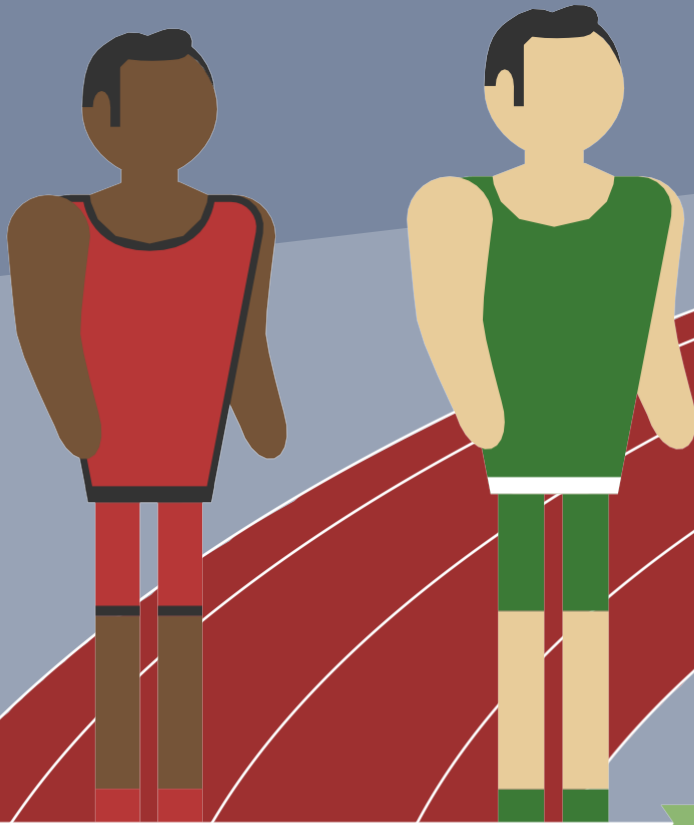


BSc (Hons) SPORTS AND EXERCISE THERAPY

N^o.2



Upper limb and spine

BMST4001 - functional anatomy handbook



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David



Introduction

Having an excellent understanding and knowledge of anatomy is extremely important when working as a Sports Therapist. If you do not know your anatomy then you cannot begin to treat and rehabilitate an injury or even know what injury you are meant to be treating.

The following workbook has been put together to aid your learning of anatomy during your degree. Please use it to make notes and practice your functional anatomy.

range of movement

Every joint that you will assess will have a certain range of movement. As a Sports Therapist you will need to know which movements occur at each joint. During an examination and assessment range of movement is examined in THREE different ways:

Active:

The range of motion a client can achieve on their own (without assistance). Look at the quality of movement, sticking points, ROM, symmetry of motion.

Passive:

The client takes the joint through the specific range of motion and then the therapist adds an over pressure at the end. This is to see whether there is a passive spring at the end of the joint.

Resistive:

The client takes the joint through the specified range of motion and then you apply a resistance. This examines whether the joint has an ability to protect itself.

You must assess **FULL ROM** - from one end of range to the other and back again. *For example when testing flexion, you must go from extension to flexion and then back to extension again.*

Palpation of location of bony points and surface markings of:

- Use the pads of the fingers and / or thumb because they have better discrimination - They can detect points as close as 1-2mm apart!
 - Only palpate with one hand as it can get confusing for the patient if they can feel lots of fingers and thumbs! Slow, firm and precise movement of the fingers is needed during palpation. You should not randomly touch/poke/prod! You are looking for differences between limbs.
 - Palpation takes practice, but practice will make it better / easier to identify key bony points and landmarks. You must know your bony points as this will make muscle testing and ligament testing easier.
 - Patients must be relaxed during palpation.
 - The Therapist needs to explain to the client what they are doing and have tact and sensitivity.
- You must look after your hands. Make sure they are clean and smooth. If you do work which may produce calluses be careful or wear gloves. Your hands are your future!

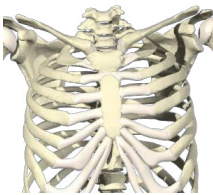
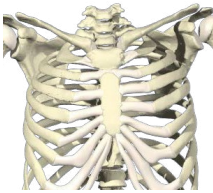
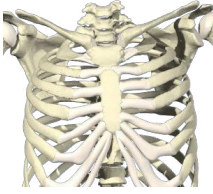
Practical Anatomy and Palpation of the Shoulder

The client should be supine, relaxed, socks off and wearing shorts.
The feet need to be off the edge of the bed when examining the foot and the ankle.

