

Effects of normo/hyperbaric oxygen pre-treatment on blood sex hormone profile in scuba divers



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Background

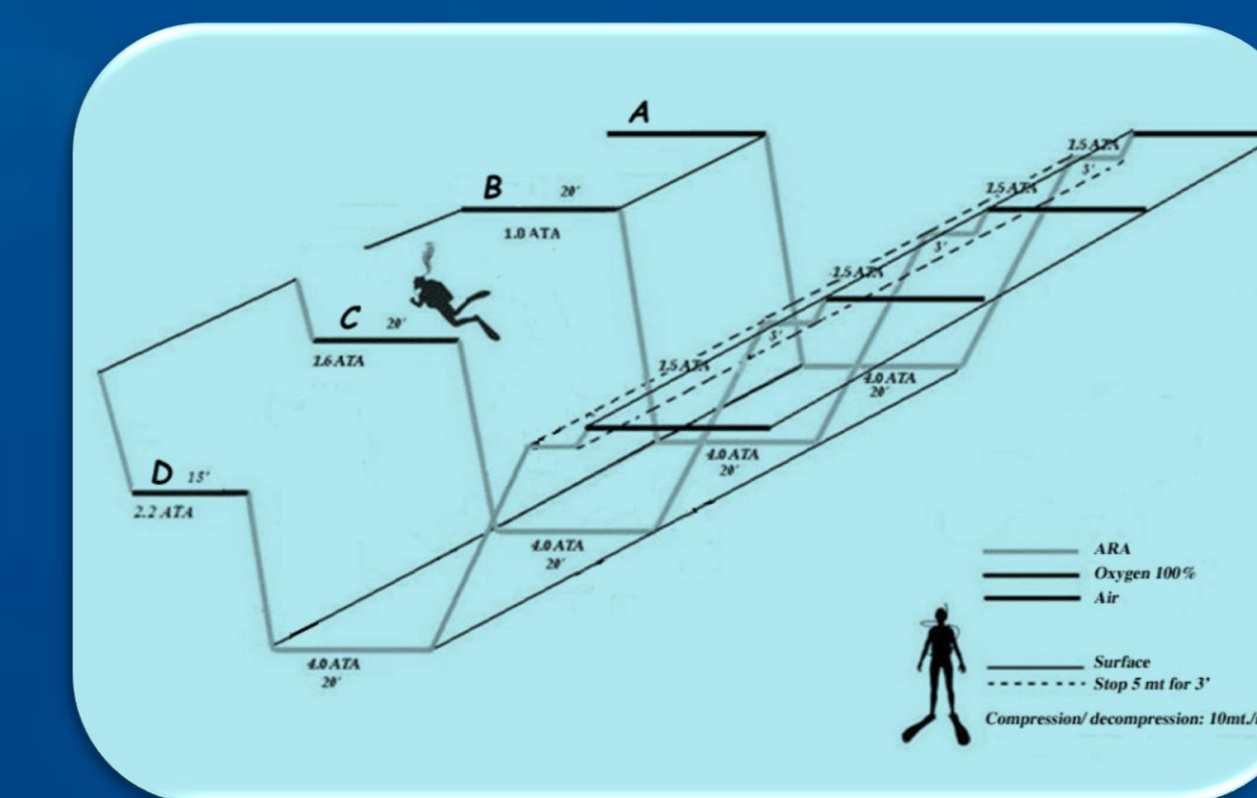
Professional divers with a lower level of physical fitness showed more pronounced hormonal responses to hyperbaric environments. Aim of this study was to compare hormonal changes in plasma of male sex hormones after normo (N) and hyperbaric (H) oxygen pre-treatments to establish a correlation between male fertility and oxygen supply.



