

Study Area 1: Biomechanics

Graduate Outcome
1.3.1 Describe biomechanical principles and how they relate specifically to the analysis of various forms of human movement to demonstrate an understanding of:
1.3.1.1 health, exercise and sport from both performance-enhancement and injury- prevention perspectives
1.3.1.2 injury, disability and disease as they relate to movement
1.3.1.3 a scientific approach to ascertaining the aetiology of injury
1.3.1.4 the physical effects of human interaction with equipment and the environment.
1.3.2 Apply the principles of the biomechanical analysis of human movement in the context of health, exercise, sport and activities of daily living in a variety of populations.
1.3.3 Explain the nature of biomechanical problems and how qualitative and/or quantitative analysis can be interpreted to develop and implement intervention strategies relevant to the movement context.
1.3.4 Determine when basic movement analysis can add value to the needs of a client.
1.3.5 Demonstrate skill in conducting and interpreting basic biomechanical measurements relevant to clients' needs.
1.3.6 Communicate scientific data and movement techniques to clients, colleagues and professionals with appropriate use of illustrations and user-friendly terms.
1.3.7 Identify specific aspects of movement patterns, particularly for movement asymmetry.
1.3.8 Integrate knowledge of and skills in biomechanics with other study areas of exercise science.

Study Area 2: Exercise Delivery

Graduate Outcome
2.3.1 Employ a range of tools and methods to monitor and evaluate exercise load and progress, including mechanical, physiological and perceptual methods that are appropriate for the specific needs of clients.
2.3.2 Demonstrate how data obtained during a client assessment are used in the delivery and monitoring of exercise or physical activity.
2.3.3 Identify, describe, analyse and demonstrate a broad range of exercise modalities, and select appropriate exercises and equipment to suit the needs and abilities of clients.
2.3.4 Apply the principles of motor control, functional anatomy and biomechanics to assess movement and to recognise the cause of dysfunctional movement patterns and unsafe exercise technique.
2.3.5 Apply the principles of motor learning and skill acquisition, including the effective use of learning cues and movement progressions, for teaching and correcting movement and exercise technique.
2.3.6 Instruct group-based exercise classes for distinct groups of clients with health, fitness and sports performance goals.

2.3.7 Identify the common contraindications for participation in exercise that are associated with chronic and complex conditions, and demonstrate an awareness of the relevant pathophysiology that underpins such contraindications.

2.3.8 In accordance with professional guidelines, monitor and evaluate whether it is safe for a client to continue with an exercise program or session, and initiate appropriate measures to ensure the client's safety.

2.3.9 Evaluate and adapt the delivery of an exercise prescription to respond to environmental change or change in the needs or capacities of clients.

2.3.10 Employ motivational techniques to deliver safe and effective exercise programs in a manner that is sensitive to the specific needs and abilities of clients.

2.3.11 Record and document the responses and progress of clients during an exercise program, and appropriately report on the outcomes, verbally or in writing, to clients or related professionals.

2.3.12 Integrate knowledge of and skills in exercise delivery with other study areas of exercise science.

Study Area 3: Exercise Physiology

Graduate Outcome

3.3.1 Describe the function, regulation and interaction of physiological systems relating to exercise.

3.3.2 Describe the individual and integrated physiological responses and adaptations to acute and chronic exercise.

3.3.3 Describe the physiological responses and adaptations to acute and chronic exercise in various environmental conditions and the interactions with 'ergogenic' aids or technologies.

3.3.4 Apply knowledge of the physiological responses to acute exercise and adaptations to chronic exercise to provide a rationale for the provision of exercise programs to improve and maintain specific aspects of health, fitness and performance.

3.3.5 Interpret, explain and analyse physiological data obtained during acute exercise, and compare such data between time points, individuals and populations.

3.3.6 Integrate knowledge of and skills in exercise physiology with other study areas of exercise science.

Study Area 4: Exercise Prescription

Graduate Outcome

4.3.1 Identify and describe the principles of current best practice for designing exercise programs, and explain why various exercise types confer health, fitness or performance benefits (as relevant) for the apparently healthy population.

4.3.2 Explain in simple, comprehensible language the risks of performing exercise and describe appropriate strategies to address these risks.

4.3.3 Design exercise programs that meet the needs of clients, in consideration of:

- **4.3.3.1** current, best-practice guidelines for performing exercise

- 4.3.3.2 the exercise tolerance, physical function and capacity, and motivation level of the client

4.3.4 Integrate knowledge of and skills in exercise prescription with other study areas of exercise science.

Study Area 5: Functional Anatomy

Graduate Outcome

5.3.1 Identify the foundational principles of kinesiology that explain individual joint complexes and their independent and composite functions in posture and movement analysis in exercise.

5.3.2 Identify the components of the neuro-musculoskeletal system of the human body, and describe the role of the bony segments, joint-related connective tissue structures, muscles and the external forces applied to these structures.

5.3.3 Describe the effects of exercise, immobilisation, aging and injury on the musculoskeletal system of the human body.

