LETTER TO THE EDITOR

It is time to investigate acute and chronic perceptual responses to eccentric cycling

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TO THE EDITOR: Haynes and colleagues (4) recently confirmed the potential for using eccentric cycling (ECC) in rehabilitation programs with chronic heart failure patients. Interestingly, the authors did not report any perceptual responses to ECC in this article, and among the numerous parameters monitored by the same research group in a recently published companion article (2), the only perceptual response to ECC reported was the perception of leg muscle pain (from immediately postexercise to 72 h postexercise). Therefore, this letter aims at encouraging the monitoring of additional perceptual responses to ECC in an attempt to develop its use in rehabilitation.

Due to the low respiratory responses observed during ECC, the potential for using such an ergometer in rehabilitation with patients suffering from cardiorespiratory limitations is now clear (e.g., 2, 4). However, the efficiency of a rehabilitation program should not only be evaluated by physiological responses to the exercise but also in terms of adherence to the exercise. Indeed, if a patient does not adhere to a novel rehabilitation program and is not willing to regularly exercise, the beneficial physiological adaptations induced by the novel rehabilitation program cannot be observed. As the adherence to exercise is thought to be influenced and conditioned by perceptual responses to the exercise performed (3, 5), we urge the need of integrative studies merging the fields of exercise physiology and psychology to better understand the acute and chronic perceptual responses to ECC. Of particular importance are the perception of pain, the perception of effort, and affective responses.

Muscle/joint pain, defined as “the intensity of hurt felt in a muscle/articulation” (6), impairs patients quality of life. Although the time course of leg muscle pain induced by ECC has been described up to 72 h postexercise (2), we are not aware of any study investigating muscle/joint pain during ECC. Furthermore, as ECC solicits the ankle, knee, and hip flexors/extensors, the monitoring of perceived pain during and postexercise should dissociate each muscle group and each articulation involved in ECC.

Perception of effort, defined as “the conscious sensation of how hard, heavy and strenuous the physical task is” (for review, see 7), has been identified as a barrier to regular physical activity (for more details, see 5). ECC is known to be associated with low perceived effort at high power output (e.g., 1), thus reinforcing the potential for its use. Affective responses to the exercise are directly linked to the exercise intensity and associated perceived effort (3) and condition the adherence to an exercise program (3, 5). As ECC induces a mismatch between perception of effort and the exercise intensity (i.e., low perceived effort at high power output), ECC could be a promising intervention to perform vigorous exercise at low perceived effort.

Finally, the majority of studies investigating ECC used an experimental design imposing a fixed power output (e.g., 2, 4). As the self-selection of exercise intensity is known to increase exercise-related pleasure (3), we believe that future studies should aim at selecting the intensity of ECC by using a fixed perceived effort rather than an imposed power output. A fixed perceived effort approach would also be of great interest for the tailoring of rehabilitation programs (1).

AUTHOR CONTRIBUTIONS

B.P. drafted manuscript; B.P., R.L., J.-M.C., and D.L. edited and revised manuscript; B.P., R.L., J.-M.C., and D.L. approved final version of manuscript.

DISCLOSURES

No conflicts of interest, financial or otherwise, are declared by the authors.

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