



# EXAMINATION SPECIFICATIONS MANUAL

Exercise Oncology Instructor™  
Certification

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# Examination Specifications

## Objectives of EOI Examination

The MTCA Certified Exercise Oncology Instructor™ (EOI) exam is designed to test potential candidate's knowledge and comprehension in the areas of exercise oncology. It is intended to measure competency areas that are specific to the field of cancer exercise such as exercise physiology, fitness assessment, prescription and programming, and clinical and medical considerations. The corresponding level of practice being measured is a specialty certification in exercise as it relates to cancer patients.

## Examination Specifications

The EOI exam is administered to candidates who wish to become certified in the specialty of exercise oncology. The exam length is approximately 2 hours with 100 questions, all multiple choice. Every 3 years, the Exam Committee will meet to administer new questions and assure that current questions are up to par with the newest knowledge in the respective field.

The critical elements of the EOI certification examination, as well as rationale for each element, are as follows:

- ***Cancer exercise programming, fitness assessment, and evaluation***
  - Rationale:
    - Incorporating cancer exercise programming, fitness assessment, and evaluation into the certification exam for EOs is driven by a profound recognition of the critical role that exercise plays in enhancing the well-being and quality of life for individuals facing a cancer diagnosis and its associated challenges.
    - Evidence-Based Practice: Cancer exercise programming is grounded in an extensive body of scientific research and clinical evidence demonstrating its efficacy in mitigating treatment-related side effects, improving physical function, and enhancing overall health outcomes for cancer patients and survivors.
    - Patient-Centered Care: Individuals diagnosed with cancer have unique needs and considerations. EOs must be equipped with specialized knowledge and skills to provide patient-centered care tailored to the specific requirements and limitations of each patient.
    - Health Promotion: Exercise is recognized as a potent tool in promoting health and preventing the recurrence of cancer, along with other chronic diseases. Ensuring that certified instructors possess expertise in this area supports long-term health and wellness for patients.
    - Quality of Life Enhancement: Cancer exercise programming contributes significantly to improving the quality of life for cancer survivors. It helps address physical limitations, emotional well-being, and overall vitality, aligning with the holistic approach to cancer care.
    - Safety and Risk Mitigation: Fitness assessment and evaluation are integral to determining each patient's baseline fitness level and identifying potential risks or contraindications associated with exercise during cancer treatment. Instructors must have the knowledge and skills to prioritize patient safety.
    - Empowerment and Support: Exercise Oncology Instructors serve as guides and motivators in empowering cancer patients and survivors to take an active role in their own health and recovery. Comprehensive training in cancer exercise programming equips instructors to inspire and support individuals on their journey.
    - Multidisciplinary Collaboration: Exercise Oncology Instructors often work alongside healthcare teams, including oncologists, nurses, and rehabilitation specialists. Competence in cancer exercise programming enhances effective collaboration and communication within the healthcare system.

- Professional Standards: The inclusion of cancer exercise programming, fitness assessment, and evaluation aligns with the evolving standards and expectations within the field of exercise oncology, ensuring that certified instructors remain at the forefront of best practices.
  - Meeting Industry Demand: As the importance of exercise oncology gains recognition, there is a growing demand for qualified professionals who can provide safe and effective exercise interventions. Certification exams that cover these topics help meet this demand and raise the quality of care provided.
- ***Cancer treatment terminology and epidemiology***
    - Rationale:
      - The inclusion of cancer treatment terminology and epidemiology in the EOI certification exam is driven by a profound recognition of the critical need for instructors to possess a comprehensive understanding of the disease, its treatment modalities, and its impact on patients.
      - Holistic Understanding: Cancer is a complex disease with various types, stages, and treatment options. Instructors need a holistic understanding of cancer terminology and treatment to provide safe and effective exercise interventions tailored to individual patient needs.
      - Informed Decision-Making: Knowledge of cancer treatment terminology allows instructors to make informed decisions about exercise programming, taking into account the specific challenges and considerations associated with different treatment approaches, such as surgery, chemotherapy, radiation, immunotherapy, or targeted therapy.
      - Safety and Risk Assessment: Familiarity with the side effects and potential complications of cancer treatments is essential for risk assessment during exercise prescription. Instructors must be able to identify contraindications, exercise precautions, and adaptations to ensure patient safety.
      - Individualized Care: Cancer treatment terminology and epidemiology enable instructors to customize exercise programs to address the unique needs and limitations of each patient, whether they are in active treatment, in recovery, or long-term survivors.
      - Communication with Healthcare Teams: Instructors often collaborate with healthcare providers as part of a multidisciplinary care team. Proficiency in cancer treatment terminology facilitates effective communication and alignment with medical professionals regarding patient care plans.
      - Empowerment and Support: A thorough understanding of cancer epidemiology empowers instructors to provide patients with valuable insights into their condition, prognosis, and risk factors, fostering a sense of control and self-efficacy.
      - Awareness of Comorbidities: Many cancer patients may have comorbid conditions that impact exercise tolerance and response. Knowledge of epidemiology aids in identifying and addressing these coexisting health issues.
      - Evidence-Based Practice: The field of exercise oncology is continually evolving, with emerging research highlighting the benefits of exercise during and after cancer treatment. Instructors must stay informed about the latest epidemiological findings to provide evidence-based recommendations.
      - Professional Competence: Including cancer treatment terminology and epidemiology aligns with the evolving standards and expectations within the field of exercise oncology, ensuring that certified instructors are well-prepared to deliver high-quality care.
      - Patient-Centered Approach: Ultimately, this knowledge equips instructors to offer patient-centered care that recognizes the unique journey of each cancer patient and survivor, fostering trust and engagement.

