control session. In this session, the initial blood sample was obtained following the same procedure adopted in the control session. Forty minutes after breakfast, the group started a concurrent training session consisting of a 40-minute indoor cycling class using the continuous method with intensity between 5 and 7 of the OMNI scale of perceived effort to the cycling.33

Next, a strength training session was undertaken comprising three sets of repetitions performed until exhaustion for each tested exercise. The intensity was of 85% 1RM for all exercises and the rest interval between the sets was of 2-3 minutes.

After these procedures, the subjects were submitted to a new blood sample collection for analysis of the same variables.

**CT2 session**

In this session, the same procedure of the earlier sessions was followed, including effort intensity, while the concurrent training order was inverted: strength training session followed by an indoor cycling class. In this session, the strength training was preceded by a five-minute warm-up on the treadmill, with intensity ranging between 55-60% of reserve heart rate.30

During the control and CT sessions the subjects took only water *ad libitum*.

The blood samples were collected at the study site by qualified staff from the “Sérgio Franco Medicina Diagnóstica” laboratory, Brazil, and transferred to the laboratory for analysis (radioimmunoassay analysis for plasma leptin, quimioluminescence immunoenzymatic assay for the cortisol and atomic absorption for the zinc determination).

All of the statistical procedures were processed with the *Statistical Package for the Social Sciences* software (SPSS 18.0, Chicago, USA). Descriptive statistics were used to establish the mean and standard deviation values. A repeated ANOVA test was applied for inferential analyses. The Shapiro-Wilk (SW) test and Tukey’s Post-Hoc test were used. The Pearson’s Correlation was used between the blood variables. A significance level of p<0.05 was applied.

**RESULTS**

In Table 1 the anthropometric characteristics of the individuals in the different sessions are presented.

The values of leptin, cortisol and zinc before (pre) and after (post) each session are depicted in Table 2.

A significant reduction (p<0.05) in leptin and cortisol levels was observed only after the CT1 and CT2 sessions, with significant difference (p<0.05) between CT1 and CT2 for both variables.

No significant alterations in zinc values were observed after any of the sessions.

Table 3 presents the results of correlation (r) between the blood variables at the pre and post sampling periods in all sessions.

A highly significant correlation was observed between leptin (pre) and cortisol (pre and post) at CS, and a moderate and significant correlation between leptin (post) and cortisol (pre and post) at CS. In the other sessions there was no significant correlation between the variables.

There was a highly significant correlation between leptin (pre) and zinc (pre), and moderate and significant correlation between leptin (post) and zinc (pre and post) at CS.

**DISCUSSION**

The data show that a single session of concurrent training induced a significant reduction in serum leptin levels independently of the order of the exercise component, this being in agreement with Kanaley,3 Landt,4 Keller5 and Jürimäe6 who analyzed the response of leptin to aerobic and strength training separately performed. In the present study, there