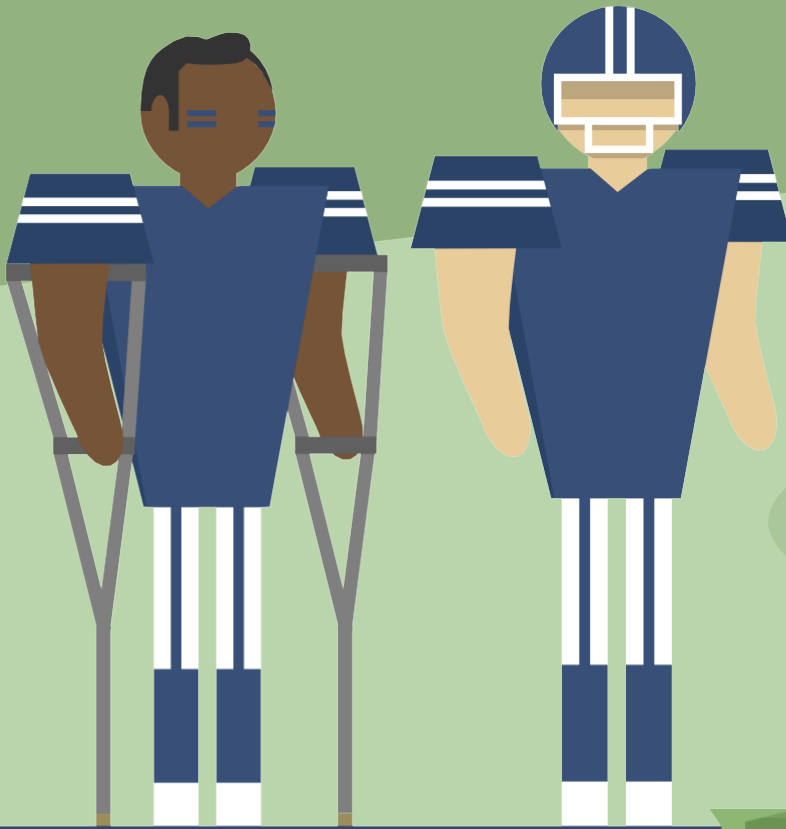


BSc (Hons) SPORT AND EXERCISE THERAPY

Nº.1



Lower Limb

BMST 4001 - functional anatomy handbook



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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 got 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 Foot and Ankle

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. Palpation

Anatomical Point	Palpation
	Anterior border of the tibia
	Medial border of the tibia
	Medial Malleolus
	Lateral Malleolus
	Talocrural joint line

Anatomical Point	Palpation
	Calcaneum (gross)
	Sustentaculum tali of the calcaneum
	Tuberosity of navicular
	Base of the 5th metatarsal
	Heads of all 5 metatarsals
	Sub talar joint line

2. Range of movements

Movement	Active	Passive
Plantarflexion		
Dorsiflexion		
Inversion (Sub-talar)		
Everson (Sub-talar)		
Inversion (Mid-tarsal)		
Enversion (Mid-tarsal)		

3. Palpate and identify the extent of:

Make sure you know the attachments and can demonstrate the entire length of the ligament.

Ligament	Origin, Insertion & Action	Palpation
Anterior Talofibular Ligament		
Calcaneofibular Ligament		
Posterior Talofibular Ligament		
Deltoid Ligament - 2 layers, deep not palpable, superficial 3 bands		

4. Demonstrate by contraction the specified muscles:

You need to explain what you are going to do before you do it. Remember to ‘say’ then ‘do’. This assessment should not be a fight with your client! Start off with a gentle application of force and progress to a stronger application of force if the muscle is not injured. The contractions must be performed in mid to inner range – where the muscles are at their strongest.

Muscle	Origin, Insertion & Action	Demonstration
Tibialis Anterior		
Extensor Hallucis Longus		
Extensor Digitorum Longus		
The Peronei (as a group)		

Muscle	Origin, Insertion & Action	Demonstration
Tibialis Posterior		
Flexor Hallucis Longus		
Flexor Digitorum Longus		
Gastrocnemius		
Soleus		

Practical Anatomy and Palpation of the Knee and Thigh

1. active and passive movements

Movement	Active	Passive
Flexion		
Extension		

2. location of bony points and surface markings of:

The following bony points/markings are often easier to palpate with the knee in slight flexion because the contours of the knee / patella disappear in extension.

Anatomical Point	Palpation
The superior & inferior poles of the patella	
The medial & lateral borders of the patella	

Anatomical Point	Palpation
The patella tendon (ligament)	
The tibial tuberosity	
Tibial plateau	
The head of the fibula	
The epicondyles of the femur	
The joint line of the knee (tibio femoral)	

3. Palpate and identify the extent of:

Ligament	Origin, Insertion & Action	Palpation
Medial Collateral Ligament (MCL)		
Lateral Collateral Ligament (LCL)		

Also be aware of:

- Anterior Cruciate Ligament (ACL)
- Posterior Cruciate Ligament (PCL)

4. Demonstrate by contraction, and palpate, the specified muscles:

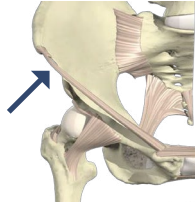
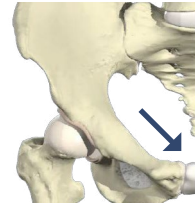
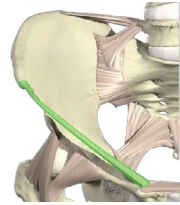
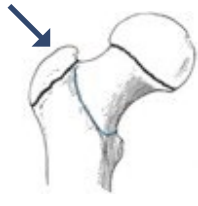
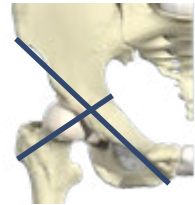
Muscle	Origin, Insertion & Action	Demonstration
Quadriceps (as a group)		
Vastus medialis in isolation		
Rectus Femoris in isolation		
The hamstrings as a group		
Popliteus		

Practical Anatomy and Palpation of the Hip

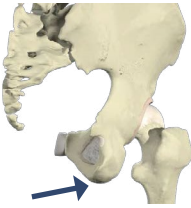
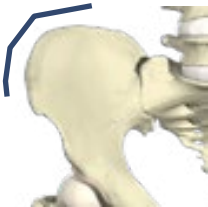
1. active and passive movements

Movement	Active	Passive
Flexion		
Extension		
Adduction		
Abduction		
Lateral Rotation		
Medial Rotation		

2. Location of bony points and surface markings of:

Anatomical Point	Palpation
	Anterior Superior Iliac Spine (ASIS)
	Pubis Symphysis
	Inguinal ligament
	Greater trochanter of the femur
	Joint line of the hip
	Anterior Inferior Iliac Spine (AIIS)

2. Location of bony points and surface markings of:

Anatomical Point	Palpation
	Ischial tuberosity
	Iliac crests
	Posterior Superior Iliac Spine (PSIS)

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

- The pubo-femoral ligament
- The ischio-femoral ligament
- The ilio-femoral ligament

4. Demonstrate by contraction, and palpate, the specified muscles:

Muscle	Origin, Insertion & Action	Demonstration
Rectus femoris		
Illiopsoas group		
Adductor Brevis		
Adductor Longus		
Adductor Magnus		
Tensor Fascia Lata		

4. Demonstrate by contraction, and palpate, the specified muscles:

Muscle	Origin, Insertion & Action	Demonstration
Gluteus Medius and Minimus (as a group)		
Gluteus Maximus		
Hamstrings (as a hip extensor)		



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