- **Functional biomechanics, physiology, and anatomy**

- Rationale:

- The inclusion of functional biomechanics, physiology, and anatomy in the EOI certification exam is rooted in the fundamental understanding that exercise, when applied effectively, can play a pivotal role in promoting the well-being and quality of life of individuals navigating cancer.
- **Mechanistic Understanding:** Proficiency in functional biomechanics, physiology, and anatomy equips instructors with an in-depth understanding of how the human body responds to exercise. This knowledge is essential for designing safe and effective exercise interventions tailored to individual patient needs.
- **Optimal Exercise Prescription:** Instructors who comprehend biomechanical principles can design exercise programs that maximize functional gains while minimizing the risk of injury, thus ensuring patient safety and effectiveness.
- **Physiological Adaptations:** A grasp of exercise physiology enables instructors to predict and assess the physiological adaptations that occur during exercise, such as changes in cardiovascular function, muscular strength, and endurance. This knowledge informs exercise prescription and progression.
- **Biomechanical Analysis:** Knowledge of biomechanics allows instructors to analyze movement patterns and identify any abnormalities or inefficiencies that may contribute to musculoskeletal issues, enabling the design of corrective exercises.
- **Anatomical Considerations:** Understanding the anatomical structures of the human body is essential for avoiding contraindications and ensuring that exercises are appropriate for patients with specific anatomical challenges or surgical alterations.
- **Safety and Risk Mitigation:** Comprehensive knowledge of anatomy is crucial for recognizing potential vulnerabilities and contraindications in cancer patients, allowing instructors to adapt exercises accordingly and minimize injury risk.
- **Individualized Exercise:** Functional biomechanics, physiology, and anatomy inform the development of personalized exercise programs that cater to the specific needs and limitations of each patient, whether they are in active treatment, recovery, or survivorship.
- **Multidisciplinary Collaboration:** Instructors often collaborate with healthcare teams, including physiotherapists and rehabilitation specialists. Competence in these areas enhances effective communication and alignment with medical professionals regarding patient care plans.
- **Evidence-Based Practice:** The field of exercise oncology continues to evolve, with emerging research emphasizing the importance of tailored exercise interventions. Instructors must stay informed about the latest biomechanical and physiological findings to provide evidence-based recommendations.
- **Professional Competence:** Including functional biomechanics, physiology, and anatomy aligns with the evolving standards and expectations within the field of exercise oncology, ensuring that certified instructors are well-prepared to deliver high-quality, science-based care.

## **Exam Design Considerations for the EOI Certification**

Designing the certification exam for Exercise Oncology Instructors is a complex and critical task that requires careful consideration of various factors to ensure its effectiveness, validity, and relevance to the field. This statement outlines the key exam design considerations that were taken into account to develop a robust and credible certification process.

1. **Content Validity:** The EOI certification exam content aligns closely with the responsibilities and competencies expected of EOs. To achieve content validity, a comprehensive job task analysis was conducted, involving input from subject matter experts and certified EOs. This analysis ensures that the exam assesses the most relevant and essential knowledge and skills required for the role.

2. **Standardization:** The EOI certification exam is standardized to ensure fairness and consistency across all candidates. Standardization includes creating a clear and detailed exam blueprint, defining scoring criteria, and providing uniform instructions to candidates.
3. **Diverse Item Types:** The EOI certification exam includes a variety of item types, such as multiple-choice questions, case studies, and practical scenarios. Diverse item types assess different cognitive levels and skills, ensuring a comprehensive evaluation of candidates' abilities.
4. **Cognitive Levels:** The EOI certification exam assesses various cognitive levels, including knowledge recall, comprehension, application, and analysis. This approach ensures that candidates demonstrate both theoretical understanding and practical problem-solving skills.
5. **Realistic Scenarios:** The EOI certification exam incorporates real-life scenarios and case studies, allowing candidates to apply their knowledge to practical situations they may encounter as certified EOIs. This helps assess their ability to make informed decisions in clinical settings.
6. **Ethical and Professional Standards:** The EOI certification exam includes questions related to ethical and professional standards, to evaluate candidates' understanding of ethical principles, patient confidentiality, and professional conduct.
7. **Evidence-Based Practice:** The EOI certification exam includes questions that emphasize evidence-based practice, requiring candidates to apply current research and guidelines in exercise oncology to their responses.
8. **Patient-Centered Care:** The EOI certification exam includes questions that gauge candidates' ability to provide patient-centered care, demonstrate empathy, communication skills, and an understanding of patients' psychosocial needs.
9. **Accessibility:** The EOI certification exam is designed to accommodate individuals with disabilities, ensuring equal access and fairness to all candidates.
10. **Continuous Review:** The EOI Certification Board has an established mechanism for ongoing review and updates of the exam to align with advancements in exercise oncology research, practices, and guidelines.
11. **Standard Setting:** The EOI certification exam includes standard setting processes, including norm-referenced methods, to establish passing scores that are valid and defensible.
12. **Fairness and Bias Mitigation:** The EOI certification exam is reviewed for potential bias, and steps are taken to minimize cultural, gender, or other biases in the exam content.
13. **Pilot Testing:** Before the official launch, the EOI certification exam underwent pilot testing with a diverse group of candidates to identify any issues with item clarity, difficulty, or fairness.