1. active and passive movements:

Movement	Active	Passive
Flexion		
Extension		
Abduction		
Adduction		
Lateral Rotation		
Medial Rotation		

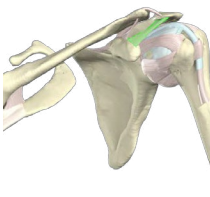
2. locations of bony points and surface markings of:

Anatomical Point	Palpation
 Sternal Notch	
 S-C Joint	
 Clavicle	
 A-C Joint	
 Spine of Scapula	
 Medial Border of Scapula	
 Inferior Border of Scapula	

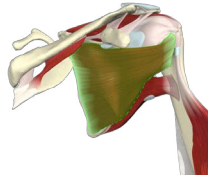
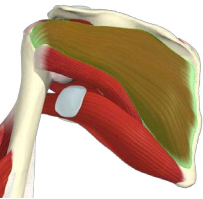
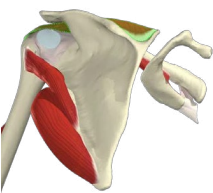
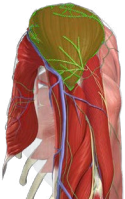
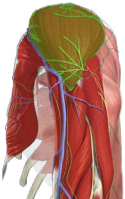
2. locations of bony points and surface markings of:

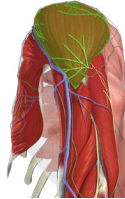
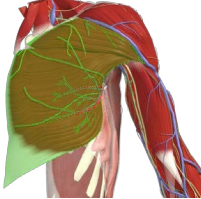
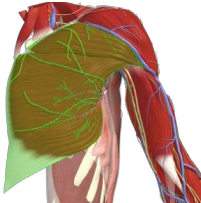
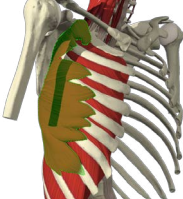
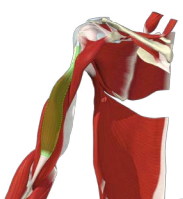
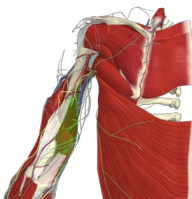
Anatomical Point	Palpation
	Lateral Border of Scapula
	Greater Tuberosity of Humerus
	Lesser Tuberosity of Humerus
	Intertubercular (bicipital) Groove
	Coracoid Process
	Gleno-Humeral Joint Line

3. Be aware of the supporting ligaments of the shoulder:

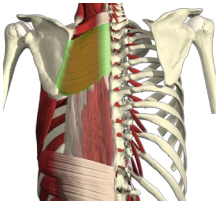
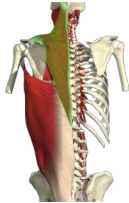
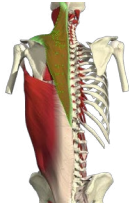
	Glenohumeral Ligament
	Coracoclavicular Ligament
	Coracoacromial Ligament
	Acromioclavicular Ligaments

4. Demonstrate by contraction and palpate the specified muscles:

Muscle	Origin, Insertion & Action	Demonstration
	Subscapularis	
	Infraspinatus	
	Teres Minor	
	Supraspinatus	
	Deltoid - Anterior Fibres	
	Deltoid - Middle Fibres	

Muscle	Origin, Insertion & Action	Demonstration
	Deltoid - Posterior Fibres	
	Pectoralis Major - Sternal Fibres	
	Pectoralis Major - Clavicular Fibres	
	Serratus Anterior	
	Long Head of Biceps	
	Triceps	

4. Demonstrate by contraction and palpate the specified muscles:

Muscle	Origin, Insertion & Action	Demonstration
	Rhomboids	
	Trapezius - Upper Fibres	
	Trapezius - Middle Fibres	
	Trapezius - Lower Fibres	

Practical Anatomy and Palpation of the elbow

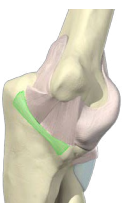
1. active and passive movements

Movement	Active	Passive
Flexion - Supine		
Flexion - Mid-Prone		
Flexion - Prone		
Extension		
Pronation		
Supination		

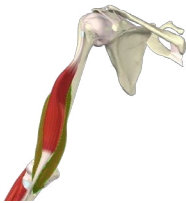
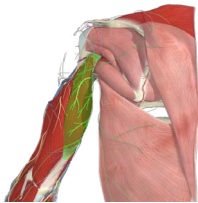
2. Location of bony points and surface markings of:

Anatomical Point	Palpation
	Medial epicondyle of Humerus
	Lateral Epicondyle of Humerus
	Olecranon Process
	Head of Radius
	Elbow Joint Line

