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Comparison of skeletal muscle strength between cardiac patients and age-matched healthy controls

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Abstarc :

The purpose of the present study was to compare muscular strength of knee extensors and arm flexor muscles of cardiac patients (n = 638) and healthy controls (n = 961) in different age groups. Isometric torques were measured in a sitting position with the elbow, hip, and knee flexed to 900. For statistical analysis, age groups were pooled in decades from the age of 30 to 90 years. Additionally, the influence of physical lifestyle prior to disease on muscular strength was obtained in the patients. For statistical analysis three-way ANOVA (factors age, gender, and physical activity level) was used. Both in patients and in controls a significant age-dependent decline in maximal torque could be observed for arm flexors and knee extensors. Maximal leg extensor muscle showed statistically significant differences between healthy controls and cardiac patients as well as between subgroups of patients: Physically inactive patients showed lowest torques (male: 148 ± 18 Nm; female: 82 ± 25 Nm) while highest values were measured in control subjects (male: 167 ± 16 Nm; female: 93 ± 17 Nm). In contrast, arm flexor muscles did not show any significant influence of health status or sports history. This qualitative difference between weight-bearing leg muscles and the muscle group of the upper extremity suggest that lower skeletal muscle strength in heart patients is mainly a consequence of selective disuse of leg muscles rather than any pathological skeletal muscle metabolism. Since a certain level of skeletal muscle strength is a prerequisite to cope with everyday activities, strength training is recommended as an important part of cardiac rehabilitation.

Key Word :
isometric torque, ageing, heart disease, rehabilitation

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