A guide to derived measures from the National Child Development Study/1958 British birth cohort: self-reported measures of adulthood chronic fatigue syndrome, irritable bowel syndrome, and CFS-like illness at 42y; child- and adulthood physical activity; and measures of childhood illness and symptoms.

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The National Child Development Study/1958 British birth cohort is a nationally representative birth cohort study that included 98.7% of births in one week in March 1958 (n=17 415) in England, Wales and Scotland (Atherton, Fuller, Shepherd, Strachan, & Power, 2008). Follow-up was good throughout childhood, with 92% of the eligible sample participating at age 7, 92% at age 11 and 87% at age 16 (Power & Elliot, 2006). In adulthood the rate of attrition increased, largely as a result of the data collection occurring through home contact rather than through the school. Seventy six percent participated at age 23, 71% at age 33 and 71% at age 42 (Atherton et al., 2008). The childhood data was obtained from the mother at birth, and the mother, teacher and participant [there was also some medical assessment in childhood that should be noted] at 7, 11 and 16 years. Adulthood data was gathered at 23, 33 and 42 years.

Background to this study:

This research has examined risk and preventive factors for chronic fatigue syndrome/myalgic encephalomyelitis (CFS/ME) and irritable bowel syndrome (IBS) in the 1958 British birth cohort/National Child Development study. Data on the outcome measures was assessed in 1999/2000 during phase 6 of data collection, at which point the cohort members were 42 years. This study has examined a number of life course risk markers for CFS/ME and IBS including childhood adversity, childhood illness, physical activity and psychopathology in childhood and adulthood. This guide includes information on the derivation of the self-report measures of CFS/ME and IBS; CFS-like illness; measures of childhood illness and symptoms; and measures of physical activity in childhood and adulthood. This project titled “General and specific risk markers and preventive factors for chronic fatigue and irritable bowel syndromes in a birth cohort” was funded by the Health Sciences Board at the Medical Research Council

(grant number G0701032), between June 2008-May 2010. The investigators on this project were Charlotte Clark, Laura Goodwin, Peter D White, Stephen Stansfeld and Matthew Hotopf.

The derived childhood adversity variables were not previously archived as part of the Biomedical Survey of the NCDS, and, given the sensitive nature of abuse and neglect reported, have not been archived as part of this grant. Whilst the dataset is anonymised, including adversity data increases the risk of linkage with other individual data from across the lifecourse, which could increase the likelihood of identification. We are happy to collaborate on grant applications with other researchers wishing to work with these data and are happy to advise researchers wishing to use the adversity data for funded projects with specific hypotheses relating to adversity.

As both childhood illness experience and physical activity are strongly related to health across the lifecourse, these data have broad application for future epidemiological studies, examining many different health outcomes. Given their broad relevance, it is unfeasible that we could collaborate with all future applicants wishing to use these data: we are happy to advise researchers wishing to use the derived variables and would like to collaborate in studies using these data in relation to psychological health outcomes.

This guide is structured in the following way:

1. Guide to the derivation of the CFS/ME, IBS and CFS-like illness items.
2. Guide to the derivation of the individual measures of childhood illness and the composite illness categories.
3. Guide to measures of physical activity in childhood and adulthood.

1. SELF-REPORTED CHRONIC FATIGUE SYNDROME/MYALGIC ENCEPHALOMYELITIS, IRRITABLE BOWEL SYNDROME AND A DERIVED MEASURE OF CFS-LIKE ILLNESS; ALL AT 42 YEARS (NCDS6).

At NCDS6 data is available for 11419 participants (61.5%), and is missing for 7139 participants (38.5%).

1.1 Chronic fatigue syndrome/myalgic encephalomyelitis.

At age 42, all participants were asked if they had 'ever had or been told they had persistent back pain or ME'.

2 variables relate to this question:

'backme1'

(Values; 1 = Persistent back pain, lumbago or sciatica, 2 = Chronic fatigue syndrome (ME), 3 = Neither of these)

'backme2'

(Values; 0 = No additional conditions to that from CFSa, 1 & 2 = as above)

[N.B. The 2nd variable was created to allow for participants reporting both of the conditions.]

See the tables below for the frequencies of these conditions:

MC:ever had persistent back pain or ME

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Persistent back pain lumbago or sciatica	2542	13.7	22.3	22.3
	Chronic fatigue syndrome (ME)	72	.4	.6	22.9
	Neither of these	8805	47.4	77.1	100.0
	Total	11419	61.5	100.0	
Missing	-666	7139	38.5		
Total		18558	100.0		

MC:ever had persistent back pain or ME

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No additional conditions to that in CFSa	11367	61.3	99.5	99.5
	Chronic fatigue syndrome (ME)	52	.3	.5	100.0
	Total	11419	61.5	100.0	
Missing	-666	7139	38.5		
Total		18558	100.0		

Overall, 124 participants reported CFS, independent of any co-morbidity.

A new variable was derived to include data on whether or not participants reported CFS/ME, using the syntax below:

```
if ((backme1=2) or (backme2=2)) me=1.
if ((backme1=3) or ((backme1=1) and (backme2 ne 2))) me=0.
frequencies variables = me.
```

Frequencies for the derived variable labelled 'me'.

me

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	11252	60.6	98.9	98.9
	1.00	124	.7	1.1	100.0
	Total	11376	61.3	100.0	
Missing	System	7182	38.7		
Total		18558	100.0		

1.2 Irritable bowel syndrome.

At age 42, all participants were asked if they had 'ever had ulcers, gallstones, IBS, ulcerative colitis or Crohns disease'

Four variables relate to this question, due to the number of conditions enquired about.

'ugicocr1'

(Values; 1 = Peptic, duodenal or gastric ulcer, 2 = Gallstones, 3 = Irritable bowel syndrome or IBS, 4 = Ulcerative colitis, 5 = Crohns disease, 6 = None of these)

'ugicocr2', 'ugicocr3' & 'ugicocr4'

(Values; 0 = No additional conditions to that from IBSa, 1-6 = As above)

The tables below highlight the frequencies these items:

MC:ever had ulcer,gallstones,IBS,ulcerative collitis,Crohns

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Peptic, duodenal or gastric ulcer	496	2.7	4.3	4.3
	Gallstones	239	1.3	2.1	6.4
	Irritable bowel syndrome or IBS	848	4.6	7.4	13.9
	Ulcerative colitis	54	.3	.5	14.3
	Crohn s disease	24	.1	.2	14.5
	None of these	9758	52.6	85.5	100.0
	Total	11419	61.5	100.0	
Missing	-666	7139	38.5		
Total		18558	100.0		

MC:ever had ulcer,gallstones,IBS,ulcerative collitis,Crohns

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No additional conditions to that from IBSa	11266	60.7	98.7	98.7
	Peptic, duodenal or gastric ulcer	5	.0	.0	98.7
	Gallstones	26	.1	.2	98.9
	Irritable bowel syndrome or IBS	100	.5	.9	99.8
	Ulcerative colitis	12	.1	.1	99.9
	Crohn s disease	10	.1	.1	100.0
	Total	11419	61.5	100.0	
Missing	-666	7139	38.5		
Total		18558	100.0		

MC:ever had ulcer,gallstones,IBS,ulcerative collitis,Crohns

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No additional conditions to that from IBSa	11402	61.4	99.9	99.9
	Irritable bowel syndrome or IBS	11	.1	.1	99.9
	Ulcerative colitis	4	.0	.0	100.0
	Crohn s disease	2	.0	.0	100.0
	Total	11419	61.5	100.0	
Missing	-666	7139	38.5		
Total		18558	100.0		

MC:ever had ulcer,gallstones,IBS,ulcerative collitis,Crohns

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No additional conditions to that from IBSa	11417	61.5	100.0	100.0
	Ulcerative colitis	1	.0	.0	100.0
	Crohn s disease	1	.0	.0	100.0
	Total	11419	61.5	100.0	
Missing	-666	7139	38.5		
Total		18558	100.0		

Overall, 959 participants reported IBS, independent of co-morbidity.

A new variable was derived to include data on whether or not participants reported IBS, using the syntax below:

```
if (((ugicocr1=1) and (ugicocr2 ~= 3) and (ugicocr3 ~= 3)) or ((ugicocr1=2)
and (ugicocr2 ~= 3) and (ugicocr3 ~= 3)) or ((ugicocr1=4) and (ugicocr2 ~= 3)
and (ugicocr3 ~= 3)) or ((ugicocr1=5) and (ugicocr2 ~= 3) and (ugicocr3 ~=
3)) or (ugicocr1=6))
IBSoriginal=0.
if ((ugicocr1=3) or (ugicocr2=3) or (ugicocr3=3)) IBSoriginal=1.
frequencies variables = IBSoriginal.
```

Frequencies for the derived variable labelled ‘IBS original’ in the archived data.

IBSoriginal

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	.00	9714	52.3	91.0	91.0
	1.00	959	5.2	9.0	100.0
	Total	10673	57.5	100.0	
Missing	System	7885	42.5		
Total		18558	100.0		

1.3 CFS-like illness.

Participants were assigned as meeting the criteria for this objective measure if they reported the symptom 'Feeling tired most of the time' from the Malaise Inventory **AND** 4 or more out of the following 5 symptoms:

From the Malaise Inventory:

1. 'Do you often have backache'
2. 'Do you often have bad headaches'
3. 'Usually have difficulty falling or staying asleep'
4. 'Troubled with rheumatism or fibrositis?'
   (Values; 0 = no, 1 = yes)

From the General Health Questionnaire (GHQ):

5. 'Can concentrate on what you are doing?'

   [Scored as 1 = Better than usual, 2 = Same as usual, 3 = Less than usual, 4 = Much less than usual.

