SHORT COMMUNICATION

Lessons Learned from the Certified Mulligan Concept® Practitioner Exam

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Abstract

The Mulligan Concept® is taught worldwide through structured courses that aim to equip physical therapists with hands-on techniques to enhance movement and alleviate pain in individuals with musculoskeletal disorders. To obtain certification as a Certified Mulligan Concept® Practitioner (CMP), participants are required to successfully complete a formal examination following course completion. This paper outlines the essential information and preparatory considerations that candidates should be aware of prior to undertaking the certification examination.

Level of evidence: V

Keywords: Musculoskeletal Manipulations; Joints; Mulligan Concept® Technique

Introduction

Mulligan techniques represent a form of manual therapy intervention developed by Brian Mulligan (Dip. M.T.) and are based on the application of a sustained manual "gliding" force to the joint while the patient or physical therapist simultaneously performs osteokinematic joint movement.[1] During Mulligan techniques, the applied manual "gliding" force may be generated actively by the patient or passively by the physical therapist.[1] According to Mulligan, [1] these techniques result in immediate improvements in joint mobility, reductions in pain, and enhanced functional performance.

The underlying mechanisms are thought to involve both neurophysiological and biomechanical effects, including modulation of pain through descending inhibitory pathways and habituation,[2,3] restoration of normal joint kinematics, and enhanced proprioceptive input.[1] Over time, the demonstrated effectiveness and clinical practicality of these methods have contributed to the growing international popularity of Mulligan courses, which attract large numbers of physical therapists each year seeking to enhance both their theoretical knowledge and practical skills. Evidence further suggests that structured training in these techniques improves clinician confidence, manual dexterity, and the capacity to tailor interventions to individual patient needs.[4]

In line with this trend, the first author (M.P.) participated in the Certified Mulligan Concept® Practitioner (CMP) examination held in Mashhad, Iran, in November 2024. This examination is a structured assessment designed to evaluate both theoretical knowledge and clinical competence. The certification process emphasizes not only proficiency in specific mobilization techniques but also the ability to integrate clinical reasoning, patient-centered assessment, and outcome evaluation into routine practice, reflecting the comprehensive scope of the Mulligan Concept® approach to manual therapy.

The CMP examination is divided into two components: theoretical and practical sections. The theoretical section comprises 50 multiple-choice questions (MCQs) and accounts for 30% of the total examination score. Approximately 90% of these questions are based on clinical case scenarios, requiring candidates to demonstrate an in-depth understanding of Mulligan's clinical concepts, including the Client-Specific Impairment Measure (CSIM), CROCKS, PILL, treatment planes, and positional faults.

The practical section comprises 16 hands-on examination stations, each consisting of 10 questions, and accounts for 70% of the final score. This section evaluates candidates' ability to perform manual therapy techniques with precision under defined time constraints. Successful

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completion requires the maintenance of correct hand positioning, appropriate patient positioning, and accurate execution of movements without provoking pain, thereby assessing both technical proficiency and clinical judgment in applied clinical scenarios.

This short communication synthesizes insights derived from clinical and educational experience to provide a structured preparation guide for CMP candidates. It serves two complementary purposes:

1) To present an evidence-informed, clinically focused framework to support examination preparation, and
2) To serve as a technical and conceptual reference for practitioners seeking to integrate Mulligan techniques into routine clinical practice.

Main body

Client-Specific Impairment Measure (CSIM) and Clinical Reasoning

The CSIM is the core element that determines both clinical practice success and examination outcomes, helping to identify a particular movement or task that exactly replicates:

- The patient's primary pain,
- The limiting end-range, or
- The difficulty in maximal contraction or movement control.

