

# PHEU Fact Sheet

## Trend Analysis of Physical Activity NHS 1989 – 2001

### Background

The Population Health Epidemiology Unit examined the comparability of physical activity estimates for the last three National Health Surveys (NHS). All aspects of the NHS surveys were examined, including question wording, recall period, data collection methodology and coding of the exercise level categories. Of all the aspects examined, the exercise level category coding varied substantially across the three survey iterations. This was significant enough to render the estimates non-comparable without statistical intervention. The details of the exercise level coding and the work performed to render the estimates comparable are briefly described below.

### Methodology

Three main types of activity considered by the ABS within the NHS are *walking*, *moderate*, and *vigorous* exercise. Each of these exercise levels has an intensity value attributed to it, and these intensity values are adjusted by the ABS for each survey to reflect the latest research into physical activity. (table below)

NHS 1989/90		NHS 1995		NHS 2001	
Walking	3.2	Walking	3.5	Walking	3.5
Moderate Exercise	5.7	Moderate Exercise	5.0	Moderate Exercise	5.0
Vigorous Exercise	8.5	Vigorous Exercise	9.0	Vigorous Exercise	7.5

Incorporating these intensity values, an overall exercise score for a survey respondent is calculated by the ABS as:

$$\text{Number of times activity undertaken in the past 2 weeks} \times \text{Average time per session (in minutes)} \times \text{Intensity Value}$$

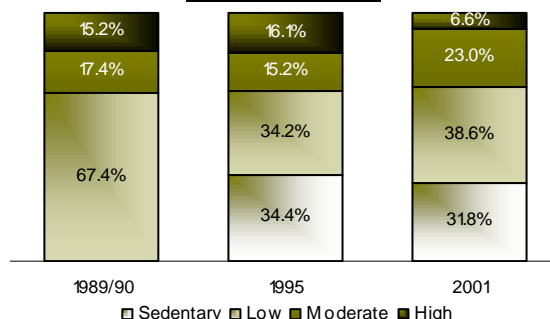
Once the exercise score has been calculated for each respondent, the ABS "grouped" exercise scores by using the criteria listed in the following table:

NHS 1989-90		NHS 1995		NHS 2001	
		Sedentary	<100 incl no exercise	Sedentary	<100 incl no exercise
Low level	<1500	Low level	>=100 & < 1600	Low level	>=100 & < 1600
Moderate level	>=1500 & <=3250	Moderate level	>=1600 & <=3200	Moderate level	>=1600 & <=3200
High level	>3250	High level	>3200	High level	>3200

The next graph shows the NHS results for the three surveys prior to re-coding and rendering the estimates comparable. The graph shows that the NHS 1989/90 used only three levels of physical activity: low, moderate, and high, while subsequent surveys used four activity categories.

Further, the 1989/90 survey used dissimilar exercise scores, and the 1995 and 2001 surveys used different intensity values for vigorous exercise. These differences in methodology render a comparison of physical activity levels across the three NHS surveys invalid without statistical adjustments.

Levels of Physical Activity in Tasmania, 15 Years and Over, NHS 1989/90-2001  
Non-Adjusted Data



In order to make the physical activity estimates comparable, the 2001 NHS coding methodology was applied to the 1989/90 and 1995 surveys, as the 2001 survey utilised the most up-to-date physical activity research of the three survey iterations.

The 1989/90 and 1995 NHS confidentialised unit record files were obtained, and the exercise level intensity scores and exercise level categories were re-calculated for both surveys using the 2001 methodology.

Once the exercise level categories were re-calculated for the 1989/90 and 1995 surveys, the physical activity estimates were derived from each of the three surveys for the most commonly used age groups. The new estimates should be used in conjunction with the attached Appendix.

### Results

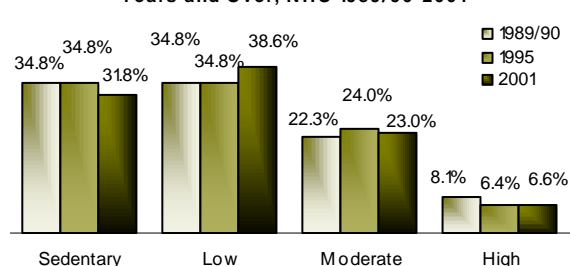
For the 15+ Tasmanian population there has been a slight convergence of physical activity levels since 1989/90, with a decrease in both sedentary and high level activity, and an increase in low and moderate activity levels.

Specifically:

- The level of sedentary activity remained constant from 1989/90 to 1995, but then decreased significantly from 34.8% in 1995 to 31.8% in 2001.
- The proportion engaging in low-level exercise remained constant from 1989/90 to 1995, but then increased significantly from 1995 to 2001.

