PREPARTICIPATION CARDIOVASCULAR EVALUATION FOR
COMPETITIVE SPORT

Quiz ECG

F. Carré
Pontchaillou Hospital - Université Rennes 1 - INSERM UMR 1099
DO YOU GIVE CLEARANCE FOR COMPETITIVE SPORT?

Athlete (more than 4 hours of intense physical training)

- No symptom
- No CV familial history
- Normal physical exam

Yes  Or  No
Case 1: MALE TRIATHLETE 27 YEARS OLD
Case 1: Male Triathlete 27 Years Old

Bradycardia with AV dissociated rhythm due to vagus tone

YES
CASE 2: MALE VOLLEY-BALL PLAYER 16 YEARS OLD
CASE 2: MALE VOLLEY–BALL PLAYER 16 YEARS OLD

Abnormal Q waves, ST-segment depression and negative T waves NO
CASE 3: MIDDLE DISTANCE RUNNER 23 YEARS OLD
CASE 3: MIDDLE DISTANCE RUNNER 23 YEARS OLD

Isolated electrical left ventricular hypertrophy

YES
CASE 4: AFRICAN BASKET-BALL PLAYER 22 YEARS OLD
CASE 4: BASKET-BALL PLAYER 22 YEARS OLD

Incomplete right bundle branch block

YES
CASE 5: MALE MARATHON RUNNER 31 YEARS OLD
CASE 5: MALE MARATHON RUNNER 31 YEARS OLD

AVB type 2 with Lucciani-Wenckebach period

YES
CASE 6: FEMALE MARATHON RUNNER 31 YEARS OLD
CASE 6: FEMALE MARATHON RUNNER 31 YEARS OLD

Positive bifid T waves
YES
CASE 7: MALE GOLF PLAYER 42 YEARS OLD

Left bundle branch block NO
CASE 8: MALE RUGBY PLAYER 23 YEARS OLD
CASE 8: MALE RUGBY PLAYER 23 YEARS OLD

Wolff-Parkinson-White pattern

NO
CASE 8: FEMALE HANDBALL PLAYER 22 YEARS OLD

<table>
<thead>
<tr>
<th>Vitesse: 25 mm/s</th>
<th>Gain: 10 mm/mV</th>
<th>Filter: FM, baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III</td>
<td></td>
<td></td>
</tr>
<tr>
<td>aVR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>aVL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>aVF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CASE 8: FEMALE HANDBALL PLAYER 22 YEARS OLD

Ventricular premature beats

NO
Cardiovascular Preparticipation Evaluation
History and physical exam,
NO ABNORMALITY

Resting 12 leads-ECG

Normal

Training related changes

Sinus bradycardia ≥ 30 bpm
Sinus arrhythmia, isolated SV PB
AVB 1 or 2 with LW period
Incomplete RBBB
Isolated LVH or RVH
Early repolarisation syndrome
T waves < 0 V1, V2, V3 if < 16 y.o.

Training unrelated changes

Complete RBB
Axis deviation
Left atria enlargement

Bradycardia < 30 bpm
Arrhythmias
PR > 400 ms, AVB 2 (mobitz 2)
AVB 3
Preexcitation wave (WPW)
Complete LBBB
Pathological Q wave
ST segment-depression
Negative T wave
LQT-SQT-Brugada
Epsilon wave

1 feature

> 1 feature

Cardiovascular clearance for intensive sport

Adapted cardiovascular exams
Temporary or definitive disqualification for intensive sport

CV= cardiovascular
LVH Left ventricle hypertrophy
RVH Right ventricle hypertrophy
RBB Right bundle branch block
LBB Left bundle branch block
AVB Atrioventricular block
LQT Long QT
SQT Short QT