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KOMPARATIVNA ANALIZA VASKULARNE RIGIDNOSTI KOD SPORTISTA I NESPORTISTA

COMPARATIVE ANALYSIS OF VASCULAR RIGIDITY IN ATHLETES AND NON-ATHLETES

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SAŽETAK

Uvod: Vaskularna rigidnost predstavlja jedan od ključnih biomarkera kardiovaskularnog zdravlja, jer omogućava ranu detekciju funkcionalnih i strukturnih promena u arterijskom sistemu. Njeno povećanje je direktno povezano sa višim rizikom od razvoja hipertenzije, ateroskleroze i drugih kardiovaskularnih oboljenja. Istovremeno, fizička aktivnost se prepoznaje kao jedan od najvažnijih zaštitnih faktora za očuvanje vaskularne funkcije i prevenciju navedenih stanja.
Cilj: Cilj istraživanja je bio ispitati razlike u arterijskoj rigidnosti između sportista i fizički neaktivnih osoba.
Materijali i metode: U studiju je bilo uključeno 60 ispitanika, od kojih su 45 (75%) bili muškarci, a 15 (25%) žene. Ispitanici su podeljeni u dve grupe: sportisti (n=25; 14 muškaraca i 11 žena) i nesportisti (n=35; 31 muškarac i 4 žene). Za procenu arterijske rigidnosti korišćena je metoda analize pulsnog talasa (Pulse Wave Analysis – PWA), sa posebnim fokusom na brzinu karotido-femoralnog pulsnog talasa (cfPWV), kao zlatni standard u proceni centralne arterijske rigidnosti.
Rezultati: Rezultati su pokazali statistički značajno niže vrednosti cfPWV u grupi sportista u poređenju sa nesportistima. Prosečna vrednost cfPWV kod nesportista iznosila je 5,38 ± 0,6 m/s, dok je u grupi sportista iznosila 4,67 ± 0,6 m/s ($p < 0,05$).
Zaključak: Dobijeni nalazi potvrđuju da redovna fizička aktivnost ima značajan pozitivan efekat na elastičnost arterija, odnosno smanjenje arterijske rigidnosti. Ovi rezultati dodatno podupiru preporuke za primenu fizičke aktivnosti kao nefarmakološke strategije u prevenciji kardiovaskularnih bolesti.
Ključne reči: Arterijska rigidnost; kardiovaskularni sistem; sportisti; nesportisti; brzina pulsnog talasa (PWA); karotido-femomralni segment

ABSTRACT

Introduction: Vascular stiffness is one of the key biomarkers of cardiovascular health, as it enables early detection of functional and structural changes in the arterial system. Its increase is directly associated with a higher risk of developing hypertension, atherosclerosis, and other cardiovascular diseases. At the same time, physical activity is recognized as one of the most important protective factors for maintaining vascular function and preventing these conditions.
Aim: The aim of the study was to examine the differences in arterial stiffness between athletes and physically inactive individuals.
Materials and methods: The study included 60 participants, of whom 45 (75%) were men and 15 (25%) were women. The participants were divided into two groups: athletes (n=25; 14 men and 11 women) and non-athletes (n=35; 31 men and 4 women). To assess arterial stiffness, the Pulse Wave Analysis (PWA) method was used, with a specific focus on carotid-femoral pulse wave velocity (cfPWV), recognized as the gold standard for evaluating central arterial stiffness.
Results: The results showed statistically significantly lower cfPWV values in the athlete group compared to the non-athletes. The average cfPWV value in the non-athlete group was 5.38 ± 0.6 m/s, while in the athlete group it was 4.67 ± 0.6 m/s ($p < 0.05$), indicating a more favourable hemodynamic profile in physically active individuals.
Conclusion: The obtained findings confirm that regular physical activity has a significant positive effect on arterial elasticity, i.e., the reduction of arterial stiffness. These results further support the recommendations for the use of physical activity as a non-pharmacological strategy in the prevention of cardiovascular diseases.
Keywords: Arterial stiffness; cardiovascular system; athletes; non-athletes; pulse wave velocity (PWA); carotid-femoral segment (cfPWV).