Supplementary Table 1. Summary of studies examining domain-specific physical activity and sedentary behaviour in relation to colon and rectal cancer risk

| First author, year(Reference),location  | Physical activity, sedentary behaviour domain | Exposure category | Sex | Relative risk (95% CI) | Adjusted variables  |
| --- | --- | --- | --- | --- | --- |
| **Cohort studies** |  |  |  |  |  |
| Simons, 2013(29), | Occupational sitting | <2 (Referent) *vs.* | Men | C:1.38(1.12,1.72) | Age, family history of colorectal |
| Netherlands |  | >6-8hours/day |  | R:0.90(0.68,1.22) | cancer, smoking, total energy intake, |
|  | Recreational activity | Never(Referent) *vs.* | Men | C:1.20(0.91,1.59) | alcohol, processed meat, and body |
|  |  | >2 hours/week |  | R:1.15(0.79,1.66) | mass index |
|  |  |  | Women | C:0.94(0.67,1.31) |  |
|  |  |  |  | R:0.89(0.49,1.62) |  |
|  | Transport activity | ≤10 (Referent) *vs.* | Men | C:0.94(0.76,1.17) |  |
|  |  | >60 minutes /day |  | R:1.03(0.77,1.38) |  |
|  |  |  | Women | C:0.79(0.60,1.04) |  |
|  |  |  |  | R:0.47(0.27,0.83) |  |
| Howard, 2008(30), | Recreational activity | Never(Referent) *vs.* | Men | C:0.82(0.71,0.95) | Age, smoking, alcohol, education,  |
| United States |  | ≥5 times/week |  | R:0.76(0.61,0.95) | race, family history of colon cancer,  |
|  |  |  | Women | C:0.87(0.71,1.06) | red meat, total energy intake, fruits, |
|  |  |  |  | R:0.97(0.67,1.41) | calcium, and menopausal hormone |
|  | Recreational sitting | <3 (Referent) *vs.* | Men | C:1.56(1.11,2.20)  | therapy (females) |
|  | (TV viewing time) | ≥ 9 hours/day | Women | C:1.45(0.99,2.13)  |  |
| Moradi, 2008(31), | Occupational activity | Light(Referent) *vs.* | Men | C:0.77(0.67,0.83) | Age, residence, and socio-economic  |
| Sweden |  | high intensity work |  | R:0.91(0.83,1.11) | status |
|  |  |  | Women | C:0.83(0.66,1.00) |  |
|  |  |  |  | R:1.00(0.76,1.25) |  |
| Nilsen, 2008(32), | Recreational activity | Never(Referent) *vs.* | Men | C:0.77(0.54,1.09)  | Age, smoking status, alcohol, marital |
| Norway |  | ≥ 4 times/week | Women | C:0.99(0.72,1.36) | status, and educational status |
| Takahashi, 2007,(37) | Transport activity | < 0.5(Referent) *vs.* | Men | C:0.38(0.22,0.64) | Age, alcohol, smoking, colorectal |
| Japan |  | > 1 hour/day |  | R:1.21(0.56,2.61) | cancer in family, education, sports,  |
|  |  |  | Women | C:1.79(0.64,4.96) | exercise, meat, vegetables, fruits,  |
|  |  |  |  | R:0.71(0.31,1.61) | and menopausal status |
| Wolin, 2007(33), | Recreational activity | <2(Referent) *vs.* | Women | C:0.77(0.58,1.01) | Smoking, aspirin, red meat, alcohol  |
| United States |  | 21.5 MET hours/ |  |  | colon cancer in family, calcium |
|  |  | week |  |  | vitamin D, and body mass index |
| Friedenreich, 2006(35), | Recreational activity | <12(Referent) *vs.* | Combined | C:0.88(0.74,1.05) | Age, education, marital status, red  |
| Europe  |  | 42.8 MET hours/ |  | R:1.21(0.94,1.54) | meat, smoking, alcohol, hormone, |
|  |  | week |  |  | replacement therapy (women), fibre  |
|  | Household activity | <19.5(Referent) *vs.* | Combined | C:0.93(0.76,1.13) | height, weight, fruits vegetables, and  |
|  |  | 73.9 METs/week |  | R:0.98(0.75,1.29) | folate |
| Larsson, 2006(36), | Occupational activity | 7.4 (Referent) *vs.* | Men | C:1.03(0.72,1.47) | Age, education, smoking , aspirin,  |
| Sweden  |  | 22 MET hours/day  |  | R:1.16(0.78,1.74) | fruits, colorectal cancer in family, |
