Trends in Vigorous Physical Activity Participation Among Ontario Adolescents, 1997-2001

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ABSTRACT

Objective: This paper examines trends in vigorous physical activity participation among students enrolled in grades 7, 9, 11 and 13 in Ontario between 1997 and 2001. Patterns in participation by gender and grade level are also described.

Methods: Data were derived from the Ontario Student Drug Use Survey for 1997, 1999, and 2001. Three outcomes of vigorous physical activity were included in self-report questionnaires completed by more than 5,000 students over a three-year period. They responded to the survey in classroom groups during school time. Estimates were weighted and variance and statistical tests have been corrected for the complex sample design.

Results: Comparisons between 1997 and 2001 indicated that, overall, patterns of vigorous physical activity remained stable. However, there were significant declines in vigorous physical activity participation by females and 11th grade students between 1997 and 2001.

Interpretation: The trends for females and 11th graders are disturbing, since they indicate that the normal gender and age differences in vigorous physical activity participation, found in numerous previous studies, are compounded by declining levels over time for these groups.

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

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Regular physical activity among adolescents is associated with numerous health benefits.¹ National guidelines recommend that young people should accumulate 20 or more minutes of vigorous physical activity on 3 or more days each week.^{2,3} In addition, the Canadian Association for Health, Physical Education, Recreation and Dance (CAHPERD) and the Canadian Medical Association recommend that Canadian children should participate in 30 minutes of compulsory physical education per day.^{4,5} In this report, we assess trends in vigorous physical activity participation, overall, and in physical education classes among students enrolled in grades 7, 9, 11 and 13 in Ontario between 1997 and 2001. Patterns in participation by gender and grade level are also described.

METHODS

These data were derived from the 1997, 1999, and 2001 cycles of the *Ontario Student Drug Use Survey (OSDUS)*,⁶ a repeated cross-sectional survey of students enrolled in grades 7, 9, 11 and 13 in Ontario. OSDUS, which employed a random two-stage cluster design (i.e., random selection of both school and class), surveyed public school students throughout Ontario. Staff from the Institute for Social Research, York University, administered the self-report questionnaires that were completed by more than 5,000 students over a three-year period. The students responded to the survey in classroom groups during school time. Student completion rates were 76.7%, 76.0% and 71.0%, respectively.

Three outcomes of vigorous physical activity that were included in the self-report questionnaires were assessed: past 7-day non-participation in vigorous physical activity, past 7-day participation in vigorous physical activity (3+ days), and daily participation in vigorous physical activity in physical education class. The first two outcomes were based on the following question, "On how many of the last 7 days did you exercise or participate in sports activities for at least 20 minutes that made you sweat and breathe hard? Please include activities such as basketball, jogging, fast dancing, swimming laps, tennis, fast bicycling, or similar aerobic activities (include both school and non-school activities)."

TABLE I

Prevalence of Vigorous Physical Activity Among Students in Ontario in Grades 7, 9, 11 and 13 by Demographic Subgroup and Survey Year, 1997-2001

Demographic Subgroup	Survey Year	N	No Vigorous Physical Activity During the Past 7 Days (95% CI)		20 Minutes or More of Vigorous Physical Activity 3 or More Days During the Past 7 Days (95% CI)		Daily Participation in Vigorous Physical Activity in Physical Education Class† (95% CI)	
			%		%		%	
Total Sample	1997	2,016	13.7	(11.7-15.7)	66.4	(64.0-68.7)	17.4	(14.8-20.4)
	1999	1,477	15.3	(12.6-18.4)	63.0	(59.7-66.1)	13.7	(10.9-17.1)
	2001	2,188	14.3	(11.7-17.3)	63.1	(58.8-67.2)	15.5	(12.7-18.8)
Male	1997	913	12.9	(9.6-16.1)	71.1	(66.6-75.1)	20.3	(17.8-23.0)
	1999	725	16.4	(12.6-21.0)	67.1	(62.4-71.5)	16.9	(13.4-21.0)
	2001	591	13.0	(9.7-17.2)	71.9	(66.9-76.4)	20.1	(15.9-25.2)
Female	1997	1,101	14.4	(11.9-16.9)	62.4	(59.3-65.5)	15.0	(11.7-19.0)
	1999	752	14.3	(11.4-17.8)	58.9	(54.7-63.0)	10.6	(7.6-14.6)
	2001	617	15.5	(12.3-19.4)	54.4**	(49.1-59.6)	11.0	(7.8-15.2)
Grade 7	1997	420	15.5	(11.6-19.4)	62.3	(59.4-65.1)	10.8	(7.0-16.2)
	1999	397	18.5	(13.9-24.1)	62.0	(56.1-67.5)	13.0	(9.1-18.1)
	2001	386	11.9	(9.1-15.4)	67.3	(60.3-73.6)	16.3	(11.5-22.6)
Grade 9	1997	590	12.7	(10.4-15.1)	69.5	(63.4-74.9)	24.2	(17.8-31.9)
	1999	463	11.8	(9.1-15.1)	69.5	(64.1-74.3)	20.2	(13.9-28.3)
	2001	359	12.9	(8.7-18.6)	66.5	(59.0-73.3)	20.1	(15.7-25.3)
Grade 11	1997	536	12.5	(7.9-17.1)	70.2	(66.8-73.4)	21.7	(17.6-26.4)
	1999	393	19.1	(13.1-27.0)	60.1	(54.2-65.8)	11.0	(7.2-16.4)
	2001	283	16.4	(11.2-23.6)	60.4*	(52.1-68.1)	12.8**	(7.9-20.4)
Grade 13	1997	470	15.2	(9.9-20.5)	58.4	(51.4-65.1)	5.2	(3.8-7.0)
	1999	224	10.4	(6.8-15.6)	55.6	(48.3-62.8)	5.3	(2.9-9.6)
	2001	180	18.0	(11.4-27.4)	51.9	(42.3-61.4)	8.0	4.2-14.9)

