PACC

Physical Activity for People with Chronic Conditions

Competency, Qualification and Accreditation Framework for Long-term Conditions Exercise Instructors

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Table of Contents

List of Tables

List of Figures

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Glossary of Terms

Accreditation processes	Processes of validation of education providers delivering the qualification and registration of Long-term Condition Exercise Instructors
Chronic condition	Long-term health conditions that require ongoing medical attention or limit activities of daily living or both [1]
Clinical exercise service providers	Services providing exercise classes, programmes and support to people living with chronic conditions in non-acute settings outside of healthcare services
Core learning areas	Learning units (may or may not be modules depending on the education provider) that encapsulate the topics that address the learning outcomes
Exercise	A subset of physical activity that is planned, structured and repetitive with the objective of improvement or maintenance of physical fitness [2]
Exercise professional	Those with a qualification to develop and implement exercise programmes, encompassing a range of qualifications, including but not limited to personal trainer or exercise scientist, and reflecting the language of the fitness industry and the Irish and European Register of Exercise Professionals (i.e. REPs)
Framework	Refers to this document that encompasses the occupational competencies, qualification specification and accreditation process for the Long-Term Conditions Exercise Instructor
Long-Term Conditions Exercise Instructor	The title associated with role for exercise professionals accredited under this Framework, the short hand being LTC Exercise Instructor
Multimorbidity	The presence of two or more chronic medical conditions in an individual [3]
NFQ	National Framework of Qualifications levels, indicative of nationally agreed standards of what a learner is expected to know, understand and be able to do to achieve a qualification

Occupational competencies	The knowledge, skills, attitudes and behaviours expected of a LTC Exercise instructor in their professional role
PACC	Physical Activity for People with Chronic Conditions, a multiagency collaboration of physical activity and health professionals, alongside academics from Higher Education Institutions
Physical activity	Any bodily movement produced by the skeletal muscles that requires energy expenditure and includes movement for leisure, transport, occupation and in the household [2]
Prerequisites	Minimum entry requirements to the programme
Qualification specification	The learning objectives, curriculum content, assessment procedures and delivery arrangements for a LTC Exercise Instructor qualification
QQI	Quality and Qualifications Ireland, the state agency responsible for promoting the quality, integrity and reputation of Ireland further and higher education system

Background

One in two Irish people over the age of 50 are living with at least one chronic condition [4]. Chronic conditions are long-term health conditions that require ongoing medical attention or limit activities of daily living or both [1]. Given the growth in the aging population, the prevalence of individuals living with chronic conditions is predicted to increase [4]. Chronic conditions are the major driver of healthcare utilisation and account for 70-80% of healthcare budgets in European countries [5]. These conditions also place a substantial burden on the individual and their families. They can significantly limit functional capacity and the ability to live independently and can have a detrimental effect on mental wellbeing and quality of life [6,7].

Physical activity refers to any bodily movement produced by the skeletal muscles that requires energy expenditure and includes movement for leisure, transport, occupation and in the household [2]. Physical activity has proven benefits in the prevention, treatment and management of a wide range of chronic conditions [8]. There are exceptionally few chronic diseases, in which the burden of the disease, comorbidities related to the disease, or the disease-related quality of life are not improved with physical activity.

National Landscape

In spite of the importance of physical activity in preventing, minimising and reducing the health impacts of chronic conditions, it is an underutilized strategy in secondary prevention. There remain gaps nationally in opportunities for people with chronic conditions to participate in regular, appropriate, high quality and accessible physical activity in accordance with their needs, capacities and interests.

At the level of acute or specialist care, exercise, a planned, structured and goal-oriented subset of physical activity, is the cornerstone of cardiac and pulmonary rehabilitation delivered by multidisciplinary teams of health professionals, including physiotherapists and clinical nurse specialists. For people with other chronic conditions, there are limited opportunities within the heath service to engage in supported physical activity programmes specific to their

condition. Physiotherapy, within hospital and community settings, can provide assessment and rehabilitation to address physical limitations or other therapeutic outcomes and prescribe appropriate physical activity.

Upon completion of rehabilitation programmes, discharge from health services or those living well with chronic conditions in the community, the objective is long-term maintenance of physical activity. An estimated 70% of people with chronic conditions are considered "non complicated" [9] and the majority of people with chronic conditions can exercise safely in community settings [10]. Evidence indicates that the benefits of physical activity for people with chronic conditions outweigh any potential risks, except where explicitly contraindicated [11]. Additionally, inactivity poses a high risk to health and people living with chronic conditions tend to be significantly less active than people without a chronic condition [12]. Therefore, facilitating and supporting people with chronic conditions to be physically active is paramount.

However, there are gaps in the availability of structured and supported physical activity programmes in the community and gaps in locally based capacity to deliver physical activity programmes for people with chronic conditions. There are limited opportunities for healthcare professionals to signpost onwards to or for people with chronic conditions to present themselves to. Exercise professionals represent a workforce with the potential to facilitate increased availability of such opportunities. Exercise professionals are already involved in the delivery of such services through clinical exercise service providers; entities that offer exercise classes, programmes and support to people living with chronic conditions in non-acute settings outside of the healthcare service. Exercise professionals are also engaged by patient advocacy groups to facilitate community-based exercise programmes for specific chronic conditions.

Sport Ireland's network of Local Sports Partnerships (LSPs) are the lead agencies in facilitating physical activity participation at a community level. They aim to deliver inclusive, impactful and sustainable opportunities tailored to local needs and they engage exercise professionals to deliver their programmes. LSPs have partnered with the HSE to deliver physical activity programmes for specific clinical populations. The piloting of Physical Activity for Health Officers in six LSPs, funded by Sláintecare via Sport Ireland, aims to ensure those who need

more support transitioning to community physical activity will be facilitated with appropriate programmes on the pathway to mainstream LSP or other community physical activity programmes.

The current and potential future community-based physical activity opportunities for people with chronic conditions are varied, offering choice and growing accessibility for this population. Settings, signposting routes, programme oversight arrangements and conditions catered for are varied. In this context, it is important to consider the issue of education, qualifications and CPD for exercise professionals to enhance the capacity to service the variety of current and future initiatives. Greater national co-ordination on these matters will be a capacity building exercise in Ireland. National standardisation of training and certification of exercise professionals working with people with chronic conditions has the potential to increase confidence of exercise professionals, healthcare professionals and people with chronic conditions themselves. It is likely to improve the safety and experience for the participant and evidence indicates that there is greater compliance to exercise regimens with supervision from suitably qualified professionals [13].

PACC

PACC (Physical Activity for people with Chronic Conditions) involves a multiagency collaboration of physical activity and health professionals, alongside academics from Higher Education Institutions. It was established in 2021 by the Carlow, Waterford and Westmeath Sports Partnerships, following initial grant aid received from the Dormant Accounts Innovation Fund, administered by Sport Ireland. The initiative arose from a recognition of benefits of physical activity for people with chronic conditions and the need for collaboration across systems to remove systemic barriers that prevent or reduce opportunities for people living with chronic conditions to participate in regular, appropriate, high quality and accessible physical activity in accordance with their needs and interests. PACC, through funding from the Dormant Accounts Innovation fund administered by Sport Ireland and from the HSE, commissioned the development of a National Competency, Qualification and Accreditation Framework as a capacity building measure to further the development of a workforce of

exercise professionals as part of the continuum to work with people living with chronic conditions deemed medically stable.

Aim

The aim of the Framework is to set out occupational competencies, qualification standards and accreditation processes to guide standardisation of the upskilling and certification of exercise professionals. Exercise professionals are defined as those with qualifications to develop and implement exercise programmes and can include personal trainers, sport and exercise scientists and others. Irrespective of the variety of potential backgrounds, this qualification is to supplement them in their capacity as an exercise instructor. It is aimed to "sit on top of" their existing qualification to undertake the instructor role with greater empathy, understanding and safety in delivering exercise programmes to people with chronic conditions, in a manner that will be recognised in both exercise and medical fields.

The qualification specification deliberately aims to adopt an integrated approach across various chronic conditions, where possible, minimising a condition-by-condition approach. Creating a generalist rather than specialist qualification develops a workforce through a special purpose award, to work across chronic condition populations, with people with multimorbidity and in mixed chronic condition groups. Maintaining accreditation will require continuous professional development (CPD), providing opportunities for further education on specific conditions. Exercise professionals accredited under this Framework may undertake this role in a variety of community settings and it is not the purpose of this Framework to design a new referral programme, screening processes, or quality assurance systems for existing programmes, but to outline the minimum competencies for exercise professionals appropriate across various settings. The Framework does not set out to create a barrier to physical activity. People with chronic conditions do not require the supervision of accredited exercise professionals to undertake physical activity. They can exercise on their own or in other settings, including mainstream LSP programmes or other community physical activity programmes, as suitable.

It is envisaged that the qualification specification outlined in the Framework can be adopted to provide two access routes to the qualification. Higher education providers can map undergraduate curriculum to the qualification specification to embed the qualification within existing programmes and/or use the qualification specification to develop part-time stand-alone special purpose awards. The latter will accommodate those working in industry and those not undertaking an undergraduate degree. In both instances, providers will be required to align with the accreditation processes.

In addition to an accredited qualification, the physical activity sector more broadly would benefit from increased awareness in the area of physical activity for chronic conditions. A separate accompanying document outlines the indicative content for *PACC Awareness Level Training.* The training draws from the qualification specification of the Framework and is aimed to develop a basic understanding of chronic conditions, the role of physical activity in secondary prevention and safety approaches to exercise in people with chronic conditions. The programme seeks to create a more "chronic condition friendly" physical activity sector. It may also serve as a bridging programme for exercise professionals to gauge interest in pursuing the qualification towards accreditation.

Framework Development

A multidisciplinary team undertook a phased process to develop the Framework, which is detailed in the accompanying report. In summary, a research team at SETU was commissioned by PACC to lead process, supported by an advisory panel with oversight from a PACC steering committee (Appendix A). The process included a comprehensive review of relevant former, existing, and forthcoming international curricular framework. Significant stakeholder engagement was undertaken and a total of 130 stakeholders were consulted, consisting of clinical exercise service providers (n=8); local sports partnerships (n=41), including LSP coordinators, Physical Activity for Health Officers and tutors; higher education providers (n=16); healthcare stakeholders (n=44), including relevant national clinical programmes, GPs, nurses, physiotherapists, and self-management support coordinators; patient advocacy groups and representative bodies (n=9) and other key stakeholders relevant to the development and/or implementation of the Framework (n=12).

A draft framework was then developed and disseminated for review to the engaged stakeholders. Feedback on the draft was collated through an online survey and 33 responses were received. A one-day in-person stakeholder event was attended by 95 stakeholders from across the multiple relevant sectors. The event included an international speaker presenting the experience of the UK in this domain, an overview of the PACC initiative and the development of the Framework, and a series of small round table group discussions on components of the Framework. Utilising the findings of both the online stakeholder survey and stakeholder event the Framework was finalised.

Framework Structure

The Framework has three distinct sections; Occupational Competencies, Qualification Specification and Accreditation Processes. Occupational competencies describe the role envisaged and the core competencies required. This provides the grounding for the qualification specification, which outlines the recommended prerequisites, learning outcomes, curriculum content under four core learning areas and assessment methods. Educator guidance provides a narrative to clarify where emphasis lies and the level of depth of education expected. An exemplar condition is detailed to provide guidance on the approach recommended and depth of knowledge required. For quality and standardisation purpose, the qualification specification also includes recommendations for learning hours, face-to-face contact hours, training resources, facilities, staffing expertise and overall programme management. The final section outlines accreditation process including auditing of education providers and eligibility criteria for the registration of LTC Exercise Instructors.

Occupational Competencies

Title

Long-Term Conditions Exercise Instructor or LTC Exercise Instructor

Purpose

LTC Exercise Instructors will facilitate participation in physical activity aimed at improving functional fitness in people with chronic conditions.

