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ORIGINAL ARTICLE

Sociodemographic Patterns of Leisure-Time Physical Activity of Albertans 2000 to 2011

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Abstract

Background: Physical inactivity has been a significant health concern among the Canadian population over the last decade. *Purpose:* To study the trend in leisure-time physical activity (LTPA) of Albertans from 2000 to 2011 and to assess the relationship between sociodemographic factors (i.e., sex, age, income, education, and marital status,) and LTPA. *Methods:* Cross-sectional design was used. Data were obtained in 2000 (n = 1200), 2002 (n = 1209), 2005 (n = 1208), 2006 (n = 1207), 2008 (n = 1313) and 2010 (n = 1202) through representative random telephone surveys. The Godin Leisure-Time Exercise Questionnaire was used for all three surveys, in addition to questions about sociodemographic information. Men and women were considered active if they expended at least 38 or 35 metabolic equivalents (METs) per week, respectively. *Results:* From 2000 to 2005, the proportion of active Albertans increased from 54.2% to 60.2%, whereas from 2006 to 2011, it decreased from 57.4% to 54.3%. Controlling for sex, logistic regression analyses showed that, compared to the youngest adults, the oldest adults were the least likely to be active (OR = 0.16 to 0.55) over the last decade. The highest quintile of income was the most likely to be active from 2000 to 2008 (OR = 1.96 to 2.28). Education was not related to LTPA. *Conclusion:* Older age remained a risk for inactivity over the decade and high income supported LTPA until 2008. Marital status inconsistently affected activity status in Albertans over the last decade. Education was not related to LTPA. **Health & Fitness Journal of Canada 2012;5(1):3-15.**

Keywords: income, marital status, exercise, socioeconomic, population surveillance, Canada

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Background

Participation in regular leisure time physical activity (LTPA) has been associated with a reduced risk of pre-mature mortality, cardiovascular diseases, stroke, hypertension, colon cancer, breast cancer and type 2 diabetes (Warburton et al., 2010). According to the 2007/08 Canadian Community Health Survey, 48% of Canadian adults achieved at least moderate levels of LTPA, with British Columbians and Albertans being the most likely to be active (Canadian Fitness and Lifestyle Research Institute, 2008). Yet, a recent national surveillance assessing physical activity levels of Canadians using an objective measure (accelerometer) estimated that 15% of Canadians achieve enough physical activity to meet the current LTPA guidelines (Colley et al., 2011). To remedy low LTPA rates among Canadians, there is a need to understand long-term physical activity trends of Canadians as well as any specific regional patterns evident in the separate provinces and territories.

Sociodemographic factors such as socioeconomic status (SES) and sex (Giles-Corti and Donovan, 2002; Huston et al., 2003) have aided in our understanding of poor LTPA participation. Giles-Corti and Donovan (2002) found that while individuals living in low SES areas had superior access to recreational facilities, they were less likely to use them compared with those living in high SES areas. Furthermore, individuals living in low SES neighbourhoods were more likely to perceive that they had access to sidewalks, but also perceived that their neighbourhoods were busier with traffic, less attractive, and less supportive of walking. Those with the highest level of income reported the most physical activity from 1981 to 2000 (Craig et al., 2004). According to Craig et al. (2004) the disparity in activity levels by income seems to be growing in Canada, as in 1981 physical activity levels according to income bracket varied from 21.8% active (lowest income bracket) to 25.2% active (highest income bracket), a difference of 3.4%, whereas in 2000, this variation was from 33.1% active (lowest income bracket) to 55.3% active (highest income bracket), a difference of 22.2%. Similarly, sex has been found to moderate the association between perceptions of the environment and physical activity (Garcia Bengoechea et al., 2005). Craig and colleagues (2004) showed a disparity between the activity levels of men and women (49% of men active; 33% of women active). In Alberta, having access to places for physical activity was the environmental dimension most strongly associated with LTPA in both men (after adjusting for sociodemographic factors and self-efficacy) and women (after adjusting for sociodemographics) (Garcia Bengoechea et al., 2005). However, the average annual household income of women was lower than that of men, offering an explanation as to why only women's perceptions that one's neighbourhood had free or low cost recreation facilities was significantly associated with higher levels of LTPA. Other studies exploring sex and LTPA within a Canadian context have found that, regardless of sex, age emerges as having the strongest association with LTPA correlates (Plotnikoff et al., 2004). Marital status was also associated with physical activity, with married people being less likely to be active.

