

Teaching Psychomotor Skills and Simulations

Goals

- Define psychomotor skills
- Describe teaching methods appropriate for learning a psychomotor skill
- Describe classroom activities used to teach and practice psychomotor skills
- Demonstrate the use of corrective feedback during a skill demonstration
- Create a skill scenario which enhances realism



ประกาศคณะกรรมการการแพทย์ฉุกเฉิน
เรื่อง เกณฑ์มาตรฐานคุณวุฒิฉุกเฉินการแพทย์ (มคจ.๑)
พ.ศ. ๒๕๖๕

มาตรฐานผลการเรียนรู้

๑. ด้านคุณธรรม จริยธรรม และคุณลักษณะของผู้สำเร็จการฝึกอบรมที่พึงประสงค์

๒. ด้านความรู้

๓ ด้านทักษะ

๓.๑ ทักษะทางปัญญา

๓.๒ ทักษะความสัมพันธ์ระหว่างบุคคล

๓.๓ ทักษะการวิเคราะห์เชิงตัวเลข การสื่อสาร และการใช้เทคโนโลยีสารสนเทศ

๓.๔ ทักษะพิสัย

๔ ด้านความสามารถในการประยุกต์ใช้และความรับผิดชอบ

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ทักษะพิสัย

- การบริหารผู้ป่วยฉุกเฉิน
 - ทักษะหัตถการฉุกเฉินการแพทย์
- ก. ทางหายใจ การหายใจ และการไหลเวียนเลือด
- ข. หัตถการทางเภสัชวิทยาและสรีรวิทยา
- ค. หัตถการวินิจฉัย
- ง. ด้านอื่นที่จำเป็นต่อการป้องกันการเสียชีวิตและการรุนแรงขึ้นของการบาดเจ็บหรืออาการป่วยของผู้ป่วยฉุกเฉิน

Psychomotor domain

- The psychomotor domain involves the skills of the EMS profession
- Skill, action, muscle movement and manual manipulation

