

Table G10.A3. Relative Risk of Sudden Cardiac Events by Level of Activity

| Reference, Study Design, and Time Period of Study | Relative Risk of Risk Period Versus Non-Risk Period | Relative Risk Stratified by Level of Usual Activity | Number of Subjects, Percent Male, Age | Measure of Usual Level of Activity | Activity at Time of Event, Method of Assessment | Event of Interest | Time Period of Risk, Onset of Symptoms | Time to Death | No. Events, No. (%) During Risk Period, No. per 1 Million Risk Periods | Overall RR | Incidence (Overall) |
|--|--|---|--|--|---|------------------------------|--|---------------|--|--|---|
| Siscovick et al., 1984 (1) Case-control 1979-1981 | NR | 0 min/wk = incalculable 1-19 min/wk = 56 20-139 min/wk = 13 ≥140 min/wk = 5 | 133 subjects 100% male 25-75 years Married, no prior CVD or other major CD % minority NR | Spouse-reported MN Leisure Time Activity Questionnaire: frequency, duration, intensity | Vigorous (≥6 METs) Spouse- reported. | Primary cardiac arrest | Onset during activity | NA | 133 subjects with primary cardiac arrest 9 (7%) during vigorous activity No./million hours vigorous activity NR | 0 min/wk = 3.6 1-19 min/wk = 2.8 20-139 min/wk = 1.2 ≥140 min/wk = 1 | 0 min/wk = 18/million hours 1-19 min/wk = 14 20-139 min/wk = 6 ≥140 min/wk = 5 |
| Mittleman et al., 1993 (2) Case- crossover 1989-1992 | 5.9 (expected activity) 5.6 (previous day activity) | <1/wk = 107 1-2/wk = 19.4 3-4/wk = 8.6 ≥5/wk = 2.4 | 1,228 subjects 68% male Mean age, 62 years % minority NR | Self-reported annual frequency of activities at 8 levels of exertion | Vigorous (≥6 METs) Self reported | Nonfatal MI | Onset within 1 hour of activity | NA | 1,228 subjects with acute MI 54 (4%) in risk period No./million risk periods NR No diff by sex, age. Diabetes increased risk | OR by level of physical activity at event | – |
| Willich et al., 1993 (3) Case-control and Case- crossover 1989-1991 | 2.1 (case-control) 2.1 (case- crossover) | <4/wk = 6.9 ≥4/wk = 1.3 | 1,194 subjects 74% male Mean age, 61 years % minority NR | Self-reported Questions not specified | Vigorous (≥6 METs) Self-reported or medical record | Nonfatal MI | Onset within 1 hour of activity | NA | 1,194 subjects with acute MI 7% in risk period (C-Cont only) No./million risk periods NR | vig = 2.1 (stat sign) mild-mod = 0.9 sedentary = 1.1 sleep = 0.8 (stat sign) | Increased risk for males, smokers, obese, and CVD |
| Giri et al., 1999 (4) Case crossover analysis within case series 1995-1998 | 10.1 | Very low active* = 30.5 Low active* = 20.9 Moderately active* = 2.9 Highly active* = 1.2 | 640 subjects 70% male Mean age, 61 years 90% white | Self-reported Framingham PAI; modified LRC Physical Activity Questionnaire | Vigorous (>6 METs) Self-reported | Nonfatal MI | Onset within 1 hour of activity | NA | 640 acute MIs 64 (10%) during risk period No./million risk periods NR | – | Increased risk with age, tobacco, diabetes, cholesterol |

Table G10.A3. Relative Risk of Sudden Cardiac Events by Level of Activity (continued)

| Reference, Study Design, and Time Period of Study | Relative Risk of Risk Period Versus Non-Risk Period | Relative Risk Stratified by Level of Usual Activity | Number of Subjects, Percent Male, Age | Measure of Usual Level of Activity | Activity at Time of Event, Method of Assessment | Event of Interest | Time Period of Risk, Onset of Symptoms | Time to Death | No. Events, No. (%) During Risk Period, No. per 1 Million Risk Periods | Overall RR | Incidence (Overall) |
|---|---|---|---|---|---|----------------------|--|--|---|--|---|
| Albert et al., 2000 (5) Case-crossover analysis within cohort study 1984-1995. | 16.9 | <1/wk = 74.1 1-4/wk = 18.9 ≥5/wk = 10.9 | 21,481 subjects 100% male Mean age, 53 years in 1982. No CVD at baseline % minority NR | Self-reported frequency Vigorous "enough to work up a sweat" | Vigorous (≥6 METs) Medical record review or next of kin | Sudden cardiac death | Onset within 30 minutes of activity | Death within 1 hour of onset of symptoms | 122 sudden cardiac deaths 23 (19%) during risk period 7/million risk periods | No difference by activity group in overall risk | – |
| Hallqvist et al., 2000 (6) Case-crossover analysis within case-control study 1993-1994 | 4.7 (case-control) 4.2 (crossover, prior day) 3.3 (crossover, usual activity) | <1/wk = 100.7 1-2/wk = 6.9 <2-4/wk = 3.7 >4/wk = 3.3 | 660 subjects 77% male Mean age, about 59 years % minority NR | Self-reported Usual frequency of vigorous; "How much" activity divided into 4 categories | Vigorous (≥6 METs) Self-reported | Nonfatal MI | Onset within 1 hour of activity | NA | 660 acute MIs 6% during risk period No./million risk periods NR | – | Absolute risk low for females and 45-60 years (vs. 61-70), but RR equal for sexes and RR higher for younger (7.2 vs. 4.1) Overall RR of SCD (all causes) |
| Whang et al., 2006 (7) Case-crossover analysis within cohort study 1986-2004. | 2.4 | <2 hrs/wk = 9.0 ≥ 2 hrs/wk = 1.49 | 69,693 subjects 100% female Mean age, 53 years in 1986 No CVD at baseline % minority NR | Self-reported Time per week in specific activities | Moderate-vigorous (≥5 METs) Medical record review or next of kin | Sudden cardiac death | Onset during activity | Death within 1 hour of onset of symptoms | 288 sudden cardiac deaths 9 (3%) during mod-vig activity 0.03/million hours of mod-vig activity | 0 hrs/wk = 1. (1.0) >0-1.9 hr/wk = 0.73 (0.72) 2-3.9 hr/wk = 1.08 (0.58) 4+ hr/wk = 0.32 (0.50) P trend = .006 (<.001) | – |

* Lipid Research Clinics modified classification, very low and low active persons report no strenuous exercise or hard physical labor.

CD, coronary disease; CVD, cardiovascular disease; LRC, Lipid Research Clinics; MET, metabolic equivalent; MI, myocardial infarction; mod, moderate; NA, not applicable; No., number; NR not reported; OR, odds ratio; PAI, physical activity index; RR, relative risk; SCD, sudden cardiac death; vig, vigorous

For studies with activity reported in times per week, each "time" is considered to be 30 minutes in length.

Reference List

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