ACCREDITATION

CRITERIA AND COMPETENCIES

INTRODUCTION

Sport and Exercise Science New Zealand (SESNZ) has developed an accreditation and quality assurance scheme for professionals working within the field of sport and exercise science. This scheme enables professionals to be recognised for their expertise by those outside this field, to ensure appropriate levels of professionalism and safety for the public and align our field with other similar professions.

This scheme, established by SESNZ over a decade ago, sets minimum standards for both qualifications and competence. The standards were established using recognised discipline experts from within SESNZ membership, including practitioners and academics and approved by the SESNZ Board after consultation with the wider SESNZ membership and interested third parties.

SESNZ recognised accreditation needs to accommodate those already working within the field, and those currently studying. Therefore, accreditation can be gained by two methods:

- Direct accreditation
- Supervised learning

DIRECT ACCREDITATION

Applicants with appropriate qualifications and sufficient relevant experience in an accredited discipline may apply directly to SESNZ for accreditation providing suitable evidence of their competence.

SUPERVISED LEARNING

The SESNZ Supervised Learning programme is intended to enable those wishing to pursue a professional career in sport and exercise science to achieve the criteria required for SESNZ Accreditation while working and studying. The programme is designed to complement theoretical knowledge with practical experience in a variety of "real-life" situations.

Applicants must undertake supervision with appropriate trained supervisors approved by SESNZ. Appropriate supervisors may include, but not limited to:

- A current SESNZ accredited practitioner with a minimum of two (2) years' experience
- A sport or exercise professional with five (5) years or more experience, and/or capable of attaining full membership of SESNZ
- A university-trained allied health professinal with experience in exercise delivery.
- Other persons may be suitable as supervisors and is decided on a case-by-case basis.

Potential supervisors are required to complete Supervised Learning Supervisor application forms and forward these to SESNZ before any placement or supervision commences.

APPLICATION PROCESS

Applicants will complete the required application forms and provide all evidence required along with payment to SESNZ.

Verified evidence required includes, but not limited to:

- ✓ Copy of academic transcripts
- ✓ Appropriately logged/recorded hours of experience with accompanying support from a reputable source, e.g., coach, manager, supervisor etc
- ✓ Case-studies or examples of work as required for the discipline
- ✓ Other appropriate and relevant documentation as required, e.g., course attendance certificates
- ✓ Membership/accreditation with other bodies, e.g., ESSA, BASES, etc

Applicants may apply for accreditation in more than one discipline but must ensure all the discipline competency requirements are met.

EVIDENCE TO BE SUPPLIED

- Current First Aid Certificate (Level 3)
- Log Book
- 3 case-studies

Log Book

Logged/recorded hours of experience with accompanying support from a reputable source should clearly identify the requisite 400 hours of practical experience.

Case Study Reports

Case Studies must be of clients you have personally worked with and have an intimate knowledge and experience of their condition(s) and subsequent exercise therapy. Each case study must describe a different condition i.e., not all cardiovascular, or situation.

The case study reports must include the following:

- Brief introduction that includes relevant background information such as client history and the purpose of the assessment
- The method including statements which demonstrates you understand the equipment involved in the assessment (e.g. strain-gauge force plate vs. piezoelectric force plate) and any limitations of the assessment (e.g. accuracy, reliability), or
- The methods used in the intervention/s including statements that demonstrates that you understand any particular methods of assessment used (e.g., psychometric testing, performance profiling etc.) and any limitations of the assessment (e.g. validity or reliability).
- The client reports – video, written. Supplementary information can be provided on any oral information provided. Include details of any referrals.

Where possible, all identifying features of the client should be removed or masked in the report. Written client consent is required prior to submitting any visual material where the identity of the client cannot be protected. Consent should be limited to the purpose of obtaining your accreditation with SESNZ. Please provide a copy of the client's consent.

APPLICATION REVIEW

An independent reviewer will consider the application and advise whether the application meets the SESNZ accreditation requirements. Successful applicants will be issued with a 2-year SESNZ Practising Certificate which is valid until 30 June. Practising Certificate renewal is conditional on completing the SESNZ Continuing Competency Credits (CCC) scheme.

If an application is unsuccessful, the applicant will be notified and advised of the shortcomings and requirements needed to be successful. If these requirements are minimal no extra fee will be charged if supplied within the specified period. If however, the application requires a full review and new application, the full accreditation fee will be payable.

CORE CRITERIA

- Be a FULL member of SESNZ (or join as a Full member at the time of application)
- An applicant must have at least an undergraduate degree or equivalent in sport and exercise science or a related field.
- 400 hours practical experience, including 50 hours of cross-discipline observation for all accreditation disciplines except Mental Skills Trainer/Sport Psychology which have separate criteria (refer to Mental Skills Trainer/Sport Psychology pages for criteria).
- Demonstration of knowledge of specific discipline(s) for accreditation as outline in the following pages. For Clinical Exercise Physiology refer to the specific section for break down of hours.

CORE COMPETENCIES

The core competencies have been identified as those inherent to all of SESNZ disciplines.

