

The use of the objective structured clinic examination (O.S.C.E.) at the Canadian Memorial Chiropractic College Outpatient Clinic

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An Objective Structured Clinical Examination (O.S.C.E.) utilized in the Canadian Memorial Chiropractic College's teaching clinics is examined. The need for valid, reliable, objective, relevant and practical clinical examinations is emphasized. The development and administration of an O.S.C.E. is described and sample testing stations are presented. It is suggested that O.S.C.E. provides chiropractic colleges with an objective tool for assessing clinical competence.

KEY WORDS: chiropractic, manipulation, competency, clinical, O.S.C.E.

Il s'agit de l'analyse d'un examen clinique objectif, (O.S.C.E.), utilisé dans les centres cliniques d'enseignement du "Canadian Memorial Chiropractic College". On y souligne le besoin d'examen cliniques valables, fiables, objectifs, pertinents et pratiques. Le déroulement et l'organisation d'un O.S.C.E. y est décrit et des centres d'examen y sont présentés.

Il est suggéré que l'O.S.C.E. représente pour les collèges de chiropractie un outil objectif pour évaluer les compétences cliniques.

MOTS CLEFS: chiropractie, manipulation, compétence clinique, O.S.C.E.

Introduction

The major objective of any chiropractic college is the graduation of chiropractors who are clinically competent and thus able to carry on a successful professional career. However, among the many examinations that take place during the four year undergraduate programme, the most subjective have traditionally been those which attempt to measure clinical competence. Recently, the Canadian Memorial Chiropractic College (C.M.C.C.), Outpatient Clinics have attempted to improve the assessment of clinical competence by developing various methods of evaluation that would take into account several important criteria.

Hart¹ specifies the following five factors:

- 1 validity
- 2 reliability
- 3 objectivity
- 4 relevance
- 5 practicality

The validity of any examination relates to its ability to measure what it sets out to measure. Reliability of an examination is the accuracy and consistency with which it measures a certain variable. Unreliability in the clinical examination can result from the fact that different students are tested on different patients giving rise to unfair and "unreliable" results.^{2,3,4} An objective examination is one in which there is a high degree of correlation between the judgement of different examiners assessing the same performance.^{5,6} An examination is relevant when there is a high degree of correlation between the testing criteria of the exam and the questions asked (ie. an exam should measure the stated objectives of a course). It is obvious that one must take practicality into account before setting any exam, making sure there is sufficient and appropriate staff; patients

(real or simulated); support personnel; time, and appropriate physical facilities.

The Objective Structured Clinical Examination (O.S.C.E.) seems to fulfill most of the above criteria. Developed in the mid 1970's at the University of Dundee by Harden,⁷ it is an excellent attempt to combine in one examination different methods of evaluation: "It is a method of assessing a student's clinical competence which is objective rather than subjective and in which the areas tested are carefully planned by the examiners".⁷

The examination uses real or simulated patients, patient management problems (PMP's), multiple choice questions (MCQ's), models, photographs, videotapes, slides and short answer questions, in a series of testing stations.

At certain stations, the students are observed performing a clinical task, such as examination of the lumbar spine or the knee, or taking a history from a patient, etc. . . ., while at other stations they will answer the questions asked. Since the correct answer to the questions, and more importantly, the correct method of performing a certain clinical skill has already been predetermined, the objectivity of the exam is established.

The exam can be made to cover as broad an area of relevant clinical skills as needed. O.S.C.E. is an extremely practical system since it allows for the examination of 150 students in the same afternoon using the same patient format. The use of simulated patients and models enhances the validity of the clinical examination.²

Assessment of competence at the Canadian Memorial Chiropractic College (C.M.C.C.), outpatient clinics

During their clinical internship year, students are tested three times by the O.S.C.E. format: for clinic entrance; mid-term; and exit examination.

The objective of the clinic entrance exam is to assess the student's level of competence in doing basic physical examination procedures (ie. history taking, vital signs, neurological examination, motion palpation, etc. see fig. 1).