Scope of Practice

The scope of practice is that of an exercise instructor. It is the range of roles, functions, responsibilities and activities that an exercise instructor is educated and competent to perform.

Occupational Role Envisaged

LTC Exercise Instructors will deliver:

- structured exercise programmes
- while providing broader physical activity guidance and support
- where the primary focus of the role is to increase fitness and physical activity
- in community-settings
- on a one-to-one and group basis
- tailored to adults living with a range of chronic conditions, including multi-morbidity,
- whose condition is stable with low to moderate risk of an adverse event due to exercise*
- who have sufficient functional mobility and strength to partake in exercise independently*

* see risk stratification section below

LTC Exercise Instructors should not:

- Diagnose health conditions
- Give medical advice
- Prescribe or advise on medications or supplements
- Prescribe nutritional programmes or advise beyond national healthy eating guidelines
- Provide smoking cessation support other than encourage a quit attempt and signpost to the HSE Quit service
- Assess or treat injuries
- Provide psychological counselling other than strategies to increase physical activity

LTC Exercise Instructors should always:

- Act responsibly in relation to exercise risks, not organising structured exercise for individuals who clearly have high risk* of an adverse event but seek medical clearance and guidance as appropriate or if in doubt
- Terminate exercise or physical activity when individuals display symptoms of concern
- Employ exercise techniques or systems for which they have sufficient expertise and/or qualifications

Risk stratification in relation to the occupational role of the LTC Exercise Instructor

Risk stratification for any given individual is based on the complexity of the medical condition itself and the functional ability of that participant. In general, low to moderate risk encompasses individuals whose health issues are stable (individual has reached treatment goal), without exacerbation and not resulting in multiple acute visits for ongoing medical management. Very low walking ability and strength is a specific risk, as is the inability to independently undertake multiple activities of daily living. Risk stratification tools can assist in decision making including the National Exercise Referral Framework (Woods et al., 2016), which places conditions and presentations into Categories A, B and C based on risk and the

level of supervision required. Category A presentations have the highest risk profile. There will be instances however, where a particular clinical exercise service is satisfied to include some participants, who might be judged as higher risk by a specific risk stratification tool. This decision to include might be based on the overall profile of the participant clinically judged by a medical professional, the existence of additional clinical exercise expertise in the service or recent completion of more intensive block of exercise rehabilitation with onwards referral (e.g. phase III cardiac rehabilitation or a block of physiotherapy). It is not the role of LTC Exercise Instructors to exercise fine clinical judgements in relation to risk categorisation. They will however, be assisted in understanding the limitations of their education and in simple terms, the categories of conditions and participant profiles that could represent higher risk for an adverse event. They should act responsibly if organising structured exercise classes with respect to participant suitability and supervision ratios, bring risk concerns to the attention of others and seek additional expertise/ medical clearance if there is any doubt. Their source of additional expertise and route to medical clearance, where needed, will vary from setting to setting. A list of presentations that might be deemed to be at higher risk of an adverse event during exercise can be found in Appendix B.

Further elements of the occupational role

The elements of the occupational role are further defined as follows:

It is envisaged that LTC Exercise Instructors will primarily deliver structured exercise programmes or offer broader physical activity guidance and support. LTC Exercise Instructors can apply their skillset to any appropriate form or delivery method of exercise or physical activity, for which they have appropriate expertise and/or qualifications.

LTC Exercise Instructors will undertake their role in diverse community-based services and programmes with varied referral/access routes and varied programme oversight arrangements. It is envisaged that services will be primarily delivered in a group setting but can also be offered on an individual basis. The qualification specification pertains to adults with chronic conditions only and given many of the chronic conditions covered are age-related, LTC Exercise Instructors will likely work with older adults.

Programmes may cater for adults with specific conditions, or multimorbidity, where the risk of an adverse event during exercise is low to moderate. The qualification specification includes education on common chronic conditions. The following are included at a basic level: coronary artery disease (to include percutaneous coronary angiography, myocardial infarction and stable angina but not heart failure), stroke, hypertension, peripheral arterial disease, type I and II diabetes, obesity, chronic obstructive pulmonary disease, asthma, arthritis, osteoporosis, chronic pain, multiple sclerosis, Parkinson's disease, mild to moderate depression, anxiety disorders and cancer (focus on cancer treatments and side-effects). Where possible, the qualification specification takes a pan-condition approach to adapting exercise and intensity for low functional capacity and a risk management approach focusing on general symptoms of concern with appropriate responses. Consequently, it should be possible for LTC Exercise Instructors to work with chronic conditions not specifically covered in the qualification specification, assuming the participant has a low to moderate risk profile for adverse events.

Core Competencies

The core competencies represent the knowledge, skills, attitudes and behaviours expected of a LTC Exercise instructor in their professional role (Table 1). These competencies are developed through education, training and practical work experience. The competencies can also be used when reflecting upon continuing professional development needs.

Table 1: Core Competencies of a LTC Exercise Instructor

Screen	To conduct pre-exercise screening to determine the need for medical clearance prior to programme participation. To conduct on-the-day screening and monitoring for symptoms of concern.
Assess	To select and conduct appropriate assessments of functional fitness and wellness and interpret the results to determine an appropriate exercise programme, including initial intensity and volume, and to monitor changes and progress over time

Programme	To apply knowledge of chronic conditions, exercise physiology and exercise programming to design safe and appropriate evidence-based exercise programmes to improve or maintain functional fitness
Deliver and monitor	To deliver structured exercise programmes, and observe, intervene and limit individuals and activities to ensure safe participation and signpost to health services, if necessary
Adapt and progress	To adapt and modify programmes appropriately to ensure safe and inclusive participation, including for those with low functional ability, and to gradually progress programmes to ensure continued effectiveness
Change behaviour	To apply effective communication skills and a patient-centred approach to support individuals to initiate, engage in and maintain regular physical activity
Educate	To educate individuals on the benefits of physical activity and ways in which to adopt a physically active lifestyle and to signpost individuals to credible resources for other health behaviours
Communicate and collaborate	To communicate knowledgably, empathetically, effectively and respectfully with participants and their carers/family and establish and maintain collaborative working relationships with healthcare professionals, as required
Exemplify professionalism	To adhere to the highest standards of ethical and professional practice, demonstrate a duty of care and act in the best interests of the participant at all times
Invest in development	To commit to continual professional development and proactively pursue relevant learning opportunities

Qualification Specification

This section sets out the qualification specification for what is envisaged as a *20 ECTS NFQ Level 7 special purpose award,* to be validated by an education provider with authority from Quality and Qualifications Ireland (QQI) for NFQ Level 7 awards. NFQ Level 7 indicates the level of depth of the knowledge and skills and is indicative of an ordinary bachelor degree at major award level. The breadth (volume) of learning is indicated by the allocated credits (ECTS) and learning hours. As a special purpose award, it reflects a relatively narrow or purpose-specific achievement. Education providers can offer a qualification as a part-time stand-alone programme or embed the content into an existing undergraduate curriculum. The latter may form part of more extensive education in the area compared to the former but both must align with the qualification specification.

The qualification specification is intended to provide an acceptable and sufficient, yet manageable base of training and education for instructors to work across multiple low to moderate risk chronic conditions. Acknowledging the potential benefits of specialized training or continuing professional development (CPD) in specific areas, the qualification specification avoids an exhaustive approach that would be impractical for part-time education programmes. It is not possible to deliver in-depth knowledge and competencies across multiple chronic conditions without a very extensive education.

Entry prerequisites have been set in relation to exercise-related knowledge and skills to allow the LTC Exercise Instructor qualification to build upon this existing expertise. LTC Exercise Instructor qualifications will assist in applying existing skills when working with people with chronic conditions.

Prerequisites and Assumed Prior Knowledge

The qualification aims to upskill exercise professionals to apply the knowledge and skills of exercise programme design and delivery in the context of a special population, people with chronic conditions. Prior to undertaking this qualification, exercise professionals will require basic core knowledge and skills in designing and delivering exercise programmes for the general population. The recommended prerequisites are:

- REPs Ireland certification in Personal Training or equivalent
  OR
- BSc. or higher in a relevant area including sport or exercise science, physical activity for health, strength and conditioning, athletic therapy, physiotherapy or equivalent
  OR
- Recognition of Prior Learning (RPL) mapped to the assumed prior knowledge outlined (unusual entry route)

Through the prerequisites, it is assumed the learner will have prior knowledge of the following in particular:

- Human physiology, including basic systems physiology
- Exercise physiology, including the acute and chronic responses of physiological systems to exercise in healthy populations
- Exercise programming, including the principles of training and their application to programme design
- Exercise instruction, including planning and delivering exercise sessions with safe and effective instruction, ensuring correct exercise technique and skill development
- Physical activity, including the domains of physical activity

A NQF Level 7 is warranted to accredit exercise professionals to work with people with chronic conditions. It is envisaged that education providers will enrol students from different learning backgrounds, including personal trainers. Personal Trainer qualifications sit above fitness

instructor qualifications and equip professionals to tailor exercise programmes for specific fitness goals in healthy populations using multiple exercise techniques. Some personal trainers working in Ireland however, do not have qualifications on the Irish NFQ. Bridging studies may be desirable in certain circumstances and education providers are encouraged to have short bridging opportunities available, e.g. micro credentials**.** Education providers may also wish to consider assessing rather than assuming prior knowledge. An entry assessment may be used to determine suitability for a programme. RPL processes will follow those in place at the level of individual education providers but aligned to the assumed prior knowledge outlined. The purpose of bridging studies and RPL processes will be to ensure that the learners enrolled have the pre-requisite prior knowledge and skills but also the capability of achieving the LTC Exercise Instructor award.

Programme Learning Outcomes

The purpose of a qualification is to develop exercise professionals' knowledge, skills and competencies to ensure they are:

1. Knowledgeable and empathetic to the person living with a chronic condition to whom they are delivering exercise services in the community
2. Competent in the execution, interpretation and use of appropriate functional fitness assessments and the ability to programme, adapt and modify, including for participants with low functional ability, and progress a variety of forms of exercise
3. Competent in recognising and intervening appropriately, communicating, and where necessary signposting in relation to medical events or areas of concern for exercise safety
4. Competent in supporting, including through education, people living with chronic conditions to maintain health and wellbeing through physical activity and signposting to credible resources for other health behaviours

Core Learning Areas

Four core learning areas are identified that represent the core topics, which will address the learning outcomes (Table 2). There is a need that any education programme that is aligned to the qualification specification, be it an undergraduate degree programme or stand-alone part-time programme, should place specific and identifiable emphasis on both the teaching and assessment approaches in each of these four learning areas. The 20 ECTS of this special purpose award are spread across these core areas.

Table 2: Core Learning Areas

1. Understanding chronic conditions
2. Exercise safety and professional practice in working with people with chronic conditions
3. Exercise assessment, programming and delivery for people with chronic conditions
4 Supporting physical activity behaviour change

The qualification specification deliberately emphasises how to safely increase physical activity and functional fitness in people with chronic conditions as opposed to condition-specific outcomes. Where possible, the qualification specification integrates across various chronic conditions, minimising a condition-by-condition approach. Core Learning Area 1 outlines common chronic conditions that should be covered with education packages. Students should be supported to develop the ability to source and interpret evidence-based information on other or less common chronic conditions. The common chronic conditions included are categorised by type of conditions, e.g. cardiovascular, pulmonary etc. Subsequent core learning areas include content pertaining to the safety and exercise consideration for people living with chronic conditions generally and specific consideration for these categories of conditions. Core Learning Area 4 takes a person-centred rather than condition-centred approach.

Knowledge and Skills

The knowledge and associated skill requirements of the LTC Exercise Instructor role are presented across the four core learning areas in Table 3. The knowledge requirements are labelled (e.g. K1.1) to allow later mapping to curriculum content.