|  | Recreational activity | <10 (Referent) *vs.*  | Men | C:0.56(0.37,0.83) | diabetes mellitus, body mass index, |
|  |  | ≥ 60 minutes /day |  | R:0.59(0.34,1.02) | alcohol, vegetables, red meat, folates, |
|  | Household activity | <1(Referent) *vs.* | Men | C:0.68(0.48,0.96) | and multi-vitamins |
|  |  |  ≥ 3 hours /day |  | R:1.08(0.69,1.69) |  |
| Chao, 2004(34), | Recreational activity | 0 *vs.* ≥7 hours/ | Combined | C:0.60(0.44,0.83) | Age, education, smoking, alcohol,  |
| United States  |  | week |  | R:0.83(0.59,1.16) | folate, dietary fibre, red meat, race, |
|  |  |  |  |  | cancer history in family, aspirin, and |
|  |  |  |  |  | vegetables |
| Colbert, 2001(38), | Occupational activity | Light (Referent) *vs.*  | Men | C:0.45(0.26,0.78) | Age, intervention group, body mass |
| Finland |  | heavy labour |  | R:0.50(0.26,0.97) | index, and smoking |
| Lee, 1997(39), | Recreational activity | <1(Referent) *vs.* | Men | C:1.10(0.70,1.60) | Age, obesity, and alcohol |
| United States  |  | ≥ 5 times/week |  |  |  |
| Thune, 1996(40), | Occupational activity | Light (Referent) *vs.* | Men | C:0.82(0.59,1.13) | Age, body mass index, cholesterol, |
| Norway  |  | heavy manual  |  | R:1.00(0.69,1.45) | geographical region, and civil status |
|  |  | labour | Women | C:0.69(0.34,1.42) |  |
|  |  |  |  | R:0.88 (0.30,2.36) |  |
| Giovannucci, 1995(41), | Recreational activity | 0.9 (Referent) *vs.* | Men | C:0.53(0.32,0.88) | Age, body mass index, history of |
| United States |  | 46.8 median MET  |  |  | screening, red meat , total energy |
|  |  | hours/week |  |  | intake, smoking, aspirin, folate, |
|  |  |  |  |  | alcohol, dietary fibre, and colorectal |
|  |  |  |  |  | cancer history in family |
| Albanes, 1989(42), | Recreational activity | None(Referent ) *vs.* | Men | CRC:1.00(0.53,2.00) | Age, height, weight, body mass  |
| United States  |  | much exercise | Women | CRC:0.83(0.35,1.67) | index, race, education, income, |
|  |  |  |  |  | smoking, fats, and energy intake |
| Wu, 1987(43), | Recreational activity | <1 (Referent) *vs.* | Men | CRC:0.40(0.20,0.80) | Age, alcohol consumption, smoking, |
| United States  |  | >2 hours/day | Women | CRC:0.89(0.50,1.60) | Parity (women), multivitamins intake |
|  |  |  |  |  | and body mass index |
| Gerharrdsson, 1986(45), | Occupational sitting | <20%(Referent) *vs.*  | Men | C:1.30(1.19,1.41) | age, population density, and social  |
| Sweden |  | ≥50% sitting at job |  | R:1.10(0.98,1.22) | class |
| Garabrant, 1984(44), | Occupational sitting | <20%(Referent) *vs.*  | Men | C:1.60(1.46,1.74) | Age and social class |
| United States |  | >20-80% sitting  |  | R:0.90(0.50,1.30) |  |
|  |  | at job |  |  |  |
|  |  |  |  |  |  |
| **Case-control studies**  |  |  |  |  |  |
| Boyle, 2011(2,46), | Occupational activity | Light(Referent) *vs.* | Combined | C:0.64(0.44,0.94) | Age group, sex, occupational, |
| Australia |  | heavy manual work |  | R:0.88(0.56,1.38) | physical activity level, cigarette |
|  | Recreational activity | 0 (Referent) *vs.* | Combined | C:0.88(0.58,1.33) | smoking, diabetes mellitus,  |
|  |  | ≥ 30 MET hours/ |  | R:0.99(0.57,1.74) | education level, energy intake,  |
|  |  | week |  |  | alcohol, and socio-economic status |
|  | Occupational sitting  | 0 (Referent) *vs.* | Combined | C:1.52(1.11, 2.07) |  |
|  |  | ≥ 10 years in  |  | R:1.44(0.96,2.18) |  |