Despite the above findings and the interest in the associations between sociodemographic factors and physical activity, few current Canadian studies have systematically explored this relationship over time. Information on regional trends in physical activity and the determinants are scarce, particularly in a Canadian context. Studying the Alberta context provides a unique opportunity to explore sociodemographic factors in relation to LTPA, in light of the province's Active Living Strategy (Alberta Sport, Recreation, Parks, & Wildlife Foundation (ASRPWF), 2011a) and the current Active Alberta Policy (ASRPWF, 2011b). These government-action strategies target broader factors (e.g., environmental, policy) to promote physical activity. While it will take time for progress in these areas to take hold, tracking LTPA in Alberta may lead to an understanding of LTPA trends in various segments of the Alberta population. This could have implications for further development of interventions to increase LTPA levels, particularly for segments of the population more likely to benefit from such interventions. This study therefore sought to extend the existing research by examining the influence of

sociodemographic factors on physical activity participation in representative samples of Albertans from 2000-2011.

Methods

Participants and Design

The survey design was approved by the Arts, Science and Law Research Ethics Board at the University of Alberta. Representative random sampling was conducted through random digital dialing telephone interviews over a 10-year period: winter of 2000 and 2002, and the spring of 2005, 2006, 2008, and 2010. The cross-sectional design included samples that were roughly equal with respect to sex (see Table 1) and region (approximately 400 respondents from Calgary, Edmonton, or other parts of Alberta). Samples sizes for each region at each time point were approximately 400 respondents per region in the province but the population of the three regions was not equal. Thus, data for each year were weighted to adjust for these sample size differences by region. For example, the weighting for the three regions in 2000 were .711, .883, and 1.406 for Edmonton, Calgary, and other Alberta, respectively.

Sample sizes from 2000 to 2010 ranged from 1200 to 1313 respondents. Response rates for the three samples declined from 2000 to 2005 with approximately 53% of valid household responding in 2000, 54% in 2002, 40% in 2005, 43% in 2006, 37% in 2007, 29% in 2008, and 21% in 2010. These response rate declines echo declining response rates in other large population surveys in Canada (Bladon, 2009).

Measures

Leisure-time physical activity (LTPA) was assessed with the Godin Shephard Leisure Time-Exercise Questionnaire (Godin & Shephard, 1985). Participants were asked how often they engaged in mild, moderate, and strenuous exercise for more than 15 minutes in an average week. Weekly LTPA was calculated as the sum of the weighted minutes of mild, moderate and strenuous activity by associated MET values of 3, 5, and 9, respectively. Participants were considered sufficiently physically active based on a MET cut-off score (≥35 METs per week for women; ≥38 METs per week for men). These MET values have been used previously (Garcia Bengoechea et al., 2005) and approximate 300-400 MET-minutes per day, or a weekly energy expenditure of about 2000 kcals per week.

Sociodemographic variables included age, household income, education, and marital status (see Table 1). Since the survey periods spanned a decade, income was grouped into quintiles for each year for comparisons rather than by raw dollar income. Due to the dynamic nature of income distribution over time, not all the quintiles have exactly the same number of respondents. This strategy for handling income data is similar to other large population surveys (Craig et al., 2004; Dunlop et al., 2000).

Analysis

Data were cleaned for outliers and unusual values prior to analyses. Frequencies of activity status, age categories, income level, education and marital status were calculated according to sex for each of the six sample years. Chi-square test for independence were conducted to assess sex differences in age, education, activity status, income and marital status in each sample. Unconditional logistic regression analyses were conducted with activity status as the dependent variable to examine

differences in determinants of LTPA status from 2000 to 2011. Five independent variables (sex, age, income, education and marital status) were included in the models.