COMMUNICATION

A practitioner effectively communicates in English with a wide range of people in all situations, both verbally and in writing.

- Adjusts communication style to suit the needs of the audience
- Communicates key points clearly and concisely
- Presents ideas in a logical sequence
- Communicates without using inappropriate jargon or phrases
- Demonstrates understanding of cultural differences in regard to communication
- Demonstates respect for all cultures and cultural practices in all situations
- Presents complex ideas and concepts effectively

PROFESSIONAL CONDUCT

Open, honest and consistent in behaviour and can be relied upon. They generate confidence in others through their professional and ethical behaviour.

- Displays ethical and professional behaviour in all situations
- Demonstates respect for all cultures and cultural practices in all situations
- Demonstrates openness and honesty when dealing with issues, day to day tasks and people
- Applies consistent standards that are fair and objective to all situations
- Does not compromise own standards, despite pressures
- Understands and complies with the SESNZ Code of Ethics
- Understands their personal ability, knowledge and competency limitations, and recognises when to refer a client on, and to whom.

PROFESSIONAL DEVELOPMENT

- Actively pursues professional development
- Regularly attends educational and professional development opportunities
- Reflect on professional development opportunities and apply or integrate (when appropriate) in professional practice

RELATIONSHIP BUILDING

Building and maintaining positive working relationships and networks useful to achieving the organisation's objectives.

- Able to work as part of a multidisciplinary team for improving either health or sport performance for the client.
- Builds and maintains appropriate productive relationships or networks of contact
- Builds and sustains appropriate positive and productive working relationships
- Maintains an extensive network of technical/professional contacts/staff to keep abreast of latest ideas
- Consults widely to obtain several perspectives

CRITICAL EVALUATION

A applicant is able to identify and analyse issues and problems, consider alternatives, make sound decisions and commit to a course of action.

- Checks the quality, validity and relevance of information sought - Identifies issues, relationships and/or trends amongst information
- Interprets and/or reorganises information and looks for alternative solutions to the problems
- Researches issues thoroughly using a suitable methodology
- Identifies and minimises significant risks associated with decisions
- Follows up on decisions to ensure they have been effective

SPECIFIC COMPETENCIES

In addition to the Core Competencies listed above, applicants are required to show competence in the specific discipline for which they are seeking accreditation.

- Applied Exercise Physiology
- Biomechanics
- Clinical Exercise Physiology (and appendix)
- Mental Skills Trainer/ Sport Psychologist
- Musculoskeletal Exercise Rehabilitation
- Physical Conditioning
- Sports Nutrition

APPLIED EXERCISE PHYSIOLOGY

SCOPE OF PRACTICE

The Applied Exercise Physiologist has expertise in the area of determining the risk and assessing the function and performance of healthy individuals across a range of physical activities.

EVIDENCE TO BE SUPPLIED

- Current First-aid certificate
- Logbook
- 3 case-studies

APPLIED PRINCIPLES AND PRACTICE

The applicant demonstrates the following applied principles and practices.

Evaluation

A practitioner possesses an ability to:

1. Use pre-activity screening of an healthy population to determine the risk of activity
   - competency in pre-activity screening/evaluation for musculoskeletal, metabolic and circulo-respiratory risks.
   - an ability to screen for appropriate cardio-pulmonary responses to sub-maximal and maximal physical activity.

2. Select, reliably conduct/implement and correctly interpret tests (listed below) to determine function and performance on the strength-endurance continuum. Tests include direct and indirect measurements of:
   - anthropometry (e.g. BMI, BIA, girth, skinfolds)
   - strength (e.g. dynamometry, 1RM testing)
   - power (e.g. vertical power, horizontal power, sprinting)
   - anaerobic capacity (e.g. Wingate test, repeated sprints)
   - aerobic capacity (e.g. maximal and submaximal testing)
   - economy of exercise (e.g. speed-VO_2 testing, lactate profiling)
   - cardiopulmonary function (e.g. basic ECG, HR, BP, lung function)
   - flexibility (e.g. goniometry)
   - common variables in body fluids (e.g. blood, urine, saliva)

   Applicants should be able to deliver *laboratory-based* and *field-based* tests where appropriate.

Knowledge

A practitioner possesses the knowledge and understanding of:

3. Physiological, mechanical, environmental determinants underpinning physical activity and assessment in the area of exercise physiology (including, but not limited to, thermoregulation, circadian rhythms, altitude, ergogenic aids, muscular function, endocrinology, fluid homeostasis and metabolism).

4. Laboratory health and safety regulations, and adherence to hygiene regulations, body fluid/tissue safe sampling and handling, and emergency procedures.

and ability to:

5. Complete basic maintenance and calibration procedures of common equipment (ergs, wet and dry lactate analysers, metabolic carts).

6. Work and consult with other specialists in associated professions e.g. medical profession.

BIOMECHANICS

SCOPE OF PRACTICE

The Sport Biomechanics practitioner has expertise in assessment and evaluation of sport performance and technique with the aim of improving athlete [or team] performance and/or reducing injury risk.