3. Locate and palpate the extent of:

Ligament	Origin, Insertion & Action	Palpation
	Radial (Lateral) Collateral Ligament	
	Ulnar (Medial) Collateral Ligament - Anterior Band	
	Ulnar (Medial) Collateral Ligament - Posterior Band	
	Ulnar (Medial) Collateral Ligament - Transverse Band	

4. demonstrate by contraction and palpation the specified muscleS:

Muscles	Origin, Insertion & Action	Demonstration
	Biceps Brachii	
	Brachioradialis	
	Brachialis	
	Triceps Brachii	
	Pronator Teres	
	Supinator	

Practical Anatomy and Palpation of the wrist and hand

1a. active and passive movements: wrist

Movement	Active	Passive
Flexion		
Extension		
Radial Deviation		
Ulna Deviation		

1b. active and passive movements: fingers

Movement	Active	Passive
Flexion		
Extension		

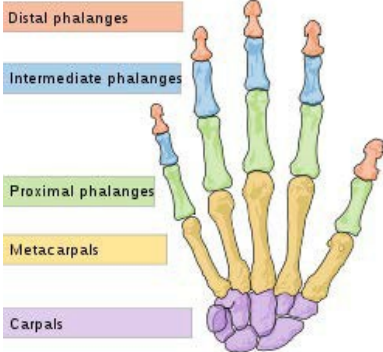
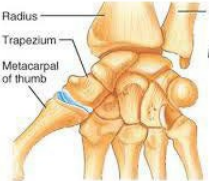
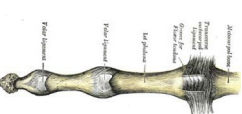
Movement	Active	Passive
Abduction		
Adduction		

1c. active and passive movements: thumb

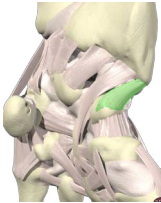
Movement	Active	Passive
Flexion		
Extension		
Abduction		
Adduction		
Opposition		

2. location of bony points and surface markings of:

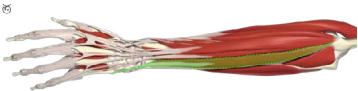
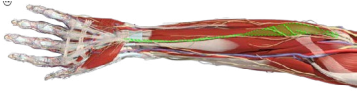
Anatomical Point	Palpation
 Radial Styloid	
 Ulnar Styloid	
 Radio-carpal Joint Line	
 Scaphoid	
 Trapezium	
 Lunate	
 Pisiform	

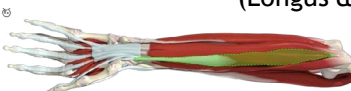
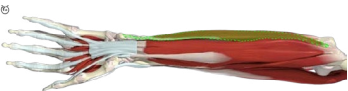
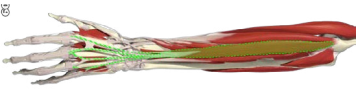
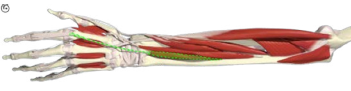
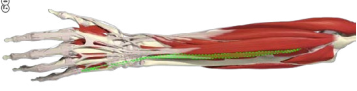
Anatomical Point	Palpation
 Hook of Hamate	
 Bases, Shafts and Heads of Metacarpals	
 Bases, Shafts and Heads of Phalanges	
 1st Carpometacarpal Joint	
 Metacarpophalangeal Joints (MCPs)	
 Interphalangeal Joints (PIPs & DIPs)	

3. locate and palpate the extent of:

Ligament	Origin, Insertion & Action	Palpation
	Radial Collateral Carpal Ligament	
	Ulnar Collateral Carpal Ligament	

4. demonstrate by contraction and palpate the specified muscles:

Muscle	Origin, Insertion & Action	Demonstration
	Flexor Carpi Radialis	
	Flexor Carpi Ulnaris	
	Plamaris Longus	
	Flexor Digitorum Superficialis	
	Flexor Digitorum Profundus	

Muscle	Origin, Insertion & Action	Demonstration
	Flexor Pollicis Longus	
	Extensor Carpi Radialis (Longus & Brevis)	
	Extensor Carpi Ulnaris	
	Extensor Digitorum	
	Extensor Indicis	
	Extensor Digiti Minimi	
	Extensor Policis (Longus and Brevis)	

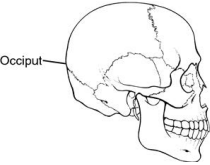
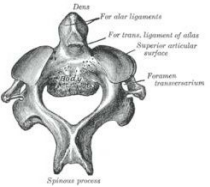
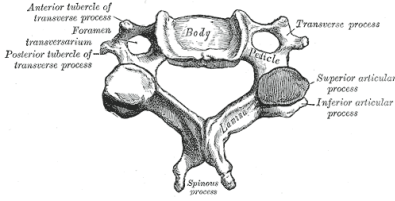
Practical Anatomy and Palpation of the cervical spine