Clinical role:

- The selection of an appropriate mobilization technique (e.g., mobilization with movement [MWM], sustained natural apophyseal glide [SNAG], natural apophyseal glide [NAG]) is guided by the functional task identified through the Client-Specific Impairment Measure (CSIM).
- Assessment of the severity, irritability, and nature (SIN) of the disorder[5] is derived from CSIM findings and informs decisions regarding load progression and treatment safety.
- The CSIM should be assessed both before and after intervention to evaluate immediate treatment effects, in accordance with Mulligan's pain-free and immediate-response principles. This emphasis on repeated functional testing is supported by evidence demonstrating that clinically meaningful movement tasks must exhibit adequate test–retest reliability to ensure that observed changes represent true clinical effects rather than measurement error.[6]

Exam tip:

Expect case-based questions requiring to:

- Identify the most appropriate CSIM for a given functional presentation.
- Justify the selection based on patient-specific findings.
- Describe how quantify changes would be (e.g., via visual analogue scale, numeric pain rating scale, degrees of range of motion, or functional task performance).
- Re-test CSIM after the intervention and explain how PILL criteria achievement would be confirmed.

CROCKS and PILL Principles in Practice

CROCKS, core principles ensuring safety and effectiveness [Figure 1]:
Contraindications, Repetitions, Overpressure, Communication, Knowledge, Skill, Subtlety, Sustainability, Sensibility, Slow, Common Sense.

* The following conditions serve as contraindications for treatment: Acute fractures, dislocations, ligament ruptures, instability, infections, tumors, acute myelopathy, acute soft tissue injuries, osteoporosis, ankylosing spondylitis, rheumatoid arthritis, vascular diseases, vertebral artery abnormalities, connective tissue disease, and anticoagulant therapy.[7]

* Repetitions: [8]
-Spinal techniques: 1 set × 3 repetitions (initial session)
-Peripheral joints: 3 sets × 6 repetitions (initial session)

*Later sessions: 3–5 sets × 6–10 repetitions for both spine and periphery.

* Overpressure: Apply only when indicated and pain-free.

* Communication: Explain procedure; gain at least verbal informed consent.

* Skill and Subtlety: Refine through repeated practice.

Exam tip:

1-Expect MCQs requiring identification of absolute contraindications and the correct dosage per region.
2-In practical exams, verbalize consent, apply controlled overpressure, and explain reasoning throughout.
3-The most frequent reason for losing marks in CMP practical exams is inconsistent use of overpressure and failure to re-test the CSIM after treatment.

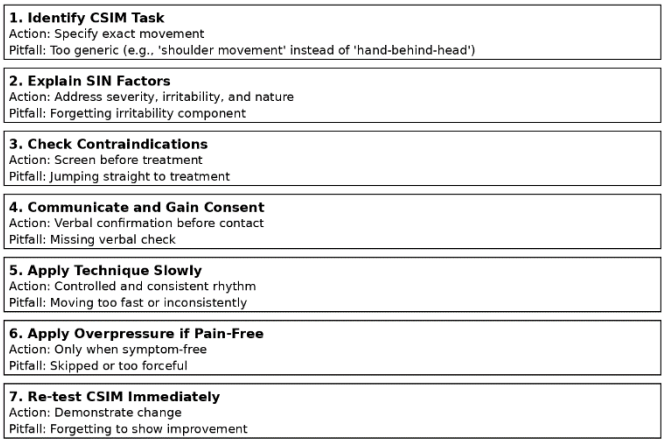

Figure 1: Key Practical Considerations for the CMP Examination

PILL, Pain-free, Instant result, Long-lasting effect.

* If PILL is not achieved, reconsider:
- Glide direction (often the first adjustment),
- Patient position, or
- Technique selection.

Exam tip:

- Expect 1–2 MCQs or practical tasks assessing PILL reasoning.
- Always re-test the CSIM to confirm instant and long-lasting effects.
- Examiners note that overpressure omission and failure to reassess are the two leading causes of borderline scores.

Treatment Planes

A treatment plane is defined on the concave articular surface and is oriented perpendicular to a line extending from the center of the convex surface. Its orientation may vary depending on anatomical variation, pathological changes (e.g., osteoarthritis), or patient positioning. Table 1 summarizes the treatment planes of the major joints [Table 1].

