

2019

A Paediatric Musculoskeletal Competence
Framework for Physiotherapists Working in the UK



The Shoulder Complex



Association of Paediatric
Chartered Physiotherapists

MSK Specialist Committee

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Introduction

Children and young people are different from adults. They are continually developing physically, emotionally and psychologically. Due to the physiology and biomechanics of growth, young people show a unique set of age related symptoms. Whilst many conditions seen in childhood are self-limiting; some more serious pathology can occur. Delays in diagnosis may lead to long term disability or mortality [1]. The differential diagnosis relevant to musculoskeletal symptoms is so broad that adequate paediatric training is essential. Clinicians working in this specialist field must have a clear understanding of the biological differences between children and adults. [2]

Physiotherapists are personally accountable for their practice and are responsible for their own actions. They must work within their competence according to the CSP and HCPC guidelines for practice. They have a duty of care to children, young adults and their families to ensure they receive safe, competent care.

Authorities commissioning services for children and young people need to be certain that professionals employed have the correct training as indicated by their professional bodies.

The intention of this document is to provide a learning resource for physiotherapy assessment and management of children and young people presenting with musculoskeletal symptoms.

The document was developed by a panel of expert paediatric physiotherapists to establish the basis by which to prepare the physiotherapy workforce to deliver safe care to children and young people requiring musculoskeletal assessment, advice and management.

Physiotherapists will be able to utilise the document as the basis for their ongoing learning and demonstrate their competence to practise as a physiotherapist with children and young adults.

What is a Competence Framework?

Definition of competence

The CSP defines competence as being a combination of “a person’s skills, knowledge, job responsibilities, scope of practice and behaviour and professionalism”. [3]

Competence means the caregiver can integrate knowledge skills and personal attributes consistently in daily practice to meet established standards of performance. [4]

What it is and what it is not

Competence involves:

- Thinking, critical analysis and learning;
- Assimilation of new learning with previous learning;
- Integration of new knowledge, skills and abilities with previous knowledge;
- Application of new learning in practice.

Competence is not:

- Just about knowledge, skills and abilities;
- About defining technical competence;
- About the technical skills necessary to do a job;
- Just about doing or completing a task.

How a competence framework differs from competency

A competence framework provides a guide to the range of knowledge, and skills and abilities a practitioner needs to work at a safe, effective, professional standard. It does not look at competencies that are formally assessed and passed.

Aims of the Competence Framework

The overall aims of this framework are to:

1. Provide physiotherapists, working with children and young people, with clear guidelines regarding the knowledge and skills required to achieve quality care in this specialist field.
2. Guide managers and educators in the design and implementation of learning experiences that help practicing physiotherapists achieve these competences.

The advice given in this document is based on research evidence available at the time of writing and reflects a consensus of professional experience by the authors.

It is important that this document is read in this context and the reader should seek the most current information from a number of sources. The ultimate judgement regarding any specific procedure or treatment must be made in consideration of all facts presented and the resources available.

It is expected that this will be a working document which will stimulate discussion, and changes will be made as new knowledge, skills and innovations emerge.

These competences are not intended to replace other standards, but to be used in conjunction with:

- Working with Children – Guidance on good practice; Association Paediatric Chartered Physiotherapists (APCP) 2016. [5]
- Quality Assurance Standards for physiotherapy service delivery; The Chartered Society of Physiotherapy (CSP) 2013. [6]
- Code of professional values and behaviour; Chartered Society of Physiotherapy (CSP) 2011. [7]
- Physiotherapy Framework: putting physiotherapy behaviors, values, knowledge and skills into practice The Charters Society of Physiotherapy (CSP) 2011 [updated Sept 2013] [8]
- Standards of Proficiency for Physiotherapists; Health and Care Professions Council 2013. [9]
- National Service Framework for Children, Young People and Maternity Services: Core Standards; Department of Health, 2004. [10]
- The Common Core of skills and knowledge. CWDC, 2010. [11]
- Managing Performance Issues; Chartered Society Physiotherapy, 2011. [3]

Using this Document

A grading system has been generated based on those used within the “Resource Manual and Competences for Extended Musculoskeletal Physiotherapy Roles”. The grading system is outlined below.

