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Sex and death: are they related?

George Davey Smith, *professor of clinical epidemiology,*^a **Stephen Frankel**, *professor of epidemiology and public health medicine,*^a **John Yarnell**, *senior lecturer*^b

letters to nature

Nature **294**, 580 - 582 (10 December 1981); doi:10.1038/294580a0

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Sexual activity reduces lifespan of male fruitflies

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Many theories on the evolution of life histories have assumed a physiological cost of reproduction in terms of reduced lifespan¹⁻³. A cost of increased reproduction in terms of reduced longevity has been established experimentally for females, both as an additive genetic^{4,5} and as a purely phenotypic^{6,7} effect. Such a physiological cost of reproduction has not been demonstrated for males. The cost of sexual activity has been assumed to be relatively small in those species where the only paternal contribution to an offspring is the gamete^{8,9}. Here we show that increasing sexual activity reduces longevity in the male fruitfly (*Drosophila melanogaster*) and hence that there is a significant physiological cost of male sexual activity in a species where the father contributes only gametes to his progeny.

Definition

By Mayo Clinic staff

Broken heart syndrome is a temporary heart condition brought on by stressful situations, such as the death of a loved one. People with broken heart syndrome may have sudden chest pain or think they're having a heart attack. These broken heart syndrome symptoms may be brought on by the heart's reaction to a surge of stress hormones. In broken heart syndrome, a part of your heart temporarily enlarges and doesn't pump well, while the remainder of the heart functions normally

Übersterblichkeit

innerhalb 1 J. nach Hospitalisierung des Partners/der Partnerin in einer Kohorte von 518.240 Paaren, je nach Diagnose

The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

Mortality after the Hospitalization of a Spouse

Nicholas A. Christakis, M.D., Ph.D., M.P.H., and Paul D. Allison, Ph.D.

ABSTRACT

BACKGROUND

The illness of a spouse can affect the health of a caregiving partner. We examined the association between the hospitalization of a spouse and a partner's risk of death among elderly people.

METHODS

We studied 518,240 couples who were enrolled in Medicare in 1993. We used Cox regression analysis and fixed-effects (case–time–control) methods to assess hospitalizations and deaths during nine years of follow-up.

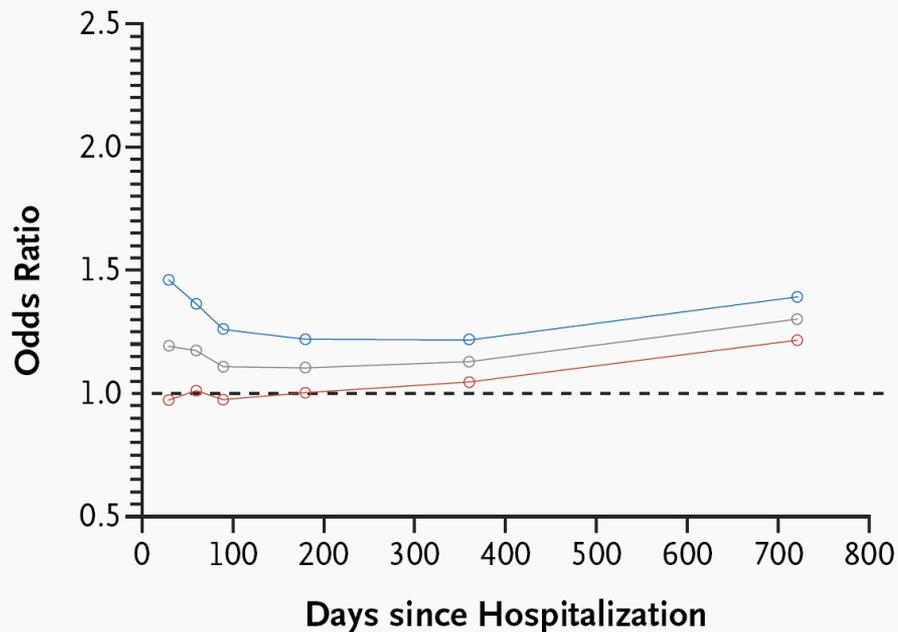
From the Department of Health Care Policy, Harvard Medical School, and the Palliative Care Service, Department of Medicine, Massachusetts General Hospital — both in Boston (M.A.C.); the Department of Sociology, Harvard University, Cambridge, Mass. (N.A.C.); and the Department of Sociology, University of Pennsylvania, Philadelphia (P.D.A.). Address reprint requests to Dr. Christakis at the Department of Health Care Policy, Harvard Medical School, 180 Longwood Ave., Boston, MA 02115, or at christakis@hcp.med.harvard.edu.