Results

Table 1 shows sample characteristics for each study year. For both men and women, physical activity rates increased from 2000 (53.5% active) to 2005 (60.2% active) at which point they generally declined in the three subsequent time-points to 54.3% active in 2010/11 (see Figure 1). According to Chi-square analyses, men and women had similar activity rates at all times, except in 2002 ($\chi 2$ (1,1209) = 4.17, $\rho < .05$, phi= -.059) where a higher proportion of men than women were active. Chi-square analyses showed that men were consistently significantly different than women in terms of income and marital status at all six times. Standardized adjusted residuals were examined to identify the source of this difference. At all times, a higher proportion of women than men were in the low income category and a higher proportion of men than women were in the high income category. At all six times, more men than women were single and a higher proportion of women than men were divorced, widowed or separated.

Table 2 shows the multivariate-adjusted sequential logistic regression analyses for sociodemographic effects on activity status according to year. The first block shows the influence of sex on activity status for year. Sex did not have a significant impact across year. The second block included all of the sociodemographic variables. In this full model, year was associated with sex in 2010/2011 where women were more likely to be active than men.

After controlling for sex, the sociodemographic variables of age, income and marital status were the common determinants of activity status from 2000 to 2011. In terms of age, those over 65 years were the least likely to be active compared to those 18 to 24 years. The general trend over the last decade is that as people increase in age they become significantly less active.

In terms of income, the odds of being sufficiently active were generally higher for middle-high (MH) and high (H) income brackets from 2000 to 2009 but not in 2010/11. Further, the odds of being physically active in 2000/01 from the middle income quintiles were higher than the comparison group.

Marital status generally did not influence activity levels over the last decade with exception to 2002/03 and 2004/05. In 2002/03, married/common-law (MC) people were less likely to be active than single people (ORMC = 0.58). While in 2004/05 divorced, widowed or separated people were less likely than singles to be physically active (OR divorced, widowed or separated = 0.042). Level of education did not influence physical activity status in any of the years from 2000 to 2011.

Table 1: Sociodemographic Characteristics and Leisure-time Physical Activity (LTPA) Levels of Men and Women from 2000 to 2011 in Alberta, Canada.

	2000/01 (Total N = 1200)						2002/03 (Total N = 1209)						2004/05 (Total N = 1208)					
	Men (n = 600)		Women (n = 600)		Combined		Men (n = 600)		Women (n = 609)		Combined		Men (n = 603)		Women (n = 605)		Combined	
	n	%	n	%	N	%	n	%	n	%	N	%	n	%	n	%	N	%
Active†	330	55.0	321	53.5	651	54.2	360*	59.9	330*	54.2	690	57.0	364	60.4	364	60.1	728	60.2
Age†																		
18 to 24	85	14.2	74	12.3	159	13.3	92	15.3	71	11.7	163	13.5	81	13.4	62	10.2	142	11.8
25 to 34	121	20.1	126	20.9	246	20.5	126	21.0	124	20.4	250	20.7	100	16.5	117	19.3	216	17.9
35 to 44	148	24.7	151	25.1	299	24.9	142	23.7	135	22.2	277	22.9	129	21.4	129	21.3	258	21.4
45 to 54	113	18.7	105	17.4	217	18.1	107	17.9	114	18.8	222	18.3	128	21.3	127	21.0	255	21.1
55 to 64	58	9.6	72	12.1	130	10.8	67	11.1	61	10.0	128	10.6	91	15.3	70	11.6	161	13.3
> 65	69	11.5	67	11.1	136	11.3	55	9.2	79	13.0	134	11.1	67	11.3	91	15.0	158	13.1
Income†																		
Low	70**	11.7	108**	18.1	179	14.9	61**	10.2	124**	20.3	185	15.3	77**	12.8	111**	18.4	189	15.6
Middle-low	74**	11.8	90**	14.9	160	13.4	78**	13.1	86**	14.1	164	13.6	89**	14.7	96**	15.9	185	15.3
Middle	114**	19.0	91**	15.2	205	17.1	108**	18.0	75**	12.4	183	15.2	105**	17.3	76**	12.6	181	15.0
Middle-high	85**	14.2	83**	13.8	168	14.0	107**	17.8	79**	12.9	186	15.3	125**	20.7	120**	19.9	245	20.3
High	133**	22.1	77**	12.8	210	17.5	129**	21.4	75**	12.4	204	16.9	98**	16.3	62**	10.2	160	13.3
Education†																		
< High Sch	77	12.8	75	12.5	152	12.6	77	12.9	71	11.7	149	12.3	70	11.5	68	11.2	137	11.4
High Sch	117	19.5	139	23.2	257	21.4	118	19.7	132	21.6	250	20.6	115	19.0	121	20.0	236	19.5
Post-sec	405	67.4	382	63.7	788	65.6	404	67.3	405	66.5	809	66.9	417	69.1	415	68.6	832	68.9
Marital†																		
Single	153**	25.5	112**	18.7	266	22.1	157**	26.2	130**	21.3	287	23.8	152**	25.2	102**	16.8	254	21.0
Married	391**	65.1	372**	61.9	762	63.5	383**	63.8	354**	58.1	736	60.9	386**	64.1	370**	61.2	757	62.6
Divorced	52**	8.7	114**	19.0	166	13.8	56**	9.3	121**	19.9	177	14.6	64**	10.6	131**	21.6	195	16.1

