

The United Kingdom Musculoskeletal Advanced Practice Standards

September 2022



Health Education England



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Acknowledgements

This United Kingdom Advanced Practice Standards were developed by Health Education England and the MSK Partnership Group.

We are extremely grateful to the many stakeholders who have been instrumental in shaping this piece of work, to our patient representatives who sit in the heart of the Standards development.

We would like to thank the MSK Partnership Group: Our Patient Stakeholders, The Musculoskeletal Association of Chartered Physiotherapists, The International Federation of Orthopaedic and Manipulative Physical Therapists (IFOMPT), The Arthritis and Musculoskeletal Alliance, The Royal College of Podiatry, The Institute of Osteopathy The Society of Musculoskeletal Medicine, The Advanced Practice Physiotherapy Network, The Faculty of Sports and Exercise Medicine, NHS England BestMSK The Chartered Society of Physiotherapy, Physiotherapy Pain Association, Association of Sports Physiotherapists in Sports Medicine, British Society of Sports and Exercise Medicine, Association of Trauma and Orthopaedic Chartered Physiotherapists, The Acupuncture Association of Chartered Physiotherapists, , British Association of Hand Therapists, Physio First, Physio Matters, General Practitioners with Extended Roles in MSK.

We would also like to thank our clinical representation outside the MSK Partnership group: Chiropractors, Nursing, Royal College of Emergency Medicine and the Pain Faculties.

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The development of the Musculoskeletal Advanced Practice Standards was project managed by Amanda Hensman- Crook and Helen Welch as the Chairs of the MSK Partnership Group, the Standards development workstream was led by Dr Tim Noblet and governance workstream by Dr Neil Langridge and supported by Dr Elaine Atkins MBE, Dr.Colette Ridehalgh, Diarmuid Denny and Kenneth Chance-Larson.

Supporting Statements

Co-production

“Just like many other people, probably most, I have experienced good and safe healthcare, but I have also experienced very poor and unsafe healthcare. With different roles coming into primary secondary and community care, I need to know that the healthcare professional I see will have undergone rigorous training and assessment. I believe that the introduction of the new Advanced Practice Practitioner Standards will go a long way to achieving this. The standards set are high. Importantly the standards have been co-created with patients. People with lived experience of the healthcare system have had their thoughts and views embraced throughout the development process. They have been able to challenge proposals and put forward ideas of their own. I know this as I have been one of those patients. This co-production of the standards has helped make them powerful for both clinician and patient alike.

I look forward to knowing that my treating healthcare professionals have achieved these high and exacting standards. My expectation is that I will likely achieve a higher standard of care, that my complexity will be embraced, skilfully assessed, and treated, and my safety better assured. I cannot adequately put in words how important this is for me.”

Christine Price Lived Experience Patient



NHS England

“We have a significant challenge across musculoskeletal health services, with increased demand and complexity associated with both an aging population and widening social inequalities, and the need to best manage patient backlogs that have built as a result of the coronavirus pandemic. Driven by our shared vision to promote lifelong best MSK health in all communities, to meet this challenge we must make best use of our resources to sustain delivery of evidence-informed, personalised high-quality care. MSK advanced practitioners across multiple professions have a key role to play, working across a wide range of settings and clinical specialities within MSK, as skilled clinicians, educators, leaders, and researchers. Thanks to all involved in the development of these standards which provide the foundation for MSK advanced practice capability, and I look forward to working with you all on translating this into practice across the NHS in England.”

Andrew Bennett National Clinical Director MSK Conditions NHS England



Institute of Osteopathy

“Osteopaths, one of the family of Allied Health Professions, have a well-evidenced reputation for expertise in the delivery of MSK care. The Institute of Osteopathy (the professional body for UK osteopaths) is therefore delighted to have been able to contribute to the development of this document. It is hoped that the MSK Advanced Practice standards will support standardisation of NHS MSK service provision promising the delivery of joined-up patient-centred care for those we serve and reducing unwarranted variation. We also look forward to the prospect of enhanced inter-disciplinary working and parity of opportunity across the Allied Health Professions in the UK in the spirit of the NHS Long Term Plan.”

Maurice Cheng CEO Institute of Osteopathy



Faculty of Exercise and Sports Medicine

“The publication of the MSK AP Standards represents an important step forward in the care of Musculoskeletal problems in the United Kingdom and underpins NHSE transformation. Defining standards expected of advanced MSK clinicians aligns closely to the Faculty of Sport and Exercise Medicine’s work with stakeholders to define standards for GP’s with Extended roles and we have worked closely with the MSK Partnership Group to ensure these standards are in harmony. These advanced standards reflect the truly multi-disciplinary nature of MSK care, and will help open up MSK roles to all clinicians. Ensuring highly skilled clinicians are available to provide this care is a huge step forward for the NHS.”

Dr Chris Tomlinson BM BS, MSc (SEM), FFSEM(UK)



Chartered Society of Physiotherapy

“To deliver on the NHS long term plan and ensure patients are receiving the care they need it is imperative we have an advanced clinical workforce who are confident, competent and working to the top of their capabilities. This document provides an excellent opportunity to achieve this within MSK. We are working with a patient population presenting with ever increasing levels of complexity, often presenting with multimorbidities, and against a backdrop of widening health inequalities. This document will support physiotherapists to understand the skills and capabilities required to deal with such clinical complexity and uncertainty. It is a great step forward for clinicians and patients alike.”

Ashley James Director of Practice and Development Chartered Society of Physiotherapy



Background

Advanced Musculoskeletal Practitioner roles have existed in the UK for over 30 years, playing an integral part within the delivery of MSK health-services nationally. By utilising their full scope of practice at Master's level across all four pillars of practice, research has shown Advanced Practitioners to be clinically and cost-effective across MSK patient-pathways, working in a diversity of settings including emergency, rheumatology, persistent pain, paediatric and therapies departments, as well as in primary care and in MSK secondary care interface services.