Table 1. Treatment planes of major joints (anatomical position)

Joint	Orientation	Key Clinical Notes
Glenohumeral	30–40° anterior to the frontal plane [9]	Consider scapular plane alignment
Humeroulnar	Mostly horizontal; carrying angle ~13° ± 6° [9,10]	Adjust mobilization accordingly
Proximal and Distal Radioulnar	Nearly vertical	
Radiocarpal	Predominantly horizontal; radius has ulnar tilt 15–25° [9,11]	
Midcarpal	Nearly horizontal	
Metacarpophalangeal and Interphalangeal	Nearly horizontal; ulnar tilt of proximal phalanges: 2nd:14°, 3rd:13°, 4th:4°, 5th:8° [12]	
Upper cervical facets	Horizontal in the transverse plane	
Lower cervical facets	45° between frontal and transverse [12]	
Thoracic facets	~60° to transverse; 20° to frontal [12]	Upper thoracic closer to cervical, lower closer to lumbar [12]
Lumbar facets	Sagittal plane; 90° to transverse, 45° to frontal [12]	
Sacroiliac	Oblique; varies by individual	
Hip	~20° medial to sagittal (acetabular anteversion) [9]	
Tibiofemoral	Nearly horizontal	
Proximal Tibiofibular	Variable (0–76° inclination) [13,14]	
Distal Tibiofibular	Sagittal plane	
Talocrural	Medial side 10° higher (frontal), 6° more anterior (sagittal), [9]	
Tarsometatarsal	Almost vertical	
Metatarsophalangeal and Interphalangeal	Almost horizontal	

Positional Fault

A positional fault refers to a subtle alteration in the alignment of articular surfaces that is not consistently detectable on radiological imaging,[1] although it may be identifiable in certain cases.[15] Mulligan proposed that trauma, sprains, or other injuries may result in minor positional faults within a joint, potentially disrupting the normal kinematics of the spine and peripheral joints.[3] The identification of positional faults is based on clinical examination using specific assessment techniques within the Mulligan Concept®. Mulligan further suggested that correction of these positional faults may lead to meaningful symptom resolution.[16] Table 2 outlines the common positional faults typically taught in Mulligan Concept® courses [Table 2].

Table 2. Common positional faults

Region / Joint	Typical Positional Fault
Shoulder complex	Humeral head superior migration; medial clavicle anterior, lateral clavicle forward rotation; scapular elevation, protraction, upward rotation
Humeroulnar	Medial shift of ulna
Distal Radioulnar	Medial shift of first carpal row relative to radius
Radiocarpal	First carpal row shifts medially
Metacarpophalangeal	5th metacarpal head shifts anteriorly
Thumb Metacarpophalangeal	Pronation of first proximal phalanx [17]

Table 2. Continued.	
Metacarpophalangeal and Interphalangeal (fingers 2–5)	Internal rotation
Cervical/Lumbar spine	Local pain: decreased facet space; Radicular pain: rotation toward pain side
Thoracic spine	Facet/rib hypomobility
Sacroiliac	Anterior or posterior innominate rotation
Hip	Decreased femur–acetabulum distance
Tibiofemoral	Tibial external rotation
Patellofemoral	Increased patella–condyle angle; lateral tilt
Proximal Tibiofibular	Posterior displacement of fibula [18]
Distal Tibiofibular	Anterior displacement of fibula; narrowed malleolar gap [19]
Talocrural	Plantarflexion limit → talus posterior; Dorsiflexion limit → talus anterior
Tarsometatarsal	Upward cuboid displacement; downward 5th metatarsal

Exam tips:

Effective preparation for the CMP exam requires a synthesis of theoretical competence, technical accuracy, and reflective clinical thinking. Candidates must first solidify their understanding of the central models—CSIM, CROCKS, PILL, treatment planes, and positional faults—as these form the foundation of both the written and clinical components of the exam. Purposeful and intentional practice is essential, with a focus on precision of hand positioning, management of glide direction, and preservation of patient comfort during each technique. Practicing under exam conditions by alternating between clinical reasoning and manual skill performance within timed constraints enhances both confidence and proficiency. Safety should never be compromised; competent candidates routinely demonstrate contraindication screening and obtain informed consent prior to intervention. Finally, subtlety of technique—evidenced by smooth, controlled, pain-free movements—captures the essence of the Mulligan Concept® and represents excellence in achieving the PILL criteria of pain-free, instant, and long-lasting beneficial effects. Table 3 provides a structured examination plan summarizing the most critical learning objectives and the examiner focus areas for both the theoretical and practical components of the CMP exam [Table 3].

