Occupational Physical Activity and Body Mass Index (BMI) Among Canadian Adults: Does Physical Activity at Work Help to Explain the Socio-economic Patterning of Body Weight?

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ABSTRACT

Background: The behavioural and socio-cultural processes underlying the association between socio-economic position (SEP) and body mass index (BMI) remain unclear. Occupational physical activity (OPA) is one plausible explanatory variable that has not been previously considered.

Objectives: 1) To examine the association between OPA and BMI, and 2) to examine whether OPA mediates the SEP-BMI association, in a Canadian population-based sample.

Methods: This cross-sectional study was based on secondary analysis of the 2008 Canadian Community Health Survey data, focusing on adults (age 25-64) working at a job or business (men, $n=1,036$; women, $n=936$). BMI was based on measured height and weight and we derived a novel indicator of OPA from the National Occupational Classification Career Handbook. Our analytic technique was ordinary least squares regression, adjusting for a range of socio-demographic, health and behavioural covariates.

Results: OPA was marginally associated with BMI in women, such that women with medium levels of OPA tended to be lighter than women with low levels of OPA, in adjusted models. No associations between OPA and BMI were detected for males. Baron and Kenny's (1986) three conditions for testing mediation were not satisfied, and thus we were unable to proceed with testing OPA as a mediator.

Conclusions: Notwithstanding the small effects observed in women, overall the associations between OPA and BMI were neither clear nor strong, which could reflect conceptual and/or methodological reasons. Future research on this topic might incorporate other plausible explanatory variables (e.g., job-related psychosocial stress) and adopt a prospective design.

Key words: Body mass index; occupation; physical activity; Canada

La traduction du résumé se trouve à la fin de l'article.

Can J Public Health 2011;102(3):169-73.

Canada is one of the many industrialized nations that have recorded an increasing prevalence of overweight and obesity. The prevalence of adult obesity (i.e., BMI ≥ 30 kg/m²) in Canada has risen from 13.8% in 1978/79 to 23.1% in 2004.¹ Obesity has been associated with a broad spectrum of physical, psychological, social and economic consequences.²⁻⁴

Body mass index (BMI) and obesity are associated with socio-economic position (SEP),⁵ which refers to one's social and economic position in society.⁶ The nature of this association varies by sex and by country, being predominantly inverse for women in the developed world (i.e., higher SEP, lower BMI) and less consistent for men in these countries.⁵ The association appears to further vary by indicator or aspect of SEP;¹ for example, the *education*-BMI association is predominantly inverse (particularly for women), while some studies have shown a positive *income*-BMI association for men but not women.^{5,7}

Some Canadian studies have examined possible mediators of the associations between SEP and BMI/obesity. For example, both Kuhle and Veugelaers⁷ and Ward and colleagues⁸ reported that leisure time physical activity (LTPA) and fruit and vegetable consumption helped to explain the SEP-obesity association among Canadian adults. Research suggests that LTPA does not fully capture one's total energy expenditure^{9,10} and thus, the amount of physical activity accumulated in other life domains should also be considered.

Although recent technological advancements and automation have reduced the amount of energy expenditure for many occupa-

tions,¹¹ it is nonetheless important to consider occupational physical activity (OPA) because individuals spend a large portion of their waking hours at work. It is plausible that, for example, the positive income-BMI association in men referred to above^{5,7} reflects, in part, that higher-income men are less active at work.

We located ten population-based studies that investigated OPA in relation to BMI.¹²⁻²¹ Findings were varied; however, among the six studies that used measured (versus self-reported) height and weight, four reported an inverse OPA-BMI association¹²⁻¹⁵ (with the exception of a positive association for women in the study by Barengo et al.¹³) and two found no significant association.^{16,17} Importantly, in most (i.e., nine of ten) studies, OPA was based on employee self-report, which is prone to reporting biases, and is thus a limitation of existing research.

To our knowledge, there are no Canadian population-based studies that examine OPA in relation to BMI. Thus, it is not currently

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Acknowledgements: This work stems from Amanda Barberio's honours thesis project, submitted in partial fulfillment of the degree of Bachelor of Health Sciences Honours at the University of Calgary and successfully defended in April 2010. Lindsay McLaren is supported by a Population Health Investigator Award from Alberta Innovates – Health Solutions (formerly the Alberta Heritage Foundation for Medical Research). We thank Dr. Jenny Godley for helpful comments on an earlier version of this manuscript.