The emergence of advanced practice roles across the United Kingdom, has led to the development and implementation of education and training programmes to better prepare the workforce.

Assurance is required that there is a standardisation of quality in education and training provided across multiple professions at this level of practice and across all healthcare sectors. This standardisation provides governance and ultimately patient safety ensuring that clinicians have the knowledge, skills, and behaviours to work at this level of practice.

Introduction

Development of the United Kingdom Musculoskeletal Advanced Practice Standards (the Standards) was funded by Health Education England and co-produced by the UK Musculoskeletal Partnership Group. The Standards were informed by current literature that identified the need for specific musculoskeletal focused standards to maintain and further promote high quality musculoskeletal care across all health sectors ([Noblet et al, 2021](#)).

Purpose

The Standards were developed to reduce unwarranted variation in education and practice at advanced practice level across all professions and sub-specialties to enhance the quality of MSK care, uphold patient and clinician safety, and strengthen system-level leadership to benefit populations, patients and services.

The Standards define the minimum knowledge, skills and behaviours to work at advanced practice level in the UK. They are designed to inform and underpin the development and delivery of MSK advanced practice education and training programmes and pathways across the UK (at academic level 7/11; Master's degree level).

The Standards apply across all advanced musculoskeletal clinical practice roles across the UK, regardless of the profession (and therefore the statutory regulator) of the practitioners undertaking them.

The United Kingdom Musculoskeletal Advanced Practice Standards

The structure of the Standards is explained below. The combined layers of the Standards – elements, outcomes and knowledge, skills and behaviours – define the minimum education and practice requirements for advanced level MSK practice in the UK.

The Standards are divided into 8 elements.

The elements are as follows:

1. Demonstrates critical and evaluative evidence informed practice
2. Demonstrates comprehensive knowledge and critical application of scientific disciplines in contemporary MSK practice
3. Demonstrates critical use of comprehensive knowledge base of MSK practice
4. Demonstrates critical and an advanced level of clinical reasoning skills enabling effective assessment and management of patients with MSK conditions
5. Demonstrates an advanced level of communication skills enabling effective assessment and management of patients with MSK conditions
6. Demonstrates of an advanced level of practical skills with sensitivity and specificity of handling, enabling effective assessment and management of patients with MSK conditions
7. Demonstrates a critical understanding and application of the process of research
8. Demonstrates clinical expertise and continued professional commitment to the development of MSK practice

LEARNING OUTCOMES

A set of learning outcomes is articulated under each element.

KNOWLEDGE, SKILLS, AND BEHAVIOURS

Knowledge, skills and behaviours are articulated under each learning outcome.

A blend of learning, teaching and assessment approaches should be used to develop, test and evidence practitioners' fulfilment of the Standards. The combination of selected approaches should reflect the demands of level 7/11 learning and advanced practice and ensure that different sources of evidence are triangulated.. In support of this triangulation of evidence, practitioners should maintain a portfolio of their learning and assessments, feedback from others and their critical reflection on their own learning, development and practice.

The Table below shows examples of learning, teaching, and assessment approaches.

<p>Examples of learning and teaching approaches that can be used to develop fulfilment of the learning outcomes</p> <ul style="list-style-type: none"> ✓ Case analysis ✓ Problem based learning ✓ Student seminar presentations ✓ Discussion and debates ✓ Mentored practice ✓ Lectures ✓ E-learning ✓ Development of research proposal ✓ Execution of research project ✓ Manual techniques practice ✓ Discussion and debates ✓ Online discussion forums with peers with input from a facilitator ✓ Reflective case presentation/analysis ✓ Facilitated/Moderated online peer discussion forums ✓ Mentored clinical practice ✓ Facilitated/Moderated peer reflection groups ✓ Review literature relevant to MSK practice, including psychologically informed and person-centred approaches
<p>Examples of assessment approaches that can be used to assess fulfilment of the learning outcomes</p> <ul style="list-style-type: none"> ✓ Reflective and critical case analysis ✓ Clinical examination of patient ✓ Management of returning (follow-up) patient ✓ Viva discussion ✓ Research proposal ✓ Research article/oral presentation/poster presentation of research project findings ✓ Assessment of techniques ✓ Literature review/Essay evaluating evidence informed assessment and/or management ✓ Critical seminar presentation of a case analysis ✓ Reflective analysis of practice ✓ Critique of peer reviewed journal article(s), grey literature and SoMe e.g., blogs, tweeterials, infographics and opinion pieces)

LEARNING OUTCOMES: Element 1

Demonstrates critical and evaluative evidence informed practice

By the end of the programme of study, the successful student will be able to:

1. Retrieve, integrate and critically apply knowledge from all relevant sciences (e.g., biomedical, clinical, pharmacological, psychological, behavioural, and social) in order to draw inferences for MSK practice, recognising the limitations of incorporating evidence into practice
2. Critically evaluate the results of treatment, in collaboration with the patient, modifying and progressing treatment and management as required, using appropriate outcome measures, to evaluate the effectiveness of MSK practice
3. Integrate and apply evidence informed approaches in health promotion and preventative care programmes
4. Facilitate, enhance, and promote the rights of the patient, demonstrating person centred care, to facilitate the patient to actively participate in the health care management taking into account the patient's wishes, goals, attitudes, beliefs and circumstances

