

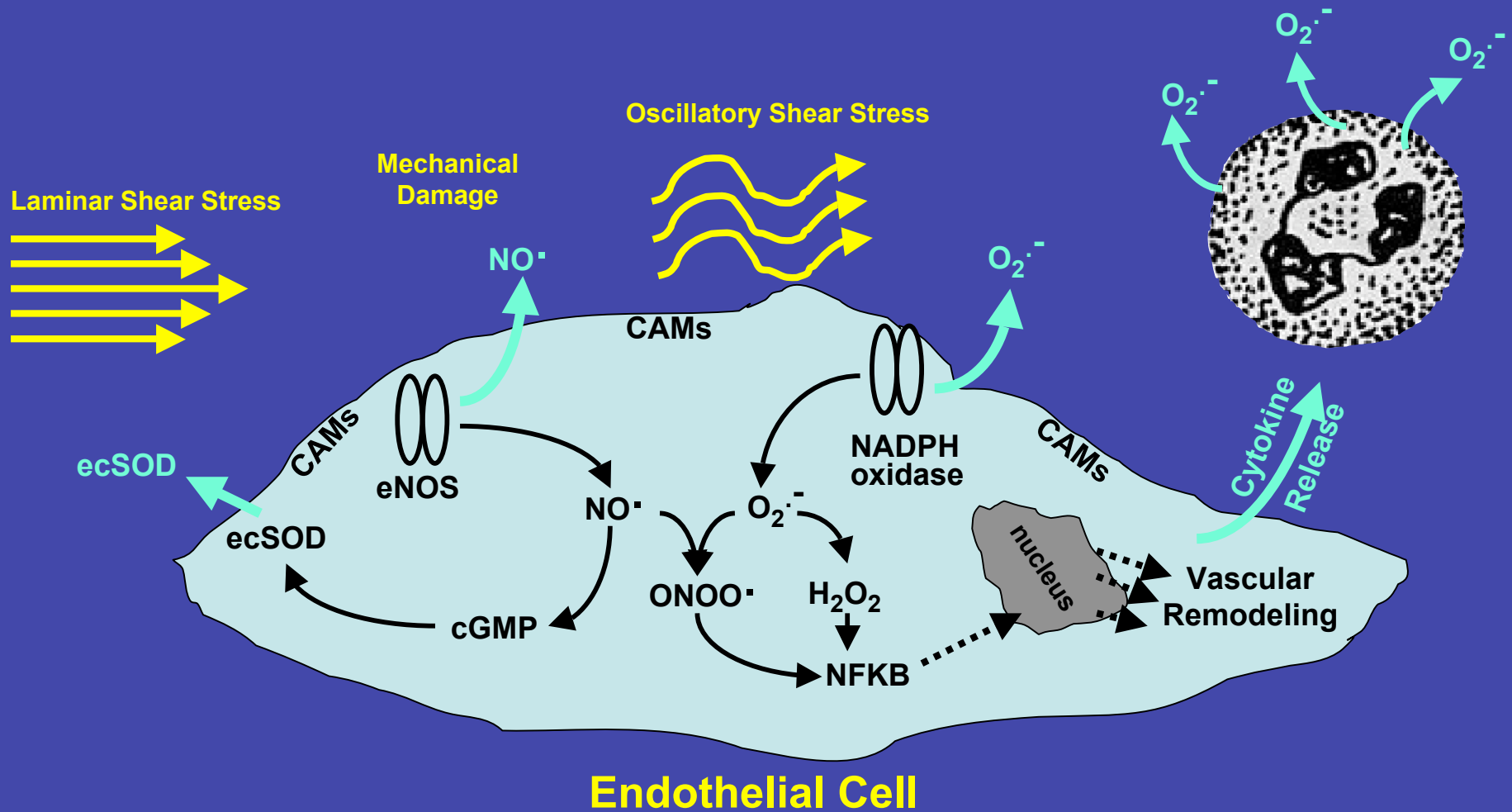
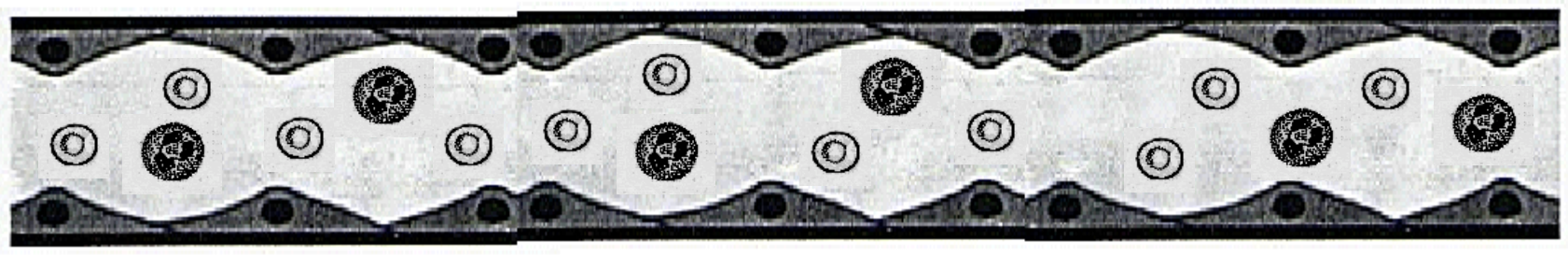


