

**NHANES 2001-2002 Data Release
January 2004
MEC Examination**

Muscle Strength (MSX_B)

Survey Years Included in this File: 2001-2002

Component Description:

The loss of muscle mass, muscular strength, and power with age has important health and functional consequences. These changes predispose elderly people to falls and functional limitations. Numerous studies suggest that functional limitations are causally linked to disability. In NHANES, an observed timed 20-foot walk and 8 foot walk (instituted in January 2001) will assess physical limitations. Measuring the isokinetic strength of the knee extensors (quadriceps) will assess muscle strength.

Eligible Sample and Component-Specific Exclusions:

The measured walk and isokinetic strength testing will be completed on Survey Participants (SPs) 50 years of age and older.

SPs who had a myocardial infarction within the past six weeks, chest or abdominal surgery within the past three weeks, knee surgery or knee replacement surgery, severe back pain, a history of brain aneurysm or stroke are excluded from the muscle strength exam. SPs who are not able to walk alone without holding onto someone are excluded from the timed walk. The use of a walker or cane is permitted for the timed walk.

Examination Protocol:

A Kin Com MP dynamometer manufactured by Chattanooga Group, Inc ,Chattanooga, TN was used to evaluate knee extensor strength. The outcome measurement is the peak force (Newton) of the quadriceps at one speed (60 degrees/second). Two measured walk test track were set up in the MEC for the measured walk component. A 20 feet long test track area including in it an 8 feet marking was set up in a corridor of the MEC.

Six muscle strength measurements are obtained: three warm-up/ learning measurements and three outcome measurements.

The 8 and 20 foot walk was timed using a hand-held stopwatch. The examinee is asked to walk at their usual pace. Start and stop times are defined as follows:

- **START TIME:** When the SP's first foot touches the floor across the start line.

- 8 FEET STOP TIME: When the SP's foot touches the floor across the 8 feet line.
- 20 FEET STOP TIME: When the SP's foot touches the floor across the finish line.

Certified health technicians conduct the examinations. All health technicians receive intensive training on the NHANES examination protocols.

Quality Control during Data Collection:

The quality control procedures include site visits with expert consultants and NCHS and contractor staff; implementation of a continuous quality assurance plan that includes a procedural checklist; and continuous data review to identify systematic error.

For further details regarding the quality control procedures, analysts should consult the NHANES Muscle Strength Procedures Manual.

Data Processing and Editing:

Although six muscle strength trials are performed only the highest peak force is reported in the data file. The following algorithm was used: For each SP who had \geq 4 trials select one peak force from trials 4-6. If fewer than 4 trials were completed, select the highest peak force from the trials that were completed.

NCHS Research Data Center:

No data related to this component are in the Research Data Center.

Reference:

National Center for Health Statistics. Muscle Strength Procedures Manual. January 2000. <http://www.cdc.gov/nchs/data/nhanes/ms.pdf>.