Evidence to be supplied

- Current First-aid certificate
- Logbook
- 3 case-studies

APPLIED PRINCIPLES AND PRACTICE

The applicant demonstrates the following applied principles and practices.

Evaluation

A practitioner possesses an ability to:

1. Reliably perform valid (2D and 3D) movement analysis testing. Showing appropriate knowledge of:
   - Marker sets (e.g., Helen Hayes, Cleveland clinic, rigid, cluster)
   - Motion capture techniques (e.g., On-line systems, Dv cameras, Active sensors)
   - Calibration techniques (e.g., volume, plane, anatomical)
   - Direct force measures (e.g., force plate, F-scan, transducers)

2. Select, conduct and interpret specific biomechanical data analysis techniques, including:
   - Kinematics (e.g., linear and angular displacement and the first and second time derivatives of).
   - Kinetics both direct and indirect (e.g., inverse dynamics 2D or 3D).
   - Qualitative analysis including deterministic modelling
   - Performance analysis (e.g., notational analysis)

3. Accurately interpret Biomechanical assessments and monitor outcomes in the short or long-term.

4. Perform *laboratory-based* and *field-based* tests where appropriate.

5. Communicate findings in an appropriate manor to stakeholders (e.g., written reports, video analysis, silicon coach)

6. Palpate and locate at least 10 standard bony landmarks used in Biomechanics motion analysis (e.g. trochanterion, distal clavicle)

7. Qualitatively assess the component demands of human movement (including a deterministic model) by providing a case-study report that addresses an exercise or sport-based problem

8. Apply kinematics (time series two dimensional; time series multiple plane two dimensional and/or three dimensional) by presenting a case-study report that addresses an exercise or sport-based problem

9. Apply kinetic (quantitative) assessment of human movement (including a free body diagram and deterministic model) by presenting a case-study report which addresses an exercise or sport-based problem

Knowledge

A practitioner possesses a thorough understanding and knowledge of:

10. The anatomical, mechanical, environmental determinants underpinning activity and assessment in the area of biomechanics (including, but not limited to, functional anatomy, anthropometry, movement analysis, mathematics, kinematics, kinetics, performance analysis, task analysis, needs assessment)

CLINICAL EXERCISE PHYSIOLOGY

SCOPE OF PRACTICE

The Clinical Exercise Physiologist has expertise in the area of assessment and prescription exercise to level II for prevention, management and rehabilitative programming to enhance quality of life and physical performance for persons with a high risk of developing, or with existing chronic and complex medical conditions and injuries. The Clinical Exercise Physiologist is experienced offers expert advice and support to engender a lifestyle and/or behaviour modification to enhance health and well-being.

400 HOURS OF EXPERIENCE

- 50 hours or experience gained with apparently healthy clients
- 350 clinical hours of practival experience with clinical populations, as defined below:
  - 140 hours neuromuscular / neurological / musculoskeletal / and elderly patient experiences
  - 140 hours with metabolic / cardio and circulatory / respiratory patient experiences
  - 70 hours of other clinical hours from other clinical health patients (e.g. cancer)
- 50 hours of cross-subject observation. Examples include: body fat measurement, strength & conditioning training of athletes, flexibility measuring and training

Applicants must demonstrate:

- At least 85% of their clinical work involved face-to-face contact either with assessments or delivery of exercise services
- A maximum of 10% of time for reading, preparation and plan development for exercise delivery, observation and other activities related to the scope of practice of CEP
- A maximum of 5% for administrative duties

EVIDENCE TO BE SUPPLIED

- Current First-aid certificate
- Log Book
- 3 case-studies

APPLIED PRINCIPLES AND PRACTICE

The applicant demonstrates the following applied principles and practices.

Evaluation

A practitioner possesses an ability to:

1. Perform comprehensive client profile for an individual, incorporating a needs analysis including recognition of any psychosocial determinants and constraints associated with exercise and physical activity.

2. Screen, and conduct appropriate or necessary risk assessment and pre-exercise screening procedures for chronic diseases (particularly CAD) using ACSM risk stratification or other risk assessments, stratification and validated screening tools.

3. Select and conduct a variety of sub-maximal exercise tests used as a basis to determine aerobic fitness, strength, balance and flexibility in a normal and clinical population.

4. Utilise a range of client assessments, including subjective assessments, functional assessments and physical assessments.

Knowledge
A practitioner possesses a thorough understanding and knowledge of:

5. Exercise physiology, in particular the various modalities of physical exercise. For example (but not limited to) core stability, functional progression, open and closed-kinetic chain exercise, isokinetics, plyometrics, hydrotherapy, unstable surface training and flexibility training.

6. Clinical pathologies (listed in the Appendix), including the physiological morphology, symptoms, initial development, and progression of the disease.

7. Medical treatments including invasive and non-invasive procedures i.e. surgical, chemotherapies, or radiotherapies at a level of understanding of what the treatment procedures are, who conducts the procedure, and expected recovery times.

