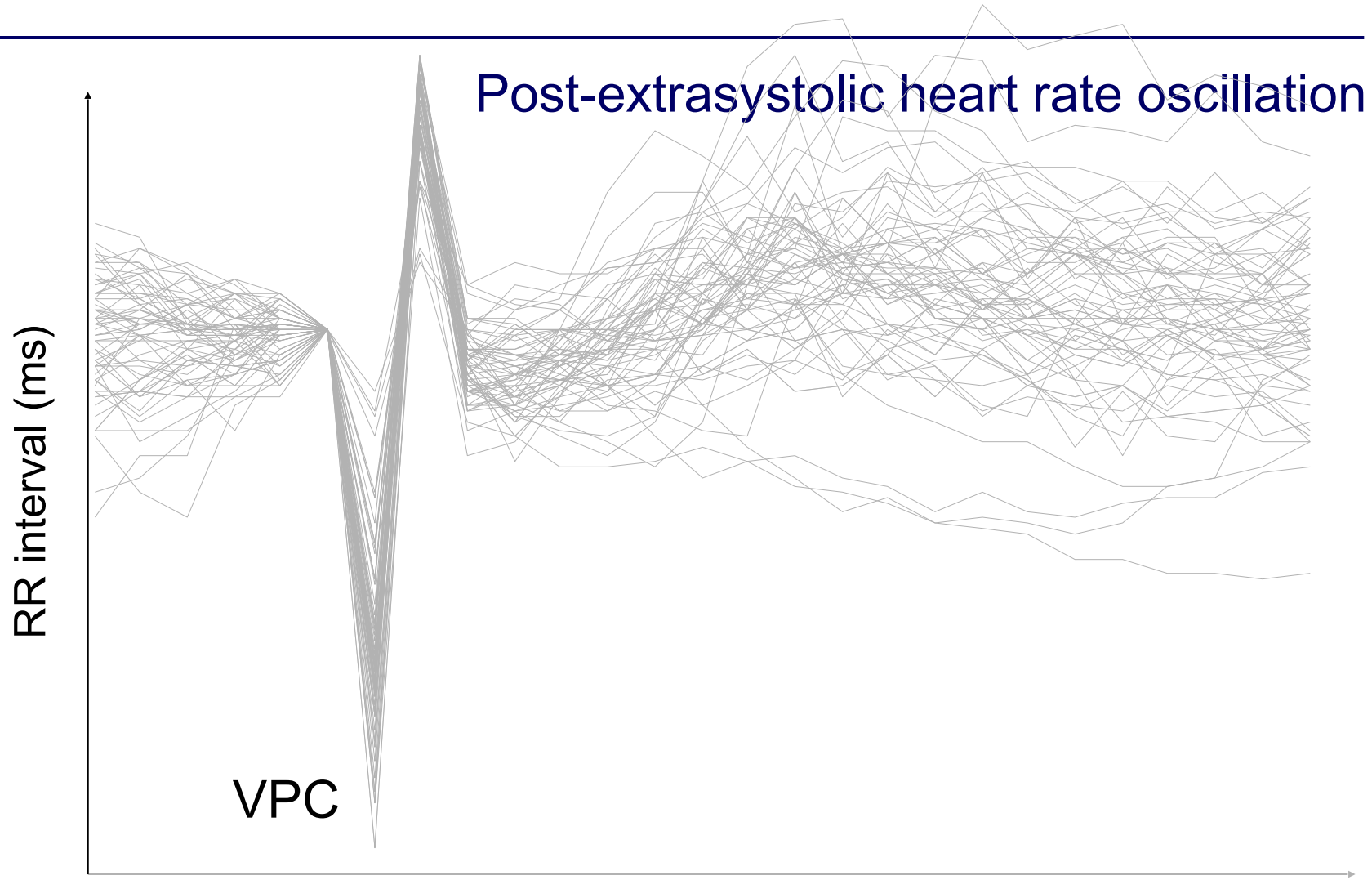
Heart Rate Turbulence

Heart Rate Turbulence