Table 3: Knowledge and Skills for the Core Learning Areas

Core Area	Knowledge	Skill
Understanding chronic conditions	Explain the challenge and impact of chronic conditions and the role of exercise in their prevention and management (K1.1)	Support the management of chronic conditions through the provision of physical activity opportunities
	Detail briefly the pathophysiology of common chronic conditions and the impact on health outcomes and functional capacity (K1.2)	Apply knowledge of chronic conditions, symptoms and functional limitations to tailor exercise programmes to the needs of the individual and communicate knowledgeably with the individual and their healthcare provider (if required)
	Describe briefly the medical management of common chronic conditions including common medication classes and how it may impact on exercise participation (K1.3)	Apply knowledge of the patient journey and associated treatments to interact with greater understanding and empathy with participants Adapt exercise programmes, individual sessions and assessments as needed taking into account medications and recent/ongoing treatments
	Identify and summarise credible sources of information on less common conditions (K1.4)	Source and interpret evidence-based information to work safely with individuals presenting with unfamiliar conditions

Core Area	Knowledge	Skill
Exercise safety and professional practice in working with people with chronic conditions	Explain the risks associated with exercise and the prevention of exercise-related cardiac events and falls (K2.1)	Apply knowledge of risks and prevention strategies to design and deliver safe exercise programmes
	Describe a pre-exercise screening tool and the purpose of its various elements. Describe briefly participant profiles that have higher adverse event risk (K2.2)	Apply and interpret a screening method to determine the need for medical clearance. Identify individuals at higher risk of adverse event and potentially unsuitable for proposed programme, signposting, if necessary to health services
	Describe general safety principles for exercise in people with chronic conditions and special safety considerations for specific conditions (K2.3)	Apply safety principles to the design and delivery of exercise programmes and tailor the programme to specific individual or group considerations
	Identify signs and symptoms of potential medical complications during exercise (K2.4)	Monitor individuals before, during and after exercise for signs and symptoms of complications and respond to red flags, signposting to health services, as required
	Explain the LTC Exercise Instructors scope of practice, envisaged occupational role, limitations of knowledge and principles of professional and ethical practice	Exercise a professional and ethical duty of care and practice within the LTC Exercise Instructors scope of practice, cognisant of the envisaged occupational role and limitations of knowledge

Core Area	Knowledge	Skill
Exercise assessment, programming and delivery for people with chronic conditions	Describe the assessment of basic resting health measures and appropriate field-based measures of the components of fitness (K3.1)	Select, administer and interpret basic resting health measures and field-based fitness assessments
	Detail the acute and chronic physiological responses to exercise in healthy and chronic condition populations (K3.2)	Programme, modify and progress safe and effective exercise programmes for people living with chronic conditions
	Describe evidence-based physical activity guidelines and exercise programming for people living with chronic conditions (K3.3)	
	Explain special considerations for exercise for common chronic conditions and older adults (K3.4)	Tailor exercise programmes to the needs and abilities of individuals and groups and cater for multiple abilities within a single setting
	Describe methods of prescribing and monitoring exercise intensity (K3.5)	Use objective and subjective methods to prescribe and monitor exercise intensity
	Demonstrate an understanding of exercise programming and delivery procedures in a practical setting for people with chronic conditions (K3.6)	Reflect on one's own approach to exercise programming and delivery for people with chronic conditions based on experiences in the work placement setting

Core Area	Knowledge	Skill
Supporting physical activity behaviour change	Explain the social determinants of health. Outline the national physical activity landscape (K4.1)	Use knowledge of the social determinants of health when supporting individuals to become more physically active. Use knowledge of the national physical activity landscape to signpost to other suitable opportunities
	Describe the determinants of physical activity and their grounding in behaviour change theory (K4.2)	Apply knowledge of behaviour change theory and the determinants of physical activity when designing services and supporting participants to increase physical activity
	Reflect on effective communication skills and strategies to support people living with chronic conditions to be physically active (K4.3)	Apply effective communication skills and strategies to support physical activity behaviour change
	Describe effective and evidence-based approaches to exercise consultation (K4.4)	Apply an effective and person-centred approach to conducting exercise consultations and appropriately adapt the approach based on the setting and time available

Curriculum Content

Mapped to the knowledge and skill requirements, curriculum content is outlined for the four core learning areas. The qualification specification seeks insofar as practicable, to standardise the content delivered across different education providers, and is therefore granular where deemed necessary. The intention is to maximise the sense of confidence that stakeholders attach to any qualification that is based on the qualification specification and in particular the safe practice elements. In describing a topic, the term *including* is used to denote the minimum content that should be covered. Individual education providers may wish to expand upon this.

Core Learning Area 1: Understanding Chronic Conditions

A basic knowledge of various chronic conditions is needed so that a LTC Exercise Instructor can empathise with the participant, understanding the limitations imposed by the condition or the treatments. The expected knowledge of chronic conditions, medications and treatments falls well short of that needed by health professionals or a clinical exercise physiologist. It is the impact of the chronic condition on physical activity participation that is the central focus. Emphasis is placed on exercise safety and knowing when to signpost to health services.

Chronic conditions are deliberately grouped to facilitate covering multiple conditions within a limited credit qualification. The included conditions are those with the highest prevalence in Ireland, that account for the greatest proportion of healthcare spending, and that have an established evidence-base for physical activity in their management. Seven categories of chronic conditions are included and under each specific conditions are listed (Figure 1). These conditions are subsequently referred to as 'common chronic conditions'. An exemplar condition is detailed to set out this approach and signify the level of depth expected. The curriculum content also refers to the need to develop abilities at a basic level to source and interpret evidence-based sources of information, should LTC Exercise Instructors encounter of other chronic conditions.

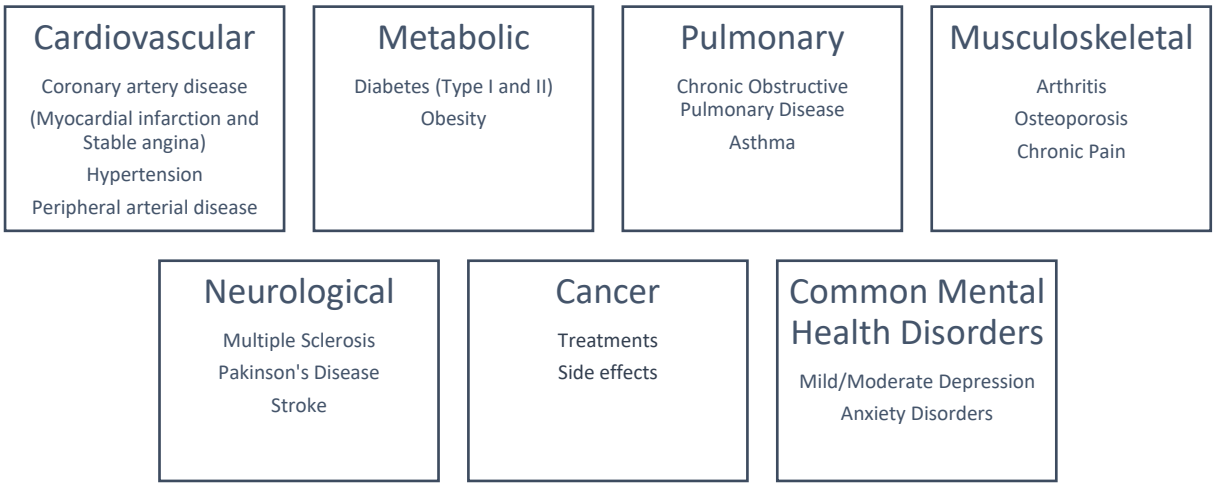

Figure 1: Common chronic conditions included in the qualification specification

Note: This does not restrict LTC Exercise Instructors from working with other chronic conditions or multimorbidity but reflects the most common conditions, which can be covered in a limited credit qualification. The qualification also develops the skills to source information on other conditions. The pan-condition approach that focuses on increasing low functional capacity and recognising symptoms of concern during exercise will also enable instructors to work with more diverse conditions.

Note: Cancer is not further subdivided based on tumour site as rather the type of treatment and cancer and treatment-related side effects are more relevant in an exercise context. Further explanation of this approach is provided in the educator guidance.

Table 4 sets out the curriculum content under Core Learning Area 1, including the knowledge sub-areas (which are mapped back to Knowledge in Table 3), topics, and indicative educational content.

Table 4: Curriculum Content for Core Learning Area 1

Learning Sub-area	Topic	Learners will develop an understanding of:
K1.1 The Health Context	Prevalence of chronic conditions	• Overview of the prevalence of chronic conditions in the Irish population • Multi-morbidity including common concurrent chronic conditions • Overview of primary common risk factors for chronic conditions
	Health system structures	• Brief overview of national policy on the management of chronic conditions, including the role of physical activity • Brief overview of national and local health care system structures, the roles of key organisations and the health professionals involved
K1.2 Development and impact of chronic conditions	The ageing process	• Overview of how ageing impacts physiological systems • Understanding of how ageing impacts functional capacity • Overview of frailty and sarcopenia
	Pathophysiology of common chronic conditions	• Definition and overview description of specified common chronic conditions • Basic pathophysiology of specified common chronic conditions • Signs, symptoms and presentation of specified common chronic conditions with particular emphasis on those relevant to exercise participation • Pre-conditions, levels of severity of conditions and stage of diagnosis (where appropriate)

	Profile of people living with chronic conditions	• Overview of features common to multiple chronic conditions that impact on daily life, including pain, fatigue, dyspnea, low functional capacity and low mood • Impact of chronic conditions on quality of life
K1.3 Medical management of chronic conditions	Pharmacology	<u>Indications and exercise interactions</u> for common drug classes for: • Cardiovascular conditions, including ACE inhibitors, angiotensin-II receptor blockers, anti-arrhythmics, anti-coagulants, β-blockers, calcium channel blockers, diuretics, nitrates, potassium channel activators • Metabolic conditions, including insulin, lipid lowering drugs, metformin, GLP1-agonists • Pulmonary conditions, including controllers (long-acting bronchodilators, corticosteroids and combination medications), relievers (shorting-acting bronchodilators), long-term oxygen therapy • Musculoskeletal disorders, including NSAIDs, pain relief, steroid injections, DMARDS • Neurological disorders, including levodopa, steroids • Cancer, including chemotherapy, hormone therapy, immunotherapy, targeted biological treatments and combinations of systematic anticancer therapy • Common mental health disorders, including antidepressants
	Intervention	Overview and side effects relevant to exercise of interventions for: • Cardiovascular conditions, including CABG and PCI • Musculoskeletal disorders including joint replacement

		• Cancer including surgery, radiotherapy, lymphatic drainage
	Rehabilitation	• Overview of cardiac rehabilitation, including scope, objectives, phases, multi-disciplinary teams, and exercise components • Overview of pulmonary rehabilitation, including scope, objectives, structure, multi-disciplinary teams, and exercise components
K1.1 Physical activity and chronic conditions	Primary prevention	• Summary of the evidence for physical activity in the primary prevention of common chronic conditions
	Secondary prevention	• Overview of the physical and psychological benefits of physical activity common across chronic conditions • Overview of the benefits of physical activity specific to types of chronic conditions • Limitations of the evidence and benefits of physical activity in secondary prevention
K1.4 Evidence-based sources	Credible sources of information	• Credible sources of information on the pathophysiology and management of less common chronic conditions suitable for LTC Exercise Instructor • Evidence-based sources of information on exercise considerations for less common chronic conditions suitable for LTC Exercise Instructor

Core Learning Area 1 Educator Guidance

Some conditions may require greater depth than others given the complexity of the condition and/or the extent of considerations relevant to exercise. For example, cardiovascular conditions have significant exercise considerations, however, these are dealt with in the subsequent core learning area pertaining to safety. An alternative approach is taken with cancer. Rather than focusing on tumour sites, the education centres around treatments and side effects (cancer and treatment related) due to the greater relevance for exercise considerations. It is recommended that the basic pathophysiology of cancer is covered and for "signs, symptoms, and presentations" that the following at a minimum is covered: lymphedema, peripheral neuropathy, incontinence, cardiac toxicity, fatigue and pain. The treatments are included under the medical management section relevant to cancer.

