Physical activity over the life course: the effects of partnering and childbearing

This paper investigates how participation in physical activity changes over the life course, with a particular emphasis on partnering and childbearing. As discussed by Lunn in his examination of retrospective data, there are many identified benefits of physical activity, and 'physical activity policies across the developed world look to participation in sports and exercise activities as an important part of leisure-time physical activity. Public health policy can therefore gain from improved understanding of why some people participate in sports and exercise and others do not' (2010, p. 711). Like other countries, Australia has a 'game plan' to increase physical activity and decrease sedentary behaviour. The Australian Government Department of Health provides guidelines and recommendations through 'Make your move – Sit less – Be active for life!' (http://www.health.gov.au/internet/main/publishing.nsf/content/health-pubhlth-strateg-phys-act-guidelines).

The usual approach to examining participation in exercise is cross-sectional. These results typically show that men are more likely to exercise than women, that those in low socio-economic groups are less likely to exercise than higher socio-economic groups, that rates of exercise are lower in older age groups, and that there are regional differences both within and between countries (Apostolou 2014, 2015; Deaner et al. 2012; Gerovasili et al. 2015; Van Tuyckom et al. 2010). Many of these studies compare countries, and the direction of results are remarkably consistent, although there are differences in level of participation, particularly between countries. For example, in Scandinavian countries, there are much higher reported levels of education and less variation between individuals.

A small number of longitudinal studies have followed children through to adulthood (e.g. Lefevre et al. 2000; Scheerder et al. 2006; Telama et al. 2005; van Mechelen et al. 1999). These studies find that exercise habits formed when young do influence exercise habits in adulthood. Studies also find that having a parent involved in exercise influences children's physical involvement, and the magnitude is even higher if both parents are physically active (Lunn 2010), emphasizing the importance of significant others: an important aspect of life course studies.

The research by Lunn (2010) using retrospective data, provides an analysis of exercise over the life course. He finds that participation peaks at about age 15, and declines from then. The decline is most notable for participation in team sports, where participation is highest in the high school years, particularly for females. While his findings emphasize the importance of preventing drop-out of physical activity in the 'middle-ages', he does not specifically examine the effect of having children on physical activity.

In this paper we focus on the effect of partnering and having children on involvement in physical activity using HILDA (Household, Income and Labour Dynamics in Australia) 2001-2014. Funded by the Australian Government, HILDA is a longitudinal panel study of Australian adults aged 15+. For the purposes of this paper, HILDA contains annual prospective data on individual pathways through life. The survey collects detailed information on education, employment, socio-demographic characteristics, relationship status and participation in 'regular exercise'. The question which we use is: *In general, how often do you participate in moderate or intensive physical activity for at least 30 minutes?*

We will use longitudinal event-history analysis to examine 'drop-out' and 'uptake' of physical activity. The analysis will specifically examine the effect of partnering, as significant others can influence participation (Louveau 2004), and childbearing – modelling both having a first child, and higher parities, as it has been found that there are different effects depending on the number of children (Louveau 2004). Child age will also be considered.

Preliminary cross-section results show that, as expected, sex of respondent and education are associated with participation in physical activity. Looking also at the age of the youngest child, there is also a clear pattern of an uptake in exercise when the youngest child turns 6. While these results are preliminary, they show that there is a likely effect of having children on exercise participation for both women and men.

Data shown below is cross-sectional and based on the first wave the respondent was observed. N=13,516

In general, how often do you participate in moderate or intensive physical activity for at least 30 minutes?

All respondents

	N	%
Not at all	1,673	12
Less than once a week	2,043	15
1 to 2 times a week	3,049	23
3 times a week	2,063	15
More than 3 times a week	2,787	21
Every day	1,901	14
Total	13,516	100

Most common answers were “1 to 2 times a week” or “More than 3 times a week”.

By sex (column percentages)

	Male	Female
Not at all	11	13
Less than once a week	14	16
1 to 2 times a week	21	24
3 times a week	15	16
More than 3 times a week	22	20
Every day	18	11
Total	100	100

Pearson chi2(5) = 147.34 Pr =<0.001 Cramér's V = 0.1044

Males were more likely to engage in physical activity on a daily basis.