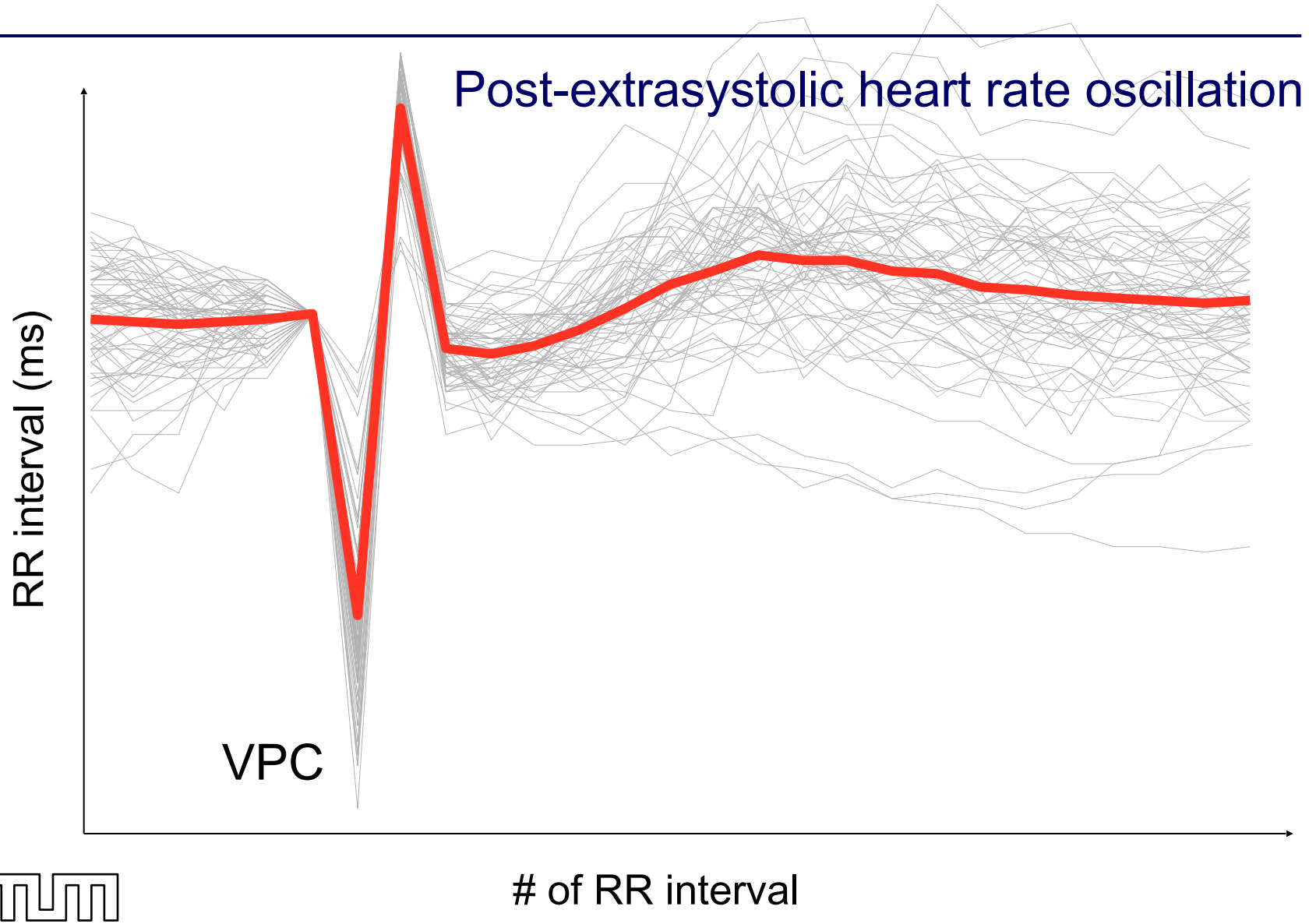
Post-extrasystolic heart rate oscillation

