

Importance of physical capacity and the effects of exercise in heart transplant recipients.

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Abstract

One of the most important prognostic factors in heart failure patients is physical capacity. Patients with very poor physical performance and otherwise eligible, may be listed as candidates for heart transplantation (HTx).

After such surgery, life-long immunosuppression therapy is needed to prevent rejection of the new heart. The dark side of immunosuppression is the increased risk of infections, kidney failure, cancer and advanced atherosclerosis (cardiac allograft vasculopathy), with the two latter conditions as the main causes of later mortality.

In a worldwide perspective, 50% of the HTx patients survive past 10 years. Poor aerobic capacity prior to graft deterioration is not only limited to the failing heart, but also caused by peripheral factors, such as limited function in the skeletal muscles and in the blood vessels walls.

Exercise rehabilitation after HTx is of major importance in order to improve physical capacity and prognosis.

Effects of **high-intensity interval training (HIT)** in HTx recipients is a growing field of research attracting worldwide focus and interest. Accumulating evidence has shown that HIT is safe and efficient in maintenance HTx recipients; with superior effects on physical capacity compared to conventional moderate exercise.

This article generates further evidence to the field by summarizing results from a decade of research performed at our center supported by a broad, but not strict formal, literature review.

In short, **this article demonstrates a strong association between physical capacity measured after HTx and long-term survival.**

It describes the **possible "HIT-effect" with increased levels of inflammatory mediators of angiogenesis.**

It also describes long-term effects of HIT; showing a positive effect in development of anxiety symptoms despite that the improved physical capacity was not sustained, due to downregulation of exercise and intensity.

Finally, our results are linked to the ongoing HITTS study, which investigates safety and efficiency of HIT in *de novo* HTx recipients. Together with previous results, this study may have the potential to change existing guidelines and contribute to a better prognosis for the HTx population as a whole

