

Einfluss körperlicher Aktivität auf die Herzfrequenzvariabilität bei Herzerkrankungen

Influence of physical fitness on heart rate variability in patients suffering from cardiac disease

Summary

Background: *There is consensus on physical training as playing an important role in the prevention and rehabilitation of cardiovascular diseases. While earlier researchers were interested in studying parameters of physical performance, there has been a paradigm shift in favour of the study of the autonomic nervous system (ANS). Hence, indices of heart rate variability (HRV), that have been shown to be valuable in cardiac risk stratification, are increasingly used in sports and training sciences. Numerous studies have shown that reduced HRV is associated with a poor outcome in various populations. Theoretically, improvement of compromised ANS activity through physical training should have a positive impact on prognosis and manifest in an increase of HRV.*

Objectives: *Therefore, we studied the effects of moderate physical training on both HRV and physical performance in patients suffering from congestive heart failure and healthy individuals.*

Methods: *We performed a quasi experimental study in 15 individuals with congestive heart failure and 15 age-matched healthy volunteers. Each of the study participants underwent a three-month period of physical training. Of importance, the training intensity was individually tailored and consisted of neuromuscular conditioning and endurance training elements. Prior to and after the training period several HRV indices and parameters of physical performance were measured.*

Results: *In both the patients and the volunteers, the training resulted in a significant increase of physical performance and a significant reduction of mean heart rate and an increase in heart rate reserve. In contrast, other HRV indices, such as RMSSD, pNN50 and SD2, did not exhibit significant changes*

Conclusions: *A short training period of three months does not only lead to an increased physical fitness, but also results in a reduced heart rate, which is a benign phenomenon as to cardiac performance and prognosis. However, it is also concluded that three months of training may not suffice to induce autonomic alterations strong enough to manifest in altered indices of short-term HRV.*