

# Role of OSCE in Orthopaedics Practical Examinations: A Comprehensive Narrative Review

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## Abstract

**Background:** Assessment of clinical competence in orthopaedics has traditionally relied on long-case examinations, short-case presentations, and viva voce assessments. Although these methods evaluate theoretical knowledge and bedside skills, they are often associated with examiner bias, variability in case complexity, and inconsistent scoring patterns. The Objective Structured Clinical Examination (OSCE) was developed to provide a more structured, objective, and standardized approach for assessing clinical competence in medical education.

**Objective:** To review the role, structure, applications, advantages, and limitations of OSCE in orthopaedic practical examinations and to evaluate its impact on competency-based orthopaedic training.

**Methods:** This narrative review analyzes the application of OSCE in orthopaedic education based on published literature and current assessment practices. The review focuses on the organization of orthopaedic OSCE stations, assessment domains, checklist-based evaluation methods, and their educational significance in undergraduate and postgraduate orthopaedic training.

**Results:** Orthopaedic OSCEs commonly consist of multiple timed stations designed to assess musculoskeletal examination skills, trauma management, radiological interpretation, procedural competence, implant and instrument identification, communication skills, and clinical decision-making. OSCE provides standardized assessment through predefined scoring rubrics and structured examiner checklists, thereby improving objectivity, reliability, and reproducibility. Simulation models, standardized patients, and procedural stations enhance the practical relevance of the examination. Despite its advantages, OSCE remains resource-intensive and requires trained faculty, careful organization, and substantial logistical support.

**Conclusion:** OSCE represents a major advancement in orthopaedic practical assessment by enabling comprehensive evaluation of clinical, procedural, and communication skills in a structured and objective manner. It overcomes many limitations of conventional examination methods and supports competency-based medical education. With increasing integration of simulation technology and digital assessment tools, OSCE is expected to play an even greater role in improving orthopaedic training and ensuring clinical preparedness among trainees.

**Keywords:** Objective Structured Clinical Examination (OSCE), Orthopaedics, Practical Examination, Clinical Competence, Medical Education, Trauma Assessment, Musculoskeletal Examination, Procedural Skills, Simulation-Based Assessment, Competency-Based Training.

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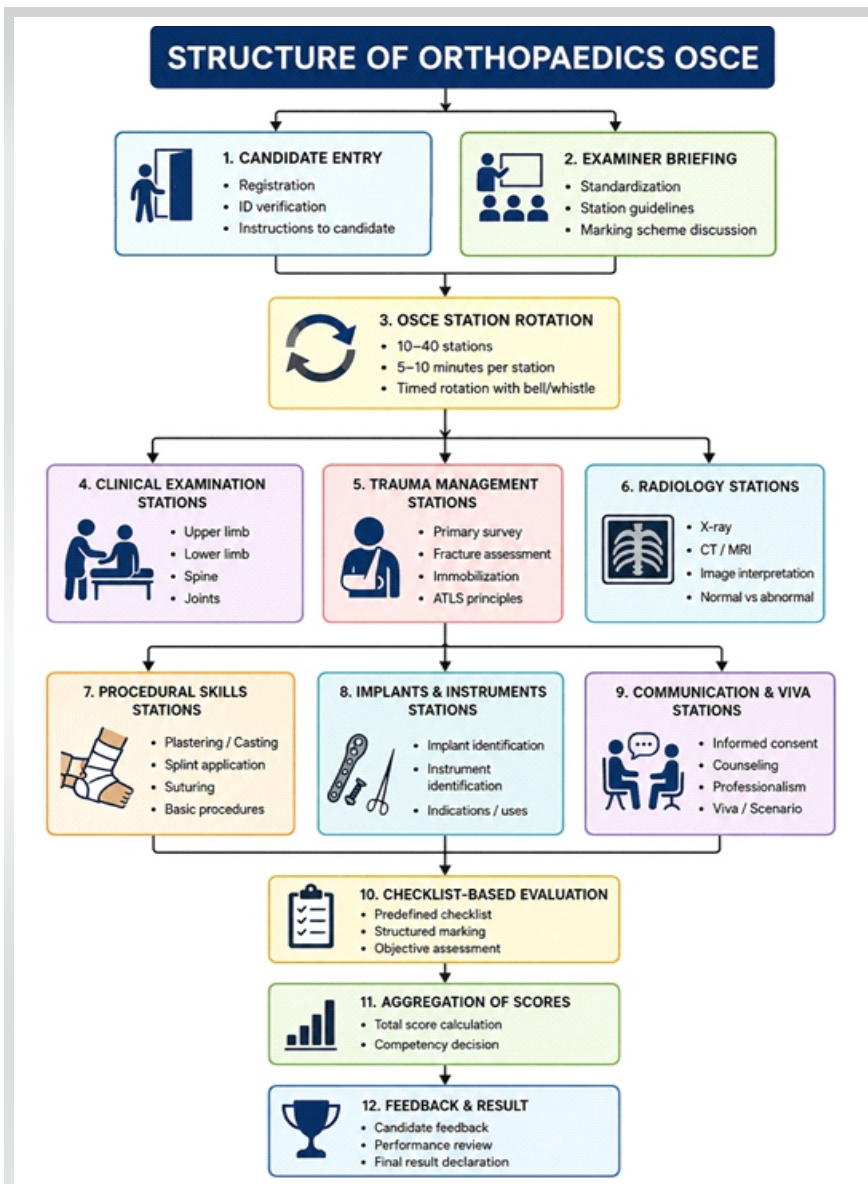