BMSC

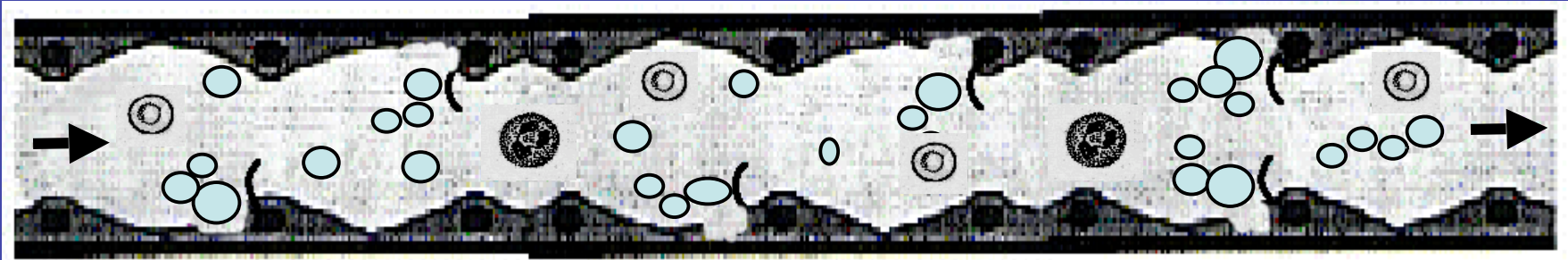
GENERATION OF REACTIVE OXYGEN AND NITROGEN SPECIES DURING HYPERBARIC STRESS IN EXPERIENCED DIVERS VERSUS NAÏVE SUBJECTS

