THE TRAINING PROGRAMME AS A STRATEGY TO REDUCE JET-LAG.

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The pre-flight bright light exposure or the modification of bed-time can reduce the jet-lag symptoms. A 5-days session training, carried out in different parts of the day, can induce a shift of circadian rhythm. Aim of this study is to verify if the adjustment of circadian rhythm induced by a training program, carried out before a transmeridian flight, can reduce the jet-lag.

Thirteen volunteers flew from Milan to New York and back, in occasion of the New York City Marathon 2006; 9 of them participated to the marathon.

Individual training programs were planned for all of the 9 athletes. For a month before the flight, the athletes carried out their training divided into these 2 groups: E (Evening), athletes who carried out a training during the evening, after 19:00; M (Morning), athletes who carried out a training during the morning, before 11:00. The training schedule consisted in at least 3 times a week of 1 hour or more running training sessions (50-60% VO2max). Before the flight, the 2 groups trained for 5 consecutive days with the same intensity; in New York they all carried out the training in the morning. The group C (Control), was composed by non-athletes who didn’t trained before the flight and didn’t participate to the marathon.

Continuous monitoring sessions (4 days long) were obtained by Heart Rate monitor (HR) and actigraph. PRE: before the flight Milano-New York; NY: during the stay in New York. In addition, during the monitoring sessions, the subjects daily filled in the jet-lag questionnaire, for the subjective perception of jet lag, developed by Waterhouse.

The HR data were analyzed using the Cosinor method, showing a statistically significant circadian rhythms for all the subjects, while the sleep-activity data with the actigraph software. Sleep analysis, carried out to appraise Sleep Efficiency (SE) and Mouvement and Fragmentation Index (MFI), demonstrated statistically significant differences between groups M, E and C. In each group the after flight MFI and SE were calculated as a percentage of the before flight MFI and SE. In the control and morning groups the MFI increases after the flight, while in the evening group the MFI decreases. In the control and morning groups the SE is the same or slightly decreased after the flight while in the evening group the sleep efficiency improves in New York.

The trend of MFI and SE indices confirms an objective better rest after a EW flight for the subjects that trained in the evening, for quite long time (a month), before the travel. Further confirmation of this findings is done by the jet-lag questionnaire results, that show that although the controls fell asleep more easily, as a matter of fact the sleep quality was better for evening trained.


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