1.3.1 Deriving the measures from the Malaise Inventory.

```
RECODE mal01 (0=0) (1=1) INTO Mal01Backache.
EXECUTE.
RECODE mal02 (0=0) (1=1) INTO Mal02Tired.
EXECUTE.
RECODE mal04 (0=0) (1=1) INTO Mal04Headaches.
EXECUTE.
RECODE mal06 (0=0) (1=1) INTO Mal06SleepingDifficulties.
EXECUTE.
RECODE mal23 (0=0) (1=1) INTO Mal23Rheumatism.
EXECUTE.
FREQUENCIES VARIABLES=Mal01Backache Mal02Tired Mal04Headaches
Mal06SleepingDifficulties Mal23Rheumatism
  /ORDER=ANALYSIS.
```

Feeling tired most of the time.

Mal02Tired

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	7594	40.9	66.5	66.5
	1.00	3825	20.6	33.5	100.0
	Total	11419	61.5	100.0	
Missing	System	7139	38.5		
Total		18558	100.0		

Backache.

Mal01Backache

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	8010	43.2	70.1	70.1
	1.00	3409	18.4	29.9	100.0
	Total	11419	61.5	100.0	
Missing	System	7139	38.5		
Total		18558	100.0		

Bad headaches.

Mal04Headaches

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	9564	51.5	83.8	83.8
	1.00	1855	10.0	16.2	100.0
	Total	11419	61.5	100.0	
Missing	System	7139	38.5		
Total		18558	100.0		

Difficulty falling or staying asleep.

Mal06SleepingDifficulties

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	8943	48.2	78.3	78.3
	1.00	2476	13.3	21.7	100.0
	Total	11419	61.5	100.0	
Missing	System	7139	38.5		
Total		18558	100.0		

Troubled with rheumatism or fibrositis.

Mal23Rheumatism

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	10824	58.3	94.8	94.8
	1.00	595	3.2	5.2	100.0
	Total	11419	61.5	100.0	
Missing	System	7139	38.5		
Total		18558	100.0		

1.3.2 Deriving the item from the GHQ.

Responses for the GHQ item were dichotomised into a separate item [1 & 2 recoded as 0 = able to concentrate, 3 & 4 recoded as 1 = unable to concentrate] using the syntax below:

```
RECODE ghq1 (3 thru 4=1) (1 thru 2=0) INTO GHQConcentration.
EXECUTE.
FREQUENCIES VARIABLES=GHQConcentration
  /ORDER=ANALYSIS.
```

GHQConcentration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	9321	50.2	82.7	82.7
	1.00	1956	10.5	17.3	100.0
	Total	11277	60.8	100.0	
Missing	System	7281	39.2		
Total		18558	100.0		

1.3.3 Deriving the final item for CFS-like illness

A new variable was created for the sum of the Malaise items 1, 4, 6, 23 and GHQ item using the syntax below:

```
COMPUTE CFlikesymptoms=SUM (Mal01Backache, Mal04Headaches,
Mal06SleepingDifficulties, Mal23Rheumatism, GHQConcentration).
EXECUTE.
FREQUENCIES VARIABLES=CFlikesymptoms
  /ORDER=ANALYSIS.
```

CFlikesymptoms

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	5244	28.3	45.9	45.9
	1.00	3400	18.3	29.8	75.7
	2.00	1755	9.5	15.4	91.1
	3.00	742	4.0	6.5	97.6
	4.00	235	1.3	2.1	99.6
	5.00	43	.2	.4	100.0
	Total	11419	61.5	100.0	
Missing	System	7139	38.5		
Total		18558	100.0		

This variable was then dichotomised into a separate variable for participants reporting 0 to 3 symptoms (0) and participants reporting 4 or 5 symptoms (1):

```
RECODE CFlikesymptoms (0 thru 3=0) (4 thru 5=1) INTO CFlikecutoff.
EXECUTE.
FREQUENCIES VARIABLES=CFlikecutoff
  /ORDER=ANALYSIS.
```

The final stage involved deriving a variable to indicate whether participants met all of the criteria for CFS-like illness. Participants reporting the symptom 'Mal02Tired' who also reported 4 out of the 5 symptoms were scored as meeting the criteria for CFS-like illness, and those who did not meet one or both of these criteria were scored 0. See the syntax below:

```
if ((Mal02Tired=1) AND (CFlikecutoff=1)) CFSlike=1.
if ((Mal02Tired=0) OR (CFlikecutoff=0)) CFSlike=0.
Frequencies variables = CFSlike.
```

CFSlike

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	11178	60.2	97.9	97.9
	1.00	241	1.3	2.1	100.0
	Total	11419	61.5	100.0	
Missing	System	7139	38.5		
Total		18558	100.0		

Using this criteria, 241 participants were scored as meeting the criteria for CFS-like illness in the variables ‘CFSlike’.

2. CHILDHOOD ILLNESSES AND SYMPTOMS.

Deriving the measures of childhood health at NCDS 1, 2 & 3 (7, 11 and 16 years):

One of the aims of this project was to examine specific categories of childhood illnesses and symptoms as a risk for CFS/ME and IBS and this firstly required the derivation of the individual childhood illness variables. The childhood illness data were reported at 7, 11 and 16y, by the child's mother and by the cohort member.

A number of steps were taken to develop the final categories of childhood illnesses:

i. The 1958 database was screened for any illness variables at 7, 11 or 16y and these were listed in an excel spreadsheet.

ii. The individual variables were then categorised into illness groupings that were relevant to this study. This process was based upon existing research and also from discussion with medical professionals. Not all of the illness variables were measured at all ages, so the categories differ slightly by age.

iii. The next stage involved recoding all of the individual childhood illness variables so that all of the missing responses were blank in the dataset, and any ambiguous responses such as "don't know" were also recoded as missing. Some of the variables were derived from multiple choice items, which assessed a number of possible health problems, and had been entered into the dataset accordingly across more than one variable. Any items that were derived from these variables used the information from across all of the related items (see section 2.1 for syntax).

iv. Positive responses to all items were coded as '1' and negative responses were recoded as '0. The individual syntax for the derivation of the new illness variables is shown in section 1.1.

v. For some of the illnesses there was more than one measure/item at each time point, therefore, the final measure was derived using all of the items (see section 2.2 for syntax).

vi. Finally, for each illness category, all of the items in that category at one time point were summed, resulting in the final total scores (see section 2.3 for syntax). See section 2.4 for the frequencies of the illness categories.

The illness categories were as follows:

1. *Somatic symptoms* – 'Headaches', 'Pale, bad turns', 'Poor respiration', 'Recurrent mouth ulcers', 'Sleeping difficulties', 'Sore, red eyes' and 'Very cold hands'.
2. *Gastrointestinal symptoms* – 'Abdominal pain', 'Bilious, diarrhea', 'Feels ill, sick', 'Periodic vomiting', 'Poor appetite' and 'Tummy upsets'.
3. *Gastrointestinal illness* – 'Abdominal disorder', 'Abnormal alimentary system', Gastroenteritis' and 'Hernia'.
4. *Atopy* – 'Allergies', 'Asthma', 'Eczema' and 'Hayfever'.
5. *Longstanding illness* – 'Abnormal heart', 'Abnormal respiratory system', 'Abnormal urogenital system', 'C.N.S. condition', 'Cerebral palsy', 'Congenital heart condition', 'Diabetes', 'Epilepsy', 'Heart condition' 'Nephritis' and 'Nephrosis'.
6. *Infectious illness* – 'Bronchitis', 'Chest infection', 'Chicken pox', 'Glandular fever or Tuberculosis', 'Ear infection', 'Urine infection', 'Infectious disease', 'Infectious fever', 'Infectious hepatitis', 'Kidney infection', 'Many colds', 'Many sore throats', 'Measles', 'Meningitis', 'Mumps', 'Pneumonia', 'Rheumatic fever', 'Scarlet fever', 'Tonsilitis', 'Upper respiratory infection' and 'Whooping cough'.

2.1 Deriving the individual illness variables.

2.1.1 Recoding of the individual illness variables at age 7 (NCDS1):

The first stage involved deriving a new measure for all relevant illness and symptom items in childhood. Some of these were straightforward recodes, when a single variable corresponded to the illness/symptom of interest, and some items were more complex to derive when one item from the original data corresponded to multiple illnesses/symptoms.

