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ABNORMAL ELECTROCARDIOGRAPHIC PATTERNS IN TRAINED ATHLETES SCREENED BY EUROPEAN SOCIETY OF CARDIOLOGY RECOMMENDATIONS

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Introduction Young, trained athletes may have abnormal 12-lead ECGs without evidence of structural cardiac disease. In 2005, the European Society of Cardiology (ESC) published recommendations for cardiovascular screening in athletes. This study aimed to screen highly trained young athletes with 12 leads ECG criteria of this recommendation.

Methods ECGs of 175 highly trained young athletes (113 males, age 22.9±4.7 years), 305 college student athletes (229 males, age 21.1±1.9 years) and 183 controls (111 males, age 21.7±1.8 years) were studied. R-wave, S-wave voltages, ST segment or T-wave changes, abnormal Q waves, R-R interval and QT interval were measured and analysed.

Results ST-segment depression, T-wave flattening or inversion were the most common ECG changes in trained athletes and student athletes compared to the control (trained athletes: 72.57%; student athletes: 64.26%; vs control: 36.07%, both $p<0.05$). Nine trained athletes (5.14%), two student athletes (0.66%) and one control (0.55%) showed right bundle branch block (both $p<0.05$). R wave in lead V5 or V6 ≥ 3 mV was found in 13 trained athletes (7.43%), four student athletes (1.31%) and five controls (2.7%), with both $p<0.05$. First or second degree atrioventricular block appeared in 12 trained athletes (6.86%), seven student athletes (2.29%) and one control (0.55%), with both $p<0.05$.

Conclusions ST-segment depression, T-wave flattening or inversion were the most common ECG changes in athlete screened by ESC published recommendations. The degree of these abnormalities correlated with training intensity, indicating that the underlying reason of the abnormal ECG patterns was physiological cardiac remodelling.