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Assessing competence in the understanding and use of Muscle Energy Techniques

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Introduction

This article proposes a method of conducting assessment of competence in the skills necessary to perform Muscle Energy Techniques (MET).

The method proposed has been adapted from the method of teaching and assessing High Velocity Thrust Techniques published by the same author in the *Journal of the American Academy of Osteopathy*, Spring, 1999.

The proposed method of assessment is a demonstration of how clinical skills, such as MET, can be examined by practical as well as oral and written methods of assessment.

By using practical, oral and written assessments the examiner is able to develop a clear picture of the student's strengths and weaknesses, and will as a consequence be able to give 'meaningful feedback' to improve student performance which was suggested by Laurillard in her book entitled, *Rethinking University Teaching*⁽¹⁾.

The three dimensional approach to assessment gives the examiner an understanding of whether 'deep learning' has taken place as opposed to 'surface learning' which is a concept of learning covered in detail by Paul Ramsden in his book, *Learning to Teach in Higher Education*⁽²⁾.

This paper takes the reader through the preparation for:

1. Written, and
2. Practical (which includes oral) examinations, giving example questions and offering an explanation of how each

type of question assesses a different aspect of the student's skill.

1. How to prepare for written examinations

Establish the total marks allocated and the duration of the written exam. Then decide in advance the mark that will be allocated to each question. It is a good idea and it expedites marking if you have a model answer prepared.

Example questions for a written paper may include:

- Q1. Describe the principles behind a MET using reciprocal inhibition
- Q2. Describe the principles behind a MET using post-isometric relaxation
- Q3. When would you choose to use reciprocal inhibition in preference to the Post Isometric Relaxation type of MET?

These three questions examine the students' knowledge of physiology and their ability to differentiate between two different types of techniques. Question three examines the students' ability to make a decision i.e. how and why they select techniques.

- Q4. Describe and explain the **reason for the patient's position**, and the **difference in patient positioning**, when performing a MET to:
 - a) the infraspinatus muscle and
 - b) the subscapularis muscle.

The questions assess the students' understanding of the rationale behind the positioning of the patient.

- Q5. Describe the movement that occurs to the scapula when performing an MET technique to the levator scapulae muscle.

This question examines how well the students understand their anatomy and biomechanics. It helps the instructor to know whether the student is developing the three dimensional visual image that experienced practitioners have in their 'mind's eye' during any technique.

- Q6. What are the contraindications to Muscle Energy Techniques?
- Q7. What are the indications for using Muscle Energy Techniques?
- Q8. Your patient has a hamstring imbalance:
 - a) Explain how you would have diagnosed a hamstring problem. How would you differentiate between a problem in the semimembranosus muscle and the semitendinosus muscle?

b) Write out **in full** the corrective techniques to relieve hypertonic muscle contraction in both the semimembranosus and the semitendinosus muscles.

c) Explain the reasons why the positioning of the patient in the above techniques is different.

- Question assesses the students' ability to:
- a) demonstrate how they diagnose a hamstring problem and differentiate between any of the hamstring muscles
 - b) write a Muscle Energy technique
 - c) explain their rationale for patient positioning.

Another important skill for students to develop is the ability to interpret and use techniques that have been written by other osteopaths.

To examine the students' ability to interpret the written form of a technique the examiner can write a technique taught in class 'incorrectly' and then ask the students to correct it.

The Muscle Energy Technique for the Sterno-clavicular joint (see box) is an example of an exam question where a technique is written incorrectly and the student is asked to write the correct answers. Some of the changes may seem trivial; however, each component of a technique has an effect on its overall success. The incorrect statements are written in normal font followed by the corrected statement which is written in *italics*.

2. How to prepare for practical examinations

If the examinations are to be considered valid and reliable then the teacher must ensure that *all* techniques taught in the curriculum are examined.

This author has found that learning is increased if practical exams are conducted regularly, say after six or eight techniques have been taught.

a) How many techniques should be examined at each practical exam?

From my experience I have learned that it takes approximately fifteen minutes to assess four techniques.

At the beginning of an exam students in my class are offered a 'selection' of four techniques which are written down and they are allowed five minutes reading time before I ask them to demonstrate their proficiency. I usually prepare six or eight 'selections' of different questions, so that the same questions are not repeated too often.

A large selection is particularly important for larger classes and examinations where students are treating other students.

MUSCLE ENERGY TECHNIQUE Reciprocal Inhibition

Sterno-Clavicular Joint

Lesion Medial end of the left clavicle is held cephalad or superiorly.

Restriction Restricted superior movement of the left medial end of the clavicle i.e. restricted abduction of the shoulder
Restricted inferior or caudal movement

Patient position Seated

Operator position Standing behind the patient

Contacts Operator's right thenar eminence is placed on the lateral margin of the medial end of the patients left clavicle. Left hand, grasps patients left elbow. *Superior*

Lock up description Externally rotate and adduct the patient's left arm.
and abduct the patient's arm

Instructions to the patient Ask patient to adduct the upper arm i.e. pull your elbow to the right using 5% of available strength. Hold contraction for 20seconds. Alternatively you can have the patient pull their elbow down towards their side. *Using 20% of available strength, holding the contraction for 5-7 seconds*

Relaxation phase of the technique Patient is told to relax and the arm is further abducted and externally rotated until a new barrier to inferior/caudal glide is sensed at the sterno - clavicular joint, by the operator's right hand. *Reset and Repeat* until free movement of the lateral clavicle is achieved. *the medial clavicle*

Explanation of Technique Abduction and external rotation of the shoulder cause the medial end of the clavicle to move inferiorly/caudally and to rotate posteriorly. By contracting the adductors of the shoulder and then stretching them, through their attachment to the clavicle they will pull the medial end of the clavicle in the desired direction and reciprocally inhibit the sternocleidomastoid muscle to relax, and discontinue its superior/cephalic pull.

