Component Description

The Creatine Kinase questionnaire (prefix CKQ) collects interview data to help interpret NHANES laboratory data for serum Creatine Phosphokinase (CPK). CPK is a key enzyme involved in cellular-level energy metabolism (McLeish and Kenyon, 2005). It is in general clinical use as a biomarker for muscle tissue injury.

CPK levels in the serum may be elevated in a number of health conditions, including muscle degeneration, muscle inflammation, certain endocrine disorders, and as a side effect of prescription medications, such as the “statins” (Wu et al., 2009). However, CPK may also be elevated simply as a result of direct injury to muscle or as a result of recent strenuous physical activity (Clarkson et al., 2006).

The main purpose of the CKQ questionnaire was to collect data on factors which may cause transient elevations in CPK (a history of recent injury or heavy physical exertion) so that data analysts can account for such cases in their analyses of the relationship of CPK to health conditions. Also, a single question was asked about a personal history of muscle pain not due to physical exertion or injury, which can occur in instances such as chronic muscle inflammation (myositis). If this was present, the duration of the muscle pain was recorded.

Eligible Sample

The CKQ questions were administered to a full sample of NHANES examined participants 12+ years of age.

Interview Setting and Mode of Administration

These questions were asked, in the NHANES Mobile Examination Center (MEC), by trained interviewers using the Computer-Assisted Personal Interviewing (CAPI) system.

Quality Assurance & Quality Control

The CAPI system is programmed with built-in consistency checks to reduce data entry errors. CAPI also uses online help screens to assist interviewers in defining key terms used in the questionnaire. During the data collection cycle, periodic QC checks were performed on the questionnaire data being collected and interviewer specific feedback and retraining was performed as appropriate.

Data Processing and Editing

Interview responses were electronically captured and then uploaded into a computerized database.The data was then edited for completeness, consistency, and illogical values.

Analytic Notes

The CKQ recall period for whether a participant had a history of a muscle injury or heavy physiclal exertion was the three-day period immediately preceeding NHANES phlebotomy. CKQ also collected data on whether the injury or physical exertion caused symptoms of muscle pain.

Because the CKQ was administered at the time of examination, 2-year MEC examination sample weights should be used when the data are analyzed.

Please refer to the [NHANES Analytic Guidelines](https://wwwn.cdc.gov/nchs/nhanes/analyticguidelines.aspx) and the on-line [NHANES Tutorial](https://www.cdc.gov/nchs/tutorials/) for further details on the use of sample weights and other analytic issues.

References

* Clarkson PM, Kearns AK, Rouzier P, Rubin R, Thompson PD. Serum creatine kinase levels and renal function measures in exertional muscle damage. Med Sci Sports Exerc. 2006. 38(4):623-7.
* McLeish MJ, Kenyon GL. Relating Structure to Mechanism in Creatine Kinase. Critical Reviews in Biochemistry and Molecular Biology. 2005. 40(1):1-20.
* Wu AH, Smith A, Wians F. Interpretation of creatine kinase and aldolase for statin-induced myopathy: Reliance on serial testing based on biological variation. Clin Chim Acta. 2009. 399(1-2):109-11.

Codebook and Frequencies

SEQN - Respondent sequence number

**Variable Name:**

SEQN

**SAS Label:**

Respondent sequence number

**English Text:**

Respondent sequence number.

**Target:**

Both males and females 12 YEARS - 150 YEARS

CKQ010 - Strenuous exercise in the past 3 days?

**Variable Name:**

CKQ010

**SAS Label:**

Strenuous exercise in the past 3 days?

**English Text:**

In the past 3 days, did {you/SP} do any strenuous exercise or heavy physical work?

**English Instructions:**

PROBE IF NEEDED: Strenuous exercise or heavy physical work is exercise or work that causes large increases in breathing or heart rate if they are done for at least 10 minutes continuously.

**Target:**

Both males and females 12 YEARS - 150 YEARS

| **Code or Value** | **Value Description** | **Count** | **Cumulative** | **Skip to Item** |
| --- | --- | --- | --- | --- |
| 1 | Yes | 2060 | 2060 |  |
| 2 | No | 4393 | 6453 | CKQ030 |
| 7 | Refused | 0 | 6453 | CKQ030 |
| 9 | Don't know | 2 | 6455 | CKQ030 |
| . | Missing | 524 | 6979 |  |

CKQ020 - Did exercise make muscles sore/painful

**Variable Name:**

CKQ020

**SAS Label:**

Did exercise make muscles sore/painful

**English Text:**

Did it make {your/SP's} muscles sore or painful?

**English Instructions:**

INTERVIEWER INSTRUCTION: DO NOT INCLUDE JOINT PAIN.

