

## Sedentary living hazardous to health

What impact does physical inactivity have on the health of Canadians? Who are the people potentially affected by sedentary living? The 1995 Physical Activity Monitor provides answers to these questions by pointing out who is active and who is not, thus allowing us to evaluate the public health risk of physical inactivity in Canada.

The risks associated with being inactive have been well documented. Paffenbarger and colleagues<sup>1</sup> investigated the impact of physical activity on health by examining the increased risk of premature mortality associated with sedentary living. They found that compared with their more active counterparts, people expending less than 2,000 kilocalories per week faced

- a 1.43 increase in the risk of premature death, adjusting for age differences;
- a 1.40 increase in the risk of premature death, adjusting for age differences, cigarette smoking, hypertension, being overweight relative to height, and parents' death before age 65.

These results indicate that individuals who expend fewer than 2,000 kilocalories weekly in physical activity face a 40–43% increase in the risk of premature all-cause mortality, even when accounting for other risk factors.

These risk values, applied to the Canadian population, show that the impact on the health of Canadians is substantial. As shown in Table 1, if Canadians facing increased relative risk were more active, premature death

Table 1

### POSSIBLE REDUCTION IN PREMATURE DEATH RATES by energy expended in physical activity

Energy expended (kcal/week)	Prevalence in 1995	Relative risk <sup>1</sup>	Reduction in premature death rates
< 500	22%	1.81	15%
500–999	20	1.14	3
1,000–1,499	17	1.12	2
1,500–1,999	9	1.01	0
≥ 2,000	32	1.00	0

1995 Physical Activity Monitor, CFLRI

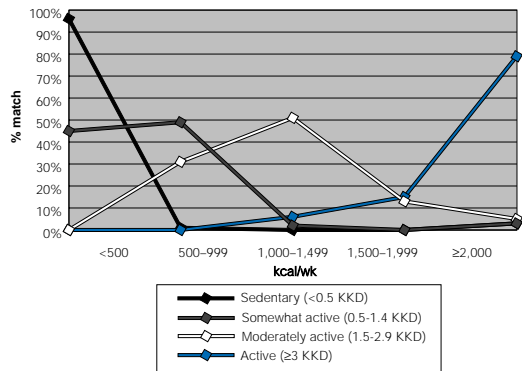
might be reduced by 20%. Three-quarters of this reduction would occur among those expending fewer than 500 kilocalories per week, with the remaining one-quarter occurring among people expending 500–1,499 kilocalories per week.

The activity level discussed in prior bulletins<sup>2</sup> is based on energy expenditure as well and, as such, is related to the weekly energy expenditure on which the above discussion of risk is based. The difference is that one is a measure of total weekly expenditure whereas the other is a measure of daily expenditure relative to body weight. Figure 1 demonstrates the consistency between the two measures (100% indicates a perfect match). As can be seen, almost all Canadians who are sedentary expend less than 500 kilocalories a week in activity; those who are somewhat active are equally likely to expend 500–999 or less than 500 kilocalories weekly; those who are moderately active are most likely to expend 1,000–1,499 kilocalories weekly; and almost all active Canadians



Figure 1

**CONCORDANCE BETWEEN WEEKLY ENERGY EXPENDITURE (kcal/wk) AND ACTIVITY LEVEL (KKD)**



1995 Physical Activity Monitor, CFLRI

expend at least 2,000 kilocalories weekly.

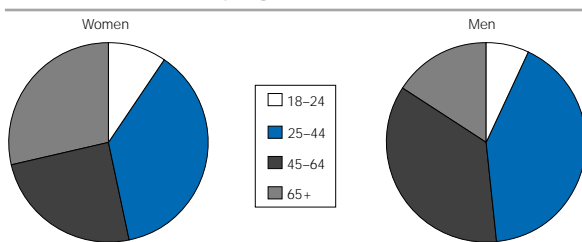
So, who faces increased risk? Canadians who are sedentary face the highest level of risk, almost double that of active Canadians. Those who are only somewhat active also face increased risk, with half of them facing the same degree of risk as the sedentary and the other half facing an increase in risk of 14% over those who are active. It is important to know who these groups are if we are to encourage and support them in becoming more active. A profile of sedentary and somewhat active Canadians thus follows.

**Profile of sedentary Canadians**

**Age and sex** Over one in ten Canadian adults are sedentary. Of these, 38% are men and 62% are women. Few of the sedentary are young adults. About 40% are found in the 25–44 age group, a group facing increased time pressure due to work and caring for

Figure 2

**DISTRIBUTION OF SEDENTARY CANADIANS by age and sex**



1995 Physical Activity Monitor, CFLRI

dependants and whose leisure time is at a premium. Almost 30% of sedentary Canadians are 45–64, and about 25% are 65 and older.

This age distribution has two notable exceptions between men and women, as shown in Figure 2: there is a higher proportion of sedentary men in the 45–64 age group and a higher proportion of sedentary women among the 65 and older.