5.3.4 Discuss the role of body proportions in sports performance and talent identification.

5.3.5 Describe the adaptations that can occur during exercise to elements of the neuro- musculoskeletal system.

5.3.6 Conduct musculoskeletal movement analyses.

5.3.7 Analyse and evaluate results from anthropometric, flexibility and posture testing, and present a summary of recommendations for exercise prescription.

5.3.8 Analyse movement during prescribed exercises, identifying which muscles are active in producing and controlling a movement of a particular joint.

5.3.9 Integrate knowledge of functional anatomy with other exercise science sub- disciplines, and apply this knowledge in health, exercise, sports and workplace contexts.

Study Area 6: Growth and Development

Graduate Outcome

6.3.1 Recall and describe the stages of growth and development across the lifespan, from conception through to death (including pregnancy in women).

6.3.2 Recognise exercises that are contraindicated for particular stages of growth and development across the lifespan, and know the injuries or conditions that commonly present during certain stages of growth and development.

6.3.3 Describe the structural, physiological and motor development changes across the lifespan and the effect of exercise on such changes.

6.3.4 Analyse and evaluate the literature and guidelines on growth and development as they relate to exercise.

6.3.5 Integrate knowledge of and skills in growth and development with other areas of exercise science.

Study Area 7: Health, Exercise and Sport Assessment

Graduate Outcome
7.3.1 Identify and explain the common processes and equipment required to conduct accurate and safe health, exercise and sport-related assessments.
7.3.2 Identify and describe the limitations, contraindications or considerations that may require the modification of assessments, and make appropriate adjustments for relevant populations or clients.
7.3.3 Explain the scientific rationale, purpose, reliability, validity, assumptions and limitations of common assessments.
7.3.4 Describe the principles and rationale for the calibration of equipment commonly used in assessments, and recognise and adjust incorrectly calibrated equipment.
7.3.5 Conduct appropriate pre-assessment procedures, including explaining the test, obtaining informed consent and a focused medical history, and performing a pre- exercise risk assessment.
7.3.6 Identify the need for guidance or further information from an appropriate health professional, and recognise when medical supervision is required before or during an assessment and when to cease a test.
7.3.7 Select, develop and conduct appropriate protocols for safe and effective assessments, including instructing clients on the correct use of equipment.
7.3.8 Record, analyse and interpret information from assessments and convey the results, including the accuracy and limitations of the assessments, through relevant verbal and/or written communication with the client or involved professional.
7.3.9 Integrate knowledge of and skills in health, exercise and sport assessment with other study areas of exercise science, in particular the physiology that underpins common exercise contraindications.

Study Area 8: Health, Exercise and Sport Psychology

Graduate Outcome
8.3.1 Describe human behaviour in terms of personality, motivation and learning, and relate these influences to the behavioural aspects of health, exercise and sport.
8.3.2 Analyse and understand behaviour in the health, exercise and sport contexts from an ecological perspective.
8.3.3 Identify and describe best practice in the delivery of health and exercise advice.
8.3.4 Describe the factors associated with realistic goal setting, exercise adoption and safe participation in physical activity.
8.3.5 Describe the factors that influence and predict exercise adherence.
8.3.6 Explain the role of exercise, physical activity and sport in mental health and wellbeing.
8.3.7 Interpret behavioural theories and their constructs that relate to health, exercise and sport.
8.3.8 Apply relevant psychosocial measures and behavioural tools in the delivery of an exercise program.
8.3.9 Formulate strategies for behaviour modification to increase the adherence of clients to exercise and physical activity throughout the lifespan.

8.3.10 Identify clients in need of additional strategies for behaviour modification and design an intervention accordingly.

8.3.11 Evaluate and revise behavioural strategies according to the needs of the client and their progress towards achieving realistic goals.

8.3.12 Listen to and engage with the client and respond appropriately to match their various needs and preferences with realistic goals and safe, progressive improvement.

8.3.13 Demonstrate basic counselling and communication skills.

Study Area 9: Human Anatomy

Graduate Outcome

9.3.1 Locate components of the body systems, with an emphasis on musculoskeletal structures, using a variety of tools such as cadaveric specimens, anatomical models, radiographic images, and diagrams and photographs (in print or electronic media).

9.3.2 Identify the components of the musculoskeletal system and their key parts and describe the operation of the musculoskeletal system in detail.

9.3.3 Identify and describe the basic structures and organisation of the other systems in the body, including their interrelationship/interdependence, with emphasis on the cardiovascular, nervous and respiratory systems.

9.3.4 Identify musculoskeletal structures from surface anatomy.

9.3.5 Integrate the knowledge of and skills in human anatomy with other study areas of exercise science.

Study Area 10: Human Physiology

Graduate Outcome

10.3.1 Describe, understand and integrate the functions and needs of the various tissues, organs and systems, and how they relate to health and common pathologies and their pharmacological treatments, especially in the context of exercise delivery.

10.3.2 Measure basic physiological parameters, perform basic analyses, and interpret and analyse the data, taking into account the limitations of the methodology on the conclusions that can be drawn.

10.3.3 Demonstrate an appreciation of the importance of scientific rigour in responding to the demand for evidence-based models and in developing a deeper understanding of the functioning of the human body.

