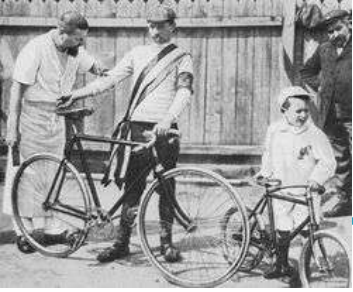


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Athletes, Exercise and the Heart

Prof Rob Doughty



Le Tour de France Doping

- 1886 English cyclist died after taking combination of cocaine, caffeine and strychnine
- Early Tour riders used alcohol and ether to dull the pain
- Caffeine, Amphetamines
- Cocaine
- GH, testosterone
- EPO
- MIRCERA



Athletes, Exercise and the Heart

- Regular exercise is strongly encouraged as part of cardiovascular prevention
- Regular sports participation common
 - Range of sports, training, competition and age of participation
- Cardiac symptoms frequently occur during exercise

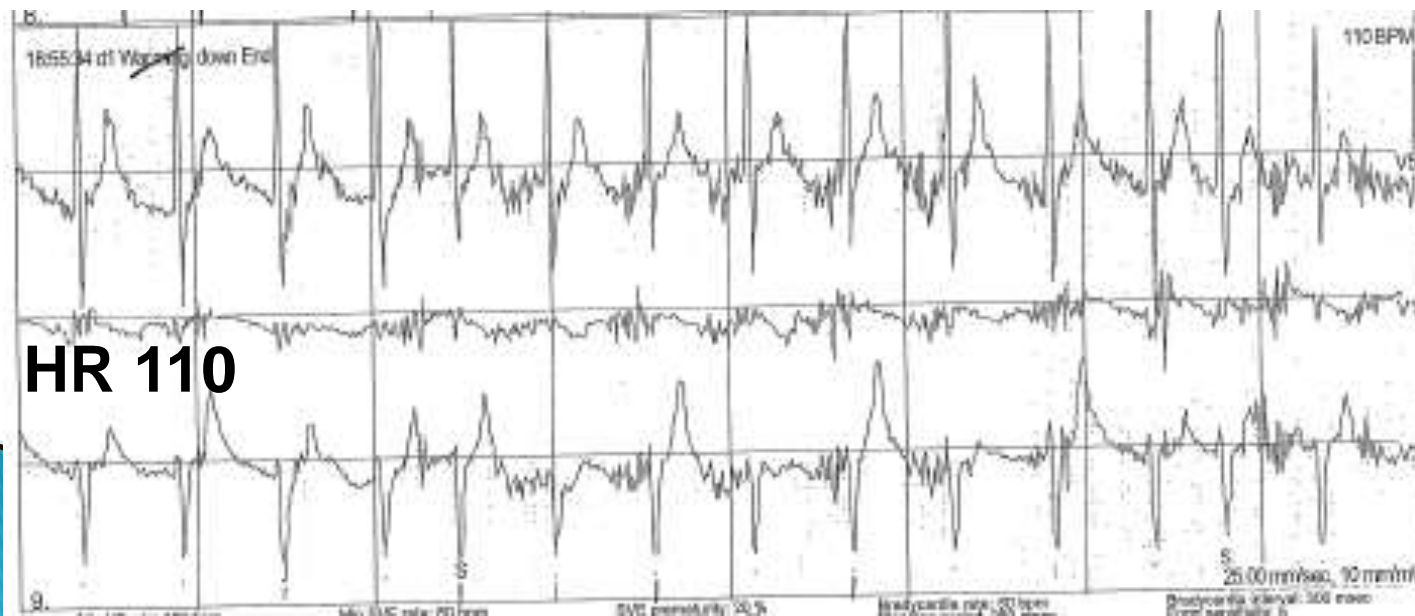
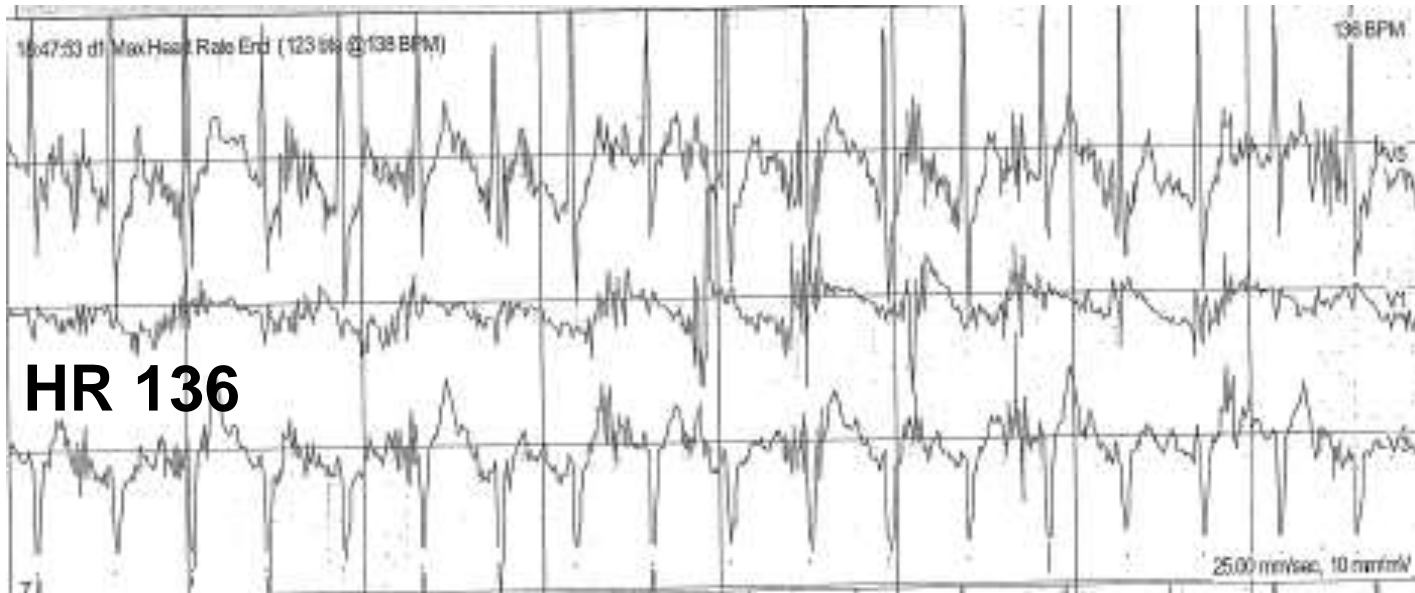
Case 1