Materials and Methods

Concentrations of prolactin (PRL), follicle-stimulating hormone (FSH), luteotrope hormone (LH), cortisol, estradiol (17β) and testosterone were determined in venous blood of six healthy volunteers immediately after five different conditions:

- Control
- Scuba diving at 4 ATA for 20'
- Pre-N treatment for 20'
- Pre-H treatment at 1.6 ATA for 20'
- Pre-H treatment at 2.2 ATA for 15'



Tremiti Islands



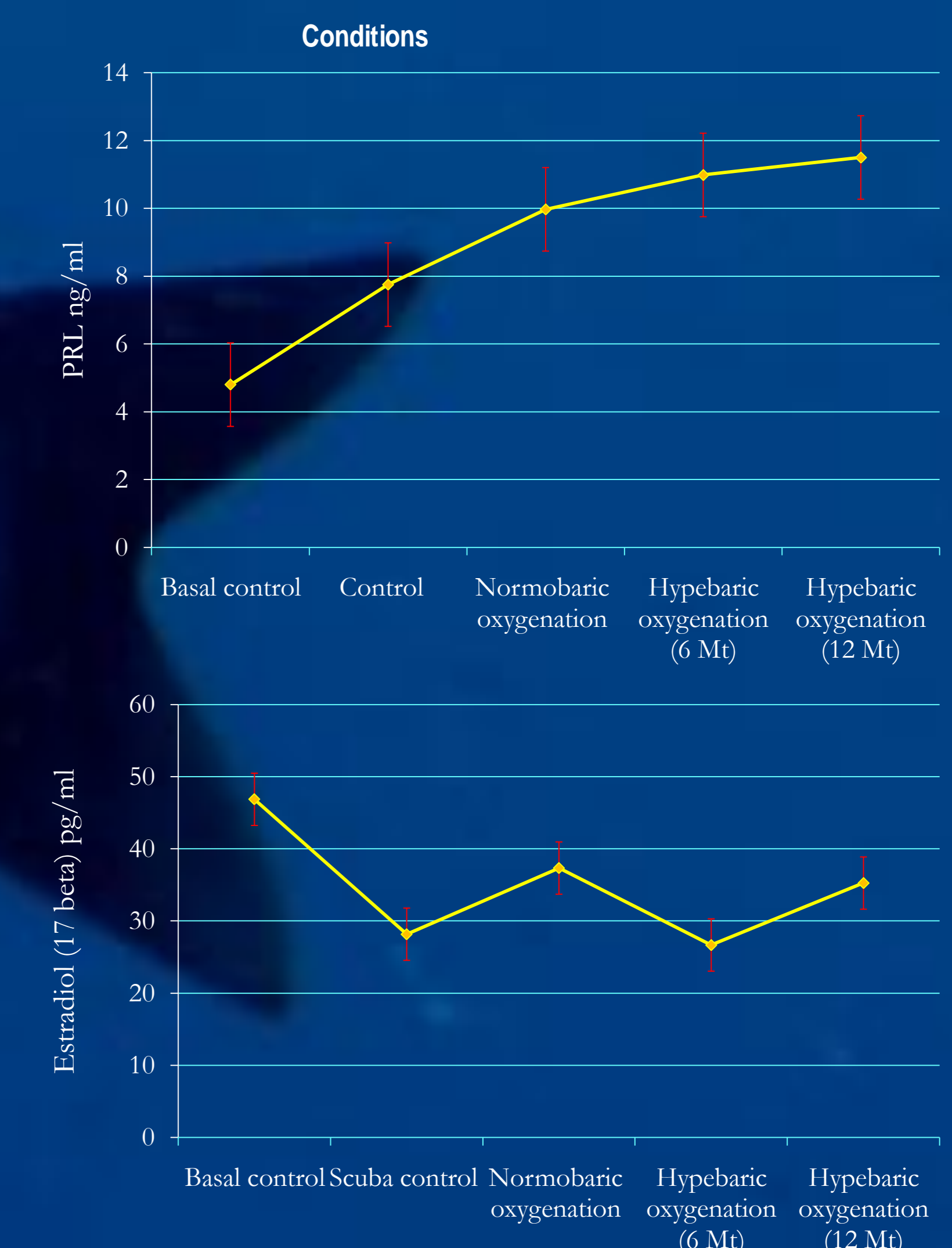
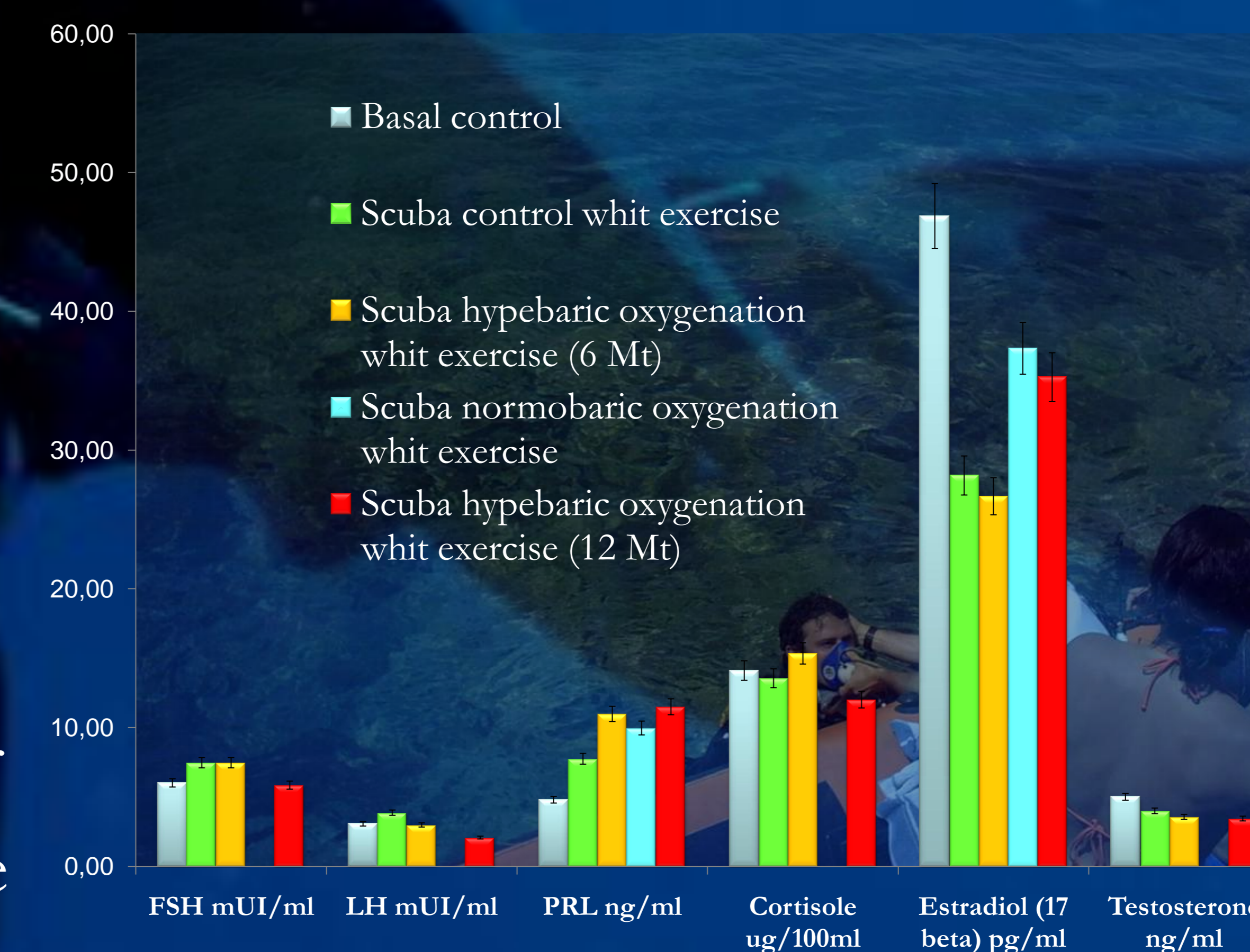
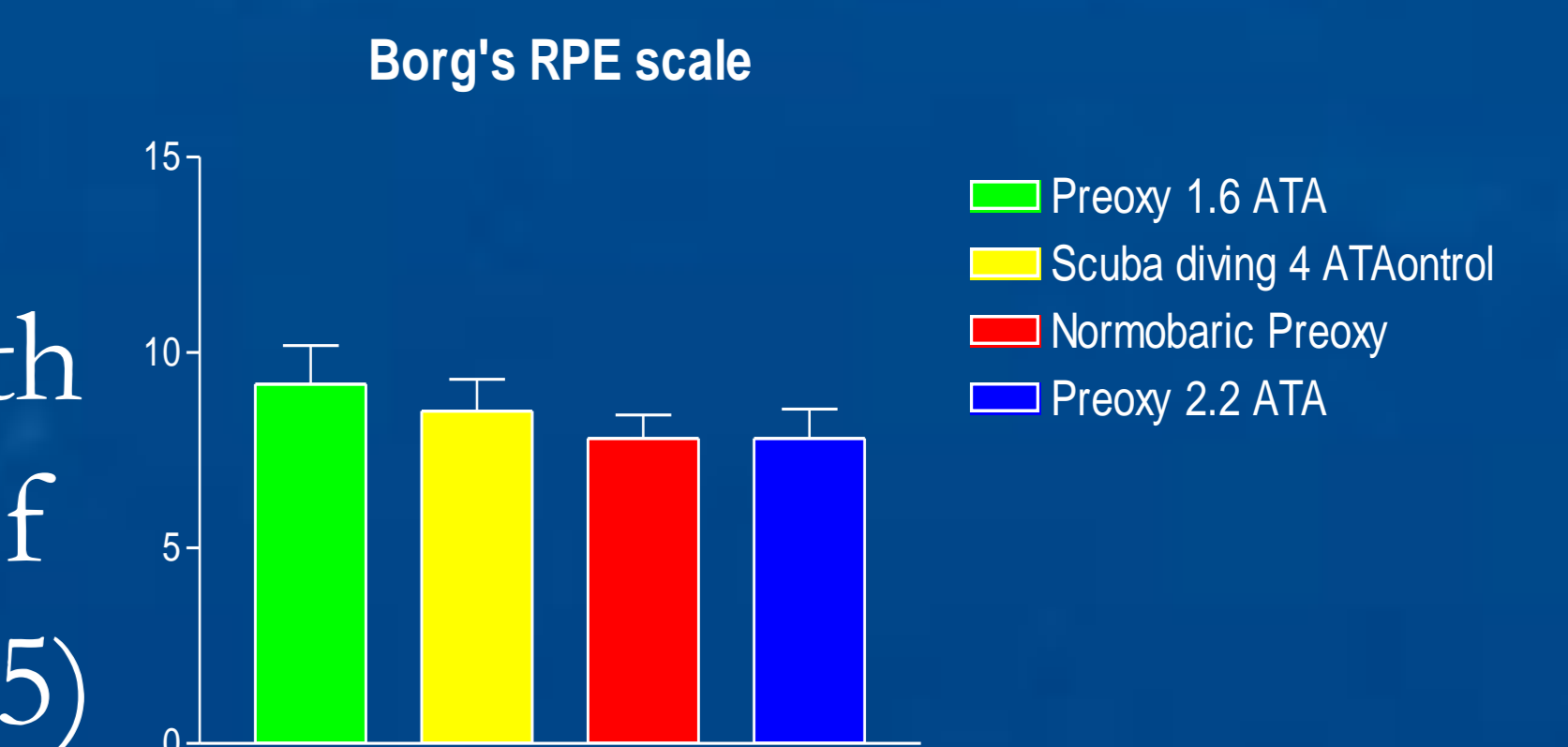
After oxygen pre-treatment in water, subjects exercised for 20' at 4 ATA, pedaling on a bike (OKEO-Italy) with a pedal rate of 25 rpm. Exercise intensity was assessed by the rating of perceived exertion (RPE). Analysis of variance (ANOVA) and Newman-Keuls test were carried out for multiple comparisons among groups ($P < 0.05$)

Results

Underwater exercise conditions were similar because no significative differences were found in RPE. The significative changes of male sex hormones were variations in the PRL and 17β s plasmatic levels. PRL modification are significative per: control vs. pre-exposure normobaric treatment for 20' with 100% oxygen ($P = 0,018$); control vs. pre-exposure compression at 1.6 ATA for 20' with 100% hyperbaric oxygen ($P = 0,02$); control vs. pre-exposure at 2.2 ATA for 15' with 100% hyperbaric oxygen ($P = 0,0003$). Statistical data concerning serum levels of 17β modification are: control vs. compression at 4 ATA for 20' ($P = 0,03$).

Conclusions

Our data confirm the increased levels of PRL in response to hyperoxic treatment. The reduction of serum estradiol after hyperbaric oxygen may represent a positive aspect in the dynamics that regulate the fertility state in men.



Poster # D24



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