

Degrees *AV* blocks in athletes

**Name:** BCA  
**Height:** 1.96m

**Age:** 22yo

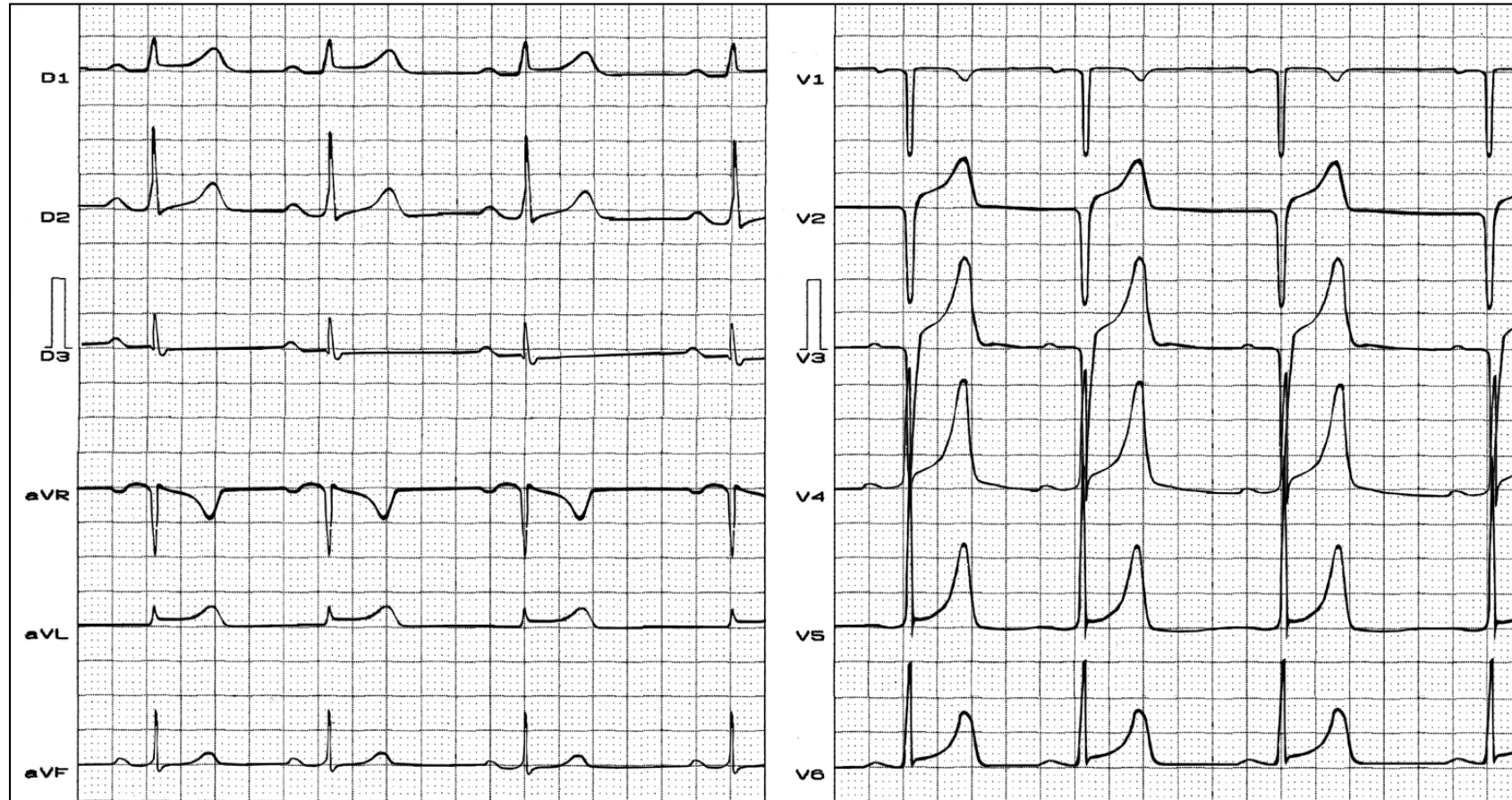
**Sex:** Male

**Biotype:** Athletic Profession: professional basketball player

**Race:** Black

**Weight:** 82 kg

**Date:** 2/09/2001

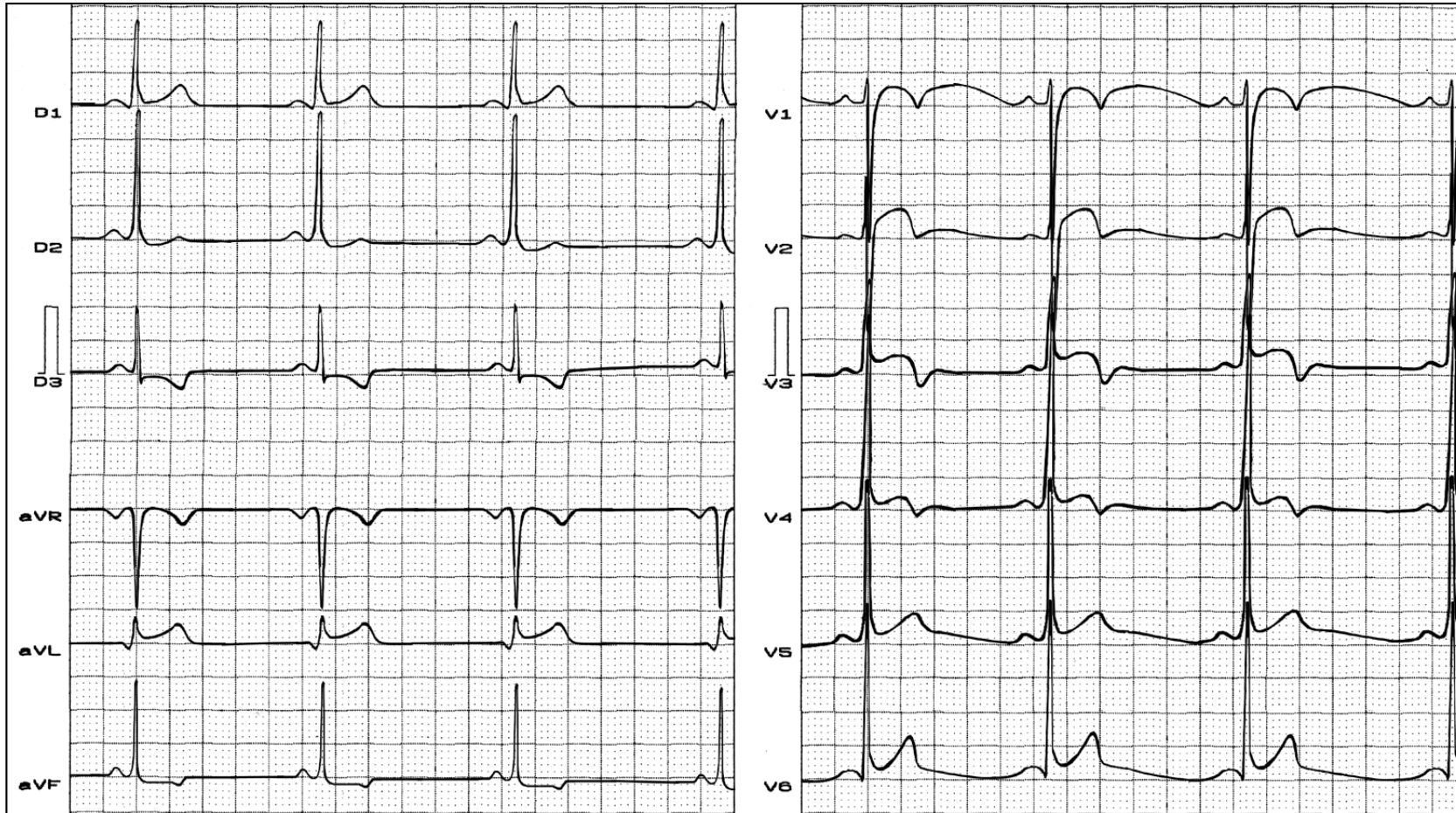


**Clinical diagnosis:** athlete's heart. Normal variant.

**ECG diagnosis:** sinus rhythm; HR: between 50 bpm and 57 bpm: phasic or respiratory sinus bradyarrhythmia; QS from V1 to V3: pattern of pseudo infarction in antero-septal wall. Peaked T waves from V3 to V6. Normal X-rays of chest and echocardiogram.

Pattern of pseudo anterior infarction in an athlete, professional player of basketball with normal heart.

**Name:** BCW; **Age:** 24yo.; **Sex:** Male; **Race:** Black; **Weight:** 86 kg; **Height:** 2.02 m; **Biotype:** Asthenic; **Profession:** professional basketball player; **Date:** 05/01/1999



**Clinical diagnosis:** healthy patient. Tracing obtained in a periodical evaluation.

**ECG diagnosis:** sinus bradycardia, phasic sinus arrhythmia. Positive voltage criterion for LVE.  $SV_1$  or  $V_2 + RV_5$  or  $V_6 > 35$  mm (Index of Sokolow Lyon). ST segment elevation from  $V_2$  to  $V_6$  and with negative T from  $V_1$  to  $V_4$ . Early repolarization, pattern of pseudo injury and anterior subepicardial ischemia. Normal chest X-rays and echocardiogram.

Pattern of pseudo subepicardial injury and ischemia in anterior wall in an athlete, professional player of basketball with normal heart.