|  |  | sedentary jobs |  |  |  |
| Parent, 2011(47), | Occupational activity | ≤ 1.5(Referent) *vs.*  | Men | C:0.58(0.34,0.99) | Age, Smoking, alcohol consumption,  |
| Canada |  | > 4 mean time |  | R:0.66(0.34,1.29) | ethnicity, educational status, family  |
|  |  | weighted METs |  |  | income, body mass index  |
|  | Recreational activity | Never(Referent) *vs* | Men | C:1.07(0.81,1.41) |  |
|  |  | Once per week |  | R:0.91(0.66,1.27) |  |
| Boutron-Ruault, 2009(48) | Occupational activity | Low(Referent) *vs.*  | Combined | CRC:0.50(0.30,0.90) | Age, gender, colorectal cancer in  |
| France |  | high score |  |  | family, dietary history, and energy  |
|  | Recreational activity | Low(Referent) *vs.*  | Combined | CRC:0.30(0.20,0.50) | intake |
|  |  | high score |  |  |  |
| Isomura, 2006(49), | Occupational activity | Light work  | Men | C:0.70(0.40,1.00)  | Age, cigarette smoking, alcohol use,  |
| Japan |  | (Referent) *vs.* |  | R:0.60(0.40,0.90) | area of residence, and body mass  |
|  |  | hard manual labour | Women | C:0.70(0.40,1.20) | index |
|  |  |  |  | R:1.10(0.60,1.90) |  |
| Zhang, 2006(50), | Occupational activity | Low score  | Men | C:0.80(0.50,1.20) | Age, gender, Education, family  |
| United States |  | (Referent) *vs.* | Women | C:0.60(0.20,1.40) | history of colon cancer, dietary fat  |
|  |  | high score |  |  | intake, fibre intake, body mass index,  |
|  | Recreational activity | <1 time /month | Men | C:0.70(0.52,0.94) | and cigarette smoking |
|  |  | (Referent) *vs.* | Women | C:0.70(0.51,0.92) |  |
|  |  | ≥ 2 times/week |  |  |  |
| Yeh, 2003(53), | Recreational activity | No (Referent) *vs.*  | Men | C:0.49(0.28,0.86) | Age, educational status, smoking,  |
| Taiwan |  | yes exercise |  | R:0.48(0.29,0.81) | dietary factors, and alcohol use |
| Tang, 1999(58), | Recreational activity | 1 (Referent) *vs*.  | Men | C:0.19(0.05,0.77)  | Age, total energy intake, dietary |
| Taiwan |  | ≥ 20 MET hours/ |  | R:0.44(0.13,1.49) | fibre, vegetable protein, smoking,  |
|  |  | week | Women | C:0.63(0.18,2.18) | alcohol and water intake |
|  |  |  |  | R:0.84(0.28,2.46) |  |
| Hou, 2004(51), | Occupational activity | <8(Referent) *vs.*  | Men | C:0.81(0.59,1.19) | Age, education, monthly family  |
| China |  | >12 Kilo-joules/ | Women | C:0.64(0.39,1.02) | income, marital status, total energy, |
|  |  | minute |  |  | intake of red meat, beta-carotene,  |
|  | Recreational activity | <9.2 (Referent) *vs.* | Men | C:0.72(0.41,1.07) | dietary fibre, number of pregnancies, |
|  |  | >13.6 MET hour/ | Women | C:0.84(0.13,2.25) | and menopausal status (women) |
|  |  | week |  |  |  |
|  | Transport activity | <48.3(Referent) *vs*. | Men | C:0.52(0.27,0.87) |  |
|  |  | >94.3 METs/week | Women | C:0.56(0.21,0.91) |  |
| Mao, 2003(54), | Recreational activity | <6.4(Referent) *vs.*  | Men | R:0.88(0.64,1.20) | Age, residence, smoking, education  |
| Canada |  | ≥37.4 METs/week |  |  | vegetable, dietary fibre, alcohol,  |
|  |  | <6.1 (Referent) *vs.*  | Women | R:1.15(0.88,1.49) | body mass index, and total energy. |
|  |  | ≥31.3 METs/week |  |  | intake |
| Markowitz, 1992(63), | Occupational activity | <20%(Referent) *vs.*  | Men | C:0.50(0.30,0.80) | Age, race, geographical area and  |
| United States |  | >80% time in  |  | R:0.60(0.30,1.10) | recreational activity at age 22-44  |
|  |  | active jobs |  |  | years |
