# No substitute for hard work: Creatine supplementation does not improve exercise outcomes in COPD

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Creatine, a popular nutritional supplement renowned for enhancing athletic performance and muscle strength, does not improve exercise outcomes in patients with chronic obstructive pulmonary disease (COPD), according to a new study. The randomized, placebo-controlled, double-blind study provided the most powerful evidence to date that the effect of creatine (Cr) supplementation was negligible at best among these patients.

"We have evidence to suggest Cr uptake into muscles [in COPD patients] but are unable to explain why an increase in muscle Cr did not enhance training," wrote the study's lead author, Sarah Deacon, M.D., specialist registrar at the Institute for Lung Health at Glenfield Hospital in Leicester, England.

The results were published in the first issue for August of the *American Journal of Respiratory and Critical Care Medicine* by the American Thoracic Society (ATS).

Cr supplementation has been shown to improve short-burst, high-intensity exercise function in athletes, as well as enhancing isometric muscle strength, lower body endurance and lean body mass in the elderly. To determine whether Cr supplementation could similarly enhance the physical condition of COPD patients, Dr. Deacon and co-researchers recruited 100 patients with COPD to either receive Cr or a

placebo over the course of a seven week pulmonary rehabilitation program.

Those who were randomized to the placebo group were give lactose supplements that appeared identical to the Cr-containing supplements. Following a five-day loading period (22g/d Cr or 24 g/d lactose) each subject followed maintenance dosing of 3.76 or 4 g of Cr or lactose respectively.

Of the original 100 subjects, 80 successfully completed the study. In both control and Cr groups, there were statistically significant improvements in functional and muscular performance during the loading phase, but no differences were seen between the groups. The Cr group also showed a greater, but non-significant percentage of improvement in the incremental shuttle walking test with loading and after pulmonary rehabilitation, but additional analysis still showed no overall effect between it and the placebo group.

"The most likely explanation is that any benefits of creatine have been submerged by the large training effect of physical training alone," wrote Dr. Deacon.

This study, therefore, further validates that there is no substitute for the old-fashioned hard work that is an essential element of pulmonary rehabilitation. "Those of us interested in pulmonary rehabilitation are happy to see confirmation of the beneficial effects of exercise training…. This information indicates that creatine supplementation not be viewed as a good substitute for exercise training—good news for adepts of pulmonary rehabilitation," wrote Francoise Maltais, M.D., Didier Saey, Ph.D., and Richard Debigare, Ph.D., all of the Centre de Recherche de l'Hospital Laval Quebec in Canada.

"Without minimizing the importance of the quest to optimize the results

of pulmonary rehabilitation, we had to appreciate that only a small portion of patients with COPD actually engage in pulmonary rehabilitation….so improved [access] is important for PR to achieve its full potential from a public health perspective."

Dr. John Heffner, past president of the ATS, commented that "these and other studies are finally gaining recognition that pulmonary rehabilitation is an essential element of comprehensive care for patients with COPD. The weight of the evidence has succeeded in gaining Medicare payment for rehabilitation services, which has been one of our major hurdles to access."

Source: American Thoracic Society