The CVAC Process ≠ Normobaric Hypoxia

Hypobaric Hypoxia

- Hypobaric hypoxia is low pressure, low oxygen (less oxygen molecules) - it is a natural environment
- The CVAC Process utilizes dynamically varying changes in pressure
- Fresh air (21% oxygen; lungs are intended to breathe this content)
- Changes in pressure encourage full oxygen exchange (oxygen in-carbon dioxide out); “effective, appropriate breathing”

Normobaric Hypoxia

- Nitrogen tents and masks use a gas mixture not naturally found on this planet.
- A static, low-oxygen environment is faked “altitude”
- Associated with inflammation of the lungs
- Uses sustained hypoxia to cause an acclimatization response.

Published papers are available upon request

CVAC Whole-Body Adaptive Conditioning ≠ Altitude Training

CVAC provides rapid changes in a natural environment

Mountain Air is 21%

CVAC is always 21%

Lungs are intended for 21%

Traditional “altitude training “

21% Oxygen Reduced 16% to 13%

Why do we change pressure and vary the changes?
Cell Membranes are Piezoelectric - they respond to pressure

electronic-Liquid Crystal Communications April 10, 2007

Piezoelectricity of phospholipids:

A possible mechanism for mechano-, and magneto-receptions in biology

A. Jákli, J. Harden, C. Notz, C. Bailey

Liquid Crystal Institute and Chemical Physics Interdisciplinary Program,
Kent State University, Kent, OH 44242, U.S.A.

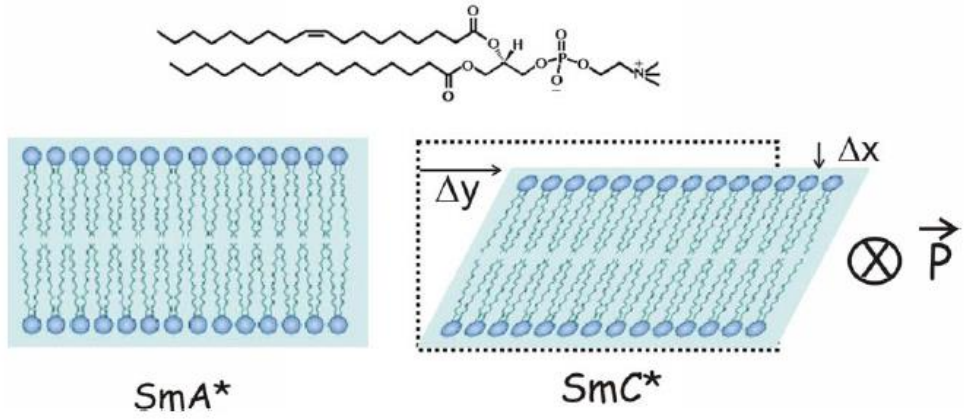


Figure 1: Illustration of the molecular structure of phospholipid L-α-Phosphatidylcholine and of the piezoelectricity of a lipid bilayer. A tilt of the average molecular orientation (director) with respect to the layer normal, induced by mechanical shear and/or layer compression, leads to a SmC configuration with polarization normal to the tilt (shear) plane.*

