# Registered Exercise and Sport Scientist (RESS)

## The role of a Registered Exercise and Sport Scientist

Registered Exercise and Sport Scientist have the ability to use pre-screening tests on healthy populations to determine the risk of completing activity. RESS have the ability to screen for appropriate cardio-pulmonary responses to sub-maximal and maximal physical activity. They are able to select tests, reliably conduct, and correctly interpret results to determine function and performance on the strength-endurance continuum for a range of testing procedures. This includes but not limits to: anthropometric, strength, power, anaerobic capacity, aerobic capacity, economy of exercise, cardiopulmonary function, flexibility and common variables in body fluids. An RESS has the understanding of laboratory health and safety regulations and adherence to hygiene regulations, body fluid/tissue sampling and handling and emergency procedures. They have the ability to work and consult with other specialists in associated professions.

## Eligibility

To gain registration, an individual must:

- have graduated with a minimum Level 7 Bachelor degree in the field of exercise and sport science
- Hold a current cardiopulmonary resuscitation certificate
- Hold a current first aid certificate
- Meet the following standards outlined in this document
- Have undertaken at least 140 hours of professional practice with apparently healthy individuals and provide log book to demonstrate*

*The Registered Exercise and Sport Scientist should have obtained 140 hours of practical experience in exercise prescription to improve health, fitness or performance for wellbeing in apparently healthy populations. Practical competencies reflect particular skills expected of a registered exercise and sport scientist working with the public and should be demonstrable in an applied setting. Evidence of practical competencies should be identified in log books and case notes supplied with the application for candidature.

# Contents:

**Registered Exercise Scientists (RESS) should demonstrate knowledge and understanding in the following core competencies:**

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## *1. Anatomy*

*Upon successful completion of the functional anatomy curriculum, the graduate will have a thorough knowledge of the neuro-musculoskeletal and musculoskeletal systems and an understanding of all body systems relevant to exercise science.*

- Identify the foundational principles of kinesiology that explain individual joint complexes and their independent and composite functions in posture and movement analysis in exercise.
- 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.
- 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).
- Identify the components of the musculoskeletal system and their key parts and describe the operation of the musculoskeletal system in detail.
- Describe the adaptations that can occur during exercise to elements of the neuro-musculoskeletal system.
- Analyse and evaluate results from anthropometric, flexibility and posture testing, and present a summary of recommendations for exercise prescription.

## 2. Exercise Prescription and Delivery

*Upon successful completion of the exercise delivery curriculum, the graduate can prescribe and deliver, in- person or remotely, an exercise program that includes the instruction and leadership of individual and group exercise sessions and is based on best practice to meet the specific health, fitness and/or sports performance goals of apparently healthy clients.*

- 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
- Explain in simple, comprehensible language the risks of performing exercise and describe appropriate strategies to address these risks.
- 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.
- 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.
- 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.
- Instruct group-based exercise classes for distinct groups of clients with health, fitness and sports performance goals.
- Identify the common contraindications for participation in exercise that are associated chronic and complex conditions, and demonstrate an awareness of the relevant pathophysiology that underpins such contraindications.
- Employ motivational techniques to deliver safe and effective exercise programs in a manner that is sensitive to the specific needs and abilities of clients.

## 3. Biomechanics

*Upon successful completion of the biomechanics curriculum, the graduate can describe, measure, analyse and evaluate, based on best practice, the mechanical principles underlying human movement as they apply to the unique needs of clients*

- 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.
- Determine when basic movement analysis can add value to the needs of a client.
- Identify specific aspects of movement patterns, particularly for movement asymmetry.
- Assessing sports techniques and efficiency of movement using appropriate reliable and valid technologies to improve an athlete's performance
- In consultation with coaches, skill acquisition specialists and sports medicine professionals, developing technical modifications to improve the efficiency of an athlete's performance and/or to reduce the risk of injury
- Working with researchers to develop new techniques, sports equipment (e.g. rackets, bats, balls, surfaces) or personal equipment (e.g. helmets, footwear, sportswear) to improve sports performance and/or reduce the risk of injury

## 4. Exercise Physiology

*Upon successful completion of the exercise physiology curriculum, the graduate can demonstrate the ability to apply knowledge of the effects of acute and chronic exercise on the physiological systems necessary to evaluate, improve and maintain health, fitness and performance of the client.*

- Describe the function, regulation and interaction of physiological systems relating to exercise.
- Describe the individual and integrated physiological responses and adaptations to acute and chronic exercise in various environmental conditions and the interactions with 'ergogenic' aids or technologies.
- Apply knowledge of the physiological responses to acute exercise and the 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.
- Interpret, explain and analyse physiological data obtained during acute exercise, and compare such data between time points, individuals and populations.
- Integrate knowledge of and skills in exercise physiology with other study areas of exercise science.

