Accredited exercise physiology (AEP) criteria

AEP target pathologies

The ESSA Accreditation and Curriculum Committee has nominated a list of pathologies for which all AEPs should be clinically competent, but the list is not meant to be exhaustive and AEPs need general competence to deal with other primary and co-morbidities. Any referral to “AEP target pathologies” within this document relates to the conditions listed below. The accreditation system will licence practitioners of clinical exercise science, who may then go on to specialise in particular niche areas of clinical practice. The primary criterion for inclusion on the list of target pathologies is that there is an evidence base of exercise efficacy for the condition. A secondary consideration was that the condition has been identified as a National Health priority.

The current list is as follows. Other conditions will be added as new evidence bases and professional opportunities emerge.

<table>
<thead>
<tr>
<th>Category</th>
<th>Condition</th>
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</thead>
<tbody>
<tr>
<td>Cardiopulmonary</td>
<td>Hypertension (HT), coronary artery disease (CAD), peripheral vascular disease (PVD), myocardial infarction (AMI), chronic heart failure (CHF), asthma, COPD, cystic fibrosis (CF)</td>
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<tr>
<td>Metabolic</td>
<td>Obesity, dyslipidaemias, impaired glucose tolerance (IGT), diabetes mellitus (DM)</td>
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<tr>
<td>Musculoskeletal</td>
<td>Arthritides (esp. OA and RA), osteoporosis (OP), sub-acute and chronic specific and non-specific musculoskeletal pain / injuries</td>
</tr>
<tr>
<td>Neurological/Neuromuscular</td>
<td>Stroke (CVA), spinal cord injury (SCI), acquired brain injury (ABI), Parkinson's disease, Multiple sclerosis (MS)</td>
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<tr>
<td>Other</td>
<td>Cancers, depression</td>
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AEP scope of work

The AEP delivers clinical exercise services under two broad categories:

1. chronic disease management (rehabilitation and secondary prevention)
2. functional conditioning (incorporating both work conditioning and conditioning for living i.e. activities of daily living)

Evidence based approach

There are large and expanding bodies of evidence supporting the therapeutic and preventive benefits of exercise for people living with, or who are at risk from, chronic diseases, injuries or disabilities. Significantly, the US Surgeon General’s Report on Physical Activity (1996) concluded that regular exercise confers protection from diseases such as coronary heart disease, hypertension, diabetes mellitus, and some cancers.


Criteria for AEP accreditation

Following are the criteria for accreditation as an AEP. There are two types of criteria listed below;

Type 1 - Knowledge; and
Type 2 - Application.

Knowledge refers to possessing and understanding information. All knowledge criteria must be met through formal university study. Application refers to using new knowledge to develop skills and competencies for practice as a clinical exercise practitioner.
Section A: Generic criteria

1. **Scope of practice**

   **Knowledge**
   a) Knowledge of the professional roles available to the Accredited Exercise Physiologist (AEP) within the two broad categories: Chronic disease management (rehabilitation and secondary prevention)
   Functional conditioning (incorporating both work conditioning and conditioning for activities of daily living (ADLs))
   b) Understand the broad classifications of pathology in the context of the AEP
   c) Knowledge of the understanding of the roles of other health practitioners in the context of clinical exercise practice

   **Application**
   a) Articulation of the scope of professional roles available to the AEP
   b) Experience in referring to, and/or use of a referral letter from:
      An allied health professional
      A medical practitioner

2. **Compensation schemes: legislation, systems, policies and procedures**

   **Knowledge**
   a. Awareness and understanding of national compensation schemes and legislation that includes clinical exercise practice
   b. Knowledge of Workers Compensation and Compulsory Third Party (CTP) Legislation and Frameworks

   **Application**
   Capacity to deliver appropriate Workers Compensation and CTP services in the role of the:
   AEP
   Case manager

3. **Ethics**

   **Knowledge**
   Knowledge of the ESSA Code of Professional Conduct and Ethical Practice

   **Application**
   Categorise professional behaviour according to the ESSA Ethics charter

4. **Pathophysiology**

   **Knowledge**
   Knowledge and understanding of pathological and pathophysiological bases of the AEP target pathologies, including diagnostic procedures
   Knowledge and understanding of the stages of disease, risk factors, complications and co-morbidities that must be accounted for in exercise interventions