Figure 1: ALGORITHM OF OSCE

**Introduction**

Assessment of clinical competence in orthopaedics has traditionally relied on long-case examinations, short-case presentations, and viva voce methods. Although these conventional approaches evaluate clinical knowledge and bedside skills, they are often associated with significant examiner bias, variability in case difficulty, and inconsistent marking systems. As orthopaedic practice demands not only theoretical understanding but also procedural proficiency, communication skills, radiological interpretation, and decision-making ability, there has been a growing need for a more objective and structured method of assessment. The Objective Structured Clinical Examination (OSCE), first introduced by Ronald Harden and colleagues in the 1970s, emerged as a solution to these limitations. OSCE is a station-based practical examination designed to assess multiple domains of clinical competence using standardized tasks, predetermined scoring rubrics, and structured examiner checklists. Unlike traditional examinations, OSCE allows uniform evaluation of all candidates, thereby improving reliability, fairness, and reproducibility in medical assessments. In orthopaedics, where hands-on clinical examination and procedural accuracy are essential, OSCE has become an increasingly valuable tool for undergraduate, postgraduate, and surgical training assessments.

Orthopaedic OSCE stations commonly assess musculoskeletal examination techniques, trauma evaluation, radiographic interpretation, implant and instrument identification, fracture management principles, plaster and casting skills, as well as communication and informed consent (Fig. 1). The structured nature of OSCE enables examiners to evaluate a broad range of competencies within a limited time frame while minimizing subjectivity. Furthermore, the incorporation of simulation models, standardized patients, and emergency scenarios enhances the practical relevance of the examination and better reflects real-world orthopaedic practice. In recent years, OSCE has gained widespread acceptance in medical education due to its ability to provide both formative and summative assessment. It not only identifies

**Table 1. Common OSCE Station Categories in Orthopaedics**

Category	Types of Stations	Examples
Clinical Examination	Joint/Spine assessment	Knee exam, Shoulder exam, Pediatric gait evaluation
Trauma Management	Acute injury scenarios	ATLS primary survey, open fracture grading
Radiology	X-ray / CT / MRI interpretation	Distal radius fracture classification
Procedural Skills	Hands-on tasks	Plaster application, traction, reduction techniques
Implants & Instruments	Identification & usage	Plate types, nail entry point identification
Communication	Patient interaction	Explaining surgery, consent taking
Decision-Making	Management planning	Choosing fixation method, postoperative plan



Figure 2: Stations of OSCE

gaps in student performance but also promotes systematic learning, clinical reasoning, and skill-based training. Despite challenges such as the need for significant resources, faculty training, and logistical organization, OSCE continues to play an increasingly important role in modern orthopaedic education and competency-based medical training. This review aims to discuss the structure, applications, advantages, limitations, and educational impact of OSCE in orthopaedic practical examinations.

#### OSCE Structure in Orthopaedic Practical Exams (Table 1)

OSCEs typically include around 10-20 stations, each lasting around 5 minutes, assessing domains such as: (The question set and the time duration varies according to the various formats of exams)

- Musculoskeletal examination
- Trauma assessment
- Radiological interpretation
- Procedural skills
- Decision-making
- Communication and professionalism

Stations may be:

- Interactive (with real or standardized patients)
- Procedural (skills mannequins, bones, casts)
- Static (X-rays, implants, MCQs, instruments)

#### OSCE Station Examples (Orthopaedics) (Fig. 2)

##### Example Station 1 – Knee Examination

###### (Interactive Station)

Task: Examine this patient's knee and present your findings.