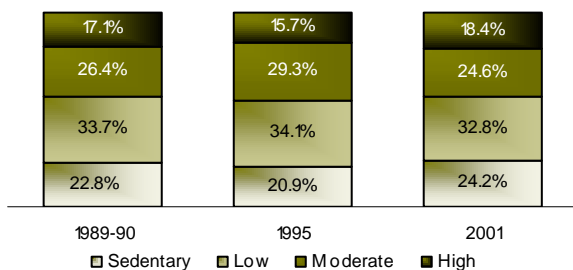
Of the remaining activity types, the proportion engaged in moderate-level exercise increased significantly from 1989/90 to 1995, but then decreased from 1995 to 2001. This decrease was not statistically significant. The proportion engaged in high-level exercise decreased significantly from 1989/90 to 1995, but then increased slightly from 1995 to 2001. However, this increase was not statistically significant.

Levels of Physical Activity in Tasmania, 15 Years and Over, NHS 1989/90-2001

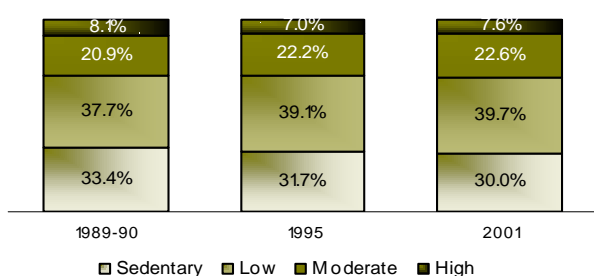


Despite some significant changes in the exercise levels of the total population aged 15 years and over, there were no statistically significant differences in the exercise levels of persons in the age groups 15-24 years and 25-44 years over the three NHS survey iterations.

**Levels of Physical Activity in Tasmania, Age 15-24 Years, NHS 1989/90-2001**



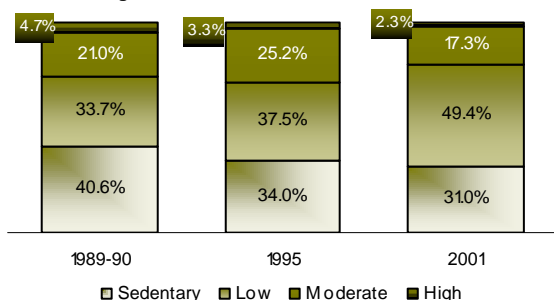
**Levels of Physical Activity in Tasmania, Age 25-44 Years, NHS 1989/90-2001**



For Tasmanians aged 45-54 years, major changes occurred in the levels of sedentary activity and low-level exercise.

- The level of sedentary activity consistently decreased from 40.6% in 1989/90 to 31% in 2001, with the largest, and the only statistically significant, decrease occurring from 1989/90 to 1995.
- The proportion engaging in low-level exercise increased consistently from 1989/90 to 2001, with the largest change occurring between 1995 and 2001, from 37.5% to 49.4%. The latter of these increases was statistically significant, and implies a shift from sedentary activity to low-level exercise for this group.
- The proportion engaging in moderate-level exercise increased from 1989/90 to 1995, but the trend reversed over the next 5 years, with the 2001 value of 17.3% being significantly lower than that for 1989/90 (21%)
- While small in absolute terms, the proportion engaging in high-level exercise consistently decreased between 1989/90 and 2001. High level activity declined, but estimates should be used with caution because of high relative standard errors.

**Levels of Physical Activity in Tasmania, Age 45-54 Years, NHS 1989/90-2001**

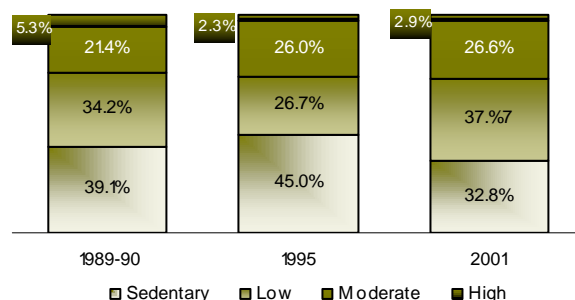


For Tasmanians aged 55-64 years, the most volatility occurred within the sedentary and low-level exercise categories. The level of sedentary activity for Tasmanians in this age group increased from 1989/90 to 1995, but then decreased significantly between 1995 and 2001 to a value lower than that for 1989/90. High levels of activity decreased, but these estimates should be used with caution due to high relative standard errors.

Conversely, the proportion engaged in low-level exercise decreased significantly from 1989/90 to 1995, but then increased significantly from 1995 to 2001 to a value higher than that for 1989/90.

This suggests a shift from sedentary activity to low-level exercise for this age group. As stated previously, this shift was also observed for those aged 45-54 years.