8. Indicated and contra-indicated exercise for each clinical pathology (see Appendix) and its drug/treatment.

9. Human nutrition and/or relevant physiology and how it relates to exercise and general health.

10. Needs and indicators which extend beyond learning and development into issues of personality function/dysfunction and an ability to process such referrals to appropriately qualified health professionals.

11. New Zealand's public and private health system, along with all relevant legislation pertinent to allied health workers in New Zealand. This includes an understanding of the Health Practitioners Competence Assurance Act 2003

Exercise Programming and Prescription
A practitioner can:

12. Safely assess the capabilities of the patient/client using appropriate exercise tests and assessments.

13. Develop safe and effective personalised progressive exercise programme based on knowledge of the patient/client's particular pathology, treatment, and goals.

14. Safely instruct the patient appropriate exercises including observation and subsequent correction/remediation of exercise technique.

15. Prescribe exercise programmes incorporating elements of cardiopulmonary conditioning, proprioception, resistance training and flexibility exercises.

16. Explain the psychosocial benefits of prescription exercise, with a focus on well-being.

17. Demonstrate knowledge of requirements to manage emergency situations.

Cultural Awareness and Health Models
A practitioner should:

18. Understand different models of health and health promotion with he ability to apply and demonstrate this in clinical practice.

Competencies for Defined Pathologies
Knowledge of the pathologies of disease and medical treatments required to achieve the above competencies are outlined in the Appendix.

MENTAL SKILLS TRAINER / SPORT PSYCHOLOGY

SCOPE OF PRACTICE

Mental Skills Trainer: A Mental Skills Trainer has expertise in providing support for individuals and/or groups/teams, within a sport and exercise science setting, in the development of mental well-being and improvement of psychological skills with the aim to improve sporting performance.

Sport Psychology: An applicant applying for accreditation in Sport Psychology must be a registered psychologist (with the New Zealand Psychological Registration Board) or a registered provider in an appropriate profession.

400 HOURS OF EXPERIENCE

- 150 hours (maximum) of advanced studies, made up of structured learning (e.g. tertiary study, specialist course, focused workshops/seminars) specific to mental skills in sport and/or exercise for individuals and groups/teams, teaching mental skills; sport and exercise science.
- 50 hours (minimum) of cross-discipline sport science observation.
- 100 hours (minimum) applied experience including mental skills training work with individuals and groups.
- 25 hours (minimum) of logged supervision oversight, with at least 15 of these hours as structured supervision promoting reflective practice.
- Remainder of 400 hours from a combination of the above.

EVIDENCE TO BE SUPPLIED

- Logbook
- 3 case-studies

APPLIED PRINCIPLES AND PRACTICE

The applicant demonstrates the following applied principles and practices.

Knowledge

A practitioner has the knowledge of:

1. Common theories and models applied within Sport Psychology
2. Different approaches that can be used within therapeutic settings
3. The SESNZ code of ethics and how this impacts upon delivery of services and their responsibilities as a practitioner (e.g., confidentiality)

and ability to:

4. Critically assess the relevance of research in an applied setting
5. Transfer this knowledge to applied settings
6. Identify the mental skills that are key to ensuring peak performance

Evaluation

A practitioner has the ability to**:**

7. Systematically assess an athlete's cognitive/behavioural sport performance functioning.
8. Conduct an intake interview with appropriate recording of the session.

9. Establish the aspects of performance that require intervention, detail a performance profile/plan, and implement the plan for individual and teams.

10. Measure and evaluate the effectiveness of interventions and modify plans accordingly.

MUSCULOSKELETAL EXERCISE REHABILITATION

SCOPE OF PRACTICE

The Musculoskeletal Exercise Rehabilitation Practitioner has expertise in individual assessment and exercise prescription for preventative or rehabilitative programming a musculoskeletal condition or injury to improve a healthy person's physical status, quality of life and/or performance.

400 HOURS OF EXPERIENCE

Documented practical or work-related experience is not limited to, but should include, rehabilitation of individuals with diagnosed musculoskeletal injury. It is recommended applicant aim to see at least 25 individuals in Category A and as many as possible from Category B:

Category A

- Ankle & Lower leg injuries
- Back (Upper & Lower back)
- Shoulder
- Knee

Category B

- Anterior & Posterior Thigh
- Postural deviations
- Neck
- Elbow & Upper arm
- Forearm, Hand, Wrist & Fingers
- Buttock, Groin, Hip & Pelvis
- Muscle & Soft Tissue Injuries (Sport & Work related)

EVIDENCE TO BE SUPPLIED

- Current First Aid Certificate
- Logbook
- 3 case-studies (from either Category A or B above)

APPLIED PRINCIPLES AND PRACTICE

The applicant demonstrates the following applied principles and practices.

Musculoskeletal condition in this scope of practice refers to non-clinical condition e.g. Piriformis syndrome, not a clinical condition e.g., arthritis or osteoporosis. An accredited MSK practitioner does not diagnose but carries out assessment for the purposes of monitoring exercise rehabilitation progression.

