Web Table 1. Physical Activity Variables in the Medical Research Council National Survey of Health and Development.

Physical activity variable	Males		Females		Total	
	n	%	n	%	n	%
Walking						
Age 36 years						
Time spent walking during day[A]						
Less than half the time	747	46.1	497	30.5	1,244	38.3
At least half the time	512	31.6	594	36.5	1,106	34.0
Practically all the time	363	22.4	538	33.0	901	27.7
Total	1,622		1,629		3,251	
Time spent walking to work[A]						
< 5 minutes	1,219	80.2	679	67.4	1,898	75.1
5-15 minutes	224	14.7	249	24.7	473	18.7
16+ minutes	77	5.1	79	7.9	156	6.2
Total	1,520		1,007		2,527	
Time spent walking for pleasure in last month[B]						
0 hours	583	35.9	492	30.0	1,075	33.0
1-6 hours	538	33.2	583	35.6	1,121	34.4
> 6 hours	502	30.9	564	34.4	1,066	32.7
Total	1,623		1,639		3,262	
Age 43 years						
Distance walked on average weekday[A]						
≤ 0.5 miles	493	30.8	611	38.2	1,104	34.5
>0.5-2.5 miles	709	44.2	785	49.0	1,494	46.6
> 2.5 miles	401	25.0	205	12.8	606	18.9
Total	1,603		1,601		3,204	
Cycling						
Age 31 years						
Frequency of cycling						
Seldom or never	780	79.0	830	82.2	1,610	80.6
Less than once a week	106	10.7	105	10.4	211	10.6
At least once a week	102	10.3	75	7.4	177	8.9
Total	988		1,010		1,998	
Age 36 years						
Time spend cycling per week[B]						
0 minutes	1,334	80.8	1,392	83.6	2,726	82.2
1-99 minutes to work or 1-59 minutes outside work	134	8.1	102	6.1	236	7.1
100+ minutes to work or 60+ minutes outside work	184	11.1	171	10.3	355	10.7

Total	1,652		1,665		3,317	
Age 43 years						
Distance cycled on average weekday[A]						
0 miles	1,390	87.1	1,384	86.6	2,774	86.9
0.1-1.5 miles	67	4.2	120	7.5	187	5.9
> 1.5 miles	139	8.7	94	5.9	233	7.3
Total	1,596		1,598		3,194	
Leisure time physical activity						
Age 36 years						
Gardening[A]						
Inactive	334	20.9	432	26.5	766	23.7
Less active	538	33.7	684	42.0	1,222	37.9
Most active	724	45.4	514	31.5	1,238	38.4
Total	1,596		1,630		3,226	
DIY[A]						
Inactive	506	31.7	987	59.9	1,493	46.0
Less active	458	28.7	402	24.4	860	26.5
Most active	631	39.6	259	15.7	890	27.4
Total	1,595		1,648		3,243	
Sport or leisure activity[A]						
Inactive	512	32.2	706	43.8	1,218	38.0
Less active	466	29.3	525	32.5	991	30.9
Most active	614	38.6	382	23.7	996	31.1
Total	1,592		1,613		3,205	
Age 43 years						
Vigorous housework or cleaning[A]						
Inactive	1,146	71.3	429	26.7	1,575	49.0
Less active	356	22.2	537	33.4	893	27.8
Most active	105	6.5	642	39.9	747	23.2
Total	1,607		1,608		3,215	
Heavy gardening[A]						
Inactive	860	54.3	1,101	68.9	1,961	61.6
Less active	412	26.0	302	18.9	714	22.4
Most active	311	19.6	196	12.3	507	15.9
Total	1,583		1,599		3,182	
Heavy building or DIY[A]						
Inactive	1,153	75.0	1,522	95.4	2,675	85.4
Less active	203	13.2	47	2.9	250	8.0
Most active	182	11.8	26	1.6	208	6.6

Total	1,538		1,595		3,133	
Sport or vigorous leisure activity[A]						
Inactive	774	48.6	888	55.4	1,662	52.0
Less active	315	19.8	455	28.4	770	24.1
Most active	503	31.6	259	16.2	762	23.9
Total	1,592		1,602		3,194	
Age 53 years						
Leisure time physical activity						
Inactive	705	48.1	772	50.9	1,477	49.5
Less active	434	29.6	397	26.2	831	27.9
Most active	326	22.3	349	23.0	675	22.6
Total	1,465		1,518		2,983	

[A] χ^2 test for difference between males and females: $P < 0.001$. [B] χ^2 test for difference between males and females: $0.001 \leq P < 0.05$.