## 5. Motor Control and Skill Acquisition

*Upon successful completion of the motor control and learning curriculum, a graduate can interpret the theoretical basis of motor control and learning to select and perform assessments of motor skills. The graduate can also design a suitable program, based on best practice, for teaching motor skills to meet the unique needs of clients.*

- 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
- Identify the strengths and limitations of techniques to assess aspects of motor control and the processes of motor learning and skill acquisition
- Explain the changes in motor function or motor performance that may occur with motor learning, skill acquisition, aging and injury
- Discuss the common theoretical models proposed to explain motor control and the processes of motor learning and skill acquisition
- Examine aspects of a client's motor function or motor performance as appropriate in health, exercise and sporting contexts.
- Use appropriate test protocols to imply motor learning outcomes
- 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
- Integrate knowledge of and skills in motor control and learning with other study areas of exercise science.
- Assessing an athlete's motor performance and providing advice on the design of training programs that will enhance an athlete's ability to improve or to learn new skills to improve performance

## 6. Sport Nutrition

*Upon successful completion of the nutrition curriculum, graduates will have the knowledge and skills to provide general advice on nutrition to apparently healthy clients*

- Describe the basic functions of macronutrients and key micronutrients, their common sources, and their role in energy balance and general wellbeing.
- Identify the strengths and limitations of commonly used methods for measuring and analysing dietary intake.
- 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.
- Evaluate the risks to physiological and psychological health of common fad or popular diets.
- Undertake a basic dietary analysis and discuss its implications.
- Use current guidelines to provide appropriate general advice on nutrition.

## 7. Physical Activity, Health and Assessment

*Upon successful completion of the physical activity and health curriculum, the graduate will be able to design a basic population intervention, based on best practice, to increase physical activity and reduce sedentary behaviour.*

- Explain the role of sedentary behaviour and physical activity in the aetiology, prevention and management of lifestyle-related chronic diseases.
- Apply population-level recommendations and guidelines for optimising physical activity and reducing sedentary behaviour throughout the lifespan.
- 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.
- Identify and explain the common processes and equipment required to conduct accurate and safe health, exercise and sport-related assessments.
- Identify and describe the limitations, contraindications or considerations that may require the modification of assessments, and make appropriate adjustments for relevant populations or clients.
- Conduct appropriate pre-assessment procedures, including explaining the test, obtaining informed consent and a focused medical history, and performing a pre- exercise risk assessment.
- 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.

## 8. Growth and Development

*Upon successful completion of the growth and development curriculum, the graduate will have a thorough understanding of how age and gender influence exercise capacity, and how physical activity can influence changes in the human body, from conception to old age.*

- Recall and describe the stages of growth and development across the lifespan, from conception through to death (including pregnancy in women).
- 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.
- Describe the structural, physiological and motor development changes across the lifespan and the effect of exercise on such changes.
- Analyse and evaluate the literature and guidelines on growth and development as they relate to exercise.

## 9. Bicultural Considerations

*Treat all people with respect and consideration of their identity and belief without discrimination towards:*

- Age or generation, gender, sexual orientation, occupation and socioeconomic status, ethnic origin or migrant experience, religious or spiritual belief & disability
- Understands the Treaty of Waitangi/Te Tiriti o Waitangi and its relevance to the health of Maori in Aotearoa/New Zealand
- Apply the Treaty of Waitangi/Te Tiriti o Waitangi to professional practice
- Demonstrates knowledge of differing health and socio-economic status of Maori and non-Maori
- Practises in a way that respects each person's right to hold personal beliefs, values and goals
- Consults with members of cultural and other groups as requested and approved by the participant/s

## 10. Professional Practice

*Upon successful completion of the curriculum in the professional practice of exercise science, a graduate can apply their knowledge and skill set to operate effectively in an ethically responsible manner.*

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