The knowledge of the chronic condition goes beyond the pathophysiology; to include an understanding of the patient journey and basic knowledge of treatments, to increase empathy but also understanding of the physical activity challenges and opportunities. A particular emphasis should be placed on symptoms and limitations imposed by conditions, including those common across conditions. The application of this understanding is further considered in the other core learning areas. There is a need also for instructors to understand the person as a whole and the impact of conditions and treatments on function, pain, and quality of life. These challenges are common across many chronic conditions and may be particularly evident in exercise settings. These issues are greatly emphasised by advocacy groups and individuals and rarely appreciated by young instructors and graduates.

The topic of the health context needs only to provide a profile of the Irish population in terms of chronic conditions and multimorbidity prevalence to develop an understanding of the need for physical activity opportunities and qualified staff. There is a need to understand the systems, structures and professions involved in the management of chronic conditions, in particular rehabilitative therapies used in the acute and sub-acute phase to develop an

awareness of where participants may have come from and where it's appropriate to signpost back to.

There is a need for instructors to understand the benefits of exercise for an aging population in general (the general benefits) and also to possess a basic knowledge of what physical activity does and does not achieve for specific conditions, also addressing misconceptions. This will however, be sufficient as summary-based rather than epidemiology/evidence-based. Knowledge of the underpinning research evidence is the remit of rehabilitation professionals and the clinical exercise physiologist.

There is a need for instructors to understand at a basic level that there are varying degrees of condition severity, as this may have implications for exercise or risk, but not a need to understand disease classification systems and thresholds of expert bodies. There is a specific need to understand cardiac and pulmonary rehabilitation and how it is similar and different to community-based exercise classes, as it is possible that signposting pathways may follow.

The medication list is based on those drug classes that have specific exercise interactions rather than the need for learners to understand the pharmacology of every condition. To articulate the relative brevity of the information required, an example for a selection of the common drugs for cardiovascular disease is outlined in Appendix C. There is only a need to educate in relation to specific classes of drugs but instructors should know how to use appropriate resources to identify the drug class from a brand name (e.g. www.medicines.ie).

A variety of teaching strategies would be suitable for this area. A case study-based approach is recommended, which can integrate a number of the topics, for example describing the patient pathway including through exercise rehabilitation in the acute setting.

Core Learning Area 2: Exercise Safety and Professional Practice in Working with People with Chronic Conditions

Screening has been identified as one of the occupational roles of the LTC Exercise Instructor. Instructors should, at a basic level, be able to identify a range of factors in a participant that could deem them to be high risk of an adverse event (see Appendix B). They will not be able to exercise any fine clinical judgement and should be aware of the occupational role envisaged for their qualifications and the need for further medical evaluation and guidance if there is any doubt. They should understand the purpose and principles of screening and also be able to administer and interpret at least one widely recognised pre-exercise screening tools, with understanding of the rationale for all questions on that tool. The Physical Activity Readiness Questionnaire (PAR-Q) and PAR-Q+ (Appendix D) have been identified as the tools to facilitate education on screening that should be covered.

The qualification specification deliberately emphasises safety, focusing on safety protocols and providing clear guidelines and specific exercise "red flags" or "do's and don'ts". There is specific prominence given to cardiac events and falls risk. Most exercise safety considerations overlap across various conditions and therefore, are presented as general safety principles. This, for the most part, outlines an appropriate approach to exercise safety for common chronic conditions and other chronic conditions. Additional considerations unique to specific conditions are outlined separately.

Recognising medical incidents are to the fore of this learning area. This includes pre-exercise class "check-ins" to monitor for deterioration in condition and monitoring for signs and symptoms of emerging medical events during and after exercise. A clear understanding of the boundaries of their expertise and professional practice is important in this regard.

Table 5 sets out the curriculum content under Core Learning Area 2.

Table 5: Curriculum Content for Core Learning Area 2

Learning Sub-area	**Topic**	**Learners will develop an understanding of:**

K2.1
Cardiac risk associated with physical activity
	Exercise-related cardiac events	• Risk of a cardiovascular event during physical activity and influence of:
		  ○ Chronic condition
		  ○ Physical activity intensity
		  ○ Habitual physical activity

K2.2 Pre-exercise evaluation	Exercise preparticipation health screening	• Chronic conditions at high risk of an event during exercise • Purpose of preparticipation screening • Determining current physical activity levels • Purpose of the items on the PAR-Q+ • Administration and interpretation of the PAR-Q+

	Pre-exercise session screening	• "Checking in" with participants prior to each exercise session, enquiring about how they are feeling and whether they have had any changes in their condition, symptoms or medication since the last session
		• Where the information is available, consider relative contraindications to beginning an exercise session and reasons to signpost to health services, including:
		  ○ Acute exacerbation or worsening of symptoms
		  ○ Fever, systemic illness or pyrexia (viral illness)
		  ○ Unexplained chest pain

		○ Resting SBP >180 mm Hg or DBP >105 mm Hg ○ Symptomatic hypotension ○ Resting tachycardia >100 bpm ○ Hypoglycemia (<3.9 $mmol \cdot L^{-1}$) ○ Hypergylcemia (≥13.9 $mmol \cdot L^{-1}$) with presence of urine ketones ○ Severe or unusual headache
K2.1 Falls risks and prevention associated with physical activity	Falls risk	• Adverse effects of falls risk • Chronic conditions and side effects, including peripheral neuropathy, with increased risk of falls • Common causes of falls • Administration and interpretation of the Level 1 Multidisciplinary Falls Prevention in Primary Care tool (Appendix E) • Suitability of participants for proposed exercise in relation to functional mobility
	Falls prevention strategies	• Environmental setup • Equipment selection • Exercise programming including prescribing seated or stationary exercise where appropriate • Balance training including both static and dynamic activities
K2.3	General safety principles	Exercise safety approaches common across chronic conditions including:

Safety principles and considerations		• Extended warm-up including gradual raising of heart rate and controlled movement of joints through full ROM • Gradual and extended cool-down • Initiation of a new exercise programme at a light-to-moderate intensity • Gradual progression of exercise volume and intensity • Closer supervision and monitoring by the exercise professional at the outset of a training programme • Minimising and executing caution with transitions between standing and floor exercises • Monitoring for fatigue or general worsening of symptoms • Avoiding the Valsalva maneuver or activities that dramatically elevate blood pressure • Encouraging adequate hydration before, during and after exercise • Observation of participants for a period post-cessation of exercise • Encouraging use of skin protection in outdoor exercise settings
	Special safety considerations for people with chronic conditions	• Other special exercise safety considerations for cardiovascular conditions, including avoiding high intensity exercise using isolated small muscle masses and keeping feet moving between bouts of aerobic exercise, and in those with hypertension, moderate is generally recommended to optimise the benefit to risk ratio and monitoring for signs of post-exercise hypotension. • Other special exercise safety considerations for metabolic conditions, including encouraging monitoring of blood glucose levels before, occasionally during (if needed) and after exercise in those taking insulin or hypoglycaemic agents and suggesting consideration of

	compensation with appropriate dietary or medication changes (in consultation with healthcare professionals); refraining from vigorous intensity exercise with those presenting with hypergylcemia (≥13.9 $mmol \cdot L^{-1}$) • Other special exercise safety considerations for pulmonary conditions, including being aware of the possibility of the onset or temporary increase in symptoms after exercise • Other special exercise safety considerations for musculoskeletal conditions, including reducing impact, intensity or volume for those at high risk of fractures • Other special exercise safety considerations for neurological disorders, including monitoring for the development of fatigue, considering spasm and tone, considering assessing RPE of the extremities separately, avoiding overhead free weight exercises and considering extending recoveries between resistance exercise sets; and for those living with multiple sclerosis, monitoring for overheating and using cooling strategies and adjusting the exercise time and intensity as required • Other special exercise safety considerations for cancer, including exercising caution in relation to falls and facture risk in those with peripheral neuropathy and following hormonal therapy, encouraging the use of a compression sleeve and very gradual exercise progression during resistance training in the presence of lymphedema and terminating exercise with changes in swelling, discouraging water-based exercise in the presence of an immune suppressed state or ostomy, prescribing light intensity and lower progression in immune suppressed state.
Environmental safety	• National and local health and safety guidelines and policies for environmental health and safety assessments • Potential risks and mitigations for hazards within the exercise environment

		• Availability of and access to appropriate resuscitation equipment

K2.4
Red flags
	Signs and symptoms of an emerging medical complication	• Identifying signs and symptoms of:
		  ○ cardiac chest pain
		  ○ palpitations
		  ○ pain
		  ○ hypoglycaemia
		  ○ overexertion
		  ○ excessive dyspnea
		  ○ excessive/unusual fatigue
		  ○ excessive perspiration
		  ○ loss of co-ordinated movement
		  ○ confusion or mood disturbances
		  ○ Hypotension, orthostatic hypotension
		
		Note: Eligibility criteria for registration as a LTC Exercise Instructor post qualification will require certification in Occupational First Aid

K2.5 Professional Practice		• Understanding the role of the LTC Exercise Instructor in supporting the management of chronic conditions • Working within scope of practice, sensitive to envisaged occupational role, signposting onwards • Working in accordance with recognised best practice

	• Exercising professional duty of care and acting in best interests of participants • Data protection and participant confidentiality • Incident reporting

Core Learning Area 2 Educator Guidance

Core Learning Area 2 draws together the knowledge needed to reduce the risk of adverse events in the first instance but also to recognise and deal with concerning presentations. It equips LTC Exercise Instructors with the ability to ask the right questions, to understand their remit, including in the provision of information, and to assist in recognising when to signpost elsewhere. It is envisaged that this will be delivered and assessed in a standardised factual manner. It would benefit from co-operation between all education providers and the development of appropriate national materials. By listing these elements in one unit, it is envisaged that all education programmes based on this qualification specification will place appropriate emphasis on the "do's and don'ts" relevant to maintaining safety. It also assists in highlighting the importance of safety in this context and in the training of LTC Exercise Instructors. It aims to provide confidence to stakeholders in relation to the competencies of instructors. It is particularly prescriptive in places in an attempt to standardise national knowledge in relation to safety.

Preparticipation screening must go beyond simple administration of a tool but not as far as the use of clinical judgement, which is beyond the scope of LTC Exercise Instructors. It is important the exercise professionals are clear on the purpose of screening and the curriculum content identifies the PAR-Q+ as the tool to administer but also as a vehicle to aid a greater understanding of screening. Understanding the purpose, relevance and importance of each item on the PAR-Q+ can facilitate greater overall knowledge of exercise risk and the screening process. The PAR-Q+ is set as the minimum standard to enable standardisation but does not preclude education providers from covering other tools. The focus of the education on screening should not be to exclude people from physical activity but to provide information to appropriately tailor or adapt physical activity guidance and exercise programmes.

A case study-based approach is recommended, where learners work through various scenarios.

Core Learning Area 3: Exercise Assessment, Programming and Delivery for People with Chronic Conditions

Learners will gain the knowledge and skills to administer and interpret appropriate assessments of functional fitness and subsequently design and deliver safe and effective exercise programmes for people with chronic conditions. The recommended programme prerequisites and assumed prior knowledge include exercise physiology and exercise programming and instruction. The qualification specification sets out not to duplicate but to build on this and develop the ability to apply this knowledge and skills specifically to people with chronic conditions.

Exercise approaches and considerations overlap across various conditions and therefore, are presented as general programming and delivery principles. This, for the most part, outlines an appropriate approach to exercise for common chronic conditions and other chronic conditions. Functional capacity rather than condition in many instances is the most significant factor in relation to exercise participation. The ability to adapt and modify exercise based on functional capacity is emphasised and can be applied across conditions. Additional considerations unique to specific conditions are outlined separately.

Assessing functional capacity, fitness and resting health measures should inform programming and track progress. A battery of standardised assessments is valuable to allow pooling of data or comparison across schemes or settings. Educators are not limited to these assessments.

Table 6 sets out the curriculum content under Core Learning Area 3.