| Diagnosis of Wife | Wives Hospitalized with Disease and Mortality at 1 Year | Mortality among Husbands within 1 Year after Hospitalization of Wife |
|--------------------------|--|---|
| | <i>no. (mortality [%])</i> | % |
| Ischemic heart disease | 30,188 (13.4) | 6.2 |
| Stroke | 24,674 (18.6) | 6.9 |
| Congestive heart failure | 13,261 (25.6) | 7.5 |

When a spouse was hospitalized, the partner's risk of death increased significantly above baseline and remained elevated for up to two years.

the more a disease interfered with physical or mental ability (regardless of the lethality of the disease), the worse the outcome for the partner.

E Congestive Heart Failure



Interpersonal health effects have clinical and policy significance.

Nicholas A. Christakis, Paul D. Allison. N Engl J Med 1996;354:719-30





Koronare Herzkrankheit und Herzinfarkt [\[Bearbeiten\]](#)

Betablocker senken durch die Abnahme der Herzleistung den Sauerstoffbedarf des Herzens. Außerdem wird über die Senkung der Herzfrequenz eine bessere Durchblutung der Herzkranzgefäße erreicht, da diese nur in der Diastole durchblutet werden.^[13] Betablocker sind daher die wichtigsten Medikamente bei stabiler *Angina Pectoris*^[14] und werden – mit demselben Ziel – auch nach einem *Herzinfarkt* eingesetzt. Für beide Indikationen ist eine lebensverlängernde Wirkung von Betablockern eindeutig belegt.^[14]



ELSEVIER



EUROPEAN
SOCIETY OF
CARDIOLOGY

Clinical research

Report of erectile dysfunction after therapy with beta-blockers

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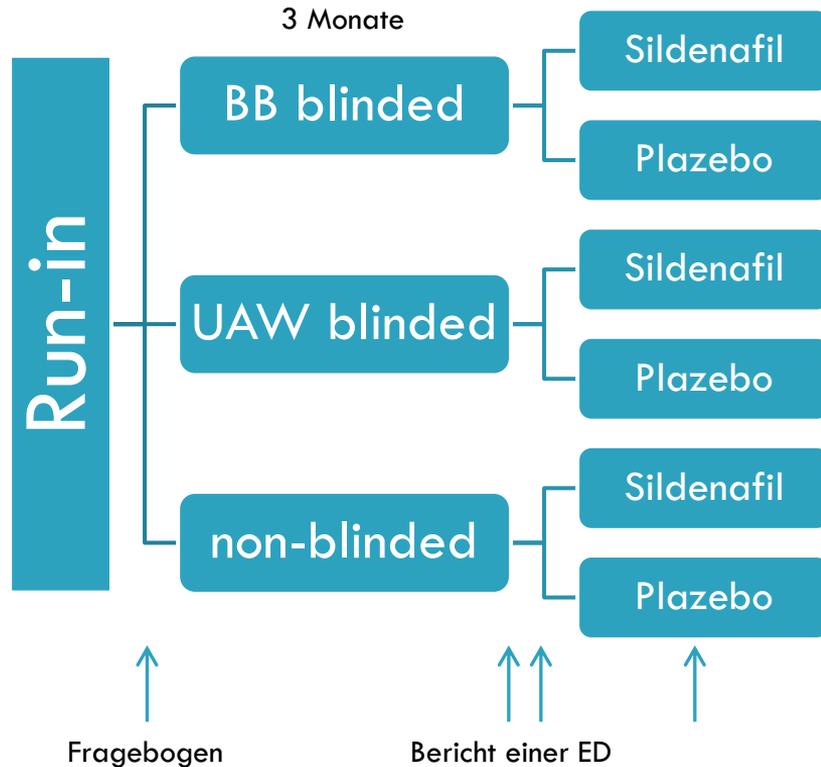