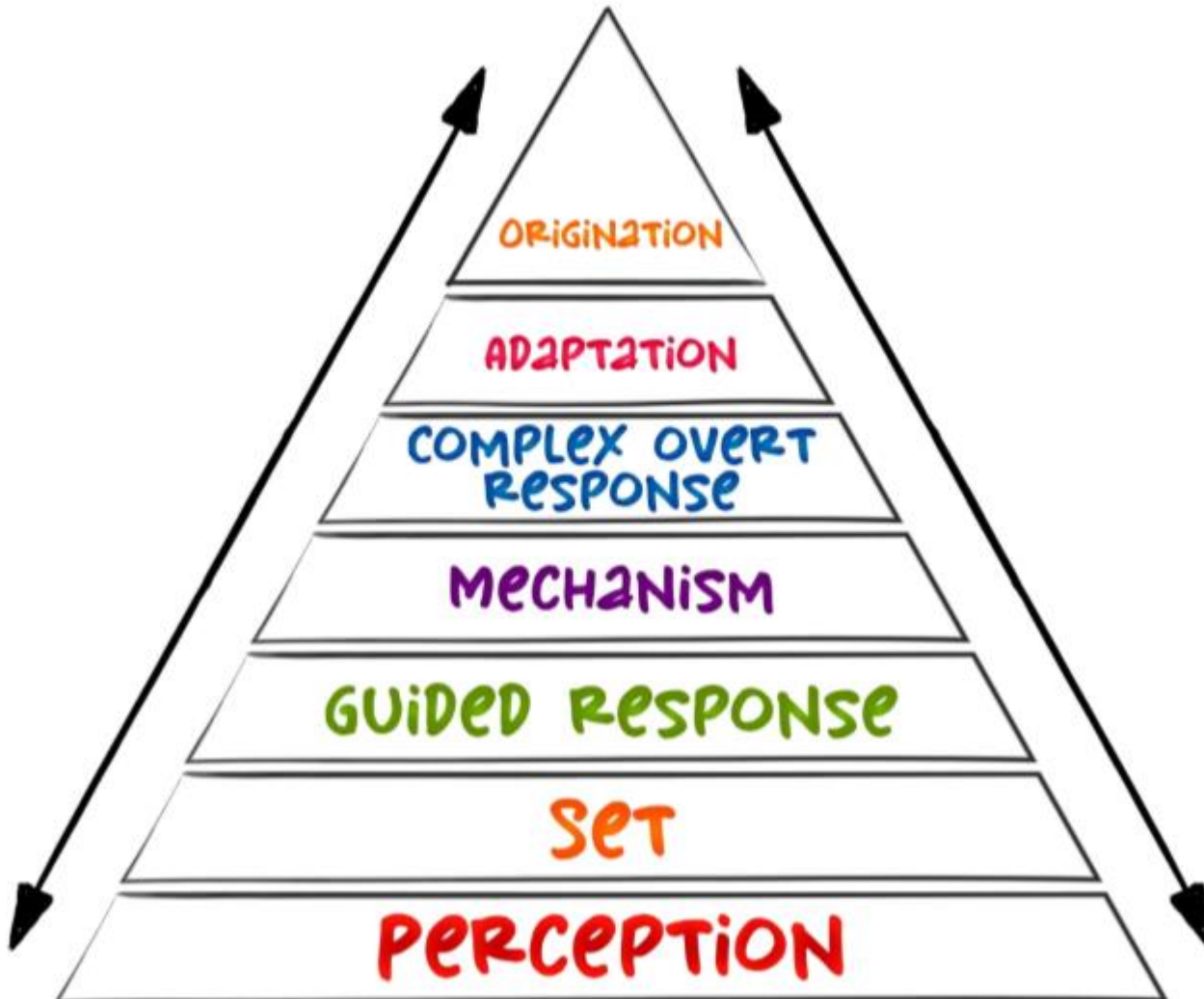


Psychomotor domain

- พฤติกรรมทักษะพิสัย : เป็นกลุ่มพฤติกรรมที่เกิดจากการใช้กล้ามเนื้อและประสาทสัมผัส หรือพฤติกรรมจากการได้ลงมือปฏิบัติจริง

