Correspondence was published by Springer Nature; in Ginis, K. A. M., Scheer, J. W. van der, Latimer-Cheung, A. E., Barrow, A., Bourne, C., Carruthers, P., … Goosey-Tolfrey, V. L. (2018). Response to correspondence from the ESSA Statement authors. Spinal Cord, 56(4), 409–411. https://doi.org/10.1038/s41393-017-0051-1

Dear Dr. Harvey,

We thank the ESSA statement authors for their letter regarding the International Scientific SCI Exercise Guidelines (ISSEG)[1]. 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)[2] and ESSA's 150 min/week guideline[3] because it is neither based on SCI-specific evidence nor feasible. Stakeholders want SCI-specific guidelines[1]. 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 (i.e., AGREE[4]) that fully adheres to internationally-accepted standards for formulating clinical practice and PA guidelines for the general population (e.g.,WHO)[2]. The ESSA statement was not formulated using AGREE and its authors acknowledge their "exercise recommendations…are somewhat arbitrary" (p.112)[3].

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[5]. Evidence for the 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 the guideline's foundation, evidence from 29 Level 3-4 studies supported its 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)[3], and is merely an endorsement of the WHO's generic PA guideline[2].

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

"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 strength exercise, has produced significant fitness or cardiometabolic health (CMH) benefits with <20min moderate-vigorous intensity aerobic exercise 2x/week, or <2 bouts of strength-exercise/week[5]. We recognize, however, there may be shorter, effective exercise protocols not yet scientifically documented (e.g., high intensity interval training protocols).

Concerns with stating a 'minimum' level of activity.

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, as explained above, a minimum amount is needed to improve fitness. Regarding CMH, the three highest quality studies (Level 2) showed positive effects on CMH indices using an exercise intervention of 3x30-44min sessions/week of ≥moderate intensity[5]. Without evidence for a 'lower' minimum and given need for SCI-specific guidelines to improve CMH, we are comfortable endorsing 3x30min sessions/week of ≥moderate intensity exercise as a minimum to improve CMH[1]. Stating a minimum target is important for PA surveillance and goal setting, and is characteristic of virtually all PA guidelines (e.g., WHO[2]).

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 report sufficient activity for good health[6]. A recent Canadian study of 73 adults with SCI showed 12% reported moderate-vigorous aerobic activity ≥2x/week for ≥20min plus ≥2x/week strength-exercise[7] (i.e., ISSEG fitness guideline[1]). As 60% of Canadian adults with SCI report no moderate-vigorous exercise whatsoever (secondary analysis of ref.[8]), even with a 'lower' guideline, we are far from SCI 'sufficiently active' rates approximating those of 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."

'Healthy' has myriad meanings. We assume the authors mean CMH (encompassing 'traditional' and 'non-traditional' indices). The available evidence suggests **people with SCI can improve CMH with a 'lower' exercise dose than able-bodied individuals**[5]. The three Level 2 studies showed improvements in the reviewed CMH indices with exercise 3x/week for 30-44min ≥ moderate intensity[5]. Evidence from eight Level 3-4 studies supported these results[5].

The ESSA statement authors conclude their letter by advising readers to critically evaluate the primary evidence underpinning the guidelines. We agree wholeheartedly and, as such, have made all of our evidence summary tables available[1]. We also encourage readers to consider the altered cardiovascular disease risk profile, altered response to exercise[9], and extensive PA barriers experienced by people with SCI and to decide which is the better recommendation: exercise guidelines merely lifted from the general population[3] or rigorously developed SCI guidelines underpinned by SCI-specific evidence[1].

Sincerely,
Kathleen A. Martin Ginis, Victoria L. Goosey-Tolfrey, Christof A. Leicht, Jan Lexell, Christopher B. McBride, Jan W. van der Scheer, Robert B. Shaw, Christopher R. West & Amy E. Latimer-Cheung on behalf of the International Scientific SCI Exercise Guideline authors

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