Element 1: Demonstrates critical and evaluative evidence informed practice	
Knowledge	
E1.K1	Demonstrate critical and evaluative application of <u>evidence informed practices</u> relevant to the field of MSK practice e.g. uses clinical audit to evidence the use of best practice/national and international guidelines within MSK care and service delivery, identifying where modifications are required
E1.K2	Demonstrate critical and evaluative understanding of appropriate outcome measures e.g. data collection and analysis, satisfaction feedback and stakeholder engagement to improve quality of care, service delivery and health inequalities
E1.K3	Demonstrate critical and evaluative understanding of pharmacotherapy and the role of joint and soft tissue injections, informed by the evidence base in MSK practice
Skills	
E1.S1	Demonstrate ability to retrieve, integrate and apply knowledge from the clinical, medical and behavioural sciences in the clinical setting, recognising the limitations of incorporating evidence into practice whilst exercising substantial autonomy and initiative in complex and unpredictable situations at the limits of current professional codes and practices
E1.S2	Demonstrate ability to critically review the recent literature of the applicable sciences relevant to MSK dysfunctions/conditions, to draw inferences for MSK practice and present material logically in both verbal and written forms

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E1.S3	Demonstrate an evidence informed approach to the assessment and management of patients with MSK conditions and awareness of the complex impact of activity patterns on pain experience and influences on patient’s activity related habits
E1.S4	Demonstrate the ability to evaluate the results of treatment accurately and modify and progress treatment as required using evidence
E1.S5	Demonstrate the advanced use of outcome measures to evaluate the effectiveness of clinical interventions and services and uses outcomes to inform future planning and development
E1.S6	Demonstrate an ability to integrate and apply evidenced informed approaches in the presentation of health promotion and preventative care programmes; work in partnership utilising behaviour change principles to promote and support the individual with continuing work/exercise participation and the importance of social networks, clinical and non- clinical groups and services
E1.S7	Demonstrate an ability to enhance and promote the rights of a patient to actively participate in their health care management by asking about and understanding the patient’s beliefs about their condition. Taking into consideration the patient’s wishes, values, goals, attitudes, and circumstances. Demonstrate an awareness of the motivational role of values and assist patient to clarify these, in the presence of psychological distress, and move towards them with awareness of influence of own values on ability to do this
E1.S8	Make recommendations to employers regarding individuals’ fitness to work, including through the appropriate use of fit notes and seeking of appropriate occupational health advice
E1.S9	Work in partnership with individuals to make an informed choice regarding surgical intervention e.g., to understand individuals’ beliefs, fears, and concerns, seeking assistance where required, referring appropriately and with consideration of local and national pathway, guidelines, resources and policies.

Behaviours

E1.B1	Demonstrate a critical and evaluative approach to all aspects of practice
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LEARNING OUTCOMES: Element 2

Demonstrates critical use of a comprehensive knowledge base of the applicable sciences in MSK practice

By the end of the programme of study, the successful student will be able to:

1. Work effectively within a biopsychosocial and narrative model of practice, demonstrating application of knowledge of psychological and social determinants of health, to inform assessment and management strategies in MSK practice
2. Demonstrate awareness, and critical evaluation, of the influence of the practitioner's context and behaviour on therapeutic alliance and treatment outcomes
3. Critically apply knowledge of anatomy, physiology, pharmacology, biomechanics, and epidemiology to enable assessment of functional ability, pain, and multidimensional needs in relation to the ICF classification
4. Critically evaluate knowledge informing pathology, pathogenesis and pain mechanisms underlying mechanical dysfunction of the MSK system
5. Critically apply knowledge of psychological, social and behaviour change theory to effective MSK assessment and management
6. Integrate and apply knowledge of examination procedures, appropriate selection of assessment techniques and tools through understanding of their diagnostic and evaluative qualities (including reliability, validity, responsiveness, and diagnostic accuracy), and differential diagnosis in the assessment of MSK dysfunction
7. Critically apply knowledge and advanced clinical reasoning skills to differentiate dysfunction of the MSK system from dysfunction in other systems
8. Critically apply knowledge of indications, contraindications, precautions, and effects, as well as knowledge of effectiveness and risks, and include shared decision making, to inform best practice in the management of MSK dysfunction and accurately predict prognosis with realistic outcomes
9. Integrate and apply knowledge of prognostic, risk and predictive factors of relevant health problems and ensure the patient can make informed choice regarding MSK management decisions
10. Critically use data from outcome measures to evaluate clinical presentation

Element 2:

Demonstration of comprehensive knowledge and critical application of scientific disciplines in contemporary MSK practice

Knowledge

E2.K1	Demonstrate comprehensive knowledge of the relevant biomedical and clinical sciences as applied to understanding, assessment, and management, of MSK conditions. Relevant scientific disciplines include anatomy, physiology, pharmacology, pain management, biomechanics, and epidemiology.
E2.K2	Demonstrate comprehensive knowledge of psychological and behavioural sciences and the relevant theories on psychological processes and behaviour changes relevant to MSK assessment and management much of which is at, or informed by, the forefront of professional practice. Demonstrate an understanding of the complex and overlapping influences of thoughts, emotions, and body sensations and how they influence behaviour. Demonstrate awareness of and ability to assist patients to modify sleep related behaviours in the presence of physical and psychological factors
E2.K3	Demonstrate comprehensive knowledge of the role of the biopsychosocial model in relation to MSK practice, including advanced knowledge and understanding of narrative based approaches, particularly related to the stories people form in relation to their MSK condition, and social determinants of health as related to MSK conditions.
E2.K4	Demonstrate comprehensive knowledge of contemporary and applied pain management, with an in depth understanding of the responses of people to pain, to include integration of biopsychosocial model and understanding of all determinants of pain including biological, psychological, and social contributors.
E2.K5	Demonstrate comprehensive knowledge of indications, contraindications, effects, side-effects of therapeutic drugs and Injection therapy, understanding local, national formularies, resources, guidelines, and policies related to their use in the examination and management of MSK conditions

