Functional Assessments in Osteoarthritis Care
Overview

● Osteoarthritis (OA) is a serious disease\textsuperscript{1,2}

● Role of functional assessments in OA care

● Functional assessments commonly used in OA care
  ○ Performance-based tests
  ○ Patient-Reported Outcome Measures (PROMs)
  ○ Work/Occupational Assessments

● Summary & Discussion

Osteoarthritis is a serious disease
OA is common and increasing in prevalence

- Over 50% of Adults (18.7 Million) with Osteoarthritis are of Working Age
- 32.5 Million Adults have Osteoarthritis
- $71.3 Billion in Annual Earning Losses
- Annual Medical Costs: $65.5 Billion
- Average Per Person Per Year in Medical Costs: $2,018


*Reported from 2008 to 2014
OA Symptoms

- OA may cause pain, stiffness, and swelling.\(^7\)

- OA symptoms may contribute to functional disability and reduced quality of life.\(^8\)

Impact of OA

- Compared to adults of comparable age without OA, adults with OA may experience greater:
  - Pain
  - Fatigue
  - Activity limitations
  - Levels of disability
  - Risk of depression and anxiety
  - Work limitations

- Among adults with arthritis, 43.5% report arthritis-related activity limitations.

Role of functional assessments in OA care
Role of functional assessments in OA care

In general, when assessing patients with OA, the recommended assessments include pain, (physical) function, and patient global assessment.¹⁰

These slides will focus on physical function assessments in OA care with the addition of the most commonly used health-related quality of life (HRQoL) measures used in OA care and research.

¹¹ Carr AJ. *Osteoarthritis Cartilage.* 1999;7(2):230-238
Function defined

What does function mean?

- Ability to move around\(^3\)
- Ability to perform daily activities\(^3\)
- Participation in daily life- relationships to other people and involvement in social interactions\(^10\)
- Ability to perform activities of daily living (ADLs) and instrumental activities of daily living (IADLs)\(^12\)

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Physical function examples

Examples:
Stooping, bending, kneeling, walking, push/pull objects

ADLS such as bathing and dressing and IADLs such as grocery shopping

Role of functional assessments in primary care

Reasons for using functional assessments

- Quantify OA severity$^3$
- Quantify progression over time$^3$
- Individualize treatment approach$^3$

Role of functional assessments in the workplace

Reasons for using functional assessments

● Assess work loss and productivity\textsuperscript{13}
● Tailor treatment to help employee safely and effectively perform job duties\textsuperscript{4}
● Assess employee’s readiness to return to work\textsuperscript{4}
● Assess employee’s need for work accommodations such as reduced hours, assistive devices, modified work duties\textsuperscript{4}

Functional assessments commonly used in OA care
Functional assessments used in OA care

- A variety of assessments exist to measure the impact of OA on physical function.\(^{14}\)
- There is no gold standard measure to assess physical function in individuals with OA.\(^{3}\)
- The main types of functional assessments are:
  - Performance-based tests
  - Patient-reported outcome measures
- Work/Occupational assessments help measure the impact of arthritis on work activities, performance, productivity, and missed days.\(^{15}\)

Performance-based tests
Performance-based tests

● Performance-based tests
  ○ Measure what individuals *can* do as opposed to what they *think* they can do\(^3\)
  ○ Allow a provider to observe a patient doing activities\(^3\)

● The tests described on the following slides are commonly used with patients with OA and are categorized by joint with details about how they are administered.

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Performance-based tests – Knee & Hip

Osteoarthritis Research Society International (OARSI) recommends 5 performance-based tests of physical function for knee and hip OA, with 3 of the tests identified as the minimum core set:\(^3,^16\)

**Minimum Core Set**

1) 30-second chair stand
2) 40-meter fast-paced walk
3) Stair Climb Test
4) Timed up-and-go test
5) 6-minute walk test

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Performance-based tests – Knee & Hip

30-second chair stand test

- Measures lower body strength and balance
- Equipment: stopwatch and chair
- Description: maximum number of sit-to-stand repetitions in 30 seconds
- Does not require fee or license

Performance-based tests – Knee & Hip

40-meter fast-paced walk\(^3,16\)

- Measures walking speed and ability to change direction
- Equipment: stopwatch, walking space (e.g. hallway)
- Description: Timed fast-paced walking over 40 m (132 ft); can be done in smaller space over 4 x 10 m (33 ft)
- Does not require fee or license

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Performance-based tests – Knee & Hip

**Stair climb**\(^3,16\)

- Tests ability to go up and down stairs, lower body strength, and balance
- Equipment: stopwatch, flight of stairs
- Description: Timed ascent and descent of a single flight of stairs
- Does not require fee or license