5. **Medical and allied health management: effects on clinical status**

   **Knowledge**
   Knowledge of the purpose, methods and typical clinical outcomes of common surgical, medical and allied health treatments for AEP target pathologies

   **Application**
   Access and use information on the effects of common surgical medical and allied health treatments on the clinical status of clients with AEP target pathologies

6. **Surgical, medical and allied health interventions: effects on exercise capacity**

   **Knowledge**
   Knowledge of the typical effects of common surgical, medical and allied health treatments on exercise responses for clients with AEP target pathologies

   **Application**
   Access and use information on the effects of common surgical, medical and allied health treatments on the expected acute and chronic exercise responses
7. **Medications: effects on exercise responses**

**Knowledge**
- Knowledge of the mode of action and indications of medications commonly prescribed in AEP target pathologies
- Knowledge of the effects of the following commonly prescribed medication classes on acute and chronic exercise responses:
  - Cardiovascular: beta blockers, alpha blockers, angiotensin converting enzyme inhibitors (ACEI), calcium channel blockers, anti-anginal agents, cardiac glycosides (e.g., Digoxin), diuretics, statins, anti-arrhythmic agents, anti-thrombogenic agents
  - Respiratory: relievers, symptom controllers, preventers and emergency medicine
  - Metabolic: hypoglycaemic agents, insulin: fast and slow acting, sugar to treat hypoglycaemia, agents to treat obesity. Include sulfonylureas, meglitinides, biguanides, thiazolidinediones, and alpha-glucosidase inhibitors
  - Musculoskeletal: NSAIDs, corticosteroids and opioids
  - Neurological / Neuromuscular: anti-spasm medications, psychotropic, anti-depressants

**Application**
- Experience with details of clients’ current medications, including:
  - Accessing (e.g., MIMS) information on the actions of prescribed medications
  - Explaining to clients in plain language the purpose(s) of their prescribed medications
  - Explaining to clients the importance of compliance to prescribed medication regimes
  - Accessing and using information on medications with respect to the associated acute and chronic exercise responses

8. **Exercise interventions: effects on clinical outcomes**

**Knowledge**
- Knowledge of the evidence with regard to mode of exercise, intensity, duration, frequency, volume and progression for AEP target pathologies

**Application**
- Experience with the assessment of clinical outcomes following exercise interventions by:
  - Accessing clinical data (e.g., request data from medical practitioners)
  - Interpreting clinical data (e.g., blood tests) with reference to the clinical literature
  - Measuring the clinical outcomes (e.g., blood pressure)
- Use the above data to inform one’s own practice

9. **Risk factor stratification**

**Knowledge**
- Knowledge and understanding of typical risk factors (e.g., biological, socio-cultural, behavioural and environmental), alleviating factors and aggravating factors for AEP target pathologies, and co-morbidities

**Application**
- Selection and application of appropriate instruments to assess the risk of exercise participation for clients with AEP target pathologies, and co-morbidities

10. **Assessments of exercise capacity**

**Application**
- Experience with using appropriate (to the client and situation) exercise tests, including measurements and observations of aerobic power (predicted or direct VO\textsubscript{2max} or VO\textsubscript{2peak}), aerobic endurance, rest and exercise spirometry, muscle strength and endurance, ranges of motion, body composition, static and dynamic postures, core stability, balance, coordination, mobility, gait, movement patterns, functional capabilities, and activities of daily living.
- Experience with the determination of safe (client-centred) exercise limits and effective ranges for exercise and physical activity.

11. **Functional capacity, functional conditioning and occupational rehabilitation**

**Knowledge**
- Knowledge and understanding of the core principles of Occupational Rehabilitation
- Knowledge and understanding of the ergonomic principles within workplace environments and how these functionally apply to the individual
- Knowledge and understanding of the core principles of case management
- Knowledge of Functional Capacity Evaluations (FCE) that are widely used and accepted in industry and professional practice
- Knowledge and understanding of how to transfer FCEs into functional conditioning programs and strategies
- Knowledge of the tests for activities of daily living (ADLs) that are widely used and accepted in professional practice
- Basic understanding of the ergonomic principles within home environments

