

## D-Ribose Aids Fatigue in Aging Adults

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Dear Editor:

Worldwide, our aging population continues to increase due to an extended life expectancy and better health care. However, health concerns go with aging, such as vision and hearing loss, decrease muscle strength, less energy, and the common complaint of fatigue. Fatigue encompasses feelings of tiredness, drowsiness, lethargy, malaise, weakness, or lack of energy. In fact, approximately 20% of Americans complain of fatigue so intense that it interferes with their normal lifestyle,<sup>1</sup> for which many seek therapies to regain lost energy and feel less tired.

Fatigue is commonly assessed subjectively due to difficulty in quantifying this symptom. Objective parameters provide credibility and, when coupled with subjective questionnaires, can establish a more complete evaluation. Cardiopulmonary exercise testing (CPX) evaluates the relationship between ventilation, cardiovascular hemodynamics, peripheral musculature, and sympathetic tone during exercise at and beyond anaerobic threshold (AT) in patients with cardiopulmonary or metabolic diseases, and more recently in healthy “normal” individuals. Anaerobic threshold represents a particular phase of exercise where aerobic energy metabolism, due to a reduction in tissue oxygen perfusion, shifts to anaerobic metabolism, of which CPX may help in assessing fatigue.<sup>2,3</sup>

A study presented at the recent Scripps Institute of Integrative Medicine meeting reported on the benefits of oral D-ribose in lessening physical fatigue with an improved mental outlook in aging adults (>50 years of age), who complained of tiredness for at least 1 month. Ten (10) subjects, assessed at baseline and at 1 and 2 weeks while taking oral D-ribose (3g/dose, b.i.d.), demonstrated a significant improvement in CPX parameters, centering on aerobic fitness, breathing efficiency, oxygen uptake efficiency, heart-rate-to-oxygen uptake coupling, and metabolic energy expenditure at AT. They also found a significant subjective improvement in mental outlook and vitality.<sup>4</sup>

Cells require adequate ATP levels to maintain integrity and function. D-Ribose, a naturally occurring pentose carbohydrate, replenishes adenosine triphosphate levels with improved function following stress, such as myocardial ischemia, congestive heart failure, fibromyalgia, and chronic fatigue, as well as in high-intensity exercise.<sup>5–7</sup> Fatigue may

reflect a mismatch in energy demand and supply. D-Ribose may offer a nutritional energy enhancement benefit in improving symptomatology. The positive CPX findings from this fatigue-based study appeared to demonstrate, although in a small cohort of subjects, that supplemental D-ribose may achieve this goal. To better define this relationship, future placebo-control, double-blind studies are necessary in a larger population to confirm this benefit beyond this open-label trial.

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