

Characteristics of Physically Active Smokers and Implications for Harm Reduction

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Recent evidence has suggested that physical activity could act as a potential tobacco harm-reduction strategy for smokers.¹ Although we have shown in previous work that physical activity fulfills several criteria that guide the development of potential tobacco harm-reduction strategies, skepticism remains regarding its practicality.¹ The majority of the North American population does not fulfill the current public health recommendations for physical activity.^{2,3} Because smokers have a tendency to participate in less physical activity compared with nonsmokers,^{4–6} it is unclear how practical it would be to promote physical activity as a harm-reduction strategy.

An additional concern associated with the adoption of physical activity as a potential harm-reduction strategy is the possibility that physical activity may unintentionally result in a delay in cessation. If smokers perceive physical activity as an effective strategy for reducing smoking-related morbidity and mortality, cessation attempts could be deferred or neglected.⁷ This would undermine the long-term goal of harm reduction: complete smoking cessation.⁸

To maximize the effectiveness of physical activity as a tobacco harm-reduction strategy, physical activity must be promoted and advocated to those smokers most likely to adopt and maintain it. If smokers have no interest in becoming physically active, any effort to promote physical activity would be ineffective. The success of public health interventions that promote physical activity among smokers will be dependent upon the ability of health professionals to identify and target those smokers likely to participate in physical activity on a regular basis.

If physical activity is to be regarded as an effective tobacco harm-reduction strategy, these concerns need to be addressed. Therefore, we sought to answer 3 specific questions: (1) What is the prevalence of physically active smokers within the smoking and general population? (2) Are physically active smokers more likely to attempt smoking cessation? (3)

Objectives. We sought to establish the prevalence of physical activity among smokers, whether or not physically active smokers were more likely to attempt cessation, and who these physically active smokers were.

Methods. We used logistic regression to contrast physically active and inactive smokers in a secondary data analysis of the Canadian Community Health Survey Cycle 1.1.

Results. Physically active smokers represented almost one quarter of the smoking population. Compared with physically inactive smokers, physically active smokers were more likely to have attempted cessation in the past year. Physically active smokers were more likely to be young, single, and men compared with their inactive counterparts. Income had no influence in distinguishing physically active and inactive smokers.

Conclusions. Skepticism persists regarding the practicality and potential risks of promoting physical activity as a harm-reduction strategy for tobacco use. We found that a modest proportion of the daily smoking population was physically active and that engagement in this behavior was related to greater cessation attempts. Interventions could be developed that target smokers who are likely to adopt physical activity. (*Am J Public Health.* 2008;98:925–931. doi:10.2105/AJPH.2007.120469)

Which demographic characteristics differentiate physically active smokers from physically inactive smokers? Some answers to these questions were provided by Ward et al.,⁹ who examined characteristics of highly physically active and less physically active smokers in a sample of military recruits. They concluded that highly physically active smokers were more likely to be young men who earned higher family incomes, consumed more fruits and vegetables, were less dependent on nicotine, and were more likely to achieve cessation for a minimum of 24 hours compared with less physically active smokers.

However, several limitations were identified in the study conducted by Ward et al. that may have influenced the results. Reliance on a sample of military recruits may have limited the generalizability of the results.⁹ Also, the assessment of physical activity levels by a single question may not have been as accurate as measuring frequency, duration, and intensity of specific physical activities. Thus, misclassification of physical activity levels may have occurred.⁹ We addressed these limitations by comparing physically active and inactive

smokers with a more detailed measure of physical activity and a nationally representative sample of Canadians to provide further insight into the role of physical activity as a tobacco harm-reduction strategy.

METHODS

Data Source

We used the Canadian Community Health Survey (CCHS) Cycle 1.1 (2000–2001), a large, nationally representative survey of Canadians conducted by Statistics Canada,¹⁰ to evaluate demographic characteristics and smoking behaviors among physically active and inactive smokers. Between September 2000 and November 2001, information was obtained from 131 535 individuals 12 years or older who lived in private residences in 136 health regions across 10 provinces and 3 territories in Canada.¹⁰ Canadians residing in remote areas of the country, Indian reserves, Crown Lands, Canadian military bases, or institutions were excluded from the survey.¹⁰ Informed consent was obtained from all participants.

