“CV Screening Across the Spectrum”

Andrew Pipe, CM, MD, Dip. Sport Med., FACSM
Division of Prevention & Rehabilitation
University of Ottawa Heart Institute
Sudden Cardiac Death
“The incidence of SCD in NCAA athletes is high, with males, black athletes, and male basketball players at the highest risk.

SCD was the second leading cause of death after accidents and the leading medical cause of death.

SCD was much more common than other causes of death, such as sickle cell trait, heat illness and brain injury, which have received considerable attention.

Yet, during the preparticipation exam, all NCAA athletes are required to provide confirmation of SCT status, and either undergo SCT testing or sign a release...”
The Most Common Cause of Death in NCAA Athletes

Motor Vehicle Accidents

Causes of Death in NCAA Athletes 2003 – 2013
Etoh = ethanol;  SCT = sickle cell trait

Accident 50%
Cardiac 15%
Homicide 8%
Suicide 8%
Cancer 7%
SCT 2%
Head injury 1%
Heat Stroke 1%
Medical - other 3%
Drug/Etoh Overdose 3%
Meningitis 1%
Unknown 1%
Causes of sudden cardiac death in athletes.

- SUD: 25%
- Anomalous coronary: 11%
- Myocarditis: 9%
- CAD: 9%
- Idiopathic LVH/possible cardiomyopathy: 8%
- Idiopathic LVH/possible SCT: 1%
- Myocarditis NOS: 8%
- Cardiomyopathy: 8%
- HCM: 8%
- ARVC: 5%
- Aortic dissection: 5%
- WPW: 3%
- DCM: 3%
- Kawasaki's Disease: 2%
- Long QT: 1%
- Commotio: 2%
Listen to your patient, he is telling you the diagnosis,

William Osler
FIGURE 1. Hypertrophic cardiomyopathy: A= normal heart; B= asymmetric septal; C= apical hypertrophic cardiomyopathy.
Myocarditis

- More common than generally appreciated
- *Coxsackie B* virus often involved
- *Chagas’ Disease* most common cause in some regions
- 5% - 10% of those with a viral infection will develop mild myocardial inflammation

A common cause of exercise associated SCD in military recruits?
Long QT Syndrome
Sudden Cardiac Death in Sport

A particular challenge for the sport medicine professional, who must be familiar with the common causes of SCD and sensitive to the nuances of their presentation.

*Harmon KG et al. BJSM 2014;48:1185-1192.*
# Incidence of Sudden Cardiac Death in Sports

<table>
<thead>
<tr>
<th>Sport</th>
<th>Athlete Deaths</th>
<th>Athlete-Years</th>
<th>Incidence per Athlete-Year</th>
<th>Incidence over 4-y Career</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men’s basketball</td>
<td>19</td>
<td>170,590</td>
<td>1 in 8,978</td>
<td>1 in 2,245</td>
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<tr>
<td>Men’s soccer</td>
<td>9</td>
<td>213,205</td>
<td>1 in 23,689</td>
<td>1 in 5,922</td>
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<tr>
<td>Men’s football</td>
<td>18</td>
<td>647,125</td>
<td>1 in 35,951</td>
<td>1 in 8,988</td>
</tr>
<tr>
<td>Men’s swimming</td>
<td>2</td>
<td>85,568</td>
<td>1 in 42,784</td>
<td>1 in 10,696</td>
</tr>
<tr>
<td>Men’s cross-country</td>
<td>3</td>
<td>128,570</td>
<td>1 in 42,857</td>
<td>1 in 10,714</td>
</tr>
<tr>
<td>Men’s lacrosse</td>
<td>2</td>
<td>91,699</td>
<td>1 in 45,850</td>
<td>1 in 11,463</td>
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<tr>
<td>Women’s cross-country</td>
<td>3</td>
<td>141,268</td>
<td>1 in 47,089</td>
<td>1 in 11,772</td>
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<tr>
<td>Women’s volleyball</td>
<td>3</td>
<td>147,653</td>
<td>1 in 49,217</td>
<td>1 in 12,304</td>
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<tr>
<td>Men’s baseball</td>
<td>6</td>
<td>300,137</td>
<td>1 in 50,023</td>
<td>1 in 12,505</td>
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<tr>
<td>NCAA athletes</td>
<td>79</td>
<td>4,242,519</td>
<td>1 in 53,703</td>
<td>1 in 13,426</td>
</tr>
<tr>
<td>Women’s swimming</td>
<td>2</td>
<td>115,221</td>
<td>1 in 57,611</td>
<td>1 in 14,402</td>
</tr>
<tr>
<td>Women’s basketball</td>
<td>2</td>
<td>154,121</td>
<td>1 in 77,061</td>
<td>1 in 19,265</td>
</tr>
<tr>
<td>Men’s track</td>
<td>2</td>
<td>241,041</td>
<td>1 in 120,521</td>
<td>1 in 30,130</td>
</tr>
</tbody>
</table>

