[Syncope During Exercise in a 12-Year Old](http://hqmeded-ecg.blogspot.co.uk/2016/05/syncope-during-exercise-in-12-year-old.html)

999 was called because a 12 year-old female had a "seizure" at the gym. On arrival, medics found the patient supine on gym mats, conscious but lethargic. Her skin was very pale, cold, and diaphoretic, and there was no radial pulse but only a palpable brachial.  Her lips were cyanotic and paramedics begun oxygen therapy. She complained of nausea and bilateral rib pain not worsened by palpation or inspiration. She did not have any obvious injuries but **bladder incontinence**. She was still cyanotic 15 minutes after the "seizure."

She was "warming up" for practice when she suddenly lost consciousness, fell (ground-level fall onto a soft surface), and had brief seizure-like activity. She regained consciousness within a few minutes, but remained altered. Later she stated she was running then became very dizzy, losing consciousness. PMH: NAD for seizures; similar episodes with exercise. NO FH of cardiac problems nor sudden death.

A paramedic monitor strip showed frequent premature atrial complexes (not shown). Vitals were: BP 100/63, HR 72, SpO2 99%, RR 22. Her lungs were clear and she never complained of dyspnoea. After about 6 or 7 minutes on oxygen, the patient's cyanosis resolved and so did the premature beats. Her mental status and skin greatly improved. However, for the remainder of transport her systolic blood pressure remained in the 80s (86/56) despite improvement otherwise (I wondered later if the first BP was an incorrect reading). **At ED, her only complaint was fatigue.**

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**ECG shows**

1. Sinus rhythm
2. Clear ischaemic (down-up) T-waves in II, III, aVF and V4-V6
3. rSr' in V1, but this is not abnormal.  It can be due to high lead placement
4. QRS duration is 98 msec (normal)
5. QTc is 461 msec (slightly long, but not dangerously so).

She was admitted to a children's hospital, found to have an anomalous left main coronary artery which reportedly became "pinched" during exercise, causing severe ischaemia with drop in cardiac output and syncope.  She had surgery to move the artery and is reportedly doing well.  They are just having difficulty keeping her inactive.

**Learning Points**:

1. ECG essential in cases of "seizure" without prior diagnosis of epilepsy.
2. Syncope in children can be due to ischemia, as well as due to pure rhythm disturbances such as long QT, WPW, Catecholaminergic polymorphic VT (CPVT), Brugada, AV block, etc.
3. Syncope during activity is particularly worrisome.
4. **Most syncope/presyncope episodes in otherwise healthy children and adolescents are not due to a potentially serious cardiac disorder**. But it is essential for us to recognize those few times when a potentially life-threatening cardiac abnormality is present. This case highlights one of those times.
5. Specifically, an “alarm” should go off in each of us from the history that was obtained— **namely, that this 12-year old girl “recalls running when she suddenly became dizzy and fell”. Syncope during exercise = automatic referral for full evaluation!**
6. **THIS IS NOT A PANIC ATTACK**
7. **THIS IS NOT A VASOVAGAL SYNCOPE**