# Holter recording 1<sup>ST</sup> degree AV block

**Name:** B . C.

**Sex:** Male

**Age:** 22

**Race:** Black

**Weight:** 74 Kg.

**Height:** 1.82 m

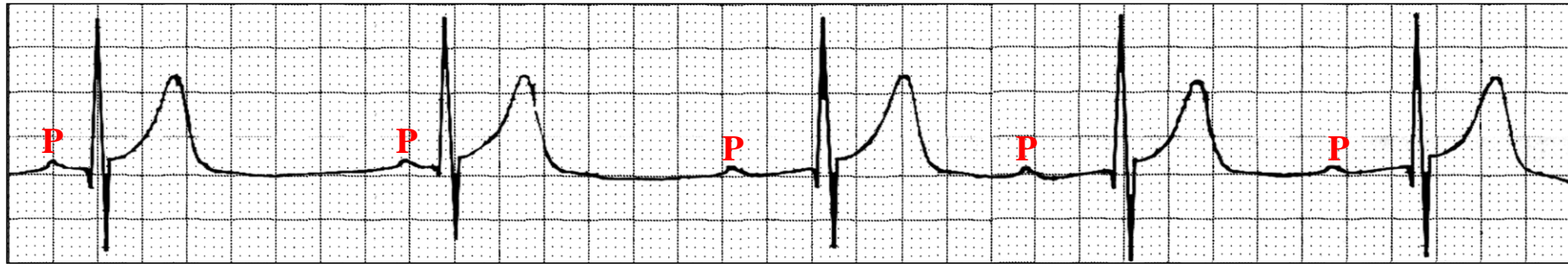
**Biotype:** Athletic

**Date:** 01/04/2002

**Time:** 2:50:12 AM

Patient sleeping.

**Profession:** Marathon runner



Heart rate of 38 bpm.

1<sup>st</sup> degree AV block usually observed for a few seconds, as in this case, where it is present only in the three last beats.

1<sup>st</sup> degree AV block is observed in average between 10% and 33% of athletes (**Smith 1964**), generally very briefly. In non-athletes it is around 0.65%.

1st-degree AV block in an elite athlete in Holter.

# Holter recording

**Name:** A . S.

**Sex:** Male

**Age:** 26

**Race:** Black

**Weight:** 64 Kg.

**Height:** 1.68 m

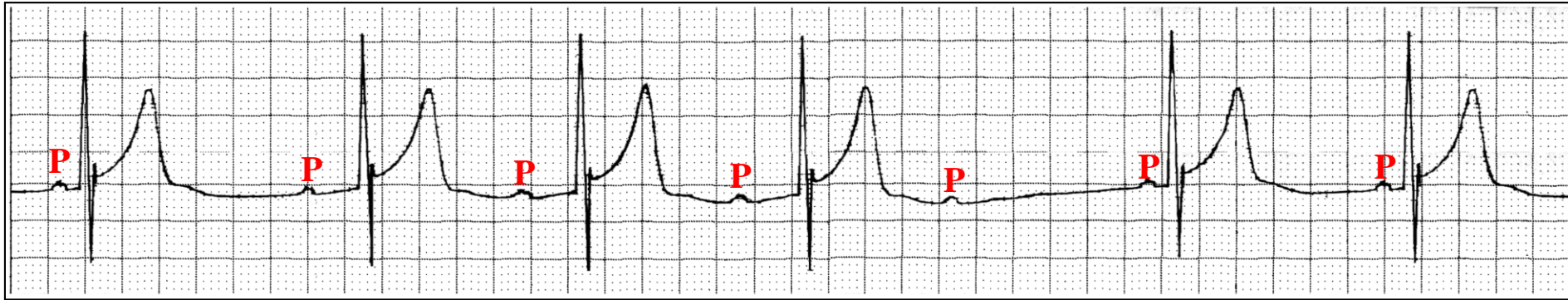
**Biotype:** Athletic

**Date:** 05/01/2003

**Time:** 3:42:30 AM

Patient sleeping.

**Profession:** long distance runner



Gradual prolongation of PR interval until the 5<sup>th</sup> P wave is not conducted: 2<sup>nd</sup> degree AV block; Wenckebach or Mobitz Type I.

This modality of dromotropic disorder is observed in more than a 20% of elite athletes (**Viitasalo 1982**). In the general population, 2<sup>nd</sup> degree AV block Type I & II is observed and 1 each 30,000 people or 0.003 %

2nd-degree AV block, Wenckebach type or Mobitz Type I in an elite athlete.