VPC

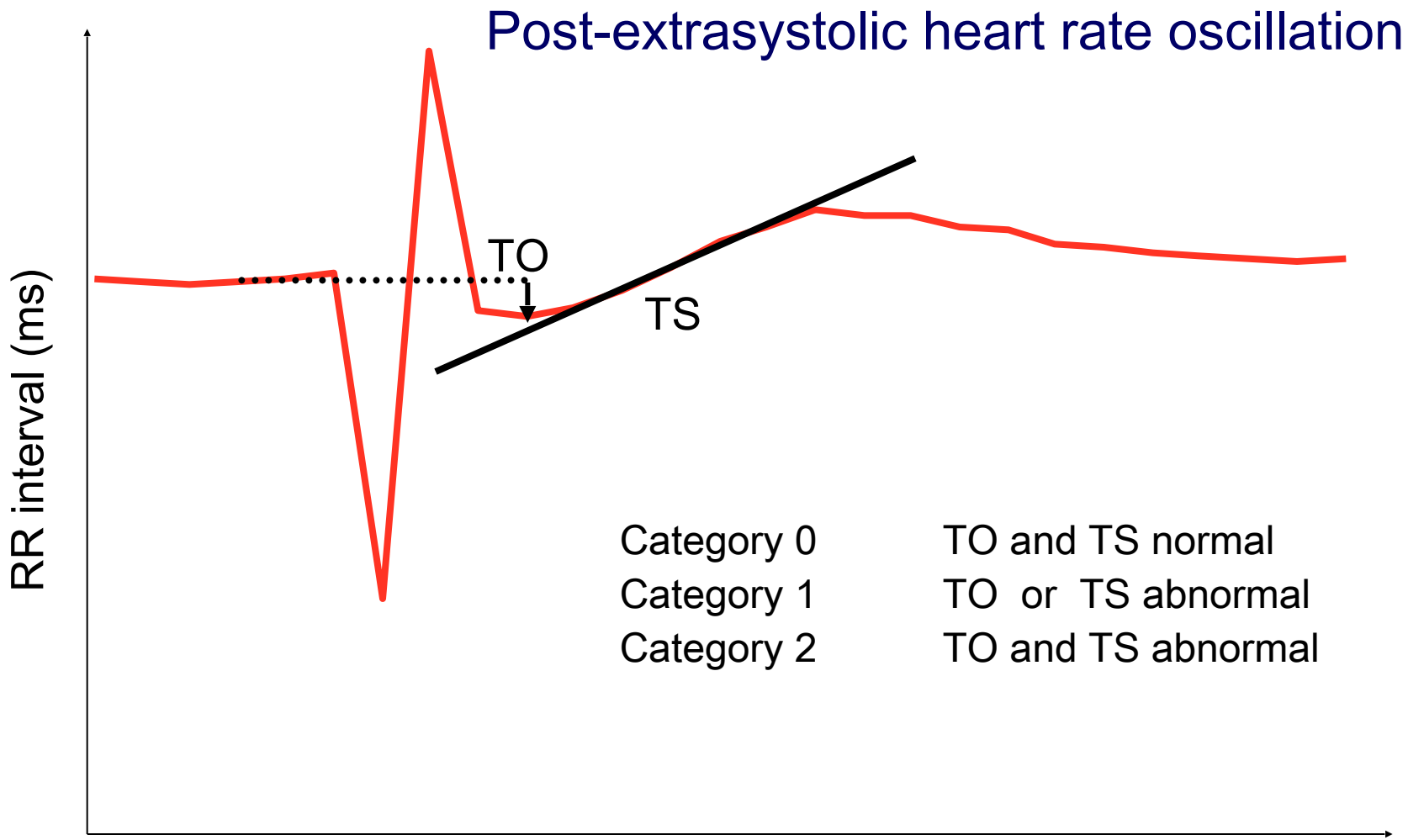
Heart Rate Turbulence



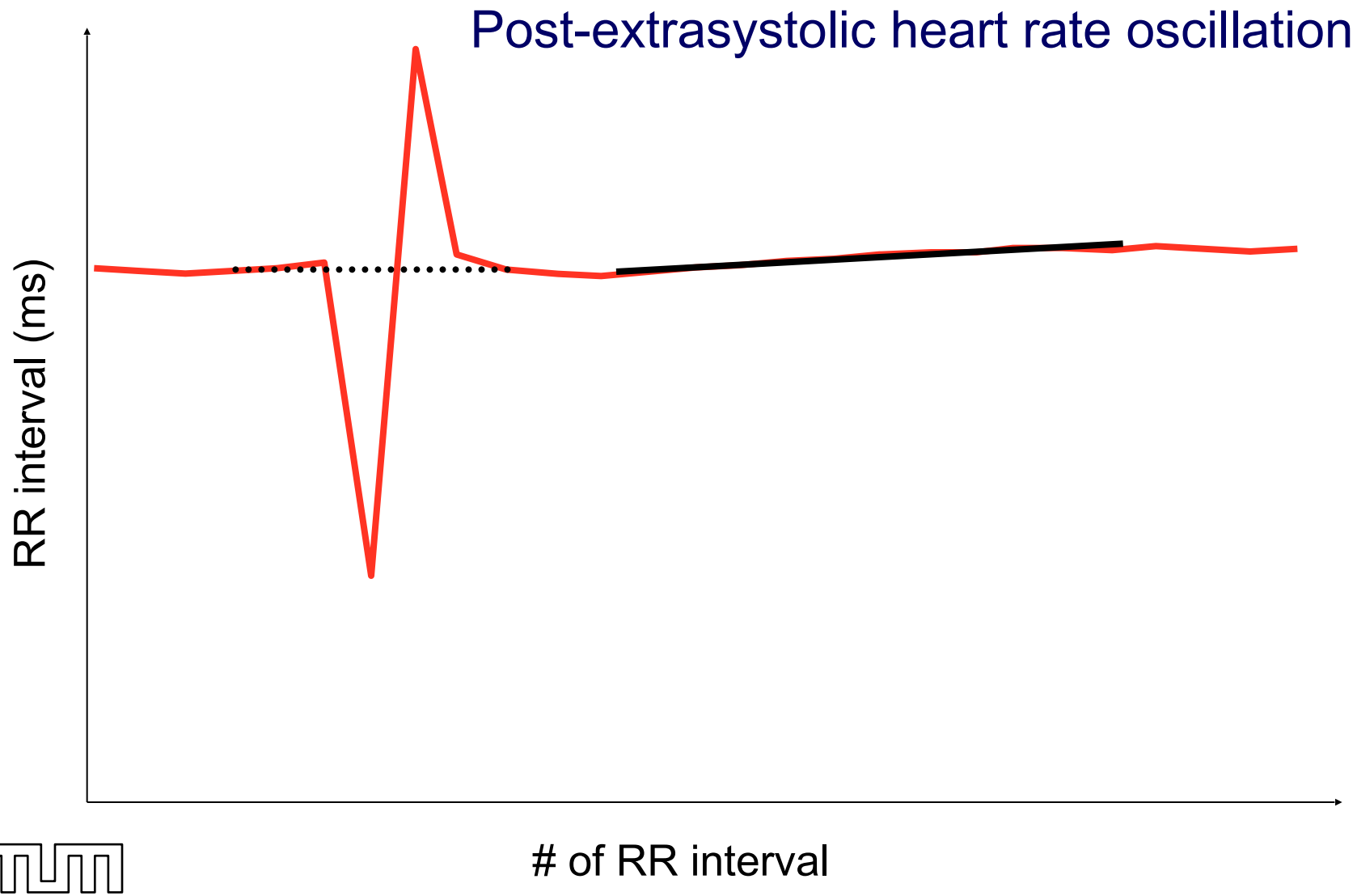
Heart Rate Turbulence



Heart Rate Turbulence

