Letter to the editor

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Dear Editor,

With great interest, we read the study by Dyer [1] entitled “The impact of lower-limb prosthetic limb use in international C4 track para-cycling”. Based on that study, Dyer [1] reported that there were no advantages or disadvantages of a lower limb prosthesis in C4 athletes who required its use (AC-C4) over athletes who did not need it (OC-C4). However, in our opinion, data acquisition and analysis was unclear, so we have some doubts about the conclusions of Dyer about the impact of a lower limb prosthesis and would like to make some comments.

To make the comparison between C4 athletes who require a lower limb prosthesis and those who do not need it, Dyer [1] retrieved the time to complete 1-kilometer Track Para-cycling in the Paralympic games of 2012 and 2016 and the time to complete it in the UCI World Para-cycling Track Championships of 2011, 2012, 2014–2016 from the public domain and the official international Paralympic Committee website (www.paralympic.org). Although the UCI World Para-cycling Track Championships were also evaluated, it is not clear if Dyer searched the official UCI website (www.uci.org) since no reference to the site is provided. When we looked at the data on the UCI official website [2] and compared the data of that website with the level of participation presented in Figure 1 in the study of Dyer [1], we see a difference. In the 2011 World Championship, 25 participants competed while in Figure 1 of Dyer, 24 participants are presented. We, therefore, wonder what the source of information is for data presented in Figure 1 of Dyer.

In the paper of Dyer, additional characteristics of the individual participants (including age, body weight, length, training hours, cardiac output, type of impairment) were not reported. The photo and video sources analyzed to determine grouping of participants were not specified. Regarding grouping the participants as a lower limb prosthetic user (AC-C4) or non-user (OC-C4), the author stated “two athletes could not be reliably identified so were, therefore, decided to be included in OC-C4 category” [1]. It is unknown in which year(s) these two athletes were participating in the World Para-cycling Track Championships or Paralympic games. We believe that these two participants should be excluded from the analysis because of the missing data. These two participants may account for 12–40% of OC-C4 groups (total number of participants in the different events ranged from 5 to 17), hence their data might have considerable impact on the outcomes of data analysis.

On the UCI website, it is shown that Jody Cundy, Jiri Bouška, Diego German Duenas Gomez, Masashi Ishii, and Jiri Ježek competed in all 7 games [2]. For that reason, each one of them was analyzed for 7 times as 7 participants. The total number of participants analyzed in the study was 116 (Figure 1) [1] and raising the impression that this sample size may be a good representation of AC and OC-C4 athletes. However, there were only 49 participants [2] who were analyzed, in which 27 participants were repetitively analyzed, at least 2 times. When only the Gold, Silver and Bronze winners of all 5 UCI World Para-cycling Track Championships games were considered, we found that Cundy, Bouska, Metelka and Guoping Wei won 5, 3, 3 and 2 times, respectively [2]. Ishii won Bronze medals in both Paralympic Games. In total, Cundy who was AC-C4 athlete won the Gold medal in 6 games except in the year 2012 in which he did not finish the game [2]. As a result, the observations were not independent from each other. For the aforementioned reasons, we disagree with re-analyzing these same participants as independent unit of analysis in both the top 3 and full-field analyses (Tables 1–4) [1]. To tackle the problem of dependency of observations, a linear mixed model analysis would have been more appropriate since it corrects for repeated observations within the participants.

Taking all of the above into account, we have doubts about data acquisition, completeness of data, handling of missing data and data analysis and as a result, we have doubts if the research question can be answered in the way Dyer performed his study.

Disclosure statement
No potential conflict of interest was reported by the authors.

References

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