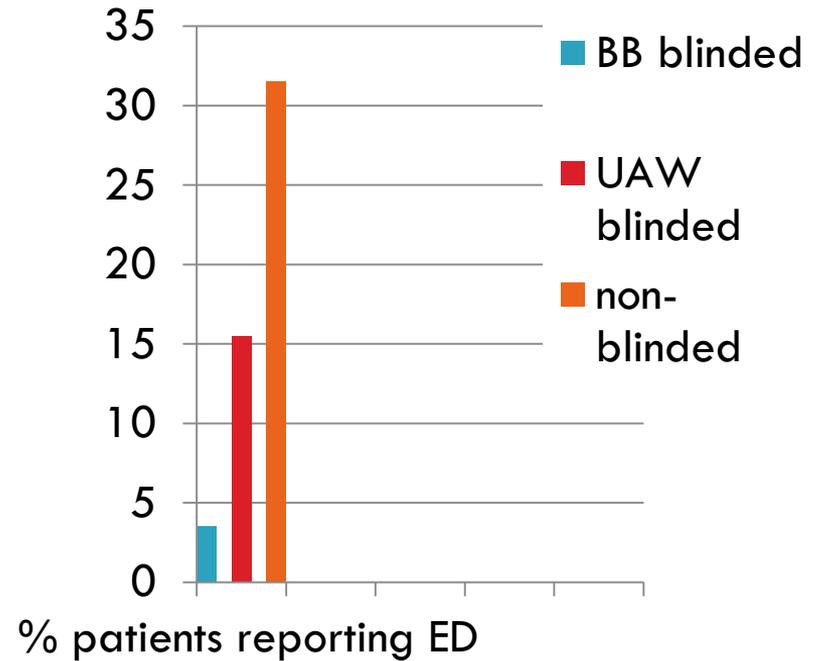
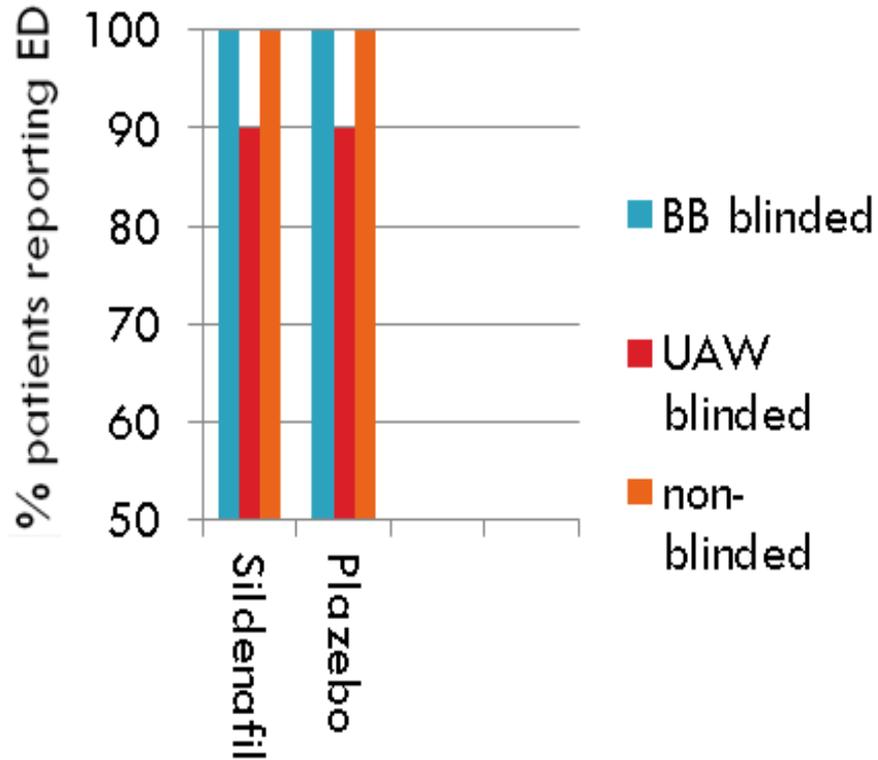
Table 1 Clinical features of study patients