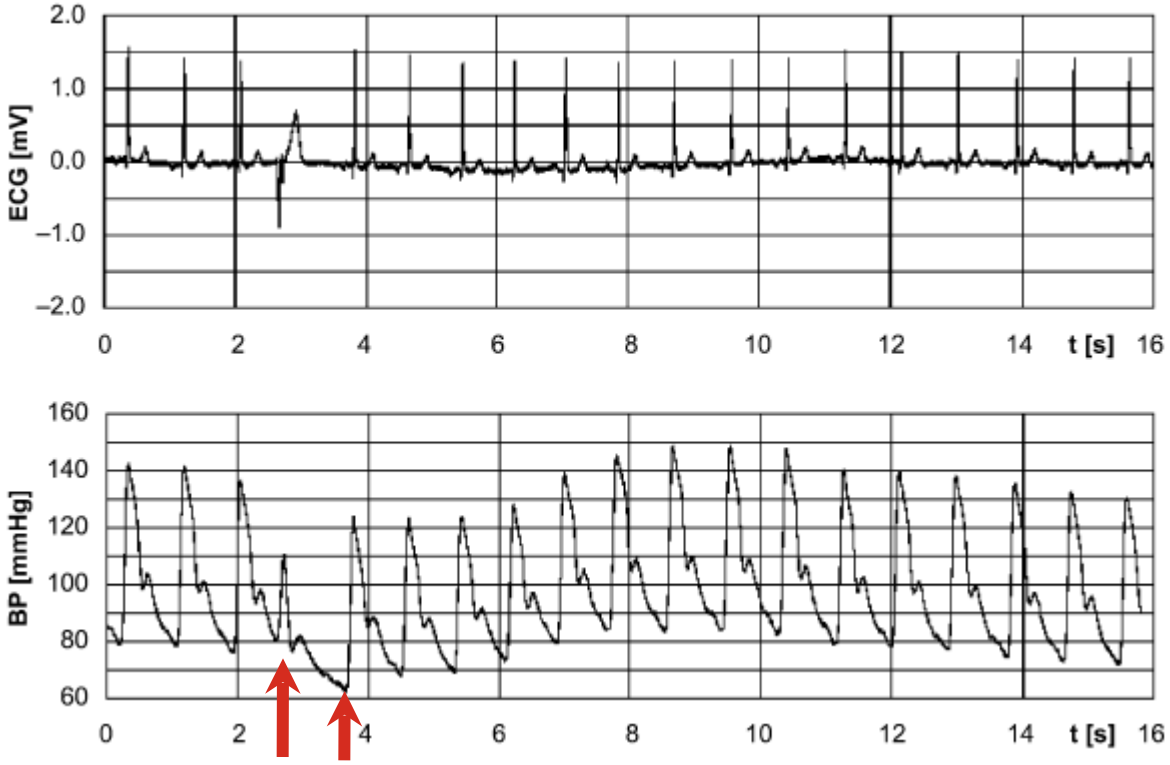


Heart Rate Turbulence



Heart Rate Turbulence

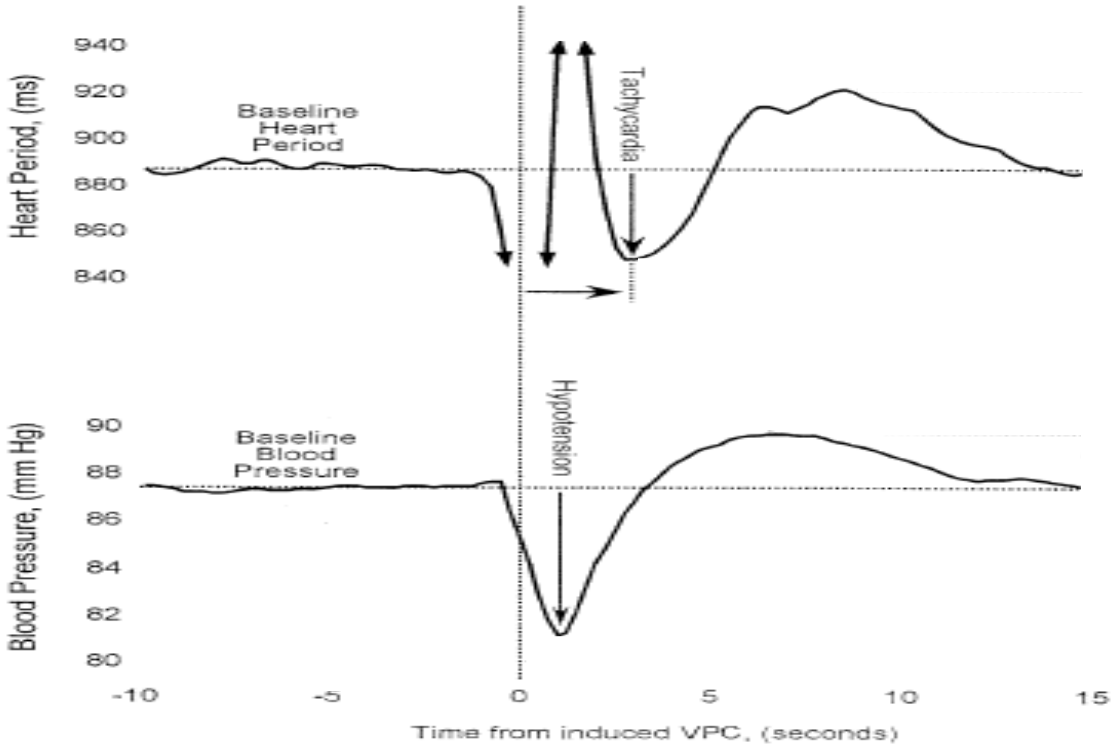
Mechanism



Voss et al., J Physiol, 2002

