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**Electrocardiogram analysis from a cardiac screening program in elite Australian cricketers**

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**Topic(s):**
Sports Cardiology

**Citation:**

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**BACKGROUND:** Australian cricket implemented a formal cardiac screening policy for elite players in 2016. Under the policy, it is recommended, although not compulsory (opt-out), that players undertake cardiac screening prior to participating in elite cricket. This program covers all elite male and female cricket squads from 16 years upwards, including state and national squads, with complete records for all players covered stored in a central database.

**PURPOSE:** To report the compliance and results of an electrocardiogram (ECG) cardiac screening program in a well-defined cohort of male and female elite Australian cricket players.

**METHODS:** Players who consented provided a personal and family history, and underwent physical examination and resting 12-lead ECG. Follow-up tests were conducted if required. An audit (1 February 2019) examined all cardiac screening records for male and female players in all Australian Cricket state squads from 16 years upwards. Data extracted from the database included the number of players who underwent cardiac screening; signed waivers opting out; and had follow-up tests. ECGs were re-reviewed by sports cardiology experts according to the International Criteria for athlete ECG interpretation.

**RESULTS:** 710 players were included in the audit cohort (mean age 20.4±4.9 years, 62% male). 692 (97.5%) players underwent recommended cardiac screening (including ECG) or signed a waiver (1.1%). 173 (24.4%) players were screened (or signed a waiver) more than once during the period. Follow-up testing was conducted for 59 (6.9%) cases. No players were excluded from sport due to a cardiac problem and no major cardiac incidents occurred during the period. Review of 830 ECGs showed benign athlete heart changes, including sinus bradycardia (33.5%), left ventricular hypertrophy (16.3%), and incomplete/right bundle branch block (8.4%), were common but abnormal screening ECGs were uncommon (2.0%). Left ventricular hypertrophy was 15 times more prevalent in male cricketers than females (25.0% vs 1.6%; p<0.0001). Males also had significantly more sinus bradycardia (37.4% vs 27.0%; p=0.002) and left axis deviation (2.7% vs 0.3%; p=0.01) than females. However, any T-wave inversion (excluding leads aVR, III and V1) was more common in females than males (8.0% vs 1.2%; p<0.0001).

**CONCLUSIONS:** an audit of a cardiac screening program in elite Australian cricketers found excellent compliance. A small proportion required follow-up testing and no player was excluded from sport due to a cardiac problem. ECG analysis suggested cricket is a sport of moderate cardiac demands, with benign athlete heart changes common. Analysis also shows some sex differences in ECG features in line with previous studies. The study illustrates the successful implementation of a cardiac screening program in an elite sporting cohort.
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