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E2.K6	Demonstrate comprehensive knowledge of the influence of the MSK practitioner’s own attributes on the therapeutic interaction including, but not limited to, socio-cultural and economic status, ethnicity, gender, sexual orientation, and beliefs that may influence the therapeutic encounter and outcomes
E2.K7	Demonstrate comprehensive knowledge of effectiveness, risks, and efficacy of MSK treatments/ interventions
E2.K8	Demonstrate comprehensive knowledge of pathological processes, and possible contributions, as well as differentiate from other systems including (but not limited to) cardio-vascular, respiratory, neurological, dermatological, genito-urinary, lymphatic, and visceral, as they relate to MSK conditions
E2.K9	Demonstrate comprehensive knowledge of the specific diagnostic and evaluative qualities of assessment tools, including reliability, validity, responsiveness, positive likelihood, negative likelihood, and diagnostic accuracy
E2.K10	Demonstrate comprehensive knowledge of prognostic, risk, and predictive factors of relevant health problems in relation to MSK management strategies
E2.K11	Demonstrate comprehensive knowledge of examination procedures to enable differential diagnosis of MSK, cardio-vascular, respiratory, neurological, dermatological, genito-urinary, visceral, and lymphatic conditions
E2.K12	Demonstrate comprehensive knowledge of effectiveness, risks, and efficacy of MSK diagnostic tools including imaging, blood test, and neurophysiology, and treatment interventions
E2.K13	Demonstrate comprehensive knowledge of indications for, and the nature of, surgical intervention in the management of MSK conditions including the expected benefit, limitations, advantages and disadvantages of surgical interventions and the importance of an impartial approach to the information shared in the context of other management options, rehabilitative interventions and social prescribing

E2.K14	Demonstrate the knowledge and skills needed to improve the environmental sustainability of health systems, and describe how the environment and human health interact at different levels
Skills	
E2.S1	Demonstrate critical and comprehensive application of knowledge of the relevant sciences and their contribution to the patient’s presentation in the examination and management of patients with MSK conditions. Practise within complex and unpredictable contexts which demands innovative work which may involve exploring current limits of knowledge.
E2.S2	Demonstrate ability to coach patients to set appropriate and person centred goals with attention to barriers, underpinned by effective application of psychologically informed and behavioural principles, to determine which outcome, assessment, and intervention tools are most appropriate, and to interpret outcomes in assessment and management of patients fulfilment of personal goals and independence relevant to their MSK condition e.g. supports and recognises when to discharge the individual with self-management. Demonstrate an awareness of the complex psychological, social and cultural factors that will influence a patient to engage with and continue a pain self-management approach and assist the patient in identifying strategies to overcome modifiable obstacles
E2.S3	Demonstrate effective interpersonal and communication skills in the application of knowledge of all relevant sciences in the examination and management of people with MSK conditions to inform them about the risks, prognosis, potential side effects, and likely benefits of an MSK treatment intervention in relation to this. Demonstrate ability to cultivate a shared understanding of pain with patients, acknowledging complexity, explaining the multifactorial nature of pain. exploring their beliefs about the relationship between pain and damage, and the impact of pain on people’s lives
E2.S4	Demonstrate the ability to identify, in the context of a biopsychosocial framework, the nature and extent of patients’ functional abilities, pain and multidimensional needs, including psychological and social determinants of health, in relation to the ICF classification and planned MSK management e.g. able to identify risk factors for the persistence of MSK conditions and advise, signpost and refer individuals to psychological therapies, counselling and pain services as appropriate
E2.S5	Demonstrate accurate prediction of expected changes and progress towards realistic outcomes

E2.S6	Demonstrate ability to advise individuals regarding medicines management of their MSK problem, and the expected benefits and limitations in the context of other management options
E2.S7	Demonstrate ability to keep an individuals' response to medication under review, recognising differences in the balance of risks and benefits that may occur in the context of polypharmacy, multi-morbidity, frailty, and cognitive impairment. Seeking appropriate support or onward referral for pharmacotherapy where required and utilising available resources to further complement advice given e.g., signpost to websites, leaflets, pharmacists, MHRA yellow card scheme.
E2.S8	Demonstrate ability to work in partnership to explore the suitability for injection therapy, including the expected benefit, limitations, advantages and disadvantages of injection therapy and the importance of an impartial approach to the information shared in the context of other management options. Seeking advice and local referral for injection where required
E2.S9	Demonstrate advanced skills in the application of psychological approaches, drawing on awareness of underpinning theories in the interpersonal interaction and management of people living with MSK conditions
E2.S10	Discuss how the duty of a health professional to protect and promote health is shaped by the dependence of human health on the local and global environment
Behaviours	
E2.B1	Demonstrate an objective and analytical attitude in the application of knowledge and adaptation of the applicable sciences in the context of person-centred practice with respect for the individual by acknowledging their unique needs, preferences and values, autonomy, and independence in accordance with legislation, policies, procedures. Working to inform and promote legislation, policies, procedures, and best practice. Demonstrating ability to deliver complex treatment programmes

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E2.B2	Demonstrate criticality of practice in the application of knowledge of relevant sciences, within a biopsychosocial framework that includes social determinants of health, in the examination and management of people with MSK conditions
E2.B3	Demonstrate creativity and innovation in the application of knowledge of all relevant sciences in the examination and management of patients with MSK condition and demonstrate sensitivity to changes in behaviour of those presenting with MSK conditions.
E2.B4	Demonstrate an advanced level of reflection and self-evaluation in managing people with MSK conditions including a high level of awareness of influences on communication and model ability to work with these in a nonreactive way
E2.B5	Provide information and support individuals to make an informed choice and to exercise their autonomy in accordance with legislation, policies, procedures, and work to inform and promote legislation, policies, procedures, and best practice

