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Short Note

Effects of Physical Activity on Cognitive Deficits in Chronic Obstructive Pulmonary Disease (COPD) Subjects

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Chronic Obstructive Pulmonary Disease (COPD) is a complex progressive pulmonary disease with significant physical, cognitive and psychological sequels [1].These sequels contribute to reduce the quality of life and improve the mortality [2]. Dementia is a common comorbidity of COPD characterized by multiple cognitive deficits, involving memory and one or more other cognitive domains that cause significant impairment in social and occupational functions [3].The cognitive impairment in COPD patients appear to be correlate with the severity of the disease [4], and several studies demonstrated the presence of a specific pattern of neuropsychological impairment that differs from other dementia diseases such as Alzheimer's disease [5,6]. In fact, several researches indicated that COPD patients demonstrated deficits in specific domains such as verbal memory, mental flexibility, delayed recall, attention, abstract reasoning, speed performance and drawing ability [7-9] probably due to a neuronal damage produced by decreased blood flow in the brain and by hypoxemia [8].Other causes could be the inflammatory processes characterizing the COPD, and in particular the C-reactive protein may have an important role playing a direct neurotoxic effect on cerebral atherosclerosis [10]. Other inflammatory mediators havealso been associated to cognitive dysfunction, including interleukin (IL)-6, IL-1b, tumor necrosis factor-a and a1-antichymotrypsin [11,12]. However, these studies suggest only an association rather than a causal link [13].

The main factors influencing cognitive functions in COPD are age and educational level, that are strongly related to neuropsychological performance in all populations [14]. No many previous studies concerned the effects of physical activity on cognitive decline, because this disease is generally underestimated and only recently the use of physical activity as treatment starts to attract interest [15]. The studies up to now demonstrate the positive effects of physical exercise on the maintenance and enhance cognitive performance in COPD [16].The effects of aerobic training onlyon cognitive abilities were observed, and the results showedan improvement in the following cognitive domains: verbal fluency, fluid intelligence (sequency, problem solving, abstract reasoning) and executive functions (purposive behavior, self -control, ability to shift attention) [16-18].Only one study has examined the effect of strength muscle training [17]. However despite the effectiveness of physical therapy in COPD, no standard protocol of retraining physical exists.

For these reasons an investigation of the effectiveness and benefits of physical treatment in COPD subjects is necessary. Furthermore, standard protocol of training could be evaluated and formulated by researchers and scientists working in this field. The authors of the present editorial are working in this direction in order to increase the current knowledge in this topic, and evaluate the possibility to use physical activity as safe and low-cost therapeutic strategy.Preliminary data of the study showed the effectiveness of physical exercise, and in particular of combined training (aerobic + resistance training) compared to aerobic trainingalone in order to improve cognitive performance in COPD subjects.

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