Headaches 7y (3 items).

```
RECODE n123 (2=1) (3=0) INTO Headache7ya.
EXECUTE.

RECODE n277 (2=1) (3=0) INTO Headache7b.
EXECUTE.
```

```
if ((n472=4) OR (n473=4) OR (n474=4)) Headache7c=1.
if ((n473=0) AND (n472 ne 4)) Headache7c=0.
```

Pale, bad turns 7y (1 item).

```
if ((n472=5) OR (n473=5) OR (n474=5) OR (n475=5) OR (n476=5))PaleBadTurns7=1.
if ((n473=0) AND (n472 ne 5)) PaleBadTurns7=0.
```

Poor respiration 7y (1 item).

```
if ((n470=2) OR (n471=2)) ManyColds7=1.
if ((n471=0) AND (n470 ne 2)) ManyColds7=0.
```

Sore, red eyes 7y (1 item).

```
if ((n472=8) OR (n473=8) OR (n474=8) OR (n475=8) OR (n476=8)) SoreEyes7=1.
if ((n473=0) AND (n472 ne 8)) SoreEyes7=0.
```

Very cold hands 7y (1 item).

```
if ((n472=9) OR (n473=9) OR (n474=9) OR (n475=9) OR (n476=9)) ColdHands7=1.
if ((n473=0) AND (n472 ne 9)) ColdHands7=0.
```

Abdominal pain 7y (1 item)

```
RECODE n265 (2=1) (3=0) INTO AbPain7.
EXECUTE.
```

Feels ill, sick 7y (1 item)

```
if ((n472=3) OR (n473=3) OR (n474=3)) FeelSick7=1.
if ((n473=0) AND (n472 ne 3)) FeelSick7=0.
```

Periodic vomiting 7y (1 item)

```
RECODE n264 (2=1) (3=0) INTO PeriodicVomit7.
EXECUTE.
```

Poor appetite 7y (1 item)

```
RECODE n130 (2=1) (3=0) INTO Appetite7.
EXECUTE.
```

Abnormal alimentary system 7y (1 item)

```
RECODE n410 (2=0) (3 thru 6=1) INTO AbnAlimentary.
```

```
EXECUTE.
```

Hernia 7y (4 items)

```
RECODE n248 (2=1) (3=0) INTO Hernia7a.
EXECUTE.

RECODE n266 (2=1) (3=0) INTO Hernia7b.
EXECUTE.

RECODE n362 (2=1) (3=0) INTO Hernia7c.
EXECUTE.

RECODE n363 (2=1) (3=0) INTO Hernia7d.
EXECUTE.
```

Asthma 7y (1 item)

```
RECODE n1816 (8=0) (1 thru 7=1) INTO Asthma7.
EXECUTE.
```

Eczema 7y (2 items)

```
RECODE n271 (2=1) (3=0) INTO Eczema7a.
EXECUTE.

RECODE n364 (3=0) (2=1) INTO Eczema7b.
EXECUTE.
```

Hayfever 7y (1 item)

```
RECODE n257 (2=1) (3=0) INTO Hayfever7.
EXECUTE.
```

Abnormal heart 7y (1 item).

```
RECODE n412 (2=0) (3 thru 6=1) INTO AbnHeart7.
EXECUTE.
```

Abnormal respiratory system 7y (1 item).

```
RECODE n409 (2=0) (3 thru 6=1) INTO AbnRespiratory7.
```

```
EXECUTE.
```

Abnormal urogenital system 7y (1 item).

```
RECODE n411 (2=0) (3 thru 6=1) INTO AbnUrogenitary7.
EXECUTE.
```

C.N.S. condition 7y (1 item).

```
RECODE n416 (2=0) (3 thru 6=1) INTO CNScondition7.
EXECUTE.
```

Cerebral palsy 7y (1 item).

```
RECODE n367 (3=0) (4 thru 11=1) INTO CerebralPalsy7.
EXECUTE.
```

Congenital heart condition 7y (1 item).

```
RECODE n263 (2=1) (3=0) INTO ConHeart7.

EXECUTE.
```

Diabetes 7y (1 item).

```
RECODE n417 (2=0) (3 thru 6=1) INTO Diabetes7.
EXECUTE.
```

Epilepsy 7y (1 item).

```
RECODE n415 (2=0) (3 thru 6=1) INTO Epilepsy7.
EXECUTE.
```

Heart condition 7y (3 items).

```
RECODE n350 (3=0) (2=1) INTO HeartCondition7a.
EXECUTE.

RECODE n354 (3=0) (2=1) INTO HeartCondition7b.
EXECUTE.
```

```
RECODE n351 (3=0) (2=1) INTO HeartCondition7c.
EXECUTE.
```

Nephritis 7y (1 item).

```
RECODE n285 (2=1) (3=0) INTO Nephritis7.
EXECUTE.
```

Bronchitis 7y (1 item)

```
RECODE n260 (2=1) (3=0) INTO Bronchitis7.
EXECUTE.
```

Chicken pox 7y (1 item)

```
RECODE n218 (2=1) (3=0) INTO ChickenPox7.
EXECUTE.
```

Glandular fever or Tuberculosis 7y (1 item)

```
RECODE n221 (2=1) (3=0) INTO GForTB7.
EXECUTE.
```

Urine infection 7y (1 item)

```
RECODE n284 (2=1) (3=0) INTO UrineInfec7.
EXECUTE.
```

Many colds 7y (1 item)

```
if ((n470=2) OR (n471=2)) ManyColds7=1.
if ((n471=0) AND (n470 ne 2)) ManyColds7=0.
```

Many sore throats 7y (1 item)

```
RECODE n256 (2=1) (3=0) INTO ThroatInfec7.
```

```
EXECUTE.
```

Measles 7y (2 items)

```
RECODE n215 (2=1) (3=0) INTO Measles7a.
EXECUTE.

RECODE n216 (2=1) (3=0) INTO Measles7b.
EXECUTE.
```

Mumps 7y (1 item)

```
RECODE n219 (2=1) (3=0) INTO Mumps7.
EXECUTE.
```

Pneumonia 7y (1 item)

```
RECODE n261 (2=1) (3=0) INTO Pneumonia7.
EXECUTE.
```

Scarlet fever 7y (1 item)

```
RECODE n220 (2=1) (3=0) INTO ScarletFever7.
EXECUTE.
```

Tonsilitis 7y (1 item)

```
RECODE n246 (2=1) (3=0) INTO Tonsils7.
EXECUTE.
```

Whooping cough 7y (1 item)

```
RECODE n217 (2=1) (3=0) INTO WhoopingCough7.
EXECUTE.
```

2.1.2 Recoding of the individual illness variables at age 11 (NCDS2):

Headaches 11y (3 items).

```
if ((n1321=5) OR (n1322=5) OR (n1323=5) OR (n1324=5) OR (n1325=5))
Headache11a=1.
if ((n1322=0) AND (n1321 ne 5)) Headache11a=0.


RECODE n1341 (2=0) (1=1) INTO Headache11b.
EXECUTE.

if ((n1079=4) OR (n1080=4) OR (n1081=4) OR (n1082=4) OR (n1083=4))
Headaches11c=1.
if ((n1079 ne 4) AND (n1080=0)) Headaches11c=0.
```

Poor respiration 11y (1 item).

```
if ((n1077=1) OR (n1078=1)) PoorBreathing11b=1.
if ((n1077 ne 1) AND (n1078=0)) PoorBreathing11b=0.
```

Sore, red eyes 11y (1 item).

```
if ((n1079=8) OR (n1080=8) OR (n1081=8) OR (n1082=8) OR (n1083=8))
RedEyes11=1.
if ((n1079 ne 8) AND (n1080=0)) RedEyes11=0.
```

Very cold hands 11y (1 item).

```
if ((n1079=9) OR (n1080=9) OR (n1081=9) OR (n1082=9) OR (n1083=9))
ColdHands11=1.
if ((n1079 ne 9) AND (n1080=0)) ColdHands11=0.
```

Recurrent mouth ulcers 11y (1 item).

```
RECODE n1347 (2=0) (1=1) INTO MouthUlcers11.
EXECUTE.
```

Abdominal pain 11y (3 items)

```
if ((n1321=4) OR (n1322=4) OR (n1323=4) OR (n1324=4) OR (n1325=4))
AbPain11a=1.
```

```
if ((n1322=0) AND (n1321 ne 4)) AbPain11a=0.

RECODE n1344 (2=0) (1=1) INTO AbPain11b.
EXECUTE.

RECODE n1490 (2=1) (1=0) (3 thru 5=0) INTO AbPains11c.
EXECUTE.
```

Periodic vomiting 11y (1 item)

```
RECODE n1343 (2=0) (1=1) INTO RecVomiting11.
EXECUTE.
```

Tummy upsets 11y (1 item)

```
if ((n1079=3) OR (n1080=3) OR (n1081=3) OR (n1082=3) OR (n1083=3))
TummyUpsets11=1.
if ((n1079 ne 3) AND (n1080=0)) TummyUpsets11=0.
```

Abdominal disorder 11y (1 item).

```
if ((n1490=5) OR (n1491=5)) AbComplaint11=1.
if ((n1491=0) AND (n1490 ne 5)) AbComplaint11=0.
```

Hernia 11y (2 items).

```
if ((n1490=3) OR (n1490=4) OR (n1491=3) OR (n1491=4)) Hernia11=1.
if ((n1491=0) AND (n1490 ne 3) AND (n1490 ne 4) AND (n1491 ne 3) AND (n1491
ne 4)) Hernia11=0.


if ((n1503=3) OR (n1504=3) OR (n1503=4) OR (n1504=4)) Hernia11b=1.
if ((n1503 ne 3) AND (n1503 ne 4) AND (n1504 ne 3) AND (n1504 ne 4))
Hernia11b=0.
```

Epilepsy 11y (1 item).

```
if ((n1307=1) OR (n1308=1) OR (n1307=2) OR (n1308=2) OR (n1307=3) OR
(n1308=3)) Epilepsy11=1.
```

```
if ((n1308=0) AND (n1307 ne 1) AND (n1307 ne 2) AND (n1307 ne 3))
Epilepsy11=0.
```

[N.B. The derived variable for epilepsy at 11y includes those reporting a major convulsion, minor convulsion or other convulsion.]