Table 6: Curriculum Content for Core Learning Area 3

Learning Sub-area	**Topic**	**Learners will develop an understanding of:**
K3.1 Assessment of resting health measures and functional fitness	Assessment selection	• Selection of appropriate assessment measures based on presenting individual, available equipment and individual/programme goals • Ability to modify assessments to accommodate functional limitations and understand the consequences on the interpretation of the results
	Administration of resting health measures	Administration and recording of assessments for: • Height, weight, BMI • Waist circumference • Blood pressure using automated devices and factors influencing measurement accuracy • Resting pulse including using palpation • Quality of life including EQ-5D
	Administration of field-based measures of the components of fitness	Administration and recording of assessments for: • Aerobic capacity including the 6-minute walk test • Muscular fitness including the sit-to-stand test and handgrip strength test • Mobility including the timed up & go test (TUG) • Balance including the balance error scoring system (BESS)

		• Overall physical function including the short physical performance battery (SPPB)
	Interpretation of and exercise programming based on resting health measures and functional assessments	• Normative data, percentiles, boundaries and minimal clinically important difference for each of the measures, where available • Interpreting the assessment results in the context of other results and information to provide a comprehensive assessment • Using the assessment results to prescribe exercise intensity and volume • Using the assessment results to identify physical limitations, required exercise adaptations or modifications or contraindicated movements or exercises • Communicating assessment results to participants
K3.2 Physiological responses to exercise	Acute responses	• Overview/recap of acute cardiovascular and respiratory responses to exercise in healthy populations • Differences in acute cardiovascular and respiratory responses to exercise in chronic condition populations compared to healthy populations
	Chronic responses	• Overview/recap of chronic exercise adaptations in healthy populations • Basic understanding of mechanisms through which exercise can benefit common chronic conditions • Understanding that the rate and/or extent of exercise adaptations in people with chronic conditions may vary from those expected

		• Recognising when an exercise response is not as expected and when to signpost to health services
K3.3 Exercise programming and delivery for chronic conditions	Exercise recommendations for general health	• Physical activity guidelines for people living with chronic conditions including the FITT (frequency, intensity, time and type) prescription • The importance of each component of the guidelines (aerobic, resistance, flexibility) and balance training in people living with chronic conditions and older adults

	Exercise programming for chronic conditions	• How to gradually progress towards and beyond the physical activity guidelines including:
		  ○ Programming at low intensity and short or intermittent duration at the outset
		  ○ Using intermittent aerobic exercise as an effective alternative for those unable to perform continuous exercise
		  ○ Using active recovery to increase the total volume of aerobic exercise that may be achieved
		  ○ Encouraging higher intensities when appropriate to yield greater physiological benefit
		• Incorporating functional exercises that mirror activities of daily living
		• Considering the timing of exercise relative to medications and symptom burden
		• Suitability of exercise modes and equipment accounting for functional limitations and balance deficits

	Exercise adaption and progression	• How to adapt exercise in the presence of:
		  ○ Low functional fitness
		  ○ Musculoskeletal or orthopaedic conditions
		  ○ Pain
		  ○ Other symptoms and side effects of treatment including day-to-day variations
		• How to cater for multiple abilities and fitness levels in a group exercise setting to ensure a safe and inclusive offering
		• Gradual progression based on exercise tolerance including “start low and go slow” approach by increasing duration or reducing recovery first and intensity last and avoiding large increases in frequency, duration and especially intensity
		• Not exceeding progression recommendations for the general population of increasing duration of aerobic exercise by 5-10 min every 1-2 wk over the first 4-6 wk
		• Common methods of progression for resistance training while recognizing the potential need to increase loads at slower rates and in smaller increments

K3.4 Special exercise considerations	Special exercise considerations for common chronic conditions	• Exercise considerations specific to metabolic conditions, including for those living with diabetes advising no more than 2 consecutive days without aerobic exercise and considering including anaerobic efforts combined with or resistance training before aerobic training to reduce the risk of postexercise hypoglycaemia • Exercise considerations specific to respiratory conditions, including use of bronchodilators prior to exercise if medically indicated or following consultation with a medical professional or pharmacist

	• Exercise considerations specific to cancer, including being aware of the variability of symptoms and impact on exercise tolerance, being aware of potential incontinence and considering incorporating pelvic floor exercises, incorporating range of motion exercise in regions of impaired mobility, incorporating weight-bearing exercise following hormone therapy • Exercise considerations specific to common mental health disorders including advising those with anxiety symptoms that the normal response to exercise can include physiological changes similar to chronic maladaptive symptoms associated with anxiety disorders
Special exercise considerations for older adults	Exercise considerations for older adults including: • Importance of demonstration and clear, repeated exercise instruction in the presence of cognitive, visual or auditory impairments • How to recognise mild cognitive impairment and signpost to health services, if necessary • Being aware that those with significant cognitive impairment may require individualised assistance • Encouraging moderate intensity aerobic exercise, especially combined with a cognitive task for those with cognitive decline with a low falls risk • Considering those with sarcopenia may need to increase muscular strength before they are physiologically capable of engaging in aerobic training • Incorporating weight-bearing activities unless it will exacerbate joint pain

K3.5 Intensity prescription and monitoring	Methods of estimating exercise intensity	• Understanding the thresholds of low, moderate and vigorous intensity activity
		• Use of the following methods to prescribe and monitor exercise intensity:
		  ○ Estimated HRmax
		  ○ Estimated HRR
		  ○ RPE including Borg scale and dyspnea scale
		  ○ Repetition estimates
		• Importance of not relying on an any single measure of exercise intensity due to measurement error and conditions in which and medications with which caution is warranted in the use of the measures

	Exercise self-regulation	• Educating participants on use of subjective methods of monitoring exercise intensity, including RPE and talk test • Educating participants on recognising signs of overexertion • Educating participants on normal exercise responses, including delayed onset muscle soreness, and the importance of recovery
K3.6 Practical experience	Placement	• 6 hours of planned and structured placement in exercise provision for chronic conditions, which may be with single or mixed conditions

Core learning Area 3 Educator Guidance

Core Learning Area 3 requires significant practical learning hours and the opportunity for to learn through application. The qualification assumes exercise programming and instruction competency and revisiting this is not deemed to be required. Rather the qualification builds on this, with an emphasis on how to adapt general programming and instruction based on, primarily, limitations in functional ability.

There is a deliberate approach in the curriculum content to emphasise programming based on the general physical activity recommendations for health, which can then be adapted for specific chronic conditions. This approach is possibly different to other qualifications and textbooks, which present exercise recommendations as a separate prescription for each condition. The approach emphasises the challenge of increasing intensity and volume in de-conditioned inactive individuals, potentially with functional limitations and/or low motivation to exercise, as much as it references the underlying chronic conditions.

Insofar as possible, the qualification specification tries to amalgamate the special exercise considerations that are relevant to all older adults and that straddle multiple chronic conditions. This also has the advantage of reducing curriculum time compared to a condition by condition approach.

The topic of acute and chronic responses to exercise has been included. Although most should have covered these responses, even at a basic level as part of previous education, a recap is warranted with reference to some differences between healthy and chronic condition populations. An emphasis on a wide array of typical acute and chronic response values is not required, particularly for parameters that cannot be measured in community exercise settings (e.g. stroke volume, cardiac output).

This core learning area specifies basic assessments of functional fitness and health, particularly relevant to the population groups of interest. Students may not have been exposed to these exercise assessments as part of their previous education. It is envisaged that

experience of assessing relevant populations with reference to associated test norms will sensitise the student to the functional abilities of people with chronic conditions. Contact with real participants or video of real participants undertaking assessments would be useful here to prompt discussions on goals, implications for programme planning and possible adaptations needed. Field based assessments have been included to allow assessment outside of controlled settings with limited equipment.

A key practical competency of students is to be able to monitor intensity of exercise based on heart rate and non-heart rate measures as this can be relevant to both optimising the exercise stimulus and also maintaining safety. From a safety and physical activity sustainability perspective, it is also important that the participant is educated and assisted in self-monitoring.

It is recommended that education providers partner with a physical activity provider catering for chronic conditions or develop a programme of their own, to more easily create placement opportunities. Appropriate existing providers include clinical exercise services, patient advocacy groups providing exercise classes, local sports partnerships and other community-based programmes catering for chronic conditions. It is recommended education providers coordinate the placement for the learners. The practical experience can be gained with individuals or groups with chronic conditions of any kind. It is recommended that 6 hours of placement are completed, ideally with exposure to a variety of operating procedures, e.g. participant screening, induction, assessment and exercise delivery. However, these components may vary across services and at a minimum students should gain experience in exercise delivery. The placement should be planned and structured to ensure quality placement hours. A proportion of placement hours are contained within the qualification to allow quality assurance and planned structuring by education providers. Additional hours of practical experience will be required post qualification prior to registration. Further information on practical experience can be found under eligibility for registration.

Core Learning Area 4: Supporting Physical Activity Behaviour Change

Core Learning Area 4 takes a person-centred approach. It provides the learner with the skills to "draw out" the motivation to change or maintain a behaviour from within the participant themselves. Learners will develop an understanding of factors influencing the initiation and maintenance of physical activity and the skills to collaboratively support individuals to change behaviour. It focuses on developing communication skills to assist people to identify their personal motivators and challenges to initiating, returning to and/or maintaining physical activity and to empower and develop self-efficacy in relation to physical activity behaviour.

Patient centred communication skills can be applied not only to support physical activity behaviour change but are transferrable to all aspects of the participant interaction, including exercise assessments and delivery.

Table 7 sets out the curriculum content under Core Learning Area 4.

Table 7: Curriculum Content for Core Learning Area 4

Learning Sub-area	**Topic**	**Learners will develop an understanding of:**
K4.1 The Health and Physical Activity Landscape	Social determinants of health	• How social determinants of health, including socioeconomic status, access, residential location, finance, transport, influence both health and physical activity
	Physical activity in Ireland	• Brief overview of national physical activity policy and national and local physical activity initiatives, opportunities and supports • Population specific physical activity levels and trends in Ireland
	Health behaviour resources	• Signposting to credible sources of information for smoking cessation, dietary advice and other health behaviours
K4.2 Determinants of Physical Activity	Models of change	• Applying models of change in delivering physical activity opportunities to people and groups living with chronic conditions • A socio-ecological approach to physical activity interventions • Understanding of the most effective behaviour change techniques in specific contexts including with people living with a chronic condition, in community setting, and on a 1:1 or group basis
	Beliefs and attitudes	• Commonly held beliefs and attitudes of people living chronic conditions towards physical activity

	Motivators and barriers to physical activity	• Motivators and barriers to initiation of physical activity • Motivators and barriers to adherence to physical activity • Understanding the influence of capability and opportunity as well as motivation on behaviour including the importance of accessibility
K4.3 Applied Effective Communication Skills	Ethos of motivational interviewing	• Overview, goal and spirit of motivational interviewing • Avoiding the Fixing Reflex
	Core communication skills	• Basic principles and strategies • OARS (open questions, affirmation, reflective listening and summary reflections)
	Specific communication strategies and skills	• Eliciting and responding to change talk • Moderating and responding to sustain talk • Scaling questions to assess importance and confidence to engage in a physical activity programme • Application of communication strategies and skills to group settings
K4.4	Early tasks	• Establishing the purpose of the conversation • Assessing physical activity levels, history and exercise self-efficacy • Assessing importance and confidence to engage in a physical activity programme

Exercise Consultation Process	Strengthening commitment to physical activity	• Strategies and techniques for communicating key physical activity messages;
		  ○ The current the physical activity guidelines
		  ○ The concept of physical activity and its different domains
		  ○ The benefit associated with moving from sedentary to any physical activity
		  ○ The benefit associated with exceeding the lower threshold of the guidelines
		  ○ The acute and chronic benefits of physical activity
		  ○ The interaction between high sitting time and physical activity

	Building a collaborative physical activity plan	• Programme design and goal setting • Domain-specific and non-exercise physical activity, including active living and incidental physical activity • Strategies to promote physical activity adherence • Importance of social support and methods to build social connectedness

Core Learning Area 4 Educator Guidance

Aligned to the other core learning areas, this area has a practical emphasis. Rather than approaching behaviour change from a theory perspective, the focus is on the determinants of health and physical activity, with an underpinning of how the determinants are grounded in theory. The emphasis isn't on an understanding of physical activity motivators and barriers specific to people living with chronic conditions, *per se.* Rather, it follows the ethos of motivational interviewing, whereby the instructor facilitates the participant to identify influencing factors unique to themselves. In this context, avoiding the "Fixing Reflex" (also known as the "Righting Reflex") is important. Instructors would benefit from staged and real-world experience in conducting exercise consultations, with an emphasis on teaching them to resist the urge to "fix", in particular with their newly acquired knowledge in relation to chronic conditions. The goal is to support the participant to elicit change themselves, through the use of effective communication. It is not to force information on the participant (educate), e.g. the benefits of physical activity, but rather allow them to identify what might motivate them to be physically active.