| | Atenolol-do not know drug | Atenolol-do not know side effects | Atenolol—know side effects |
|-------------------|---------------------------|-----------------------------------|----------------------------|
| Mean age | 52±7 | 52±11 | 53±9 |
| Cigarette smoking | 24% | 30% | 26% |
| Hypertension | 52% | 50% | 60% |
| Diabetes | 20% | 14% | 24% |
| Angina | 60% | 60% | 60% |
| Hypertipidemia | 60% | 48% | 58% |

Table 2 Concurrent medications in study patients

| | Atenolol-do not know drug | Atenolol-do not know side effects | Atenolol—know side effects |
|-----------------------------|---------------------------|-----------------------------------|----------------------------|
| Aspirin/antiplatelet agents | 84% | 81% | 81% |
| Statins | 59% | 56% | 53% |
| Calcium Channel Blockers | 22% | 25% | 25% |
| ACE Inhibitors | 31% | 37.5% | 37.5% |
| Diuretics | 25% | 25% | 21.8% |
| Nitrates | 9% | 6% | 9% |
| Trimetazidine | 53% | 56% | 53% |

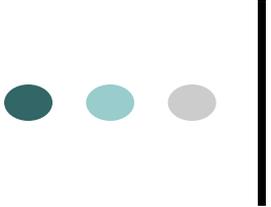
Effekt von Sildenafil bzw. Plazebo bei Pat., die eine ED beklagten





The 4th Earl of
Chesterfield, 1694-1773:

›...the pleasure is
momentary, the
position ridiculous,
and the expense
damnable.‹

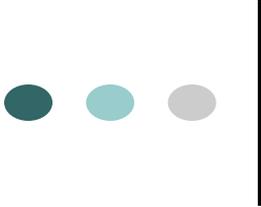


Kardiovaskuläre Antwort auf sexuelle Aktivität

- Wie hoch steigt die Herzfrequenz?
- Wie hoch steigt der Blutdruck?
- Wie hoch ist die kardiovaskuläre Belastung (METs*, vergleichbare Beanspruchungen)?

*MET, Sauerstoffaufnahme in Ruhe/Körpergewicht

$$[\text{MET}] = (\text{ml/min}) / \text{kg}$$



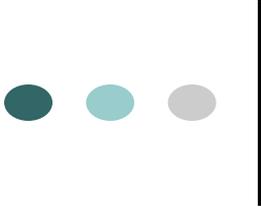
Int Rehab Med 1981;3:35-7; Arch Int Med 1984;144:1745-8:

Kardiovaskuläre Antwort auf sexuelle Aktivität

| Herzfrequenz (/min) | max. syst. Blutdruck (mmHg) | MET |
|-------------------------------|-----------------------------------|------------|
| 122,2 ± 7,1 [110-130(180)] | 150-180 (+20-60) | 3-4*(-5**) |

* 1,5 km/20 min Gehen zu ebener Erde

** Fahrradergometrie 75 W, eine Runde Golf



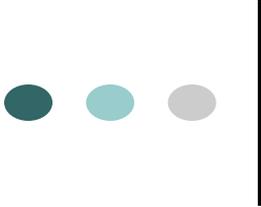
Int Rehab Med 1981;3:35-7; Arch Int Med 1984;144:1745-8:

Kardiovaskuläre Antwort auf sexuelle Aktivität

| | Herzfrequenz (/min) | max. syst. Blutdruck (mmHg) | MET |
|----------------------|-------------------------------|-----------------------------------|------------|
| keine Betablocker | 122,2 ± 7,1 [110-130(180)] | 150-180 (+20-60) | 3-4*(-5**) |
| Betablocker | 82,0 ± 2,8 | 130-160 | 2-4 |

* 1,5 km/20 min Gehen zu ebener Erde

** Fahrradergometrie 75 W, eine Runde Golf



Chest 1986;90:681-5; Am J Cardiol 1985;56:395-8; J Assoc Physicians India
1990;38:545:

