

Association between Exercise and Metabolic Syndrome in Koreans (J Obes Metab Syndr 2018;27:117-24)

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We were pleased to read the paper by Lee et al.¹, “Association between exercise and metabolic syndrome in Koreans,” which confirms that participating in moderate to vigorous intensity exercise and walking were associated with a lower prevalence of metabolic syndrome, when compared to inactive individuals, but the frequency and duration of exercise were not associated with the prevalence of metabolic syndrome. This study included a total of 10,533 Koreans, aged 19 years of age or more, using the data from the Korea National Health and Nutrition Examination Survey (KNHANES 2007–2009). These findings provided a better understanding of the association between exercise and metabolic syndrome.

Recently, the beneficial effects of exercise on the prevalence of metabolic syndrome have been reported in a study examining exercise types (including walking, strength exercise, and flexibility); exercise intensity (including vigorous exercise and moderate exercise); and exercise frequency (day/wk), covering a total of 24,178 participants ranging in age from 19 to 60 years old, using the KNHANES (1999–2012).² The inverse association between exercise and the prevalence of metabolic syndrome (according to exercise type, intensity, and frequency) were investigated further, by considering different genders and by examining each component of metabolic syndrome.² The study identified the beneficial effects

of participating in exercise, with the lowest prevalence of metabolic syndrome being associated with vigorous intensity exercise conducted six times per week. However, depending on the factors of gender and the components of metabolic syndrome, those associations were found to vary. Thus, it is important to know which exercise intensity, type, and frequency offer optimal benefits towards modifying each of the components of metabolic syndrome and to better understand their association with gender.

There are several factors impacting the association between physical activity and metabolic syndrome, which include fitness levels, adipose, post menopause, and sarcopenia.³⁻⁷ In a study that examined 1,007 Koreans, Hong et al.⁸ found a higher prevalence of metabolic syndrome in both women and men who had a high body mass index and low fitness levels, than in both women and men who had a high body mass index and high fitness levels. Maintaining a healthy fitness level may reduce the prevalence of metabolic syndrome, independent of the adiposity level. In another study that used the KNHANES data, it was reported that postmenopausal women who participated in moderate exercise, strength exercise, and flexibility for 3–4 times/wk had a lower prevalence of metabolic syndrome, than the women who participated in moderate exercise, strength exercise, and flexibility for 1–2

times/wk.⁹ Compared with 1–2 times/wk of exercise frequency, the 3–4 times/wk exercise frequency may be a better recommendation for postmenopausal women in order to reduce the risk of metabolic syndrome. Likewise, sarcopenia was associated with an increased prevalence of metabolic syndrome, particularly in non-obese older Korean adults.¹⁰

Given the evidence of the relationship between exercise and metabolic syndrome, further studies need to be conducted, not only to better understand the associations between physical activity and the metabolic risk, but also to identify the most beneficial exercise guidelines. First, the exercise amount should be measured by using objective measurements of physical activity, as by an accelerometer or a physical activity wearable sensor. Second, exercise volume measures that identify both duration and frequency should be more precisely calculated. Third, more comprehensive data that identifies exercise type and intensity should be accumulated for a prospective longitudinal cohort study. Fourth, KNHANES has released more data on strength exercise such as handgrip strength that also has the potential to further the understanding of those associations. Finally, studies using evidence-based exercise interventions with randomized controlled design need to be done for a better understanding of how exercise affects metabolic syndrome.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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