By the mid-term, the student is expected to have developed more sophistication and a deeper understanding of most

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Figure 1 Structure of *clinic entrance exam*

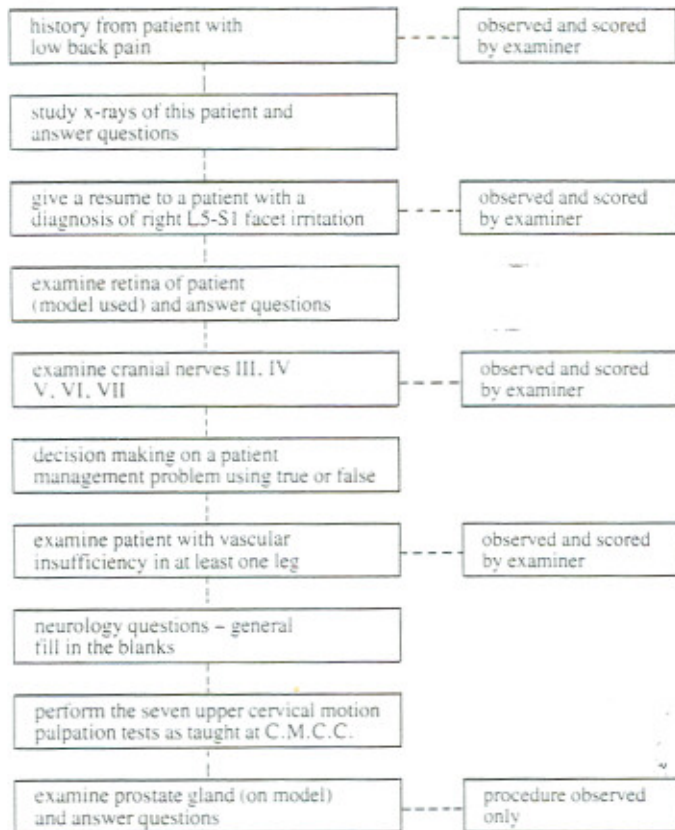


Figure 2 Structure of a *clinic mid-term exam*

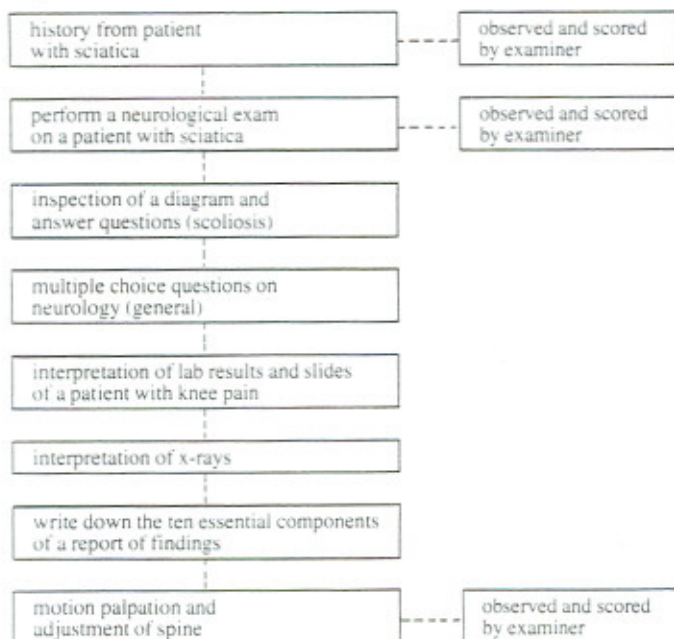
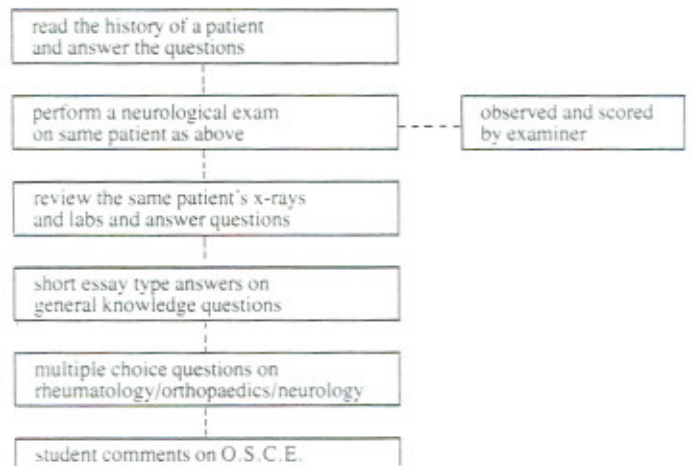


Figure 3 Structure of a *clinic exit exam*



conditions encountered in a chiropractic clinic (see fig. 2). The questions are therefore designed to assess clinical reasoning, diagnostic, therapeutic and prognostic skills, interpersonal and attitudinal skills, and of course adjustive proficiency.