(continued)

	2006/07 (Total N = 1207)						2008/09 (Total N = 1313)						2010/11 (Total N = 1202)					
	Men (n = 603)		Women (n = 604)		Combined		Men (n = 651)		Women (n = 662)		Combined		Men (n = 592)		Women (n = 610)		Combined	
	n	%	n	%	N	%	n	%	n	%	N	%	n	%	n	%	N	%
Active†	359	59.6	333	55.2	693	57.4	373	57.2	394	59.4	766	58.3	306	51.7	342	56.1	649	54.3
Age†																		
18 to 24	61	10.2	64	10.5	125	10.4	83	12.8	79	12.0	162	12.4	53	9.0	50	8.2	103	8.6
25 to 34	100	16.5	110	18.3	210	17.4	105	16.1	138	20.9	243	18.5	99	16.7	103	16.9	202	16.8
35 to 44	133	22.0	119	19.7	252	20.9	124	19.1	133	20.0	257	19.5	130	21.9	144	23.7	274	22.8
45 to 54	151	25.0	129	21.3	279	23.1	139	21.3	141	21.3	280	21.3	104	17.5	99	16.3	203	16.9
55 to 64	79	13.1	87	14.3	166	13.7	90	13.8	85	12.8	175	13.3	101	17.0	99	16.2	199	16.6
> 65	63	10.5	85	14.0	148	12.3	110	16.9	86	13.0	196	14.9	83	14.1	81	13.2	164	13.6
Income†																		
Low	65**	10.8	116**	19.3	181	15.0	81*	12.4	107*	16.1	187	14.3	64**	10.8	111**	18.2	175	14.6
Middle-low	98**	16.3	90**	14.9	189	15.6	103*	15.9	105*	15.9	209	15.9	99**	16.7	83**	13.6	182	15.2
Middle	100**	16.6	79**	13.0	179	14.8	79*	12.1	67*	10.1	146	11.1	33**	5.6	30**	4.9	63	5.2
Middle-high	107**	17.8	81**	13.4	189	15.6	116*	17.8	108*	16.4	224	17.0	161**	27.2	100**	16.4	261	21.7
High	120**	19.9	75**	12.4	195	16.2	125*	19.2	80*	12.1	205	15.6	128**	21.6	87**	14.3	216	17.9
Education†																		
< High Sch	46	7.5	69	11.4	114	9.5	58*	8.9	35*	5.3	93	7.1	41	6.9	45	7.4	86	7.1
High Sch	102	16.8	99	16.4	200	16.6	111*	17.1	120*	18.2	231	17.6	117	19.8	122	19.9	239	19.9
Post-sec	454	75.3	434	71.8	888	73.5	482*	74.1	506*	76.4	988	75.2	430	72.7	438	71.8	869	72.2
Marital†																		
Single	132**	22.0	116**	19.3	249	20.6	162**	24.9	127**	19.1	289	22.0	118**	20.0	91**	14.9	210	17.4
Married	403**	66.9	361**	59.8	765	63.4	429**	65.8	416**	62.8	844	64.3	430**	72.7	413**	67.7	843	70.1
Divorced	61**	10.2	121**	20.1	183	15.2	58**	9.0	117**	17.6	175	13.3	40**	6.8	103**	16.8	143	11.9

Note: High Sch = High School; Post-sec = Post-secondary. Married includes married and common-law; divorced includes divorced, separated and widowed. Chi-square significant differences for gender differences in 2000/01, 2002/03, 2004/05, 2006/07, 2008/09, 2010/11.
† $p < 0.05$. *p<.05 for gender differences in sample; **$p < 0.001$ for gender differences in sample.