Conflict of Interest: None to declare.

Table 1. Weighted Descriptive Statistics for Study Sample, Stratified by Sex

Variable		Males (n=1,036) Mean (SD) or n (%)	Females (n=936) Mean (SD) or n (%)
Body mass index (BMI) (kg/m ²)		27.7 (4.5)	26.8 (6.4)
Occupational physical activity (OPA)	Low	273 (26.3%)	415 (44.3%)
	Medium	425 (41.0%)	363 (38.8%)
	High	338 (32.7%)	158 (16.9%)
Income adequacy	Lowest	110 (10.6%)	95 (10.2%)
	Low-middle	283 (27.3%)	277 (29.6%)
	High-middle	216 (20.8%)	236 (25.2%)
	Highest	427 (41.2%)	328 (35.1%)
Education	Less than secondary	115 (11.1%)	48 (5.1%)
	Secondary school graduate	152 (14.7%)	161 (17.2%)
	Some post-secondary	62 (6.0%)	63 (6.7%)
	Post-secondary graduate	707 (68.2%)	664 (71.0%)
Alcohol consumption	Regular	804 (77.6%)	536 (57.3%)
	Occasional	104 (10.0%)	236 (25.2%)
Smoking status	Never	128 (12.3%)	164 (17.5%)
	Current	298 (28.7%)	186 (19.9%)
	Former	421 (40.7%)	367 (39.2%)
Fruit and vegetable consumption	Never	317 (30.6%)	383 (40.9%)
	Eats fruit and vegetables <5 times/day	661 (63.8%)	485 (51.9%)
Leisure-time physical activity (LTPA)	Eats fruit and vegetables ≥5 times/day	375 (36.2%)	451 (48.1%)
	Inactive	546 (52.7%)	534 (57.0%)
	Moderately Active	267 (25.8%)	225 (24.1%)
Hours Worked (past week)	Active	223 (21.5%)	177 (18.9%)
	0 to 35 hrs/week	126 (12.2%)	387 (41.3%)
	36 to 40 hrs/week	431 (41.6%)	383 (41.0%)
	41+ hrs/week	479 (46.2%)	166 (17.7%)
Birth place	Born outside of Canada	274 (26.5%)	249 (26.6%)
	Born in Canada	762 (73.5%)	687 (73.4%)
Self-rated health	Poor or fair	59 (5.7%)	78 (8.3%)
	Good	318 (30.7%)	233 (24.9%)
	Very good or excellent	659 (63.6%)	625 (66.8%)
Chronic disease diagnosis	Diagnosed with one or more chronic diseases	220 (21.2%)	239 (25.6%)
	Not diagnosed with any chronic diseases	816 (78.8%)	697 (74.4%)

Note: Chronic diseases considered were: arthritis, asthma, bronchitis, cancer, diabetes and heart disease.

known in Canada whether, or the extent to which: a) OPA is associated with BMI; and b) OPA mediates the association between SEP (income, education) and BMI, among Canadian working adults. Our aim is to fill these knowledge gaps.

METHODS

We analyzed microdata from the 2008 Canadian Community Health Survey (CCHS), accessed at the Prairie Regional Research Data Centre. Full details about the 2008 CCHS are available online at www.statcan.gc.ca, but briefly, the CCHS is a nationally representative, cross-sectional survey that collects health information for the Canadian population age 12 and over. The 2008 CCHS covers approximately 98% of the population in the provinces, and approximately 71-97% of the population living in the Territories. The vast majority (99%) of the sample was drawn using a multi-stage stratified cluster design and the overall survey response rate was 77.6%.

We focused on respondents 25-64 years of age who indicated working at a job or business in the previous week. Use of the 2008 CCHS is ideal for this research for two reasons: first, measured height and weight (used to calculate BMI) was collected by a trained interviewer using validated instruments for a subsample of 4,688 respondents (of whom 2,841 were age 25-64). The target population for this subsample was the same as that of the full CCHS survey with the exception of the Territories, according to the 2008 CCHS User Guide. Second, detailed occupational data were available for 2,550 respondents who reported working at a job or business (of whom 2,135 were age 25-64), and this information was used to assign each respondent an occupational code (of which there are 520) based on the National Occupational Classification for Statistics 2006 (NOC-S) system.