Heart condition 11y (2 items).

```
RECODE n1352 (2=0) (1=1) INTO HeartCondition11a.
EXECUTE.

RECODE n1486 (1=0) (2 thru 3=1) INTO HeartCondition11b.
EXECUTE.
```

Nephritis 11y (1 item).

```
if ((n1494=3) OR (n1495=3) OR (n1496=3)) Nephritis11=1.
if ((n1495=0) AND (n1494 ne 3)) Nephritis11=0.
```

Nephrosis 11y (1 item).

```
if ((n1494=4) OR (n1495=4) OR (n1496=4)) Nephrosis11=1.
if ((n1495=0) AND (n1494 ne 4)) Nephrosis11=0.
```

Asthma 11y (2 items)

```
if ((n1321=3) OR (n1322=3) OR (n1323=3) OR (n1324=3) OR (n1325=3))
Asthma11a=1.
if ((n1322=0) AND (n1321 ne 3)) Asthma11a=0.

RECODE n1305 (1=1) (2=0) (3=0) INTO Asthma11b.
EXECUTE.
```

Eczema 11y (2 items)

```
RECODE n1350 (2=0) (1=1) INTO Eczema11a.
EXECUTE.

RECODE n1487 (2=1) (1=0) (3 thru 6=0) INTO Eczema11b.
EXECUTE.
```

Hayfever 11y (1 item)

```
RECODE n1342 (2=0) (1=1) INTO Hayfever11.
EXECUTE.
```

Bronchitis 11y (2 items)

```
if ((n1321=2) OR (n1322=2) OR (n1323=2) OR (n1324=2) OR (n1325=2))
Bronchitis11=1.
if ((n1322=0) AND (n1321 ne 2)) Bronchitis11=0.

RECODE n1305 (3=0) (2=1) INTO Bronchitis11b.
EXECUTE.
```

Chicken pox 11y (1 item)

```
if ((n1287=4) OR (n1288=4) OR (n1289=4) OR (n1290=4)) ChickenPox11a=1.
if ((n1287 ne 4) AND (n1288 ne 4) AND (n1289 ne 4) AND (n1290 ne 4))
ChickenPox11a=0.
```

Tuberculosis 11y (1 item).

```
if ((n1294=4) OR (n1295=4) OR (n1296=4) OR (n1293=4)) TB11=1.
if ((n1294=0) AND (n1293 ne 4)) TB11=0.
```

Urine infection 11y (1 item).

```
if ((n1494=5) OR (n1495=5) OR (n1496=5)) UrinaryInfec11=1.
if ((n1495=0) AND (n1494 ne 5)) UrinaryInfec11=0.
```

Hepatitis 11y (1 item).

```
if ((n1294=2) OR (n1295=2) OR (n1296=2) OR (n1293=2)) Hepatitis11=1.
if ((n1294=0) AND (n1293 ne 2)) Hepatitis11=0.
```

Infectious disease 11y (1 item).

```
if ((n1321=6) OR (n1322=6) OR (n1323=6) OR (n1324=6) OR (n1325=6))
InfecDis11a=1.
if ((n1322=0) AND (n1321 ne 6)) InfecDis11a=0.
```

Many colds11y (1 item).

```
if ((n1077=2) OR (n1078=2)) ManyColds11b=1.
if ((n1077 ne 2) AND (n1078=0)) ManyColds11b=0.
```

Many sore throats 11y (1 item).

```
RECODE n1348 (2=0) (1=1) INTO ThroatInfec11a.
EXECUTE.
```

Measles 11y (2 items).

```
if ((n1287=1)) Measles11a=1.
if ((n1287 ne 1)) Measles11a=0.

if ((n1287=2) OR (n1288=2)) GMeasles11a=1.
if ((n1288 ne 2) AND (n1287 ne 2)) GMeasles11a=0.
```

Meningitis 11y (1 item).

```
if ((n1294=3) OR (n1295=3) OR (n1296=3) OR (n1293=3)) Meningitis11=1.
if ((n1294=0) AND (n1293 ne 3)) Meningitis11=0.
```

Mumps 11y (1 item).

```
if ((n1287=3) OR (n1288=3) OR (n1289=3)) Mumps11a=1.
if ((n1288 ne 3) AND (n1287 ne 3) AND (n1289 ne 3)) Mumps11a=0.
```

Rheumatic fever 11y (1 item).

```
if ((n1294=1) OR (n1295=1) OR (n1296=1) OR (n1293=1)) RheumaticFev11=1.
if ((n1294=0) AND (n1293 ne 1)) RheumaticFev11=0.
```

Scarlet fever 11y (1 item).

```
if ((n1287=6) OR (n1288=6) OR (n1289=6) OR (n1290=6) OR (n1291=6) OR
(n1292=6)) ScarletFever11a=1.
if ((n1287 ne 6) AND (n1288 ne 6) AND (n1289 ne 6) AND (n1290 ne 6) AND
(n1291 ne 6) AND (n1292 ne 6)) ScarletFever11a=0.
```

Tonsilitis 11y (2 items).

```
RECODE n1353 (2=0) (1=1) INTO Tonsilitis11.
EXECUTE.

if ((n1503=2) OR (n1504=2)) Tonsillectomy11=1.
if ((n1504=0) AND (n1503 ne 2)) Tonsillectomy11=0.
```

Whooping cough 11y (1 item).

```
if ((n1287=5) OR (n1288=5) OR (n1289=5) OR (n1290=5) OR (n1291=5))
WhoopingC11a=1.
if ((n1287 ne 5) AND (n1288 ne 5) AND (n1289 ne 5) AND (n1290 ne 5) AND
(n1291 ne 5)) WhoopingC11a=0.
```

2.1.3 Recoding of the individual illness variables at age 16 (NCDS3):

Headaches 16y (3 items).

```
if ((n2554=4) OR (n2555=4) OR (n2556=4) OR (n2557=4) OR (n2558=4) OR
(n2559=4)) Headache16a=1.
if ((n2554 ne 4) AND (n2555 ne 4) AND (n2556 ne 4) AND (n2557 ne 4) AND
(n2558 ne 4) AND (n2559 ne 4)) Headache16a=0.

RECODE n2624 (1=0) (2 thru 6=1) INTO Headache16b.
EXECUTE.

if ((n1912=8) OR (n1913=8) OR (n1914=8) OR (n1915=8) OR (n1916=8) OR
(n1917=8) OR (n1918=8)) Headaches16c=1.
if ((n1913=0) AND (n1912 ne 8)) Headaches16c=0.
```

Recurrent mouth ulcers 16y (1 item).

```
if ((n2560=6) OR (n2561=6) OR (n2562=6) OR (n2563=6) OR (n2564=6) OR
(n2565=6)) MouthUlcers16a=1.
if ((n2561=0) AND (n2560 ne 6)) MouthUlcers16a=0.
```

Sleeping problems 16y (1 item).

```
RECODE n2513 (1=0) (2 thru 3=1) INTO SleepingProb16.
EXECUTE.
```

Abdominal pain 16y (2 items).

```
if ((n2554=8) OR (n2555=8) OR (n2556=8) OR (n2557=8) OR (n2558=8) OR
(n2559=8)) AbPain16a=1.
if ((n2554 ne 8) AND (n2555 ne 8) AND (n2556 ne 8) AND (n2557 ne 8) AND
(n2558 ne 8) AND (n2559 ne 8)) AbPain16a=0.

if ((n2560=5) OR (n2561=5) OR (n2562=5) OR (n2563=5) OR (n2564=5) OR
(n2565=5)) AbPain16b=1.
if ((n2561=0) AND (n2560 ne 5)) AbPain16b=0.
```

Periodic vomiting 16y (1 item).

```
if ((n2560=2) OR (n2561=2) OR (n2562=2) OR (n2563=2) OR (n2564=2) OR
(n2565=2)) Vomiting16a=1.
if ((n2561=0) AND (n2560 ne 2)) Vomiting16a=0.
```

Poor appetite 16y (1 item).

```
if ((n2511=1) OR (n2512=1)) PoorAppetite16=1.
if ((n2511 ne 1) AND (n2512=0)) PoorAppetite16=0.
```

Diarrhea 16y (1 item).

```
if ((n2554=6) OR (n2555=6) OR (n2556=6) OR (n2557=6) OR (n2558=6) OR
(n2559=6)) Diarrhea16a=1.
if ((n2554 ne 6) AND (n2555 ne 6) AND (n2556 ne 6) AND (n2557 ne 6) AND
(n2558 ne 6) AND (n2559 ne 6)) Diarrhea16a=0.
```

Abdominal disorder 16y (2 items).

```
if ((n2598=9) OR (n2599=9) OR (n2600=9) OR (n2601=9)) AbdomCond16a=1.
if ((n2599=0) AND (n2598 ne 9)) AbdomCond16a=0.

 if ((n2603=12) OR (n2604=12) OR (n2605=12) OR (n2606=12) OR (n2607=12) OR
(n2608=12)) AbdomCond16b=1.

if ((n2603 ne 12) AND (n2604 ne 12) AND (n2605 ne 12) AND (n2606 ne 12))
AbdomCond16b=0.
```

Abnormal alimentary system 16y (1 item).

```
RECODE n2027 (3 thru 7=1) (1 thru 2=0) INTO AbAlimenSystem16.
EXECUTE.
```

Gastroenteritis 16y (1 item).

```
if ((n1912=5) OR (n1913=5) OR (n1914=5) OR (n1915=5) OR (n1916=5) OR
(n1917=5) OR (n1918=5)) Gastroenteritis16=1.
if ((n1913=0) AND (n1912 ne 5)) Gastroenteritis16=0.
```

Heart condition 16y (3 items).

```
if ((n2598=8) OR (n2599=8) OR (n2600=8) OR (n2601=8)) HeartCond16a=1.
if ((n2599=0) AND (n2598 ne 8)) HeartCond16a=0.

if ((n2603=11) OR (n2604=11) OR (n2605=11) OR (n2606=11) OR (n2607=11) OR
(n2608=11)) HeartCond16b=1.
if ((n2603 ne 11) AND (n2604 ne 11) AND (n2605 ne 11) AND (n2606 ne 11))
HeartCond16b=0.

if ((n2663=14) OR (n2664=14) OR (n2665=14) OR (n2666=14) OR (n2667=14))
HeartCond16c=1.
if ((n2664=0) AND (n2663 ne 14)) HeartCond16c=0.
```

