The Measurement of Respiratory and Metabolic Parameters of Patients and Controls Before and After Incremental Exercise on Bicycle Supporting the Effort Syndrome Hypothesis?

B. H. C. von Scheele and I. A. M. von Scheele, Stress Medicine AB

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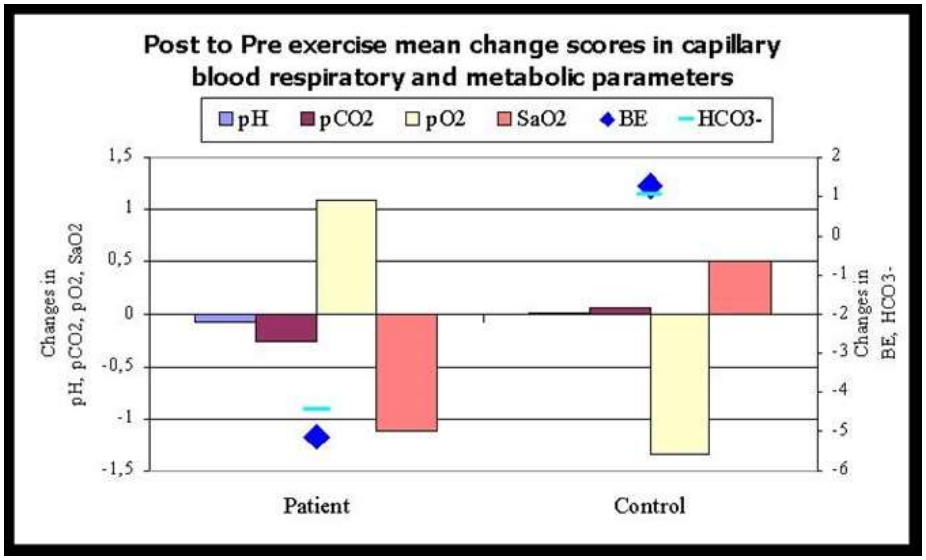


| Table 1 | | pH | | pCO2 | | pO2 | | BE | | HCO3 | | SaO2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Group | pre | post | pre | post | pre | post | pre | post | pre | post | pre | post |
| | Patients | 7.43 | 7.35 | 4.97 | 4.70 | 10.22 | 11.31 | .32 | -4.82 | 24.68 | 20.25 | 94.47 | 95.60 |
| | Controls | 7.41 | 7.40 | 5.66 | 5.60 | 9.76 | 11.10 | 2.65 | 1.37 | 26.63 | 25.60 | 95.85 | 95.35 |

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Data above illustrates difference in pre-post exercise score changes between groups where the most pronounced difference is in predicted parameters supporting Nixon´s argument. This explain partly while treatment must address also respiratory behaviors and it´s complexity in dependent psychophysiological systems.

The data revealed complex changes in the parameters. However, in most patients, a clear picture could be seen supporting the assumption that the patients were suffering from the Effort Syndrome (Nixon, 1994). The predicted change in the alkali buffering systems was observed. Our patients mean data for pETCO2 break-point and corresponding watt (3.38 min. resp. 53.8 watt) also mainly agreed with observations on Nixon's (1994) patients (male patients mean 6 min. resp. 75 watt and 14 of 18 female patients 3.5 min. resp. 35 watt; p. 164) although the patients patterns were not quite comparable. The blood gas test statistical analysis using MS Excel 5.0 two-tailed t-test for different variance between patients and controls showed the following significances: (a) pH $p < 0.002093$ (with ready treated patients also as controls $p < 0.00174$); (b) BE $p < 0.00166$ ($p < 1.46E-05$), and (c) HCO3 $p < 0.001229$ ($p < 4.89E-06$).

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Abstract
Hypocapnea, hyperventilation (HV), defined in etCO2 “behaviors”/levels, occurring out of appropriate context, under some circumstances, can be potentially harmful to health. Nixon (1994) discusses convincingly the negative effects of long-term HV on the alkaloid buffering system and the potential challenge to a person's health status.

Using capnography to measure respiration, percent expired CO2, to determine the anaerobic threshold during incremental exercise (the Effort Test), Nixon (1994) documented the onset of metabolic acidosis followed by alkalosis, secondary to the alkaloid buffering system response. Nixon (1994) hypothesized that recurring HV can lead to depletion of the alkaloid buffering system.

By combining capnography, during the Effort Test, with analysis of blood gases and specific electrolytes, the effort-syndrome hypothesis was further tested in the present study. Thirteen patients with various kinds of stressrelated problems were compared with four control participants.

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Pretest blood gases, from capillary blood, were collected after 10 minutes rest and 10 minutes of incremental exercise. Exhalation C02. oxygen saturation, and traditional psychophysiological parameters were measured continuously during the experimental condition.

Data from capillary blood and exhalation CO2 are reviewed. Change in patients' alkali buffering system supports the prediction made by Nixon (1994). The complexity of the data as well as methodological procedures of this study warrant a more sophisticated design, with more clearly defined functional analysis.

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