We used a novel approach for characterizing OPA based on information from the NOC Career Handbook (<http://www5.hrsdc.gc.ca/NOC/English/CH/2001/Welcome.aspx>). For each occupation indicated by a NOC 4-digit unit group, the Handbook provides descriptive information about the job derived through systematic, field-based research by the former Occupational and Career Information Branch of Human Resources Development Canada. We used information from three items describing each occupation's physical exertion: body position, limb coordination, and strength. This classification scheme has considerable face validity; for example, a firefighter has the highest scores in all three dimensions whereas a university professor has the lowest scores in all three dimensions. We generated an overall score for OPA for each CCHS respondent by summing the scores from the three dimensions of physical activity and dividing into three approximately equal-sized groups (high, medium, low). To further explore the validity of our OPA measure, we located a self-reported work physical exertion variable that was present as optional content for the main sample of the 2008 CCHS ("WST_408"). Among adults age 25-64 in the main 2008 CCHS sample for whom both occupational physical activity variables were available, we computed the correlation coefficient between the two variables.

Other variables were: highest level of education achieved by the respondent and the respondent's income adequacy group* (these were used as indicators of SEP); socio-demographic covariates (age; hours worked during past week; birth place); behaviours (smoking status; alcohol consumption; LTPA; fruit/vegetable consumption) and health status variables (self-rated health; chronic disease diagnosis). These covariates have elsewhere shown associations with obesity.²²⁻²⁵

* Income adequacy is a derived Statistics Canada variable that takes into account annual household income and the weighted size of the household.

Table 2. Results of Ordinary Least Squares Regression Analysis for Males (n=1,036) and Females (n=936), with BMI (continuous variable), Regressed on Occupational Physical Activity (OPA), Socio-economic Variables (income adequacy and education) and Covariates

Predictor Variable	Model A – Males (unadjusted) Coefficient (95% CI)	Model B – Males (fully adjusted) Coefficient (95% CI)	Model A – Females (unadjusted) Coefficient (95% CI)	Model B – Females (fully adjusted) Coefficient (95% CI)
Occupational physical activity (OPA) (Reference: Low)				
Medium	-0.05 (-1.02 to 0.91)	0.23 (-0.66 to 1.13)	-0.83 (-2.00 to 0.34)	-1.09 (-2.24 to 0.07)†
High	-0.19 (-1.17 to 0.80)	-0.01 (-1.01 to 0.98)	1.08 (-0.62 to 2.79)	0.72 (-0.98 to 2.41)
Income adequacy (Reference: Lowest)				
Middle-low	1.03 (-0.53 to 2.59)	0.74 (-0.66 to 2.15)	-0.33 (-1.98 to 1.32)	-0.07 (-1.79 to 1.65)
Middle-high	1.75 (0.14 to 3.36)*	1.00 (-0.47 to 2.48)	0.51 (-1.41 to 2.43)	0.37 (-1.65 to 2.38)
Highest	1.98 (0.39 to 3.57)**	1.13 (-0.32 to 2.57)	-1.19 (-2.86 to 0.48)	-1.09 (-3.00 to 0.83)
Education (Reference: Less than secondary)				
Secondary school graduate	0.72 (-0.56 to 2.01)	0.62 (-0.58 to 1.81)	-0.40 (-2.45 to 1.65)	-0.67 (-2.79 to 1.45)
Some post-secondary	2.29 (0.60 to 3.99)**	1.74 (0.13 to 3.34)*	-0.74 (-2.85 to 1.38)	-0.93 (-3.15 to 1.29)
Post-secondary graduate	0.59 (-0.33 to 1.52)	0.78 (-0.18 to 1.74)	-1.76 (-3.17 to 0.34)*	-1.45 (-3.25 to 0.35)
Alcohol consumption (Reference: Regular)				
Occasional	0.18 (-1.17 to 1.54)	0.60 (-0.66 to 1.86)	-0.03 (-1.35 to 1.30)	-0.01 (-1.22 to 1.21)
Never	-0.29 (-1.33 to 0.76)	0.23 (-0.75 to 1.21)	-0.55 (-1.82 to 0.73)	0.22 (-1.11 to 1.56)
Smoking status (Reference: Current)				
Former	1.20 (0.25 to 2.16)**	1.31 (0.52 to 2.09)**	0.98 (-0.38 to 2.34)	1.65 (0.27 to 3.03)*
Never	0.51 (-0.54 to 1.57)	1.13 (0.22 to 2.04)*	-0.62 (-1.87 to 0.64)	0.87 (-0.57 to 2.32)
Fruit and vegetable consumption (Reference: Eats fruit and vegetables <5 times/day)				
Eats fruit and vegetables ≥5 times/day	-0.34 (-1.11 to 0.43)	-0.20 (-0.90 to 0.51)	0.17 (-0.95 to 1.29)	0.92 (-0.17 to 2.01)†
Leisure time physical activity (LTPA) (Reference: Inactive)				
Moderately active	-0.56 (-1.38 to 0.27)	-0.68 (-1.45 to 0.09) †	-0.82 (-2.06 to 0.41)	-0.87 (-2.05 to 0.32)
Active	-0.95 (-2.05 to 0.16)†	-0.93 (-1.93 to 0.08) †	-1.19 (-2.72 to 0.35)	-1.14 (-2.67 to 0.39)
Hours worked/week (Reference: 0 to 35 hrs/week)				
36 to 40 hrs/week	0.31 (-0.89 to 1.50)	0.57 (-0.45 to 1.59)	-0.08 (-1.31 to 1.16)	0.48 (-0.68 to 1.63)
41+ hrs/week	0.92 (-0.32 to 2.16)	0.93 (-0.10 to 1.96) †	0.03 (-1.47 to 1.54)	0.73 (-0.68 to 2.14)
Birth place (Reference: Born outside of Canada)				
Born in Canada	2.59 (1.81 to 3.38)**	2.49 (1.66 to 3.32)**	2.28 (1.20 to 3.36)**	2.76 (1.64 to 3.87)**
Self-rated health (Reference: Poor or fair)				
Good	-1.46 (-3.88 to 0.96)	-1.51 (-3.86 to 0.85)	0.61 (-2.02 to 3.24)	1.06 (-1.38 to 3.49)
Very good or excellent	-2.12 (-4.45 to 0.21) †	-2.11 (-4.51 to 0.29) †	-1.27 (-3.67 to 1.13)	-0.62 (-3.01 to 1.78)
Chronic disease diagnosis (Reference: Not diagnosed with any chronic diseases)				
Diagnosed with one or more chronic diseases	1.13 (0.22 to 2.05)*	0.90 (0.07 to 1.72)*	2.40 (0.86 to 3.93)**	2.15 (0.49 to 3.81)**

