

# The differential benefit of using Handgrip in patients with ischemia-induced ventricular arrhythmia

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**Background:** The scientific literature suggests that the handgrip acutely increases systolic and diastolic blood pressure (DBP) and the double cardiac product. More specifically, increased DBP increases perfusion pressure in the aortic root, improving coronary irrigation. This may be beneficial for patients who present with ischemia-induced ventricular arrhythmias. **Objective:** To describe how using the handgrip during cyclic exercise reduced ventricular arrhythmia in a patient with heart failure with intermediate ejection fraction. **Case report:** A 30-year-old male with a clinical diagnosis of heart failure with intermediate ejection fraction presented episodes of non-sustained ventricular tachycardia in the submaximal phase and peak effort during the maximal physical effort test (TEFM). According to the clinical report, the leading suspected cause of the arrhythmia was left ventricular dilation, associated with a decrease in coronary microcirculation. Before starting the Cardiovascular Rehabilitation (CR) program, the patient underwent two submaximal exercise tests. The tests were carried out as follows: three minutes at 70% of the speed achieved in TEFM, with a passive rest of 5 minutes and another 3 minutes at the same speed with 2 kilo dumbbells in each hand. The following day, the same test was performed, reversing the order in which the exercise was performed. The tests were carried out with electrocardiographic monitoring. It was observed that when the patient performed the treadmill while holding the dumbbells, there was a significant reduction in arrhythmia when compared to the moment without the dumbbells. Thus, it was suggested that the handgrip favored coronary perfusion during exercise, promoting a reduction in ventricular arrhythmias. The patient was treated based on this assessment, performing neuromuscular exercises and cyclic interval exercises of moderate intensity on an ergometric treadmill with 2-kilo dumbbells in each hand for six months. Electrocardiographic Holters performed before and after the supervised exercise program showed respectively: 5908 vs. 1594 isolated ventricular arrhythmias, 46 vs 0 episodes in pairs, 10 vs. 6 bigeminisms. The echocardiogram showed that the ejection fraction increased from 46% to 52% and the left ventricular mass decreased from 278g to 236g. **Conclusion:** This case raises the hypothesis that using the handgrip in patients with ischemia-induced arrhythmia may be a resource that promotes benefit for this population, enabling cyclic exercise to be performed more safely.