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Performance-based tests – Knee & Hip

Timed up-and-go\textsuperscript{3,16}

- Measures walking speed, ability to change direction, and ambulatory transitions
- Equipment: stopwatch, walking space (ex. hallway), chair
- Description: Time taken to get up from a seated position, walk 3 meters (9 ft 10 inches), turn back to chair, walk 3 meters and sit down
- Does not require fee or license

Performance-based tests – Knee & Hip

6-minute walk\textsuperscript{3,16}

- Measures ability to walk long distances, aerobic capacity
- Equipment: stopwatch, walking space (ex. hallway)
- Description: Distance covered in 6 minutes
- Does not require fee or license

Performance-based tests – Hand

Arthritis Hand Function Test (AHFT)

11-item test that measures hand strength and dexterity

Equipment: buttons, laces, and other common items as well as grip and pinch strength measurement devices

Takes 20 minutes to complete

The manual and supplies cost approximately $500

Performance-based tests – Hand

Grip & Pinch strength

Measurement of grip and pinch strength using manual devices-

- The Jamar dynamometer most accurately measures grip strength
- Finger pinch strength can be measured with a pinch meter

These devices can be purchased from a variety of medical device suppliers.

Patient-Reported Outcome Measures (PROMs)
Patient-reported outcome measures (PROMs)

• Definition: PROMs are questionnaires that patients complete to describe how arthritis impacts various aspects of their lives.\textsuperscript{14}

• A variety of PROMs exist\textsuperscript{14} and measure a range of domains such as:
  • Pain, physical function, sleep, work, self-care, self-efficacy, quality of life\textsuperscript{14}

• The tests described on the following slides are commonly used in patients with OA.
  • Slides are organized by joint and HRQoL

Western Ontario McMaster Osteoarthritis Index (WOMAC®*)

- Evaluates 3 dimensions: pain (5 questions), stiffness (2 questions), and physical function (17 questions)
- The Likert version uses responses (None, Mild, Moderate, Severe) and is scored on a scale of 0-4 with lower scores indicating lesser symptoms or disability. Also available in formats using 100 mm visual analog or 11-point numerical rating scales.
- Self-administered and takes 5-10 minutes to complete
- Requires a license and fee to use

*WOMAC® is a registered trademark of Nicholas Bellamy.*
PROMs- Knee

Knee Disability and Osteoarthritis Outcome Score (KOOS)\textsuperscript{23,24}

- Evaluates symptoms and function in patients with knee injury or OA
- 42 items divided into 5 domains: pain, non-pain symptoms, activities of daily living, sports and recreation, knee-related quality of life
- Self-administered and takes 10 minutes to complete
- Does not require fee or license to use

PROMs- Hip

Hip Disability and Osteoarthritis Outcome Score (HOOS)²⁵,²⁶

- Evaluates symptoms and function in patients with hip injury or OA
- 40 items divided into 5 domains: pain, non-pain symptoms, activities of daily living, sports and recreation, knee-related quality of life
- Self-administered and takes 10 minutes to complete
- Does not require fee or license to use

Disabilities of the Arm, Shoulder and Hand (DASH)\textsuperscript{27}

- Assesses ability to perform certain upper extremity activities
- 30-item measure assessing disability/symptoms with an optional high-performance Sport/Music or Work section (4 items)
- Self-administered and takes 4 minutes to complete\textsuperscript{28}
- Does not require fee to use

American Shoulder and Elbow Surgeons Standardized Shoulder Assessment Form (ASES)²⁸

- Patient ASES (pASES) measures pain, instability, and activities of daily living.
- Includes 18 items; lower score indicates worse symptoms and greater disability.
- Self-administered and takes 3 minutes to complete.
- Does not require fee or license to use.

PROMs- Hand

Australian/Canadian Hand OA Index (AUSCAN)\(^{29}\)

- 15-item measure evaluating pain (5 items), stiffness (1 item), and function (9 items)
  - Physical function subscale can be used

- Uses a scale of 1-5 (none $\rightarrow$ extreme), with higher scores indicating worse symptoms and greater disability\(^{30}\)

- Requires a license and fee to use

PROMs- Hand

**Functional Index for Hand Osteoarthritis (FIHOA)**$^{31,32}$

- Assesses impact of hand OA on functional ability to perform daily tasks$^{32}$
- 10-item measure, which rates a person’s ability to do certain tasks with higher score equal to greater disability$^{33}$
- Self-administered and takes an average of 3 minutes to complete$^{33}$
- Does not require a fee, license, or permission to use$^{32}$

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PROMs- HRQoL

Rand Short Form-36 Health Survey (SF-36)®

A generic HRQoL survey that has been validated in patients with OA

Includes 36 items related to 8 physical and mental health domains

Takes about 10 minutes to complete

Does not require fee or license

*The SF-36® is a registered trademark of the Medical Outcomes Trust.

