INTRODUCTION

The Musculoskeletal Function Assessment (MFA) evaluates the health status of patients with musculoskeletal disorders of the extremities, including patients with fractures and soft tissue injuries, repetitive motion disorders, osteoarthritis or rheumatoid arthritis. It describes patient functioning, assesses outcomes of surgical interventions and clinical trials, and monitors patients’ functional status over time. The MFA has two parts.

PART 1:
Part 1 contains 100 items requiring either a “Yes” or “No” response. These Yes/No questions are grouped into 10 categories (Table 1), representing domains that have been identified by clinicians, patients, and in other surveys as important measures of functional status. The MFA Score is calculated from these 100 items. Higher MFA scores indicate higher levels of dysfunction.

Part 1 also contains 10 patient self-rating items in which patients rate the importance of the problems they are having due to their injury. Each category has one self-rating item. All 10 items are summed to create a Patient Rating Subscore which is separate from the MFA Score. Like the 100 item MFA Score, higher scores indicate more bothersome problems.
ADMINISTRATION

The MFA takes about 10-15 minutes to complete and is either self-administered or administered by an interviewer. It may be administered once, assessing patient functioning at a single point in time, or a number of times, providing information on changes in functioning.

STEPS FOR CODING AND SCORING THE MFA

1. Enter Data
2. Reverse Code
   - Items: Move4, Move5, Move6, Move7, Move10, Move16, Move17, Move18, Home2, Home4, Emot5, Emot6, Emot7
3. Recode “Not Applicable”, Missing, “Don’t Know” Responses
4. Assign Default Codes
   - Items: Move1, JobHlth
5. Calculate Raw Scores
6. Calculate MFA Scores
   - Calculate Patient Rating Subscores
CODING AND SCORING PROCEDURES

In order to correctly code and score the MFA, do the following:

1. Complete each step in order.
2. Do all parts of each step.
3. Check ☒ each step when completed.

Please refer to the MFA Coding Key Manual for variable and category names.

PART 1 (YES/NO AND SELF-RATING ITEMS)

CODING PROCEDURES:

☐ 1. Enter data with the following values:

☐ YES/NO Items:
  “YES” answers 1
  “NO” answers 0
  “Not Applicable” 7
  Missing/Skipped 8
  “Don’t Know” 9

☐ Patient Self-Rating Items (e.g., MoveR, FineR, HomeR, etc.):
  Code as marked by patients 1,2,3,4,5
  “Not Applicable” 7
  Missing/Skipped 8
  “Don’t Know” 9
2. **Reverse code (0=1, 1=0) the following 13 items:**

This is necessary because, for these variables, a “YES” answer indicates good functioning and a “NO” answer indicates poor functioning. Do not recode the “Not Applicable”, Missing, or “Don’t Know” responses at this point.

**Mobility Category (8 items):**

- Move4. Do you straighten or bend your arm(s) completely?
- Move5. Do you straighten or bend your leg(s) completely?
- Move6. Do you pivot?
- Move7. Do you climb up and down ladders?
- Move10. Do you stand for long periods of time?
- Move16. Do you kneel?
- Move17. Do you pick up things from the floor?
- Move18. Do you run at all?

**Housework Category (2 items):**

- Home2. Do you do as much housework or yardwork?
- Home4. Do you mop or sweep or vacuum?

**Emotional Adjustment / Coping / Adaptation Category (3 items):**

- Emot5. Do you think everything will work out in the long run?
- Emot6. Do you accept your current situation?
- Emot7. Do you feel everything is back to normal?
3. **Recode “Not Applicable”, Missing, “Don’t Know” responses for Yes/No Items:**

Recode 7=0, 8=0, 9=0. This recoding is based on the assumption that, if a patient did not check an item, it is most likely not a problem for him. This rule is often used in scoring health status instruments.

4. **Recode “Not Applicable”, Missing, “Don’t Know” responses for Patient Self-Rating Items:**

For all self-rating questions except JobR, do not recode. Retain “Not Applicable” (7), Missing (8), and “Don’t Know” (9) values. Label these values so that they will not be included in later calculations.

