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RE: Physical Activity and the Risk of Liver Cancer: A Systematic Review and Meta-Analysis of Prospective Studies and a Bias Analysis

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Liver cancer is the sixth most frequently diagnosed cancer and was the fourth leading cause of cancer-related death globally in 2018, with approximately 841 000 new cases and an estimated 782 000 deaths annually (1). Primary liver cancer mainly consists of hepatocellular carcinoma (comprising 75–85% of cases) and intrahepatic cholangiocarcinoma (comprising 10–15% of cases). The major risk factors for liver cancer are chronic infection with hepatitis B virus or hepatitis C virus, aflatoxin-contaminated foodstuffs, smoking, heavy alcohol consumption, obesity, and type 2 diabetes (1–3). A growing number of studies have reported the association between physical activity and liver cancer risk, but the conclusions are not consistent. Recently, Baumeister and colleagues (4) performed a systematic review and meta-analysis based on 14 prospective studies to investigate the association of physical activity with liver cancer risk, which has been published online in this Journal. Their findings demonstrate that physical activity is inversely related to liver cancer risk. The mean hazard ratio (HR) for liver cancer risk, comparing high and low levels of physical activity, is 0.75 (95% confidence interval [CI] = 0.63 to 0.89). With great interest, we have read this article and found that there are several issues that are worth mentioning.

First, the observation outcome is liver cancer mortality in both the study by Suzuki et al. (5) and the study by Arem et al. (Ref. 58 in Baumeister et al.'s paper (4)), but Suzuki et al.'s study (5) was enrolled in the primary analysis in Figure 2 in Baumeister et al. (4), maybe owing to that, the observation outcome of the study by Suzuki et al. (5) was mistakenly considered as liver cancer incidence by Baumeister et al. (4).

Second, the number of incident liver cancer extracted from Yun et al. (6) should be 2676 because there are 1672 for low leisure-time physical activity and 1004 for moderate-high leisure-time physical activity in Table 2 in Yun et al. (6), but it is reported as 169 in Table 1 in Baumeister et al. (4).

Third, the number of incident liver cancer extracted from Wen et al. (7) should be 1371 because there are 890 for inactive ([<3.75 MET-h] and 481 for medium, high, and very high [≥7.50 MET-h]) in Table 4 in Wen et al. (7), but it is reported as 481 in Table 1 in Baumeister et al. (4).

Fourth, Wen et al. (7) reported both liver cancer mortality and liver cancer incidence in Table 4 (7), but the data of liver cancer mortality were not included in the subgroup analysis by endpoint in Table 2 in Baumeister et al. (4).

Taken together, the findings of the study reported by Baumeister et al. (4) should be interpreted with caution. To present an accurate conclusion on the association between physical activity and liver cancer risk, we hope Baumeister et al. consider the above-mentioned points.

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