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A set of measures to assess a patient’s physical, mental, and social health

The physical function domain (PROMIS-PF) includes a large bank of items but is also available in a variety of short forms (ex. v.10a)

Does not require a fee or license

*PROMIS® is a registered trademark of the U.S. Department of Health and Human Services.
PROMs- HRQoL

EuroQoL-5D (EQ-5D)\textsuperscript{40}

- Assesses 5 domains: mobility, self-care, daily activities, anxiety/depression, pain\textsuperscript{41}
- 5-item measure where respondents rate their health “today” in the 5 domains\textsuperscript{40}
- Easy to complete, taking just a couple of minutes\textsuperscript{40,41}
- Must register through website for access (non-commercial use is free)\textsuperscript{40}
  - Scoring and User manuals are also available\textsuperscript{40}

\textsuperscript{40}EUROQUOL. EQ-5D. 2021. \textsuperscript{41}Beaton DE, et al.. Clin Orthop Relat Res. 2003(413):90-105.
Work/Occupational Assessments

Work Productivity and Activity Impairment Questionnaire (WPAI)\textsuperscript{13,42}

- Assesses an employee’s absenteeism (missed work), presenteeism (reduced job performance), work productivity loss (absenteeism plus presenteeism), and activity impairment\textsuperscript{42}

- 6-item measure, which is available for General Health and for Osteoarthritis of Knee or Hip but is easily adapted for other health conditions\textsuperscript{42}

- Does not require fee or license

- Scoring and user instructions are also available

Work/Occupational Assessments

Workplace Activity Limitations Scale (WALS)\textsuperscript{44}

- Assesses limitations while performing workplace activities\textsuperscript{15}
- 11- or 12-item measure with a higher score indicating greater workplace limitations \textsuperscript{15}
- Does not require a fee

Work/Occupational Assessments

Work Instability Scale for Rheumatoid Arthritis (RA-WIS)\textsuperscript{45}

- Measures work instability, which is defined as ‘a mismatch between an individual’s functional abilities and job demands’\textsuperscript{46}

- 23-item measure assessing symptom control, task performance at work, stamina at work, time management, psychological distress\textsuperscript{46}

- Requires a license but is free for non-commercial use\textsuperscript{15}

Summary & Discussion
Summary

- There are many different types of functional assessments that can be used with individuals with OA.

- Regardless of which instrument is used, functional assessments can help:
  - Quantify OA progression and severity
  - Individualize treatment options for individuals with OA
  - Measure change in patient status after a specific intervention (ex. drug, surgery, workplace accommodation)
  - Measure and optimize employees’ health and safety
  - Predict future work disability and provide for timely intervention

- In your work, what are the benefits of using functional assessments?

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Discussion ideas for clinical care

- What functional assessments do you/your practice currently use for patients with OA?
- What functional assessments seem practical for your clinical setting?
- What are some barriers to using functional assessments that you/your clinic need to address?
- What are some facilitators to implementing functional assessments in your clinic?
- How might you begin implementing functional assessments into your regular clinical practice?
Discussion ideas for the workplace

- How does your workplace assess employee productivity, job fit, and need for job accommodations or job switching?15
- What functional assessments seem practical for your workplace?
- What are some barriers to using functional assessments that your workplace needs to address?
- What are some facilitators to implementing functional assessments in your workplace?
- How might you begin implementing functional assessments into your workplace?

Visit www.oacaretools.org for more tools and resources, including a video interview with a healthcare provider about how he uses performance measures and PROMs in his care of patients with OA.

OAAA collaborated with Pfizer in the development of this resource.
References

References


28. Angst F, Schwyzer HK, Aeschlimann A, Simmen BR, Goldhahn J. Measures of adult shoulder function: Disabilities of the Arm, Shoulder, and Hand Questionnaire (DASH) and its short version (QuickDASH), Shoulder Pain and Disability Index (SPADI), American Shoulder and Elbow Surgeons (ASES) Society standardized shoulder assessment form, Constant (Murley) Score (CS), Simple Shoulder Test (SST), Oxford Shoulder Score (OSS), Shoulder Disability Questionnaire (SDQ), and Western Ontario Shoulder Instability Index (WOSI). Arthritis Care Res (Hoboken). 2011;63 Suppl 11:S174-188.
References