Heart Rate Turbulence

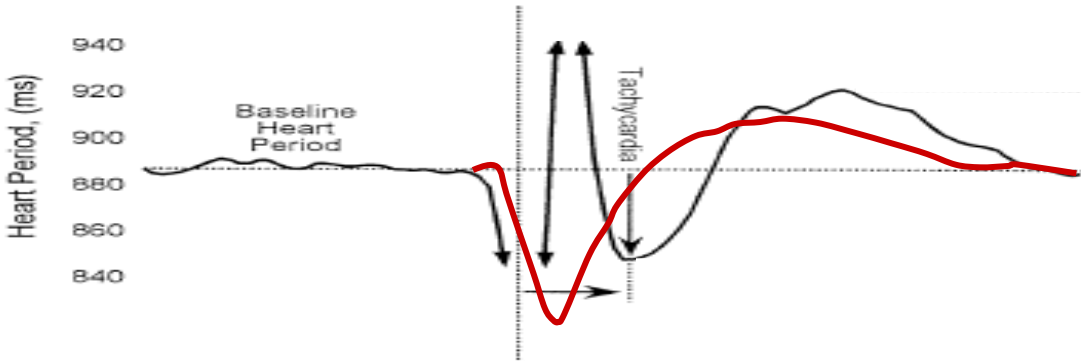
Mechanism



Roach et al., Am J Cardiol, 2002

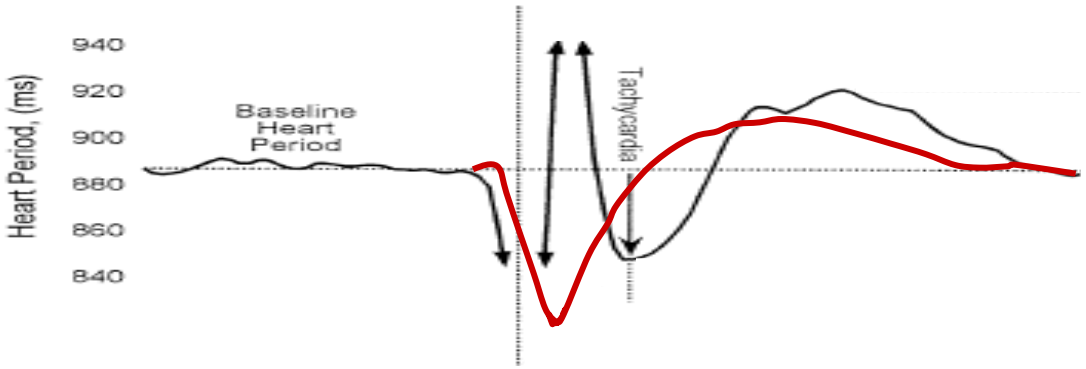
Heart Rate Turbulence

Mechanism



Heart Rate Turbulence

Mechanism



vagal withdrawal ⟶ TO

sympathetic burst

vascular resistance ↑↑↑

vagal recruitment ⟶ TS

Heart Rate Turbulence

Clinical value

?