BLOOM'S TAXONOMY

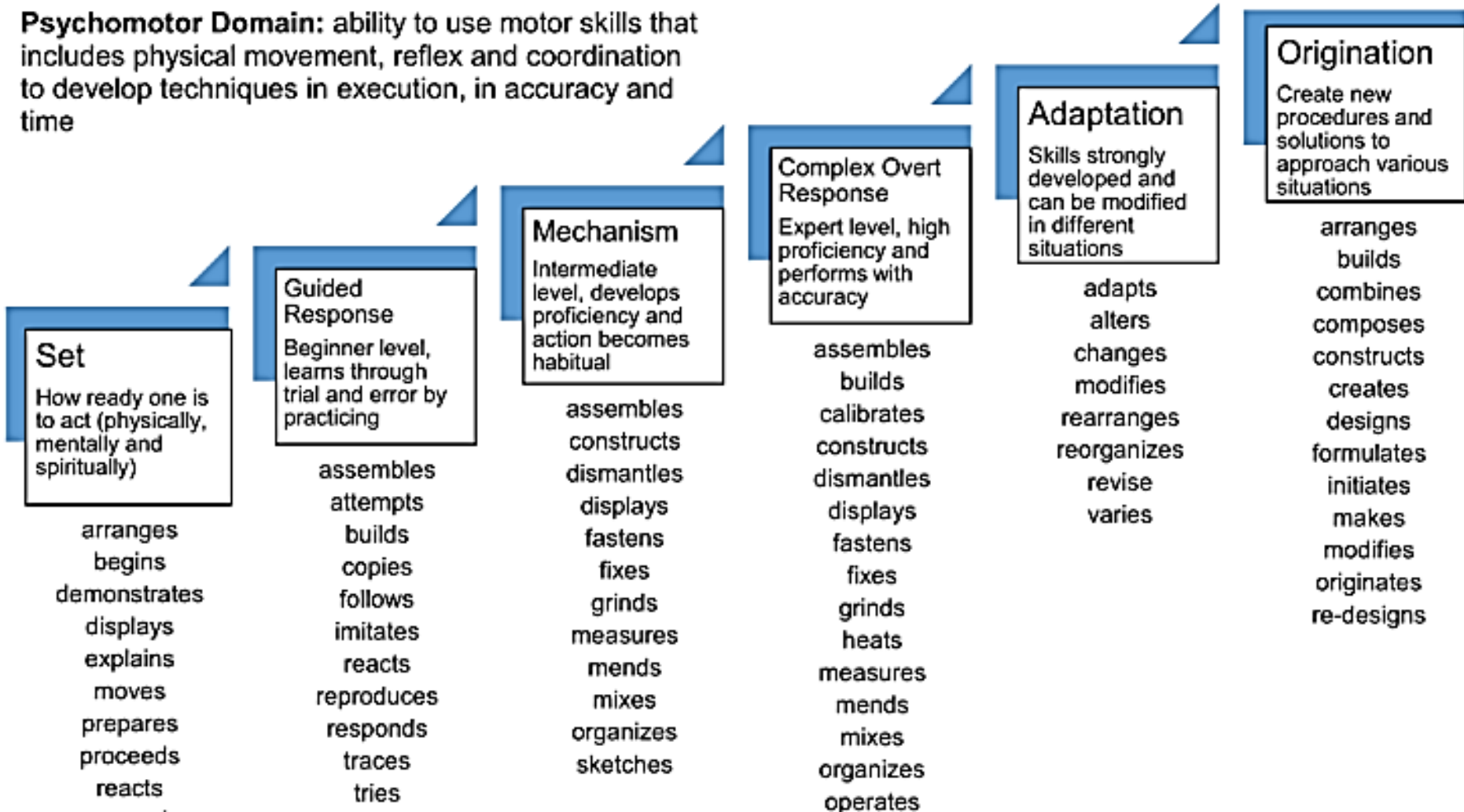
THE PSYCHOMOTOR DOMAIN - ACTION-BASED



Bloom's taxonomy

1. การรับรู้ (Perception) สัมผัสสิ่งเร้าผ่านทางประสาทสัมผัส
2. การเตรียมความพร้อม (Set) มี 3 ด้าน คือ ความรู้ ร่างกายและอารมณ์
3. การตอบสนองตามการแนะ (Guided Response)
4. การปฏิบัติได้ด้วยตนเอง (Mechanism) ปฏิบัติงานได้ มีผลสัมฤทธิ์
5. การตอบสนองที่ซับซ้อน (Complex overt Response)
6. การดัดแปลง (Adaptation) พัฒนาวิธีการเดิมให้มีประสิทธิภาพ
7. การริเริ่ม (Origination) สร้างสรรค์ผลงานใหม่

