Coeur et sexe

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Cardiovascular epidemiology
and sudden death
Forest plot of case-crossover studies assessing the association of sexual activity with myocardial infarction.

<table>
<thead>
<tr>
<th>Sexual activity: myocardial infarction</th>
<th>No. of Patients</th>
<th>Relative Risk (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Möller et al., 2001</td>
<td>659</td>
<td>1.10 (0.46-2.60)</td>
</tr>
<tr>
<td>Muller et al., 1996</td>
<td>1633</td>
<td>2.50 (1.69-3.69)</td>
</tr>
<tr>
<td>Masoomi et al., 2010</td>
<td>198</td>
<td>3.42 (1.13-10.42)</td>
</tr>
<tr>
<td>Baylin et al., 2007</td>
<td>470</td>
<td>5.47 (2.71-11.03)</td>
</tr>
</tbody>
</table>

Test for heterogeneity: $I^2 = 64\%$; $P = .04$

Relative Risk (95% CI)
During sexual activity
increase in systolic and diastolic BP, heart rate
maximum during the 15s of orgasm
Rapid return to normal

Men and women have similar neuroendocrine,
BP and HR response to sexual activity

Comparable to mild to moderate physical activity (3 to 4 METS)
(2 flights of stairs)
BP rarely exceeds 170 mmHg and BP 130 bpm
Cycling, Jogging, Soccer

![Bar chart showing the number of sudden deaths in various sports for men and women. The chart indicates that Cycling has the highest number of sudden deaths, followed by Jogging and Soccer.]

- Cycling
- Jogging
- Soccer
- Hiking
- Basket-ball
- Swiming
- Rugby
- Tennis
- Diving
- Judo
- Hand-ball
- Speed skiing
- Body-building
- Table tennis
- Volley-ball

Number of sudden death

Men
Women
Cœur et sexe

Études prospectives
   cohorte (exposés / non exposés)

Études rétrospectives
   études controlées…
      double aveugle…
   études cas-témoins
      pourquoi ce sujet a fait un IDM et pas un autre?
   études cas-croisés
      pourquoi cet individu a fait un IDM à ce moment précis?
Triggering of cardiac events by sexual activity: findings from a case-crossover analysis

• James Muller

• Am J Cardiol. 2000 Jul 20;86(2A):14F-18F.

• Division of Cardiology, Massachusetts General Hospital, Boston, Massachusetts 02114, USA.
Relative Risk of Onset of MI

Usual Frequency of Exertion $\geq 6$ METs, Episodes/wk

$P_{\text{trend}} = .01$
Cœur et sexe

• Dans l’heure précédant l’IDM
  - Reveil: 19%
  - Stress: 14%
  - Exercice: 5%
  - Activité sexuelle: 1,5%

• Comparaison des risques d’IDM et de MS
  - Activité sexuelle 2,5
  - Exercice 2,5
  - Stress 2,3
  - Cocaïne 24
Non-vulnerable Atherosclerotic Plaque

Vulnerable Atherosclerotic Plaque

Physical or Mental Stress Triggers Plaque Rupture

Minor Plaque Rupture

Major Plaque Rupture

Non-occlusive Thrombus

Coagulability Increase or Vasoconstriction Triggers Complete Occlusion by Thrombosis

Asymptomatic, Unstable Angina, or Non-Q-MI

Occlusive Thrombus

Myocardial Infarction or Sudden Cardiac Death
Age-related changes in heart rate during copulatory behavior of male rats

- Specifically, copulatory behavior increases circulatory load, which may be related to reports of cardiac sudden death following ejaculation.
- Heart rate (HR) before and after ejaculation in 48-week-old (aged) and 10-week-old (young) male rats,
- HR after ejaculation was increased by 54.2 +/- 3.5 and 41.7 +/- 2.7, respectively, among aged and young male rats.
- We also studied decreases in HR following ejaculation and found that aged male rats had a significantly higher HR at 1 and 2 min after ejaculation than young rats (P<0.01).
- These results suggest that there is a higher risk of sudden cardiac death during sexual behavior in older males.
Heart-Rate Profile during Exercise as a Predictor of Sudden Death

Xavier Jouven, M.D., Ph.D., Jean-Philippe Empana, M.D., Peter J. Schwartz, M.D., Michel Desnos, M.D., Dominique Courbon, M.Sc., and Pierre Ducimetière, Ph.D.
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Excessive heart rate increase during mild mental stress in preparation for exercise predicts sudden death in the general population

Xavier Jouven$^{1,2,3,4,10*}$, Peter J. Schwartz$^{5,6,7,8,9}$, Sylvie Escolano$^{1,3,4,10}$, Céline Straczek$^{1,3,4,10}$, Muriel Tafflet$^{1,3,4,10}$, Michel Desnos$^{2,3}$, Jean Philippe Empana$^{1,3,4,10}$, and Pierre Ducimetière$^{1,3,4,10}$

European Heart Journal (2009) 30, 1703–1710
Excessive heart rate increase during mild mental stress in preparation for exercise predicts sudden death in the general population.

Values of heart rate change during exercise vs. heart rate change during mild mental stress.
Excessive heart rate increase during mild mental stress in preparation for exercise predicts sudden death in the general population.
One publication provided results from 2 separate populations, which were considered as independent strata in our analyses. ISI indicates Institute of Scientific Information.
Summary results for each exposure-outcome subgroup are presented separately. Within each subgroup, studies are arranged by the point estimate of relative risk. Values greater than 1 indicate that exposure is associated with increased risk of the outcome. Squares are proportional to the weight of each study in the meta-analysis. CI indicates confidence interval.
From: Association of Episodic Physical and Sexual Activity With Triggering of Acute Cardiac Events: Systematic Review and Meta-analysis


Figure Legend:

Meta-regression graph of relative risks (RRs) for myocardial infarction is based on 3 studies that used the same scale (weekly frequency) to report habitual activity levels; graph for sudden cardiac death is based on 2 studies that used the same scale. Subgroup estimates are depicted as circles proportional to their precision (inverse of the variance of the log[RR]). The solid line indicates fitted values by random-effects meta-regression. rRR indicates relative RR calculated from the meta-regression.
Cœur et sexe

- L’activité sexuelle est responsable de peu d’IDM
- Plus on pratique (activité physique) plus le risque diminue
- -50% d’IDM et -30% de MS par activité supplémentaire/semaine