

## Role of Exercise in Blood Pressure Control Among Hypertensive Chronic Kidney Disease Patients

Dear Editor,

According to the findings of Motedayen *et al.*<sup>[1]</sup> on the “Prevalence of hypertension in renal diseases in Iran,” more than one-third of kidney disease patients in Iran are hypertensive. With regard to preventive medicine, exercise training is an effective complementary therapy for blood pressure control in hypertensive chronic kidney disease (CKD) patients. Sedentariness is associated with a decrease in functional capacity and cardiovascular mortality worldwide. Exercise improves heart rate variability (HRV) and baroreflex sensitivity (BRS); hence, it is an important tool in the primary and secondary prevention of cardiovascular disease. Exercise decreases arterial blood pressure, reduces total and low-density lipoprotein (LDL), increases the level of high-density lipoprotein (HDL), and improves endothelial function in physically active individuals. Exercise improves autonomic cardiac control by decreasing sympathetic activity and increasing vagal activity and baroreflex control of heart rate. Hypertension is highly prevalent among CKD patients, and exercise training is an effective strategy for controlling blood pressure in hypertensive CKD patients.

Exercise training improves functional and work capacity, thereby enhancing the quality of life among hypertensive CKD patients. However, the cardiorespiratory response to muscular exercise training in hypertensive CKD patients depends on the type of exercise, the intensity of exercise, and individual muscle mass. The optimal dose of exercise (volume and intensity) that can be prescribed by physicians to achieve the desired treatment goal of decreased blood pressure and improved functional capacity in hypertensive CKD patients remains an issue of global debate and experimentation. When prescribing an exercise regimen, it is important to consider the patient’s functional capacity and clinical status to minimize the risk of adverse cardiac events. Hence, there is a need for individualization of exercise training among hypertensive CKD patients. Combined aerobic and resistance training was noted as a potential therapy in decreasing inflammation, thereby improving endothelial function in hypertensive early-stage CKD patients.<sup>[2]</sup>

There was a significant improvement in blood pressure regulation and a decrease in 10-year risk of cardiovascular disease among physically active CKD patients.<sup>[3]</sup> There was an association between exercise and significant lowering of blood pressure in nondialysis CKD patients after 24 weeks of follow-up; however, exercise also significantly decreased systolic blood pressure in CKD

patients between stages 2 and 5.<sup>[4]</sup> Combined aerobic and resistance exercise training is an effective tool which enables physicians to improve the aerobic capacity and control the arterial blood pressure in patients that require hemodialysis for end-stage renal disease. This may be because of the improvements in neurovegetative control of the heart and peripheral mechanisms associated with combined exercise training.<sup>[5]</sup>

Individually tailored exercise training coupled with dietary counseling, smoking cessation, and stress management may be more beneficial to hypertensive CKD patients, hence enabling clinicians to achieve the desired treatment outcomes/goals. However, further research studies are needed in this area with regard to the exact dose and type of exercise training regimen that can be prescribed by physicians to lower the blood pressure in hypertensive CKD patients based on different stages of CKD.

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### Conflicts of interest

There are no conflicts of interest.

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