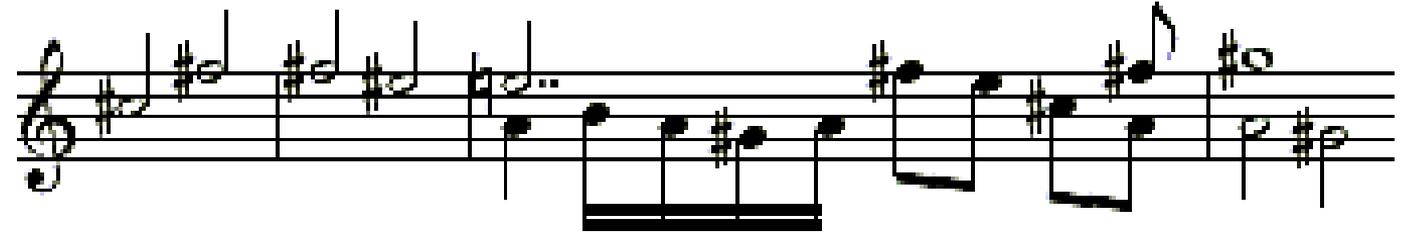
Psychosoziale Antworten

...25 % haben nach einer Bypass-OP keine sexuellen Kontakte mehr

88,7 % aller Infarktpatienten haben noch nach 6 mo ihre frühere sexuelle Aktivität nicht wieder aufgenommen, davon die überwiegende Anzahl aus Angst vor Überanstrengung und zu 10-20 % aufgrund falscher ärztlicher Ratschläge



mort d'amour



M. Parzeller
C. Raschka
H. Bratzke

Der plötzliche kardiovaskuläre Tod bei der sexuellen Betätigung – Ergebnisse einer rechtsmedizinischen Obduktionsstudie

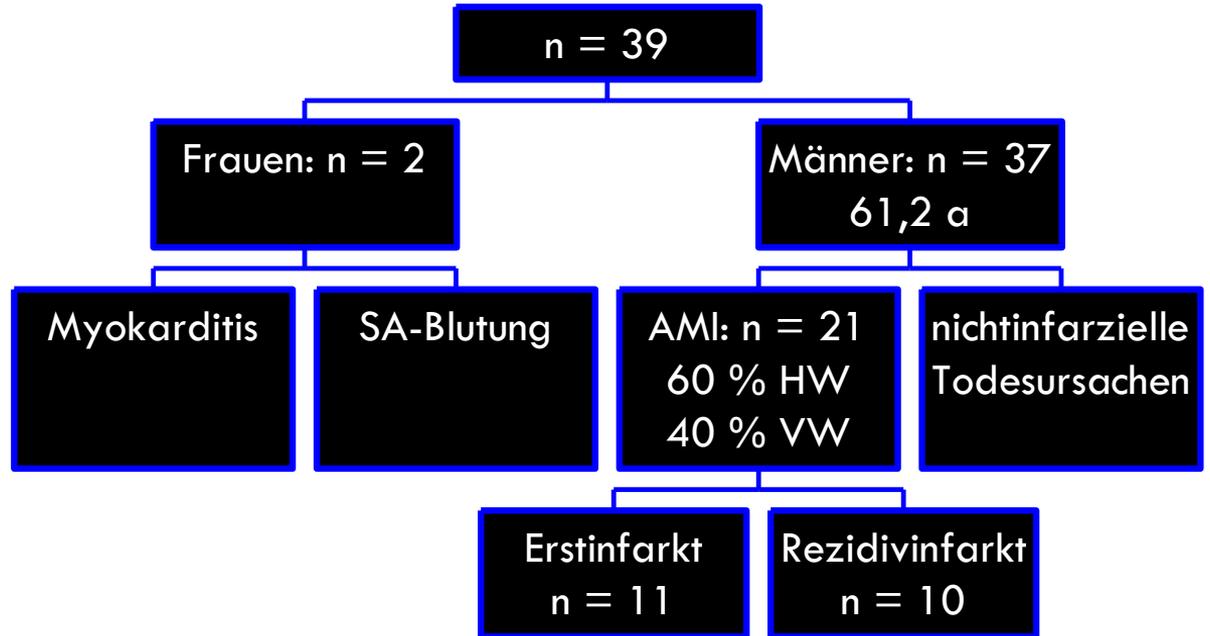
Sudden cardiovascular death occurring during sexual activity – Results of a medicolegal postmortem study