The clinic exit exam is to ensure that the student has reached a minimum expected level of competence that would qualify him to treat patients on his own without supervision. Atypical cases are used in order to test the student's depth of understanding of the complexity and multifactorial cause of disease (see fig. 3).

Examples of sample station contents can be found in Appendix I. A graphic analysis of the actual grades obtained from clinic entrance, mid-term and exit exams may be utilized to assess general strengths and weaknesses.

Guidelines for designing an objective structured clinical examination

The first step is to decide the clinical skills that need to be assessed and then for each skill, determine the contexts in which the skill could be assessed. For example: taking a history from a patient complaining of sciatica or of chest pain, doing a physical examination on a patient with neurological deficit or with some vascular deficiency, or giving a report of findings to a patient with a specific diagnosis (ie. cervical headache or primary dysmenorrhea). All of the above skills should be a representative sample of what was taught and is expected of the students at that point in time.^{8,9}

The number and type of stations is then decided. There are two basic types of stations: examiner and marker. An examiner station is one in which an observer (clinician) is usually present at the station with the student and he "marks" the student's performance using a predetermined checklist. This type of station is used for testing history taking, physical examination or any procedural skill such as an adjustment (see fig. 4, 5).

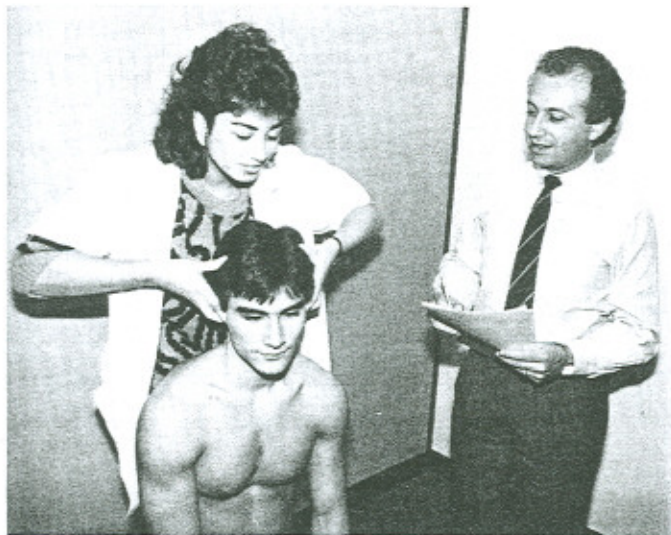


Figure 4: Examiner station - motion palpation

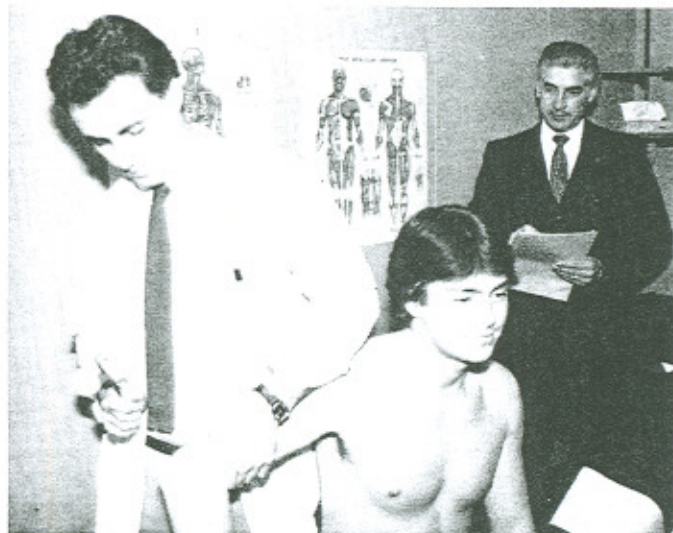


Figure 5: Examiner station - neurological examination

A marker station is one where students are left alone in a room to answer questions on a provided sheet. These could be MCQ's or short answer questions. Such stations are commonly used for interpretation (x-ray, slides, lab) or management skills (PMP's) (see fig. 6).