1. **Foundation:** Knows of / has heard of / has read about
2. **Intermediate:** Can demonstrate acceptable performance in the competency/area of knowledge but is not expected to demonstrate full competence or practice autonomously.
3. **Proficient:** Demonstrates competence through the skills and ability to practice safely and effectively without the need for direct supervision.
4. **Advanced:** The practitioner is autonomous and reflexive, perceives situations as a whole, delivers care safely and accurately and is aware of current best practice.
5. **Expert:** Is able to demonstrate a deeper understanding of the situation and contributes to the development and dissemination of knowledge through teaching and development of others.

It is **not** expected that every physiotherapist working with children and young adults will achieve expert level in all the dimensions of the framework; some aspects may need to be developed. For example, a newly qualified physiotherapist in their first role is likely to be at level one (will have a basic knowledge of or have heard something about the condition during their undergraduate training); whereas a more senior physiotherapist may request further investigations such as blood tests and imaging; conduct complex assessments and interventions so will therefore be working at an “expert level “.

It is important that the individual analyses their role within the context of their current job role in order to identify development needs and prioritise their continuing professional development (CPD) requirements.

The framework is intended to be empowering and aspirational. It is primarily a tool to support self-assessment and personal development plans rather than a tool against which performance is judged.

Each document sets out the knowledge and skills required for a musculoskeletal body area. Information written in *italics* are relevant to all ages; whilst **coloured plain text** relates specifically to paediatrics. Where appropriate, hyperlinks to additional APCP documents or other relevant resources have been provided.

Workforce planning

The framework will give service managers and higher educational institutes an insight into the expertise and competence required of a specialist paediatric musculoskeletal physiotherapist.

It will provide service providers and commissioners with evidence that the workforce has the relevant competence to ensure delivery of high quality, qualitative, safe and effective care.

The document may be used when developing a business case, to promote and sell specialist paediatric MSK physiotherapy services to commissioners.

This document will:

- Assist in the analysis of the distribution of competences between roles in a paediatric MSK team and can suggest areas where new roles may be able to deliver the service more effectively

- Enable the identification of a range of competences that may be needed to deliver a service and where there are gaps or overlaps
- Enable individuals to be clear about their role and responsibilities
- Assist in the analysis of a role in more detail than a KSF role outline and so be useful in writing job specifications, recruitment selection and role design
- Provide a guide to the range of knowledge and skills a physiotherapist needs in order to work at a safe and competent level when working with children
- Help higher educational institutes identify the level of knowledge needed for newly qualified graduates.

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The Shoulder Complex

Italics- Generic knowledge.

Non-italics- Paediatric specific knowledge

Paediatric Shoulder Complex Knowledge and Skills	Competency Levels							
	F	I	P	A	E	n/a	Date	Initials
SHOULDER COMPLEX HISTORY- The physiotherapist is able to obtain an accurate clinical history from the parent, child or young person presenting with signs and symptoms in the area of the upper limb and spine:								
<i>Presenting complaint and description of symptoms</i>								
<i>Severity / irritability of the problem (using valid age appropriate assessment tools)</i>								
<i>Chronological relevant sequence of events and symptoms, including identification of possible predisposing factors / mechanism of injury</i>								
Joint specific questions for example, early morning stiffness and swelling may indicate JIA [1] <u>Red Flags:</u> [2]								
<i>Current / past medications</i>								
<i>Medical history and appropriate review of symptoms</i>								
Birth history and its relevance e.g. OBPP								
Developmental milestones if appropriate								
Establish rate and stage of growth / skeletal maturity / puberty								
<i>Family history and its relevance</i>								
Social history (school / competitive / social activities, and amount of time spent in front of technology)								