The sports with 1 death were men’s crew, women’s golf, women’s softball, women’s tennis, men’s tennis, women’s track, wrestling, and women’s lacrosse. Other sports had no identified sudden cardiac deaths.

“The estimated rate of SCD in NCAA athletes has remained similar over the last 10-years and is approximately 1:50,000.”

High risk groups include males, black athletes, and basketball athletes.

The most common finding in this cohort at autopsy after SCD was an AN-SUD (Autopsy negative – sudden unexplained death).”
### Incidence of Sudden Cardiac Death (SCD) in Male Basketball Athletes

<table>
<thead>
<tr>
<th>Group</th>
<th>Black SCD</th>
<th>Black Athlete-Years</th>
<th>SCD Incidence in Blacks per Athlete-Year</th>
<th>SCD Incidence in Blacks over 4-y Career</th>
<th>White SCD</th>
<th>White Athlete-Years</th>
<th>SCD Incidence in Whites per Athlete-Year</th>
<th>SCD Incidence in Whites over 4-y Career</th>
</tr>
</thead>
<tbody>
<tr>
<td>Division I male basketball</td>
<td>7</td>
<td>30,660</td>
<td>1 in 4380</td>
<td>1 in 1095</td>
<td>3</td>
<td>15,689</td>
<td>1 in 5230</td>
<td>1 in 1307</td>
</tr>
<tr>
<td>Division II male basketball</td>
<td>3</td>
<td>24,723</td>
<td>1 in 8241</td>
<td>1 in 2060</td>
<td>1</td>
<td>18,016</td>
<td>1 in 18,016</td>
<td>1 in 4504</td>
</tr>
<tr>
<td>Division III male basketball</td>
<td>4</td>
<td>19,623</td>
<td>1 in 4906</td>
<td>1 in 1227</td>
<td>1</td>
<td>46,368</td>
<td>1 in 46,368</td>
<td>1 in 11,592</td>
</tr>
<tr>
<td>Overall male basketball</td>
<td>14</td>
<td>74,866</td>
<td>1 in 5348</td>
<td>1 in 1337</td>
<td>5</td>
<td>79,972</td>
<td>1 in 15,994</td>
<td>1 in 3,999</td>
</tr>
</tbody>
</table>

For over 30 years, **5-10 NCAA student athletes** have died per year.

The overall risk...is estimated at **1 in 54,000 athletes/year**.

- African-American SCD risk: **1 in 22,000**
- Caucasian SCD risk: **1 in 68,000**

- Male basketball athlete: **1 in 9,000**
- African-American basketball athlete: **1 in 5,200**

Men’s basketball = **4% of NCAA athletes**
Men’s basketball = **20% of SCD deaths**
The Challenge for the Sport Medicine Practitioner

• Understand the common causes of SCD in athletes
• Identify those at risk
• Provide advice and counsel that is timely, sensitive and appropriate
• Advocate for CV Safety in sport environments
• Be able to deal with CV emergencies
“ECG is nearly five times more sensitive than the current medical history questions, 10 times more sensitive than the physical examination, and has a higher positive likelihood ratio, a lower negative likelihood ratio, and a lower false-positive rate than history and physical examination.”

“Contemporary athlete-specific ECG interpretation standards that account for physiological changes associated with exercise have drastically reduced false-positive rates.”