Diabetes 16y (2 items).

```
if ((n2663=17) OR (n2664=17) OR (n2665=17) OR (n2666=17) OR (n2667=17))
Diabetes16a=1.
if ((n2664=0) AND (n2663 ne 17)) Diabetes16a=0.

RECODE n2034 (3 thru 7=1) (1 thru 2=0) INTO Diabetes16b.
EXECUTE.
```

Epilepsy 16y (2 items).

```
if ((n2663=7) OR (n2664=7) OR (n2665=7) OR (n2666=7) OR (n2667=7))
Epilepsy16=1.
if ((n2664=0) AND (n2663 ne 7)) Epilepsy16=0.
```

C.N.S.condition 16y (1 item).

```
RECODE n2033 (3 thru 7=1) (1 thru 2=0) INTO CNSCondition16.
EXECUTE.
```

Abnormal Heart 16y (1 item).

```
RECODE n2029 (3 thru 7=1) (1 thru 2=0) INTO AbnormalHeart16.
EXECUTE.
```

Abnormal respiratory system 16y (1 item).

```
RECODE n2026 (3 thru 7=1) (1 thru 2=0) INTO AbRespSystem16.
EXECUTE.
```

Abnormal urogenital system 16y (1 item).

```
RECODE n2028 (3 thru 7=1) (1 thru 2=0) INTO AbUrogenital16.
EXECUTE.
```

Asthma 16y (6 items).

```
if ((n2554=3) OR (n2555=3) OR (n2556=3) OR (n2557=3) OR (n2558=3) OR
(n2559=3)) Asthma16a=1.
if ((n2554 ne 3) AND (n2555 ne 3) AND (n2556 ne 3) AND (n2557 ne 3) AND
(n2558 ne 3) AND (n2559 ne 3)) Asthma16a=0.

if ((n2598=2) OR (n2599=2) OR (n2600=2) OR (n2601=2)) Asthma16b=1.
if ((n2599=0) AND (n2598 ne 2)) Asthma16b=0.

if ((n2603=5) OR (n2604=5) OR (n2605=5) OR (n2606=5) OR (n2607=5) OR
(n2608=5)) Asthma16c=1.
if ((n2603 ne 5) AND (n2604 ne 5) AND (n2605 ne 5) AND (n2606 ne 5))
Asthma16c=0.

RECODE n2617 (1=1) (2=0) INTO Asthma16d.
EXECUTE.

if ((n2663=10) OR (n2664=10) OR (n2665=10) OR (n2666=10) OR (n2667=10))
Asthma16e=1.
if ((n2664=0) AND (n2663 ne 10)) Asthma16e=0.
```

```
if ((n1912=3) OR (n1913=3) OR (n1914=3) OR (n1915=3) OR (n1916=3) OR
(n1917=3) OR (n1918=3)) Asthma16f=1.
if ((n1913=0) AND (n1912 ne 3)) Asthma16f=0.
```

Allergies 16y (2 items).

```
if ((n2603=2) OR (n2604=2) OR (n2605=2) OR (n2606=2) OR (n2607=2) OR
(n2608=2)) Allergy16a=1.
if ((n2603 ne 2) AND (n2604 ne 2) AND (n2605 ne 2) AND (n2606 ne 2))
Allergy16a=0.

if ((n1912=10) OR (n1913=10) OR (n1914=10) OR (n1915=10) OR (n1916=10) OR
(n1917=10) OR (n1918=10)) Allergy16b=1.
if ((n1913=0) AND (n1912 ne 10)) Allergy16b=0.
```

Eczema 16y(1 item).

```
if ((n2560=9) OR (n2561=9) OR (n2562=9) OR (n2563=9) OR (n2564=9) OR
(n2565=9)) Eczema16a=1.
if ((n2561=0) AND (n2560 ne 9)) Eczema16a=0.
```

Hayfever 16y (1 item).

```
if ((n2560=1) OR (n2561=1) OR (n2562=1) OR (n2563=1) OR (n2564=1) OR
(n2565=1)) Hayfever16a=1.
if ((n2561=0) AND (n2560 ne 1)) Hayfever16a=0.
```

Bronchitis 16y (2 items).

```
if ((n2554=2) OR (n2555=2) OR (n2556=2) OR (n2557=2) OR (n2558=2) OR
(n2559=2)) Bronchitis16a=1.
if ((n2554 ne 2) AND (n2555 ne 2) AND (n2556 ne 2) AND (n2557 ne 2) AND
(n2558 ne 2) AND (n2559 ne 2)) Bronchitis16a=0.

if ((n1912=2) OR (n1913=2) OR (n1914=2) OR (n1915=2) OR (n1916=2) OR
(n1917=2) OR (n1918=2)) Bronchitis16b=1.
if ((n1913=0) AND (n1912 ne 2)) Bronchitis16b=0.
```

Chest infection 16y (2 items).

```
if ((n2598=4) OR (n2599=4) OR (n2600=4) OR (n2601=4)) ChestInfec16a=1.
if ((n2599=0) AND (n2598 ne 4)) ChestInfec16a=0.
```

```
if ((n2603=7) OR (n2604=7) OR (n2605=7) OR (n2606=7) OR (n2607=7) OR
(n2608=7)) ChestInfec16b=1.
if ((n2603 ne 7) AND (n2604 ne 7) AND (n2605 ne 7) AND (n2606 ne 7))
ChestInfec16b=0.
```

Infectious disease 16y (1 item).

```
if ((n2554=9) OR (n2555=9) OR (n2556=9) OR (n2557=9) OR (n2558=9) OR
(n2559=9)) InfecDisease16a=1.
if ((n2554 ne 9) AND (n2555 ne 9) AND (n2556 ne 9) AND (n2557 ne 9) AND
(n2558 ne 9) AND (n2559 ne 9)) InfecDisease16a=0.
```

Tonsilitis 16y (1 item).

```
RECODE n2590 (-2=0) (-1=0) (1 thru 9=0) (10 thru 12=1) INTO Tonsilitis16.
EXECUTE.
```

[N.B. The tonsillitis variable has been derived so that it only includes operations reported from 12 to 16y, rather than including operations before the previous data collection.]

Upper respiratory infection 16y (1 item).

```
if ((n2603=6) OR (n2604=6) OR (n2605=6) OR (n2606=6) OR (n2607=6) OR
(n2608=6)) UpResInfec16a=1.
if ((n2603 ne 6) AND (n2604 ne 6) AND (n2605 ne 6) AND (n2606 ne 6))
UpResInfec16a=0.
```

Infectious fever 16y (1 item).

```
if ((n1912=4) OR (n1913=4) OR (n1914=4) OR (n1915=4) OR (n1916=4) OR
(n1917=4) OR (n1918=4)) InfecFever16=1.
if ((n1913=0) AND (n1912 ne 4)) InfecFever16=0.
```

2.2 Deriving the individual illness variables for items with more than one question at a single phase of the data collection.

As can be seen from the above section, there were some symptoms/illnesses which had multiple measures at the same phase of data collection (e.g. headaches at 7y). These items were therefore combined, as it is possible, that an individual might have score positively in one particular measure and not in another. If there was a positive response to any one of items, then this was derived as being a positive response. The syntax below shows how these items were derived. These items were then used to derive the scale totals, in addition to the individual items from the above section (when there was only one item per illness,per phase of data collection).

Headaches 7y

```
if ((Headache7ya=1) OR (Headache7b=1) OR (Headache7c=1)) Headache7=1.
if ((Headache7ya=0) AND (Headache7b=0) AND (Headache7c=0)) Headache7=0.
```

Hernia 7y

```
if ((Hernia7a=1) OR (Hernia7b=1) OR (Hernia7c=1)) Hernia7=1.
if ((Hernia7a=0) AND (Hernia7b=0) AND (Hernia7c=0)) Hernia7=0.
```

Eczema 7y

```
if ((Eczema7a=1) OR (Eczema7b=1)) Eczema7=1.
if ((Eczema7a=0) AND (Eczema7b=0)) Eczema7=0.
```

Heart condition 7y

```
if ((HeartCondition7a=1) OR (HeartCondition7b=1) OR (HeartCondition7c=1))
HeartCondition7=1.
if ((HeartCondition7a=0) AND (HeartCondition7b=0) AND (HeartCondition7c=0))
HeartCondition7=0.
```

Measles 7y

```
if ((Measles7a=1) OR (Measles7b=1)) Measles7=1.

if ((Measles7a=0) AND (Measles7b=0)) Measles7=0.
```

Headaches 11y.

```
if ((Headache11a=1) OR (Headache11b=1) OR (Headaches11c=1)) Headache11y=1.
if ((Headache11a=0) AND (Headache11b=0) AND (Headaches11c=0)) Headache11y=0.
```

Abdominal pain 11y.

```
if ((AbPain11a=1) OR (AbPain11b=1) OR (AbPains11c=1)) AbPain11y=1.
if ((AbPain11a=0) AND (AbPain11b=0) AND (AbPains11c=0)) AbPain11y=0.
```

Hernia 11y.

```
if ((Hernia11=1) OR (Hernia11b=1)) Hernia11y=1.
if ((Hernia11=0) AND (Hernia11b=0)) Hernia11y=0.
```

Heart condition 11y.

```
if ((HeartCondition11a=1) OR (HeartCondition11b=1)) HeartCondition11y=1.
if ((HeartCondition11a=0) AND (HeartCondition11b=0)) HeartCondition11y=0.
```

Asthma 11y.

```
if ((Asthma11a=1) OR (Asthma11b=1)) Asthma11y=1.
if ((Asthma11a=0) AND (Asthma11b=0)) Asthma11y=0.
```