Paediatric Shoulder Complex Knowledge and Skills	Competency Levels							
	F	I	P	A	E	n/a	Date	Initials
Element + Criteria								
<i>Psychosocial factors / yellow flags and wellbeing / self-perception indicators</i>								
<i>Formulate a provisional diagnosis that may guide the objective examination</i>								
SHOULDER COMPLEX ANATOMY, PHYSIOLOGY AND BIOMECHANICS- The physiotherapist has knowledge of and can describe the following:								
<i>Neuroanatomy of the shoulder complex including brachial plexus and upper limb peripheral nerves and how they may be injured during child birth</i>								
<i>Dermatomes and myotomes of the upper limb</i>								
<i>The surface anatomy of the muscles and tendons relating to the shoulder complex</i>								
<i>Normal shoulder complex development from utero to skeletal maturity, including ossification centres, blood supply and how deviations can result in pathology [3]</i>								
<i>Functional ranges of normal movement of the spine, elbow and neck</i>								
<i>Biomechanics of the spine, shoulder complex, elbow, wrist and hand during function</i>								
<i>Mechanisms that produce different types of mechanical pain or dysfunction at the shoulder complex [4]</i>								
<i>Influence of age on fracture healing time. 'Bone healing in children is usually rapid and inversely related to the age of the patient' [5]</i>								
<i>Intrinsic factors which may be contributing to pathologies e.g. age, skeletal immaturity, pre/post menarche, ligamentous laxity, weak musculature, underlying conditions [5-7]</i>								

Paediatric Shoulder Complex Knowledge and Skills	Competency Levels							
Element + Criteria	F	I	P	A	E	n/a	Date	Initials
<p>Anatomical differences in the immature skeleton: The child's skeleton is different from the adults because bones are more elastic and pliable, and have growth plates (physes). The physis will change with age, becoming weaker as the child grows. Damage to the physis may be caused by trauma, infection, tumour, radiation or from stress injuries. Physeal injuries are more common in adolescence. [8, 9]</p>								
<p>Extrinsic factors which may be contributing to pathologies (e.g. activities (sports frequency / intensity / complexity / level / position of play / training surface), and the particular demands of given sport activities and lifestyle. [4]</p>								
<p>SHOULDER COMPLEX EXAMINATION- The physiotherapist is able to perform an accurate physical examination of patients, considering the relevance, validity, reliability, specificity and sensitivity of tests to child's age including the following:</p>								
<p>Use of Paediatric Gait, Arms, Legs, Spine (pGALS) as a screening tool. [10, 11]</p>								
<p>Observations of <i>swelling, rash, limb deformities / asymmetry, dysmorphic features, abnormal posturing and limb carrying angle. Asymmetry of shoulder height and scapular prominence</i></p>								
<p><i>Identify painful structures and if, symptomatic, palpate appropriate shoulder girdle anatomy</i></p>								
<p><i>Range of movement tests. Assessment of the position and movement of the scapula</i> The identification and significance of Glenohumeral internal rotation deficit (GIRD) and humeral torsion in the young athlete as they mature from humeral retroversion at birth. Identification of IR:ER strength ratio and its significance</p>								