10.3.4 Integrate the mechanisms of different physiological systems.

10.3.5 Integrate knowledge of and skills in human physiology with other study areas of exercise science.

Study Area 11: Motor Control and Learning

Graduate Outcome

11.3.1 Describe the structure and function of the neuromuscular and sensory systems as they relate to the control of voluntary and involuntary movement, motor learning and skill acquisition.
11.3.2 Identify the strengths and limitations of techniques to assess aspects of motor control and the processes of motor learning and skill acquisition.
11.3.3 Explain the changes in motor function or motor performance that may occur with motor learning, skill acquisition, aging and injury.
11.3.4 Discuss the common theoretical models proposed to explain motor control and the processes of motor learning and skill acquisition.
11.3.5 Examine aspects of a client's motor function or motor performance as appropriate in health, exercise and sporting contexts.
11.3.6 Use appropriate test protocols to imply motor learning outcomes.
11.3.7 Design motor learning environments and protocols to maximise each client's specific motor control and learning outcomes, as appropriate in health, exercise or sporting contexts.
11.3.8 Integrate knowledge of and skills in motor control and learning with other study areas of exercise science.

Study Area 12: Nutrition

Graduate Outcome
12.3.1 Describe the basic functions of macronutrients and key micronutrients, their common sources, and their role in energy balance and general wellbeing.
12.3.2 Identify the strengths and limitations of commonly used methods for measuring and analysing dietary intake.
12.3.3 Recognise the signs of inappropriate dietary behaviours, and understand appropriate referral pathways.
12.3.4 Describe the role of diet in the aetiology of obesity and explain the metabolic and chronic health consequences of obesity.
12.3.5 Explain the strengths and limitations of commonly used methods for measuring and analysing body composition.
12.3.6 Describe the evidence for the efficacy of common nutritional supplements and nutritional 'ergogenic' aids, and demonstrate awareness of prescribed or illegal supplements.
12.3.7 Address common questions on nutrition, specifically those related to exercise performance, changes in body composition, the role of diet in increasing muscle mass, and the nutritional causes of fatigue.
12.3.8 Evaluate the risks to physiological and psychological health of common fad or popular diets.
12.3.9 Undertake a basic dietary analysis and discuss its implications.
12.3.10 Use current guidelines to provide appropriate general advice on nutrition.
12.3.11 Relate appropriate information on nutrition and hydration for exercise preparation, exercising and exercise recovery.

12.3.12 Integrate knowledge of and skills in nutrition with other study areas of exercise science.

Study Area 13: Physical Activity and Health

Graduate Outcome
13.3.1 Describe in detail prevention programs at the public health, primary, secondary and tertiary levels.
13.3.2 Describe the broad structure of the health system in Australia.
13.3.3 Explain the role of sedentary behaviour and physical activity in the aetiology, prevention and management of lifestyle-related chronic diseases.
13.3.4 Describe, and provide examples of, the potential impact of public policy on promoting physical activity and reducing sedentary behaviour at the population level.
13.3.5 Identify agencies, including funding agencies, involved in the promotion of physical activity, and identify potential partners to assist with this promotion.
13.3.6 Apply population-level recommendations and guidelines for optimising physical activity and reducing sedentary behaviour throughout the lifespan.
13.3.7 Relate the benefits and risks of physical activity and apply best-practice principles to recommend appropriate levels of physical activity for populations and subgroups.
13.3.8 Identify populations at risk of insufficient physical activity or sedentary behaviour, and assess population characteristics and needs, including the social determinants of health, to inform development of appropriate interventions.
13.3.9 Plan, organise and evaluate population and community-level interventions to increase physical activity levels and reduce sedentary behaviour.
13.3.10 Discuss the appropriate use (including expected outcomes), strengths and weaknesses of individual and population-level interventions to increase physical activity and reduce sedentary behaviour.
13.3.11 Integrate knowledge of and skills in physical activity and health with other study areas of exercise science.

Study Area 14: Professional Practice

Graduate Outcome
14.3.1 Demonstrate the effective application of knowledge and skills in a work context.
14.3.2 Demonstrate helping clients to meet their goals through the integration and application of the exercise science curriculum.
14.3.3 Demonstrate effective verbal and nonverbal communication skills.
14.3.4 Understand the scope of practice for an exercise scientist, a sports scientist and an exercise physiologist.
14.3.5 Understand the elements of risk associated with the professional practice of exercise science and the strategies used to minimise this risk.

14.3.6 Understand the ESSA Code of Professional Conduct and Ethical Practice.

Study Area 15: Research Methods and Statistics

Graduate Outcome

15.3.1 Describe the types and applications of qualitative and quantitative research study designs.

15.3.2 Differentiate between high and lower quality sources of information to inform evidence-based practice.

15.3.3 Use the primary databases to access peer-reviewed scientific literature and conduct searches to identify relevant information.

15.3.4 Critically appraise research methodology and reports, including statistical results and ethical aspects of research, and integrate this knowledge into other study areas of exercise science.

15.3.5 Cite the research of others appropriately in written work.

15.3.6 Understand and perform relevant statistical analyses and interpret results.