**Application**
- Experience with:
  - The design, processes and responsibilities in development and adherence to treatment plans
ii. Conducting workplace ergonomic assessments/worksite visits in order to make functional modifications or recommend suitable duties relative to an individual’s capacity and injuries/conditions

iii. Providing concise, objective reports and return to work plans which meet the needs of all relevant parties e.g. employee, employer, medical/allied health professionals and insurer and relevant legislative requirements

iv. Conduct functional capacity evaluations (both for individuals with injuries/conditions or for Pre Employment Assessments)

v. Transfer baseline functional capacity information into functional exercise programs and understand functional body mechanics as it pertains to manual handling in the workplace environment and safe ergonomic principles

vi. Experience in the conduct of generic functional capacity /conditioning services

vii. Activities of daily living (ADLs)

viii. Designed, delivered and evaluated exercise programs to improve ADL capacities in people with AEP target pathologies

ix. The ability to conduct ergonomic assessments within home environments

12. Monitoring

Application

The ability to monitor and interpret at rest, exercise and recovery:

i. Self-report scales (eg RPE and fatigue, visual analogue scales [VAS], dyspnoea scales, pain, physical activity)

ii. Heart rate, rhythm and oxygen saturation (eg palpation, heart rate monitor, ECG, pulse oximetry)

iii. Blood pressure

iv. Breathing (eg visual observations, spirometry)

v. Balance and movement patterns (eg static and dynamic postures, coordination, mobility, gait)

13. Safety: precautions and contraindications

Knowledge

Knowledge of modes, intensities and volumes of exercise that may cause deterioration of clients (physical and/or cognitive) and/or adverse events

Application

Identification of modes, intensities and volumes of exercise that are contraindicated for clients with AEP target pathologies. These should be for acute (eg. Thermoregulation) and chronic (eg adverse remodelling of the heart in heart failure with excess loads) effects of exercise

14. Safety: signs and symptoms

Knowledge

a. Knowledge of adverse signs and symptoms that may arise during exercise or recovery for the list of AEP target pathologies

b. Knowledge of when to modify, stop or not start an exercise, test, exercise session or program in the event of the appearance of new or recurring adverse observations or measurements or new or recurring signs or symptoms

Application

a) Experience in monitoring signs and symptoms before, during and after exercise that may indicate important changes relating to an injury or disease status or progression

b) Confidence in dealing with clients (either via reassurance and/or referral) for whom a test, exercise session, or program is modified, stopped, or not started due to the presence of signs or symptoms or adverse observations or measurements

15. Design of clinical exercise interventions

Application

a. Experience in the design, implementation, evaluation, modification and advancement of individual exercises or exercise programs, accounting for:

i. Presenting pathology and co-morbidities (may be extracted from referral)

ii. Current treatment(s), including medical, pharmacological and allied health

iii. Risk factors, aggravating factors, alleviating factors

iv. Interpersonal communication

v. Goals, likes and dislikes, barriers (eg socio-cultural, socio-economic factors, socio-psychological)

vi. Subjective and objective measurements/observations

vii. Current exercise and functional capacities

b. Exercise programs should account for mode, intensity, duration, frequency, volume and progression, and should reflect a concord between AEP and client

16. Exercise leadership

Application

Motivation and leadership of individuals and groups of clients with AEP target pathologies in exercise and physical activity programs; providing feedback to clients, including correcting poor or unsafe techniques

17. Interpersonal communication and behaviour change
Knowledge

a. Knowledge of basic lifestyle strategies, programs and resources, including government- and community-based population-wide strategies
b. Knowledge of nutrition at the level needed to provide basic lifestyle advice, with emphasis on AEP target pathologies
c. Knowledge and understanding of the psychology of living with chronic medical conditions, pain, anxiety, depression, bereavement
d. Knowledge of strategies to deal with clients who may be hostile, resistant, non-compliant, anxious, depressed, or psychotic
e. Knowledge and understanding of models of behaviour change
f. Knowledge of factors that affect long term exercise adherence and concordance, and socio-cultural factors that must be considered in the support of clients in their endeavours towards self-management of healthy lifestyle, exercise and physical activity

Application

a) Experience in the interview of clients in order to compile a relevant history beyond the referral and risk factor documentation, including: exercise and work histories, the client’s perspectives on the cause(s) of disease/mechanisms of injury, co-morbidities, barriers to participation, pain, goals, likes and dislikes, opportunities
b) Provide assistance and guidance to clients and where appropriate referrers, to develop appropriate short, medium and long term goals, appropriate to medical, physical and psychosocial, functional and environmental influences
c) Experience in counselling and working with clients through behaviour change
d) Provision of counselling and support for clients in their development of self-management strategies to promote independence
e) Ability to explain, advise or provide information to assist clients’ understanding of AEP target pathologies, risk factors and the relationship with exercise
f) Provision of basic education on AEP target pathologies or risk factors, and related benefits of exercise and healthy lifestyle