Defining Variables

Using smoking status and energy expenditure variables, we developed 2 exclusive groups of individuals—physically active smokers and physically inactive smokers. Energy expenditure levels during leisure activities were classified in accordance with the Ontario Health Survey¹¹ and Campbell's Survey on Well-Being.¹² The physical activity components of the Ontario Health Survey and Campbell's Survey on Well-Being utilize self-reported measures to assess leisure-time physical activity levels. We determined energy expenditure levels by assessing the metabolic equivalent value, duration, and frequency of each activity performed in the prior 12 months.¹⁰

Individuals who expended a minimum of 12.6 kJ/kg/day and smoked daily were classified as physically active smokers; individuals who expended less than 6.3 kJ/kg/day and were daily smokers were considered physically inactive smokers. Individuals can experience cardiovascular benefits by expending 12.6 kJ/kg/day during physical activity.¹³ These cutoffs are similar to those used by Stephens et al.¹⁴ and Da Costa et al.¹⁵ Thus, these cutoffs were chosen to distinguish between active and inactive individuals. With the exception of the calculation of the prevalence of physically active smokers in the general population, occasional smokers and smokers who expended a moderate amount of energy during leisure activity (6.3–12.5 kJ/kg/day) were excluded from the analysis to simplify the interpretation of the results.

Smoking variables were evaluated among physically active and inactive smokers including the number of cigarettes smoked on a daily basis, the number of years the respondent had smoked, the age at which daily smoking was initiated, and whether the respondent had made a cessation attempt within the past year.

To examine demographic characteristics between physically active and inactive smokers, key demographic variables were selected from the CCHS Cycle 1.1 database. Demographic variables included gender, age of respondent (in years), marital status (married or common-law [reference category]; widowed, separated, or divorced; and single), education (less than secondary-school graduation [reference category], secondary-school graduation, some

postsecondary schooling, and postsecondary graduation), income adequacy (lowest income [reference category], lower-middle income, middle income, upper-middle income, highest income, and missing income), and race (White [reference category] or visible minority).¹⁰ Education was based on the highest level of education attained by each respondent, and income adequacy was categorized according to total household income and adjusted for the total number of individuals residing in the household.¹⁰

To account for nonresponse pertaining to income adequacy, a missing income variable was created and included in all multivariate analyses.

Statistical Analysis

With the Pearson χ^2 test, we compared categorical variables including gender, marital status, education, income adequacy, race, and cessation attempt over the past year between the physically active and inactive smokers. Differences between these 2 groups in age, the number of cigarettes smoked on a daily basis, the number of years the respondent had smoked, and the age of smoking initiation were examined with univariate linear regression so that adjustment for design effects could be conducted.

Logistic regression was employed to examine cessation attempt (yes or no) over the past year (odds ratios [ORs] and 99% confidence intervals [CIs] are reported). The model for cessation attempt was adjusted for marital status, education, income adequacy, race, number of cigarettes smoked per day, number of years smoking, age of smoking initiation, and physical activity. Because the correlation between age of the respondent and number of years smoked was high ($r=0.94$; $P<.01$), only the number of years smoked was included in the final model.

Logistic regression was also used to examine the association between each of the demographic characteristics and membership in the physically active versus physically inactive smoking group. A Chow test indicated that variable effects were significantly different for men and women in the cessation attempt and group membership models. As a result, the sample was split and separate models were run for each gender.

Because of the complex sampling strategy of the CCHS Cycle 1.1 survey, all analyses were bootstrapped with a set of replicate weights supplied by Statistics Canada. Stata 9 (StataCorp LP, College Station, TX) and WesVar 4.2 (Westat, Rockville, MD) were used for these analyses. Because of the substantial sample size of the CCHS Cycle 1.1, the α level for this research study was established at .01.

RESULTS

Demographic and Smoking Characteristics

In the CCHS Cycle 1.1 database, the weighted proportion of current daily smokers and occasional smokers were 21.5% and 4.5%, respectively. The “ever” smoked group represented 24.7% of the CCHS Cycle 1.1 database. The primary analysis incorporated 22 659 current daily smokers: 5441 physically active and 17 218 physically inactive. Weighted demographic characteristics and smoking behaviors of the sample are presented in Table 1. Table 2 shows the weighted percentages and mean scores for each of the demographic and smoking characteristics across the 2 smoking groups.

Notably, 22.57% of Canadian daily smokers were classified as physically active. Compared with physically inactive smokers, physically active smokers were more likely to be men and single. Education and income adequacy differed significantly between physically active and inactive smokers, but the differences appeared to be quite small. Furthermore, physically active smokers were, on average, 6 years younger than physically inactive smokers. Physically active smokers consumed fewer cigarettes on a daily basis, had smoked for a shorter duration, and had initiated smoking at a younger age compared with the inactive group.