LEARNING OUTCOMES: Element 3

Demonstrates critical use of a comprehensive knowledge base of MSK practice

By the end of the programme of study, the successful student will be able to

1. Retrieve, integrate, and critically apply current knowledge of the theoretical basis and evidence base of MSK practice to inform assessment
2. Critically evaluate evidence based diagnostic tests and outcome measures to enable a clinical diagnosis and effective evaluation of MSK management
3. Critically apply current evidence informed theory and knowledge of safe and effective practice of MSK in the person-centred assessment and management of the MSK system
4. Critically appraise and consider the Integration, application and evaluation of manual techniques, motor-learning, exercise science, ergonomic strategies, and other modalities as components of multimodal evidence informed MSK intervention, to optimise functional ability

Element 3: Demonstrates critical use of comprehensive knowledge base of MSK practice	
Knowledge	
E3.K1	Demonstrate comprehensive knowledge of the interrelationship of anatomical structures in MSK function and dysfunction
E3.K2	Demonstrate comprehensive knowledge of the theoretical basis of the assessment of the MSK system and interpretation of this assessment towards a clinical diagnosis
E3.K3	Demonstrate comprehensive and critical knowledge of static and dynamic function in the assessment of the MSK system and interpretation of this assessment
E3.K4	Demonstrate comprehensive knowledge of the biomechanics and principles of active and passive movements of the articular system including the joint surfaces, ligaments, joint capsules, and associated bursae in the assessment of the MSK system and interpretation of this assessment
E3.K5	Demonstrate comprehensive knowledge of the specific tests for functional status of the Neuro-musculoskeletal and vascular systems in the assessment of the MSK system and interpretation of this assessment
E3.K6	Demonstrate comprehensive knowledge of the specific, valid, and reliable special/screening tests for the safe assessment of body systems and interpretation of this assessment
E3.K7	Demonstrate comprehensive knowledge of appropriate medical diagnostic tests and their integration required to make a MSK clinical diagnosis. This includes being able to select the appropriate investigative tests, interpret results and inform assessment and decision making

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E3.K8	Demonstrate comprehensive knowledge of possible interventions for management of MSK condition including demonstrating shared decision making and acting in the individual's best interest to refer and/or signposting for relevant investigations, local and national services including supported self-management, psychological and coaching support
E3.K9	Demonstrate comprehensive and critical knowledge of physical, manipulative, exercise, rehabilitative, and multimodal interventions, and valid and reliable safety/screening tests for management of MSK condition e.g. the safety and appropriateness of referral for rehabilitation and/or specific interventions (manipulation, manual techniques, electrotherapy, social prescribing, injection therapy and pharmacotherapy etc)
E3.K10	Demonstrate comprehensive knowledge of evidence informed outcome measures appropriate to the management of MSK condition
E3.K11	Demonstrate comprehensive advanced knowledge of ergonomic strategies and advice to assist the individual/relevant agencies, on effective risk assessments and provision of appropriate working conditions. This may include adaptation to meet the individual's needs in their work environment to prevent MSK related work loss
E3.K12	Demonstrate comprehensive knowledge of preventative programmes for MSK conditions, including knowledge of and referral pathways for all local exercise groups, smoking cessation, and weight management programmes
Skills	
E3.S1	Demonstrate advanced application of comprehensive knowledge of the examination and management of individuals with MSK conditions. Be able to assess and manage commonly seen patterns and syndromes and the causes to which they relate: joint, bone pain, muscle pain and weakness, systemic extra-skeletal problems related to trauma, degenerative, neoplastic, inflammatory, developmental/congenital and psychological contributors
E3.S2	Demonstrate diagnostic skills required for MSK management: assess, identify, analyse and interpret information from the assessment including diagnostic uncertainty and differential diagnoses
E3.S3	Demonstrate critical evaluation of the contribution of MSK knowledge to the examination and management of the patient with MSK condition
E3.S4	Demonstrate critical decision-making regarding integration of principles of manual therapy techniques as a component of multimodal MSK management

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E3.S5	Demonstrate integration of principles of exercise science as it applies to rehabilitation programmes as a component of multimodal intervention for management of MSK conditions
E3.S6	Demonstrate integration of principles of bioplastic adaptation/ motor relearning as a component of multimodal MSK intervention for management of MSK condition
E3.S7	Demonstrate integration of principles of education and information sharing as a component of multimodal MSK intervention for management of MSK conditions
E3.S8	Demonstrate, when appropriate, integration of principles of other evidence informed modalities as a component of multimodal MSK intervention for management of MSK conditions
E3.S9	Demonstrate advanced use of interpersonal and communication skills during history taking, physical examination, review and reassessment, and documentation e.g. consideration of verbal and non-verbal communication, adapting to individual preferences, cognitive and sensory impairment, and language needs, avoiding jargon and unhelpful/judgemental assumptions
Behaviours	
E3.B1	Demonstrate adaptability of knowledge of MSK practice in the context of patient centred practice
E3.B2	Demonstrate criticality of evidence informed practice in the application of MSK management and rehabilitation in the context of person-centred care
E3.B3	Demonstrate creativity and innovation in the application of knowledge of MSK care.

LEARNING OUTCOMES: Element 4

Demonstrates critical and an advanced level of clinical reasoning skills enabling effective assessment and management of patients with MSK conditions

By the end of the programme of study, the successful student will be able to:

1. Use advanced clinical reasoning to integrate scientific evidence, clinical data and biopsychosocial and narrative factors related to the clinical context
2. Critically apply the hypothetico-deductive and pattern recognition *clinical reasoning* processes using the various categories of hypotheses used in MSK practice, related to diagnosis, management and prognosis
3. Critically evaluate and effectively prioritise clinical data collection to ensure reliability and validity of data and quality of clinical reasoning processes
4. Integrate evidence informed practice, reflective practice, person centred approaches, and metacognition into a collaborative reasoning/clinical decision-making process with the patient, carers and other health professionals to determine management goals, interventions and measurable outcomes