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Normal Vascular Morphology

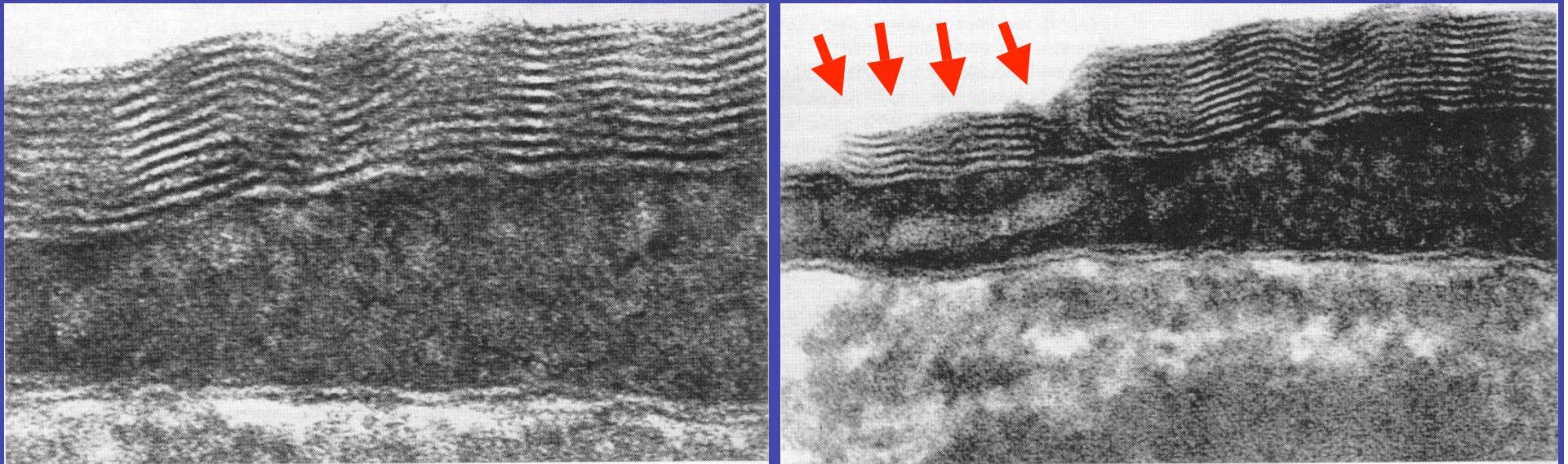


VGE-induced vascular trauma



via flow disturbance (oscillatory shear stress?)
or injury to the endothelial layer

Bubble damage to the oligomellar lining of an arteriole in the cerebral cortex



Mitchell in Bennett and Elliot

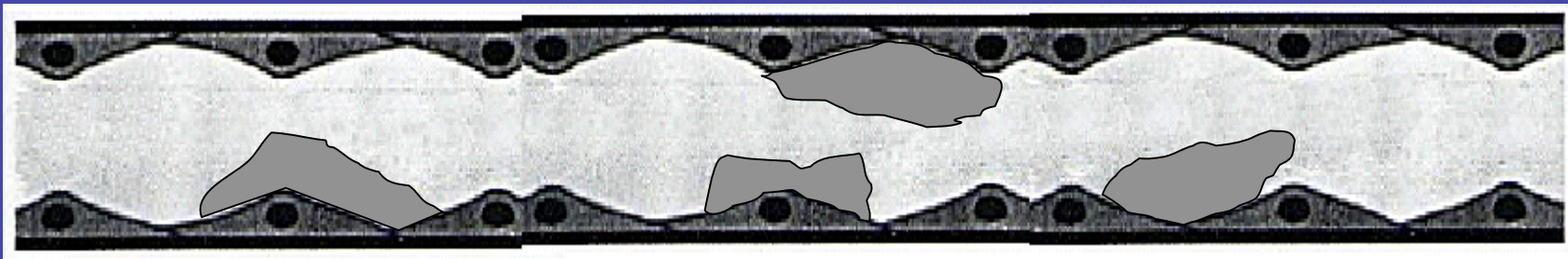
**When high levels of Nitric Oxide and Super Oxide Anions are present
in the vasculature following chronic endothelium disturbances**