**Marital status** Three-quarters of sedentary Canadians are married, with the remainder split equally between those who never married and those who are widowed, divorced, or separated.

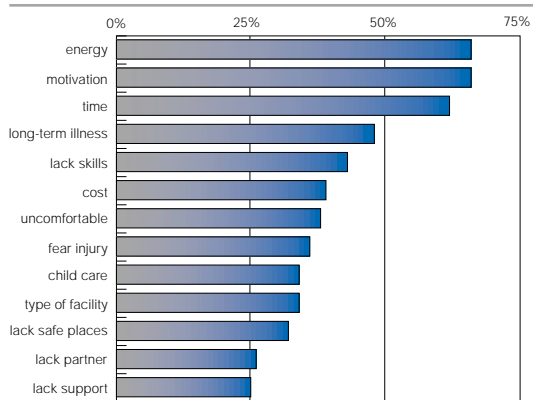
**Socioeconomic status** Most sedentary Canadians have a secondary education or less. About 20% have a college degree and about 15% have a university education. Almost 25% have annual household incomes under \$20,000. Just over 30% have incomes in the next lowest range—\$20,000–\$39,999—and a further 30% report annual incomes of \$40,000–\$59,999. Half are employed, with about 40% employed full-time. One-quarter are retired. Sedentary individuals are most likely to be found in small towns (1,000–9,999 residents) and large cities (≥300,000 residents).

**Barriers** Lack of energy, motivation, and time are the three major barriers to physical activity for sedentary Canadians, and are reported by about two-thirds of these individuals (Figure 3). A further 10 barriers may be considered moderate, as they are cited by at least 25% of sedentary individuals. Topping this list of moderate barriers is long-term illness. The high proportion citing this barrier may be indicative in part of the higher proportion of older adults among the sedentary relative to the population as a whole (24% versus 12%).<sup>3</sup>

**Leisure-time activities** In a typical week, sedentary individuals report spending 11.3 hours watching television, 8.2 hours reading, listening to music, and doing hobbies, and 4.2 hours visiting friends and family.

Figure 3

### BARRIERS REPORTED BY SEDENTARY CANADIANS



1995 Physical Activity Monitor, CFLRI

Compared with the most active Canadians, they spend more time watching television, less time reading, listening to music, and doing hobbies, and less time visiting friends and family.

**Physical activity** Sedentary individuals do engage in some physical activity, albeit at a low level. Like active individuals, they tend to cite home as the primary location for physical activity, although in relatively fewer numbers. Work is the second most frequent location for physical activity among the sedentary, and is cited by the same proportion of active and sedentary individuals.<sup>4</sup> Sedentary individuals are less likely than active individuals to participate with family but as likely to participate alone or with friends.<sup>5</sup>

About 70% intend to engage in physical activity in the future (compared with 99% of active individuals). The remaining 30% may be more difficult to reach as they have either no intention of being active in the near future or they have not been active at all in the previous year.

## Profile of somewhat active Canadians

**Age and sex** Among the one-quarter of Canadian adults who are only somewhat active, 47% are men and 53% are women. Half are between 25 and 44, one-quarter between 45 and 64, with the remaining one-

quarter evenly divided between young adults and older adults. There is no difference in this age distribution by sex.

**Marital status** Most are married (70%); the rest are about equally divided between those who never married and those who are widowed, divorced or separated.

**Socioeconomic status** Just under half have secondary education or less, about one-quarter have a college education, and over one-quarter have a university education. Almost 15% have annual household incomes under \$20,000. Over 35% have incomes in the \$20,000–\$39,999 range, and 25% earn \$40,000–\$59,000 a year. Almost one-quarter have annual incomes above \$60,000. Over 50% work full-time and another 15% work part-time. The remainder are mostly retired. Somewhat active individuals appear equally likely to live in communities of different sizes.

**Barriers** Lack of time (75%), energy (68%), and motivation (58%) are again the most frequently reported barriers. Moderate barriers—cited by at least 25% of somewhat active individuals—are cost, lack of physical skills, long-term illness, feeling uncomfortable, not having the right type of facility nearby, fear of injury, lack of safe places, lack of a partner, and problems with child care.

**Physical activity** Like active Canadians, somewhat active Canadians cite home, public facilities, and work as the top locations for physical activity.<sup>4</sup> However, relatively fewer report home and public facilities as locations. Also, relatively fewer do activities with family.<sup>5</sup>

Almost all Canadians who are somewhat active (92%) intend to stay active in the future.