The next step is to make sure that there is enough staff, space and time to carry out the exam. The "checklists" for the examiner stations are prepared and the clinicians that will be monitoring those stations are briefed ahead of time about their contents. A timetable is then prepared and posted informing each student of the place and time of his exam and each clinician of his specific role. On the day before the examination, a final check should be made to ensure every station's requirements are fully met. On the day of the examination, the co-ordinator must be available at least one hour before the start of the exam in order to make sure that all is well and in the right station, including the simulated patients. It is customary to hold an informal get together with all the students, staff and simulated patients after the exam to exchange ideas and relax. It is important to give appropriate feedback to the students as soon as possible after the exam in order to demonstrate to them their weaknesses, if any, and their strengths. It is always easier to determine the excellent students and the very weak ones. The O.S.C.E. enables us to get an objective assessment of the borderline students.

Conclusion

The Canadian Memorial Chiropractic College (C.M.C.C.) Clinics has recently used structured examinations as a basis for successful completion of the clinical training programme through the O.S.C.E. method. Previously, determination of a student's competence was based primarily on a clinical supervisor's subjective report.

Although the use of the objective structured clinical examina-



Figure 6: Marker station - x-ray interpretation

Appendix 1: Examples of sample station contents

CLINIC ENTRANCE EXAMINATION
 Student Name: _____
 Student No.: _____

Station 1
 This young patient presents with low back pain. Please take a relevant history in five minutes

<p>A. General patient information and key points for history: Please tick boxes where elicited satisfactory, where there is no tick the marker will assume that the student did not cover the item or did so inadequately.</p> <p>Type _____ Duration _____ Periodicity _____ Site _____ Severity _____ Radiation _____ Worsened by _____ Relieved by _____ Associated symptoms _____ Previous history _____ eg. 1. precipitating cause, injury _____ 2. previous occurrence _____ Other 1. _____ 2. _____ Total: _____</p>	<p>B. Attitude () Shows empathy _____ Develops rapport _____ Demonstrates concern _____ Other _____</p> <p>C. Technique () Systematic _____ Appropriate _____ quest _____ Listens attentively _____ Other _____</p>
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Examiner's checklist for a history taking station

CLINIC ENTRANCE EXAMINATION
Station 5
 Student Name: _____
 Student No.: _____

Please examine cranial nerves.

	Carried out Satisfactorily	Attempted, Not Satisfactorily	Not Attempted
III, IV, VI, pupillary reaction to light	_____	_____	_____
extra ocular movements:			
lateral rectus	_____	_____	_____
superior oblique	_____	_____	_____
other	_____	_____	_____
V. Sensory Function: light touch on cornea	_____	_____	_____
Motor Function: contraction of masseter muscles or forced opening against resistance	_____	_____	_____
VII. Motor function in mimetic musculature of face:			
raise eyebrows or forced eyelids closing	_____	_____	_____
show teeth, puff out cheeks, smile	_____	_____	_____

DID THE STUDENT PERFORM THE EXAMINATION IN AN EFFICIENT AND ORGANIZED MANNER?
 YES _____ NO _____

Examiner's checklist for cranial nerve testing

CLINIC ENTRANCE EXAMINATION
Station 9
 Student Name: _____
 Student No.: _____

Please examine the seven upper cervical motion palpation test as taught at C.M.C.C.