Web Table 2. Latent Class Analysis Fit Statistics for Cycling Comparing Models With and Without the Parameters Constrained to be the Same Across Sexes in the Medical Research Council National Survey of Health and Development (n = 3,776).

	1 class	2 classes	3 classes
Parameters allowed to differ between males and females			
No. parameters	13	27	41
Loglikelihood	-7,116.6	-6,882.3	-6,869.3
Smallest class percentage[A]			
Males	100.0	7.5	5.8
Females	100.0	16.6	1.0
Parameters constrained to be the same for males and females			
No. parameters	7	15	23
Loglikelihood	-7,144.5	-6,918.0	-6,895.4
Smallest class percentage[A]			
Males	100.0	12.0	0.8
Females	100.0	9.9	4.6
Overall	100.0	11.0	3.4
Difference in no. parameters	6	12	18
LRT statistic	55.8	71.4	52.2
LRT *P* value	<0.001	<0.001	<0.001

LRT, likelihood ratio test. [A] Based on estimated posterior class membership probabilities.

Web Table 3. Latent Class Analysis Fit Statistics for Leisure Time Physical Activity Comparing Models With and Without the Parameters Constrained to be the Same Across Sexes in the Medical Research Council National Survey of Health and Development (n = 3,671).

	1 class	2 classes	3 classes	4 classes
Parameters allowed to differ between males and females				
No. parameters	33	67	101	135
Loglikelihood	-26,187.0	-25,657.2	-25,404.5	-25,310.4
Smallest class percentage[A]				
Males	100.0	49.6	22.8	16.2
Females	100.0	45.4	16.5	6.6
Parameters constrained to be the same for males and females				
No. parameters	17	35	53	71
Loglikelihood	-27,110.7	-26,172.6	-25,812.3	-25,635.6
Smallest class percentage[A]				
Males	100.0	8.1	0.0	0.0
Females	100.0	3.4	0.1	1.1
Overall	100.0	48.0	26.1	21.4
Difference in no. of parameters	16	32	48	64
LRT statistic	1,847.4	1,030.8	815.6	650.4
LRT *P* value	<0.001	<0.001	<0.001	<0.001

LRT, likelihood ratio test. [A] Based on estimated posterior class membership probabilities.

Web Table 4. Latent Class Analysis Fit Statistics for Cycling Models in the Medical Research Council National Survey of Health and Development.

	Males (n = 1,899)			Females (n = 1,877)		
	1 class	2 classes	3 classes	1 class	2 classes	3 classes
No. parameters	6	13	20	6	13	20
Loglikelihood	-2,327.2	-2,206.9	-2,197.8	-2,171.8	-2,057.8	-2,053.5
Information criteria[A]						
AIC	4,666.5	4,439.8	*4,435.6*	4,355.7	*4,141.7*	4,147.1
BIC	4,699.8	*4,511.9*	4,546.6	4,388.9	*4,213.7*	4,257.8
aBIC	4,680.7	*4,470.6*	4,483.1	4,369.8	*4,172.4*	4,194.3
χ^2 goodness-of-fit tests						
Degrees of freedom	20	13	6	20	13	6
Pearson χ^2 value	299.5	41.6	17.4	415.0	16.1	7.9
Pearson χ^2 *P* value	<0.001	<0.001	0.008	<0.001	0.239	0.242
LRT χ^2 value	218.5	26.6	11.8	189.4	14.2	7.3
LRT χ^2 *P* value	<0.001	0.014	0.067	<0.001	0.358	0.292
Smallest class percentage[B]	100.0	8.6	5.6	100.0	17.9	4.6
Entropy	1.000	0.871	0.648	1.000	0.641	0.685
T vs. T-1 classes						
Difference in no. parameters		7	7		7	7
Lo-Mendell-Rubin adjusted LRT value		236.2	17.8		223.7	8.4
Lo-Mendell-Rubin adjusted LRT *P* value		<0.001	0.17		<0.001	0.51

AIC, Akaike's Information Criterion; BIC, Bayesian Information Criterion; aBIC, sample size-adjusted Bayesian Information Criterion; LRT, likelihood ratio test. [A] Minimum information criteria values are shown in italic type. [B] Based on estimated posterior class membership probabilities.

Web Table 5. Latent Class Analysis Fit Statistics for Leisure Time Physical Activity Models in the Medical Research Council National Survey of Health and Development.