Finally, a greater proportion of physically active smokers had tried to quit smoking compared with their inactive counterparts.

Past Year Cessation Attempts Among Physically Active and Inactive Smokers

In Table 3, several smoking behavior characteristics were shown to be significantly associated with past cessation attempt(s) among physically active and inactive smokers.

TABLE 1—Characteristics of Current Daily Smokers (n = 22 659): Canadian Community Health Survey Cycle 1.1, 2000–2001

Characteristic	Percentage or Mean (SD)
Gender	
Men	52.27
Women	47.73
Age, y	40.43 (14.94)
Marital status	
Married or common-law	53.90
Widowed, separated, or divorced	15.97
Single	30.13
Education	
Less than secondary-school graduation	31.93
Secondary-school graduation	23.16
Some postsecondary school	9.16
Postsecondary-school graduation	35.76
Income adequacy^a	
Lowest income	5.58
Lower-middle income	9.61
Middle income	22.96
Upper-middle income	32.47
Highest income	20.63
Missing income	8.75
Race	
White	90.98
Other	9.02
Smoking behaviors	
No. of cigarettes smoked daily	16.86 (9.27)
No. of years smoking	22.96 (14.36)
Age, y, initiated daily smoking	17.43 (4.95)
Cessation attempt	
Did not try to quit during the past year	60.43
Tried to quit during the past year	39.57

Note. Percentages and means are weighted because of data regulations imposed by Statistics Canada.
^aTotal household income adjusted for number of individuals residing in household.

Among men, the number of cigarettes smoked daily and the number of years smoking were significant predictors of cessation attempt, whereas the number of years smoking was significantly associated with attempted cessation among women. For men, our findings showed that with every additional cigarette smoked per day, the odds of making a

TABLE 2—Demographic and Smoking Characteristics of Physically Active and Physically Inactive Smokers: Canadian Community Health Survey Cycle 1.1, 2000–2001

	Physically Active Smokers	Physically Inactive Smokers
Total, no.	5 441	17 218
Individuals, %	22.57	77.43
Gender,^a %		
Men	57.53	50.74
Women	42.47	49.26
Age, ^a y, mean (SD)	35.81 (14.78)	41.78 (14.72)
Marital status,^a %		
Married or common-law	44.13	56.75
Widowed, separated, or divorced	12.48	16.99
Single	43.39	26.26
Education,^b %		
Less than secondary-school graduation	30.88	32.23
Secondary-school graduation	23.17	23.16
Some postsecondary school	10.33	8.81
Postsecondary-school graduation	35.62	35.80
Income adequacy,^{a,c} %		
Lowest income	6.36	5.35
Lower-middle income	9.07	9.77
Middle income	20.05	23.81
Upper-middle income	31.11	32.86
Highest income	23.51	19.79
Missing income	9.90	8.42
Race, %		
White	90.96	90.99
Minority	9.04	9.01
Smoking behaviors, mean (SD)		
No. of cigarettes smoked daily ^a	15.17 (8.46)	17.37 (9.43)
No. of years smoking ^a	18.63 (13.94)	24.22 (14.22)
Age, y, initiated daily smoking ^a	17.12 (4.65)	17.51 (5.03)
Cessation attempt,^a %		
Did not try to quit during the past year	53.21	62.58
Tried to quit during the past year	46.79	37.42
Physical activity levels, ^a mean kJ/kg/day (SD)	20.46 (9.62)	1.97 (1.88)

^aP ≤ .001.

^bP ≤ .01.

^cTotal household income adjusted for number of individuals residing in household.

cessation attempt within the past year was reduced by 2%. Furthermore, among men and women, for every additional year of smoking, the odds of making a cessation attempt within the past year decreased by 1%. Even after adjustment for marital status, education, income adequacy, race, number of cigarettes smoked per day, number of years smoked, and age of smoking initiation, male and female physically active smokers

were 36% and 37% more likely to have attempted cessation within the past year, respectively, compared with physically inactive smokers.