Knowledge

A practitioner has the knowledge and understanding of:

1. Muscle physiology and pathophysiology including common musculoskeletal conditions limiting or otherwise influencing the prescription of physical activity or symptom management.

2. The interaction of different co-morbid conditions in the development of a rehabilitation plan

3. Physical exercise/physical activity and the various modalities such as open- and closed-kinetic chain exercise, isokinetics, plyometrics, hydrotherapy and flexibility training.

4. Advanced knowledge of functional assessment test protocols.

Evaluation
A practitioner has the ability to**:**

5. Competently evaluate exercise intervention / training regimens for musculoskeletal clients; design rehabilitation programmes & achieve the goals of physical rehabilitation.

6. Record relevant historical information to determine non-modifiable and modifiable factors of the the individuals injury.

Safety and Prevention
A practitioner has the knowledge and understanding of:

7. Monitor symptoms (i.e. colour, swelling, deformity, heat, and pain) and associated data during the rehabilitation of an injury or condition.

8. Managing cardiopulmonary and other types of emergencies that may be encountered with clients undergoing rehabilitation.

9. Appropriate risk stratification principles as these apply to patient assessment procedures, exercise supervision and monitoring and referring to appropriate Health Professionals where necessary..

10. Safety principles as related to weight training techniques (e.g. spotting, dangerous lifts, etc.).

Exercise Programming and Prescription
A practitioner has the ability to**:**

11. Interpret the information obtained from the assessment of musculoskeletal capacity that may include using appropriate modes, protocols, and monitoring to ensure patient safety.

12. Understand how to develop an exercise prescription, which will safely and effectively guide the patient toward restoration and maintenance of functional capacity both on site and at home.

13. Understand how to restore specific fitness or physical abilities such as muscular strength, muscular endurance, muscular power, aerobic power, agility, joint range of motion, balance and postural equilibrium.

14. Lead, monitor and supervise individual and group therapeutic exercise sessions appropriate to clients with varying degrees of musculoskeletal injuries.

PHYSICAL CONDITIONING

SCOPE OF PRACTICE

A physical conditioner is an expert at developing and/or maintaining the physical/physiological status of an individual/group of individuals for a specific activity. Implicit in this discipline is the ability to integrate experience and knowledge in the field of exercise and sport science to reliably assess an individual(s) specific to their sporting or physical activity requirements. Thereafter, a physical conditioner has the appropriate knowledge to develop, deliver and monitor a programme of exercise appropriate to the individual's requirements.

EVIDENCE TO BE SUPPLIED

- Current First-aid certificate
- Logbook
- 3 case-studies

Additional Information for Case-Studies should include:

- critical reviews' of at least two *different* areas of training e.g. speed development or aerobic development.
- complete examples of work including assessment, programme, reassessment and re-programme
- examples of conditioning for an individual as well as a group/team.

APPLIED PRINCIPLES AND PRACTICE

The applicant demonstrates the following applied principles and practices.

Evaluation

A practitioner has the ability to:

1. Select, reliably conduct/implement and correctly interpret performance tests to determine the physical status of the individual in order to determine optimal training strategy. This may include assessments associated with :
    - specific movement competencies
    - strength & power
    - speed & agility
    - energetic demands of the activity
    - body composition
    - flexibility

Knowledge

A practitioner has the knowledge and understanding of:

2. The principles of training programme development in order to design a programme to affect the desired outcome.
    - Integrate relevant aspects of sport and exercise science (e.g. biomechanics, kinesiology, bioenergetics) to optimise physical conditioning programmes
    - Applies knowledge of planning and periodisation to programming
    - Knowledge of the principles of training across the various aspects of conditioning (e.g. energy systems, speed, strength, flexibility) with a demonstrated in-depth knowledge in at least one area

3. Coaching techniques to implement training programmes
    - Background knowledge of the practice of the various training modalities
    - Ability to prescribe and deliver (coach) training programmes in the areas of energy systems, weight training, speed development, flexibility
    - Competency in the technical delivery of specific movement competencies (e.g. squat, power clean, plyometrics)

- Coaching skills in observation and correction/remediation
- Ability to communicate with a range of individuals in a variety of environments
- Understands the holistic nature of physical conditioning

Health and Safety
A practitioner has the knowledge and understanding of:

4. Laboratory, gymnasium and field-based health and safety regulations, and adherence to best practice

and ability to:

5. Work and consult with other specialists in associated professions (e.g. medical profession)

SPORTS NUTRITION

SCOPE OF PRACTICE

A sports nutritionist applies scientific knowledge of food and nutrition in relation to sport and exercise to promote optimal performance and wellbeing for individuals and groups.

EVIDENCE TO BE SUPPLIED

- Logbook
- 3 case-studies

APPLIED PRINCIPLES AND PRACTICE

The applicant demonstrates the following applied principles and practices.

Knowledge

A practitioner has the knowledge and understanding of:

1. Sport and exercise nutrition principles to optimise wellbeing and performance for the individual and groups or teams.

Evaluation

A practitioner has the ability to:

2. Carry out detailed dietary assessments for individuals.

Programme Development

A practitioner has the ability to:

3. Deliver general advice on appropriate nutrition and fluid needs for athletes and physically active individuals.

4. Provide written dietary programmes for individuals.

5. Give appropriate nutritional advice on dietary supplements.

NB.