Element 4: Demonstrates critical and an advanced level of clinical reasoning skills enabling effective assessment and management of patients with MSK conditions	
Knowledge	
E4.K1	Demonstrate critical understanding of the process of hypothetico-deductive clinical reasoning, including hypothesis generation and testing
E4.K2	Demonstrate effective use of the process of pattern recognition, including the importance of organising clinical knowledge in patterns
E4.K3	Demonstrate advanced application of the various categories of hypotheses used in MSK healthcare including those related to diagnosis, context, management and prognosis for example understand where early referral and diagnosis may affect long term outcome
E4.K4	Demonstrate comprehensive advanced knowledge of all possible interventions for management of MSK conditions. Demonstrating where agreed in partnership and acting in the individuals best interest, using a wide range of age-appropriate methods of engaging the patient in treatment with awareness of own skills in working with developmental and age-related issues, and demonstrating a heightened awareness of professional and inter-professional boundaries and limitations. Referring and/or signposting for relevant investigations, local and national services including self- help, counselling and coaching support when indicated. referring the patient to a specialist in this area where appropriate

E4.K5	Demonstrate critical evaluation of common clinical reasoning errors
Skills	
E4.S1	Demonstrate an advanced level of accurate and efficient selection of inquiry strategies based on early recognition and correct interpretation of relevant clinical cues. Gather, synthesise and appraise, from various sources, sometimes incomplete or ambiguous, information relating to current and past history, their activities, any injuries, falls, frailty, multi-morbidity or other determinants of health and wellbeing and characteristics of MSK conditions (pain, stiffness, deformity, weakness, sensory loss and impact on tasks and occupation etc)
E4.S2	Demonstrate an advanced level of critical and evaluative collection of clinical information to ensure reliability and validity, ensuring concise and accurate documentation for clinical management and in accordance with local protocols, legal and professional requirements.
E4.S3	Demonstrate advanced use of clinical reasoning to integrate scientific evidence, clinical information, the individuals perceptions and goals, and factors related to the clinical context and the individual's circumstances using clinical outcome measures such as pain, function and quality of life, to progress meaningful goals and offering regular appointments to monitor other health care needs associated with MSK long term conditions and co morbidities
E4.S4	Demonstrate integration of evidence informed, person-centred, meta-cognitive and reflective practice in clinical reasoning decision-making
E4.S5	Demonstrate application of collaborative clinical reasoning with the patient, carers/caregivers and other health professionals in determining management goals, interventions and measurable outcomes and with consideration of local and national pathway, guidelines, resources and policies
E4.S6	Demonstrate effective prioritisation in the examination and management of patients with MSK conditions
Behaviours	

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E4.B1	Demonstrate a critical understanding of the key role of person-centred complex clinical reasoning skills in all aspects of advanced clinical practice
E4.B2	Demonstrate effective collaborative and communication skills in requesting further investigation or referral to another healthcare professional
E4.B3	Demonstrate learning through critical reflection during and after the clinical encounter
E4.B4	Demonstrate learning through precise and timely reassessment

LEARNING OUTCOMES: Element 5

Demonstrates an advanced level of communication skills enabling effective assessment and management of patients with MSK disorders

By the end of the programme of study, the successful student will be able to:

1. Demonstrate advanced verbal and non-verbal communication skills to include empathy, active listening, questioning strategies, and interpersonal skills to obtain pertinent information from the patient, avoiding errors of communication to enable effective MSK practice
2. Demonstrate efficient and clear written communication, record keeping, evidence of informed consent for effective and safe MSK practice that meets medico-legal requirements
3. Explain the assessment findings and clinical diagnosis to the patient to enable a collaborative, patient-centred discussion of their management options facilitating shared decision making.
4. Implement effective management plans by providing patients with appropriate rehabilitation programmes, and public health promotion of wellness through education of patients, carers/caregivers, the public and healthcare professionals

Element 5: Demonstrates an advanced level of communication skills enabling effective assessment and management of patients with MSK conditions	
Knowledge	
E5.K1	Demonstrate advanced critical understanding of the processes of verbal and non-verbal communication, clinical documentation and the common associated errors of communication e.g., use of inappropriate closed questions, appropriate use of lay and professional terminology.
Skills	
E5.S1	Demonstrate advanced level of efficient and effective questioning strategies to obtain reliable and valid information from history taking whilst demonstrating the ability to explore and appraise an individual’s perceptions, ideas and beliefs about their symptoms e.g. appropriate and sensitive communication styles, exploring, synthesising and distilling relevant information about relationships between social activities, work and health (biological and psycho-social barriers to recovery, frailty, dementia, other determinants of health).
E5.S2	Demonstrate efficient and effective use of advanced active listening skills throughout the individuals encounter
E5.S3	Demonstrate advanced effective interpersonal skills to inform the individual about their clinical presentation and all their management options, supporting the individual to engage in identifying the risks, prognosis, potential side effects, and likely benefits of interventions related to their personal needs and health goals

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E5.S4	Demonstrate effective and efficient communication and shared decision making with all individuals involved in determining and managing goals, clinical interventions, social prescribing and measurable outcomes to ensure integrated patient care e.g. verbal, written and digital to serve the individuals best interest
E5.S5	Demonstrate an advanced level of skill in implementing and educating individuals in appropriate rehabilitation exercise programmes supporting individuals to engage and explore personal goals, the consequences of their actions and inactions on these goals and their health status and independence relevant to their MSK condition.
E5.S6	Demonstrate effective documentation of informed consent from the individual for assessment and management procedures as appropriate
E5.S7	Demonstrate maintenance of clear, accurate and effective records of assessment and management to meet clinical and legal requirements
Behaviours	
E5.B1	Demonstrate critical awareness of person-centred communication as being central to effective advanced clinical practice, modifying personal behaviour and actions to meet the demands of the situation and to enhance own, and others' performance and to modify communication to take account of the needs of different audiences.
E5.B2	Demonstrate critical awareness of the central role of communication skills in the development of advanced clinical expertise including using a range of advanced and specialised communication skills to share specialised information and ideas/engage in critical dialogue with a range of audiences with different levels of knowledge & expertise
E5.B3	Demonstrate critical awareness of public health strategies and guidelines on the promotion of wellness and prevention through the education of individuals, public, health and social care professionals
E5.B4	Demonstrate advanced self-awareness and empathy to mitigate against the impact of a clinician's own values, beliefs, prejudices, assumptions and stereotypes when interacting with others with ability to clinically demonstrate empathy, validation and active listening to elicit relevant information and engage patients.