	Males (n = 1,848)				Females (n = 1,823)			
	1 class	2 classes	3 classes	4 classes	1 class	2 classes	3 classes	4 classes
No. parameters	16	33	50	67	16	33	50	67
Loglikelihood	- 12,275.2	- 12,008.0	- 11,882.9	- 11,833.7	- 11,367.1	- 11,104.4	- 10,976.8	- 10,932.0
Information criteria[A]								
AIC	24,582.4	24,082.0	23,865.8	*23,801.3*	22,766.2	22,274.9	22,053.7	*21,998.0*
BIC	24,670.7	24,264.2	*24,141.9*	24,171.3	22,854.3	22,456.6	*22,329.1*	22,367.0
aBIC	24,619.9	24,159.4	23,983.1	*23,958.4*	22,803.5	22,351.8	22,170.2	*22,154.2*
Smallest class percentage[B]	100.0	48.6	22.8	16.2	100.0	45.4	16.5	6.6
Entropy	1.000	0.523	0.557	0.670	1.000	0.495	0.571	0.585
T vs. T-1 classes								
Difference in no. parameters		17	17	17		17	17	17
Lo-Mendell-Rubin adjusted LRT value		530.2	248.2	97.8		521.2	253.2	89.0
Lo-Mendell-Rubin adjusted LRT *P* value		<0.001	0.08	0.28		0.002	0.11	0.40

AIC, Akaike's Information Criterion; BIC, Bayesian Information Criterion; aBIC, sample size-adjusted Bayesian Information Criterion; LRT, likelihood ratio test. [A] Minimum information criteria values are shown in italic type. [B] Based on estimated posterior class membership probabilities. Note: χ^2 goodness-of-fit tests not presented due to unreliability of results.

Web Table 6. Average Latent Class Probabilities for Most Likely Latent Class Membership (Row) by Latent Class (Column) in the Latent Class Analysis Models for Walking, Cycling and Vigorous Physical Activity in the Medical Research Council National Survey of Health and Development.

	Males			Females		
	Class A	Class B	Class C	Class A	Class B	Class C
Walking						
Class A	0.919	0.081		0.826	0.174	
Class B	0.174	0.826		0.308	0.692	
Cycling						
Class A	0.972	0.028		0.934	0.066	
Class B	0.193	0.807		0.248	0.752	
Vigorous physical activity						
Class A	0.835	0.095	0.070	0.837	0.111	0.051
Class B	0.113	0.776	0.111	0.129	0.782	0.090
Class C	0.125	0.137	0.738	0.105	0.139	0.755

Web Appendix

Annotated Mplus code

The following Mplus code relates to the 2-class LCA model for walking in males. Any text following a '!' is a comment.

A comprehensive guide to the Mplus language can be found in the Mplus User's Guide (http://www.statmodel.com/download/usersguide/Mplus Users Guide v6.pdf).

```
TITLE:

  2-class LCA model for walking in males

DATA:

  FILE IS Walking8289_toMplus.dat; !Specify input data file

VARIABLE:

  NAMES ARE id inf sex walk82 walkw82 walkpl82 walkwd89; !Specify all variable names in input data file

  USEVARIABLES = walk82 walkw82 walkpl82 walkwd89; !Specify which variables to use in the LCA

  AUXILIARY = id sex; !Specify variables which are not used in the LCA but which should be included in the output data file

  CATEGORICAL = walk82 walkw82 walkpl82 walkwd89; !Specify which variables are categorical

  USEOBSERVATIONS = sex == 1; !Use males only

  CLASSES = c (2); !2 latent classes

  MISSING ARE .; !Specify missing value indicator

  WEIGHT = inf; !Specify variable containing sample weights

ANALYSIS:

  TYPE = MIXTURE; !Use finite mixture model

  PROC = 2 (STARTS); !Use 2 processors with the random starts distributed between them
```

STARTS = 100 25; !Use 100 random sets of starting values in the initial stage and 25 optimisations in the final stage

STITERATIONS = 20; !Specify the maximum number of iterations allowed in the initial stage to be 20

OUTPUT:

TECH10 TECH11; !Request univariate, bivariate, and response pattern model fit information for the categorical dependent variables in the model (TECH10) and the Lo-Mendell-Rubin likelihood ratio test of model fit (TECH11)

SAVEDATA:

FILE = "Walking8289_cprobs_males_2classes.dat"; !Specify output data file

SAVE CPROBABILITIES; !Request individual posterior probabilities for each class to be outputted

MISSFLAG = 9999; !Specify missing value indicator