Summary This epidemiologic, retrospective follow-up mortality study is based on the data gathered in the department of forensic medicine at the University Hospital of Johann Wolfgang Goethe University in Frankfurt/Main. Over a period of 21 years (1972–1992), roughly 21,000 forensic autopsies revealed 39 cases (0.19 %) of natural deaths occurring during sexual

activity. Except for two women, all of these cases were men of an average age of 61.3 years. The most frequent cause of death was myocardial infarction ($n = 21/53.8\%$), three of these cases involving pericardial tamponade accompanied by myomalacia. The medical history of twelve of the deceased showed a previous myocardial infarction. Most of the deaths took place during or after sexual intercourse or manual stimulation. In most cases sudden death occurred during the sexual act with a prostitute. The annual incidence of sudden cardiovascular deaths during sexual activity is estimated to be

einen Zeitraum von 21 Jahren (1972–1992) wurden unter ca. 21 000 forensischen Obduktionen 39 Fälle (0,19 %) mit einer natürlichen Todesursache im Zusammenhang mit sexuellen Handlungen dokumentiert. Bis auf zwei Frauen waren ausschließlich Männer betroffen, deren Altersdurchschnitt 61,3 Jahre betrug. Die häufigsten Todesursachen waren Myokardinfarkte ($n = 21/53,8\%$), von denen 3 zu einer Herzbeutelamponade bei Myomalazie führten. 12 Verstorbene wiesen anamnestisch einen Myokardinfarkt auf. Die meisten Todesfälle ereigneten sich beim oder nach dem Geschlechts-

Als jährliche Inzidenz für den plötzlichen kardiovaskulären Tod bei sexueller Betätigung errechnet sich ein Schätzwert von 0,2/100 000 für Männer. Bei Frauen ist das Risiko um den Faktor 12 geringer.



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**Sex and death: are they related? Findings
from the Caerphilly cohort study**

George Davey Smith, *professor of clinical
epidemiology,*^a **Stephen Frankel**, *professor of
epidemiology and public health medicine,*^a **John
Yarnell**, *senior lecturer*^b

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| | Odds ratios (95% CI) for coronary mortality adjusted for age and risk factor |
|-----------------|--|
| Sexual activity | |
| low (n=199) | 2.1 (0.9-5.1) |
| medium (n=490)) | 1.8 (0.8-4.0) |
| high (n=229) | 1.0 |

Conclusion: Sexual activity seems to have a protective effect on men's health.



**After myocardial infarction or CABG:
After 2 weeks.
After angioplasty or stent:
After 2 days.**

'When can I start having sex again?'



**Stand up or sit down to reduce cardiac output.
Take a measure of brandy or whisky to vasodilate.**

'What happens if I get angina during or after sex?'

4 (vorläufige) Hypothesen

- (1) Die Datenlage zum Zusammenhang zwischen sexueller Aktivität und Lebenserwartung ist widersprüchlich. Für niedere Organismen überwiegen Belege für einen negativen, bei höheren (und Menschen) für einen positiven Zusammenhang. Dies gilt unabhängig vom Geschlecht.
- (2) Möglicherweise sind Hormone und Transmitter, die sowohl beim Sex als auch bei der Stressbewältigung eine Rolle spielen, mit gesundem Altern verbunden.
- (3) Die Bedeutung interpersoneller Beziehungen, wofür Sex nur ein Beispiel ist, für die Gesundheit ist augenscheinlich, aber es ist unklar, warum, wann, wie und wie sehr sie sich im Einzelfall durchsetzt.
- (4) Die psychophysische Aktivierung, die mit Sex verbunden ist, ist für Gesundheit und Genesung genauso von Wert wie sportorientierte Rehabilitationsprogramme.

Sexualität ist ein (kleineres oder größeres) Mosaiksteinchen in dem, was unsere Lebensqualität ausmacht.