18. Communication

Knowledge

a. Knowledge of the challenges and opportunities for the delivery of culturally appropriate exercise and healthy lifestyle programs for communities and individuals from culturally and linguistically diverse backgrounds (CALDB)
b. Knowledge of the legal and ethical requirements regarding documentation and communication in allied health practice

Application

a) Communication (verbal, written, electronic) using brief and concise language, and in appropriate syntax (SOAP, lay, medical) for other AEPs, medical practitioners, other health professionals, compensable authorities/agents (eg insurers), and clients
b) The design and delivery of culturally appropriate exercise and healthy lifestyle programs to CALDB communities and individuals. Communication must be sympathetic to socio-cultural diversity (eg CALDB clients or colleagues, and diversity/minority groups). Know when to work with an interpreter
c) Using SOAP notes, practice in clinical documentation, including the compilation of a client’s file and clinical note taking

19. Evidence based practice

Knowledge

a. Awareness of evidence bases of the effects of exercise for people living with, or at risk of, AEP target pathologies.
b. Understanding of evidence based practice models of clinical decision making

Application

a) Experience in accessing, comprehending, critically analysing, collating and disseminating the clinical exercise scientific literature
b) Experience in making informed judgements of the claims made in the original research articles versus the strength of the evidence provided

Section B: Cardiopulmonary criteria

20. Assessments of exercise capacity in clients with cardiopulmonary conditions

Application

Understanding of safe exercise limits using thresholds that commonly arise in the exercise testing of people with cardiopulmonary conditions, including:

- Angina
- Claudication
- Dyspnoea
- Light headedness/syncope

21. Assessments of lung function in clients with cardiopulmonary conditions

Knowledge

Basic knowledge of pulmonary rehabilitation
Application

a) Ability to recognise breathing limitations that impact on exercise capacity:
   i. Obstructive airway patterns
   ii. FVC, FEF_{peak}, FEV_{1}, predicted or measured MVV
   iii. \( V_{E} \) at peak exercise
   iv. Breathing reserve
   v. Exercise-induced asthma (EIA)
   vi. \( O_2 \) sat%

b) The design of an exercise intervention for clients with COPD

22. Safety: signs and symptoms

Knowledge

Knowledge of adverse signs and symptoms that may arise during exercise or recovery for the list of cardiopulmonary target pathologies

Application

Experience in recognising and taking appropriate action regarding:
   i. Vaso-vagal episodes
   ii. Hypotension/hypertension related to exertion
   iii. Ischaemia (angina, claudication)
   iv. Depleted breathing reserve
   v. General or localised fatigue
   vi. Cardiopulmonary arrest

23. Electrocardiography

Knowledge

Knowledge and understanding of the:
   i. common aberrant rhythms and waveform morphologies
   ii. pathological correlates of the aberrant rhythms and waveform morphologies
   iii. red, amber and green flags in relation to aberrant rhythms and waveform morphologies

Application

a) Experience in:
   i. Setting up, monitoring and recording 12-lead ECGs at rest, exercise and recovery (esp. heart rate and rhythm)
   ii. Basic recognition of common aberrant rhythms and traces (see list below)
   iii. Confidence in rapidly responding to adverse ECG findings: red, amber and green flags in ECG

b) Applicant has practised basic recognition of the following aberrant rhythms and waveforms, and outline the course of action (continue with exercise = green flag; continue only after medical approval = amber flag; discontinue and refer = red flag):
   a) Ectopy: atrial, junctional and ventricular
   b) Atrial fibrillation (AF)
   c) Atrial flutter
   d) Sinus block /arrest
   e) Electrolyte disturbances
   f) Digitalis toxicity
   g) Atrio-ventricular blocks (1º, 2º, 3º)
   h) Bundle branch blocks
   i) Axis deviations
   j) Real versus pseudo ST depression in exercise
   k) Pre-excitation syndrome
   l) Ventricular tachycardias
   m) Ventricular fibrillation (VF) and cardiac arrest
   n) Symptomatic brady-arrhythmias (eg vaso-vagal episodes)
   o) Symptomatic tachy-arrhythmias