**Target:**

Both males and females 12 YEARS - 150 YEARS

| **Code or Value** | **Value Description** | **Count** | **Cumulative** | **Skip to Item** |
| --- | --- | --- | --- | --- |
| 1 | Yes | 1166 | 1166 |  |
| 2 | No | 893 | 2059 |  |
| 7 | Refused | 0 | 2059 |  |
| 9 | Don't know | 1 | 2060 |  |
| . | Missing | 4919 | 6979 |  |

CKQ030 - Past 3 days muscle injury, bruise, injct

**Variable Name:**

CKQ030

**SAS Label:**

Past 3 days muscle injury, bruise, injct

**English Text:**

In the past 3 days, {have you/has SP} had a muscle injury, bruise or injection? (Do not include insulin or allergy injections.)

**Target:**

Both males and females 12 YEARS - 150 YEARS

| **Code or Value** | **Value Description** | **Count** | **Cumulative** | **Skip to Item** |
| --- | --- | --- | --- | --- |
| 1 | Yes | 430 | 430 |  |
| 2 | No | 6021 | 6451 | CKD060 |
| 7 | Refused | 0 | 6451 | CKD060 |
| 9 | Don't know | 4 | 6455 | CKD060 |
| . | Missing | 524 | 6979 |  |

CKQ040 - Injury/injct made muscles sore/painful

**Variable Name:**

CKQ040

**SAS Label:**

Injury/injct made muscles sore/painful

**English Text:**

Did it make {your/SP's} muscles sore or painful?

**English Instructions:**

INTERVIEWER INSTRUCTION: DO NOT INCLUDE JOINT PAIN.

**Target:**

Both males and females 12 YEARS - 150 YEARS

| **Code or Value** | **Value Description** | **Count** | **Cumulative** | **Skip to Item** |
| --- | --- | --- | --- | --- |
| 1 | Yes | 269 | 269 |  |
| 2 | No | 161 | 430 |  |
| 7 | Refused | 0 | 430 |  |
| 9 | Don't know | 0 | 430 |  |
| . | Missing | 6549 | 6979 |  |

CKD060 - Other muscle pain/soreness last 3 days

**Variable Name:**

CKD060

**SAS Label:**

Other muscle pain/soreness last 3 days

**English Text:**

In the last 3 days, have {you/SP} had any muscle pain or soreness?

**English Instructions:**

INTERVIEWER INSTRUCTION: DO NOT INCLUDE JOINT PAIN.

**Target:**

Both males and females 12 YEARS - 150 YEARS

| **Code or Value** | **Value Description** | **Count** | **Cumulative** | **Skip to Item** |
| --- | --- | --- | --- | --- |
| 1 | Yes | 1371 | 1371 | CKQ070Q |
| 2 | No | 5081 | 6452 |  |
| 7 | Refused | 0 | 6452 |  |
| 9 | Don't know | 3 | 6455 |  |
| . | Missing | 524 | 6979 |  |

CKQ070Q - Quantity: how long pain/aching/soreness

**Variable Name:**

CKQ070Q

**SAS Label:**

Quantity: how long pain/aching/soreness

**English Text:**

For how many days, weeks, months or years long {have you/has SP} had this pain, aching or soreness?

**English Instructions:**

INTERVIEWER INSTRUCTION: IF SP HAS HAD PAIN AT TWO OR MORE SITES, ENTER THE VALUE FOR THE SITE WHERE THE SP HAD MUSCLE PAIN THE LONGEST. ENTER NUMBER (OF DAYS, WEEKS, MONTHS OR YEARS)

**Target:**

Both males and females 12 YEARS - 150 YEARS

| **Code or Value** | **Value Description** | **Count** | **Cumulative** | **Skip to Item** |
| --- | --- | --- | --- | --- |
| 1 to 200 | Range of Values | 1364 | 1364 |  |
| 77777 | Refused | 0 | 1364 |  |
| 99999 | Don't know | 6 | 1370 |  |
| . | Missing | 5609 | 6979 |  |

CKQ070U - Unit: how long pain/aching/soreness

**Variable Name:**

CKQ070U

**SAS Label:**

Unit: how long pain/aching/soreness

**English Text:**

For how many days, weeks, months or years long {have you/has SP} had this pain, aching or soreness?

**English Instructions:**

ENTER UNIT

**Target:**

Both males and females 12 YEARS - 150 YEARS

| **Code or Value** | **Value Description** | **Count** | **Cumulative** | **Skip to Item** |
| --- | --- | --- | --- | --- |
| 1 | Days | 375 | 375 |  |
| 2 | Weeks | 142 | 517 |  |
| 3 | Months | 244 | 761 |  |
| 4 | Years | 603 | 1364 |  |
| 7 | Refused | 0 | 1364 |  |
| 9 | Don't know | 0 | 1364 |  |
| . | Missing | 5615 | 6979 |  |