** p<0.01; * p<0.05; † p<0.10

Analyses were performed using STATA software (version 11), and appropriate sampling weights were applied as directed by Statistics Canada. Ordinary least squares (OLS) regression was used. To examine the association between OPA and BMI (first research objective), we ran an unadjusted model in which BMI was regressed on each variable individually and a fully adjusted model in which BMI was simultaneously regressed on OPA, income adequacy, education, and all covariates. To test mediation (our second research objective), we followed the procedure outlined by Baron and Kenny (1986), see Figure 1.²⁶ In our case, the “independent variable” is SEP (i.e., income adequacy or education), the “mediator” is OPA, and the “outcome variable” is BMI. According to Baron and Kenny, a variable may function as a mediator when paths “a”, “b”, and “c” exist (i.e., statistically significant unadjusted association). Finally, when the mediator (OPA) is adjusted for, path “c” (SEP-BMI association) must be reduced, ideally to non-significance.

RESULTS

Our sample included n=1,972 (n=1,036 males and n=936 females) respondents age 25-64 who had complete data on all variables. Please refer to Table 1 for the descriptive statistics for our sample. A total of 163 (7.6%) eligible respondents were excluded due to missing data on one or more variables used in this study. Excluded versus included respondents were significantly (at p<0.05) heavier and more likely to be female, but did not differ on any other study variables. We observed a statistically significant positive correlation between our NOC-based OPA variable and the “WST_408” variable among the main 2008 CCHS sample (men: Pearson’s r=0.52,

Figure 1. Diagram of conditions required for testing mediation Reproduced from Baron & Kenny,²⁶ no permission required.

p<0.001, n=1,436; women: Pearson’s r=0.50, p<0.01, n=1,365), thus supporting the validity of our constructed OPA variable.

Table 2 presents the results of the OLS regression models (unadjusted and adjusted) for both males and females. OPA was not associated with BMI in the unadjusted models for either males or females (Model A). In the fully adjusted model for females (Model B), a marginal effect was observed whereby those with a medium level of OPA were marginally lighter than those with a low level of OPA (coef.= -1.09, 95% CI -2.24 to 0.07, p=0.07). For males in the fully adjusted model, the effect of OPA remained non-significant.