Empathy is a core element of communication skills. In addition, understanding the social determinants of health and the determinants of physical activity should develop learners ability to work with people with different backgrounds, e.g. culture, health/physical activity literacy.

Providing the opportunity to adapt the exercise consultation skills in a variety of settings is recommended, for example with individuals or groups, or delivered in a scheduled exercise consultation or more piecemeal before, during or after exercise sessions throughout a programme.

It is recommended that the terminology taught in relation to the exercise consultation aligns with that used in the HSE's Make Every Contact Count (MECC) programme to ensure a continuity of messaging between the health and physical activity sectors.

Exemplar Condition: Chronic Obstructive Pulmonary Disease

The qualification specification takes an integrative approach to chronic conditions, where possible. Where a condition-specific approach is required, categories of conditions (e.g. pulmonary conditions) are utilised, where appropriate. Specific chronic conditions are primarily only dealt with in Core Learning Area 1: *Understanding Chronic Conditions*, where the curriculum content includes an overview of specific conditions and their pathophysiology. One chronic condition (COPD) has been detailed to provide guidance on the depth of knowledge required. Detail specific to this condition is mapped to relevant content, i.e. only those knowledge sub-areas and topics with condition-specific content. It also highlights where the condition can be integrated with chronic condition topics more generally and with a category of condition (i.e. pulmonary conditions). Core Learning Area 4: *Supporting Physical Activity Behaviour Change* is not included as part of the exemplar as it is not framed around chronic conditions. Table 8 details indicative curriculum content for COPD under the relevant knowledge areas and topics.

Table 8: Curriculum Content for Exemplar Condition, COPD

Core Learning Area 1: *Understanding Chronic Conditions*			
Learning sub-area	***Topic***	***Qualification Specification***	***Exemplar: COPD***
K1.1 The Health Context	Prevalence of chronic conditions	Prevalence of chronic conditions	• In an overview of prevalence of chronic conditions in Ireland, inclusion of prevalence of COPD estimated at 500,000 people in Ireland living with COPD but only 200,000 diagnosed
		Risk factors for chronic conditions	• In overview of primary common risk factors for chronic conditions, inclusion of smoking
K1.2 Development and impact of chronic conditions	Pathophysiology of common chronic conditions	Definition and description	• Condition characterized by persistent respiratory symptoms and airflow limitation due to airway and/or alveolar abnormalities • Usually caused by exposure to noxious particles or gases • A mixture of chronic bronchitis and emphysema, relative contributions of which vary from person to person • Persistent and progressive compared to asthma which present in attacks and then subsides, not typically progressing
		Basic pathophysiology	• Chronic bronchitis is chronic inflammation and eventual scarring of the airways carrying air to the lungs • Emphysema is permanent enlargement of airspaces in the lungs accompanied by destruction of alveolar walls

		• Expiratory airflow limitation is the hallmark of COPD, which progressively traps air during expiration • Results in hyperinflation at rest and dynamic hyperinflation during exercise meaning a new inhalation begins before expiration is complete • Leads to breathlessness and limited exercise capacity characteristic of COPD
	Signs, symptoms and presentation	• Symptoms: dyspnea, chronic cough, sputum production • Dyspnea with exertion is a cardinal symptom of COPD resulting in exercise intolerance • Disuse muscle atrophy is common and reduced muscle strength and endurance leading to increase fatigability, which further contributes to exercise intolerance
	Levels of severity	• Diagnosis and severity is based on spirometry, which is used to determine FEV_1, the volume of air forcibly expired during the first second of expiration and FVC, the maximum volume of air that can be forcibly expired after a maximal inspiratory effort • $FEV_1/FVC < 0.70$ is indicative of COPD • COPD can be classified as mild, moderate, severe or very severe based on airflow limitation

K1.3 Medical management of chronic conditions	Pharmacology	Indications and exercise interactions for common drugs	For pulmonary conditions:
			• Controllers:
			  ○ Corticosteroids, long-acting bronchodilators, combination mediations
			  ○ For symptom management, to control or prevent
			• Relievers
			  ○ Short-acting bronchodilators
			  ○ For exacerbations or sudden unexpected increased dyspnea
			  ○ Some short-acting may increase HR and BP at rest and during exercise (salbutamol) or tachycardia and tremors (anticholinergic agents)
			• Long-term oxygen therapy
			  ○ When SaO_2 is ≤88% at rest

	Rehabilitation	Pulmonary rehabilitation	• A comprehensive intervention based on a thorough patient assessment followed by patient-tailored therapies that include, but are not limited to exercise training, education and behaviour change which are designed to improve the physical and psychological condition of people with chronic respiratory conditions and promote the long-term adherence to health-enhancing behaviours

			• Settings vary from hospital, health centre or leisure centre. Typically 2 group sessions per week for 8 weeks, incorporating 1 hour of exercise and 1 hour of education. • Multidisciplinary team including respiratory consultants, physiotherapists and clinical nurse specialists.
K1.1 Physical activity and chronic conditions	Secondary prevention	Benefits of physical activity specific to types of chronic conditions	• In addition to benefits similar to other common chronic conditions (i.e. improved maximal and functional exercise capacity, muscular strength and endurance, quality of life), in pulmonary conditions, physical activity improves perceptions of dyspnea
		Limitations of evidence and benefits	• Physical activity does not improve lung function • Beneficial effects occur mainly through adaptations in the musculoskeletal and cardiovascular systems that in turn reduce stress on the pulmonary system during exercise
Core Learning Area 2: ***Exercise Safety and Professional Practice in Working with People with Chronic Conditions***			
Learning sub-area	***Topic***	***Qualification Specification***	***Exemplar: COPD***
K2.3 Safety principles and considerations	Special safety considerations for people with	Special safety considerations for pulmonary conditions	• Being aware of the possibility of a temporary increase in symptoms after exercise

	chronic conditions		

K2.4 Medical events	Signs and symptoms of an emerging medical event	Signs and symptoms of a respiratory exacerbation	• An acute worsening of COPD symptoms beyond normal day-to-day variation including:
			  ○ Greater dyspnea
			  ○ Increase in severity or frequency of cough
			  ○ Change in sputum colour, texture or volume
			  ○ Wheezing
			  ○ Greater fatigue than usual
			• Severe symptoms include chest pain, blue lips or finger nails, confusion or disorientation, dyspnea too severe to talk

	Emergency procedures for medical events	Immediate actions and considerations for a respiratory exacerbation	• Terminate exercise • Advise participant to use their reliever inhaler
		Further action for a respiratory exacerbation	• Advise the participant to contact their doctor • If symptoms are severe or worsen, advise the participant to attend the nearest A&E

Core Learning Area 3: ***Exercise Assessment, Programming and Delivery in People with Chronic Conditions***			
Learning sub-area	***Topic***	***Qualification Specification***	***Exemplar: COPD***
K3.4 Special exercise considerations	Special exercise considerations for people with chronic conditions	Special exercise considerations for pulmonary conditions	• Maximising pulmonary function using bronchodilators before exercise can reduce dyspnea and improve exercise tolerance and could be considered if in consultation with a medical professional or pharmacist

Quality and Standardisation

The purpose of these next sections is to specify appropriate arrangements for delivery, assessment, staffing and programme management to ensure the quality of the learning experience for students, but also to help standardise all qualifications based on this qualification specification. There is considerable value to developing a high quality recognisable standardised national qualification. The next sections are written in the first instance for the delivery of stand-alone part-time programmes but there is also reference to the incorporation of relevant curriculum into larger programmes.

Recommended Learning Hours

To ensure transparency for education providers and consistency across different providers, recommendations for minimum learning hours are provided (Table 9). The recommendations relate to guided learning hours. This refers to time spent in contact with a lecturer being taught or instructed by a lecturer. Examples include lectures, practicals, webinars and supervised assessment. Education providers can prescribe an amount of independent learning hours that reflects the structure of the modules, and the credits assigned. Independent learning hours refer to an estimate of the hours the learner will reasonably spend in independent study or self-assessment, as directed but not supervised by a programme lecturer. Examples include unsupervised revision of coursework, e-learning, preparation of assignments. Total learning hours is the sum of the guided and independent learning hours and a measure of the size of the learning unit or qualification. One ECTS is typically assigned to learning outcomes achievable in 25-30 hours of total workload [14.]

Education providers can combine and divide areas to create smaller or larger blocks of learning as long as the four core learning areas remain visible in delivery and assessment. The recommended guided learning hours are the minimum recommended for accreditation.

Table 9: Minimum Recommended Guided Learning Hours

Core Learning Area	**Guided Learning Hours**	
	Total guided	***Of which in-person***
Understanding Chronic Conditions	36	0
Exercise Safety and Professional Practice in Working with People with Chronic Conditions	22	11
Exercise Assessment, Programming and Delivery for People with Chronic Conditions	36	25
Supporting Physical Activity Behaviour Change	30	12
Total	**124**	**48**
Minimum Total Qualification Duration	**124 hours spread over a minimum of 3 months**	

To ensure the effectiveness of the education process, a minimum of 3 months (or one semester) of learning is recommended to obtain the qualification. This assists in making the qualification time meaningful, allowing for consolidation of learning between teaching blocks and providing time to accumulate knowledge and practical skills.

Greater flexibility will be given to the incorporation of the curriculum in larger programmes but the four core learning areas will have to be visible in delivery and assessment. Many full-time sport and exercise science programmes with an emphasis on exercise for health, will have modules in pathophysiology, clinical exercise programming and behaviour change that would align well with the core learning areas. Some education providers might prefer to deliver part of this education in their full-time programmes and the remainder as a 5 or 10 credit micro-credential that sits outside of their full-time programme, targeted at those who have a strong interest in exercise for health. This combined approach has advantages and is very acceptable for accreditation.

Methods of Assessment

Assessment will be administered by the education providers but in line with the requirements and guidance below. Each of the four core learning areas should be assessed but can be done in an integrated manner as long as assessment of each area is visible within this. In particular, issues related to exercise safety should be highly visible in at least one assessment such that it is not possible to pass the programme without satisfactory exercise safety knowledge and skill.

The following applies to stand-alone programmes. It is recommended that assessment include the following 4 items and that a pass is achieved in each.

Multiple Choice Questionnaire (MCQ)

It is recommended that Core Learning Area 1: *Understanding Chronic Conditions* and theoretical components of Core Learning Area 2: *Exercise Safety and Professional Practice in Working with People with Chronic Conditions* and Core Learning Area 3*: Exercise Assessment, Programming and Delivery in People with Chronic Conditions* are assessed via an MCQ. For standardisation purposes, MCQs should avoid a highly complex questioning format and should avoid negative marking but employ a pass mark of 70%. This arrangement should be kept under review. Example MCQ questions are outlined in Appendix F.