It is strongly recommended that a practitioner also be a Registered Dietitian or a Registered Nutritionist.

Sports nutritionists who are not NZ Registered Dietitians must refer athletes with underlying medical conditions to a NZ Registered Dietitian.

APPENDIX
CLINICAL EXERCISE PHYSIOLOGY – Defined Pathologies

Competencies for Defined Pathologies
Knowledge of the pathologies of disease means understanding the physiological morphology, symptoms, initial development, and progression of the disease.

Knowledge of medical treatments includes invasive and non-invasive procedures i.e. surgical, chemotherapies, or radiotherapies. The practitioner must have knowledge of the side effects and the indications and contra-indications of exercise for each drug/treatment.

CARDIAC AND CIRCULATORY CONDITIONS

Note: Risk Assessments and Testing listed under Experiential Learning should include, but is not limited to those listed below.

	Knowledge	**Experiential Learning**
Pathologies	Hypotension, Hypertension, CAD, Angina, Peripheral Vascular Disease, Claudication, Syncope, Arteriosclerosis, Arrhythmia, Myocardial Infarction, Congestive Heart Failure, Atrial Fibrillation, Bacterial Endocarditis, Hypertrophic Cardomyopathy	Risk Assessments PAR-Q Questionnaire ACSM Cardiac Assessment BMI, Waist-Hip Ratio, c.f. ASCM Published Normal values
Symptoms	Red Flags High/Low Blood Pressure, Chest Pains, Arrhythmias, Leg Pain, SOB, Fatigue, Syncope, Dizziness/Faint, Headaches	Recognition of Signs and Symptoms: Angina Pain, Ischemia (Localised Leg Pain - Claudication), Heart Rate Variations (Racing, Slow, Irregular), Swollen Ankles, SOB, High/Low Blood Pressure C.F. ACSM Published Norms, Dizziness/Faint, Headaches
Surgical Interventions and Tests (American Heart Association)	Angioplasty Percutaneous Intervention (PCI Balloon, and Coronary Artery Balloon Dilation), Heart Valve Replacement, Coronary Angiography and Stenting, Percutaneous Valve Replacements PFO And AF Closures. Coronary Artery Bypass Graft (CABG, Open Heart Surgery) Electrophysiology Studies Pacemakers, Icds, Rotablator Ablation Heart Transplantation, Implanted Devices (Left Ventricular Assist Device, Pacemaker, Cardioverter Defibrillator)	Manual measurement of BP using the Ausculatory Methods of Korotokoff Sounds Use of rate of perceived exertion scale for exercise (in presence of pacemakers) dysnea scales, angina scales, and ECG trace
Non-Surgical	Lipid Profiles, Blood Clotting Test	First Aid – CPR and AED
	12 Lead ECG Procedures At Rest And GXT ECG Trace Variations (Tachycardia, Bradycardia, PVC's, Ectopic Beats, Bundle Branch Blocks, Atrial-Ventricular Blocks, S-T Depression, Ventricular Fibrillation) Echocardiography CT Angiography Cardiac MR Halter Monitoring Event Monitors Revel Devices	ECG 12 Lead Electrode Placement ECG procedure using the Bruce Protocol and modified Bruce Protocol or other validated protocols Recognition of ECG Trace Variations: Tachycardia, Bradycardia, Post-Ventricular Contractions (PVCS), Ectopic Beats, Bundle Branch Blocks, Atrial-Ventricular Blocks, S-T Depression, Ventricular Fibrillation
Drugs (American Heart Association)	Antiplatelet Agents; Angiotensis-Converting Enzyme (Ace) Inhibitors; Angiotensis Ii Receptor Blockers (Arbs or Inhibitors); Beta Blockers; Calcium Channel Blockers; Diuretics; Vasodilators; Digitalis Preparations; Statins; Central Agonists; Peripheral Adrenergic Inhibitors; Contraindications of Viagra type medications.	
	Sub-Maximal Exercise Testing	Sub-Maximal GXT and monitoring (HR and BP) Resistance Exercise Testing

PULMONARY AND RESPIRATORY CONDITIONS

	Knowledge	Experiential Learning
Pathologies	Asthma, Bronchitis, Emphysema, Cystic Fibrosis, COPD, Sarcoidosis	Risk Assessment Questionnaires
Symptoms	stages of respiratory disability Wheeze, SOB, Thick and/or Coloured Sputum, Cyanosis, Fever, Fatigue, Weight Loss, Night Cough, Hyperinflation	Symptom recognition and procedures for stages of respiratory disability: Asthma Attack, EIA, Bronchial Wheeze,
Assessments	Measurement, contra-indications, and interpretation of % Predicted Lung Function (FVC, FEV, FEV1, FEV Peak, VE at rest and exercise), Oxygen Saturation, Challenge Tests for Reversible Airway Constriction, Asthma/EIA/EIB	Measurement, contra-indications, and interpretation of % predicted FVC, FEV, FEV1, FEV Peak, VE at rest and exercise, Oxygen Saturation
Drugs	Relievers, Preventors, Steroid Treatments, Nebuliser, Antibiotics	Recognise the different colour coding of inhalers for prevention and relief of a Bronchial/Asthma attack.
	Appropriate Sub-Maximal Tests	Sub-Maximal tests not using HR for monitoring. E.G., Walking Test, 2min Walk Test, 6 Min Walk Test. Use Of RPE Scale