In terms of testing mediation (Figure 1), we confirmed that conditions “a”* (SEP-OPA) and “c” (SEP-BMI) (see Table 1) were fulfilled for both men (income adequacy) and women (education); how-

* Statistically significant association between SEP and OPA for men (e.g., highest income adequacy: coefficient= -1.17, 95% CI 1.83 to -0.52, p=0.00; highest education [post-sec grad] coef.= -1.77, 95% CI -2.32 to -1.23, p=0.00) and women (e.g., highest income adequacy: coefficient= -2.06, 95% CI -2.66 to -1.46, p=0.00; highest education [post-sec grad] coef.= -0.89, 95% CI -1.65 to -0.14, p=0.02).

ever, condition “b” (OPA-BMI) was not satisfied in any case, and thus, we did not proceed with testing mediation.

DISCUSSION

Aside from a small effect observed in women, BMI was not found to be clearly or strongly related to OPA. As such, our findings differ from four of six reasonably comparable studies identified in the literature¹²⁻¹⁵ that reported a significant inverse association.

Both conceptual and methodological explanations must be considered to account for our non-significant findings. Perhaps there really is no clear association between OPA and BMI in Canadian adults working at a job or business, and our methods accurately captured this. Alternatively, perhaps a weak association between OPA and BMI exists, but it is overwhelmed by other aspects of lifestyle. For example, it is possible that the greater energy expenditure of individuals working at a highly active occupation may be counterbalanced by a higher caloric consumption. Giving support to this notion, a 1998 study found that individuals whose occupations required a greater amount of OPA reported a higher caloric intake than their counterparts whose occupations required a lower amount of OPA.²⁷ To the extent that an individual's caloric intake exceeds their expenditure, caloric intake may be a more important predictor of BMI/obesity than OPA, even among individuals who are highly active at work.

The possibility that certain methodological flaws masked significant associations between OPA and BMI cannot be ruled out. One example is that an individual's BMI (the method we used to capture one's weight status) does not provide an accurate indication of their fat mass versus their fat-free mass.²⁸ This could result in a misclassification of BMI for a small number of individuals (e.g., those who are muscular because of their OPA, and who may thus be misclassified as overweight/obese) which might dilute our association of interest. Furthermore, it is possible that our measure of OPA failed to capture physical exertion at work with the same degree of accuracy as, for example, an electronic device to measure calorie expenditure (although this approach could be expensive and impractical for large samples). However, the high and statistically significant correlation between our OPA measure and a separate self-report variable on work physical exertion, coupled with the ethnographic approach used to gather the NOC data, suggests reasonable validity of our variable.

We explored two other possible reasons for not detecting a clear association between OPA and BMI, in a *post hoc* manner. First, it is possible that, by combining three dimensions of OPA (body position, limb coordination, and strength) into an overall index, we may have missed an important effect of any one dimension on its own. We tested this possibility by regressing BMI on each OPA dimension separately, adjusting for covariates. We observed two marginally significant associations in adjusted models: for men, a negative association between the highest category of strength and BMI (coef. = -0.87, 95% CI -0.18 to 0.03, $p=0.058$), and for women, a negative association between the third highest (of four) category of body position and BMI (coef. = -1.03, 95% CI -2.18 to 0.13, $p=0.08$). These marginal findings suggest that we did not miss important effects by creating an overall score for OPA, though they raise interesting ideas about gender differences in dimensions of importance (strength, e.g., heavy lifting, for men; body position, e.g., combination of sitting, standing, walking, for women) to be pursued in future research.