“With the use of these guidelines, false-positive rates for ECG screening in athletes have become lower than the methods to detect other lethal diseases such as breast cancer.”
The Evidence Against Cardiac Screening Using Electrocardiogram in Athletes

Chad A. Asplund, MD, MPH, FACSM¹ and Francis G. O’Connor, MD, MPH, FACSM²

“A good screening test should have the ability to influence a disease or health outcome that has a significant impact on public health during the asymptomatic period . . . a screening test should be sufficiently sensitive, specific, and acceptable to patients . . . the population screened must have a high enough prevalence of disease to justify screening in the first place, and patients must be willing to comply with the additional evaluation and early treatment in order for the screening program to be successful.”
The Evidence Against Cardiac Screening Using Electrocardiogram in Athletes

Chad A. Asplund, MD, MPH, FACSM¹ and Francis G. O’Connor, MD, MPH, FACSM²

“Further, medical care (cardiology assessment or follow-up) may not be accessible for many young athletes especially those in the inner city urban or rural parts of America...the treatment after the abnormal ECG may result in disqualification...and many will not comply with this recommendation and are going to participate in sports anyway, but in an unorganized manner in a location without resources such as medical personnel and AED.”
Utility of Exercise Electrocardiography in Pre-participation Screening in Asymptomatic Athletes: A Systematic Review

Danny A. J. P. van de Sande¹ • Michelle A. W. Breuer² • Hareld M. C. Kemps¹

| The prevalence of a positive exercise test result is low in unselected asymptomatic athletes. |
| The positive predictive value of exercise electrocardiography is poor in asymptomatic athletes. |
| Prognostic implications of a false-positive exercise test result remain unclear. |

Issues of Concern

- Costs
- Capacity
- Competencies
- Cascade – of other investigations
- ‘Casualties’ – false-positives
Routine ECG Screening of Young Athletes
Can This Strategy Ever Be Cost Effective?*

Carl J. Lavie, MD, a Kimberly G. Harmon, MD b

**FIGURE 1  Sudden Cardiac Death in Athletes**

An Italian study (blue) (6) concluded that electrocardiography (ECG) screening (started in 1982) significantly reduced the incidence of sudden cardiac death by comparing the sudden death in the 2-year pre-screening period (A to B) with the post-screening period (B to F). The study by Steinvil et al. (7) is depicted by the red graph, which compared the 12 years before screening (C to E) with the 12 years after the onset of mandatory ECG screening (E to G). Had they limited comparison of the post-screening period to the 2-year period preceding the enforcement of screening in Israel (D to E vs. E to G), as performed in the Italian study), they would have concluded erroneously that screening saved the lives of athletes in Israel. The study from Minnesota (gray) (5) shows a low mortality rate in a population of athletes not undergoing systematic ECG screening. Reproduced with permission from Steinvil et al. (7).
Exercise restrictions trigger psychological difficulty in active and athletic adults with hypertrophic cardiomyopathy

Rebecca C Luiten, Kelly Ormond, Lisa Post, Irfan M Asif, Matthew T Wheeler, Colleen Caleshu

Our data reveal that active and athletic adults experience multifaceted, lasting psychological distress in response to being advised to restrict their exercise regimen.

It appears that the negative psychological impact of exercise restrictions lingers. We found that the majority of interviewees were still experiencing negative effects of their restrictions many years later.

Our findings indicate the need for clinicians to specifically address the emotional impact of exercise restrictions and provide insight into how clinicians can help patients adapt.

Open Heart 2016;3:e000488. doi:10.1136/openhrt-2016-000488
Incidence of sudden death in high school & college students comparing competitive athletes & nonathletes, 2000-2014, in Hennepin County, Minnesota

“The present data show, in a defined forensic population, that sudden deaths due to cardiovascular disease in young nonathletes numerically exceeded those in competitive athletes 8-fold, as well as by threefold with respect to incidence.”

Am J Cardiol 2016;117:1339-1341
There are currently 750,000 Canadians engaged in school sports, >19,000 student athletes in Canada’s 47 universities and 94 colleges, and >500,000 participants in minor hockey.

If electrocardiographic screening were to be recommended for every young Canadian involved in sports, significant costs will be incurred. If one obtained an ECG at the time of a young athlete’s entry to high school, eg, at least 150,000 ECGs would be obtained annually at a cost of more than $1.6 million.  

... this would pose a logistic burden for Canada’s 1374 cardiologists.