METABOLIC/ENDOCRINE CONDITIONS

	Knowledge	Experiential Learning
Pathologies	Diabetes Mellitus Type I And II, Dyslipidaemias, Obesity, Gastric Reflux, ESRD, Hyper/Hypo-Thyroidism	Risk Assessment Questionnaires
Symptoms	Red Flags Hypo/Hyperglycaemia, Hypo/Hypertension, Diabetes, Fatigue, Sob, Growth Abnormalities, Polyurea, Oligorea, Noturia, Excessive Thirst, Skin Infections, Peripheral Neuropathy Renal Infections (Pain and Fevers) Thyroid Disease: Excessive Sweating, Heat Intolerance, Tremor, Bowel Movement Disorder' Rapid Hr, Weight Gain/Loss, Fatigue, Agitation, Anxiety, Exothalmus, Goitre, Decreased Concentration	Symptom recognition and procedures for: Hypo/Hyperglycaemia, Fatigue, Sob, Agitation, Growth Abnormalities, Polyurea, Oligorea, Noturia, Excessive Thirst, Skin Infections, Rapid Hr, Excessive Weight Gain/Loss
Drugs	Insulin (rapid acting, short or regular-acting, intermediate-acting, long-acting).	Type II Diabetes: Sulfonylureas and Meglitinides, Biguanides, Alpha-Glucosidase Inhibitors; Thiazolidinediones; DPP-4 Inhibitors. Thyroid Disease: Synthetic Thyroid Hormone, NSAIS, Steroids.
Interventions for Obesity	Gastric Band, Stomach Stapling, Diet. ESRD: Nephrectomy; Transplant; Dialysis Hyperthyroidism: removal of part or all of the Thyroid, Radioactive Ablation	
Assessments (American Heart Association)	Glucose Tolerance Test, Fasted Lipid Profile (Hdl, Ldl, Vldl, Cholesterol, Ratios, Tg), Fasted Blood Glucose, Glycosylated Haemaglobin (Hba1c), Pre and post exercise glucose screening Kidney Disease: Abdominal Ultrasound; Blood Albumin; Hematuria; Calcium; Urinalysis (Urine Protein, Creatinine, Albumin); Blood Urea Nitorgen (Bun),	Assessments: Glucose Tolerance Test, Fasted Lipid Profile (Hdl, Ldl, Vldl, Cholesterol, Ratios, Tg), Fasted Blood Glucose, Glycosylated Hb, Pre and post exercise glucose screening
	Appropriate Sub-Maximal Testing Management of hypo/hyper glyceamic responses	Sub-Max GXT with monitoring Management of hypo/hyper glyceamic responses

MUSCULOSKELETAL CONDITIONS

	Knowledge	Experiential Learning
Pathologies	Osteo-Arthritis, Osteoporosis, Chronic Fatigue Syndrome, Fibromyalgia, Cerebral Palsy, Auto Immune Disorders (Myasthenias Gravis, Lupis, Multiple Sclerosis, Pernicious Anemia, Rheumatoid Arthritis), Muscular Dystrophy, Ankylosing Spondylitis, Fractures, Osteophyte Formation	Risk Assessments
Signs and Symptoms	Pain, Fatigue, Fever, Malaise, Joint Inflammation, Weakness, Crepitus, Deformity, Joint Stiffness	Recognise Difference Between Fatigue And Occasional Tiredness. Recognise Joint Inflammation Symptoms (Colour, Heat, Swelling, Deformity, Pain), Weakness, Crepitus, Joint Stiffness
Assessments	Autoantibody Tests, Complete Blood Count (Rbc, Wbc, Total Hb, Haemtocrit, Platelet Count), C-Reactive Protein, Erythrocyte Sedimentation Rate.	Total Hb, Haematocrit ROM, Upper And Lower Limb Strength Interpret assessment results of postural and functional ability assessment, balance scores and assessment procedures.
	Appropriate Sub-Maximal Testing	Sub-Max GXT with monitoring (Weight Bearing And Non-Weight Bearing), Strength Testing