- **56yo age group athlete**
- **No medical history**
- **Vitamins**
- **Sports – triathlons, surf ski paddling**

- **Referral**
 - **....been experiencing a very interesting problem....on strenuous exercise he gets a sudden drop in heart rate towards end of races.....**

-
- **1995 World Tri Champs stopped several times**
 - **2000 Triathlon similar episode**
 - **2002 / 2003 swim/run had to stop could only run 50m**
 - **2008 4 episodes**
 - **2009 paddling with new GPS HR monitor**
HR usually mid-130s, sudden drop to 110bpm,
rush of adrenaline, drop in performance

Holter Monitor While Paddling

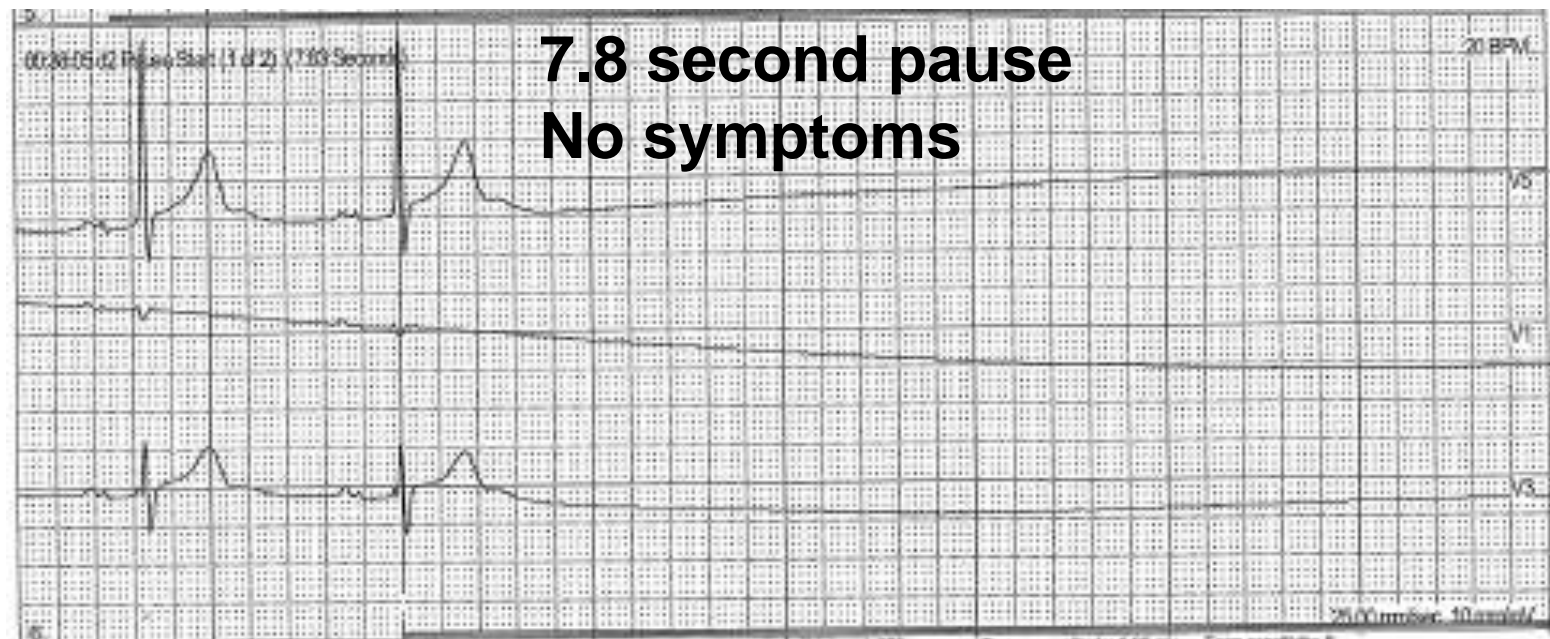


Progress

- Pt elected to “watch and wait”
- Progressive symptoms - reassessment

Progress

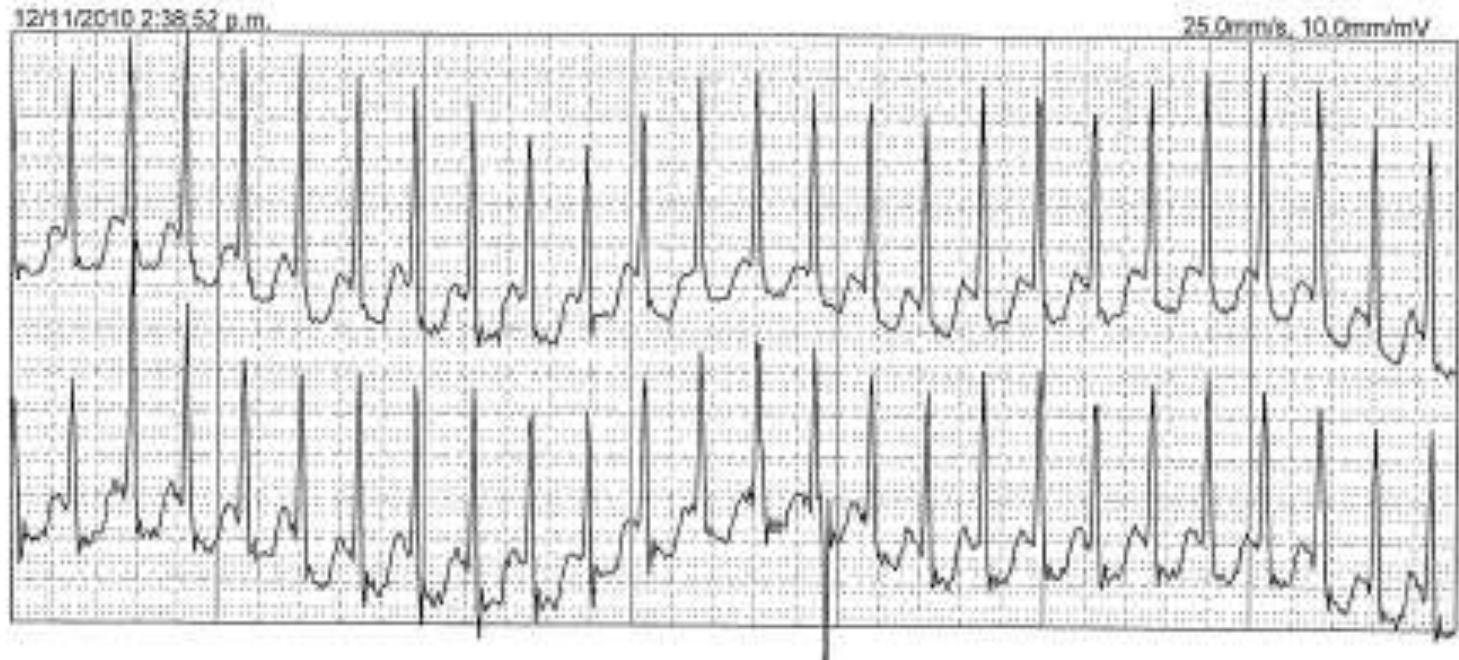
- Pt elected to “watch and wait”
- Progressive symptoms - reassessment



Case Study 2

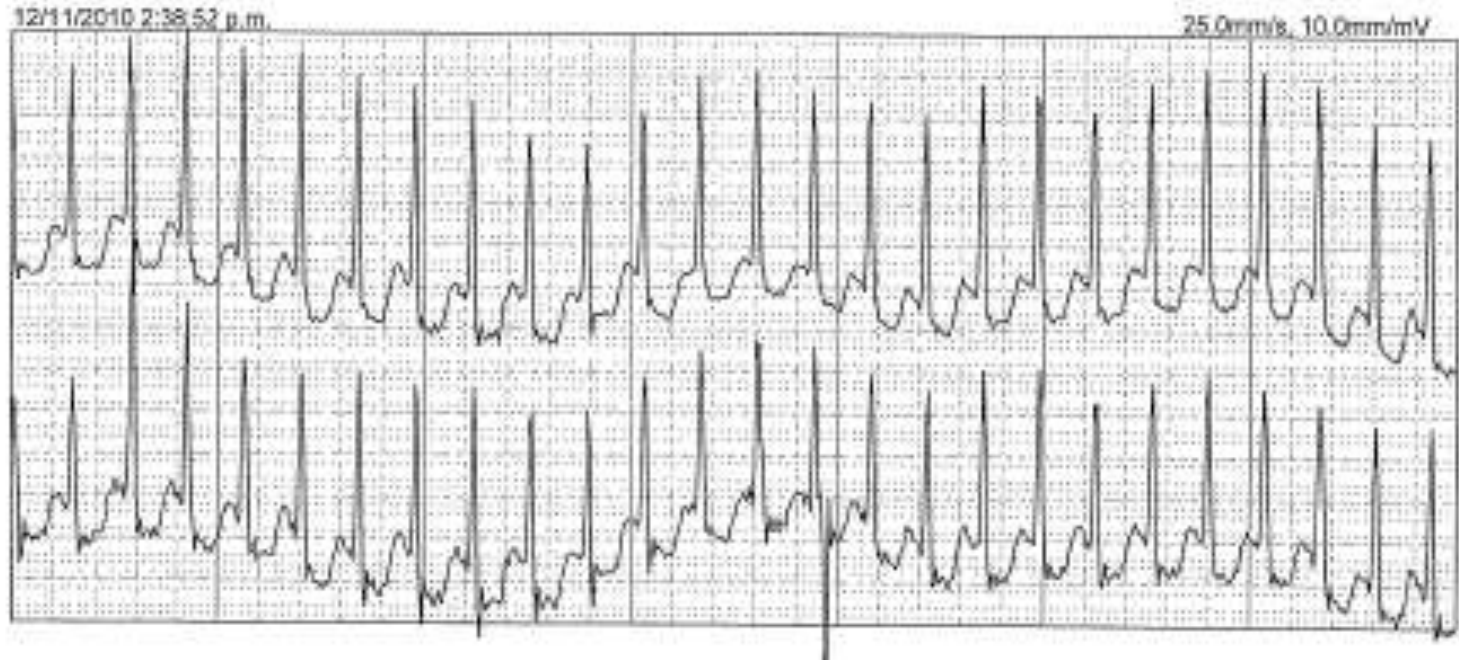
- **Elite sports woman**
- **Noted palpitation symptoms over decades**
- **Progressive decline in performance during racing**