The Italian experience suggests that 33,000 athletes would need to be screened to save 1 life at a cost of $1.32 million.
Major considerations and strength of rationale for ECG screening

- **Weak**
  - **Athlete Risk**
    - Low: Incidence of SCA/D in Targeted Athlete Population
  
  - **Resources**
    - Low: ECG Interpretation / Secondary Testing / Cardiology Partnership
  
  - **Assessment of Benefit to Harm**
    - Low: False-positives vs. Risk Reduction
  
  - **Requirements**
    - Low: Team or Institutional Standard / League Policy

- **Strong**

*Clin J Sport Med 2016;26:347–361*
Who are You?
Where are You?
Who do You care for?

What Should You Do?
AHA Recommendations for PPE

Family Hx
- of SCD
- of CVD
- of specific syndrome

Personal Hx:
- Murmur
- Hypertension
- Fatigue/Dyspnoea
- Exertional Syncope
- Exertional Chest Pain

Physical Examination
- Heart Murmur
- Femoral Pulses
- Marfan Stigmata
- Blood Pressure

Evaluations to be performed by appropriately trained health professionals
Clinical Research

Detecting Underlying Cardiovascular Disease in Young Competitive Athletes

James McKinney, MD, MSc, a Daniel J. Lithwick, MHA, a Barbara N. Morrison, BKin, a
Hamed Nazzari, MD, PhD, a Michael Luong, MD, a Christopher B. Fordyce, MD, MHS, MSc, a,b
Jack Taunton, MD, c Andrew D. Krahn, MD, a Brett Heilbron, MBChB, a and
Saul Isserow, MBBCh a

Protocols used to screen young Canadian competitive athletes:

**Phase 1:**
Modified 12-item AHA protocol
- AHA questionnaire
- ECG
- Physician present
- Physical examination

**Phase 2:**
SportsCardiologyBC protocol
- SCBC questionnaire*
- ECG
- No physician present
Young competitive athlete flow diagram

HCM = hypertrophic cardiomyopathy; MVP = mitral valve prolapse

**Phase 1:** Modified 12-item AHA protocol

- 714 young competitive athletes screened
- Excluded n = 34
- Missing documentation n = 19
  - Previously diagnosed cardiac conditions n = 10
  - Lost to follow-up n = 5
- 680 young competitive athletes included
  - Normal screen
    - No further testing n = 623
    - No disease found n = 55
    - Probable HCM n = 1
      - MVP n = 1
  - Abnormal screen
    - Further testing + follow-up with cardiologist n = 57

**Phase 2:** Sports Cardiology BC protocol

- 705 young competitive athletes screened
- Excluded n = 26
- Missing documentation n = 7
  - Lost to follow-up n = 14
  - Previously diagnosed conditions n = 3
  - Over 35 years n = 2
- 679 young competitive athletes included
  - Normal screen
    - No further testing n = 649
  - Abnormal screen
    - Further testing + follow-up with cardiologist n = 30
    - No disease found n = 25
    - Ventricular pre-excitation n = 4
    - Long QT syndrome n = 1
# SportsCardiologyBC (SCBC) Cardiovascular Screening Questionnaire

## Personal History

1. Have you ever passed out or nearly passed out? (+4)*
   - Did this occur during exercise? (+3)
   - Was this associated with blurred vision? (+1)
   - Did you feel lightheaded/nauseous/weak before? (-1)
   - Were you in a hot or warm environment? (-1)
   - Have you experienced this more than two times? (-2)
   - Did you feel that your heartbeat was abnormal? i.e. was it racing or skipping beats? (+4)
   - If you passed out, were you tired after? (-2)
   - If you passed out and someone witnessed it, did they notice you were pale in color? (-1)
2. Do you regularly and consistently experience discomfort, pain, tightness or pressure in your chest? (+2)

- Does this pain occur during exercise or emotional stress? (+1)

- Does the pain feel dull, achy, heavy and located in the middle of the chest and/or radiate to the jaw, neck, shoulders or arms? (+1)

- Is the pain relieved within 5 minutes of rest? (+1)

- Is the pain worsened with deep inspiration? (-1)

- Is the pain worsened with arm movement? (-1)

- Do you have asthma? (-2)
3. Do you regularly and consistently experience excessive labored breathing or have unexplained shortness of breath during exercise? (+2)
   - Do you feel a burning sensation in your throat? (-1)
   - Do you have difficulty swallowing or were constantly clearing your throat? (-1)
   - Do you feel nauseous at the same time? (-1)
   - Do you have asthma? (-2)
## Family History

4. Has any family member died of heart problems or had any unexpected sudden death before 50 years of age, including drowning or sudden infant death syndrome?