1-3 *Rotation, Lateral Flexion, Jawjut*
 Contact fingers on TVP _____
 - mastoid _____
 - angle of mandible _____
 Control of head _____
 Doctor's body positioning _____
 Interpretive analysis - rotation _____
 - lateral flexion _____
 - jawjut _____

4 *Atlas Rotation*
 Contact finger on position lateral aspect of TVP of atlas _____
 Contact thumb against spinous of C2 (on ipsilateral side to index contact) _____
 Indifferent hand contact - control of head _____
 - rotate head away _____

5 *Occiput Flexion - Atlas-Axis*
 Contact - Index finger - occiput rim _____
 - 2nd finger - space (posterior arch of atlas) _____
 - 3rd finger - spinous of C2 _____
 Indifferent hand contact - control of head during flexion _____
 Interpretive analysis _____

6 *Occiput Flexion - on Cervical Spine*
 Contact - Index finger hooked around anterior aspect of axis _____
 Contact - thumb on occiput rim just medial to midline _____
 Indifferent contact - on head _____
 - control of head movements _____
 - should force occipital movements _____

7 *Occiput - Rotation - on Cervical Spine*
 Contact - 2-3 fingers behind mastoid process _____
 Indifferent hand on head to control head rotation with slight lateral and forward flexion _____
 Interpretive analysis _____

Examiner's checklist for seven upper cervical motion palpation tests

CLINIC MID TERM EXAMINATION
 Student Name: _____
 Student No.: _____

Station 2
 This patient comes with complaints of fluctuating violent pain from the back, radiating to the posterior side of the right leg.
 The patient is lying on the exam table because he cannot walk well.
 What NEUROLOGICAL examination would you carry out?
 Please tell this to the observer. He will tell you what part of neurological exam you will have to carry out.

- Tests to stretch the spine cord or sciatic nerve
- Motor activity
- Reflexes
- Sensation
- Back inspection

Tests to stretch the spinal cord or sciatic nerve.

A. Straight leg raising test
 - tried to raise the straight leg on painful side
 - ask the patient to mention:
 - whether pain appears
 - where the pain appears
 - when the pain appears
 - writes down (mentions) the angle

B. Well leg straight leg raising test
 - tries to raise the uninvolved leg up
 - asks the patient to mention
 - whether pain appears
 - where the pain appears
 - when the pain appears

C. Dorsi flexion maneuver
 - carries out a dorsiflexion of the foot with S.L.R.

D. Flexion of the head
 - pushes patient's head with chin to chest
 - asks patient to mention if painful

Examiner's checklist for the neurological examination of a patient with sciatica

CLINIC MID TERM EXAMINATION

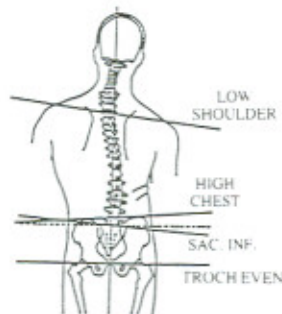
Student Name: _____
 Student No.: _____

Station 3

You are confronted with this diagrammatic representation of the spine and body of a 14 year old female patient. You have also just finished a thorough examination of that same patient.

Indicate your relevant findings:

1. On forward flexion _____
2. On "eye-balling" patient _____
3. What is your most likely diagnosis? _____
4. What is your prognosis? _____
5. What is your plan of management? _____
6. Can you straighten the curve? How? _____
7. What is the best screening test (besides x-rays) for scoliosis? _____



Example of a "marker station" on scoliosis understanding and management

tion (O.S.C.E.) may be time consuming for the co-ordinator, it has provided a valid, reliable, objective, relevant and practical examination. The use of prepared checklists for each examined task has forced us to come to a consensus of agreement as to our expectations from the students. Both faculty and interns have described the O.S.C.E. as a good learning experience allowing the former an opportunity to give more appropriate feedback to the latter.¹⁰

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CLINIC ENTRANCE EXAMINATION

Station 2 Student Name: _____ Student No.: _____

Please examine cranial nerves.

Neurological examination:	Done	Attempted	Not
	Satisfactorily	Unsatisfactorily	Attempted
Cranial Nerve Testing			
Visual Testing			
Plantar Reflexes Bilaterally			
Clonus (ankle/knee, wrist)			
Deep Tendon Reflexes Bilaterally in upper and lower limbs			
Superficial Reflexes			
Cerebellar Testing			
Sensory Testing:			
Pin			
Touch			
Vibration			
Position Sense			
Temperature			
Motor Strength:			
Arms			
Legs			
Gait			
Other			

Examiner's checklist for a patient with an upper motor neuron lesion

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