Paediatric Shoulder Complex Knowledge and Skills	Competency Levels							
Element + Criteria	F	I	P	A	E	n/a	Date	Initials
<p><i>In the adolescent patient use of appropriate tests to exclude pathology:</i></p> <ul style="list-style-type: none"> - <i>Impingement tests – Hawkins Kennedy test / Neer’s sign</i> - <i>Rotator cuff tests – Empty can / Gerber’s lift off test</i> - <i>Acromioclavicular test – Scarf test</i> - <i>Shoulder instability test – Apprehension test, sulcus</i> - <i>Labral tear tests – Crank, O’Briens, Biceps load, Anterior slide, resisted supination and external rotation test</i> <p>[3, 12, 37]</p>								
<p><i>Assessment of joint laxity [13,14]</i></p>								
<p><i>Assessment of classification of Obstetric Brachial Plexus Palsy. (OBPP) Seddons, Narkas, Toronto and Mallet scores [15]</i></p>								
<p><i>Muscle testing length and strength</i></p>								
<p><i>Spinal screening</i></p>								
<p><i>Age appropriate neurological examination including proprioception, assessment of sensation in nerve injuries and reflexes [16]</i></p>								
<p><i>Developmental tests. Appropriate motor skills and quality of movement for age</i></p>								
<p><i>Assessment of function in ADL</i></p>								
<p>SHOULDER COMPLEX DISORDERS- The physiotherapist understands the epidemiology, pathology, differential diagnosis and common orthopaedic management of the following:</p>								
<p><u>Fractures/Trauma</u> Recognises how a fall onto a shoulder tends to result in specific injury patterns which will be different to an adult e.g. a child under 10 will more likely fracture the clavicle rather than AC joint or GH joint [5, 12]</p>								
<p><u>“Little Leaguer’s” shoulder</u> An overuse or stress injury of the proximal humeral physis. 70% present with tenderness over the proximal and lateral humerus. [12] [35]</p>								

Paediatric Shoulder Complex Knowledge and Skills	Competency Levels							
	F	I	P	A	E	n/a	Date	Initials
<u>Traction apophysitis</u> The apophysis is a secondary centre of ossification and a location for the insertion of a muscle tendon into bone. Overuse syndromes such as traction apophysitis may develop in young athletes when this growth centre is unable to meet the demands placed on it during activity.[36]								
<u>Osteochondritis</u> Rare but may involve humeral head or glenoid								
Os acromiale [17]								
Instability of the shoulder complex [18]								
Excessive joint laxity [13, 14]								
<u>Chronic pain</u> [22]								
<u>Complex regional pain syndrome (CRPS)</u> This is a chronic pain syndrome that differs from the adult version. More common among adolescent girls and the distal lower extremity is most commonly affected. It is characterised by limb pain, in association with: Sensory Allodynia -pain to light touch / temperature sensation / deep somatic pressure / joint movement Hyperalgesia -to pinprick; Vasomotor Temperature asymmetry, skin colour changes / asymmetry; Sudomotor / oedema Oedema, Sweating changes / asymmetry; Motor / trophic decreased ROM, motor dysfunction -weakness, tremor, dystonia and Trophic changes hair / nail / skin. The exact mechanism is unknown, although many mechanisms have been suggested. Diagnosis is clinical, with the aid of the current adult criteria for CRPS. Complete patient history and examination are needed with judicious laboratory and radiographic tests to rule out other possible causes. Once paediatric CRPS is diagnosed, the standard care consists of a multidisciplinary approach with the implementation of intensive physiotherapy in conjunction with psychological treatment. Early recognition and treatment leads to better prognostic outcomes. When there is a patient history of CRPS, this patient is at risk of reoccurrence in the same or a different location.[23-27]								