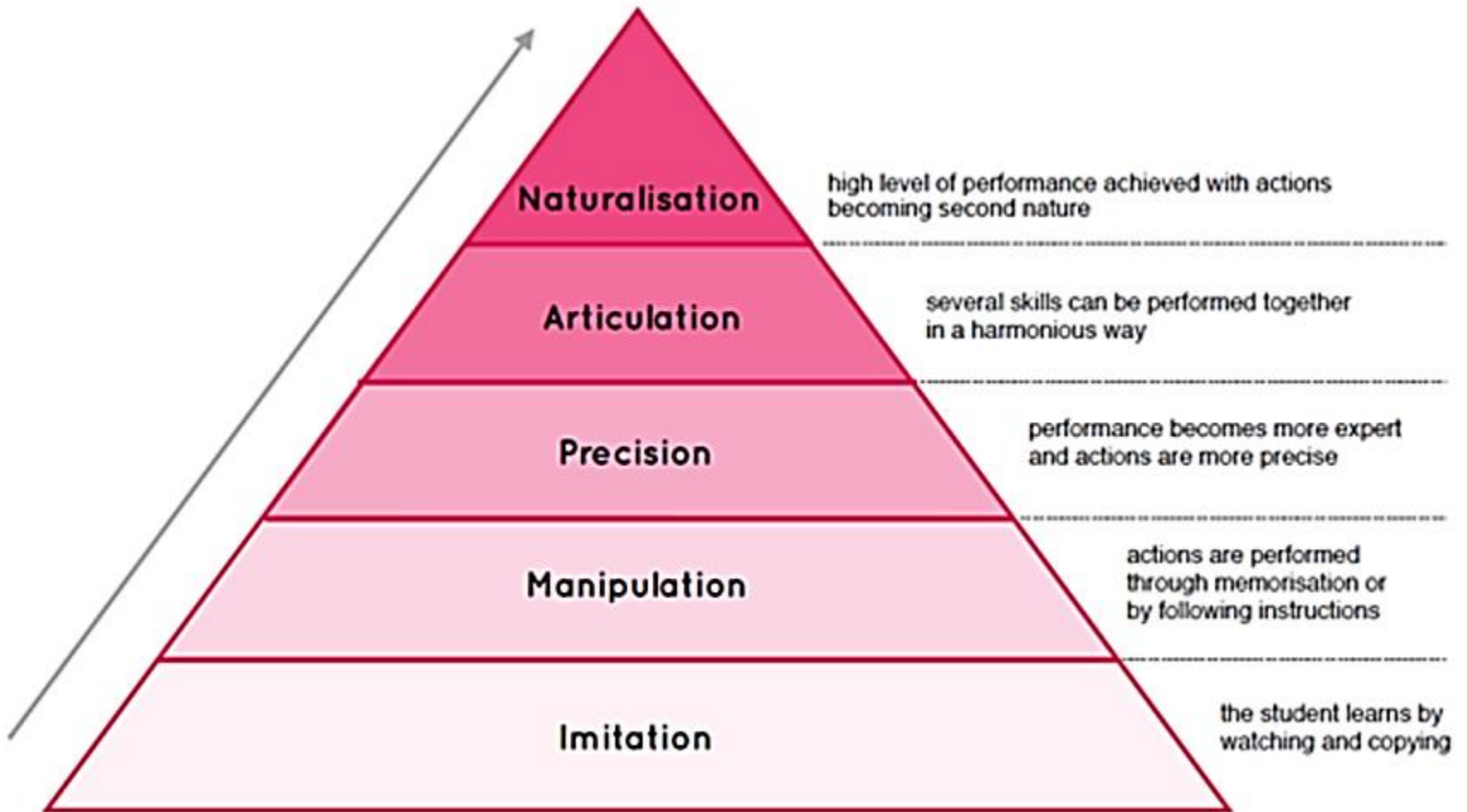
Psychomotor Domain: ability to use motor skills that includes physical movement, reflex and coordination to develop techniques in execution, in accuracy and time



- Clark, D.R. (1999) Bloom's Taxonomy:

- Simpson, E.J. (1966). The Classifications of Educational Objectives.

Psychomotor Domain - Dave's Taxonomy



Dave's taxonomy

- 1 ขั้นการเลียนแบบ (Imitation)
- 2 ขั้นการปฏิบัติได้โดยลำพัง (Manipulation)
- 3 ขั้นการปฏิบัติได้ถูกต้องแม่นยำ (Precision)
- 4 ขั้นการปฏิบัติอย่างต่อเนื่องและผสมผสาน (Articulation)
- 5 ขั้นการปฏิบัติโดยอัตโนมัติเป็นธรรมชาติ (Naturalization)

Imitation

1. Student repeats what is done by the instructor
2. “See one, do one”
3. Avoid modeling wrong behavior because the student will do as you do



Manipulation

1. Using guidelines as a basis or foundation for the skill (skill sheets)
2. May make mistakes: making mistakes and thinking through corrective actions is a significant way to learn
3. Perfect practice makes perfect: practice of a skill is not enough, students must perform the skill correctly
4. The student begins to develop his or her own style and techniques: ensure students are performing medically acceptable behaviors