Comparisons of Physically Active and Inactive Smokers

In the first part of the analysis, we ran a model that included both male and female smokers together, along with other

TABLE 3—Adjusted Odds Ratios (ORs; With 99% Confidence Intervals [CIs]) of Demographic, Smoking, and Physical Activity Characteristics for Cessation Attempt, by Gender: Canadian Community Health Survey Cycle 1.1, 2000–2001

	Men (n = 4594), OR (99% CI)	Women (n = 4796), OR (99% CI)
Marital status		
Married or common-law (Ref)	1.00	1.00
Widowed, separated, or divorced	1.07 (0.75, 1.52)	0.93 (0.69, 1.25)
Single	0.85 (0.62, 1.17)	1.20 (0.85, 1.69)
Education		
Less than secondary-school graduation (Ref)	1.00	1.00
Secondary-school graduation	0.98 (0.69, 1.39)	0.74 (0.53, 1.04)
Some postsecondary school	1.01 (0.61, 1.67)	0.73 (0.46, 1.16)
Postsecondary-school graduation	1.17 (0.87, 1.59)	0.89 (0.65, 1.20)
Income adequacy^a		
Lowest income (Ref)	1.00	1.00
Lower-middle income	0.89 (0.46, 1.75)	0.93 (0.53, 1.63)
Middle income	1.14 (0.62, 2.12)	0.79 (0.46, 1.34)
Upper-middle income	1.03 (0.56, 1.89)	0.72 (0.43, 1.22)
Highest income	0.91 (0.49, 1.68)	0.69 (0.38, 1.23)
Missing income	0.95 (0.46, 1.93)	0.92 (0.49, 1.70)
Race		
White (Ref)	1.00	1.00
Minority	1.07 (0.68, 1.68)	0.61 (0.35, 1.05)
Smoking behaviors		
No. of cigarettes smoked daily	0.98** (0.96, 0.99)	0.99 (0.97, 1.01)
No. of years smoking	0.99** (0.98, 1.00)	0.99* (0.98, 1.00)
Age initiated daily smoking	0.99 (0.96, 1.02)	0.98 (0.97, 1.00)
Physical activity		
Sedentary (Ref)	1.00	1.00
Physically active	1.36* (1.04, 1.78)	1.37* (1.05, 1.79)

Notes. Adjusted for marital status, education, income adequacy, race, number of cigarettes smoked daily, number of years smoking, and age initiated daily smoking.

^aTotal household income adjusted for number of individuals residing in household.

* $P \leq .01$; ** $P \leq .001$.

quarter (22.57%) of the total daily smoking population. Although comparison is complicated by sampling differences, this percentage is higher than the 16% observed by Ward et al.⁹ but less than the 30% of smokers in the “action/maintenance” stage of physical activity reported by King et al.¹⁶ On average, physically active smokers expended 20.5 kJ/kg/day. This exceeds the 12.6 kJ/kg/day cutoff we used to define active individuals and suggests that these physically active smokers could potentially experience some health benefits through physical activity.¹⁷

Concern over whether smokers will actually adopt physical activity is justifiable. Because it remains a challenge to convince and motivate the general population to participate in leisure-time physical activity, skepticism remains as to whether smokers will actually engage in regular leisure-time physical activity. The finding that 22.57% of the daily smoking population participated in leisure-time physical activity suggest that any concerns regarding the practicality of utilizing physical activity as a tobacco harm-reduction strategy are to some extent unwarranted. This finding demonstrates that nearly one quarter of the daily smoking population possessed the motivation and capacity to make a deliberate effort to regularly participate in leisure-time physical activity.

Although we have concluded that a modest proportion of the daily smoking population is physically active, because of the cross-sectional design of this study, we were unable to determine whether initially sedentary smokers will adopt and maintain physical activity. In a randomized controlled trial, only 10% of initially sedentary female smokers were able to adhere with regular vigorous exercise at a 12-month follow-up.¹⁸ Recent research consistently demonstrates that increases in fitness or activity levels at the end of supervised exercise treatment are not sustained at 12 months.^{19,20} However, it is unclear whether initially sedentary smokers would be successful in adopting and maintaining physical activity in an unsupervised environment.¹⁸ Thus, the practicality of whether smokers will maintain physical activity remains a concern that should be addressed through future longitudinal or randomized studies.

demographic factors; the results of this analysis revealed that men were more likely to be physically active (OR=1.28; 99% CI=1.14, 1.44; results not shown). Next, we tested for gender-specific effects (interactions) between gender and each of the other covariates in the model. As previously mentioned, the Chow test revealed significantly different variable effects between men and women. Thus, the remaining analysis for group membership was split and separate models were run for men and women. As illustrated in Table 4, physically active smokers were younger (men: OR=0.97 [99% CI=0.97, 0.98]; women: OR=0.98 [99% CI=0.97, 0.99]) and more likely to be single (men: OR=1.57 [99%

CI=1.29, 1.91]; women: OR=1.44 [99% CI=1.14, 1.80]). Among both men and women, education, income adequacy, and race did not distinguish physically active smokers from physically inactive smokers.