Case Study

It is recommended that applied components of Core Learning Area 2: *Exercise Safety and Professional Practice in Working with People with Chronic Conditions* and Core Learning Area 3: *Exercise Assessment, Programming and Delivery in People with Chronic Conditions* are assessed via a case study. This can be a fictitious or real-world case presented to the student, outlining medical and physical activity history. An example case study is outlined in Appendix G. It is recommended the assessment involve the student taking the information presented in the case to conduct preparticipation screening, to identify exercise safety considerations and

to develop a tailored exercise programme for the case. Education providers may include a practical assessment on delivery of a exercise sessions from the programme developed, if they so wish. However, it is not mandatory as competency in exercise instruction will have been assessed in prerequisite qualifications.

Exercise Consultation

It is recommended that Core Learning Area 4: *Supporting Physical Activity Behaviour Change* is assessed via an exercise consultation. Students should record themselves conducting an exercise consultation with a designated participant or volunteer (not with a classmate). Students should write a critical reflection on their own practice. Grading of the assessment should be weighted towards the self-reflection on their practice over and above the actual practice. An example of this approach is outlined in Appendix H.

Compulsory Placement

The qualification specification for Core Learning Area 3: *Exercise Assessment, Programming and Delivery for People with Chronic Conditions* includes 6 hours of placement in exercise provision with people with chronic conditions. It is recommended this is a compulsory component, which can sit within whichever module the education providers deem most appropriate. Providers can select the most appropriate method to assess achievement of this requirement, for example through use of a logbook.

In addition, to the outlined summative assessment, formative assessments, left to the discretion of the education providers, would be beneficial.

Greater flexibility will be given to those embedding the LTC Exercise Instructor knowledge and skills as part of larger programmes to allow for the distribution of curriculum across the larger programme. However, it should be clear on audit that each of the four core learning areas are being assessed and that it would be difficult for a student to pass the relevant modules without competence in the four core learning areas. It is recommended that assessment

includes the assessment of: i) theoretical knowledge; and ii) the application of knowledge and skills with real or fictious cases or scenarios. For programmes with complex course structures, such as streams or elective modules, careful oversight is required to confirm eligibility of students for registration.

The recommendations for assessment and assessment procedures should be kept under review by the accreditation body including the types, structure and pass rates of assessments.

Training Resources

To assist in standardising delivery across education providers, specific training materials are recommended (Table 10).

Table 10: Essential Materials for the Core Learning Areas

American College of Sports Medicine. *ACSM's Guidelines for Exercise Testing and Prescription* (11th edition). Lippincott Williams & Wilkins, 2021.
Erham, JK, Grodon P, Visch P, Keteyian SJ. *Clinical Exercise Physiology: Exercise Management for Chronic Diseases and Special Populations* (5th Edition). Human Kinetics Publishers, 2022.
American College of Sports Medicine. ACSM's Resources for the Exercise Physiologist: A Practical Guide for the Health Fitness Professional. Wolters Kluwer Health, 2021
American College of Sports Medicine. ACSM's Behavioural Aspects of Physical Activity and Exercise (1st Edition). Lippincott Williams & Wilkins, 2013.

Facilities

The facilities needed to deliver this programme will include access to a learning management system and a practical /gym space for Core Learning Area 3 of the qualification specification.

Formal connectivity with a clinical exercise service provider is highly desirable in relation to the practical experience requirement.

Staffing

To ensure the education can be delivered to the required standard, it is recommended that the academic staff delivering the education programme have experience with chronic condition cohorts. It is recommended that education providers should be required to have at least two members of staff to contribute to programme development, delivery, assessment and management / quality assurance.

The following expertise will be needed to deliver the programme:

i. a member of the team with clinical exercise science expertise*
ii. a member of the team with practical experience in supervising or delivering exercise to people with chronic conditions
iii. a member of the team with expertise* in behaviour change / exercise psychology

* The expertise requirement should ensure that the level of underpinning knowledge is well beyond that of the qualification / core learning area itself. It would normally include a relevant postgraduate qualification. It could also include teaching experience and CPD relevant to that core learning area and/or work experience with chronic conditions. A staff member can possess expertise in more than one domain. These requirements should not preclude new members of staff from joining a team but with appropriate mentoring and oversight. Auditors should have regard to the totality of expertise that is delivering on a programme in any given year. Delivery staff must also demonstrate evidence of relevant CPD.

Overall Programme Development, Management and Quality Assurance

Any accredited programme should operate with a programme board and programme chair, with the voice of the student being formally heard, with regular programme board meetings that are minuted and an external examiner appointed.

If embedded in a larger programme, there should be evidence that issues relating to the LTC Exercise Instructor education are considered as a separate item on agendas. If not the programme chair, one academic staff member with this expertise should be nominated to lead this element of the curriculum and to liaise with the accreditation body.

Accreditation Processes

Auditing of Education Providers

The accreditation process for part-time stand-alone programmes and full-time programmes that map to this qualification specification will require evidence of appropriateness and conformity in relation to i. Delivery hours (to include guided and in-person hour requirements), ii. assessment, iii. staffing, iv. facilities and v. overall programme development, management and quality assurance. The accreditation body will design a simple mapping process to capture relevant information, cognisant that QQI undertake overall quality assurance of the education sector. An auditor may wish to see education or assessments in action and to speak to students. It is envisaged that an auditor would work with the education provider lead to compile the documentation to bring to the accreditation committee.

Eligibility for Registration

In order to be eligible to register as a LTC Exercise Instructor, exercise professionals must meet the requirements profile (Figure 2). The registration criteria are as follows:

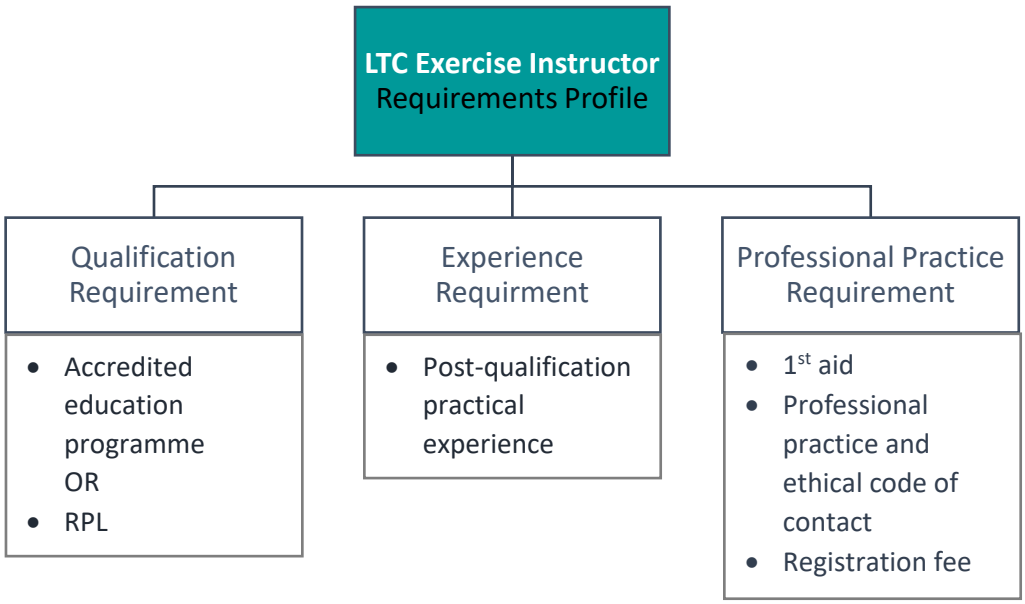

Figure 2: Requirements Profile for Registration as a LTC Exercise Instructor

i. *Qualification requirement*: Accredited education programme (either part-time programme or within an undergraduate programme) or endorsed on a case-by-case basis through recognition of prior learning (RPL) mapped against the qualification specification by an accreditation committee. Additionally, those wishing to deliver group-based classes should ideally hold REPs Ireland certification in Group Fitness Instruction or equivalent.

ii. *Experience requirement:* In addition to the 6 hours of practical experience gained during the qualification, instructors must gain further practical experience post qualification in order to be eligible to register as a LTC Exercise Instructor. A minimum of 20 hours practical experience post qualification is required. If students gained >6 hours of practical experience during their qualification, those hours can contribute here, once evidenced, e.g. through supervisor signed logbooks. Previous practical experience can be endorsed on a case-by-case basis by an accreditation committee. The post qualification practical experience can be with individuals or groups living with chronic conditions of any type or with older adults. Appropriate settings include:
   - clinical exercise service providers
   - patient advocacy body exercise programmes
   - Local Sports Partnerships with programmes for chronic conditions or older adults
   - leisure centres with older adult classes
   - nursing homes offering exercise sessions

   Other settings can be identified by learners and learners can confirm suitability with an accreditation committee. It is recommended that a list of registered placement providers is created, which can provide appropriate supervision and/or mentorship. This requires resourcing. It is recommended education providers signpost instructors to potential placement providers or facilitate coordinating placements post qualification. Learners can coordinate the placement opportunity themselves. Hours can be accumulated across a number of placement providers.

The quality of the placement hours is important, and the 20 hours are expected to be orientated to gain experience in the core competencies outlined. Therefore, the hours can be accumulated in exercise delivery but also preparticipation screening, assessment, programming, session planning and preparation, and participant consultations or interactions. Instructors are advised to seek placements that develop their competencies as a LTC Exercise Instructor and keep observational hours to a minimum. It is recommended that instructors are required to self-report their hours in different operational domains, verified by supervisor sign off, and provide a self-reflection submission on their experience and competency. It is recommended that in the future when the placement system is established, that there is a move away from an hours-based approach towards a fully competency-based approach. It would involve the placement supervisors signing off on the achievement of the core competencies.

iii. *Professional Practice requirement*:
   a. QQI/FETAC certified Occupational First Aid
   b. Confirmed agreement with a LTC Exercise Instructor Professional Practice and Ethical Code of Conduct
   c. Payment of registration fee, as appropriate

To maintain accreditation, LTC Exercise Instructors are required to:

i. Provide evidence of meeting the CPD requirements
ii. Ensure Occupational First Aid is renewed as required
iii. Pay annual membership fee

Legacy and Alternative Qualifications

It is recognised that an Exercise for Health Specialist category already exists on the REPs Ireland register, based on a Europe Active standard. There are other instructors working with

clinical exercise service providers with condition-specific qualifications. There may be others interested in organising exercise for individuals with chronic conditions with advanced education and experience in the field. Accreditation will have to ensure a recognition of prior learning (RPL) process is in place. It is envisaged that those with current REPs Ireland Exercise and Health Specialist registration be transferred to this new category. Those with condition-specific qualifications in addition to a primary exercise instruction / exercise science award, could be registered initially but required to undertake targeted CPD ahead of re-registration to address knowledge deficits. Such an approach would have to be on a case-by-case basis, taking into account the recency of previous qualifications and practical work experience with chronic conditions.

Continuous Professional Development

It is recommended that in order to maintain registration, a LTC Exercise Instructor must accumulate CPD points. The number of points and time period in which they should be accumulated should be confirmed by the accreditation body. The accreditation body will be responsible for identifying and creating CPD opportunities. CPD can take a variety of forms including training courses, workshops, conference attendance, and self-directed learning. Mechanisms for capturing and auditing CPD should be established by the accreditation body.

Existing training opportunities should be identified within the exercise industry and health field. Higher education institutions are also encouraged to consider offering CPD opportunities. It is recommended a significant focus of the CPD opportunities identified/created is condition-specific education. The LTC Exercise Instructor qualification provides basic education and takes an integrated approach to exercise for chronic conditions. Further specialisation in exercise for specific chronic conditions will be valuable to expand knowledge and skills in the delivery of physical activity opportunities for mixed chronic condition cohorts or to deliver opportunities specific to a certain condition. It is recommended that in the first instance this focuses on further specialisation in the specific chronic conditions

included in the qualification specification and then expands to other or less common conditions not included.

Additional suggestions include CPD focusing on disability and inclusion, weight stigma, mental health first aid, other forms of exercise delivery (e.g. online, aquatics) and managerial skills (e.g. establishing and operating an exercise service).