## Reaching out

Encouraging and supporting the least active to become more active pays big dividends in reducing premature deaths among Canadians. Targeting these Canadians would have the

greatest impact on reducing health care costs. Ways to encourage less active Canadians to become more active may include

- enlisting businesses to encourage physical activity at the workplace to help individuals who need to juggle the demands of work, home, and family life;
- offering opportunities for the whole family to be active by retrofitting facilities to meet the needs of families (family change rooms, space for child care) and changing the programming focus away from individuals to families;
- promoting small changes in activity patterns, such as walking more frequently, and offering specific programs and resources to suit inactive people's readiness to change;<sup>6</sup>
- planning a safe outdoor environment: more lighting, better sight lines, removal of dark areas where people can hide, police foot patrols;
- encouraging health care providers to inform clients about the benefits of physical activity in prevention, treatment, and rehabilitation and to use physical activity as an adjunct to traditional treatments;
- identifying elements in the physical and social environments in the workplace and community that reinforce sedentary behaviours, and developing strategies to remove or counteract these situations and conditions;
- developing research and pilot projects to better understand the best way to reach and engage sedentary Canadians.

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- <sup>2</sup> Canadian Fitness and Lifestyle Research Institute. (1996). How active are Canadians? *Progress in Prevention*, Bulletin no. 1.
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# Profile of active and inactive Canadians

1995 Physical Activity Monitor

	Sex		Women				Men			
	Women	Men	18-24	25-44	45-64	65+	18-24	25-44	45-64	65+
Active ( $\geq 3$ KKD <sup>1</sup> )	48%	52%	23%	46%	24%	7%	22%	47%	22%	9%
Moderately active (1.5–2.9 KKD)	52	48	10	48	28	13	–	46	28	–
Somewhat active (0.5–1.4 KKD)	53	47	11	51	27	12	–	50	28	–
Sedentary (<0.5 KKD)	62	38	–	37	25	29	–	42	–	–

	Age				Education level			
	18-24	25-44	45-64	65+	< Secondary	Secondary	College	University
Active ( $\geq 3$ KKD <sup>1</sup> )	22%	47%	23%	8%	16%	26%	22%	36%
Moderately active (1.5–2.9 KKD)	12	47	28	12	21	29	21	28
Somewhat active (0.5–1.4 KKD)	11	51	28	11	22	23	25	30
Sedentary (<0.5 KKD)	–	39	29	24	36	29	21	15

	Household income						
	< \$20,000	\$20,000– 29,999	\$30,000– 39,999	\$40,000– 59,999	\$60,000– 79,999	\$80,000– 99,999	$\geq$ \$100,000
Active ( $\geq 3$ KKD <sup>1</sup> )	16%	13%	13%	22%	18%	9%	10%
Moderately active (1.5–2.9 KKD)	16	14	15	23	15	–	10
Somewhat active (0.5–1.4 KKD)	14	20	16	26	9	–	–
Sedentary (<0.5 KKD)	24	15	–	30	–	–	–

<sup>1</sup> Kilojoules/kilogram of body weight/day; an energy expenditure of 3 KKD is equivalent to walking one hour every day.

– Data unavailable because of insufficient sample size.

(cont'd)

	<i>Employment status</i>					
	<i>Full-time worker</i>	<i>Part-time worker</i>	<i>Unemployed</i>	<i>Homemaker</i>	<i>Student</i>	<i>Retired</i>
<i>Active (≥3 KKD<sup>1</sup>)</i>	53%	13%	6%	8%	9%	11%
<i>Moderately active (1.5–2.9 KKD)</i>	53	16	8	6	–	14
<i>Somewhat active (0.5–1.4 KKD)</i>	53	16	–	6	–	13
<i>Sedentary (&lt;0.5 KKD)</i>	41	–	–	–	–	27

	<i>Community size</i>				
	<i>&lt; 1,000</i>	<i>1,000–9,999</i>	<i>10,000–74,999</i>	<i>75,000–299,999</i>	<i>≥ 300,000</i>
<i>Active (≥3 KKD<sup>1</sup>)</i>	9%	20%	21%	19%	32%
<i>Moderately active (1.5–2.9 KKD)</i>	8	19	24	19	30
<i>Somewhat active (0.5–1.4 KKD)</i>	11	26	22	17	24
<i>Sedentary (&lt;0.5 KKD)</i>	–	36	17	–	25

	<i>Family composition</i>								
	<i>Living with a partner</i>			<i>Widowed, divorced, separated</i>			<i>Never married</i>		
	<i>Total</i>	<i>With children</i>	<i>Without children</i>	<i>Total</i>	<i>With children</i>	<i>Without children</i>	<i>Total</i>	<i>With children</i>	<i>Without children</i>
<i>Active (≥3 KKD<sup>1</sup>)</i>	59%	28%	31%	9%	3%	6%	32%	3%	29%
<i>Moderately active (1.5–2.9 KKD)</i>	66	31	35	14	–	11	21	–	19
<i>Somewhat active (0.5–1.4 KKD)</i>	70	37	33	12	–	9	19	–	17
<i>Sedentary (&lt;0.5 KKD)</i>	60	20	40	21	–	18	19	–	15

1 Kilocalories/kilogram of body weight/day; an energy expenditure of 3 KKD is equivalent to walking one hour every day.

– Data unavailable because of insufficient sample size.