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## Active Voice: Some Potential Benefits of Sprint Interval Exercise Training

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The benefits of interval exercise training on aerobic performance and health have been known for many years. Recently, [Gibala and colleagues](#) have shown that sprint interval training (SIT; 4-6, maximal efforts of ~30 sec. duration separated by ~4 min. of recovery repeated several times a week for 4-6 wk) promotes similar cellular and endurance performance adaptations as more traditional endurance exercise training (ET) but with a fraction of the time commitment. In fact, it seems that as little as 15 minutes of SIT per week can produce aerobic effects similar to those achieved by 1.5-3 hours of ET per week. In a society that is increasingly time-sensitive, the potential benefits of SIT are at the very least intriguing.

As described in our recent [MSSE](#) research article, we assessed SIT further by comparing body composition and maximal cardiac output (Q<sub>max</sub>) changes over six weeks (3 sessions/wk) of SIT vs. ET (30-60 min at 65% aerobic capacity) in six men and four women (24±3yr) per group, and we utilized run exercise (self-propelled treadmill) because most previous studies involved cycling. Total training time differed substantially (SIT: <1hr/6 wk vs. ET: >13hr/6 wk), yet improvements in maximal oxygen uptake (VO<sub>2</sub>max; SIT: +11.5%; ET: +12.5%) and 2000 meter best effort run performance (SIT: +4.6%; ET: +5.9%) were similar. Importantly, body fat loss was greater with SIT (-1.7 vs. -0.8 kg), apparently due to large changes in the men. However, we are not convinced that a significant gender difference exists because in a subsequent similar SIT experiment over six weeks with 15 women, we not only observed body fat losses (-1.2 kg) but also a 2.8 cm (>1 inch) decrease in waist circumference (unpublished data). Energy expended during SIT exercise is not likely responsible for this fat loss because the efforts are so brief. Consequently, prolonged post-exercise increases in metabolism, increased recovery fat utilization and/or insufficient energy intake increases must occur with SIT. Further, repeated, 30-second maximal efforts appear to be insufficient to stimulate the heart to adapt, as Q<sub>max</sub> gains were only observed with ET (22.2 to 23.4 L/min). Interestingly, similar between-group improvements in VO<sub>2</sub>max, without an increase in Q<sub>max</sub>, indicate that substantial increases in muscle oxygen extraction from the blood delivered must have occurred with SIT. If so, some combination of SIT and ET would likely maximize central and peripheral adaptations and, therefore, improve aerobic performance optimally. How best to combine these vastly differing training stimuli must await further study. Surprisingly, we observed both a much greater adherence rate with SIT and no increase in injuries.

Finally, although these effects are considerable, it is important to appreciate that SIT involves maximal efforts. In this case, peak speeds of 24-25 and 20-21 km/hr (young men and women, respectively) were achieved by 4-6 seconds of SIT and followed by near linear decreases to ~50% at 30 seconds. Such high intensity exercise is not recommended for all. However, the minimal intensity required to stimulate these adaptations is unknown, so some version of SIT may be practical not only to improve exercise performance but perhaps even as a potential tool against the rising obesity epidemic in North America.