

## EDITORIAL

# Menopause and high-intensity interval training: effects on body composition and physical performance

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**H**igh-intensity interval training (HIIT) refers to an intermittent style of exercise in which very high-intensity exercises are interspersed with short periods of recovery within a single training session. The last few years, studies suggested that HIIT method is economical in terms of the time invested in improving physical function among young and older adults. In this sense, the article by Nunes et al,<sup>1</sup> published in the present issue of *Menopause*, addresses the question regarding the effects of HIIT on physical function in a specific population of obese postmenopausal women. Little is, however, known about the influence of menopause on its benefits. Thus, this editorial allows us to outline some of the evidence about the effects of HIIT on physical function and its confounding factors (ie, fat mass) in menopausal women.

First, several studies showed that HIIT induced positive effects on functional abilities and metabolism throughout the older population. For example, Sculthorpe et al<sup>2</sup> observed, based on a 6-week randomized controlled study performed among older adults, a significant increase in power (706.5 vs 831.1 W;  $P < 0.05$ ) and muscle mass (66.1 vs 68.1 kg;  $P < 0.05$ ) but also a significant decrease in body fat (22.8% vs 20.8%;  $P < 0.05$ ) in the HIIT group (five sessions per week) compared with the control group.

Moreover, to counteract the strong impact on lower extremity joints potentially generated during HIIT, it has been shown that HIIT, performed on an elliptical trainer for 12 weeks at a rate of three times per week, significantly decreased waist circumference and appendicular fat mass but also increased leg muscle mass, resting heart rate, and  $\text{VO}_2\text{max}$  in prediabetic elderly obese men.<sup>3</sup> The same modalities of training have also highlighted an improvement in functional capacity and muscle function among dynapenic-obese elderly, in the recent study by Buckinx et al.<sup>4</sup> More importantly, Grossman

et al<sup>5</sup> supported the effectiveness of HIIT for weight loss and body composition changes in a specific population of obese postmenopausal women.<sup>5</sup> In this randomized controlled trial of 16 weeks, participants in the HIIT group lost twice as much body weight as those in the endurance group (8.7% vs 4.3% of initial body weight).

Some studies, however, do not report the same benefits on muscle mass and body fat. For example, Hwang et al<sup>6</sup> concluded that HIIT (four sessions per week; 8 weeks) does not result in any significant body composition change but improved more  $\text{VO}_2$  peak and insulin sensitivity compared to control (nonexercise) or continuous exercise groups. In addition, HIIT is not only more efficient on cardiorespiratory health than other conditions, HIIT seems efficient independently of physical activity status. Thus, in 2015, Knowles et al<sup>7</sup> observed that HIIT (5 days/wk during 6 weeks) significantly increased  $\text{VO}_2\text{max}$  in sedentary ( $+3.0 \text{ mL} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$ ,  $P < 0.001$ ) as well as in active ( $+3.5 \text{ mL} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$ ,  $P < 0.001$ ) older individuals.

Overall, the study by Nunes et al<sup>1</sup> is original because it is one of the first studies which suggested that HIIT is an alternative time-efficient protocol for improving physical function and body composition in obese postmenopausal women when compared to continuous training.

The few discrepancies throughout the studies can be explained, among other things, by the heterogeneity of HIIT modalities. Indeed, there is no consensus regarding the best training modalities.

Another important point to implement this exercise regimen in postmenopausal women is that despite its intensity, several studies have shown that HIIT is an appreciated practice for participants and leads to the same or higher level of adherence and satisfaction as continuous training.<sup>8,9</sup> In addition, HIIT can be considered as a relatively safe training method since in 2012, Rognmo et al<sup>10</sup> reported that there were two nonfatal cardiac complications during 46,364 hours of interval training against one fatal adverse outcome during 129,456 hours of continuous training at moderate intensity.

In conclusion, the literature about the effects of HIIT in the elderly, and more specifically in postmenopausal women, is still growing. Nevertheless, it appears that HIIT, no matter how it is performed, remains a safe training method that can improve the health and the quality of life of obese

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postmenopausal women and induce a similar level of adherence to other types of physical activity (resistance, continuous).

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