Response to correspondence from the ESSA Statement authors

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Dear Dr. Harvey,

We thank the ESSA statement authors for their letter regarding the International Scientific SCI Exercise Guidelines (ISSEG). We believe issues raised in their letter reflect differences in our two groups’ philosophical, practical, scientific and methodological orientations toward SCI exercise guidelines.

**We believe guideline development should meaningfully engage the people who use the guidelines.**

People living with SCI, SCI organizations, physiatrists, physiotherapists and other stakeholders participated in the ISSEG guideline development process. Their voices were loud and clear: they do not have confidence in the World Health Organization’s (WHO) and ESSA’s 150 min/week guideline because it is neither based on SCI-specific evidence nor feasible. Stakeholders want SCI-specific guidelines. The ISSEG reflect the concerns, values and preferences of the SCI community. The ESSA statement does not.

**We believe SCI exercise guidelines should be developed with the same rigor as guidelines for the general population.**

The ISSEG were developed through a rigorous, systematic, and transparent process that fully adhered to internationally accepted standards for formulating clinical practice guidelines and PA guidelines for the general population (i.e., AGREE). The ESSA statement was not formulated using AGREE and the authors acknowledge their “exercise recommendations...are somewhat arbitrary” (p.112).

**We believe SCI exercise guidelines should be developed by considering all relevant SCI exercise evidence.**

The ISSEG are underpinned by a systematic review of 211 SCI studies. Evidence for the overall effects of exercise, specific exercise prescriptions, representativeness of study participants and adverse events were synthesized and appraised. The ESSA authors are incorrect in stating the fitness guideline is based on six studies. While the six highest quality (i.e., Level 1-2) studies provided a foundation for the guideline, evidence from 29 Level 3-4 studies supported the guideline’s effectiveness and safety. Meanwhile, the ESSA statement “is based on the dose-response relationship between physical activity and disease-risk in the general population” (p.111), and is simply an endorsement of the WHO’s generic PA guideline.

We would also like to address some specific points raised in the ESSA authors’ letter:

**Taking issue with stating a ‘minimum’ level of activity to achieve benefits.**

The authors imply that the evidence base demonstrates a ‘given-dose effect’ rather than a ‘minimum-dose effect’. Indeed, no study has directly addressed the exercise dose-response issue in people with SCI. However, using cardiometabolic disease as an example, the four Level 1-2 studies showing a positive effect on cardiometabolic health (CMH) used an exercise intervention of 3x30min sessions/week of ≥moderate intensity. Conversely, the two Level 2 studies with no positive effects on CMH used an intervention of 2x15-30min exercise sessions/week of
We believe these findings support 3x30min sessions/week of >moderate intensity exercise as a minimum to improve CMH. Stating a minimum target is important for PA surveillance and goal setting and is characteristic of virtually all PA guidelines (e.g., WHOs).

“Implying that sub-threshold volumes will not confer health/fitness benefits.”

The ISSEG preamble states: “Doing exercise below the recommended levels may or may not bring small changes in fitness or cardiometabolic health.” Our language is deliberate. No Level 1, 2, 3 or 4 SCI study of aerobic exercise, or aerobic plus resistance exercise, has produced significant fitness or CMH benefits with <20min moderate-vigorous intensity aerobic exercise 2x/week, or <2 bouts of strength-training/week. We recognize, however, there may be shorter, effective exercise protocols not yet documented (e.g., high intensity interval training@).

We will “cause a relative overestimation of the number of people with SCI who are sufficiently active for good health compared with the general population.”

In Canada, about 44% of non-disabled adults are sufficiently active for good health @. A Canadian study of 73 adults with SCI showed 12% reported aerobic activity 2x/week for >20min plus 2x/week strength-training@. (i.e., ISSEG fitness guideline). As 60% of Canadian adults with SCI report no moderate-vigorous intensity exercise whatsoever, even with a ‘lower’ guideline, we are a long way from SCI ‘sufficiently active’ rates approximating the general population.

We are “creating the impression that people with SCI do not need to be as physically active as the general population in order to be healthy.”

Although ‘healthy’ has myriad meanings, we assume the authors mean CMH (encompassing ‘traditional’ and ‘non-traditional’ indices). The available evidence suggests it is possible for people with SCI to improve CMH with a ‘lower’ exercise dose than able-bodied individuals. The three Level 2 studies showed improvements in the reviewed cardiometabolic function indices with exercise 3x/week for 20-44min ≥ moderate intensity. Evidence from eight Level 3-4 studies supported these results.

The ESSA statement authors conclude their letter by advising readers to critically evaluate the primary evidence underpinning the guidelines. We agree wholeheartedly and have made all of our evidence summary tables available. Additionally, we encourage readers to consider the altered cardiovascular disease risk profile, altered response to exercise, and unique PA barriers experienced by people with SCI and whether it makes sense to promote exercise guidelines to the SCI population that are not underpinned by SCI-specific evidence.