Eczema 11y.

```
if ((Eczema11a=1) OR (Eczema11b=1)) Eczema11y=1.
if ((Eczema11a=0) AND (Eczema11b=0)) Eczema11y=0.
```

Bronchitis 11y.

```
if ((Bronchitis11=1) OR (Bronchitis11b=1)) Bronchitis11y=1.
if ((Bronchitis11=0) AND (Bronchitis11b=0)) Bronchitis11y=0.
```

Measles 11y.

```
if ((Measles11a=1) OR (GMeasles11a=1)) Measles11=1.
if ((Measles11a=0) AND (GMeasles11a=0)) Measles11=0.
```

Tonsillitis 11y.

```
if ((Tonsilitis11=1) OR (Tonsillectomy11=1)) Tonsilitis11y=1.
if ((Tonsilitis11 ne 1) AND (Tonsillectomy11 ne 1)) Tonsilitis11y=0.
```

Headaches 16y.

```
if ((Headache16a=1) OR (Headache16b=1) OR (Headaches16c=1)) Headaches16y=1.
if ((Headache16a=0) AND (Headache16b=0) AND (Headaches16c=0)) Headaches16y=0.
```

Abdominal pain 16y.

```
if ((AbPain16a=1) OR (AbPain16b=1)) AbPain16y=1.
if ((AbPain16a=0) AND (AbPain16b=0)) AbPain16y=0.
```

Abdominal disorder 16y.

```
if ((AbdomCond16a=1) OR (AbdomCond16b=1)) AbdomCond16y=1.
if ((AbdomCond16a=0) AND (AbdomCond16b=0)) AbdomCond16y=0.
```

Heart condition 16y.

```
if ((HeartCond16a=1) OR (HeartCond16b=1) OR (HeartCond16c=1)) HeartCond16y=1.
if ((HeartCond16a=0) AND (HeartCond16b=0) AND (HeartCond16c=0))
HeartCond16y=0.
```

Diabetes 16y.

```
if ((Diabetes16a=1) OR (Diabetes16b=1)) Diabetes16y=1.
if ((Diabetes16a=0) AND (Diabetes16b=0)) Diabetes16y=0.
```

Epilepsy 16y.

```
if ((Epilepsy16=1) OR (Epilepsy16b=1)) Epilepsy16y=1.
if ((Epilepsy16=0) AND (Epilepsy16b=0)) Epilepsy16y=0.
```

Asthma 16y.

```
if ((Asthma16a=1) OR (Asthma16b=1) OR (Asthma16c=1) OR (Asthma16d=1) OR
(Asthma16e=1) OR (Asthma16f=1)) Asthma16y=1.
if ((Asthma16a=0) AND (Asthma16b=0) AND (Asthma16c=0) AND (Asthma16d=0) AND
(Asthma16e=0) AND (Asthma16f=0)) Asthma16y=0.
```

Allergies 16y.

```
if ((Allergy16a=1) OR (Allergy16b=1)) Allergies16y=1.
if ((Allergy16a=0) AND (Allergy16b=0)) Allergies16y=0.
```

Bronchitis 16y.

```
if ((Bronchitis16a=1) OR (Bronchitis16b=1)) Bronchitis16y=1.
if ((Bronchitis16a=0) AND (Bronchitis16b=0)) Bronchitis16y=0.
```

Chest infection 16y.

```
if ((ChestInfec16a=1) OR (ChestInfec16b=1)) ChestInfec16y=1.
if ((ChestInfec16a=0) AND (ChestInfec16b=0)) ChestInfec16y=0.
```

2.3 Deriving the final composite illness categories.

The syntax is shown below for each category total, ordered by phase of data collection. There is a measure of somatic symptoms, gastrointestinal symptoms, gastrointestinal illness, longstanding illness, atopy and infectious illness available at 7, 11 and 16y. The syntax for a particular category differs by phase of data collection, due to different illness items being available at different time points.
The syntax shows that for each category, all relevant items were summed, whilst only selecting those cases with full data (-1 was selected to represent missing data). This was to prevent missing values being considered equal to 0, which should only be coded when the cohort member had reported that they did not have a particular illness.

2.3.1 At 7 years (NCDS1).

Somatic symptoms 7y.

```
IF  ((Headache7 > -1) AND (PaleBadTurns7 > -1) AND (PoorRespiration7 > -1)
AND (SoreEyes7 > -1) AND (ColdHands7 > -1)) Somatic7years=SUM (Headache7,
PaleBadTurns7, PoorRespiration7, SoreEyes7, ColdHands7).
EXECUTE.
FREQUENCIES VARIABLES=Somatic7years
  /ORDER=ANALYSIS.
```

Gastrointestinal symptoms 7y.

```
IF  ((PeriodicVomit7 > -1) AND (AbPain7 > -1) AND (Appetite7 > -1) AND
(FeelSick7 > -1)) GastroSymptoms7y=SUM (PeriodicVomit7, AbPain7, Appetite7,
FeelSick7).
EXECUTE.
FREQUENCIES VARIABLES=GastroSymptoms7y
  /ORDER=ANALYSIS.
```

Gastrointestinal illness 7y.

```
IF  ((Hernia7 > -1) AND (AbnAlimentary7 > -1)) GastroIllness7y=SUM (Hernia7,
AbnAlimentary7).
EXECUTE.
FREQUENCIES VARIABLES=GastroIllness7y
  /ORDER=ANALYSIS.
```

Atopy 7y.

```
IF  ((Eczema7 > -1) AND (Asthma7 > -1) AND (Hayfever7 > -1) ) Atopy7y=SUM
(Eczema7, Asthma7, Hayfever7).
EXECUTE.
FREQUENCIES VARIABLES=Atopy7y
  /ORDER=ANALYSIS.
```

Longstanding illness 7y.

```
IF  ((HeartCondition7 > -1) AND (Nephritis7 > -1) AND (ConHeart7 > -1) AND
(CerebralPalsy7 > -1) AND (AbnRespiratory7 > -1) AND (AbnUrogenitary7 > -1)
AND (AbnHeart7 > -1) AND (Epilepsy7 > -1) AND (CNScondition7 > -1) AND
(Diabetes7 > -1))
LongstandingIllness7y=SUM (HeartCondition7, Nephritis7, ConHeart7,
CerebralPalsy7, AbnRespiratory7, AbnUrogenitary7, AbnHeart7, Epilepsy7,
CNScondition7, Diabetes7).
EXECUTE.
FREQUENCIES VARIABLES=LongstandingIllness7y
  /ORDER=ANALYSIS.
```

Infectious illness 7y.

```
IF  ((Measles7 > -1) AND ( WhoopingCough7 > -1) AND (ChickenPox7 > -1) AND
(Mumps7 > -1) AND (ScarletFever7 > -1) AND (Tonsils7 > -1) AND (GForTB7 > -1)
AND (UrineInfec7 > -1) AND (ThroatInfec7 > -1) AND (Bronchitis7 > -1) AND
(Pneumonia7 > -1) AND
(ManyColds7 > -1)) InfectiousIllness7y=SUM (Measles7, WhoopingCough7,
ChickenPox7, Mumps7, ScarletFever7, Tonsils7, GForTB7, UrineInfec7,
ThroatInfec7, Bronchitis7, Pneumonia7, ManyColds7).
EXECUTE.
FREQUENCIES VARIABLES=InfectiousIllness7y
  /ORDER=ANALYSIS.
```

2.3.2 At 11 years (NCDS2).

Somatic symptoms 11y.

```
IF  ( (Headache11y > -1) AND (PoorBreathing11 > -1) AND (RedEyes11 > -1) AND
(ColdHands11 > -1) AND (MouthUlcers11 > -1)) SomaticSymptoms11y=SUM
(Headache11y, PoorBreathing11, RedEyes11, ColdHands11, MouthUlcers11).
EXECUTE.
FREQUENCIES VARIABLES=SomaticSymptoms11y
  /ORDER=ANALYSIS.
```

Gastrointestinal symptoms 11y.

```
IF  ((AbPain11y> -1) AND (RecVomiting11> -1) AND (TummyUpsets11> -1))
GastroSymptoms11y=SUM (AbPain11y, RecVomiting11, TummyUpsets11).
EXECUTE.
FREQUENCIES VARIABLES=GastroSymptoms11y
  /ORDER=ANALYSIS.
```

Gastrointestinal illness 11y.

```
IF  ((Hernia11y > -1) AND (AbComplaint11 > -1))
GastroIllness11y=SUM(Hernia11y, AbComplaint11).
EXECUTE.
FREQUENCIES VARIABLES=GastroIllness11y
  /ORDER=ANALYSIS.
```

Atopy 11y.

```
IF  ((Asthma11y > -1) AND (Eczema11y > -1) AND (Hayfever11 > -1))
Atopy11y=SUM (Asthma11y, Eczema11y, Hayfever11).
EXECUTE.
FREQUENCIES VARIABLES=Atopy11y
  /ORDER=ANALYSIS.
```

Longstanding illness 11y.

```
IF  ((HeartCondition11y > -1) AND (Nephritis11 > -1) AND (Nephrosis11 > -1)
AND (Epilepsy11 > -1)) LongstandingIllness11y=SUM (HeartCondition11y,
Nephritis11, Nephrosis11, Epilepsy11).
EXECUTE.
FREQUENCIES VARIABLES=LongstandingIllness11y
  /ORDER=ANALYSIS.
```