1. active and passive movements: Cxsp

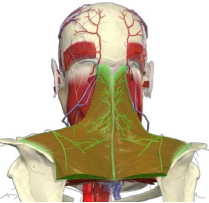
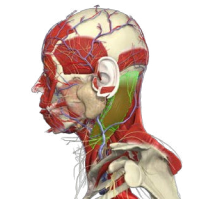
Movement	Active	Passive
Flexion		
Extension		
Left Rotation		
Right Rotation		
Left Side Flexion		
Right Side Flexion		

Movement	Active	Passive
Protraction		
Retraction		

2. location of bony points and surfcae markings of:

Anatomical Point	Palpation
	Occiput
	Posterior Tubercle of C1
	Spinous Process of C2
	Spinous Process of C3 to T4

3. demonstrate by contraction and palpate the specified muscles:

Muscle	Origin, Insertion & Action	Demonstration
	Trapezius (Upper Fibres)	
	Sternocleidomastoid	

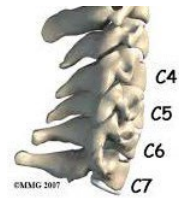
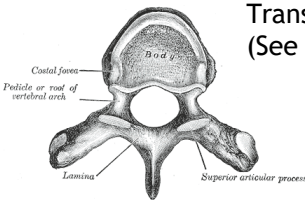
Practical Anatomy and Palpation of the thoracic spine

1. active and passive movements: txsp

Movement	Active	Passive
Flexion		
Extension		
Left Rotation		

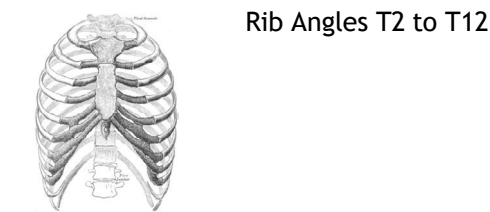
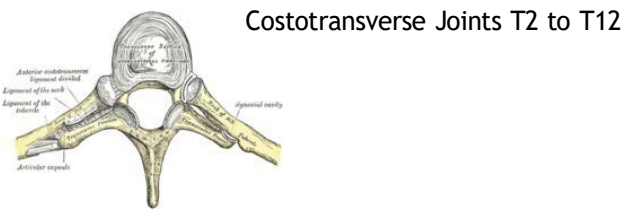
Movement	Active	Passive
Right Rotation		
Left Side Flexion		
Right Side Flexion		

2. Location of bony points and surface markings of:

Anatomical Point	Palpation
	Differentiation Test C6
	Spinous Processes T1 to T12
	Transverse Processes T1 to T12 (See rule of 3 on next page)

Anatomical Point

Palpation



- Athlete prone.
 - Use differentiation test to locate SP of C6 then palpate down to SP of T1.
- Palpate each SP down to T12.
 - To palpate TP follow rule of three as below, costo-transverse joints are 1cm up and 1cm out from TP, then palpate along ribs to find rib angle.

Rule of three:

- T1-T3:**

TP level with SP
- T4-T6:**

TP half way between SP of vertebra in question and the one above
- T7-T9:**

TP level with SP of vertebra above
- T10-T12:**

TP half way between SP of vertebra in question and the one above

4. demonstrate by contraction and palpate the specified muscles:

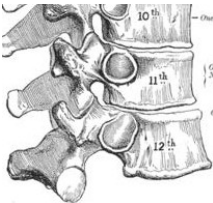
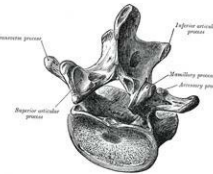
Muscle	Origin, Insertion & Action	Demonstration
	Erector Spinae (as an Extensor)	
	Erector Spinae (as a Lateral Flexor)	

Practical Anatomy and Palpation of the lumbar spine

1. active and passive movements: Lxsp

Movement	Active	Passive
Flexion		
Extension		
Left Rotation		
Right Rotation		
Left Side Flexion		
Right Side Flexion		

2. Location of bony points and surface markings of:

Anatomical Point	Palpation
 T12	
 L1	
L2	
L3	
L4	
 L5	
 S1	

3. demonstrate by contraction and palpate the specified muscles:

Muscle	Origin, Insertion & Action	Demonstration
	Erector Spinae (as an Extensor)	
	Erector Spinae (as a Lateral Flexor)	
	Rectus Abdominis	
	Internal Obliques	
	External Obliques	



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
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www.uwtsd.ac.uk