References: Chaitow Leon, 1997, Muscle Energy Techniques, Churchill Livingstone

It is also important that students be instructed to leave the building immediately after their exam so as not to corrupt the examination process.

b) Inform students of exam procedures

Early in the semester, advise the students on the examination criteria, the number of techniques to be examined and the other examination procedures.

Students cannot be expected to perform well if they have not been properly informed what to expect. A great deal of anxiety between examiners and students can be eliminated if good communication channels are maintained. 'Stressed' students make poor examinees. Poor communication often results in more students needing to re-sit exams, thereby increasing the examiner workload.

c) Decide what constitutes a 'successful' performance of a Muscle Energy Technique

A good guide when examining students is to ask, "Can the student apply this technique to this particular patient effectively?" Consideration must be given to all the possible variables that are brought to the examination by both the student and the patient. Variables such as patient versus student size, patient mobility, age and bench height.

Examiners and students must remember that the technique is not being applied to 'the textbook' it is being applied to 'the patient'. Technique assessment should be based on the agreed criteria, yet must be flexible enough to accommodate for all the variables.

d) Decide when to give feedback

Fundamentally important to the educator's role is to provide the student with **accurate and constructive feedback**. Clear, concise and positive feedback by examiners creates an atmosphere within which students feel safe to be 'wrong,' to ask when they are unsure, to expose their lack of knowledge and to open themselves to deeper understanding. In essence, to *learn*. With unclear or negative feedback students' learning may be inhibited or completely stifled.

Examiners must agree upon whether or not the student is to receive immediate feedback after the performance of each technique, at the end of exam, or at a later date after all the exams are over. More time will need to be allocated for examining each student if you intend to give immediate feedback.

Regardless of when feedback is given, it is important that all feedback is in a written form. Students quite often wish to

reflect on the comments at a later date and if they are not written down it will be difficult for the examiner to remember how each student performed each technique.

This is the reason for the marking criteria below. It allows the teacher to give "precise" feedback.

e) Marking criteria used in practical examinations

Total marks per technique = 15

Diagnosis - Three marks

In order to gain full marks in this section the student should be able to identify the hypertonic muscle to be treated, name the muscle attachments and nerve supply, as well as state the muscle's action.

Operator and Patient Positions - Two marks (one mark each)

The examiner must assess the students' ability to position themselves and the patient correctly to successfully administer each technique. Consideration should be given to all possible variables, for example where the patient is much larger than the practitioner and vice versa, or whether the bench is height adjustable or not.

Students must demonstrate an awareness of maintaining their own good posture and personal safety as well as the ability to recognise if it is appropriate for the patient to be manoeuvred into the required position.

Patient must be aligned correctly. Patient should feel relaxed in position and should be fully supported. The patient's modesty and safety are paramount!

Contact - Two marks

Equal consideration must be given to the placement/ involvement of **both** of the operator's hands, in the performance of each technique.

Lock Up description and Lock Up performance - Two marks (one mark each)

In order to gain full marks in this section the student should be able to give a verbal description of how the patient is being positioned and the effects of those movements on the patient's muscular problem, making sure all components of the restrictive barriers are addressed. The student needs to **verbalise** the correct 'lock up' description as well as **perform** the correct 'lock up' to get two full marks for these criteria.

Localisation - One mark

At least one examiner will palpate as closely as possible to the muscle or joint being treated to make sure that all forces are localised to the required area.

Instructions to client – Two marks

In order to gain full marks in this section the student should explain to the patient the procedure they are about to perform on them. The patient should be given clear instructions regarding positioning and what is expected of them during the technique, i.e. the amount of force to be used, the direction of the pressure. (Starting gently and building up pressure gradually, easing off gently.)

Explanation of the Technique - Two marks

To gain marks in this section students must demonstrate that they have a thorough understanding of the aims and objectives of the technique. Also that they have a knowledge of the anatomy, physiology and biomechanics, i.e. a three-dimensional appreciation of how the technique will help that patient.

References

1. Laurillard D., 1993, *Rethinking University Teaching*, a framework for the effective use of educational technology, Chapter 3, Routledge, London.

2. Ramsden P., 1992, *Learning to teach in Higher Education*, Routledge, London.

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(See page 19 for Bibliography)

Muscle Energy Techniques Practical Examination Marking Form

Date

Student's Name

Examiner's Name

Selection No

Students must score 13.5/15 i.e. 90% to pass each technique, as well as pass 3 out of 4 techniques to pass the exam overall.

	Marks	Tech.1	Tech.2	Tech.3	Tech.4
Diagnosis	3				
Operator Position	1				
Patient Position	1				
Left Contact	1				
Right Contact	1				
Lock Up Description	1				
Lock Up Performance	1				
Localisation	1				
Instructions to Client	2				
MET Performance	1				
a) Reciprocal Inhibition					
b) Post Isometric Relaxation					
Explanation of Technique	2				
Total	15	/15	/15	/15	/15