For JobR, use the following recoding procedure:

- If JobYN = YES: Do not recode JobR.
- If JobYN = NO and JobHlth = YES: Recode JobR to “5”.
- If JobYN = NO and JobHlth = NO: Recode JobR to “1”.

5. **Assign default codes for the following:**

- **Item Move1 (Mobility Category)**

  Code the following items to “1” for patients checking “NO” (0) to the Move1 item, “Are you able to walk?”:

  - Move2: Do you feel unsteady on your feet?
  - Move6: Do you pivot?
  - Move7: Do you climb up and down ladders?
  - Move8: Do you have to rest often when walking?
  - Move9: Do you avoid stairs?
  - Move10: Do you stand for long period of time?
  - Move12: Do you always walk with a limp?
  - Move13: Does your leg sometimes lock or give-way?
  - Move18: Do you run at all?
6. Assign default codes for the following:

**Item JobHlth (Work Category)**

Code the following items to “1” for patients checking “YES” (1) to the JobHlth item, “Are you unable to work because of your injury or arthritis?”:

- Job1. Are you making changes in your job?
- Job2. Is it more difficult for you to do your job now?
- Job3. Are you slower at your job?
- Job4. Do you take more breaks?

7. Check coding for errors:

Because errors may be made at many points in the data entry and coding process, we suggest that coding be checked using the following guidelines:

1. Run frequencies for all variables, both before and after recoding. Check that only legitimate values are present (0,1,7,8,9) and that the recodes are correctly executed by comparing frequencies.

2. Check default recoding (step 4 above) by hand for several respondents. Check the default recodes by examining the variables both before and after recoding.
SCORING PROCEDURES:

1. **Calculate the raw scores:**

   Sum all YES/NO items, *excluding* the following:
   
   
   **Job Status Items:** JobYN, JobHlth

   The Raw Category Score = sum of all YES/NO items within a category
   
   The Raw MFA Score = sum of all 100 YES/NO items or sum of raw category scores

2. **Calculate the standardized scores**

   Standardized scores transform raw scores to a scale of 0-100 and allow comparison across categories with differing numbers of items. They are also used in the manuscripts describing the development, reliability and validity of the MFA. They are calculated using the following formulas:

   \[
   \text{Standardized Category Score} = \frac{\text{Raw Category Score}}{\text{Number of Items in Category}} \times 100
   \]

   Example: A Mobility category raw score of 10 would be standardized as follows: \(\frac{10 \times 100}{20} = 50\)

   \[
   \text{The MFA Score} = \frac{\text{Raw MFA Score}}{100 \times \text{Number of MFA Items}} \times 100
   \]

   Table 1 provides the denominator for each category score (i.e., the number of items in each category).

   Please Note: Because the MFA has 100 items, the raw score and the standardized score are the same.
3. **Calculate the Patient Rating Subscores, if desired:**

The Patient Rating Subscore is still being developed and should be used with caution until additional information is available on its reliability and validity. It is the mean score of the sum of all the rating items and will range from 1 to 5. Patients with missing values on any of the items are to be excluded from the analysis. Calculate the Patient Rating Subscore using the following formula:

\[
\text{Patient Rating Subscore} = \frac{(\text{MoveR} + \text{FineR} + \text{HomeR} + \text{ADLR} + \text{SleepR} + \text{LeisR} + \text{RelatR} + \text{CogR} + \text{EmotR} + \text{JobR})}{10}.
\]

4. **Check scoring for errors:**

Use the following guidelines to check your scoring program for errors.

1. Run frequencies on raw and standardized scores. Legitimate values would range as follows:

   | raw category scores | 0 | number of items in category
   | standardized scores | 0 | 100

2. Test your coding and scoring program with the sample data set provided on disk. Means and standard deviations for the test data’s raw and standardized scores are provided on Table 2.

3. Calculate the MFA scores (category and total) by hand for several respondents and compare the results to those produced by your scoring program.