Inflammatory Conditions



Biochemical/Morphological Remodeling



Atherosclerotic Plaque/Compensatory Mechanisms

**Do repeated exposures to VGE promote
changes in inflammatory response?**

Methods

Venipuncture

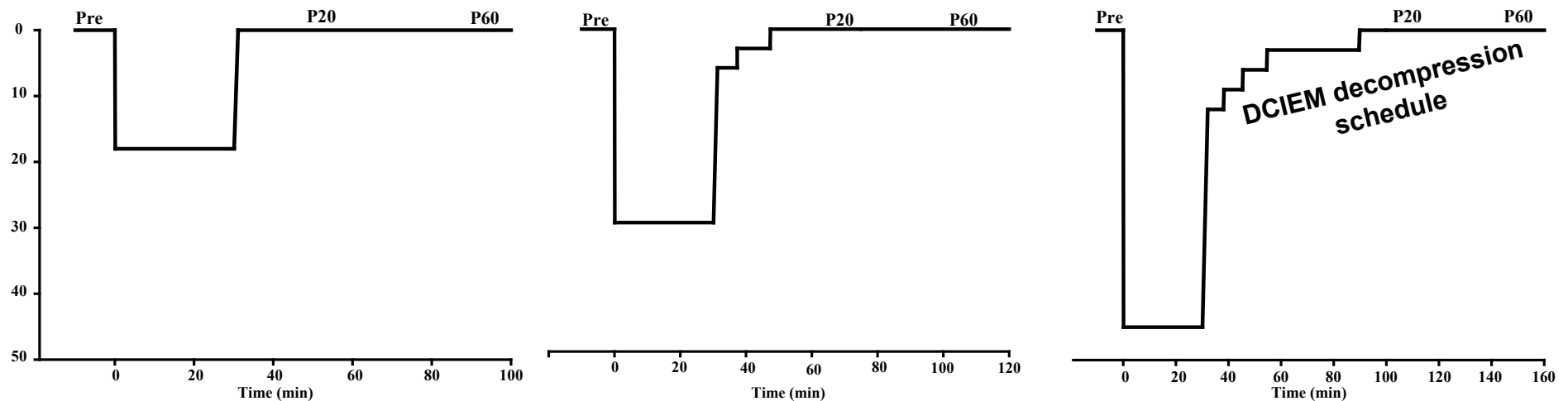
Pre-Dive
Blood Draw

Post 20 min
Blood Draw

Post 60 min
Blood Draw

12 Experienced Divers

10 Naïve Subjects

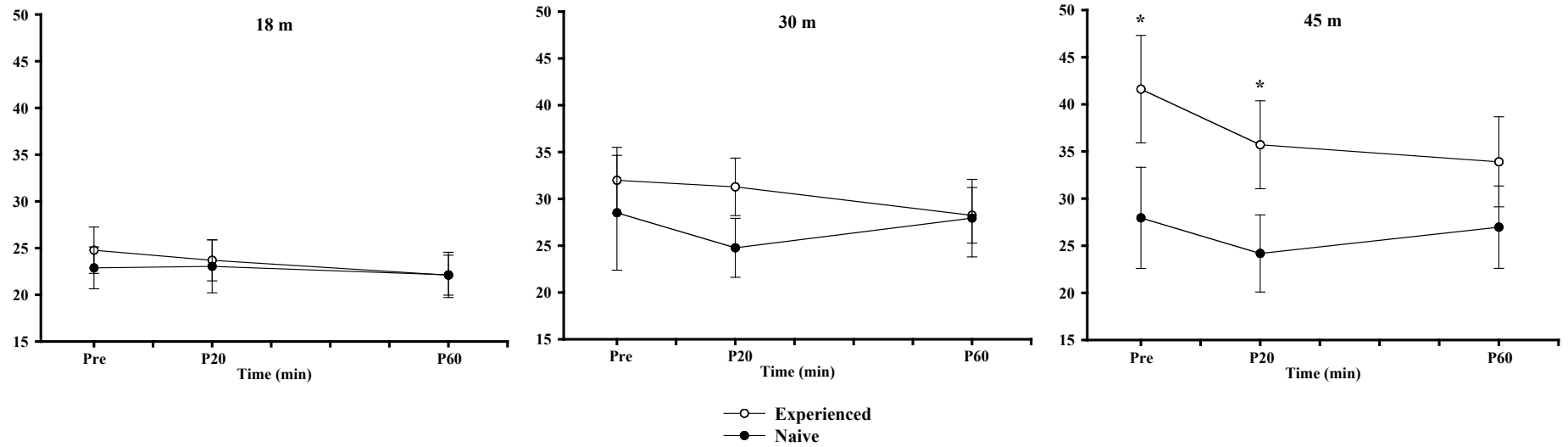


Plasma levels of Nitric Oxide determined with Total NO Griess Reagent Kit (Assay Designs)

