Response

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To the editor-in-chief,

We appreciate the interest in our recent meta-analysis (8) and welcome the opportunity to reply.

Firstly, we agree that there is a clear need to assess the safety of sprint interval training (SIT) in various populations. There is currently limited understanding of whether SIT is safe in patient populations, partly due to the lack of large trials and acute clinical assessments. Concerns about safety are grounded within assumptions that if more intense aerobic exercise exerts a greater stress on the cardiovascular system, then the stress and risk associated with SIT must surely be greater still. However, this assertion remains largely untested. SIT is certainly associated with rapid increases in heart rate, blood pressure and cardiac output, but these responses are short-lived and quite unlike the prolonged increases required during aerobic exercise. Nonetheless, in specific patient populations (e.g. those with ischemic heart disease or at increased risk of stroke), SIT may place excess strain upon the heart/cardiovascular system, and increase the risk of adverse events (4). However, there is no reason to believe that SIT protocols with a few (2-3) short (20-s) sprints would be unsafe for asymptomatic individuals screened for absolute contraindications to exercise. Indeed, we have recently studied a SIT protocol (2x20-s all-out sprints) in middle-aged overweight/obese type 2 diabetics without any adverse events (3).

Related to the above, there is a need to distinguish between the uses of SIT for the purpose of primary prevention in sedentary but otherwise healthy individuals, or to treat patients. Considering the worrying prevalence of inactivity worldwide, we need to investigate novel interventions addressing common perceived barriers to exercise, and we have recently outlined why SIT protocols with few short sprints (2x20-s) may provide a promising alternative/adjunct to aerobic exercise-based recommendations (7). Thus, it is important that fears about safety in specific patient populations do not detract from further research into SIT protocols for primary prevention of noncommunicable diseases in populations where safety is less likely to be a concern.

Verney et al. (5) also raise concerns about symptoms of nausea, lightheadedness and vomiting. These do not make SIT unsafe, but may reduce the likelihood of people undertaking SIT. Such symptoms are likely caused by unfamiliar rapid temporary reductions in plasma volume and/or blood pH (2), and appear to be prevented entirely by gradually increasing sprint duration during initial training sessions (1, 3).

Finally, we do not agree that stating a relative intensity (percentage of VO_2max) would be better than using the term ‘all-out’. Percentage of VO_2max may be meaningful for prescribing aerobic exercise intensities (although we have previously critiqued this use too (6)), but the supramaximal nature of SIT makes this unpractical. Aerobic and anaerobic capacities are

poorly linked, and it is not uncommon for unfit patients to achieve greater percentages of VO_2max during a Wingate sprint than trained athletes (3). Furthermore, it is not possible for an individual to accurately target supramaximal percentages of VO_2max. Conversely it is entirely achievable for anyone to go 'all out'.

References:

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