Author’s response to reviews

Title: Gait characteristics of CKD patients: a systematic review

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Author’s response to reviews:

Shaina Sunga

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Response letter BNEP-D-18-00859-Revision

Dear Shaina Sunga

Thank you very much for the review of our manuscript “Gait characteristics of CKD patients: a systematic review” (BNEP-D-18-00859). We addressed each suggested revision in an updated version of the manuscript, highlighting amendments using track changes, and describe the details for each amendment below.

Reviewer 1
Reviewer’s point

Reviewer 1: Overall, this is a thorough review of the relevant literature. It evaluates the quality of existing studies investigating CKD patients' gait characteristics at different CKD stages in a logical and easy-to-understand way, supported by clear figures. The discussion is well structured and informative. What is missing from the paper is a clear final section of the paper (e.g. Direction for future studies), highlighting the subsequent work which is required.

Our response

We thank the reviewer for the encouraging comments and for pointing out the missing of a clear final section of the paper. In the revised version of our manuscript we have inserted such a section in which we also consider and take up some of the remarks and suggestions of the second reviewer. We have added the following:

“Future direction for studies investigating gait function in CKD

This systematic review reveals that the field of research into aspects of locomotor functioning in people with CKD is still in its fledgling state. Gait disorders, fall risk and cognitive decline in haemodialysis patients have been analyzed in patients during the course of their therapy for at least two years. However, little is known about the transitional period these individuals experience from pre-dialysis to dialysis. It is, therefore, unclear whether these patients entered therapy with pre-existing deficiencies or whether these developed due to treatment initiation. Future studies should, therefore, select a sample of pre-dialytic individuals and describe the changes of gait and cognitive functioning from one year before to one year after HD beginning. Whether there is an association between muscle functioning during locomotion and neural drive should also be assessed. In a first step this could be assessed using a cross-sectional study design where people on haemodialysis are compared with healthy controls. Such a study could for example employ "intramuscular coherence" or "EMG-EMG coherence" analysis, which considers the common synchronized oscillatory drive to a pair of sEMG placed over the same muscle [82], and reflects the neural drive from the motor cortex to the muscles [82, 83].Such an approach could substantiate or refute a role of the cortex in locomotor functioning of people with CKD. Whether the type of maintenance haemodialysis plays a role in gait dysfunction is a further intriguing point that may be focussed on. Patients regard the time-consuming nature of haemodialysis as problematic and often fill this time being sedentary and watching tv [84]. It can be hypothesised that this behaviour worsens the physical [85, 86] and cognitive [87] functioning of these patients.”
Reviewer 2

Reviewer’s point

Reviewer 2: I believe that this is an important paper that will be of interest to the readers of this journal. I do not see obvious issues with methodology or conclusions, but offer a few minor suggestions in hopes that the authors might find them helpful in revising their manuscript.

It is unclear from the description of the data analysis if there was a statistical comparison between the groups that would allow for the conclusion that they are different.

How did standing data compare to flying start?

Line 265, I would suggest clarifying that DTC has not been evaluated in CKD patients who are not on dialysis.

I would be interested in a discussion on the relationship between dialysis modality and gait.

Our response

We are thankful for the helpful suggestions which we have taken up in the revised version of our manuscript.

Our systematic review did not include a statistical comparison between the groups because we did not have access to all original gait data from the different studies. This was specified in the Methods paragraph on line 133.
Based on the available data we were, unfortunately, not able and credibly compare standing data from flying start data. This is one of the reasons why we call for standardised approaches to assess gait in future studies with CKD patients. This was specified in the results paragraph in line 178.

We have added the following information on Line 265: “DTC has not been evaluated in CKD patients not on dialysis.”

The discussion regarding the relationship between dialysis modality and gait has been added to the results paragraph at line 214 and to the newly added final section of the manuscript where some aspects for future studies are discussed.

Thank you for considering our manuscript for publication.

Best regards

Eling de Bruin