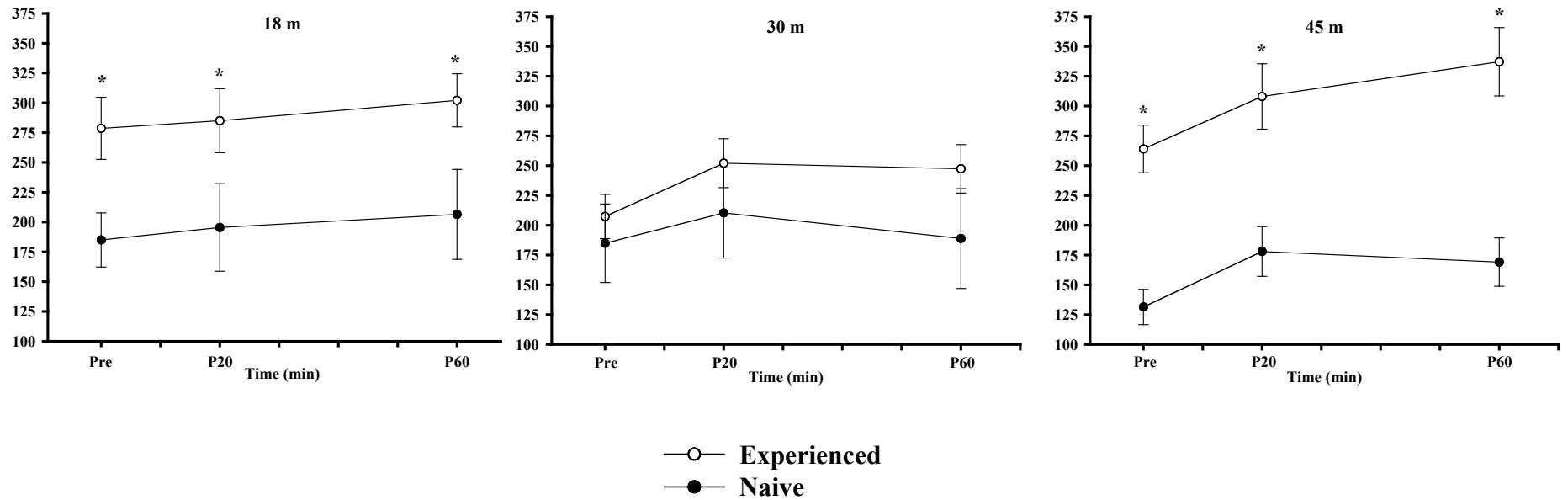
Plasma levels of Super Oxide Dismutase determined with SOD Assay kit (Cayman Chemicals)

Plasma levels of Nitrated Tyrosine peptides (ONOO^-) determined with N-Tyr assay kit (OxisResearch)

Reactive oxidant generation by PMNs was determined flow cytometrically using the Bursttest (Phagoburst) commercial kit (Orpegen Pharma) containing the fluorogenic substrate, dihydrorhodamine (DHR) 123