DISCUSSION

Prevalence of Physically Active Smokers

Physically active smokers represented only a small proportion (3.92%) of the general Canadian population. This was expected because several studies have documented lower levels of physical activity participation among smokers compared with nonsmokers. However, this proportion represented almost one

TABLE 4—Adjusted Odds Ratios (99% Confidence Intervals) for Demographic Characteristics Comparing Male and Female Physically Active Smokers With Physically Inactive Smokers: Canadian Community Health Survey Cycle 1.1, 2000–2001

	Men (n = 10 802)	Women (n = 11 411)
Age	0.97** (0.97, 0.98)	0.98** (0.97, 0.99)
Marital status		
Married or common-law (Ref)	1.00	1.00
Widowed, separated, or divorced	1.27 (0.99, 1.64)	1.11 (0.88, 1.39)
Single	1.57** (1.29, 1.91)	1.44** (1.14, 1.80)
Education		
Less than secondary-school graduation (Ref)	1.00	1.00
Secondary-school graduation	0.92 (0.72, 1.17)	1.14 (0.89, 1.45)
Some postsecondary school	0.95 (0.67, 1.35)	1.31 (0.95, 1.81)
Postsecondary-school graduation	1.00 (0.80, 1.25)	1.19 (0.97, 1.48)
Income adequacy ^a		
Lowest income (Ref)	1.00	1.00
Lower-middle income	0.83 (0.53, 1.30)	0.85 (0.58, 1.24)
Middle income	0.70 (0.47, 1.03)	0.80 (0.56, 1.16)
Upper-middle income	0.71 (0.49, 1.04)	0.98 (0.69, 1.39)
Highest income	0.95 (0.63, 1.42)	1.07 (0.73, 1.58)
Missing income	0.78 (0.50, 1.21)	1.20 (0.77, 1.87)
Race		
White (Ref)	1.00	1.00
Minority	0.77 (0.57, 1.06)	1.07 (0.74, 1.55)

^aTotal household income adjusted for number of individuals residing in household.

** $P \leq .001$.

Physically Active Smokers and Attempted Cessation

Ward et al.⁹ found that highly physically active smokers exhibited lower nicotine dependence and, thus, could be more susceptible to achieving cessation. Lower levels of nicotine dependence were also observed in our study: physically active smokers had smoked for a shorter duration and smoked fewer cigarettes per day.

Furthermore, in our study, measures of nicotine dependence including the number of cigarettes smoked per day and the number of years as smokers were significant predictors of cessation attempt. We anticipated significant inverse associations between the number of cigarettes smoked per day and cessation attempt as well as between the number of years smoking and cessation attempt. A nonsignificant inverse relationship was observed between age of smoking initiation and attempted cessation. This association was unexpected because it has been shown that female smokers attempting cessation were significantly

younger compared with female smokers who did not attempt to quit smoking.²¹ Of great importance, we observed a significant increase in cessation attempts made by physically active male and female smokers. After adjusting for demographic and smoking behavior covariates, we observed more than a 35% greater likelihood of attempting cessation among physically active smokers compared with physically inactive smokers.

Given that differences in smoking duration can be explained by the finding that physically active smokers were, on average, 6 years younger than physically inactive smokers, one may hypothesize that after an additional 6 years, a transition may occur in which physically active smokers become physically inactive smokers. Certainly, research confirms that levels of physical activity generally decline with age.²² If a transition in physical activity levels is observed among smokers, it further emphasizes the importance of targeting and identifying physically active smokers early in life. Unfortunately, because of the

cross-sectional design of this study, we were unable to address this question. Again, longitudinal studies would be more appropriate in determining whether this transition between physical activity levels exists.

Advocating physical activity as a tobacco harm-reduction strategy could produce several unexpected negative health risks because smokers may choose to continue to smoke rather than attempt to achieve cessation. We have shown that physically active smokers were significantly more likely to attempt cessation compared with their inactive counterparts. Therefore, we believe that we have addressed this concern to some extent. We were unable to determine whether smokers who were physically active delayed or postponed actual cessation. Prospective studies are required to confirm the potential interrelationships of multiple health behaviors and behavior change that may inform interventions that have impacts on multiple risk behaviors.¹⁶

Demographic Characteristics of Physically Active and Inactive Smokers

In agreement with the results presented by Ward et al.,⁹ we demonstrated that physically active smokers were more likely to be young, male, and single. Previous epidemiological research examining correlates of physical activity within the general population has demonstrated similar results.^{23–25} Thus, the associations between demographic characteristics, gender, age, and marital status, and physical activity among smokers appear to parallel those characteristics that predict physical activity in the general population.