NEUROLOGICAL CONDITIONS INCLUDING MENTAL HEALTH

	Knowledge	Experiential Learning
Pathologies	Stroke (Ischemic, Hemorrhagic, Transient Ischemic Attack [TIA]), Migraines, Spinal Cord Injuries, Parkinson's Disease, ABI, Depression, Cerebral Palsy, Epilepsy	Risk Assessment Coordination Family History
Assessments	Testing Of Senses (Vision, Hearing) And Speech, Coordination/Balance, Joint Flexes, Angiography, X-Rays, Fluroscopy, Brain Scan, CT Scan. Electroencephalography (EEG), Electromyography (EMG), Magnetic Resonance Imaging (MRI), Ultrasound, Thermography Balance assessments Medical assessment and post stroke classification process (aphasia, apraxia, and dysarthia)	Symptom recognition and treatment for the sudden onset of a Stroke or TIA (Muscular Weakness, Slurred Speech, Confusion) FAST screen for Strokes/TIA (Face, Arm, Smile) Recognise that urgent medical attention is required when stroke is suspected Balance assessments Medical assessment and post stroke classification process (aphasia, apraxia, and dysarthia)
	Neural Systems For Higher And Lower Functions	
Symptoms	Strokes: sudden numbness or weakness in the face, arm and/or leg, especially on one side of the body. Sudden onset, trouble speaking or understanding speech. Sudden trouble seeing (double vision, blurred vision, partial blindness). Trouble walking, dizziness, loss of balance or coordination. Sudden severe, headache with no known cause.	Recognise that pre-existing neurological deficit may worsen at times of tiredness or inter/current illness.
Drugs	Stroke: Antiplatelet, Anticoagulant, Statins, Arbs, ACE-Inhibitors, Beta-Blocker, Calcium Channel Blockers, Diuretics. Depression: Serotonin Reuptake Inhibitors (Ssris), Serotonin And Norepinephrine Reuptake Inhibitors (Snris), Tricyclics, Tetracyclincs, Monoamine Oxidase Inhibitors (Maois) Parkinson's Disease: Dopamine Replacement Therapy, Dopamine Agonists, Maois, Anti-Cholinergics	Recognise the potential complications of anticoagulant especially relating to minor trauma. Recognise that statins may cause Myalgia/Myopathy
		Sub-Max GXT with monitoring

CANCER CONDITIONS

	Knowledge	Experiential Learning
Pathologies	Carcinoma; Sarcoma; Leukemia; Lymphoma Specifically Breast and Prostate Cancer, Stages of Cancer Stem Cell Theory Carcinogenic Events: E.G., Environmental; Hereditary; Oncogenes; Hormonal; Impaired Immune System Immune Responses	Risk Assessments for Co-Morbidities
Screening	Mamograms, PSA Hormone Levels, Prostate Physical Exam	Pre-exercise evaluation: physical activity, type and stage of cancer, treatments undertaken, fatigue levels, quality of life
Symptoms	Tumors, Metastisized and Non-Metatastisized Cancer, Pain, Fatigue, Rapid Weight Loss Prostate Cancer: Polyurea, Pain Red Flags: Undefined Aetiology/Origin of pain	Identification of symptoms: pain, fatigue, rapid weight loss, surgical scaring
Interventions	Biopsy, Masectomy, removal of Prostate, removal of Tumors, Radiotherapy, Chemotherapy How symptoms affect training ability and tolerance	How symptoms affect training ability and tolerance
Drugs	Hormone Therapy (to reduce sex hormones testosterone or oestrogen – side effects of Osteporosis) Chemotherapy: Side Effects, Duration Effect of exercise on recovery whilst on chemotherapy Effect of exercise on the immune response	
	Effect of exercise during cancer treatment	Appropriate Sub-Max GXT with monitoring

AGING

	Knowledge	Experiential Learning
Pathologies	Compromised Senses (Eyesight, Hearing, Heat/Cold, Touch), Sarcopenia, Orthostatic Hypotension, Post-Fall Syndrome, Arterial Stiffening, Insulin Insensitivity, reduced Thermoregulation, Associated Musculoskeletal Conditions	Risk Assessment: MMSE Barthels Index Hospital and Anxiety Questionnaire
Symptoms	Weakness, Dizziness, Depression/Anxiety, lack of confidence with movement	
Assessment	Balance (Static, Dynamic), Activities of Daily Living (ADL), Lower Limb Strength, Orthostatic Hypotension, Cardiopulmonary Validated Falls risk assessments (e.g. Tinetti, DGI and POMA) Musculoskeletal limitations from Osteoarthritis/ Inflammatory Disease (Joints/Muscles) ROM	Physical Balance and Strength Assessments E.G., Seated to Standing BP, TUG, Parallel Walk Test, Tandem Walk Test, 10m Timed Walk, 2 And 6 Min Walk, Progressive Walking Test, ROM Testing, Upper and Lower Limb Strength Sub-Max GXT with monitoring Validated Falls risk assessments (e.g. Tinetti, DGI and POMA)
Drugs	Cardiac Disease, Pulmonary Disorders, Depression, Osteoarthritis, Osteoporosis	
	Indicated and contra-indicated exercises for persons with reduced walking function, balance problems, reduced sensory perception e.g. eyesight, hearing, touch, or other co-morbidities Falls prevention strategies	Development of a progressive exercise programmes for persons with reduced walking function and/or balance problems, and/or presence of co-morbidities. Use of Exercise Aids/ADL Aids