World Academy of Science, Engineering and Technology
International Journal of Sport and Health Sciences
Vol:18, No:12, 2024

Electrical Cardiac Remodeling in Elite Athletes: A Comparative Study between Triathletes and Cyclists

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Abstract : Background: Repetitive participation in triathlon training results in significant myocardial changes. However, whether the cardiac remodeling in triathletes is related to the specificities of the sport (consisting of three sports) raises questions. Methods: Elite triathletes and cyclists registered on the French ministerial lists of high-level athletes were involved. The basic information and routine electrocardiogram records were obtained. Electrocardiograms were evaluated according to clinical criteria. Results: Of the 105 athletes included in the study, 42 were from the short-distance triathlon (40%), and 63 were from the road cycling (60%). The average age was 22.1±4.2 years. The P wave amplitude was significantly lower in triathletes than in cyclists ($p=0.005$), and no significant statistical difference was found in heart rate, RR interval, PR or PQ interval, QRS complex, QRS axe, QT interval, and QTc ($p>0.05$). All the measured parameters were within normal ranges. The most common electrical manifestations were early repolarization (60.95%) and incomplete right bundle branch block (43.81%); there was no statistical difference between the groups ($p>0.05$). Conclusions: Prolonged intensive endurance exercise training induces physiological cardiac remodeling in both triathletes and cyclists. The most common electrocardiogram manifestations were early repolarization and incomplete right bundle branch block.

Keywords : cardiac screening, electrocardiogram, triathlon, cycling, elite athletes
Conference Title : ICSS 2024 : International Conference on Sport Science
Conference Location : Karachi, Pakistan
Conference Dates : December 30-31, 2024