Precision

1. The student has practiced sufficiently to perform skill without mistakes
2. Student generally can only perform the skill in a limited setting. Example: student can splint a broken arm if patient is sitting up but cannot perform with same level of precision if patient is lying down



Articulation

1. The student is able to integrate cognitive and affective components with skill performance
 - a. Understands why the skill is done a certain way
 - b. Knows when the skill is indicated
2. Performs skill proficiently with style
3. Can perform skill in context. Example: student is able to splint broken arm regardless of patient position



Naturalization

1. Mastery level skill performance without cognition
2. Also called "muscle memory"
3. Ability to multitask effectively
4. Can perform skill perfectly during scenario, simulation, or actual patient situation



Instructional Practices

- Traditional lecture is not ideal and is not equitable, as some students learn better in different settings
- Three types of instructional practices were identified by the public and various stakeholders:
 - Simulation
 - Shadowing
 - Interprofessional education



Instructional Practices

- Instructional strategies of simulation, shadowing and interprofessional education are addressed here but not in the standards themselves
- Using numerous instructional strategies will help reach every learner



Shadowing

- Shadowing a practicing clinician offers students experiential, hands-on learning opportunities
- Shadowing affords a prospective EMS professional the chance to be immersed in the actual job environment
- Experienced worker apply the skills and traits needed to accomplish the work.



Interprofessional education

- A proven instructional method that results in positive outcomes in clinical preparation, health care profession education and public safety
- Helps a learner realize how EMS fits into the larger 'continuum of care' and “systems of care”
- Mutually enhance an understanding of everyone’s roles in the system



EMS simulation

- EMS simulation begins in the classroom with educators creating realistic scenarios to train all levels of EMS personnel
- The practice of allowing students to memorize and verbalize a check sheet is no longer acceptable and should be changed
- Simulation has proven to increase critical thinking skills and reduce medical errors in our health care system



EMS simulation

- The creation of a “safe-to-fail” environment in which students can make mistakes without dire consequences and learn from those mistakes
- Enhanced understanding and more robust therapeutic communication
- Increased understanding and demonstration of affective domain competencies
- Improvement in critical thinking skills of entry-level personnel
- Substitution for infrequent or unattainable clinical scenarios



Whole-part-whole technique

Requires that the skill be demonstrated 3 times as follows:

- **WHOLE:** The instructor demonstrates the entire skill, beginning to end while briefly naming each action or step
- **PART:** The instructor demonstrates the skill again, step-by-step, explaining each part in detail
- **WHOLE:** The instructor demonstrates the entire skill, beginning to end, without interruption and usually without commentary



Progressing through the psychomotor domain levels of skill acquisition

Novice to expert

1. Allow students to progress at their own pace. If you move students too quickly they may not understand what they are doing and will not acquire good thinking skills
2. Students should master individual skills before placing them in context of a scenario or simulation
3. The need for constant direct supervision should diminish as practice time and skill level increases



Progressing through the psychomotor domain levels of skill acquisition

From novice to mastery level

1. Demonstrate the skill to students
2. Students practice using a skills check sheet
3. Students memorize the steps of the skill until they can verbalize the sequence without error
4. Students perform the skill stating each step as they perform it
5. Students perform the skill while answering questions about their performance
6. Students perform the skill in context of a scenario or actual patient situation



Providing feedback

- Interrupt and correct the wrong behavior in beginners to prevent mastery (muscle memory) of the wrong technique
- Practice sessions should end on a correct performance or demonstration of the skill
- Allow advanced students to identify and correct their own mistakes under limited supervision
- Need encouragement and positive feedback to reinforce the correct behaviors



Improving psychomotor skill development during a skills session

- Have all necessary equipment set up before session begins
- Use realistic and current equipment that is in proper working order
- Use standardized skills sheets
- Allow ample practice time in class, at breaks and during other times
- Always model correct psychomotor skills behavior
- Keep students active and involved
- Ensure competence in the individual skills before using scenarios