Table 2: Sociodemographic Factors Related to Activity Status from 2000 to 2011 (Controlling for Sex).

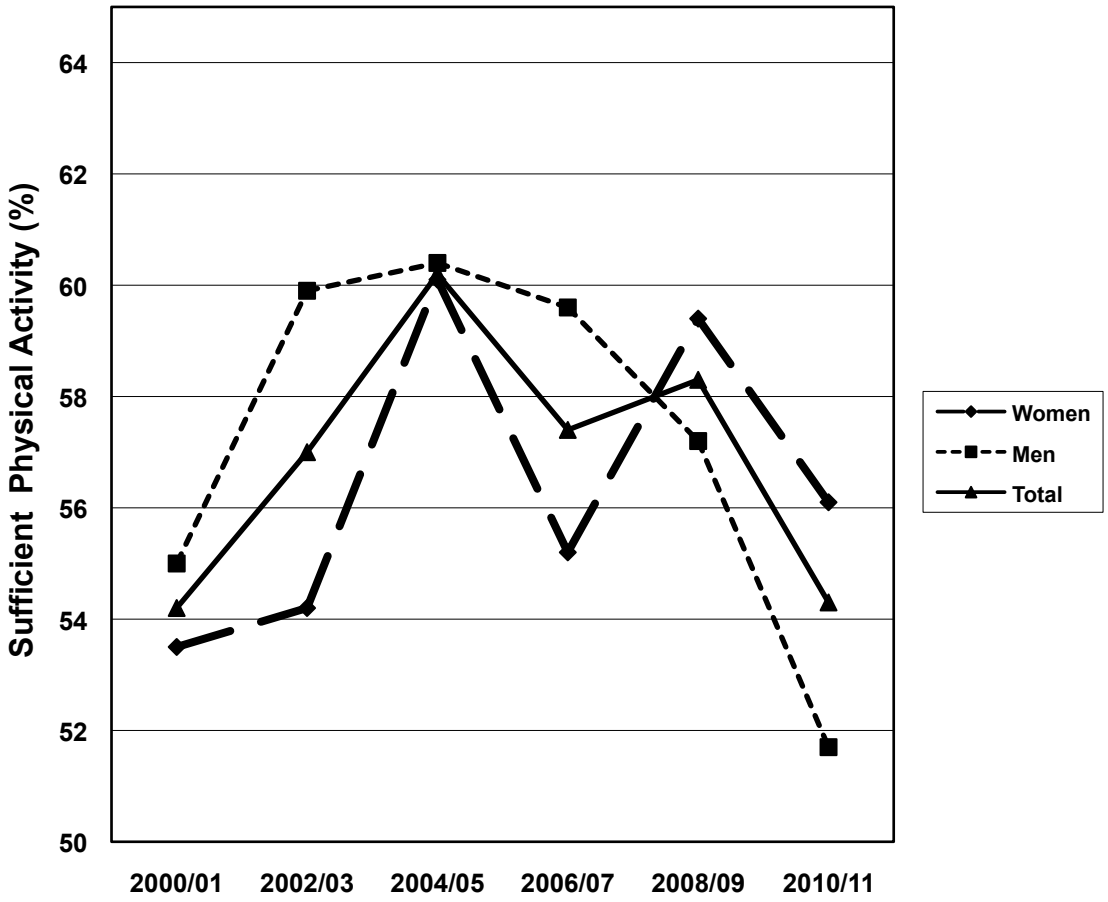
	2000/01				2002/03				2004/05			
	Block 1		Block 2		Block 1		Block 2		Block 1		Block 2	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Sex												
Male	Ref		Ref		Ref		Ref		Ref		Ref	
Female	0.96	(0.74, 1.25)	1.01	(0.77, 1.34)	.82	(0.63, 1.07)	0.90	(0.68, 1.19)	1.11	(0.86, 1.44)	1.22	(0.92, 1.61)
Age												
18 - 24			Ref				Ref				Ref	
25 - 34			0.36**	(0.20, 0.66)			0.82	(0.48, 1.40)			0.65	(0.35, 1.22
35 - 44			0.33**	(0.18, 0.61)			0.72	(0.42, 1.23)			0.64	(0.34, 1.19)
45 - 54			0.17**	(0.09, 0.33)			0.63	(0.36, 1.11)			0.53*	(0.28, 0.99)
55 - 64			0.14**	(0.07, 0.29)			0.54*	(0.29, 1.00)			0.36*	(0.18, 0.70)
> 65			0.16**	(0.08, 0.33)			0.55	(0.28, 1.06)			0.38*	(0.19, 0.77)
Income												
Low			Ref				Ref				Ref	
Middle low			1.32	(0.83, 2.09)			0.74	(0.48, 1.16)			0.83	(0.54, 1.29)
Middle			1.69*	(1.07, 2.68)			1.30	(0.83, 2.04)			1.21	(0.77, 1.90)
Middle high			1.76*	(1.07, 2.87)			1.22	(0.77, 1.95)			1.51	(0.97, 2.36)
High			2.28**	(1.40, 3.71)			2.07*	(1.28, 3.34)			1.64*	(1.00, 2.71)
Education												
< High Sch			Ref				Ref					
High Sch			0.97	(0.57, 1.66)			0.78	(0.47, 1.31)			1.48	(0.88, 2.51)
Post-sec			1.19	(0.75, 1.91)			0.90	(0.57, 1.43)			1.47	(0.93, 2.32)
Marital Status												
Single			Ref				Ref				Ref	
Married			0.91	(0.60, 1.38)			0.58*	(0.39, 0.86)			0.70	(0.46, 1.06)
Divorced			1.11	(0.64, 1.94)			0.71	(0.43, 1.18)			0.42**	(0.25, 0.70)