ISAR-RISK Trial

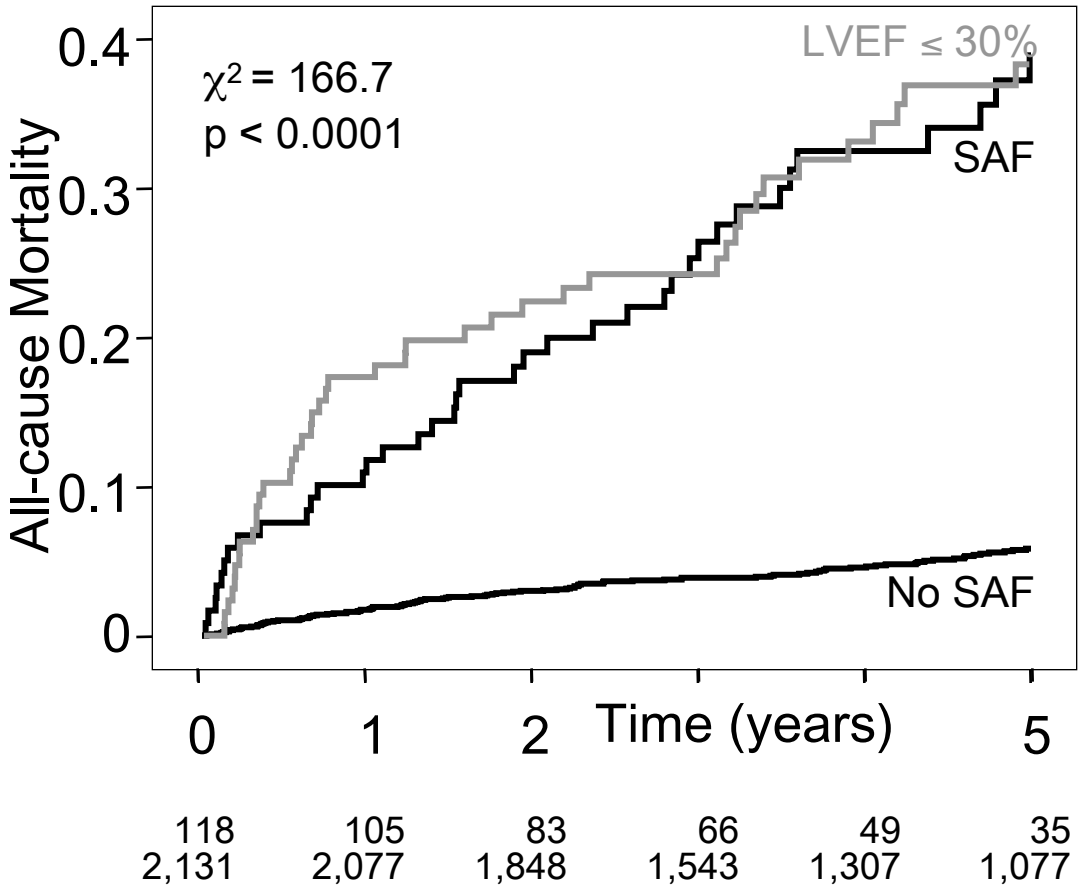
Design

- Predictive power of Severe Autonomic Failure (SAF) defined as abnormal HRT and abnormal DC[1]
- Prospective cohort study
  - Acute myocardial infarction ≤ 4 weeks
  - Age ≤ 75 years
  - Presence of sinus rhythm
- Follow-up period: median 4.9 years (IQR 2.8-6.9)
- Primary endpoint: all-cause mortality at 5 years follow-up

[1]Bauer et al., Lancet 2006

ISAR-RISK Trial

SAF stratification in LVEF >30%



Late Breaking Trial, HRS 2007

Heart Rate Turbulence

Conclusion

- HRT is a measure of baroreflex function
- HRT is a strong predictor of total mortality, cardiac mortality and sudden death
- SAF, i.e. the combination of abnormal HRT and abnormal DC, identifies patients who have preserved LVEF but have the same risk profile as patients with reduced LVEF