Table 3. CMP examination preparation plan				
Section	**Focus Area**	**Examiner Expectation**	**Candidate Task**	**Common Pitfalls**
CSIM	Identify the task reproducing the main impairment	Link the functional task to pain or limitation	Choose a specific task, justify, and measure pre post	Too broad or unspecific task; no re-measurement
CROCKS – Contraindications	Safety screening	Verbalize before contact	List absolute and relative contraindications	Skipping screening
CROCKS – Repetitions	Dosage knowledge	Correct regional dosing	State initial and later reps for spine/periphery	Incorrect dosage or overloading
CROCKS – Overpressure	Technical control	Gentle, pain-free, applied at end range	Apply safely and explain the rationale	Skipped or excessive force
CROCKS – Communication	Informed consent	Continuous patient feedback	Explain, obtain consent, monitor	Lack of communication
CROCKS – Skill/Subtlety	Handling and sensitivity	Smooth, coordinated technique	Demonstrate control and awareness	Jerky or abrupt movements
PILL – Pain-free	Therapeutic indicator	Confirm absence of pain	Modify glide/position as needed	Ignoring pain response
PILL – Instant result	Effectiveness	Immediate measurable change	Re-test CSIM	Omitted re-test
PILL – Long-lasting	Retention of effect	Sustained improvement	Repeat and reassess	No follow-up observation
Treatment Plane	Directional accuracy	Align the glide correctly	Identify concave surface orientation	Wrong direction or plane
Positional Fault	Biomechanical reasoning	Identify and correct joint misalignment	Apply MWM/SNAG appropriately	Misidentifying fault direction

In conclusion, success in the CMP exam and clinical practice depends on the integration of theoretical knowledge and technical skill. The combination of CSIM, CROCKS, PILL, and knowledge of treatment planes and positional fault anatomy enhances both examination performance and clinical outcomes. Achieving mastery relies on consistent and purposeful practice. It should be noted that future developments may explore the adjunctive

use of artificial intelligence [20,21] in Mulligan Concept® courses to support objective feedback and structured learning, without replacing expert teaching, manual skill training, or clinical decision-making.