5. Does any family member have: hypertrophic cardiomyopathy, arrhythmogenic right ventricular dysplasia/cardiomyopathy, long QT syndrome, short QT syndrome, Brugada syndrome, Marfan syndrome, catecholaminergic polymorphic ventricular tachycardia.
Clinical Research

Detecting Underlying Cardiovascular Disease in Young Competitive Athletes

James McKinney, MD, MSc, a Daniel J. Lithwick, MHA, a Barbara N. Morrison, BKin, a Hamed Nazzari, MD, PhD, a Michael Luong, MD, a Christopher B. Fordyce, MD, MHS, MSc, a, b Jack Taunton, MD, c Andrew D. Krahn, MD, a Brett Heilbron, MBChB, a and Saul Isserow, MBBCh a

“In this study, the cost of screening using the modified approach, CAD $14.42 per athlete and $3822.70 per condition identified, is much less than in previously reported studies…

…underscores the potential cost savings that would be possible by adopting their novel questionnaire and, more importantly, abolishing the need for a physician to conduct a cardiovascular examination.”

Papadakis M and Sharma S. CJC 2017;33:33-35
“With respect to the Atlantic rift, this study demonstrates that screening with the ECG appears to be the way forward for detecting disease. This study should be considered a pilot for Canada’s response to PPS in young athletes and a potentially valuable contribution in the search for the Golden Chalice.”

Papadakis M and Sharma S. CJC 2017;33:33-35
Editorial

Preparticipation Cardiac Screening in Young Athletes: In Search of the Golden Chalice

Michael Papadakis, MBBS, MD, MRCP, and Sanjay Sharma, BSc(Hons), MBChB, MD, FRCP

“...a 12-lead ECG is the most effective screening strategy for cardiovascular disease in young athletes...(but)...the great majority of athletes flagged with an abnormal ECG will be subjected to a number of unnecessary investigations before being reassured.

False-positive electrocardiographic rates are of particular concern in athletes of African/Afro-Caribbean descent, who exhibit more profound repolarization changes compared with their white counterparts.

McKinney et al provide a valuable addition to the quest for the optimal PPS protocol by using an innovative approach that challenges long-held practices.

Based on the authors’ modified screening approach...it may be argued that apart from blood pressure management and assessment for a marfanoid which can be performed by general members of the community, auscultation could be omitted.”
“The addition of an ECG enhances the ability to identify disease, and modern athlete-specific ECG interpretation standards used by experienced physicians provide low false-positive rates, improving the cost-effectiveness while preserving sensitivity. These advanced protocols have the potential to improve health and safety during sport events and should be considered the best practice in high-risk athletes when the sports cardiology infrastructure and oversight are readily available.”
Interassociation consensus statement on cardiovascular care of college student-athletes

Brian Hainline,¹ Jonathan Drezner,² Aaron Baggish,³ Kimberly G Harmon,² Michael S Emery,⁴ Robert J Myerburg,⁵ Eduardo Sanchez,⁶ Silvana Molossi,⁷ John T Parsons,¹ Paul D Thompson⁸


A. Pre-ECG planning and coordination.
B. Screening protocol.
C. Interpretation and secondary testing.
D. Management of identified conditions.

Recognition and response to SCD including emergency action plans.
Sensitivity, specificity and positive predictive value of history, physical examination and ECG to detect potentially lethal cardiac disorders in athlete preparticipation screening

<table>
<thead>
<tr>
<th>First author (Ref. #)</th>
<th>Year</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Positive predictive value</th>
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<tr>
<td></td>
<td></td>
<td>History</td>
<td>PE</td>
<td>ECG</td>
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<tr>
<td>Fuller\textsuperscript{70}</td>
<td>1997</td>
<td>0</td>
<td>17</td>
<td>83</td>
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<td>Wilson\textsuperscript{71}</td>
<td>2008</td>
<td>0</td>
<td>-</td>
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<td>2014</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

Values are %. Adapted with permission from Harmon et al.\textsuperscript{37}
PE: physical examination.