Maximizing skill session time

Assign students in a skill group to each of the following roles

1. Evaluator: uses a skill sheet or records steps as they are performed
 - a. Videotape and audiotape may also be helpful in creating a record
 - b. Allowing several students to critique and provide feedback
3. Team leader: primary patient care provider
4. Partner or assistant: performs care as directed by team leader
5. Patient: faithfully portrays signs and symptoms according to scenario
6. Bystander: acts as a distractor or helper



Maximizing skill session time

Distribute a written scenario to be practiced

1. Can use real calls to create scenarios
2. Medical textbook publishing companies have books of scenarios
3. Most textbooks have scenarios in each chapter
4. EMS professional organizations websites have scenarios



Maximizing skill session time

Do not interrupt the scenario

1. Mastery of individual skills should have already been obtained
2. Can comment on timing and decision making later
3. Safety compromises may necessitate your intervention, but do not interfere if it is not a clear safety danger



Maximizing skill session time

Group performance evaluation

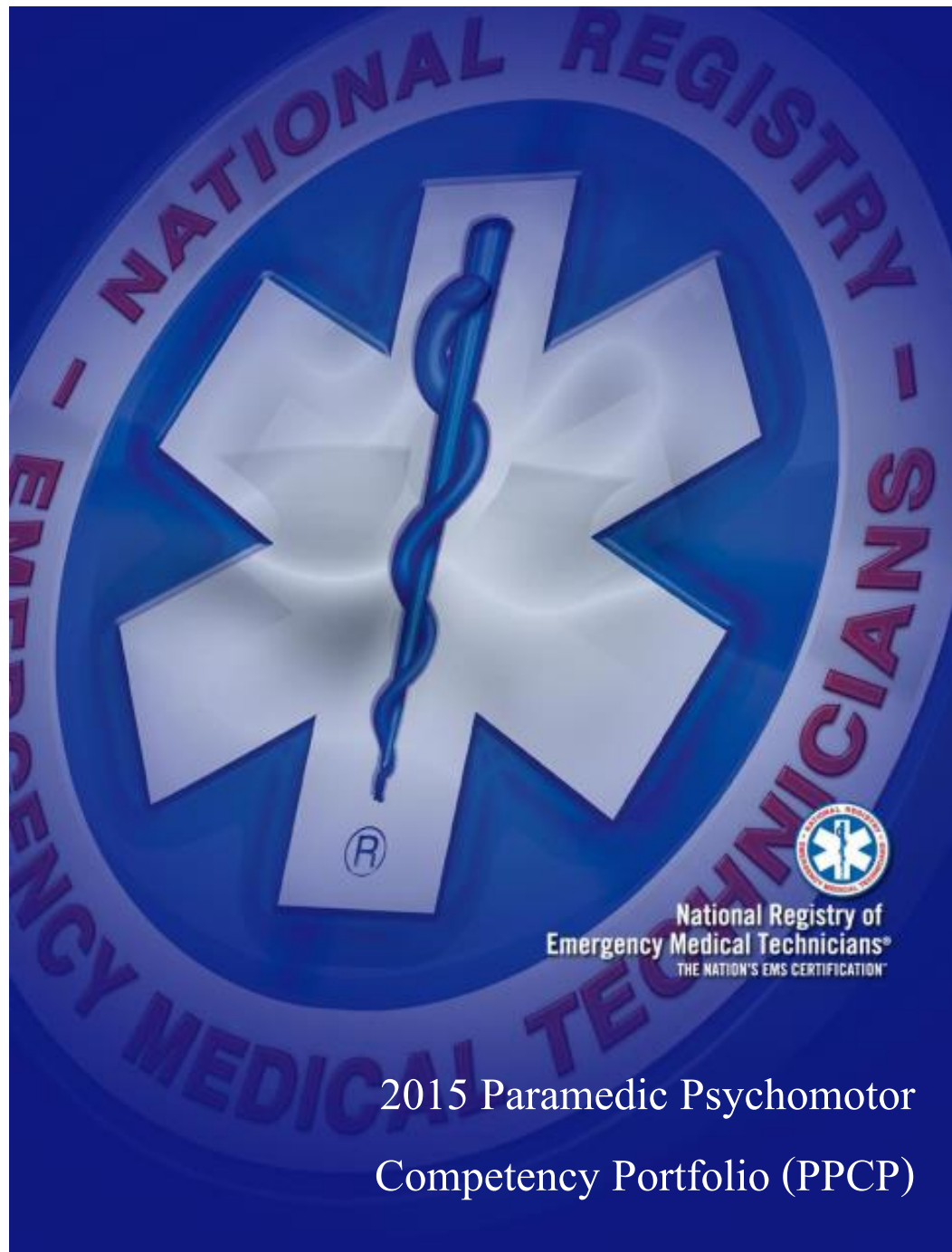
1. Utilize a positive-negative-positive format
 - a. Begin with positive statements and general comments
 - b. Move into constructive feedback and areas for improvement
 - c. End with positive reinforcement
2. Patient care leader should comment on what he or she did correctly, then what needs improvement
 - a. Remember that students are often their greatest critics; encourage them to look for positive aspects of their performance