http://www.e-lc.org/tmp/Antal__J%E1kli_2007_04_09_12_01_56.pdf

Hypoxia and Pressure Changes Similar to HIIT Training

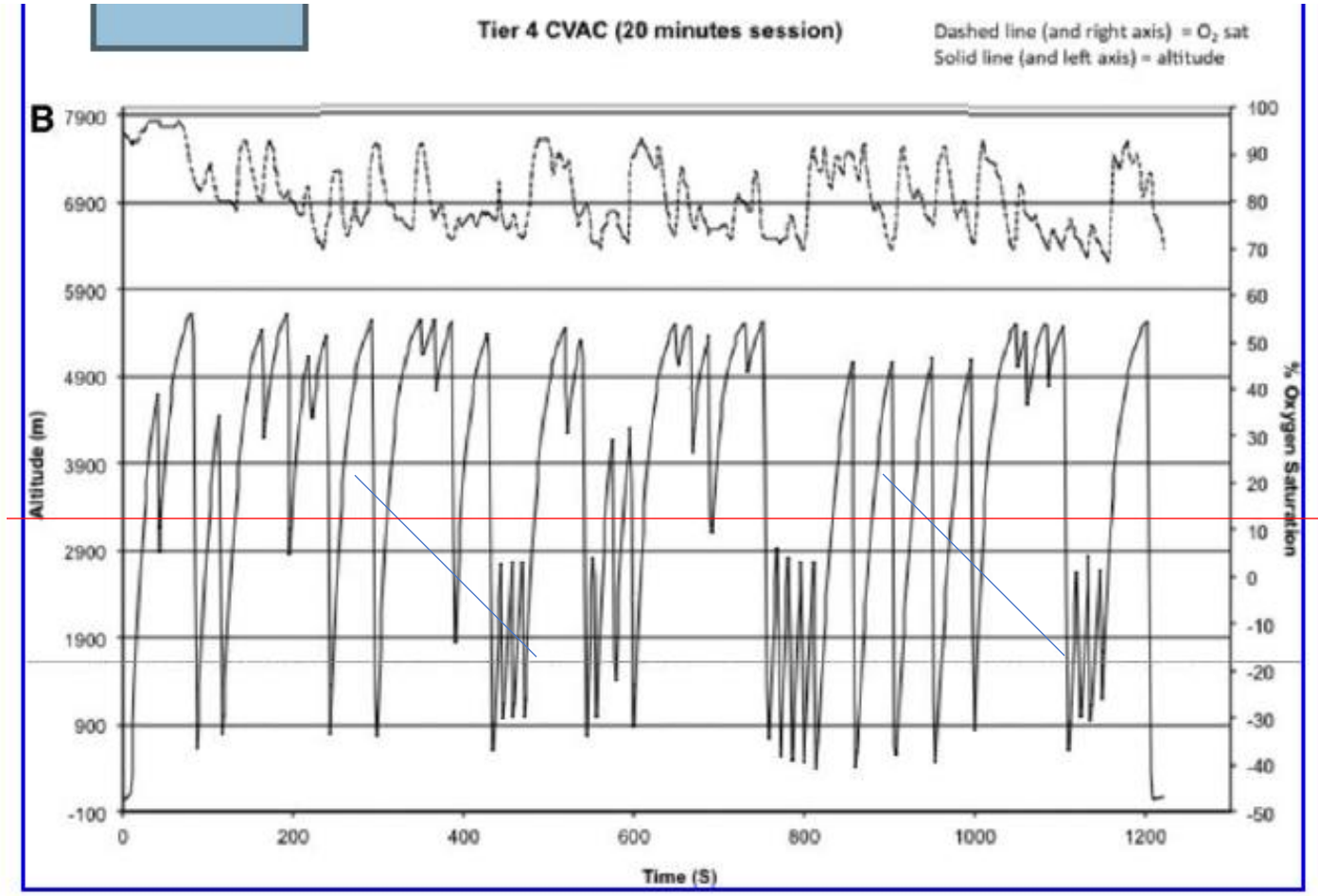


FIG. 1. **(A)** The CVAC device, and **(B)** simulated altitude of the CVAC device (meters; *solid line, left scale*) and the corresponding oxygen saturation (%, *dashed line; right scale*) in a single CHH subject during a T4 exposure session. Peak elevation is 5639 m (18,500 ft) and O_2 saturation drops as low as 68% over the course of 20 minutes. Time is in seconds (s).