Section C: Metabolic criteria

24. Blood tests

Knowledge

Understand the purpose and methods of the following tests:
   i. Glucose tolerance test (GTT)
   ii. Random blood glucose (RBG)
   iii. Fasting blood glucose (FBG)
   iv. Glycosylated haemoglobin (HbA1c)
   v. Total cholesterol, HDL_{cholesterol}, LDL_{cholesterol}, triglycerides
Application
Applicant has experience with the interpretation of the following tests:

i. Glucose tolerance test (GTT)
ii. Random blood glucose (RBG)
iii. Fasting blood glucose (FBG)
iv. Glycosylated haemoglobin (HbA1c)
v. Total cholesterol, HDL, LDL, triglycerides

25. **Safety: signs and symptoms**

Knowledge
Knowledge of adverse signs and symptoms that may arise during exercise or recovery for metabolic target pathologies

Application
a. Specifically, understand the issues surrounding glucose control before, during and following exercise in diabetics
b. Experience in recognising and taking appropriate action regarding:
   i. Hypoglycaemia
   ii. Hyperglycaemia
   iii. For both hypoglycaemia and hyperglycaemia, suitable advice for clients regarding glucose testing and control before, during and after exercise
   iv. Hypotension / hypertension related to exertion
   v. Ischaemia (angina, claudication)
   vi. Depleted breathing reserve
   vii. General or localised fatigue

**Section D: Musculoskeletal criteria**

26. **Assessments of exercise capacity in clients with musculoskeletal conditions**

Knowledge
Knowledge and understanding of applied movement analysis

Application
a) Experience in performing a movement and work task analysis in a clinically relevant time period.
b) Know how to adapt techniques based on the observations and measurements made above

27. **Exercise Interventions**

Knowledge
An understanding of the loading characteristics of tissue, (eg bone, ligament, tendon, nerve, muscle), with and without pathology

Application
Experience in progressively varying tissue loading characteristics in response to a specific pathology, physically status or work demand task (including the ability to perform this experience in a clinically relevant stage of recovery).

28. **Safety: Precautions and contraindications**

Knowledge
An understanding of tissue mechanics to create a safe exercise environment

Application
a) Experience in developing loading strategies for tissue with and without specific pathology in a clinically relevant time period.
b) Experience with the recognition and appropriate action regarding:
   i. Acute musculoskeletal pain / injuries
   ii. Medical emergencies such as cauda equine syndrome

29. **Safety: signs and symptoms**

Knowledge
Knowledge of adverse signs and symptoms that may arise during exercise or recovery for the list of musculoskeletal target pathologies

Application
The capacity to recognise (during exercise and recovery) and take appropriate action regarding:

i. New or worsening pain
ii. New or worsening neurological deficit
Section E: Neurological/neuromuscular criteria

30. Assessments of exercise capacity in clients with neurological/neuromuscular conditions

Application
Familiarity with using and interpreting various subjective and objective measures from the generic list (see criteria 12) as relevant to this category or when clinically appropriate

31. Safety: precautions and contraindications

Application
An ability to create an environment (including equipment modification) that is safe for a person with neurological pathology to exercise

32. Safety: signs and symptoms

Knowledge
Knowledge of adverse signs and symptoms that may arise during exercise or recovery for the list of neurological / neuromuscular target pathologies

Application
Confidence to recognise and take appropriate action regarding common signs and symptoms associated with neurological / neuromuscular target pathologies (e.g. Autonomic dysreflexia, hypotension, elevated core temperature).

33. Communication

Knowledge
Awareness of communication and other cognitive, emotional and social processes that could be affected by neurological / neuromuscular target pathologies

Application
Experience in modifying communication strategies in order to improve effectiveness

Section F: Other conditions

Mental health

34. Communication

Knowledge
Awareness of communication and other cognitive, emotional and social processes that could be affected by mental health disorders (e.g. bipolar disorders, schizophrenia, personality disorders, depression, mental retardation, Alzheimer’s Disease, etc)

Application
Have an ability to modify communication strategies in order to improve effectiveness

Cancers

35. Medical and allied health management

Knowledge
Awareness of the issues concerning exercise:
   i. following chemotherapy, radiotherapy, surgery and other treatments
   ii. before blood tests
   iii. after prolonged bed rest
   iv. in conjunction with medications used to treat cancer patients