Within the general population, several studies have concluded that both education and race were significantly associated with a physically active lifestyle.^{24,26,27} In our sample of current daily smokers, we were unable to detect significant relationships between physical activity and education or physical activity and race after multivariate adjustment. It is uncertain why education and race were associated with physical activity in the general population but not in current daily smokers. No such associations were observed by Ward et al.⁹

Surprisingly, income adequacy was not a strong predictor of physical activity. Although our results were inconsistent with the findings presented by Ward et al.,⁹ who concluded that

highly physically active smokers had greater family incomes compared with less active smokers, others have also been unable to find a strong independent association between household income and leisure-time exercise within the general population.²⁸ This discrepancy in income could be attributed to the method of categorizing and defining income. Ward et al.⁹ categorized income as either low (<US\$50 000) or high (≥US\$50 000), whereas we used 6 categories to describe income. Thus, a difference in the classification of individuals could explain the discrepancy in the findings for income. Furthermore, we examined income adequacy, which was adjusted for household size, as opposed to total family income on its own. Family income, as defined by Ward et al.⁹ did not take into consideration the number of individuals residing in the household. This may partially explain the inconsistencies between studies.

The results of this study demonstrated that physically active smokers represented a unique group of individuals who did not resemble physically inactive smokers. Demographic characteristics appeared to be differentiated by gender, age, and marital status. The recognition of these demographic characteristics could provide an immediate and straightforward approach that health professionals can utilize to identify smokers who are most likely to participate in physical activity and, thus, be more likely to attempt cessation. Further research should examine modifiable correlates of physical activity such as self-efficacy, barriers, perceived competence, and attitudes.

Strengths and Limitations

By using the CCHS Cycle 1.1 database, we were able to incorporate a nationally representative sample of more than 22 000 Canadian smokers, 5441 of whom were physically active. Greater generalizability was also achieved through the use of the CCHS Cycle 1.1 database as the response rate of the survey approached 85%.¹⁰ Finally, physical activity levels were calculated with a formula that incorporated the duration, frequency, and the metabolic equivalent value of specific leisure activities. This method of assessing physical activity levels is more accurate and valid compared with that in existing literature

in which physical activity levels have been evaluated with a single question.

However, the reliance on self-report for both physical activity and tobacco use is a significant limitation. Although some misclassification in physical activity and smoking behavior was expected, scientific evidence has suggested self-reported measures are appropriate and valid techniques to assess physical activity levels²⁹ as well as tobacco use³⁰ at the population level. Additionally, physical activity was measured exclusively on the basis of leisure-time activity, and other forms of activity including occupational and household activity levels were not assessed. When occupational and household activity levels are neglected, an accurate representation of physical activity levels may not be possible and misclassification of activity levels may occur. Occupational and household activity levels were unavailable in the CCHS Cycle 1.1 database and, thus, could not be assessed in our study. Consequently, we were likely to have underestimated the proportion of smokers who could be classified as physically active in terms of total energy expenditure and this underestimation may have masked important differences on the basis of occupation or social class. Such limitations need to be considered in light of the strengths of our study.

Conclusions

Previous literature has suggested that physical activity could act as a potential tobacco harm-reduction strategy for smokers currently unable or unwilling to achieve cessation.¹ However, for physical activity to be considered an effective harm-reduction strategy, several concerns need to be addressed including the practicality of physical activity as a tobacco harm-reduction strategy and the extent to which physical activity may delay cessation attempts. We have shown that physical activity is a feasible option, with nearly one quarter of the smoking population engaging in recommended levels of physical activity. Furthermore, physically active smokers had a greater likelihood of attempting cessation (see also Derby et al.²¹). Finally, our results demonstrated that physically active smokers represent a unique group of individuals who do not resemble physically inactive smokers. Prospective research that examines multiple

behavior change may provide health professionals with a better understanding of how to promote smoking cessation while modifying other important risk factors such as physical inactivity. ■

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Contributions

W.K. deRuiter originated the research study, assisted with the statistical analysis, and was the primary writer of the article. G. Faulkner originated the research study as well as supervised the study. J. Cairney supervised the study and assisted with the statistical analysis. S. Veldhuizen performed the statistical analysis. All authors contributed to the interpretation of the results and in the writing of the article.

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Human Participant Protection

Informed consent was obtained from all participants.

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