Event Recorder - Training



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Event Recorder - Training



- AV nodal reentry tachycardia ablated the following week

Screening of Athletes

- 490 BC Phidippides, young Greek messenger, ran 26.2 miles from Marathon to Athens, delivered the news of the Greek Victory over the Persians then collapsed and died



TODAY HEALTH

Teen athletes' sudden deaths spur call for heart screening

Better testing could help identify those at risk for sudden cardiac death, experts say

June 28, 2011
Can EKGs save lives of student athletes?

By Linda Carroll
merit.com contributor
updated 2/2/2011 10:13:44 PM ET

Early in September, Oregon high school football star Hayward Demison dropped to the ground with a still heart after scoring a touchdown. Just a week later, in Texas, high school senior Reggie Garrett collapsed when his heart stopped

Sudden deaths of young athletes fuel the heart screening debate

June 28, 2011

by Olga Deshchenko, DOTmed News Reporter

This report originally appeared in the June 2011 issue of DOTmed Business News

On a Thursday night in March, Wes Leonard, a 16-year-old basketball star, led his Fennville, Mich., high school team to victory, scoring a lay-up shot in overtime.

Sudden Death

Case 1

- 14 yr old male, previously fit and well
- collapse immediately after school run
- successfully resuscitated from VF

Case 2

- 45yr old businessman, previously well
- collapse during “Round The Bays”
- successfully resuscitated from VF

Screening of Athletes

- **Sudden death:**
 - **USA – most common in American Football and Basketball**
 - **Outside US - football**
- **Maron et al. Circulation 2009**
 - **1866 deaths in young athletes 1980-2006**
 - **<100 / year**
 - **56% CVS disease**

Pre-participation Screening

- **Controversial....**
- **Medical history and physical exam**
- **ECG?**
 - **Should ECG screening be done?**
 - **IF so, who, when, who to read ECGs**
- **FIFA, NZRFU, Olympics require ECG**

Recommendations for interpretation of the 12-lead ECG in the athlete

Euro Assoc CVS Prevention & Rehab and Working Group of Myocardial & Pericardial Disease of the European Society of Cardiology
Euro Heart J 2010;31:243-259

Table 1 Classification of abnormalities of the athlete's electrocardiogram

Group 1: common and training-related ECG changes	Group 2: uncommon and training-unrelated ECG changes
Sinus bradycardia	T-wave inversion
First-degree AV block	ST-segment depression
Incomplete RBBB	Pathological Q-waves
Early repolarization	Left atrial enlargement
Isolated QRS voltage criteria for left ventricular hypertrophy	Left-axis deviation/left anterior hemiblock
	Right-axis deviation/left posterior hemiblock
	Right ventricular hypertrophy
	Ventricular pre-excitation
	Complete LBBB or RBBB
	Long- or short-QT interval
	Brugada-like early repolarization

RBBB, right bundle branch block; LBBB, left bundle branch block.



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