Second, it is possible that our sample size, though reasonably large, rendered our analysis under-powered to detect an OPA-BMI association if one exists. A *post hoc* power calculation using $\alpha = 0.05$, current sample size ($n=936$ for women; $n=1,036$ for men), and mean (SD) values of BMI from our own data indicated that we had limited (<40%) power to detect a mean difference in BMI of 0.5 kg/m² between low and high OPA groups. To have 80% (acceptable) power to detect such a difference, a sample size of 1,570 in each group (high and low OPA) would be needed. Thus, we reran analyses using the main sample of the 2008 CCHS, for which a much larger sample was available ($n=11,628$ for women; $n=12,057$ for men), but for which BMI was computed from self-reported rather than measured height and weight. Towards improving the BMI variable, we applied the correction factor outlined by Connor-Gorber et al.^{29*} For women, main sample results were generally consistent with the subsample results: high OPA was positively associated with BMI (coefficient = 0.58, 95% CI 0.13 to 1.02, $p<0.01$), medium OPA was not significantly associated with BMI but the coefficient was negative in direction (coefficient = -0.12, 95% CI -0.46 to 0.23, NS), in adjusted models. For men, in contrast to the subsample findings, the main sample findings indicated a positive association between high OPA and BMI (coefficient = 0.33, 95% CI 0.00 to 0.68, $p<0.05$) and between medium OPA and BMI (coefficient = 0.36, 95% CI 0.04 to 0.69, $p<0.05$), in adjusted analyses. Although we cannot determine whether different findings between the two samples reflect sample size differences or the different outcome variables (measured vs. self-report BMI), we might sum up our results as indicating that the OPA-BMI association for men is unclear, while for women the association appears to be non-linear (inverse for medium OPA; positive for high OPA). Barengo et al.¹³ also detected a positive relationship between OPA and BMI for women. One possible explanation is that highly active jobs attract women who are larger and/or more muscular to begin with, perhaps because the larger physique is suited to the job (e.g., job requires strength) and/or because the job environment is more accepting of larger women.

Naturally, our research has some limitations; we focus here on two. First, the duration of exposure to OPA was unknown because information on the length of time in one's job was not available in the data source used. Second, due to its cross-sectional design, this study was unable to discern causality or temporality of associations.

Several strengths are present in this study. First, we built on existing population-based studies of OPA by taking advantage of a relatively objective form of OPA measurement, thereby reducing the likelihood of recall and social desirability biases that can plague self-report data. Second, our primary data source (from the 2008 CCHS subsample) contained measured height and weight, thereby eliminating the potential of reporting biases that occur with self-reported data.³⁰ Finally, our research was based on a reasonably large, nationally representative sample, and the number of participants excluded due to missing data was small and our analysis indicated only minimal missing data bias.

Future research attempting to explain the association between SEP and BMI could explore other plausible variables (e.g., psychosocial stress, which has been linked with lower SEP^{31,32} and with accumulation of visceral adipose tissue³³), adopt a prospective

* The findings did not differ substantively between the corrected and the uncorrected data.

design, and if possible clarify duration of exposure to plausible explanatory variables.

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Received: August 20, 2010

Accepted: November 22, 2010

RÉSUMÉ

Contexte : Les processus comportementaux et socioculturels qui sous-tendent l'association entre le statut socioéconomique (SSE) et l'indice de masse corporelle (IMC) sont encore obscurs. L'activité physique au travail (APT) est une variable explicative plausible qui n'a pas encore été envisagée.

Objectifs : 1) Examiner l'association entre l'APT et l'IMC, et 2) déterminer si l'APT a un effet modérateur sur l'association SSE-IMC, dans un échantillon représentatif de la population canadienne.

Méthode : Cette étude transversale est fondée sur une analyse secondaire des données de l'Enquête sur la santé dans les collectivités canadiennes de 2008. Elle s'intéresse aux adultes (25 à 64 ans) ayant un emploi ou une entreprise (1 036 hommes et 936 femmes). L'IMC a été calculé selon la taille et le poids mesurés, et nous avons dérivé un nouvel indicateur de l'APT à partir du *Guide sur les carrières* de la Classification nationale des professions. Nous avons procédé à une régression ordinaire par la méthode des moindres carrés en tenant compte d'une gamme de covariables sociodémographiques, sanitaires et comportementales.

Résultats : L'APT était marginalement associée à l'IMC chez les femmes du fait que, dans les modèles rajustés, les femmes ayant des niveaux moyens d'APT avaient tendance à peser moins que les femmes ayant de faibles niveaux d'APT. Aucune association entre l'APT et l'IMC n'a été décelée chez les hommes. Les trois conditions de Baron et Kenny (1986) pour tester l'effet modérateur n'ont pas été remplies; nous n'avons donc pas pu déterminer si l'APT était une variable modératrice.

Conclusion : Sauf pour de légers effets observés chez les femmes, dans l'ensemble, les associations entre l'APT et l'IMC n'étaient ni claires, ni fortes, mais cela pourrait s'expliquer par des raisons conceptuelles ou méthodologiques. Les recherches futures sur ce sujet pourraient incorporer d'autres variables explicatives plausibles (p. ex., le stress psychosocial lié à l'emploi) et adopter un plan d'étude prospectif.

Mots clés : indice de masse corporelle; professions; exercice physique; Canada