

**80 EXERCISE, VOLUNTARY APNOEA AND REACTIVE OXYGEN SPECIES**

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There are some evidences regarding in vitro hypoxic production of reactive oxygen species (ROS) or 'reductive stress', which is harmful. However, the formation of ROS is generally thought to be related to reoxygenation that occurs following hypoxic phase. These conditions may be repeated during exercise. In this study, we test the effect of voluntary apnoea as an in vivo physiologic tolerable hypoxic state on serum ROS level. Twelve healthy male volunteer students (age  $21 \pm 3$ ) were studied during breath holding. Voluntary apnoea was started at the end of normal inspiration and was continued for 40 s. Respiration, pulse rate and arterial haemoglobin saturation were monitored. Blood samples were collected at rest (pre-apnoea) and at the end of breath holding period (before re-breathing). The D-ROM test was used for determination of serum ROS levels. The serum ROS levels did not show any significant changes following apnoea, there was 12.75% reduction in pulse rate ( $93.3 \pm 3.03$  bpm, range 87–107 bpm vs  $81.43 \pm 3.7$  bpm, range 71–93 bpm,  $p < 0.003$ ) and 2.05% desaturation of arterial haemoglobin ( $97.6 \pm 0.16\%$ , range 97–98% vs 95.6

$\pm 0.33\%$ , range 94–97%,  $p < 0.000$ ) during 40 s of breath holding. Single voluntary apnoea had no significant effect on serum ROS level at resting condition. The compensatory homeostatic mechanisms, detection limit of assaying method, time window of sampling and the size of effect may be masked by tiny biochemical changes and can be accounted for this negative result.