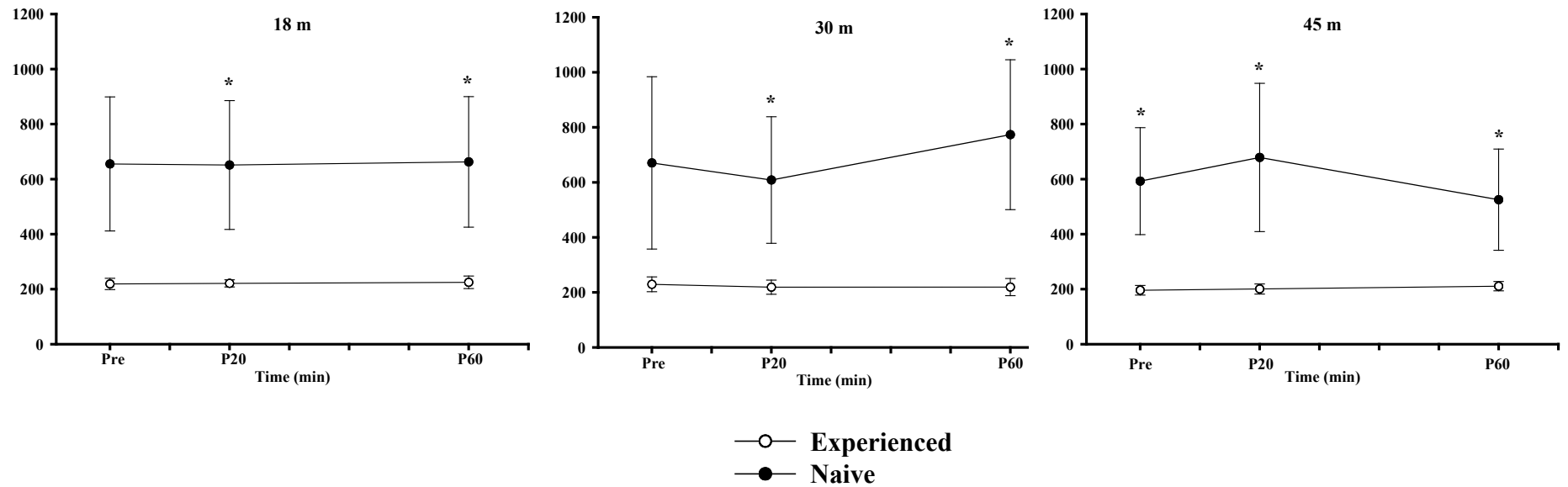


Plasma levels of Nitric Oxide increased throughout the dive series in experienced divers and remained higher after decompression from 45 MSW than that at 18 MSW

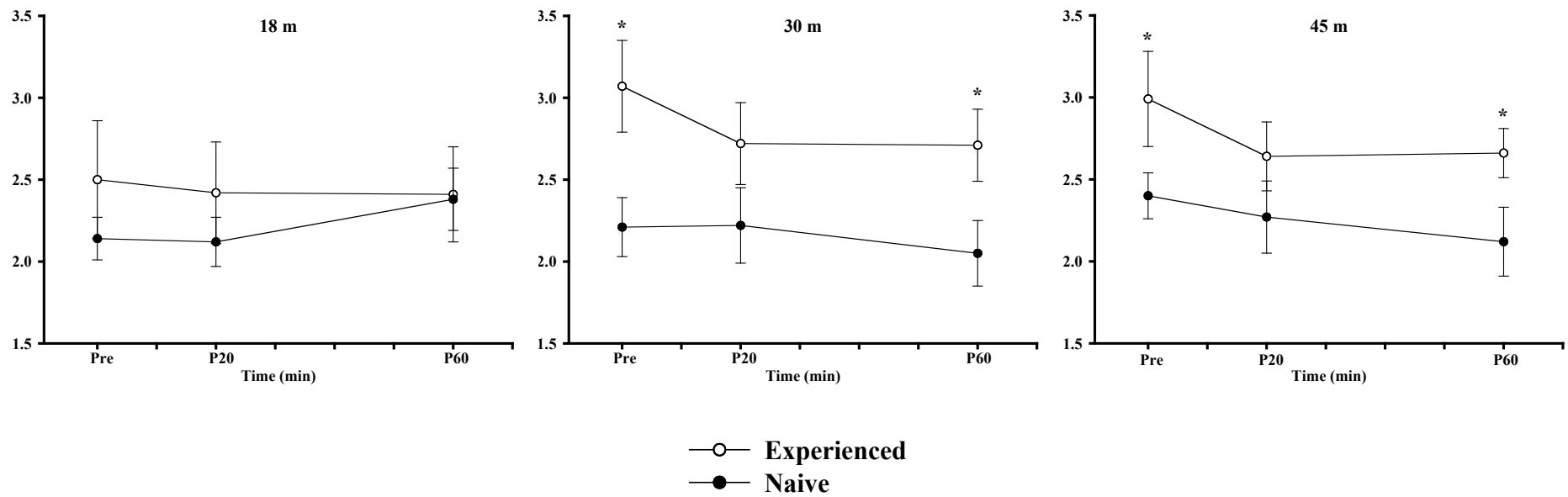


Production of ROS were higher in the PMNs of experienced divers than in naive divers at all times

Levels of ROS were higher at P60 than at Pre in the PMNs of experienced divers following decompression from the 45 MSW dive, while ROS levels decreased at P60 in the PMNs of naïve divers



Plasma levels of peroxynitrite (ONOO⁻) was lower at all times in experienced divers



SOD activity in the plasma of experienced divers increased over that in the naïve divers

Summary

Levels of Reactive Oxygen Species in PMNs and Nitric Oxide appear to be higher in experienced divers before and after decompression.

Yet, levels of Reactive Nitrogen Species are lower in experienced divers.

Is this due to higher levels of antioxidant production in the venous system in experienced divers following stimulation by venous gas emboli ?

Are experienced divers conferred with protection against inflammatory response due to chronic exposure to VGE?

What is the status of other well-known inflammatory markers in divers following decompression.