Red line denotes elevations of Cusco, Peru, La Paz, Bolivia and Lhaso, Tibet

The CVAC System ≠ Hyperbaric Oxygen Chamber

CVAC System

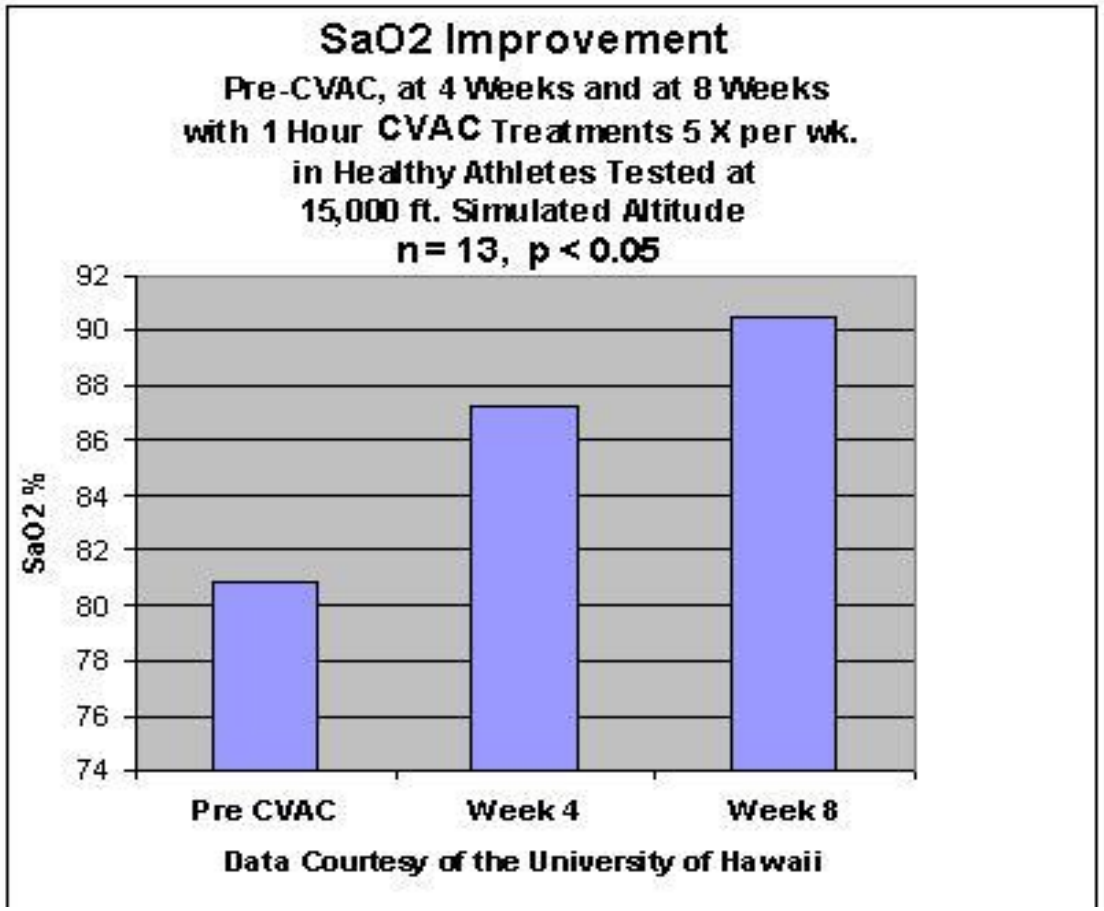
- Utilizes dynamically varying changes to fresh air (21% oxygen; lungs are intended to breathe this content)
- Low-pressure environment is extremely safe
- Obviates risk of oxidative stress
- Encourages full oxygen exchange (oxygen in-carbon dioxide out)
- Encourages/improves restorative sleep
- Session duration: 20 min.

HBOT

- Utilizes high-pressure oxygen within a static environment
- High-pressure oxygen can be dangerous therefore it requires licensed operators within appropriately designed facilities
- Risk of oxidative stress
- Associated with sleep problems and other side effects
- Session duration: 60-90 min.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3169834/pdf/NRP2011-260482.pdf