| Slattery, 2003(55), | Occupational activity | 0 (Referent) *vs.*  | Men | R:1.10(0.82,1.49) | Age, body mass index, energy  |
| United States |  | >1000 METs/week | Women | R:0.65(0.44,0.95) | intake, dietary fibre, dietary calcium,  |
|  |  |  |  |  | anti- inflammatory drugs, history of  |
|  | Recreational activity | 0 (Referent) *vs.*  | Men | R:0.56(0.38,0.82) | family bowel cancer |
|  |  | >1000 MET  | Women | R:0.75(0.48,1.19) |  |
|  |  | minutes /week |  |  |  |
| Steindorf, 2000(56), | Occupational activity | Low (Referent) *vs.*  | Combined | CRC:0.61(0.29,1.29) | Education, total energy intake, intake  |
| Poland |  | High activity level |  |  | of fibre, alcohol, smoking, and  |
|  |  |  |  |  | micronutrients |
|  | Recreational sitting | ≥2 Referent *vs.*  | Combined | CRC:0.45(0.24,0.84) |  |
|  | (TV viewing time) | <1.14 hours /day |  |  |  |
| Levi, 1999(57),  | Occupational activity | Low (Referent) *vs.*  | Combined | CRC:0.63(0.37,1.07) | Age, sex, years of education, intake  |
| Switzerland |  | high score |  |  | of alcohol, and total energy intake |
|  | Recreational activity | <2(Referent) *vs.*  | Combined | CRC:0.54(0.30,0.96) |  |
|  |  | ≥ 5 hours/week |  |  |  |
| White, 1996(59), | Occupational activity | < 35 *vs.*≥ 147.6 | Men | C:0.89(0.53,1.50) | Age and sex |
| United States |  | METs/week |  |  |  |
|  |  | 0 *vs.* ≥ 47.8  | Women | C:1.04(0.63,1.72) |  |
|  |  | METs/week |  |  |  |
|  | Recreational activity | 0(Referent) *vs.* | Men | C:0.69(0.42,1.13) |  |
|  |  | ≥ 17.8 METs/week | Women | C:0.74(0.41,1.34) |  |
|  | Household activity | ≤ 6(Referent) *vs.*  | Men | C:0.93(0.56,1.56) |  |
|  |  | >20 hours/week |  |  |  |
|  |  | ≤ 20(referent) *vs.* | Women | C:0.79(0.44,1.42) |  |
|  |  | > 48 hours/week |  |  |  |
| Longnecker, 1995(60),  | Occupational activity | Light (Referent) *vs.*  | Men | R:1.36(0.44,4.20) | Smoking, income, race, family  |
| United States |  | heavy labour |  |  | history of colorectal cancer,  |
|  | Recreational activity | 0(Referent) *vs.* | Men | R:1.19(0.70,2.04) | body mass index, alcohol, intake of  |
|  |  | ≥ 2 hours /week |  |  | energy, fat, fibre, and calcium |
| Arbman, 1993(62),  | Occupational activity | 0(Referent) *vs.* >20  | Combined | C:1.00(0.55,1.79) | Age  |
| Sweden |  | years in active jobs |  | R:1.70(0.88,3.28) |  |
|  | Occupational sitting | 0(Referent) *vs.* >20  | Combined | C:1.50(0.81,2.76) |  Age  |
|  |  | years in sitting jobs |  | R:0.30(0.09,1.04) |  |
| Vetter, 1992(65), | Occupational sitting | <2(Referent) *vs.*  | Combined | C:1.50(0.70,2.90) | Age and smoking |
| Turkey |  | >6 hours/day |  |  |  |
| Brownson, 1991(61), | Occupational activity | <20%(Referent) *vs.*  | Men | C: 0.83(0.67,1.02) | Age and smoking |
| United States |  | >80% active in job  |  |  |  |
| Kato, 1990(52), | Occupational activity | low (Referent) *vs.*  | Men | C:0.57(0.46,0.71) | Beer drinking, family history of  |
| Japan |  | high score |  | R:0.80(0.65,0.98) | colorectal cancer, smoking, marital  |
|  |  |  |  |  | status, and place of residence  |
| Slattery, 1990(64), | Occupational activity | None(Referent) *vs.*  | Men | C:0.80(0.37,1.69) | Fibre intake, age, and body mass  |
| United States |  | Highly active men |  |  | index |
|  |  |  |  |  |  |

CI, confidence interval; RR, relative risk; C, colon cancer; R, rectal cancer; TV, television CRC, colorectal cancer; METs, metabolic equivalents