(continued)

	2006/07				2008/09				2010/11			
	Block 1		Block 2		Block 1		Block 2		Block 1		Block 2	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Sex												
Male	Ref		Ref		Ref		Ref		Ref		Ref	
Female	0.84	(0.65, 1.10)	0.91	(0.69, 1.20)	1.13	(0.87, 1.48)	1.19	(0.89, 1.58)	1.22	(0.94, 1.59)	1.32*	(1.00, 1.75)
Age												
18 - 24			Ref				Ref				Ref	
25 - 34			0.80	(0.43, 1.48)			0.41*	(0.17, 1.00)			0.39	(0.14, 1.06)
35 - 44			0.63	(0.34, 1.17)			0.28*	(0.12, .66)			0.29*	(0.11, 0.78)
45 - 54			0.44*	(0.23, 0.81)			0.24**	(0.10, .56)			0.20**	(0.08, 0.52)
55 - 64			0.45*	(0.23, 0.89)			0.19**	(0.08, .46)			0.22*	(0.08, 0.58)
> 65			0.36*	(0.17, 0.75)			0.16**	(0.06, .40)			0.17**	(0.06, 0.47)
Income												
Low			Ref				Ref				Ref	
Middle low			1.50	(0.96, 2.33)			1.22	(0.79, 1.88)			1.20	(0.77, 1.87)
Middle			1.49	(0.94, 2.37)			1.47	(0.89, 2.40)			0.94	(0.51, 1.74)
Middle high			2.14**	(1.34, 3.42)			1.68*	(1.05, 2.68)			1.36	(0.88, 2.11)
High			1.96*	(1.22, 3.16)			2.07*	(1.27, 3.38)			1.35	(0.86, 2.12)
Education												
< High Sch			Ref				Ref				Ref	
High Sch			1.47	(0.80, 2.67)			1.29	(0.68, 2.45)			1.30	(0.69, 2.45)
Post-sec			1.66	(0.98, 2.82)			1.48	(0.83, 2.65)			1.46	(0.82, 2.59)
Marital Status												
Single			Ref				Ref				Ref	
Married			0.84	(0.55, 1.27)			1.02	(0.64, 1.62)			0.82	(0.51, 1.32)
Divorced			0.85	(0.50, 1.44)			0.85	(0.48, 1.51)			0.62	(0.34, 1.14)

Note. OR = odds ratio; CI = confidence interval; Ref = reference group. Reference group = 1.0. Married includes married and common-law; divorced includes divorced, separated and widowed. * $p < 0.05$, ** $p < 0.001$ significant compared to reference group.