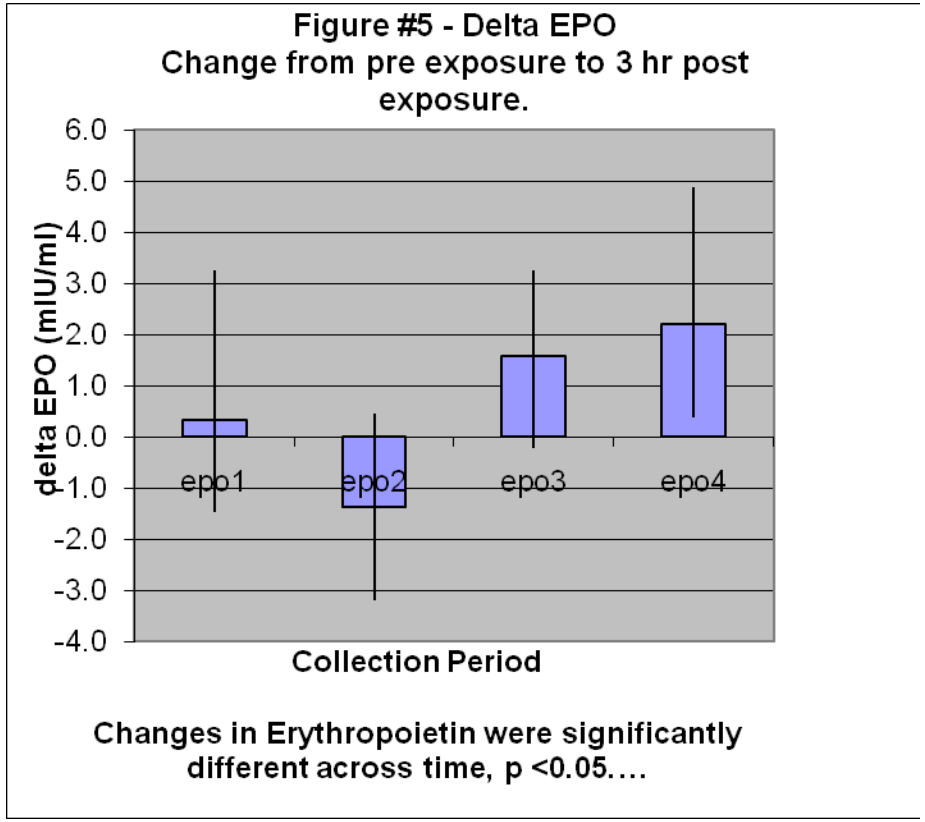
Published Scientific Study- University of Hawaii