Paediatric Shoulder Complex Knowledge and Skills	Competency Levels							
Element + Criteria	F	I	P	A	E	n/a	Date	Initials
<u>Obstetric brachial plexus injury</u> Traction injury to the brachial plexus. Severity is determined by nature and extent of the lesion. <ul style="list-style-type: none"> Erb's palsy-C4,C5, C6 (type1) Intermediate Plexus Palsy -C7 and sometimes C8 and T1 (type II) Klumpke's Palsy- C8,T1 (type III), Horner's syndrome Total Plexus ,C5,C6,C7,C8 and sometimes T1 (type IV) [15]								
<u>JIA (juvenile idiopathic arthritis)</u> Symptoms of joint pain, swelling, tenderness, warmth, and stiffness that last for more than 6 continuous weeks. [20]								
<u>Congenital conditions:</u> <ul style="list-style-type: none"> Sprengel's shoulder- congenital elevation of the scapula. Often unilateral and associated with other abnormalities in 70% of cases. Poland Syndrome: absence of the pectorals major and usually finger and forearm abnormalities Arthrogyrosis (shoulders often adducted, internally rotated and weak deltoid). [21] 								
<u>Fascioscapular humeral dystrophy</u> Muscle weakness and wasting of the face, scapula and shoulder muscles								
<u>Joint infections e.g. osteomyelitis</u> Chronic recurrent multifocal osteomyelitis (especially in clavicle) [19]								
SHOULDER COMPLEX DIFFERENTIAL DIAGNOSIS- The physiotherapist shows awareness of the following:								
<i>Differential diagnosis between shoulder girdle, elbow, wrist or spinal pathology</i>								
Possible serious pathology including exclusion of red flags and 'non-accidental Injury' (NAI)								
<i>Bone cysts and osteomyelitis</i>								
<i>Referred pain from spine</i>								
<i>TB and Lymes disease</i>								
<i>Benign and malignant tumours</i>								

Paediatric Shoulder Complex Knowledge and Skills	Competency Levels							
	F	I	P	A	E	n/a	Date	Initials
SHOULDER COMPLEX INVESTIGATIONS- The physiotherapist is aware of the available and most appropriate investigations for diagnosis of shoulder complex conditions and has a basic understanding of when and why the following can be used:								
<i>Ultrasound</i>								
<i>X-ray (when history of potential dislocation, as # proximal physis presents similarly)[12]</i>								
<i>MRI</i>								
<i>Appropriate blood tests</i>								
<i>Nerve conduction study</i>								
<i>Arthroscopy</i>								
SHOULDER COMPLEX OUTCOME MEASURES The physiotherapist has an awareness of appropriate, valid and reliable paediatric outcome measures, relevant to age and specific condition including the following:								
Severity / irritability of the problem using valid and reliable pain scale for age of child: Pediatric Pain Profile, Wong-Baker FACES pain rating scale . The Bath Adolescent Pain questionnaire (BAPQ) [28]								
Paediatric outcome measure e.g. Function and quality of life scores: CHAQ/ PEDI/PEDSQL [29] Outcome Measures Survey 2017 [30]								
SHOULDER COMPLEX MANAGEMENT The physiotherapist is able to make a diagnosis of the clinical condition based on the above history, examination and investigations								

Paediatric Shoulder Complex Knowledge and Skills	Competency Levels							
Element + Criteria	F	I	P	A	E	n/a	Date	Initials
<p>The physiotherapist has knowledge of appropriate national guidelines where available: e.g. JIA, OBPP</p> <ul style="list-style-type: none"> - SIGN management of chronic pain in children and young people - BSPAR AHP standards of care for JIA - BSPAR guidelines for the therapy management of children and young people with JIA - Guidance for management of joint hypermobility syndrome - Complex regional pain syndrome - Obstetric Brachial Plexus Palsy <p>[15,22,26,31]</p>								
<p>The physiotherapist has understanding of treatment options for the condition and understands when it is appropriate for onward referral e.g. clinical specialist physiotherapist, occupational therapist, rheumatologist, orthopaedic consultant or paediatrician.</p> <p>10 top tips for hypermobility</p> <p>My pain toolkit for teenagers</p> <p>[32, 33]</p>								
<p>The physiotherapist uses age appropriate exercises and therapy to aid rehabilitation including:-range of movement exercises, exercise prescription, taping techniques, strength and conditioning. Advice on activity modification if needed.</p> <ul style="list-style-type: none"> - APCP symptomatic hypermobility - OBPP parent leaflet <p>[15,34]</p>								
<p>The physiotherapist is able to explain the nature of the condition to the patient, their family and carers together with expected outcomes and possibly long term implications if appropriate.</p>								

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