



**Figure 1.** Number of steps on hemodialysis (HD) day and 7 days after a 12-week intradialytic exercise intervention.

nondialysis patients,<sup>2,3</sup> this is not consistent and fully clear.

Thus, how could we increase physical activity in patients with chronic kidney disease? The authors have brilliantly discussed the compensatory sedentary behavior of engaging in an exercise program. We believe that educational and lifestyle interventions should be emphasized in future studies. Patients need to be aware of the benefits of an active lifestyle, which goes further to engaging in exercise programs.<sup>4</sup>

1. Pike MM, Alsouqi A, Headley SAE, et al. Supervised exercise intervention and overall activity in CKD. *Kidney Int Rep.* 2020;5: 1261–1270.
2. Cho JH, Lee JY, Lee S, et al. Effect of intradialytic exercise on daily physical activity and sleep quality in maintenance hemodialysis patients. *Int Urol Nephrol.* 2018;50:745–754.
3. Hiraki K, Shibagaki Y, Izawa KP, et al. Effects of home-based exercise on pre-dialysis chronic kidney disease patients: a randomized pilot and feasibility trial. *BMC Nephrol.* 2017;18: 198.
4. Du W. Adopting physical activity to help combat end-stage renal disease. *Br J Sports Med.* 2020;54:495–496.

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**The Authors Reply:** We thank Andrade *et al.*<sup>1</sup> for their observations on our study examining overall physical activity in patients with chronic kidney disease in a supervised exercise intervention compared with those with usual activity. Differences in sedentary behavior between the 2 treatment arms are a consequence of random chance, and the apparent differences led to additional analyses to address the potential impact. We conducted a comparison of baseline values of sedentary time and light, moderate, and vigorous activity between the exercise and control group and reported the results in our supplementary text (Supplementary Table S2).<sup>2</sup> We additionally repeated our primary analyses after stratification by baseline percentage of sedentary time and included the results in our supplementary text (Supplementary Table S3).<sup>2</sup> No differences between the exercise and control groups in physical activity were seen at baseline, month 2, month 4, counts per minute over months 2 and 4, or change in counts per minute when stratified by percentage of sedentary time.

Finally, to additionally alleviate concerns about differences in baseline activity in our study, we stratified the analyses by median baseline counts per minute (Table 3) and adjusted for baseline counts per minute in the analyses examining change in activity over 4 months.<sup>2</sup>

Andrade *et al.*<sup>1</sup> were concerned about the eligibility criteria of the study, whereby strict inclusion and exclusion criteria may hamper the generalizability of our findings to all patients with chronic kidney disease. The restriction to individuals with body mass index  $\geq 25$  kg/m<sup>2</sup> was implemented for safety concerns, to avoid potential development of protein energy

wasting with dietary restriction. Individuals with insulin-dependent diabetes mellitus were excluded because they experience major metabolic derangements that may have altered response to the tested interventions. As a result of these exclusions, and as acknowledged as a limitation in the discussion, our sample may be healthier and more active and may not fully represent the chronic kidney disease community at-large.

Andrade *et al.*<sup>1</sup> contributed results from their study on the effects of intradialytic cycling and resistance exercises on weekly physical activity. Similar to our study, they concluded that no differences existed between groups. Andrade *et al.*<sup>1</sup> mentioned the inconsistency of these results with previous studies showing improvements in weekly physical activity.<sup>3,4</sup> Although we agree that exercise intervention and the effects of increasing overall activity should be more clearly researched and described, the studies cited by Andrade *et al.*<sup>1</sup> do not provide clear evidence that physical activity improves with exercise intervention. Both were limited by sample size and did not address differences in baseline activity. The study by Hiraki *et al.*<sup>4</sup> did not compare differences in activity between the intervention and control groups, only within-group differences from baseline to the end of the study.

In conclusion, we agree with Andrade *et al.*<sup>1</sup> that educational and lifestyle interventions should be of increased importance and that patients should be aware of the benefits of activity. It is important to recognize that activity levels may not change outside of a supervised exercise intervention and counseling on habitual levels of activity may be more beneficial.

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