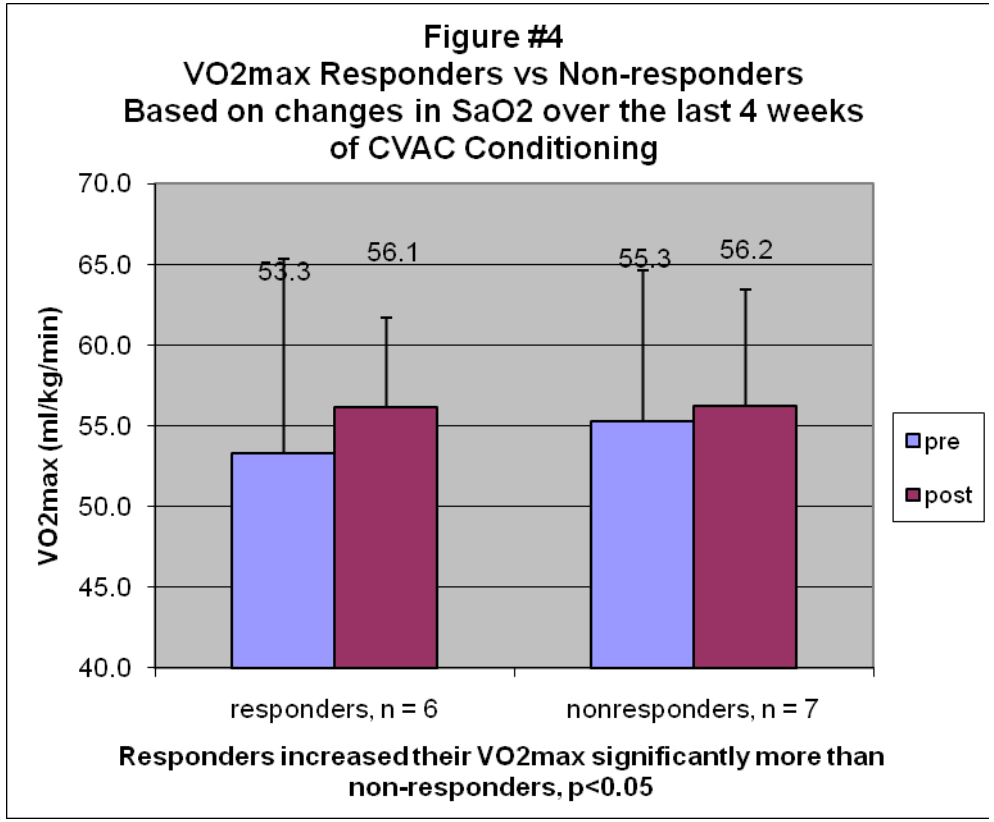


Dramatically Improved Oxygen-Carrying Capacity of the Blood

http://www.wemjournal.org/article/S1080-6032(09)70080-8/abstract

Unpublished Scientific Data-University of Hawaii





Dramatically improved oxygen uptake:
5.2% VO2 max increase was more than double
compared with typical published data from
Nitrogen Tents, Static Altitude and EPO Injections

Optimized Conditioning-Published Scientific Studies

Researcher's Affiliation	Subjects	n	Comments/ Results
University of Hawaii	Elite athletes	13	Significant increase in oxygen-carrying capacity of the blood (improved oxygen utilization)
University of California SD	Chronic pain	10	Significant reduction in pain, weight loss, improved mental scores
Stanford University	Early-stage pre-diabetes	19	Placebo-controlled. Significant improvement in blood glucose levels for middle-aged sedentary men.

Optimizing Performance

- Less muscle fatigue and soreness
- Better restorative sleep
- Improved mental function
- Better mental focus
- Improved reaction
- Improved anaerobic energy production
- Improved recovery after physical effort

Improved Overall Performance via Conditioning and Recovery

- Endurance athletes report having more power with same amount of effort
- A cycling team reported a 6-8% drop in race-pace HR with the same wattage output
- One MMA fighter simply says, “I don’t get tired in the ring”
- Hockey players stay on the ice, playing longer

Improved Overall Performance via Conditioning and Recovery- Feedback about CVAC

- ✓ Endurance athletes report more power with less effort.
- ✓ A cycling team reported *m* a 6-8% drop in race-pace HR with the same wattage output.
- ✓ One MMA fighter simply says, “I don’t get tired in the ring.”
- ✓ Hockey players play longer.
- ✓ Novak Djokovic acknowledging the CVAC Process for an article in *the Wall Street Journal,* "I think it really helps—not with muscle but more with recovery after an exhausting set."
- ✓ Tennis player, Adam Neff during an interview for *Men’s Journal*, "It relaxes my brain. I'm really present in the moment when I get out of the pod."