Maximizing skill session time

3. Assistant critiques the team's performance
4. Patient comments on how he or she was treated
5. Bystanders add their observations
6. Evaluator comments on timing, sequencing, prioritization, and skills performance
7. Students should rotate through each role then begin another scenario
8. This method keeps everybody active and involved in the skills practice time





2015 Paramedic Psychomotor
Competency Portfolio (PPCP)

NREMT Scenario Lab Evaluation*Appendix G*

Team Member

1

Team Leader

3

How to Use Scenario Lab Instruments*Appendix H*

Introduction

1

Scenario Performance

1

Scenario Lab Instruments

2

Evaluation

3

Rating Scales

4

Phase 1 Scenario-Based Psychomotor Examinations

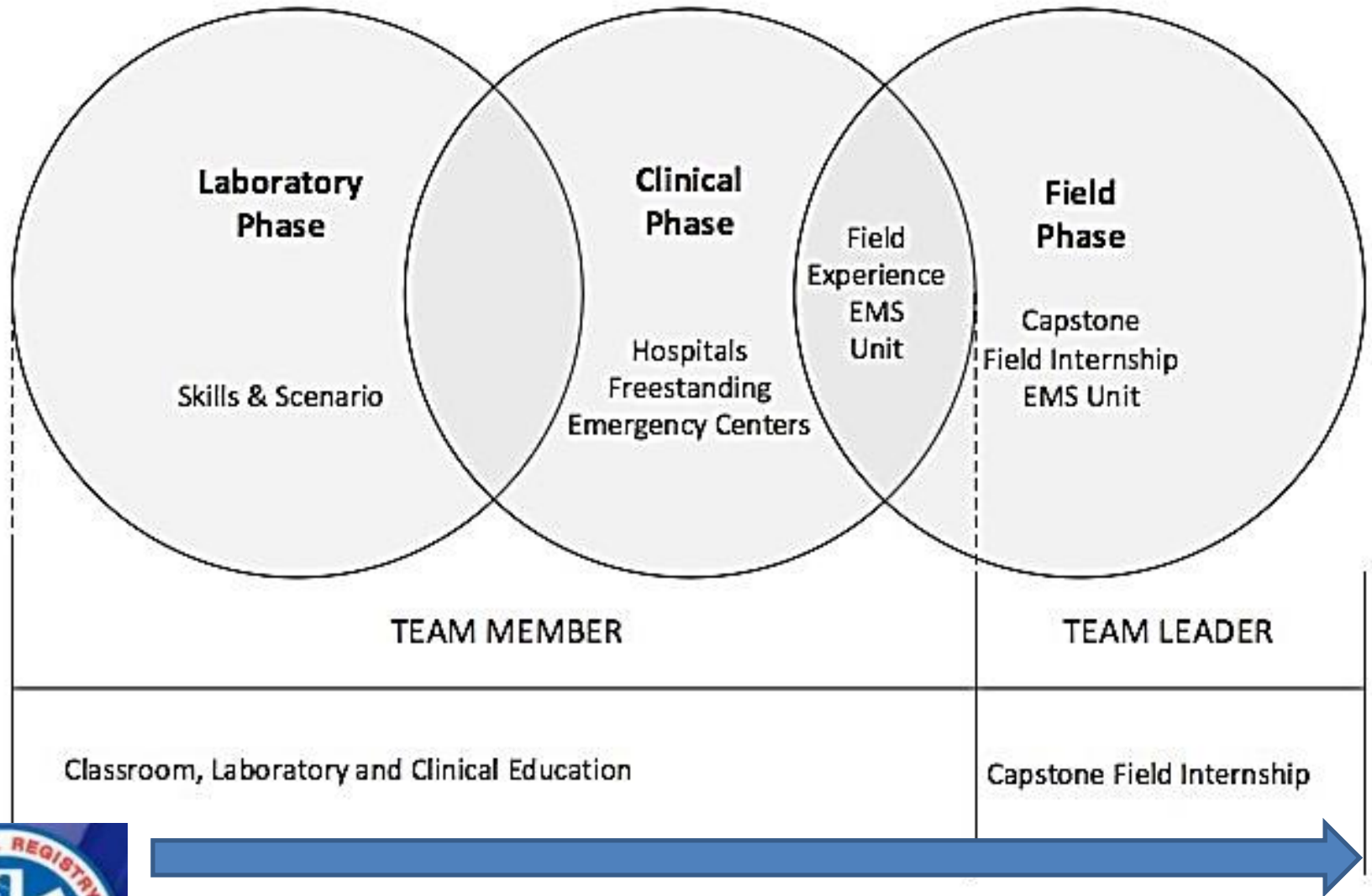
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Clinical Shift Evaluation Worksheet*Appendix I*