Infectious illness 11y.

```
IF  ((Measles11 > -1) AND (Bronchitis11y > -1) AND (Mumps11a > -1) AND
(ChickenPox11a > -1) AND (WhoopingC11a > -1) AND (ScarletFever11a > -1) AND
(RheumaticFev11 > -1) AND (Hepatitis11 > -1) AND (Meningitis11 > -1) AND
(TB11 > -1) AND (InfecDis11a > -1)
AND (ThroatInfec11a > -1) AND (Tonsilitis11y > -1) AND (UrinaryInfec11 > -1)
AND (ManyColds11 > -1)) InfecIllness11=SUM (Measles11, Bronchitis11y,
Mumps11a, ChickenPox11a, WhoopingC11a, ScarletFever11a, RheumaticFev11,
Hepatitis11, Meningitis11, TB11,
InfecDis11a, ThroatInfec11a, Tonsilitis11y, UrinaryInfec11, ManyColds11).
EXECUTE.
FREQUENCIES VARIABLES=InfecIllness11
  /ORDER=ANALYSIS.
```

2.3.3 At 16 years (NCDS3).

Somatic symptoms 16y.

```
IF  ((Headaches16y > -1) AND (SleepingProb16 > -1) AND (MouthUlcers16a > -1))
SomaticSymptoms16y=SUM(Headaches16y, SleepingProb16, MouthUlcers16a).
EXECUTE.
```

Gastrointestinal symptoms 16y.

```
IF  ((AbPain16y > -1) AND (Vomiting16a > -1) AND (PoorAppetite16 > -1) AND
(Diarrhea16a > -1)) GastroSymptoms16y=SUM(AbPain16y, Vomiting16a,
PoorAppetite16, Diarrhea16a).
EXECUTE.
```

Gastrointestinal illness 16y.

```
IF  ((AbdomCond16y > -1) AND (AbAlimenSystem16 > -1) AND (Gastroenteritis16 >
-1) ) GastroIllness16y=SUM(AbdomCond16y, AbAlimenSystem16,
Gastroenteritis16).
EXECUTE.
FREQUENCIES VARIABLES=GastroIllness16y
  /ORDER=ANALYSIS.
```

Atopy 16y.

```
IF  ((Asthma16y > -1) AND (Allergies16y > -1) AND (Eczema16a > -1) AND
(Hayfever16a > -1) ) Atopy16y=SUM(Asthma16y, Allergies16y, Eczema16a,
Hayfever16a).
EXECUTE.
FREQUENCIES VARIABLES=Atopy16y
  /ORDER=ANALYSIS.
```

Longstanding illness16y.

```
IF  ((HeartCond16y > -1) AND (Diabetes16y > -1) AND (Epilepsy16y > -1) AND
(CNScondition16 > -1) AND (AbnormalHeart16 > -1) AND (AbRespSystem16 > -1)
AND (AbUrogenital16 > -1)) LongstandingIllness16y=SUM(HeartCond16y,
Diabetes16y, Epilepsy16y,
CNScondition16, AbnormalHeart16, AbRespSystem16, AbUrogenital16).
EXECUTE.
FREQUENCIES VARIABLES=LongstandingIllness16y
  /ORDER=ANALYSIS.
```

Infectious illness 16y.

```
IF  ((Bronchitis16y > -1) AND (ChestInfec16y > -1) AND (InfecDisease16a > -1)
AND (Tonsilitis16 > -1) AND (UpResInfec16a > -1) AND (InfecFever16 > -1))
InfecIllness16y=SUM(Bronchitis16y, ChestInfec16y, InfecDisease16a,
Tonsilitis16, UpResInfec16a,
InfecFever16).
EXECUTE.
FREQUENCIES VARIABLES=InfecIllness16y
  /ORDER=ANALYSIS.
```

2.4 Frequencies of the composite symptom/illness categories.

This section shows the frequencies for the derived composite illness category totals. All of the categories have been derived at each age/phase of data collection in childhood, however, the categories differ between ages in regard to the individual illness/symptom items which are included in the scale total at each age (due to different items being available).

Somatic symptoms at 7 years.

Somatic7years

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	10119	54.5	72.6	72.6
	1.00	3520	19.0	25.3	97.9
	2.00	286	1.5	2.1	99.9
	3.00	9	.0	.1	100.0
	4.00	1	.0	.0	100.0
	Total	13935	75.1	100.0	
Missing	System	4623	24.9		
Total		18558	100.0		

Gastrointestinal symptoms at 7 years.

GastroSymptoms7y

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	8885	47.9	62.2	62.2
	1.00	3785	20.4	26.5	88.6
	2.00	1303	7.0	9.1	97.7
	3.00	307	1.7	2.1	99.9
	4.00	16	.1	.1	100.0
	Total	14296	77.0	100.0	
Missing	System	4262	23.0		
Total		18558	100.0		

Gastrointestinal illness at 7 years.

GastroIllness7y

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	13253	71.4	95.8	95.8
	1.00	558	3.0	4.0	99.8
	2.00	28	.2	.2	100.0
	Total	13839	74.6	100.0	
Missing	System	4719	25.4		
Total		18558	100.0		

Longstanding illnesses at 7 years.

LongstandingIllness7y

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	11758	63.4	86.3	86.3
	1.00	1536	8.3	11.3	97.6
	2.00	235	1.3	1.7	99.4
	3.00	75	.4	.6	99.9
	4.00	11	.1	.1	100.0
	6.00	2	.0	.0	100.0
	Total	13617	73.4	100.0	
Missing	System	4941	26.6		
Total		18558	100.0		

Atopy at 7 years.

Atopy7y

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	12192	65.7	88.1	88.1
	1.00	1343	7.2	9.7	97.8
	2.00	241	1.3	1.7	99.5
	3.00	64	.3	.5	100.0
	Total	13840	74.6	100.0	
Missing	System	4718	25.4		
Total		18558	100.0		

Infectious illnesses at 7 years.

InfectiousIllness7y

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	198	1.1	1.5	1.5
	1.00	1523	8.2	11.7	13.3
	2.00	3598	19.4	27.7	41.0
	3.00	3912	21.1	30.1	71.1
	4.00	2271	12.2	17.5	88.6
	5.00	1018	5.5	7.8	96.5
	6.00	336	1.8	2.6	99.0
	7.00	89	.5	.7	99.7
	8.00	23	.1	.2	99.9
	9.00	12	.1	.1	100.0
	Total	12980	69.9	100.0	
Missing	System	5578	30.1		
Total		18558	100.0		

Somatic symptoms at 11 years.

SomaticSymptoms11y

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	9057	48.8	72.7	72.7
	1.00	2901	15.6	23.3	96.0
	2.00	482	2.6	3.9	99.8
	3.00	19	.1	.2	100.0
	Total	12459	67.1	100.0	
Missing	System	6099	32.9		
Total		18558	100.0		

Gastrointestinal symptoms at 11 years.

GastroSymptoms11y

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	9268	49.9	78.5	78.5
	1.00	2098	11.3	17.8	96.2
	2.00	420	2.3	3.6	99.8
	3.00	24	.1	.2	100.0
	Total	11810	63.6	100.0	
Missing	System	6748	36.4		
Total		18558	100.0		

Gastrointestinal illnesses at 11 years.

GastroIllness11y

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	12134	65.4	95.0	95.0
	1.00	622	3.4	4.9	99.8
	2.00	23	.1	.2	100.0
	Total	12779	68.9	100.0	
Missing	System	5779	31.1		
Total		18558	100.0		

Longstanding illnesses at 11 years.

LongstandingIllness11y

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	11889	64.1	95.9	95.9
	1.00	500	2.7	4.0	99.9
	2.00	8	.0	.1	100.0
	Total	12397	66.8	100.0	
Missing	System	6161	33.2		
Total		18558	100.0		

Atopy at 11 years.

Atopy11y

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	9347	50.4	84.5	84.5
	1.00	1348	7.3	12.2	96.7
	2.00	287	1.5	2.6	99.3
	3.00	82	.4	.7	100.0
	Total	11064	59.6	100.0	
Missing	System	7494	40.4		
Total		18558	100.0		

Infectious illnesses at 11 years.

InfecIllness11

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	122	.7	1.2	1.2
	1.00	777	4.2	7.7	8.9
	2.00	2522	13.6	24.9	33.8
	3.00	3452	18.6	34.1	67.9
	4.00	2164	11.7	21.4	89.3
	5.00	818	4.4	8.1	97.4
	6.00	219	1.2	2.2	99.6
	7.00	34	.2	.3	99.9
	8.00	7	.0	.1	100.0
	9.00	3	.0	.0	100.0
	Total	10118	54.5	100.0	
Missing	System	8440	45.5		
Total		18558	100.0		

Somatic symptoms at 16 years.

SomaticSymptoms16y

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	6159	33.2	73.1	73.1
	1.00	1865	10.0	22.1	95.3
	2.00	369	2.0	4.4	99.6
	3.00	31	.2	.4	100.0
	Total	8424	45.4	100.0	
Missing	System	10134	54.6		
Total		18558	100.0		

Gastrointestinal symptoms at 16 years.

GastroSymptoms16y

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	15420	83.1	94.0	94.0
	1.00	757	4.1	4.6	98.6
	2.00	157	.8	1.0	99.6
	3.00	69	.4	.4	100.0
	4.00	3	.0	.0	100.0
	Total	16406	88.4	100.0	
Missing	System	2152	11.6		
Total		18558	100.0		

Gastrointestinal illnesses at 16 years.

GastroIllness16y

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	8564	46.1	94.9	94.9
	1.00	453	2.4	5.0	99.9
	2.00	10	.1	.1	100.0
	Total	9027	48.6	100.0	
Missing	System	9531	51.4		
Total		18558	100.0		

Longstanding illnesses at 16 years.

LongstandingIllness16y

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	10269	55.3	93.4	93.4
	1.00	662	3.6	6.0	99.4
	2.00	62	.3	.6	100.0
	3.00	1	.0	.0	100.0
	Total	10994	59.2	100.0	
Missing	System	7564	40.8		
Total		18558	100.0		

Atopy at 16 years.