LEARNING OUTCOMES: Element 6

Demonstrates an advanced level of practical skills with sensitivity and specificity of handling, enabling effective assessment and management of patients with MSK disorders

By the end of the programme of study, the successful student will be able to:

1. Critically select and use appropriate practical skills and outcome measures to enable collection of high-quality clinical data to inform effective clinical reasoning during patient assessment
2. Critically select and use, within a multimodal treatment plan, a range of interventions including information sharing, manual therapies, and exercise prescription with consideration to frequency of treatment, dosage parameters and progression
3. Apply skills with precision, adapting when required, to enable safe and effective practice
4. Critically apply a range of interventions, as appropriate, to enhance patient rehabilitation

Element 6: Demonstrates an advanced level of practical skills with sensitivity and specificity of handling, enabling effective assessment and management of patients with MSK conditions	
Knowledge	
E6.K1	Demonstrate comprehensive advanced knowledge including indications and contraindications of all available multimodal therapeutic intervention for management of MSK conditions including the safety and appropriateness of referral for rehabilitation and/or specific interventions (manual techniques, electrotherapy, social prescribing, injection therapy and pharmacotherapy etc)
E6.K2	Demonstrate integration of knowledge and clinical reasoning in the decision to perform practical skills
E6.K3	Demonstrate integration of advanced knowledge and clinical reasoning in the evaluation of clinical information obtained e.g., infectious, metabolic, oncological, inflammatory/autoimmune causes manifesting as MSK dysfunction
E6.K4	Demonstrate comprehensive knowledge of various manual therapy, exercise, digital, and other therapeutic adjuncts e.g., taping, acupuncture, digital technology (e.g., apps and wearables), and electrotherapy modalities used to support adherence to rehabilitation interventions for individuals with MSK conditions using a wide range of digital media to enhance treatment effectiveness of practice
Skills	

E6.S1	Demonstrate advanced level of sensitivity and specificity in the physical and functional assessment of the articular, muscular, fascial, enthesal, nervous, vascular, cardiorespiratory systems
E6.S2	Demonstrate sensitivity and specificity of handling in the application of manual therapy and manipulation skills relevant to the management of MSK conditions
E6.S3	Demonstrate sensitivity and specificity of handling in the implementation and instruction of individuals in appropriate therapeutic rehabilitation exercise programmes including performance optimisation, rehabilitation, graded return to normal activity, activity modification and rehabilitation programmes. Demonstrating technical mastery of complex skills within unpredictable contexts and ability to modify a technique in-action.
E6.S4	Demonstrate biopsychosocial assessment skills and advanced use of interpersonal and communication skills, and willingness to stay with distress where appropriate and model openness, in the effective application of practical skills for assessment, diagnosis and management of individuals with MSK conditions including risk assessment of deliberate self-harm in accordance with local policy
E6.S5	Demonstrate an awareness of the complex physical, psychological and social factors which may result in a pain flare up and strategies that could be employed to minimise the impact of the flare-up, assisting the patient in identifying their own flareup risk factors and management strategies. Emphasizing this as a normal part of management of long term MSK conditions.
Behaviours	
E6.B1	Demonstrate criticality, creativity, adaptability, and innovation of practice in the application of practical skills in the context of person-centred practice with ability to deliver complex information in an interactive way with patients whilst addressing beliefs and barriers to understanding

LEARNING OUTCOMES: Element 7

Demonstrates a critical understanding and application of the process of research

By the end of the programme of study, the successful student will be able to:

1. Recognise the need for the development of further evidence in MSK practice and the role of research in advancing the body of knowledge in MSK care
2. Critically evaluate common quantitative and qualitative research designs and methods
3. Generate an appropriate research question based on a critical evaluation and identification of gaps in the current evidence base
4. Systematically address all ethical considerations associated with research involving human subjects
5. Effectively execute a research project relevant to MSK practice, selecting appropriate data analysis procedures and disseminating findings

Element 7: Demonstrates a critical understanding and application of the process of research	
Knowledge	
E7.K1	Demonstrate critical understanding of research designs relevant to MSK practice, including strengths and weaknesses
E7.K2	Demonstrate critical evaluation of ethical considerations relating to human research
Skills	
E7.S1	Systematically collect information from a variety of sources relevant to the MSK practice and critically appraise and synthesise the outcome of relevant research, evaluation and audit, using the results to underpin own practice and to inform that of others and address issues which are at the forefront or informed by developments at the forefront of professional practice.
E7.S2	Critically engage in research activity relevant to MSK practice, adhering to good research practice guidance, so that evidence-based strategies are developed and applied to enhance quality, safety, productivity and value for money
E7.S3	Demonstrate effective execution of a research project and dissemination of its conclusions

Behaviours

E7.B1	Take a critical approach to identify gaps in the evidence base and actively identify potential need for further research to strengthen evidence for best practice. Take responsibility in alerting appropriate individuals and organisations to identified gaps and how they might be addressed in a safe and pragmatic way
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***NOTE**

A research project is defined as a process of systematic enquiry that provides new knowledge aimed at understanding the basis and mechanism of MSK conditions or improving the assessment and / or management of such conditions. The process of systematic enquiry is designed to address a research question. The process may use a range of methodological perspectives and methods including literature review, qualitative and quantitative approaches to address the research question

LEARNING OUTCOMES: Element 8

Demonstrates clinical expertise and continued professional commitment to the development of MSK practice