Assessed skills:

- Look-Feel-Move framework
- Special tests (Lachman, McMurray)
- Gait observation
- Diagnosis formulation

##### Example Station 2 – Fracture X-ray Interpretation

###### (Static Station)

Task: Interpret this X-ray and provide classification, complications, and management.

Assessed skills:

- Systematic radiographic analysis
- Fracture classification (AO/OTA)
- Treatment decision: nailing vs plating
- Awareness of complications

##### Example Station 3 – Application of Above-Knee Plaster (Procedural Station)

Candidates demonstrate:

- Padding technique
- Limb positioning

- Cast molding
- Neurovascular checks

##### Example Station 4 – Communication Station

Task: Explain to the patient the need for ORIF for a displaced ankle fracture.

Assessed skills:

- Simplifying medical terms
- Explaining risks, benefits, alternatives
- Addressing concerns
- Obtaining informed consent

#### Advantages and Limitations

The various advantages and limitations of OSCE in Orthopaedics have been listed in Table 2

#### OSCE Checklists for Orthopaedic Station

The following checklists can be used as a guide for residents on how to proceed with the particular station:-

#### Impact of OSCE on Orthopaedic Training

OSCE enhances the learning environment by:

Table 2. Advantages and Limitations of OSCE in Orthopaedics	
Advantages	Limitations
Standardized, objective scoring	Resource and faculty intensive
Evaluates multiple competencies	Requires trained standardized patients
Reproducible and fair	Time-consuming to organize
Can simulate rare emergencies	Risk of checklist-style learning
Excellent formative assessment	Limited assessment of longitudinal reasoning

Checklist 1: Knee Joint Examination	
Component	Points
Introduces self, obtains consent	1
Inspects gait, alignment, swelling	2
Palpates joint line, patella, effusion	2
Tests ROM, flexion-extension	2
Performs special tests (Lachman, Apley)	3
Neurovascular exam	1
Summarizes findings & diagnosis	2
<b>Total</b>	<b>13 points</b>

Checklist 2: X-ray Interpretation Station	
Component	Points
Identifies view and side	1
Systematic approach (ABCs)	2
Identifies fracture type & displacement	3
Classifies using AO/OTA	2
Mentions complications	1
Gives management plan	2
<b>Total</b>	<b>11 points</b>

Checklist 3 – Plaster Application Station	
Component	Points
Checks neurovascular status before	1
Applies padding correctly	2
Maintains proper limb position	1
Applies cast smoothly & symmetrically	2
Performs molding (3-point molding etc.)	2
Checks circulation after application	1
Gives after-care instructions	2
<b>Total</b>	<b>11 points</b>

- Promoting systematic examination habits
- Encouraging radiology and clinical reasoning practice
- Improving procedural competence
- Strengthening communication and informed consent skills
- Providing detailed feedback for improvement

### Learning Points

- OSCE provides a structured and objective method for assessing clinical competence in orthopaedics.
- Orthopaedic OSCE evaluates multiple domains including clinical examination, radiological interpretation, procedural skills, communication, and decision-making.
- Standardized checklists and scoring systems improve fairness, reliability, and reproducibility compared to traditional practical examinations.
- OSCE promotes systematic clinical examination habits and strengthens musculoskeletal assessment skills among trainees.
- Simulation-based stations enhance procedural competence in

orthopaedic techniques such as plaster application, fracture reduction, and trauma management.

- Communication stations improve informed consent practices, patient counseling, and professionalism in orthopaedic practice.
- Despite logistical and resource-related challenges, OSCE remains an essential component of competency-based orthopaedic education and assessment.

### Conclusion

OSCE represents a major advancement in orthopaedic assessment, addressing the limitations of traditional examinations by providing structure, objectivity, and comprehensive competency evaluation. With increasing integration of simulation and digital tools, orthopaedic OSCEs will continue to evolve and enhance trainee preparedness for clinical practice.

**Declaration of patient consent:** The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the Journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

**Conflict of Interest:** NIL; **Source of Support:** NIL

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