml)	3.77±0.46	3.86±0.45	3.36±0.41	3.41±0.26	3.58±0.17	3.66±0.24
SAA (ng/ml)	12.7±6.1	26.4±21.5	18.2±6.7	13.9±2.4	38.2±7.7	55.1±19.3

## Supplemental Figures



**Supplemental Figure I Schematic of microdialysis set-up in skeletal muscle for ROS measurement.** Perfusate is pumped by the microdialysis pump at  $2.0 \mu\text{l}/\text{min}$ , where it travels through the inlet tubing, down the shaft (brown) of the microdialysis probe, and then to the semi-permeable membrane (white). While perfusate is in the semi-permeable membrane portion of the probe,  $\text{H}_2\text{O}_2$  and  $\text{O}_2^{\cdot -}$  may cross over the pores of the membrane to interact with the reagents. After passing through the semi-permeable membrane, the solution is termed "dialysate", which travels up the shaft of the microdialysis probe, through the outlet tubing, and into the collection vial. Dialysate is transferred from the collection vial to fluorometer for fluorescence measurement. Figure is adapted from previous work.<sup>20</sup>



**Supplemental Figure II Schematic of molecular flow through the microdialysis circuit.**

Arrows indicate direction of flow. Amplex Ultrared (AU), horseradish peroxidase (HRP), superoxide dismutase (SOD), and apocynin (Apo) are perfused through the inlet tubing. Apo delivered via microdialysis may diffuse into the interstitium in the immediate vicinity of the semi-permeable membrane (dotted lines), and ultimately into the cell. Conversely, H<sub>2</sub>O<sub>2</sub> and O<sub>2</sub><sup>-</sup> produced by the cell can diffuse into the interstitium, and ultimately into the microdialysis probe where resorufin is produced by reaction of H<sub>2</sub>O<sub>2</sub> with AU and HRP. Figure is adapted from previous work.<sup>20</sup>