Atopy16y

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	6361	34.3	82.3	82.3
	1.00	1036	5.6	13.4	95.7
	2.00	244	1.3	3.2	98.9
	3.00	79	.4	1.0	99.9
	4.00	8	.0	.1	100.0
	Total	7728	41.6	100.0	
Missing	System	10830	58.4		
Total		18558	100.0		

Infectious illnesses at 16 years.

InfecIllness16y

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	14901	80.3	93.0	93.0
	1.00	1013	5.5	6.3	99.3
	2.00	102	.5	.6	100.0
	3.00	4	.0	.0	100.0
	4.00	1	.0	.0	100.0
	Total	16021	86.3	100.0	
Missing	System	2537	13.7		
Total		18558	100.0		

3. MEASURES OF PHYSICAL ACTIVITY IN CHILDHOOD AND ADULTHOOD.

From each phase of data collection up to 42 years, at least one measure of physical activity was derived. At 33 and 42 years (NCDS 5 and 6) there were measures of sporting activities in one's spare time in addition to measures of physical activity performed at work.

7 years (NCDS1).

The child's mother reported on the energy levels of the child at 7 years (inactive, normally active, or overactive). The syntax below was used to derive the new measure; 'do not know was coded as missing.

```
RECODE n121 (1=SYSMIS) (-1=SYSMIS) (3=0) (2=1) (4=2) INTO ChildActive7.
EXECUTE.
FREQUENCIES VARIABLES=ChildActive7
  /ORDER=ANALYSIS.
```

New coding:

0 = Inactive

1= Normally active

2= Over active

ChildActive7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Inactive	566	3.0	3.9	3.9
	Normally active	11896	64.1	81.6	85.4
	Over active	2124	11.4	14.6	100.0
	Total	14586	78.6	100.0	
Missing	System	3972	21.4		
Total		18558	100.0		

11 years (NCDS2).

The child's mother reported on the amount of sport played in their spare time at 11 years (hardly ever, sometimes, most days).

```
RECODE n941 (-1=SYSMIS) (3=0) (2=1) (1=2) INTO Sport11.
EXECUTE.
FREQUENCIES VARIABLES=ChildActive7 Sport11
  /ORDER=ANALYSIS.
```

New coding:

0=Hardly ever

1=Sometimes

2=Most days

Sport11

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hardly ever	1573	8.5	11.6	11.6
	Sometimes	5786	31.2	42.5	54.1
	Most days	6247	33.7	45.9	100.0
	Total	13606	73.3	100.0	
Missing	System	4952	26.7		
Total		18558	100.0		

16 years (NCDS3).

The cohort-member reported frequency of playing outdoor and indoor sports in their leisure-time at 16y (never, hardly ever, sometimes, often). 'No chance' and 'hardly ever' were recoded as the same value for both items.

```
RECODE n2865 (-1=SYSMIS) (2=1) (1=2) (3 thru 4=0) INTO OutdoorSport16.
EXECUTE.
RECODE n2867 (-1=SYSMIS) (2=1) (1=2) (3 thru 4=0) INTO IndoorSport16.
EXECUTE.
FREQUENCIES VARIABLES=OutdoorSport16 IndoorSport16
```

New coding:

0=Hardly ever/no chance

1=Sometimes

2=Often

OutdoorSport16

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hardly ever/No chance	3069	16.5	27.0	27.0
	Sometimes	4022	21.7	35.4	62.4
	Often	4268	23.0	37.6	100.0
	Total	11359	61.2	100.0	
Missing	System	7199	38.8		
Total		18558	100.0		

IndoorSport16

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hardly ever/No chance	4721	25.4	42.5	42.5
	Sometimes	3578	19.3	32.2	74.7
	Often	2811	15.1	25.3	100.0
	Total	11110	59.9	100.0	
Missing	System	7448	40.1		
Total		18558	100.0		

23 years (NCDS4).

At 23 years frequency of sports/keep fit activities in an average month was reported by the cohort member.

```
RECODE n5916 (6=0) (5=1) (4=2) (3=3) (2=4) (1=5) INTO Sport23.
EXECUTE.
FREQUENCIES VARIABLES=Sport23
  /ORDER=ANALYSIS.
```

New coding:

0= "No sport last 4 wks"

1 = "Once last 4 wks"

2= 2-3 times last 4 wks

3= 1-2 times a wk

4= 3-4 times a wk

5= 5+ times a wk

Sport23

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No sport last 4 wks	6574	35.4	52.5	52.5
	Once last 4 wks	792	4.3	6.3	58.8
	2-3 times last 4 wks	1152	6.2	9.2	68.0
	1-2 times a wk	2212	11.9	17.7	85.7
	3-4 times a wk	985	5.3	7.9	93.6
	5+ times a wk	804	4.3	6.4	100.0
	Total	12519	67.5	100.0	
Missing	System	6039	32.5		
Total		18558	100.0		

33 years (NCDS5).

At 33 years the cohort member reported on the average frequency of sporting activity in the previous month. This variable was derived from 2 corresponding items: the first item was a binary item asking whether the cohort member performed regular sport of exercise ('n504362') and the second item asked about the frequency or sport or exercise in the previous month ('n504363'). The following syntax was used to derive the variable 'sport33' in the archived data.

```
if ((n504362=2)) Sport33=0.
if ((n504362=1) AND (n504363=6)) Sport33=1.
if ((n504362=1) AND (n504363=5)) Sport33=2.
if ((n504362=1) AND (n504363=4)) Sport33=3.
if ((n504362=1) AND (n504363=3)) Sport33=4.
if ((n504362=1) AND (n504363=2)) Sport33=5.
if ((n504362=1) AND (n504363=1)) Sport33=6.
```

New coding:
0=No exercise
1=Less often
2= 2- 3 times a month
3= Once a week
4= 2-3 days a week
5= 4-5 days a week
6= Every day

Sport33

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No exercise	2499	13.5	22.1	22.1
	Less often	329	1.8	2.9	25.0
	2-3 times a month	720	3.9	6.4	31.4
	Once a week	2480	13.4	21.9	53.3
	2-3 days a week	2402	12.9	21.2	74.5
	4-5 days a week	701	3.8	6.2	80.7
	Every day	2180	11.7	19.3	100.0
	Total	11311	60.9	100.0	
Missing	System	7247	39.1		
Total		18558	100.0		

At 33 years cohort members also self-reported the amount of physical effort in their job.

```
RECODE n504361 (1=0) (2=1) (3=2) (4=3) (8 thru 9=SYSMIS) INTO ExerciseJob33.
EXECUTE.
FREQUENCIES VARIABLES=ExerciseJob33
  /ORDER=ANALYSIS.
```

New coding:

0= No exercise

1= A little

2= Some

3= A lot

ExerciseJob33

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No exercise	2219	12.0	24.3	24.3
	A little	1982	10.7	21.7	46.0
	Some	2135	11.5	23.4	69.4
	A lot	2788	15.0	30.6	100.0
	Total	9124	49.2	100.0	
Missing	System	9434	50.8		
Total		18558	100.0		

42 years (NCDS6).

At 42 years there was a similar measure of self-reported exercise to 33 years, comprising a binary measure of 'Does CM do any regular exercise?' ('exercise') and a second item on the frequency of exercise ('breathls'). The following syntax was used to derive the variable 'sport42' in the archived data, from these variables:

```
if ((exercise=2)) sport42=0.
if ((exercise=1) AND (breathls=6)) sport42=1.
if ((exercise=1) AND (breathls=5)) sport42=2.
if ((exercise=1) AND (breathls=4)) sport42=3.
if ((exercise=1) AND (breathls=3)) sport42=4.
if ((exercise=1) AND (breathls=2)) sport42=5.
if ((exercise=1) AND (breathls=1)) sport42=6.
FREQUENCIES VARIABLES=exercise breathls
  /ORDER=ANALYSIS.
```

New coding:
0=No exercise
1=Less often
2= 2-3 times a month
3= Once a week
4= 2-3 days a week
5= 4-5 days a week
6= Every day

sport42

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No exercise	2945	15.9	25.9	25.9
	Less often	280	1.5	2.5	28.4
	2-3 times a month	701	3.8	6.2	34.5
	Once a week	2051	11.1	18.0	52.6
	2-3 days a week	2411	13.0	21.2	73.8
	4-5 days a week	1002	5.4	8.8	82.6
	Every day	1982	10.7	17.4	100.0
	Total	11372	61.3	100.0	
Missing	System	7186	38.7		
Total		18558	100.0		

At 42 years, the cohort member also reported on the physical demands of their job.

```
RECODE jdemand2 (3=0) (2=1) (1=2) INTO PhysicalJob42.
EXECUTE.
FREQUENCIES VARIABLES=PhysicalJob42
  /ORDER=ANALYSIS.
```

New coding:

0= Very little

1= Moderate amount

2= A lot

PhysicalJob42

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very little	2132	11.5	22.2	22.2
	Moderate amount	3648	19.7	37.9	60.1
	A lot	3842	20.7	39.9	100.0
	Total	9622	51.8	100.0	
Missing	System	8936	48.2		
Total		18558	100.0		

References:

Atherton, K., Fuller, E., Shepherd, P., Strachan, D. P., & Power, C. (2008). Loss and representativeness in a biomedical survey at age 45 years: 1958 British birth cohort. *Journal of Epidemiology and Community Health,* 62, 216-223.

Power, C., & Elliot, J. (2006). Cohort Profile: 1958 British birth cohort (National Child Development Study). *International Journal of Epidemiology,* 35, 34-41.