Specialist Register Category or Categories

Over time, as a workforce increases, it may be possible to establish higher or more specialist titles on the Register of the accreditation body based on additional qualifications, CPD and an extensive history of working with chronic conditions.

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Appendices

Appendix A: Framework Development Team

Core Management Team

Prof. Michael Harrison	Head of Department of Sport & Exercise Science and Researcher in Clinical Exercise Physiology, SETU Waterford
Dr. Clare Lodge	Lecturer, Researcher and Chartered Physiotherapist, SETU Carlow
Dr. Bróna Kehoe	Lecturer and Researcher in Clinical Exercise Physiology, SETU Waterford

PACC Steering Committee

Sarah O'Brien (Chair)	Healthy Eating and Activity Living Programme, HSE
Dr. Brian Carson	Exercise is Medicine ® Ireland
Karl Dunne	Ireland Active
Deborah Foley	Carlow Local Sports Partnership
Neil Haran	PACC Facilitator (on behalf of Waterford Sports Partnership, PACC Lead Agent)
Alan Malone	REPs Ireland
Michael McGeehan	Sport Ireland
Prof. Marie Murphy	University of Edinburgh and Ulster University
Prof. Niamh Murphy	South East Technological University
Dr. Grainne O'Donoghue	School of Public Health, Physiotherapy and Sports Science, University College Dublin

Advisory Panel

Liam Cunningham	Athlone Regional Sports Centre
Colin Huffen	The Chartered Institute for the Management of Sport and Physical Activity, UK
Joan Johnston	COPD Support Ireland
Dr. Barry Lambe	South East Technological University
Phelim Macken	Limerick Sports Partnership
Dr. Evan Matthews	South East Technological University
Prof. Niall Moyna	Dublin City University
Dr. Noel McCaffrey	ExWell Medical
Liz O' Sullivan	Physiotherapist and Manager, Cork South PCC & Bantry General Hospital
Dr. James Ryan	General Practitioner
John Windle	Sports Medicine and Institute for Health, University of Pittsburgh Medical Centre, Waterford

Appendix B: Examples of presentations that MIGHT be deemed to be of higher risk of an adverse event during exercise

Very low functional mobility and strength

Not independently mobile (e.g. require walking sticks), inability to walk unaided, Have fallen in the past 6 months, Inability to carry out multiple activities of daily living independently, Diagnosed frailty

Cardiovascular disease

Absence of phase III cardiac rehabilitation following myocardial infarction, Recent percutaneous coronary angiography (previous 2 months), Recent myocardial infarction (previous 6 months), Stable angina, Severe arterial hypertension > 170/100 mmHg, Heart failure, NYHA Risk Classification II – III, Heart valve disease, Implanted cardiac defibrillator with history of cardiac arrest, Pre- or post- cardiac transplant, Stable cardiomyopathies, Stable cardiac arrhythmias

Pulmonary

COPD Gold stage 3-4, COPD using supplemental oxygen, Pulmonary fibrosis, Pulmonary hypertension, Pre- or post- lung transplant, Lung cancer pre- or post- treatment, Severe unstable asthma, Cystic fibrosis

Diabetes

Type I or II diabetes with recent cardiovascular complications, Diabetic autonomic or peripheral neuropathy, Diabetic retinopathy or treatment (laser, injections) for eye complications, Diabetic nephropathy, Hyopglycemia unawareness, Recurrent severe hypoglycemia

Rheumatic and orthopaedic

Rheumatoid arthritis with lung involvement or significant cardiovascular disease, Moderate to severe OA with co-morbidities

Neurological

Severe or atypical Parkinson's or motor neuron with falls risk, Autonomic dysfunction, Autonomic neuropathy or multi-system atrophy with risk of exercise induced autonomic collapse

Renal

Chronic or end stage kidney disease with either cardiac complications or anaemia

Psychiatric

Significant panic disorder, Long Q-T syndrome related to psychiatric medications

Appendix C: Example of Curriculum Content on Pharmacology

Drug Group	**Drug Name/ Suggestion**	**Indication**	**Exercise Interaction**
ACE Inhibitors	ending in: -pril	-hypertension -heart failure -post MI	Quick changes in posture or sudden cessation of exercise will increase risk of hypotension
Angiotensin II Receptor Blockers	ending in: -sartan	-hypertension -heart failure	Quick changes in posture or sudden cessation of exercise will increase risk of hypotension
Anti-Arrhythmic	Amiodarone Digoxin	-arrhythmias	-Potential slower heart rate response to exercise -Reduced exercise capacity
Anti-Coagulants	Warfarin	Reduce risk of embolism formation	-Avoid contact sports or sports with high risk of injury -Care to avoid accidents
β-Blockers	ending in: -lol	-post MI -hypertension -angina -arrhythmias -tachycardia -heart failure	- Quick changes in posture or sudden cessation of exercise will increase risk of hypotension -Prescribe exercise intensity using a combination of HR and RPE -Estimated HRmax will be approx. 20-30 bpm lower than those not using β-blockers

Appendix D: Physical Activity Readiness Questionnaire Plus (PAR-Q+)

Appendix E: Multidisciplinary Falls Prevention in Primary Care Tool

Appendix F: Sample Multiple Choice Questions

1. Which of the following describes multiple sclerosis?
    a. Chronic inflammatory autoimmune disease of the central nervous system
    b. Progressive local degenerative joint disease
    c. Elevated blood glucose concentration due to deficits in insulin secretion
    d. Chronic inflammatory disorder of the airways
2. Which of the following defines hypertension stage 1?
    a. 110 or <70 mm Hg
    b. 120 or <80 mm Hg
    c. 130 or 80-89 mm Hg
    d. 140 or >90 mm Hg
3. Which of the following is the cardinal symptom of COPD?
    a. Angina
    b. Dyspnea
    c. Coughing
    d. Pain
4. Which of the following areas are most commonly affected by osteoarthritis?
    a. Knees and hips
    b. Hands and wrists
    c. Ankles and elbows
    d. Neck and shoulders
5. Which of the following is a usual treatment for hypertension?
    a. Diuretics
    b. Statins
    c. Metformin
    d. Levodopa
6. Which of the following can be a side effect of radiotherapy?
    a. Lymphedema

b. Dyspnea
c. Elevated blood glucose
d. Intermittent claudication

7. Which of the following describes the primary mechanism by which exercise training improves blood glucose regulation in people with Type 2 diabetes?
    a. Increased insulin secretion from the pancreas
    b. Increased insulin sensitivity of the muscle
    c. Decreased glucose production by the liver
    d. Increased glucagon secretion from the pancreas
8. Which of the following systems undergo significant adaptation following exercise training in people with COPD?
    a. Respiratory system
    b. Digestive system
    c. Musculoskeletal system
    d. Integumentary system
9. Which of the following is not a relative contraindication to exercise participation?
    a. Unexplained chest pain
    b. Hypoglycaemia
    c. Delayed onset muscle soreness
    d. Fever or systemic illness
10. Which of the following describes the recommended exercise frequency for people with Type 2 diabetes?
    a. No more than 2 consecutive days without exercise
    b. No more than 3 consecutive days without exercise
    c. No more than 4 consecutive days without exercise
    d. No more than 5 consecutive days without exercise

Appendix G: Sample Case Study

Case: Tom is a 72-year-old male who has been signposted to you following completion of an 8-week pulmonary rehabilitation programme at his local hospital. He is keen to continue exercising. Tom has a diagnosis of GOLD Stage 2 COPD, and his blood pressure is 130/80 mm Hg. He has no other diagnosed medical conditions or injuries. He uses both a controller (corticosteroid) and reliver (bronchodilator) inhaler and is taking a diuretic for his blood pressure. His conditions are controlled with these medications. He is not on supplemental oxygen therapy. He is a former smoker. His primary complaint is dyspnea on exertion and he fatigues easily, especially when climbing the stairs. Other symptoms include a persistent cough with sputum production and an "achy" right knee. He has no other symptoms. His results are the following: height = 180 cm; weight = 75 kg; BMI = 23.1 $kg \cdot m^{-2}$; waist circumference = 88 cm; resting heart rate = 74 bpm; EQ-5D index score = 0.79; 6-minute walk test = 490 m; 30 second sit-to-stand test = 9 reps; TUG test = 11.1 s; BESS = 13 errors; SPPB = 7.

Brief: Use the information provided on the case to:

1. Complete exercise preparticipation screening
    a. Discuss the case's medical history, risk factors, functional limitations, symptoms and physical activity history, identifying priorities and considerations for exercise participation
    b. Apply the PAR-Q+ and determine the appropriate course of action in relation to physical activity participation
2. Design a tailored 12-week exercise programme
    a. Outline the goals of the exercise programme
    b. Describe how information on the following was incorporated into the programme design: medical history, functional limitations and symptoms, physical activity history, and baseline assessment results.
    c. Apply the principles of training and clearly identify where and how they have informed programme design

d. Describe the overall programme using the FITT principle (frequency, intensity, time and type)
e. Detail the exercise sessions for one week of the programme, describing the structure of the session and the approach to its delivery, including methods of monitoring exercise intensity and safety
f. Describe the expected response to a single exercise session and to the 12-week programme and how this may differ from a healthy individual

Appendix H: Sample Exercise Consultation

Assignment: Exercise Consultation Index Analysis

Summary: This assignment requires you to record yourself conducting one exercise consultation session with a volunteer (not a classmate). You will then conduct an in-depth assessment of your exercise consultation skills proficiency using an exercise consultation index (ECI), adapted from the Behaviour Change Counselling Index (BECCI) [15].

Brief:

1. Request permission to record a session with a client, using the consent form template provided. Ensure that the participant you work with is not currently meeting the physical activity guidelines. This will allow you to use a wider array of exercise consultation skills. Note that there is no expectation that the participant will proceed to programme design.
2. Carry out and audio record the exercise consultation
3. Anonymise and transcribe the consultation
4. Listen to the audio file and assign scores for each item using the instructions for the ECI.
5. Write a report with the results of your self-assessment.
    a. Your report should include a detailed analysis of your exercise consultation proficiency. You should highlight your strengths and weakness as identified in your ECI scores.
    b. Use examples from the transcript to support your results and to highlight particular instances of good practice.
    c. In the case of less good practice, you might suggest alternative strategies or approaches that could have been used.
    d. Consider how you might address your weaknesses and improve your skills in exercise consultation practice.
    e. Consider what aspects of the training were relevant to the consultation but not captured in the ECI tool.

Example ECI adapted from BECCI

Use the ECI to score your use of exercise consultation skills. To use, circle a number on the scale attached to each item to indicate the degree to which you have carried out the action described. As a guide while using the instrument, each number on the scale indicates that the action was carried out:

0. Not at all
1. Minimally
2. To some extent
3. A good deal
4. A great extent

Item	Score
1. Practitioner worked collaboratively with the client	**not at all** 0 1 2 3 4 **a great extent**
2. Practitioner displayed empathy	**not at all** 0 1 2 3 4 **a great extent**
3. Practitioner elicited and amplified change talk for physical activity/exercise	**not at all** 0 1 2 3 4 **a great extent**
4. Practitioner moderated sustain talk for physical activity/exercise	**not at all** 0 1 2 3 4 **a great extent**
5. Practitioner avoided the fixing reflex	**not at all** 0 1 2 3 4 **a great extent**
6. Practitioner demonstrated sensitivity to talking about other issues	**not at all** 0 1 2 3 4 **a great extent**
7. Practitioner accurately assessed PA, PA history and exercise self-efficacy	**not at all** 0 1 2 3 4 **a great extent**
8. Practitioner accurately assessed importance and confidence to initiate or increase PA	**not at all** 0 1 2 3 4 **a great extent**
9. Practitioner accurately used strategies and techniques for communicating key PA messages	**not at all** 0 1 2 3 4 **a great extent**
10. Practitioner collaboratively designed a person-centred physical activity plan incorporating components to promote adherence	**not at all** 0 1 2 3 4 **a great extent**


SETU
Ollscoil
Teicneolaíochta
an Oirdheiscirt
South East
Technological
University