The Influence of Prior Activity Upon Inspiratory Muscle Strength in Rowers and Non-Rowers

S. Volianitis¹, A. K. McConnell¹, Y. Koutedakis², D. A. Jones¹
¹ School of Sport and Exercise Sciences, The University of Birmingham, Birmingham, United Kingdom
² School of Health Sciences, The University of Wolverhampton, Wolverhampton, United Kingdom


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Introduction

Warm-up may be defined as any preliminary activity that is used to enhance physical performance and to prevent sports-related injuries. There are various types of warm-up techniques that competitors use to prepare for their event. The most widely used methods are classified as passive, general and specific warm-up [28].

Competitive rowing is considered to be one of the most demanding sports, as rowers work near their maximal physical capacities and recruit a very large muscle mass. Open class rowers generate amongst the highest values of any athletes in selected physical fitness parameters, including those related to cardiorespiratory and muscular function [16]. Warm-up is an integral part of the preparation before the start of the race.

Most general warm-up protocols are of moderate intensity and characterised by a low ventilatory demand [13]. In competitive rowing, however, a higher intensity specific warm-up usually follows the general warm-up in an attempt to practise the racing pace [8]. The higher intensity of the specific warm-up, among other peripheral adaptations, elicits an elevated ventilatory response that may prepare the respiratory muscles for the demanding entrained breathing of rowing [20, 29]. The effect of warm-up upon locomotor muscle strength is well documented [2, 3, 7, 10] but very little scientific attention has been directed towards the effect of warm-up on pulmonary function and specifically inspiratory muscle strength.

The present study sought to address the following questions: a) Does a whole body warm-up influence inspiratory muscle strength? b) Does a specific respiratory warm-up affect the inspiratory muscle strength? Accordingly, we compared the effects of 3 warm-up protocols, a general cycling warm-up, a rowing warm-up, and a specific respiratory warm-up. Our hypothesis was that the inspiratory muscles will exhibit an improvement in performance similar to that observed in other skeletal muscles following at least one of these conditions.