A summary of cardiovascular priorities in collegiate student-athletes. Cardiovascular priorities in college student-athletes range from more accurately defining the risk of SCD to developing and implementing referral centres and emergency action plans.

Planning and Coordination
Preparticipation cardiovascular screening: clinical partnership is the only certainty

Aaron L Baggish,¹ Richard J Kovacs²

“PPCS, when conducted thoughtfully using a team-based approach, may indeed save lives. Conversely, PPCS that is performed without careful planning and consideration of available expertise has the potential to do serious harm.”

“The value of close working relationships between sports medicine professionals and cardiologists has been previously espoused in print, but now requires widespread adoption at the local level.”

Br J Sports Med 2016;doi:10.1136/bjsports-2016-096954
Rather our energy should be directed towards developing a practical approach to making decisions about whether to screen or not to screen, and if to screen, how to do so. Once we collectively acknowledge the fact that there is no ‘one size fits all’ approach to athlete screening, we will be better poised to responsibly and effectively protect our athletes by minimizing the likelihood of doing more harm than good.”
What Should You do?
What Should You Do?

Who do You care for?
- High risk athletes
- High profile athletes

Where are You?
- Your community
- Your colleagues
- Your institution/organization

Who are You?
- Your experience
- Your resources
Variable Risk
High Profile
Low Risk
Local Profile
A ‘Setting Specific’ Integrated Approach
“With respect to the Atlantic rift, this study demonstrates that screening with the ECG appears to be the way forward for detecting disease. This study should be considered a pilot for Canada’s response to PPS in young athletes and a potentially valuable contribution in the search for the Golden Chalice.”

Papadakis M and Sharma S. *CJC* 2017;33:33-35
Electrocardiographic interpretation in athletes: the ‘Seattle Criteria’


Standardised criteria improve accuracy of ECG interpretation in competitive athletes: a randomised controlled trial

**Table 1  Abnormal ECG findings in athletes**

<table>
<thead>
<tr>
<th>Abnormal ECG finding</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-wave inversion</td>
<td>&gt;1 mm in depth in two or more leads V2–V6, II and aVF, or I and aVL (excludes III, aVR and V1)</td>
</tr>
<tr>
<td>ST segment depression</td>
<td>≥0.5 mm in depth in two or more leads</td>
</tr>
<tr>
<td>Pathologic Q waves</td>
<td>&gt;3 mm in depth or &gt;40 ms in duration in two or more leads (except for III and aVR)</td>
</tr>
<tr>
<td>Complete left bundle branch block</td>
<td>QRS ≥120 ms, predominantly negative QRS complex in lead V1 (QRS or rS), and upright monophasic R wave in leads I and V6</td>
</tr>
<tr>
<td>Intraventricular conduction delay</td>
<td>Any QRS duration ≥140 ms</td>
</tr>
<tr>
<td>Left axis deviation</td>
<td>−30° to −90°</td>
</tr>
</tbody>
</table>

**ONLINE E-LEARNING ECG TRAINING MODULE—FREE!**

The Seattle Criteria will be used to develop a comprehensive online training module for physicians to acquire a common foundation in ECG interpretation in athletes.

http://learning.bmj.com/ECGathlete

**Short QT interval**
- QTc≤320 ms

**Brugada-like ECG pattern**
- High take-off and downsloping ST segment elevation followed by a negative T wave in ≥2 leads in V1–V3

**Profound sinus bradycardia**
- <30 BPM or sinus pauses ≥ 3 s

**Atrial tachyarrhythmias**
- Supraventricular tachycardia, atrial flutter

**Premature ventricular contractions**
- ≥2 PVCs per 10 s tracing

**Ventricular arrhythmias**
- Couplets, triplets and non-sustained ventricular tachycardia

**Note:** These ECG findings are unrelated to regular training or expected physiological adaptation to exercise, may suggest the presence of pathological cardiovascular disease, and require further diagnostic evaluation.
- The QT interval corrected for heart rate is ideally measured with heart rates of 60–90 bpm. Consider repeating the ECG after mild aerobic activity for borderline or abnormal QTc values with a heart rate <50 bpm.
WHERE YOU THINK YOU STILL GOT IT

The High Risk Athlete!

Join Today