In conclusion, designing an effective certification exam for Exercise Oncology Instructors requires a meticulous approach that ensures content validity, standardization, and fairness. Such an exam not only validates the knowledge and skills of candidates but also promotes the highest standards of care in exercise oncology, ultimately benefiting cancer patients and survivors.

## Test Standardization

The standardization of this test will ensure validity and reliability among tests and test takers. Formatting in this way creates consistency across candidates to avoid diminishing validity and reliability.

## Score and Weight

### STANDARDIZED SCORE SCALE

Candidates' performance on the entire examination determines the pass-fail decision. Overall performance is reported on a standardized score scale ranging from 200-800 in increments of 1 point. The mean standardized score for first-time takers of this examination is 500 with a standard deviation of 100. For example, a score of 600 is one standard deviation above the mean of first-time takers. Candidates with equal ability will achieve the same standardized score.

### STANDARD SETTING

A standard setting was found for the score scale using the Modified Angoff Method. A committee of SMEs rated each question on the exam to independently estimate what proportion of "just sufficiently qualified" test takers will answer the questions correctly. Each question is discussed and averaged within the group, determining the average or standard setting.

### WEIGHT OF CONTENT AREAS

Finally, each content area is weighted proportionally, based on their distribution on the total exam. In other words, some content areas are more important (thus, have more questions) and count more with respect to the overall score than other content areas. On the score report, candidates will receive their overall score, their pass/fail status, as well as a breakdown by each specific content area.

## Exam Content Area

Content Area	Scored Questions	Percent of Exam
Cancer exercise programming, fitness assessment, and evaluation	28	28%
Cancer treatment terminology and epidemiology	40	40%
Functional biomechanics, physiology & anatomy	32	41%

The weight of each exam content area is based on the Job Task Analysis performed for a Certified Exercise Oncology Instructor.

The EOI certification exam includes sections related to cancer exercise programming, fitness assessment, evaluation, cancer treatment terminology and epidemiology, as well as functional biomechanics, physiology, and anatomy to ensure that certified instructors possess a comprehensive and well-rounded skill set. These diverse sections collectively empower instructors to provide safe, effective, and patient-centered care to individuals affected by cancer.

1. **Cancer Exercise Programming:** This section equips instructors with the ability to design personalized exercise programs tailored to the unique needs and challenges of each cancer patient or survivor, ensuring that exercise interventions are both safe and effective.
2. **Fitness Assessment and Evaluation:** This section ensures instructors can assess and evaluate patients' fitness levels, allowing the EOI to develop individualized exercise plans, monitor progress, and adjust interventions as needed, promoting continuous improvement in patients' physical well-being.
3. **Cancer Treatment Terminology and Epidemiology:** This section ensures instructors understand cancer treatment terminology and epidemiology, enabling EOIs to communicate effectively with healthcare teams, make informed decisions about exercise programming during treatment, and provide patients with essential insights into their condition.
4. **Functional Biomechanics:** This section ensures instructors have proficiency in functional biomechanics, helping EOIs to analyze movement patterns, identify limitations, and design corrective exercises, contributing to enhanced mobility and function for cancer patients.
5. **Physiology:** This section ensures instructors have a solid foundation in exercise physiology, allowing EOIs to predict and assess physiological adaptations to exercise, ensuring that exercise interventions align with patients' capabilities and goals.

6. **Anatomy:** This section ensures instructors have knowledge of anatomy, which is critical for recognizing potential contraindications, adapting exercises for patients with anatomical variations, and ensuring the safety and appropriateness of exercise programs.

These sections collectively support instructors in delivering patient-centered, evidence-based care, fostering trust and confidence among cancer patients and survivors. By comprehensively addressing the various aspects of exercise oncology, this certification exam ensures that certified EOs are well-prepared to enhance the quality of life and overall well-being of individuals facing cancer.





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