Education level (column percentages)

	University level	Diploma	Certificate level	Year 12	Year 11 or below
Not at all	6	9	12	10	17
Less than once a week	17	15	14	16	14
1 to 2 times a week	27	23	22	24	21
3 times a week	19	17	14	16	14
More than 3 times a week	22	24	21	20	20
Every day	10	13	17	13	15
Total	100	100	100	100	100

Pearson chi2(20) = 318.2 Pr = <0.001, Cramér's V = 0.08

Those with university level education had the lowest percentage not doing any exercise, but also lease likely to state 'every day'.

Age group (column percentages)

	<20	20-29	30-39	40-49	50-59	60-69	70+
Not at all	6	7	9	11	14	16	29
Less than once a week	12	15	18	17	15	11	11
1 to 2 times a week	21	26	23	24	22	19	19
3 times a week	19	17	16	14	13	13	13
More than 3 times a week	23	21	20	21	21	24	17
Every day	18	14	13	13	14	17	12
Total	100	100	100	100	100	100	100

Pearson chi2(30) = 595.32 Pr = <0.001 Cramér's V = 0.0939

Generally a negative relationship between age and amount of physical activity. However people in their 60s appear to have a little increase in daily activity or exercising more than 3 times a week (retirement?)

Logistic regression of "high activity" (i.e exercising more than 3 times a week or daily)

Odds-ratios

	Females	Males
Age of youngest child		
No child	2.01***	1.56***
0-2 (ref)	*1.00*	*1.00*
3-5	1.05	0.96
6-14	1.34***	1.22***
15+	1.57***	1.23***
Age group		
<20	1.06	2.09***
20-29	0.97	1.36***
30-39 (ref)	*1.00*	*1.00*
40-49	1.02	0.95
50-59	1.02	0.94
60-69	0.97	0.92
70+	0.55***	0.60***
Education level		
University (ref)	*1.00*	*1.00*
Diploma	1.05	1.12
Certificate	0.92	1.19***
Year 12	0.80***	1.03
Year 11 or below	0.99	1.36***

legend: * p<.1; ** p<.05; *** p<.01

References

Apostolou, M. (2014). The athlete and the spectator inside the man: A cross-cultural investigation of the evolutionary origins of athletic behavior. *Cross-Cultural Research*, 1-23.

Apostolou, M. (2015). The evolution of sports: Age-cohort effects in sports participation. *International Journal of Sport and Exercise Psychology, 13*:4, 359-370

Deaner, R., Geary, D., Puts, D., et al. (2012). A sex difference in the predisposition for physical competition: Males play sports much more often than females even in the contemporary U.S. *PLOS ONE, 7*(11), e49168.

Gerovasili, V., Agaku, I., Vardavas, C., & Filippidis, F. (2015). Levels of physical activity among adults 18–64 years old in 28 European countries. *Preventive Medicine, 81*: 87-91.

Lefevre, J., Philippaerts, R. M., Delvaux, K., et al. (2000). Daily physical activity and physical fitness from adolescence to adulthood: a longitudinal study. *American Journal of Human Biology, 12*, 487–497.

Louveau, C. (2004). Pratiquer une activité physique ou sportive: persistence des inégalités parmi les femmes. *Reserches féministes, 17*(1): 39-76.

Lunn, P. (2010). The sports and exercise life-course: A survival analysis of recall data from Ireland. *Social Science and Medicine, 70*: 711-719.

Scheerder, J., Thomis, M., Vanreusel, B., et al. (2006). Sports participation among females from adolescence to adulthood. *International Review for the Sociology of Sport, 41*(3–4), 413–430.

Telama, R., Xiaolin, Y., Jorma, V., Ilkka, V., Olli, W., & Olli, R. (2005). Physical activity from childhood to adulthood: a 21-year tracking study. *American Journal of Preventive Medicine, 28*(3), 267–273.

van Mechelen, W., Twisk, J. W. R., Post, G. B., Snel, J., & Kemper, H. C. G. (1999). Physical activity of young people: the Amsterdam longitudinal growth and health study. *Medicine and Science in Sport and Exercise, 32*(9), 1610–1616.

van Tuyckom, C., Scheerder, J., & Bracke, P. (2010). Gender and age inequalities in regular sports participation: A cross-national study of 25 European countries. *Journal of Sports Sciences, 28*, 1077–1084.