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References

1. Pourahmadi MR, Mohsenifar H, Dariush M, Aftabi A, Amiri A. Effectiveness of mobilization with movement (Mulligan concept techniques) on low back pain: a systematic review. Clinical Rehabilitation. 2018;32(10):1289–1298. Doi: 10.1177/0269215518778321
2. Zusman M. Forebrain-mediated sensitization of central pain pathways: 'non-specific' pain and a new image for MT. Manual Therapy. 2002;7(2):80–88. DOI: 10.1054/math.2002.0442
3. Zusman M. Mechanisms of musculoskeletal physiotherapy. Phys Ther Rev. 2004;9(1):39–49. Doi: 10.1179/108331904225003973
4. Zemadanis K. The short and mid-term effects of the Mulligan concept in patients with chronic mechanical neck pain. Journal of Novel Physiotherapy and Rehabilitation. 2018;2(2):022. Doi: 10.29328/journal.jnpr.1001018
5. Vicenzino B HW, Hall T, Rivett D. Mobilisation with movement: the art and science of its application. In: Vicenzino B HW, Rivett D, Hall T., ed. Mobilisation With Movement: The Art and the Science. Churchill Livingstone Australia; 2011:9–23.
6. Pourahmadi MR, Ebrahimi Takamjani I, Jaberzadeh S, et al. Test-retest reliability of sit-to-stand and stand-to-sit analysis in people with and without chronic non-specific low back pain. Musculoskeletal Science and Practice. 2018;35:95–104. DOI: 10.1016/j.msksp.2017.11.001
7. Creighton D, Gruca M, Marsh D, Murphy N. A comparison of two non-thrust mobilization techniques applied to the C7 segment in patients with restricted and painful cervical rotation. J Man Manip Ther. 2014;22(4):206–12. doi:10.1179/2042618614y.0000000077
8. Hing W, Hall T, Mulligan B. The Mulligan Concept of Manual Therapy, 2e textbook of techniques. Elsevier Australia; 2020.
9. Neumann DA. Neumann's Kinesiology of the Musculoskeletal System: Neumann's Kinesiology of the Musculoskeletal System-E-Book. Elsevier Health Sciences; 2024.
10. Nayak S, Kumar P, Oraon AK. Relationship of carrying angle with grip strength and anthropometric measurements in young adults. Bulletin of the Faculty of Physical Therapy. 2023;28(1):16. Doi: 10.1186/s43161-023-00129-8
11. Hosseinzadeh P, Olson D, Eads R, Jaglowicz A, Goldfarb CA, Riley SA. Radiologic Evaluation of the Distal Radius Indices in Early And Late Childhood. Iowa Orthop J. 2018;38:137–140
12. Magee DJ. Orthopedic Physical Assessment-E-Book: Orthopedic Physical Assessment-E-Book. Elsevier Health Sciences; 2013.
13. Noyes FR, Goebel SX, West J. Opening wedge tibial osteotomy: the 3-triangle method to correct axial alignment and tibial slope. Am J Sports Med. 2005;33(3):378–87. doi:10.1177/0363546504269034
14. Huang C, Chen S, Liu D, et al. Association between the inclination angle of the proximal tibiofibular joint surface and medial compartment knee osteoarthritis. Ann Palliat Med. 2021;10(8):8753–8761. doi:10.21037/apm-21-1348
15. Dhage P. Perspectives of "Mulligan's superior-oblique glide" on pain and functional disability in the acute stage of Prolapsed Intervertebral Disc: A case report. Medical Science. 2024;28:e35ms2808.
16. Stathopoulos N, Dimitriadis Z, Koumantakis GA. Effectiveness of Mulligan's Mobilization With Movement Techniques on Range of Motion in Peripheral Joint Pathologies: A Systematic Review With Meta-analysis Between 2008 and 2018. J Manipulative Physiol Ther. 2019;42(6):439–449. doi:10.1016/j.jmpt.2019.04.001
17. Hsieh C-Y, Vicenzino B, Yang C-H, Hu M-H, Yang C. Mulligan's mobilization with movement for the thumb: a single case report using magnetic resonance imaging to evaluate the positional fault hypothesis. Manual Therapy. 2002;7(1):44–49. DOI: 10.1054/math.2001.0434
18. Anandkumar S. Effect of a novel mobilization with movement procedure on anterolateral ankle impingement–A case report. Physiotherapy Theory and Practice. 2018;34(7):569–577. DOI: 10.1080/09593985.2017.1422822
19. Hubbard TJ, Hertel J, Sherbondy P. Fibular position in individuals with self-reported chronic ankle instability. Journal of Orthopaedic & Sports Physical Therapy. 2006;36(1):3–9. DOI: 10.2519/jospt.2006.36.1.3
20. Khojastehnezhad MA, Youseflee P, Moradi A, Jirofti N, Ebrahimzadeh MH. Artificial Intelligence and the State of the Art of Orthopedic Surgery. Arch Bone Jt Surg.. 2025;13(1):17–22. doi:10.22038/abjs.2024.84231.3829.
21. Ebrahimpour A, Dolikhani M, Shakibamaram G. Artificial Intelligence (AI) as a Catalyst for Orthopedic Residency Training. Arch Bone Jt Surg. 2025;13(12):773–775. doi:10.22038/abjs.2025.91626.4155.