2020 0220 HyperMax Oxygen Study 52yoM – Effects of O2 on Oxidative Stress Markers During Elliptical Exercise

	2020 0220 O2				2020 0302 O2				
Marker with link	11:14 Pre	11:33 After	12:06 +30 min	12:43 +60 min	14:00 Pre	14:55 After	15:43 +30 min	15:52 +60 min	Reference Range
d-ROMs https://www.hedsrl.it/eng/oxidative-stress/what-is-d-roms-test/ Unit of measure: U. Carr 1 U. Carr = 0.08 mg H^2O^2/dL	350	519	347	413	370	553	347	519	250-300 Optimal value 300-320 Border line 321-340 Low ox stress 341-400 Med ox stress 401-500 High ox stress > 500 Very high ox stress
PAT https://www.hedsrl.it/eng/oxidative-stress/what-is-the-pat-test/ Unit of measure: U. Cor 1 U.Cor = 1.4 µMol/L of ascorbic acid	2750	2670	2372	2572	3085	2750	2283	2204	<2800 Very high 2200–2800 Normal 2200–2000 BL low 2000–1800 Slightly def < 1800 Deficient
OBRI https://www.hedsrl.it/eng/obri/ Oxidative Balance Risk Index The cardiovascular risk index	1.1	1.7	1.3	1.4	1.0	1.8	1.3	2.1	0.8-1.2 Normal 1.3-1.7 Borderline 1.8-2.2 High >2.2 Very High
OSI Redox https://www.hedsrl.it/eng/osi/ Oxidative Stress Index Summary value of oxid stress	44	139	44	78	65	159	47	142	<40 Normal 41-65 Borderline 66-120 High >121 Very High

Subject background:

- 52 year old male
- Advanced osteoarthritis

Exercise Protocol

- On 2020 0220
  - First blood draw at 11:14, before exercise, called Pre
  - Performed 15-20 min of elliptical exercise while breathing through mask and not connected to O2 bag
  - Second blood draw at 11:33, after exercise, called After
  - Third blood draw at 12:06, 30 minutes after exercise, called +30 min
  - Fourth blood draw at 12:43, 60 minutes after exercise, called +60 min

- 2020 0302
    - First blood draw at 14:00, before exercise, called Pre
    - Performed 20 min of elliptical exercise while breathing through mask and connected to O2 bag
    - Second blood draw at 14:55, after exercise, called After
    - Third blood draw at 15:43, 30 minutes after exercise, called +30 min
    - Fourth blood draw at 15:52, 60 minutes after exercise, called +60 min

Results:

- If you compare the elliptical exercise with Hypermax O2 on both dates:
    - Expectation would be that the use of 93% O2 increases gene expression of antioxidant proteins resulting in:
        - Reduction of d-ROMs
        - Increasing of PAT
    - Results indicate neither of this has happened, yet:
    - Reduction in pain, improvements in ROM, improvements in performance
    - Indication is that the improvements are not mediated via oxidative stress pathways
- Reviewing this data with respect to:
    - Immunity Boosting – no evidence
    - Disease and Virus fighting/preventative – no evidence
    - Lung Health – no evidence
    - Youthfulness qualities – subjective evidence based on subject responses
        - Could be improved if we had questionnaire
        - https://link.springer.com/article/10.1023/A:1009524612420
        - https://www.tandfonline.com/doi/abs/10.1080/15298868.2015.1133452?src=recsys&journalCode=psai20
        - https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7397859/
    - Weight Loss – no evidence
        - We have tools to measure
        - This needs to be considered as a 3-6 month project
    - Reduction of Depression and Brain Fog – subjective evidence based on subject responses
        - Could be improved if we had questionnaire
        - Go here https://www.mdcalc.com/ type in ‘depression’
    - Joint Pain Relief – subjective evidence based on subject responses
        - Could be improved if we had questionnaire
        - Go here https://www.mdcalc.com/ type in ‘joint pain’
    - Cardiovascular Health – subjective evidence based on subject responses
        - Could be improved if we had EEG or other physiological data
    - Better overall Fitness – subjective evidence based on subject responses
        - Could be improved if we had measures of work performed