PP77B—Effect of endurance training on the perception of effort: a systematic review

G. Toffoli[1], S. Marcora[2]

[1]Science and Culture of Well-being and Lifestyles Università degli studi di Bologna AlmaStudiorum, [2]Department of Biomedical and Neuromotor Sciences Università degli studi di Bologna Alma Studiorum

Purpose: Parameters used to track endurance training adaptation are still matter of debate and apart from measuring the performance directly with a maximal exercise test, none have emerged as a reliable reference. Even maximal oxygen uptake is unable to detect the variations in endurance performance that occur in trained endurance athletes. To date, different theoretical models recognize the perception of effort (PE) at least as an important if not a determinant of endurance performance. Furthermore, its assessment using rating of PE (RPE) or other psychophysical methods during submaximal exercise may be a practical marker of training adaptations and endurance performance, However, to the best of our knowledge, the effect of endurance training on PE has not been systematically reviewed. Therefore, the aim of this study was to review systematically the PE adaptation to endurance training and evaluate its hypothesised relation to endurance performance variations.

Methods:

This systematic review was conducted in line with the PRISMA guidance using the following inclusion criteria: 1) The outcome was composed of whether a record of RPE estimation, RPE production, or RPE ratio (RPE/workload); 2) The study included an endurance performance test; 3) The study included a period of minimum 5 days of endurance training. Studies were excluded if they did not include direct statistical comparison pre- to post-training for RPE.

Results:

Our hypotheses were that endurance training reduces PE and improves endurance performance whilst an increase in PE reduces endurance performance.. Among the 50 studies who met the inclusion criteria, 47 used RPE estimation method among which 87% are in line with such expectations. One study used RPE ratio method and 2 used RPE production method, and for both, outcomes were in line with our hypotheses.

Conclusions:

Our results demonstrates that various methods to assess PE are sensitive to training- induced adaptations. Furthermore, changes in PE are generally associated with endurance performance as predicted by current theoretical models. Therefore, PE assessment during submaximal exercise, may be a practical marker of endurance performance and training adaptations that can be used frequently to monitor endurance athletes. Further experiments are needed to improve our understanding of the link between these two variables and understand the mechanisms underlying the reduction in PE observed with endurance training.