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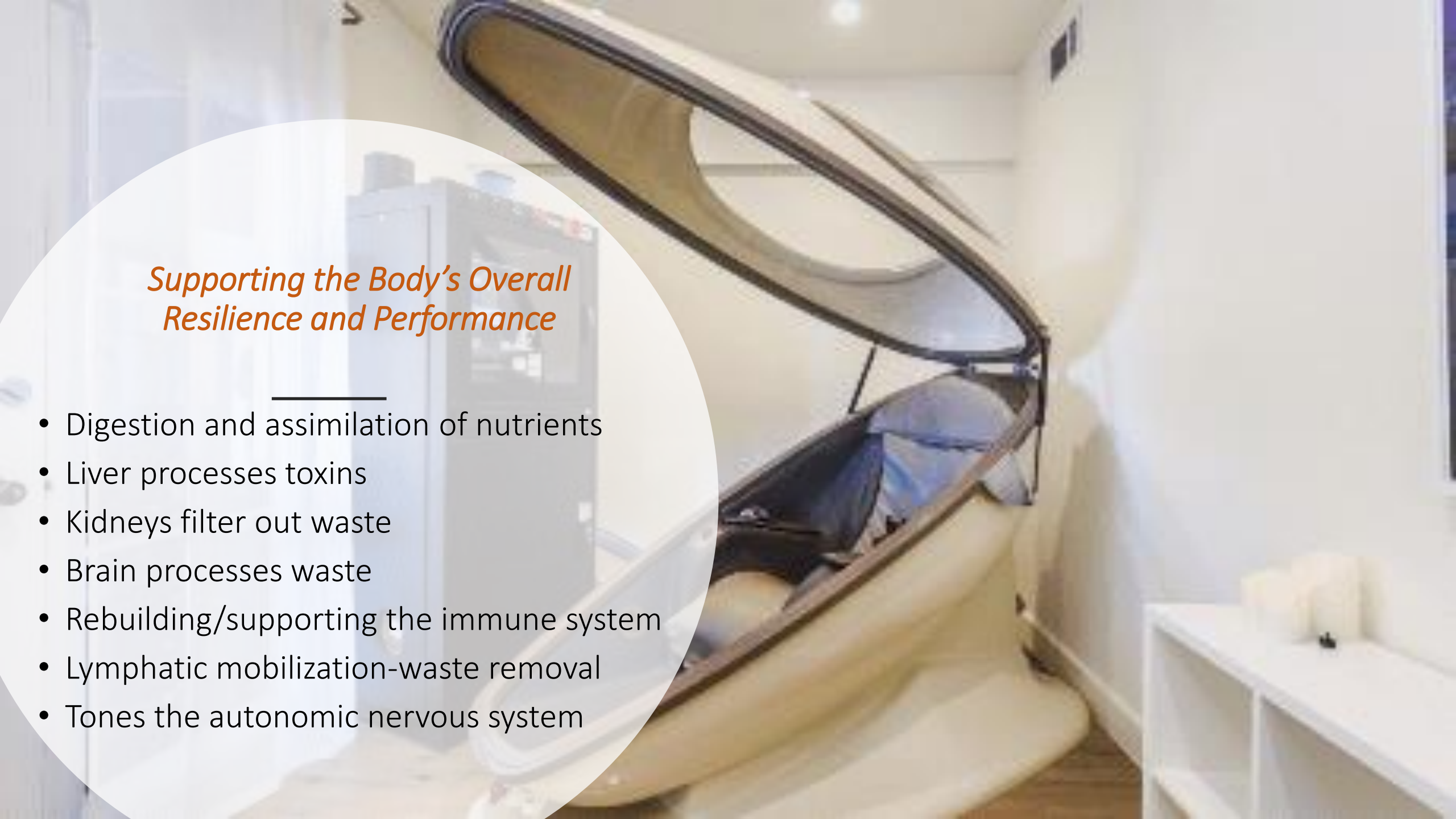
Increased Power and Endurance, yes…
What important facet haven't we considered?

"Active Recovery"



Supporting the Body's Overall Resilience and Performance

- Digestion and assimilation of nutrients
- Liver processes toxins
- Kidneys filter out waste
- Brain processes waste
- Rebuilding/supporting the immune system
- Lymphatic mobilization-waste removal
- Tones the autonomic nervous system

"Benefits that people don't think about", gained primarily through the deeper, more-effective breathing facilitated by CVAC Sessions

- Blood flows into lungs easier
- Opens the vasculature
- Promotes circulation, lymphatic and glymphatic flow
- Relieves right side of heart from (over) work
- Oxygenates the brain
- Promotes relaxation and sleep
- Encourages full oxygen exchange (oxygen in-carbon dioxide out)
- Supports digestion, assimilation of nutrients, energy production, waste removal
- Lungs can take in more air

Novak Djokovic- 2011

Conditioning and Recovery

One week before start of U.S. Open

Victory at the U.S. Open

http://bleacherreport.com/articles/816816-novak-djokovic-shoulder-injury-latest-reason-hes-in-trouble-at-2011-us-open