Thesis Title The Effect of Exercise on Scrotal Temperature and Semen Quality in Normal Healthy Men

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## ABSTRACT

The effect of exercise on scrotal temperature and semen qualities including daily sperm output (DSO) were investigated in 15 male volunteers for exercise group and 12 male volunteers for control group. The subjects had similar ages, physical and reproductive characteristics. Semen samples were collected after performing extragonadal sperm reserve (EGSR) depletion one week prior to the exercise test and were analyzed for DSO, sperm motility and morphology by an automatic semen analyzer. On the testing day, fifteen subjects in the exercise group performed a treadmill exercise at ambient temperature of 25°C, until rectal temperature were raised 1°C form resting level. Work load was adjusted to maintain the new level of temperature for thirty minutes. Heart rate, rectal temperature ($T_{re}$), scrotal temperature ($T_{sc}$) and four sites skin temperature were continuously recorded pre-, during and post-exercise periods. Seventy one days later, the subjects performed another EGSR depletion and the semen samples were collected as in the pre-treatment period. In the non-exercise control group semen samples were collected and analyzed at the corresponding time period. No

significant differences were found for $T_{SC}$ attributed to exercise when compared to the pre-exercise level. When the subjects in each group were subdivided into those who had low DSO (<40 millions) and high DSO values (>40 millions) at the beginning of the experiment. By Day-74 the daily sperm output in control subjects with low initial DSO value increased significantly from 19.36±4.24 to 52.30±10.50 millions. There was also and apparent increase in DSO value in the control subjects with high DSO value (from 66.70±6.51 to 118.80±27.20 millions) but the change was not significant. On the other hand, DSO values were not changed in the exercise group who had either low or high DSO. However, the sperm concentration of the exercise group with high DSO value decreased significantly from 57.20±8.96 to 39.09±4.73 millions. Semen volume, percentage sperm motility, percentage progressive movement, and percentage abnormal morphology were virtually not altered. The results indicated that the increment of body temperature (1°C) for 30 minutes by a single exercise bout did not alter the scrotal temperature, daily sperm output and other semen parameters in the subjects having either high or low DSO values. Therefore, exercise at the intensity used in the present study had no effect on fertility in man.