**Supplementary Digital Content 1:** Selection of items suitable to the recording of the data using a Kinect sensor during a MFM completion items.

The MFM-32 consists of 32 items (or tasks) that evaluate 3 functional domains: D1, standing and transfers (13 items); D2, axial and proximal motor function (12 items); and D3, distal motor function (7 items). The precise description of the item completion and scoring procedure is in the MFM User’s manual (see [www.mfm-nmd.org](http://www.mfm-nmd.org)).

The operation of the Kinect sensor has several limitations preventing the eligibility of all the 32 items to their capture by the Kinect (see Table S1). The main concerned regarding MFM items are: (1) the user must be facing the sensor; (2) the user should be at a distance between about 1.2 meters and 2.8 meters of the sensor; (3) Kinect is a whole-body screening sensor, it cannot capture precise finger movements.

Items from D1 domain: standing and transfers:

Items 6 and 8, with a supine starting position, were not eligible to the Kinect capture. They would need a sensor positioned on the ceiling, which was not envisaged in our project.

Items 28, 29 and 30, with a standing starting position, require a walking track of ten meters were not eligible to the Kinect capture. Subjects would leave the field of capture of the Kinect sensor during items completion.

Items 11, 12, 24, 25, 26, 27, 31 and 32 of the MFM D1 domain were finally considered as eligible to the Kinect capture.

Items from D2 domain: axial and proximal motor function:

Items 1, 2, 3, 5 and 7, with a supine starting position, were not eligible to the Kinect capture.

Item 23 was originally supposed to be eligible to the capture by the Kinect. To complete this item, subjects in a seated position behind a table and upper limbs alongside the body have to place both hands on the table. Test performed with 30 healthy subjects showed that the table hides the subject and falsifies the initial capture of the body to a large degree. This item was finally found not eligible to the Kinect capture.

Items 9, 10, 13, 14, 15 and 16 of the MFM D2 domain were finally considered as eligible to the Kinect capture.

Items from D3 domain: distal motor function:

Item 4, with a supine starting position, was not eligible to the Kinect capture.

Items 17, 18, 19, 20 and 22 which require mainly the capture of precise finger or hand movements were not eligible to the Kinect capture.

Item 21 was originally supposed to be eligible to the capture by the Kinect. To complete this item, subjects in a seated position in front of a table must pick up a tennis ball and turn the ball over. Test performed with 30 healthy subjects showed us that the capture of the hand movements by the Kinect was not precise enough. This item was finally found not eligible to the Kinect capture.

In overall, no items of the MFM D3 domain were finally considered as eligible to the Kinect capture.

Table S1. The 32 items of the MFM with starting positions and requested exercise

The items sectioned are highlighted in blue. The raisons for no selection of items are written in red.

\* Indicates items originally supposed to be eligible to the capture by the Kinect.

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| --- | --- | --- | --- | --- |
| **Item** | **Domain** | **Starting position** | **Exercise requested** | **Eligibility to a Kinect capture** |
| 1 | D2 | Supine, head in midline position | Holds the head for 5 seconds in midline position and turns it completely from one side to the other | NO |
| 2 | D2 | Supine | Raises the head and maintains the raised position for 5 seconds. | NO |
| 3 | D2 | Supine | Flexes the hip and knee more than 90° by raising the foot from the mat. | NO |
| 4 | D3 | Supine, leg supported by examiner  | From plantar flexion, dorsiflexes the foot to at least 90° in relation to the leg. | NO |
| 5 | D2 | Supine | Raises the hand and moves it to the opposite shoulder. | NO |
| 6 | D1 | Supine, lower limbs half-flexed, kneecaps at the zenith and feet resting on the mat  | Raises the pelvis; the lumbar spine, the pelvis and the thighs are aligned and the feet slightly apart. | NO |
| 7 | D2 | Supine | Turns over into prone and frees both upper limbs from under the body. | NO |
| 8 | D1 | Supine | Without upper limb support sits up. | NO |
| 9 | D2 | Seated on the mat  | Without upper limb support, maintains the seated position for 5 seconds and is then capable of maintaining contact between the two hands for 5 seconds. | YES |
| 10 | D2 | Seated on the mat, the tennis ball placed in front of the subject | Without upper limb support leans forward, touches the ball and sits back again. | YES |
| 11 | D1 | Seated on the mat  | Stands up without upper limb support | YES |
| 12 | D1 | Standing | Without upper limb support, sits down on the chair with the feet slightly apart. | YES |
| 13 | D2 | Seated on the chair | Without upper limb support nor leaning against the back of the chair, maintains the seated position for 5 seconds, with the head and trunk in midline position. | YES |
| 14 | D2 | Seated on the chair or in the wheelchair, head in flexion  | Raises the head from the flexed position, the head stays aligned throughout the movement and is maintained raised in midline position for 5 seconds. | YES |
| 15 | D2 | Seated on the chair or the wheelchair, forearms on the table, but not elbows | Places both hands on top of the head at the same time while the head and trunk remain in midline position. | YES |
| 16 | D2 | Seated on the chair or the wheelchair, the pencil on the table | Without moving the trunk, reaches the pencil with one hand, forearm and hand off the table with the elbow in full extension at the end of the movement. | YES |
| 17 | D3 | Seated on the chair or the wheelchair, 10 coins on the table | Successively picks up and holds 10 coins in one hand during the 20-second period. | NO |
| 18 | D3 | Seated on the chair or in the wheelchair, one finger placed in the center of the fixed CD | Goes round the edge of the CD with one finger without contact of the hand with the table. | NO |
| 19 | D3 | Seated on the chair or the wheelchair, the pencil on the table | Picks up the pencil and draws a continuous series of loops inside the frame and over its full length touching the top and bottom line of the frame. | NO |

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| --- | --- | --- | --- | --- |
| 20 | D3 | Seated on the chair or the wheelchair, holding the sheet of paper | Tears the sheet of paper folded in 4, beginning from the fold edge. | NO |
| 21 | D3 | Seated on the chair or in the wheelchair with the tennis ball on the table  | Picks up the ball and holding the ball turns the hand over completely. | NO \* |
| 22 | D3 | Seated on the chair or in the wheelchair, one finger placed in the center of the diagram  | Raises the finger and places it successively on the squares of the diagram without touching the lines. | NO |
| 23 | D2 | Seated on the chair or in the wheelchair, upper limbs along the trunk  | Places the two forearms and/or the hands on the table at the same time. | NO \* |
| 24 | D1 | Seated on the chair | Stands up without upper limb support and with the feet slightly apart. | YES |
| 25 | D1 | Standing with upper limb supported | Releases the support and maintains a standing position for 5 seconds with the feet slightly apart, the head, trunk and limbs in the midline position. | YES |
| 26 | D1 | Standing with upper limb support on equipment | Without upper limb support, raises the foot for 10 seconds. | YES |
| 27 | D1 | Standing | Without support, touches the floor with one hand and stands up again. | YES |
| 28 | D1 | Standing without support | Takes 10 steps forward on both heels. | NO |
| 29 | D1 | Standing without support | Takes 10 steps forward on a line. | NO |
| 30 | D1 | Standing without support  | Runs for 10 meters | NO |
| 31 | D1 | Standing on one foot without support | Hops 10 times in place. | YES |
| 32 | D1 | Standing without support  | Without upper limb support, manages to squat and gets up twice in a row. | YES |