Figure 1: Physical activity levels among men and women in Alberta, Canada from 2000 to 2011.



Note: Physical activity levels were significantly different between sex in 2002/03 ($\rho < 0.05$). There were no significant differences between sex at any other time point.

Discussion

This study sought to examine the influence of sociodemographic determinants of LTPA in Albertans. In these data, LTPA rates for men and women increased from 2000/01 to 2004/05 followed by a steady decline. Age was a significant determinant of activity status for men and women, where older individuals were less likely to be active. Income was a significant factor with higher income men and women having higher odds of being active than those in the lowest income quintile. Education did not contribute to the physical activity status. Finally, marital status generally did not contribute to LTPA. These data provided regional sociodemographic determinants of LTPA for Albertans over the last decade.

These findings are similar to Brownson and colleagues (2005) and Craig and colleagues (2004), who found that physical activity levels increased during the first half of the decade in North America then levelled off or declined for the second half of the decade (Canadian Fitness and Lifestyle Research Institute, 2008). Similar to Craig and colleagues (2004), and the Canadian Fitness and Lifestyle Research Institute (2008), older adults were less likely to be active regardless of sex. Consistent with previous research exploring income and LTPA, income was positively related to LTPA levels (Canadian Fitness and Lifestyle Research Institute, 2008; Craig et al., 2004; Stachenko et al., 1992; Steenland, 1992). Whereas few researchers have explored social determinants of LTPA, it has been noted that physical activity is heavily dependent upon financial resources and cultural capital (non-financial social assets such as education)(Kidd, 1995). These findings have implications for further study into the broad barriers to LTPA that older adults may face such as access to facilities and age-appropriate LTPA opportunities (Plotnikoff et al., 2004).

We found that marital status was not related to LTPA for the second half of the last decade although in 2002/03 married people were less likely to be active and in 2004/05 divorced, widowed or separated people were less likely to be active than single people. These findings have been inconsistent over the decade. Plotnikoff and colleagues (2004) found that married people under the age of 25 were less active. Conversely, marital transition (i.e., going from single to married) has been found to be negatively related to women's LTPA participation, but not to men's (Schmitz et al., 1997). It is plausible that women who are married assume traditional roles (e.g., care giving duties), placing familial needs above their own needs with respect to LTPA (Lewis & Ridge, 2005). Additionally, women who become divorced may experience a decrease in their household income, which, is related to lower LTPA levels. Additional research is needed to clarify the role that marital status plays in LTPA participation given inconsistencies in the literature (King et al., 1998).

Some data limitations could impact on interpretation of the results. The cross-sectional nature of the study at each of the time points limits the ability to infer causal relationship between sociodemographic factors and activity status. This study did not assess the number of children that single, married and divorced respondents have which may affect physical activity levels due to the social pressures of parenting. Also, there could be a seasonal bias in reported LTPA since data were collected in the winter and in the spring. According to Tucker & Gilliland's (2007) systematic

review of the effect of season on physical activity, in general the highest levels of physical activity are reported from April-August, and decrease in winter months. The samples were drawn from across the province where there is vast intraprovincial variance in climate (January average temperature: Northern Alberta= -24 °C, Southern Alberta = -10 °C (Government of Alberta, 2009)), ethnicity, (Statistics Canada, 2010), religious affiliations (Statistics Canada, 2005), and industry (Government of Alberta, 2012). While the random selection of representative samples of Albertans is a strength of this study, the declining rates of response from 2000 to 2011 might limit the generalizability of the findings.

Conclusions

In summary, our findings from Alberta are consistent with other data from North America showing that LTPA has increased since the 1980s then levelled off or declined since the mid-2000s. Consistent with previous studies done in a Canadian context (Canadian Fitness Lifestyle Research Institute, 2009; Plotnikoff et al., 2004; Brownson et al., 2005), our data suggests that lower income and advanced age are barriers to activity participation among Albertans.

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