95% confidence interval (CI) refers to being 95% confident that the interval contains the population percentage.

Significant difference between 1997 and 2001: * $p < 0.05$ ** $p < 0.01$

† These percentages are based on those students enrolled in physical education class in the current semester.

Responses indicated the number of days between 0 and 7. The third outcome was based on the following item, "On how many of the last 5 school days did you participate in vigorous physical activity for at least 20 minutes that made you sweat and breathe hard in physical education class in your school?" No enrolment in physical education in the current semester was a response option for the latter.

All estimates were weighted and variance and statistical tests have been corrected for the complex sample design. To assess statistical significance of differences in percentages between years, 95% confidence intervals (CIs) around the difference $P_1 - P_2$ were constructed.⁷

RESULTS

Table I shows the prevalence estimates for each of the 3 outcomes of physical activity by survey year and demographic subgroup. The percentage of students who reported that they did not participate in vigorous physical activity during any of the 7 days preceding the survey remained unchanged from 1997 (13.7%) to 2001 (14.3%). The pattern was similar among all demographic subgroups.

Overall, the percentage of students who participated in vigorous physical activity

for at least 20 minutes during 3 or more of the 7 days preceding the survey did not change significantly between 1997 (66.4%) and 2001 (63.1%). This stability was also evident among all subgroups, except for females and 11th-graders, whose prevalence of vigorous physical activity declined significantly between 1997 and 2001 (from 62.4% to 54.4%, and 70.2% to 60.4%, respectively). The prevalence of participation in vigorous physical activity in physical education class remained stable, with 17.4% of students reporting daily participation in physical education in 1997 compared to 15.5% in 2001. This stability was evident among all subgroups, except grade 11 students. Among grade 11 students, daily participation in PE showed a significant decline from 1997 (21.7%) to 2001 (12.8%).

DISCUSSION

The findings in this report indicate that, in spite of efforts to increase physical activity, only about two thirds of students in Ontario meet the recommendation for vigorous physical activity. There was virtually no change in the prevalence of students in Ontario who engaged in recommended levels of vigorous physical activity between 1997 and 2001. Moreover, this activity

significantly declined among females and 11th graders. The results also indicate that few students in Ontario currently participate daily in vigorous physical activity in physical education class.

The overall trends in student participation in vigorous physical activity are disturbing in that the normal gender and age differences in activity, found consistently in studies of teenagers,⁸⁻¹⁰ are compounded by declining levels of participation over time for particular groups – females and grade 11 students. These findings suggest that these groups may be particularly in need of interventions and policies to increase and support participation.

Two important limitations must be considered when interpreting these findings. First, these data apply only to adolescents who were enrolled in public schools and, therefore, are not representative of all youth in this age group. Second, the extent of under-reporting or over-reporting of physical activity behaviours cannot be determined. However, self-reports of physical activity are considered of adequate reliability and validity to use in research on physical activity among adolescents.^{11,12}

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RÉSUMÉ

Objectif : Examiner les tendances de la participation à des activités physiques vigoureuses chez des élèves de 7^e, 9^e, 11^e et 13^e années en Ontario entre 1997 et 2001. Les schémas de participation selon le sexe et la classe sont également abordés.

Méthode : Les données proviennent du Sondage sur la consommation de drogues parmi les élèves de l'Ontario (1997, 1999 et 2001). Nous avons inclus trois résultats liés à l'activité physique vigoureuse dans un questionnaire d'auto-évaluation rempli pendant les heures d'école par plus de 5 000 élèves, répartis en groupes de classes, sur une période de trois ans. Vu la complexité du plan de sondage, nous avons pondéré les estimations et rectifié les données des tests statistiques et fondés sur la variance.

Résultats : Dans l'ensemble, entre 1997 et 2001, les schémas de l'activité physique vigoureuse sont restés stables, mais la participation des filles et des élèves de 11^e année a présenté une baisse significative.

Interprétation : Les tendances de participation des filles et des élèves de 11^e année à des activités physiques vigoureuses sont troublantes, car elles montrent que les différences normales selon l'âge et le sexe constatées dans beaucoup d'études antérieures sont aggravées par des baisses dans le temps pour ces deux groupes.

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