

Exercise Training and Haemodialysis Patient Outcomes

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Introduction

The final stage of chronic kidney disease (CKD), end-stage renal disease (ESRD), affects 8–16% of people worldwide and is characterized by irreversible kidney function. The prevalence of ESRD is rising annually. For patients with end-stage renal disease (ESRD), hemodialysis (HD) is an important and frequently used renal replacement therapy (RRT). 2.62 million people worldwide received RRT to treat ESRD, according to the International Society of Nephrology. HD was used to treat the majority of them. When compared to patients in the same stage of ESRD receiving HD, patients with ESRD undergoing HD had significantly worse complications, including renal hypertension, reduced aerobic capacity, and decreased walking capacity. Patients with ESRD saw an increase in mortality and a decrease in quality of life (QoL) as a result of the complications. In patients with ESRD receiving HD, some recent studies reported that exercise can lower blood pressure (BP), increase aerobic capacity, walking capacity, and quality of life (QoL), but others did not. Therefore, it is important to synthesize eligible trials and investigate whether exercise improved adult ESRD patients' physical fitness. In addition, inadequate dialysis for HD patients indicates that excess water and toxins produced during dialysis will remain in the body and increase the rate of cardiovascular complications in the long run. By increasing dialysis adequacy, exercise could also reduce morbidity and mortality. The concise exercise training parameters, which include exercise type, duration, intensity, and frequency, were not mentioned and remain unclear, despite the National Kidney Function's recommendation that exercise training should be a cornerstone for patients receiving HD to control complications and modality. However, the majority of recent systematic reviews included specific exercise training parameters for HD-treated CKD patients [1–4].

Discussion

The included studies lasted anywhere from eight weeks to a year. The longest period of time was three months, followed by six months. Unfortunately, however, this meta-analysis did not conduct subgroup analyses of duration to determine which duration was most effective and had the greatest impact on physical outcomes. On the one hand, the question of whether to divide the time period into short-term or long-term was difficult because there was no standard for doing so. On the other hand, according to our knowledge, exercise may be more effective over a longer period of time, particularly for restoring structures like BP. According to Sheng's meta-analysis, VO₂ peak could rise more when exercise lasted more than six months. However, as the participant dropout rate increases over time, it may be challenging to conduct a 12-month long exercise intervention in a clinical setting [5,6].

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Received: 13 September 2022, Manuscript No. jsmds-23-87366; **Editor Assigned:** 15 September 2022, PreQC No. P-87366; **Reviewed:** 27 September 2022, QC No. Q-87366; **Revised:** 03 October 2022, Manuscript No. R-87366; **Published:** 10 October 2022, DOI: [10.37421/2161-0673.2022.12.279](https://doi.org/10.37421/2161-0673.2022.12.279)

Conclusion

Based on our evidence that showed to be beneficial for cardiovascular function reflected in exercise capacity, walking capacity, and quality of life, clinical staff can conduct aerobic exercise or combined exercise for adults with ESRD undergoing HD for at least 8 weeks to 12 months, three times weekly. For the construction of a patient exercise system, future studies still need to focus on high-quality evidence and increase the number of plans for different conditions of the patients. Additionally, it is recommended that studies examining the potential negative effects of exercise on HD patients provide more comprehensive evidence for the creation of appropriate exercise programs. It is also necessary to compare home exercise, HD exercise, resistance exercise, and combined exercise.

Acknowledgement

None.

Conflicts of Interest

None.

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How to cite this article: Anuly, Steros. "Exercise Training and Haemodialysis Patient Outcomes." *J Sports Med Doping Stud* 12 (2022): 279.