

Article of Interest

Jouven, X et al. Relation of Heart Rate at Rest and Long Term Death Rate in Initially Healthy Middle-Aged Men. American Journal of Cardiology. 2009. ([Click to Access](#))

Context and Study Objective

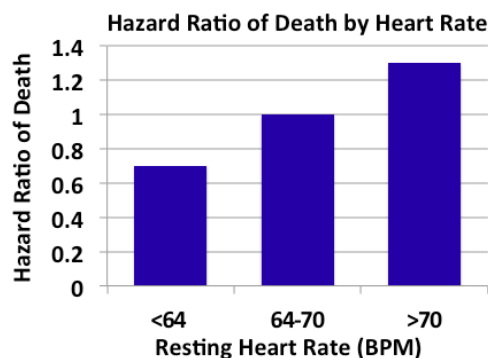
In a **future issue**, we'll learn of the prognostic value of pulse pressure in predicting cardiovascular events. The Paris Prospective Study sought to explore the relationship between resting heart rate and all-cause mortality over more than 20 years of follow up.

Design, Setting, and Participants

Consecutive employees of the Paris civil service undergoing mandatory health examination between 1967-1972 were included if they were aged 42-53, free of cardiovascular disease and had systolic pressures <180 mm Hg. Use of anti-hypertensive therapy was not mentioned. After 5 minutes of rest, heart rate was measured for 1 minute; hazard ratios for mortality data were calculated based on extended surveillance.

Results

- Characteristics: 5,100 individuals were studied with an average age of 48. Mean BP: 140/79 mm Hg. BMI: 26 kg/m². 11% smoked, 1.3% had DM. Total cholesterol 222 mg/dL. The use of anti-hypertensive therapy was not recorded.
- The cohort was followed for ~23 years with 4.5% lost to follow up.
- Figure (top): Even when controlling for age, BMI, diabetes, BP, and lipids, there was a linear and graded relationship between resting pulse and the rate of death.



Clinical Perspective

- The linear relationship between resting heart rate and all-cause mortality is consistent with prior studies demonstrating associations between pulse rate and coronary artery disease as well as sudden cardiac death.
- Figure (bottom): An **intriguing theory** is that all mammals have a finite number of heart beats; therefore, those with faster rates have shorter life expectancies. N.B.: humans are considered "outliers" because of the (evolutionarily) recent introduction of antibiotics and other life extending therapies.
- While no literature exists regarding the benefits of heart rate control, it is our practice to use anti-hypertensives with rate controlling properties (β blockers, diltiazem) as supplemental therapy in those who require multiple agents. We target a pulse of 60-70 bpm.
- Study Limitations: The use of anti-hypertensives, particularly rate slowing agents such as β blockers, were not controlled for; however, they were rarely prescribed at the time of study onset.