## Holter recording 2<sup>nd</sup> degree AV block, Mobitz type II with narrow QRS

**Name:** E . J.

**Sex:** Male

**Age:** 26

**Race:** White

**Weight:** 70 Kg.

**Height:** 1.72 m

**Biotype:** Athletic

**Date:** 25/01/2001 **Time:** 1:52:10 AM

Patient sleeping

**Profession:** Long distance runner



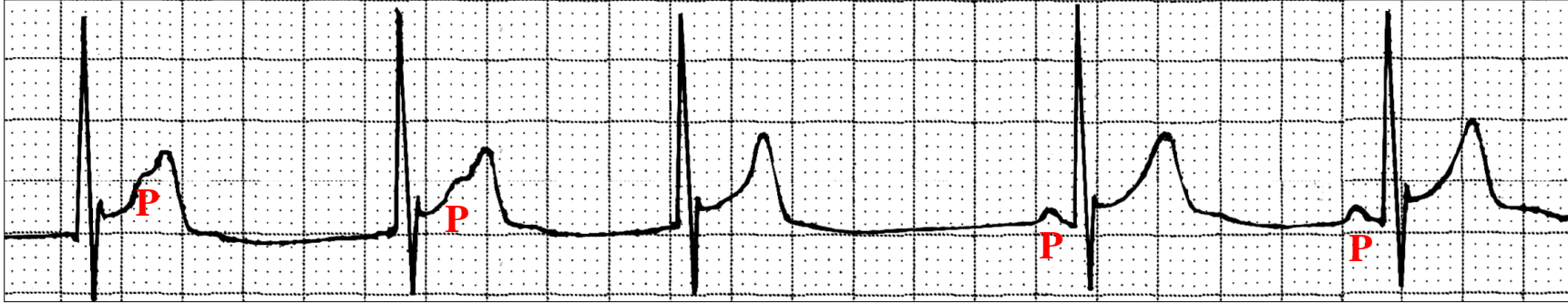
PR interval remains constant until a P wave is not conducted. This type of block is observed in 7% of the cases in athletes of enduro. Fixed or constant PR interval: it does not exist, progressive prolongation of PR, with the block occurring suddenly. In general, 2nd degree AV block type II with narrow QRS is observed in 35% of the cases and in the remaining 65%, the QRS is long.

2nd-degree AV block, Mobitz type II with narrow QRS.

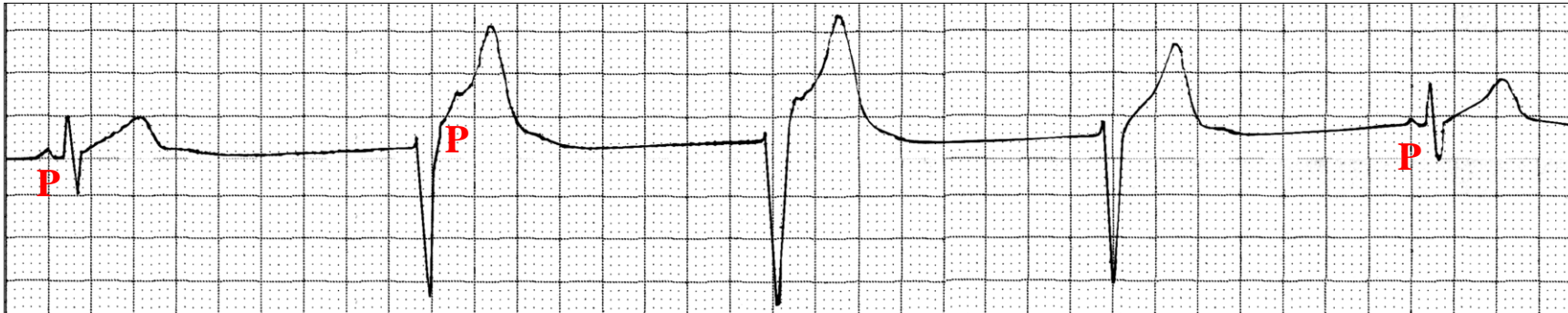


# Holter recording

**Atrioventricular dissociation (dissociation by interference) with junctional escape rhythm**



**Atrioventricular dissociation (dissociation by interference) with escape ventricular rhythm**



Atrioventricular dissociation (dissociation by interference) with junctional escape rhythm and atrioventricular dissociation (dissociation by interference) with escape ventricular rhythm in an elite athlete in Holter.

## Summary of the ECG elements common in athletes

- 1) Sinus bradycardia.
- 2) Sinus arrhythmia.
- 3) P wave with notches and of greater voltage.
- 4) 1st degree AV block: 6% to 36%.
- 5) 2nd degree AV block, Wenckebach type: Mobitz Type I (0.125% to 10%).
- 6) IRBBB or end conduction delay.
- 7) Voltage or axis criterion for RVE.
- 8) Voltage criterion for LVE.
- 9) Early repolarization variant
- 10) J point and ST segment elevation or depression.
- 11) QT interval in the superior borderline of normality.
- 12) T wave of increased voltage, peaked and inverted.
- 13) Atrial fibrillation and flutter (**Furlanello 1998**).
- 14) Junctional rhythm.