How to Use the Clinical Evaluation Worksheet*Appendix J*



PSYCHOMOTOR FORMATIVE & SUMMATIVE PHASES



Scenario Lab Forms

Document successful performances in the following provider roles and patient types (as applicable) using each of the following Scenario Topic Areas:

Team Leader

- 4 successful adult patient leads
- 3 successful pediatric patient leads
- 3 successful geriatric patient leads

Team Member

- 10 successful team member evaluations

Scenario Topic Areas	
▪ Respiratory Distress/Failure	▪ Psychiatric Condition
▪ Chest Pain	▪ Seizure
▪ Cardiac (Rhythm Disturbance including Cardiac Arrest)	▪ OB/GYN
▪ Stroke	▪ Blunt Trauma
▪ Overdose	▪ Penetrating Trauma
▪ Abdominal Pain	▪ Burns
▪ Allergic Reaction/Anaphylaxis	▪ Hemorrhage
▪ Diabetic Emergencies	



PASS/FAIL CRITERIA AND AVERAGE MINIMUM/MAXIMUM

LABORATORY PHASE: SKILLS LAB SKILL SHEETS NOTE: All forms listed with * must have at least one successful instructor documented performance before starting the related Scenario Lab.	MINIMUM POINTS REQUIRED	AVERAGE**	
		MIN	MAX
History Taking and Physical Examination			
*Obtain a Patient History from an Alert and Oriented Patient	86	2	8
*Comprehensive Normal Adult Physical Assessment Techniques	160	2	7
*Comprehensive Normal Pediatric Physical Assessment Techniques	136/146	2	7
Airway, Oxygenation and Ventilation			
*Direct Orotracheal Intubation Adult	50	2	23
*Direct Orotracheal Intubation Pediatric	40	3	14
Nasotracheal Intubation Adult	42	2	10
Supraglottic Airway Device Adult (Combitube, LMA, King, Cobra, etc.)	38	2	17
*Needle Cricothyrotomy (Percutaneous Translaryngeal Ventilation)	34	2	11
CPAP and PEEP	64	1	6