By the end of the programme of study, the successful student will be able to

1. Utilise effective integration of in-depth knowledge, current best practice, patient-centred practice, cognitive and meta-cognitive proficiency within MSK clinical practice
2. Solve problems with accuracy, precision, and lateral thinking within all aspects of clinical practice
3. Utilise sound clinical judgement, evaluating benefit and risk, when selecting assessment and treatment techniques appropriate to the patient's changing environment and presentation
4. Critically apply efficient, effective, and safe interventions in patients with complex presentations (e.g., multiple inter-related or separate conditions and/or co-morbidities)
5. Produce scholarly contributions to the MSK body of knowledge, skills, and measurement of outcomes
6. Critically discuss underpinning theory, models, and methods of developing leadership of self and others within the context of leadership of people and within services and organisations

Element 8: Demonstrates clinical expertise and continued professional commitment to the development of MSK practice	
Knowledge	
E8.K1	Demonstrate effective integration of comprehensive knowledge, cognitive and metacognitive proficiency and understanding of current best available evidence in MSK practice. Demonstrate strong self-awareness by using critical reflection on personal practice & feedback from others to identify & articulate their personal values, preferences, and ways of working, and critically evaluate how these may influence behaviour, judgement & practice e.g. understands the importance of reflective practice and supervision on professional and service development.
E8.K2	Evaluate and audit own and others’ clinical practice, selecting and applying valid, reliable methods, recognising patterns, then acting on the findings
E8.K3	Evaluate the existing and changing professional, social and political influences on the breadth and scope of advanced MSK physiotherapy practice within the context of delivery of services in order to continuously improve MSK healthcare. Demonstrate critical awareness of the political, social, economic & institutional factors shaping the health & wellbeing economy & how they inform the current & future design, delivery & professional development of physiotherapy at a local & regional level
E8.K4	Evaluate the extent to which advanced MSK practice contributes to strategies related to collaborative inter-professional working and person-centred care and play an active role in a variety of professional & policy networks that inform the implementation & development of policies relevant to professional practice with people with MSK conditions

Skills	
E8.S1	Demonstrate an advanced level in the ability to efficiently retrieve, integrate and apply evidence-based knowledge from applicable sciences in the clinical setting whilst integrating within a framework of person-centred and shared decision making, using effective communication and interpersonal skills; recognising the limitations of incorporating evidence when managing individuals with MSK conditions e.g. social, economic and environmental factors impacting on individual behaviour, intervention and management plan
E8.S2	Use their clinical-reasoning skills to undertake an assessment of the presenting problem, interpret findings, develop working and differential diagnoses, formulate, communicate, implement and evaluate management plans
E8.S3	Demonstrate advanced professional judgements when selecting assessment, diagnostic and treatment techniques, evaluating benefit and risk and adapting practice to meet the needs of different groups and individuals while maintaining a professional but relaxed communication style throughout contact with the individual e.g. recognising contribution of a range of factors including cognitive impairment, mental health issues, neurodivergence, lifestyle factors and contextual and service factors such as remote consultation, chaperones and interpreters
E8.S4	Demonstrate efficient and effective use of a variety of practical skills that encompass the breadth of MSK practice
E8.S5	Demonstrate efficient and effective management by using expert decision-making skills when working with people with multiple complex inter-related or separate problems and/or co-morbidities e.g. communicate and collaborate with other professions, exploring understanding and providing information, and advising on management interventions and plans for individuals who are off work with back and knee pain but unable to exercise due to COPD and concerned about a loss of employment
E8.S6	Demonstrate ability to skilfully consult with peers, the MDT and other professionals, legislative and regulatory organisations as appropriate to support, lead & develop local/regional professional & policy networks that advocate for, and support, people in managing their MSK related condition(s). Fostering collaboration, sharing information and ideas to enhance practice and optimise service delivery of the management of MSK conditions and health, prevention and wellbeing for the benefit of individuals, carers, professionals, agencies

E8.S7	Critically analyse leadership practice through self-awareness of ability to lead, influence and negotiate with others with responsibility for decision making designed to bring about change & development within complex and unpredictable contexts
E8.S8	Critically apply changes to their behaviour and reflect on these relating to underpinning theory on leadership and analyse and reflect on these changes critically reflecting on experiences of collaborative working. Using this information to identify and implement creative solutions to maintain and develop the effective and efficient performance of teams/networks
Behaviours	
E8.B1	Demonstrate safe, effective, autonomous, and reflective practice
E8.B2	Critically assess and address own learning needs, negotiating a personal development plan that reflects the breadth of ongoing professional development
E8.B3	Demonstrate a commitment to contributing to the professional development by supporting both the profession, the community, and the wider clinical team to build capacity and capability through teaching and mentoring, including the designing, planning and delivery of learning activities and opportunities to a range of audiences with different levels of knowledge and expertise, assisting in the advancement of MSK provision across health and social care to the benefit of the public. Contributing to the development and implementation of policy and practice at a local and regional level
E8.B4	Demonstrate advanced professional judgement, empathy and cultural competence in all interactions with people living with MSK conditions and other clinicians
E8.B5	Involve individuals in shaping the design & delivery of their service, & work with others to critically appraise user involvement, & to develop & implement policies, & processes that promote a culture of service user involvement. Using problem-solving approaches such as Quality Improvement to develop original, safe, effective & efficient recommendations for improving the quality of professional practice in unpredictable contexts. Critically reflecting on the change process, and using this information to appraise the outcome and inform future practice

E8.B6	Identify and challenge discriminatory practices and work with others to critically appraise current practice, and to develop and implement policies and processes that promote a non-discriminatory culture. Work constructively with people of all backgrounds and orientations, by recognising and responding to individuals' expressed beliefs, preferences and choices, and support individuals who need assistance in exercising their rights.
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