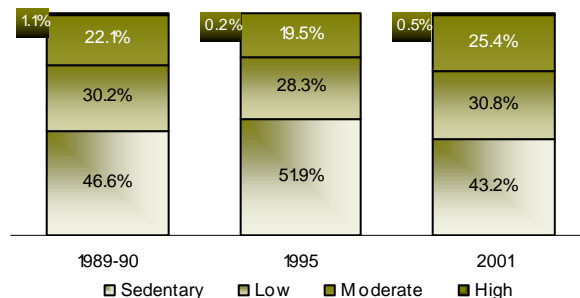
**Levels of Physical Activity in Tasmania, Age 55-64 Years, NHS 1989/90-2001**



For Tasmanians aged 65 years and over, the level of sedentary activity increased from 1989/90 to 1995 from 46.6% to 51.9%, but then decreased significantly from 1995 to 2001 to 43.2%.

The number of Tasmanians in this age group engaging in low or moderate level exercise fluctuated over the period 1989/90 to 2001. The proportion engaging in moderate level exercise increased from 22.1% in 1989/90 to 25.4% in 2001, but this increase is not statistically significant. High activity estimates should not be used due to very high relative standard errors.

**Levels of Physical Activity in Tasmania, Age 65 and Over, NHS 1989/90-2001**



## Conclusion

Overall, there has been a relatively small but statistically significant increase in the level of physical activity in Tasmania during the period 1989/90 to 2001. This increase has been most noticeable in Tasmanians aged 45 to 64 years.

Increases in low and moderate levels of physical activity have been accompanied by reductions in sedentary and high-level physical activity. The trend in physical activity levels in Tasmania according to the National Health Surveys indicates a convergence from sedentary and high activity levels towards the mid range of low and moderate levels of physical activity.

Physical Activity Estimates by Age-Group from ABS National Health Survey, 1989/90, 1995 & 2001

Age	Year	Physical Activity Level							
		Sedentary		Low		Moderate		High	
		%	CI (95%)	%	CI (95%)	%	CI (95%)	%	CI (95%)
15-24	1989/90	22.8	(20 , 25.5)	33.7	(31,36.5)	26.4	(23.5,29.3)	17.1	(14.6,19.6)
	1995	20.9	(18,23.8)	34.1	(30.5,37.6)	29.3	(26,32.7)	15.7	(13.1,18.4)
	2001	24.2	(17.8,30.6)	32.8	(25.5,40.2)	24.6	(18.2,31.1)	18.4	(12.7,24.2)
25-44	1989/90	33.4	(31.4 , 35.4)	37.7	(36.4,38.9)	20.9	(19.2,22.6)	8.1	(6.9,9.4)
	1995	31.7	(29.4,33.9)	39.1	(36.7,41.6)	22.2	(20.5,23.9)	7.0	(5.8,8.2)
	2001	30.0	(25.7,34.3)	39.7	(36.8,42.7)	22.6	(18.8,26.5)	7.6	(5.1,10.2)
45-54	1989/90	40.6	(36.1 , 45.1)	33.7	(29.5,37.8)	21.0	(17.5,24.6)	4.7	(2.8,6.6)
	1995	34.0	(30,37.9)	37.5	(33.5,41.6)	25.2	(21.7,28.6)	3.3	(1.6,5.1) * [use with caution: RSE >25%]
	2001	31.0	(25.7,36.3)	49.4	(41.4,57.4)	17.3	(11.9,22.6)	2.3	(0.3,4.2)* [use with caution: RSE >25%]
55-64	1989/90	39.1	(34.2 , 44)	34.2	(29.6,38.9)	21.4	(17.4,25.3)	5.3	(3,7.5)
	1995	45.0	(39.6,50.4)	26.7	(22.3,31.2)	26.0	(21.6,30.4)	2.3	(0.3,4.3)* [use with caution: RSE >25%]
	2001	32.8	(24.4,41.1)	37.7	(28.8,46.6)	26.6	(18.9,34.3)	2.9	(0.4,5.4)* [use with caution: RSE >25%]
65 +	1989/90	46.6	(42.8 , 50.4)	30.2	(26.5,33.9)	22.1	(18.8,25.4)	1.1	(0.2,2.1)* [use with caution: RSE >25%]
	1995	51.9	(48.1,55.8)	28.3	(24.8,31.9)	19.5	(16.4,22.6)	0.2	** [use not recommended: RSE > 50% ]
	2001	43.2	(35.8,50.6)	30.8	(23.7,37.8)	25.4	(18.9,31.9)	0.5	** [use not recommended: RSE > 50% ]
15+	1989/90	34.8	(33.8 , 35.8)	34.8	(33.8,35.8)	22.3	(21.5,23)	8.1	(7.4,8.8)
	1995	34.8	(33.7,35.8)	34.8	(33.8,35.9)	24.0	(22.8,25.1)	6.4	(5.8,7.1)
	2001	31.8	(29.7,33.9)	38.6	(36.4,40.7)	23.0	(21.3,24.7)	6.6	(5.5,7.8)