INCLUDES DVD

A GUIDE TO SPORTS AND INJURY MANAGEMENT

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CHURCHILL LIVINGSTONE

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A GUIDE TO SPORTS AND INJURY MANAGEMENT

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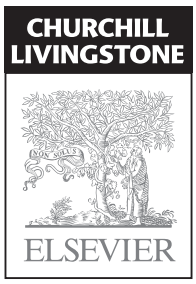

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DVD CONTENTS

The DVD accompanying this text contains:

The Interactive Diagnosis Tool
Video clips
Multiple Choice Questions relating to each chapter in the book

The Interactive Diagnosis Tool

The tool aids diagnosis of common injuries and opens as a colour image of the selected part of the human body (e.g. ankle and foot). The user clicks onto the image to bring on screen a more detailed anatomical drawing of that body area. The user can choose to view the ankle from anterior, inferior, lateral, medial and posterior views.
Within each of these views the user moves the cursor over the image and as trigger points on the image are highlighted the various diagnoses pop up on screen. The diagnoses are split into acute (red), chronic (blue) and referred (green) diagnoses. There are over 200 common injuries diagnoses included in the tool.

COMMON INJURIES

Ankle and foot
Anterior view
Forefoot (anterior view)
Inferior view (sole of foot)
Lateral view
Medial view
Midfoot (anterior view)
Posterior view

Buttock
Posterior view (lumbar spine to mid thigh)

Groin and pelvis
Anterior view
Lateral view
Posterior view

Knee
Anterior view
Lateral view
Medial view
Posterior view
Inferior view
Superior view
Acute

Lower leg
Anterior view
Posterior view

Shoulder
Anterior view
Posterior view

Spine
Cervical – posterior view
Lumbar and sacral – anterior/lateral/posterior views
Lumbar and sacral – posterior view
Thoracic – posterior view

Thigh
Anterior view
Posterior view

Upper limb
Anterior view
Medial view
Lateral view
Posterior view

Wrist and hand
Anterior view
Posterior view

VIDEO CLIPS

There are video sequences of all the techniques and exercises indicated in the text by the icon. To look at the video for a given technique, click on the relevant item in the contents list on the DVD.

Assessment of the ankle joint
Ankle dorsiflexion
Ankle eversion
Ankle inversion
Ankle plantar flexion
Anterior drawer test for the anterior talo-fibular ligament
Posterior impingement test
Syndesmosis test

Assessment of the knee joint
Anterior drawer test for the anterior cruciate ligament (ACL)
Dial test for the posterolateral corner
Lachman's test for the ACL
McMurray's test for the meniscii
Patello-femoral joint glides
Posterior drawer test for posterior cruciate ligament (PCL)
Posterior sag test for the PCL
Valgus stress test for the medial collateral knee ligament (MCL)
Varus stress test for the lateral collateral knee ligament (LCL)

Assessment of the hip joint
Hip flexion
Hip medial and lateral rotation
Ober's test
Quadrant test
Test for impingement of the anterior capsule of the hip
Thomas test

Lumbar spine assessment and lower limb nerve provocation tests
Lumbar flexion and extension
Slump test
Straight leg raise

Assessment of the sacroiliac joint (SIJ)
SIJ kinetic test – forward flexion
Stork test

Assessment of the elbow joint
Valgus stress test for the medial collateral elbow ligament (MCL)
Varus stress test for the lateral collateral elbow ligament (LCL)

Assessment of the shoulder joint
Apprehension and relocation tests
Empty and full can tests
Hawkins Kennedy test
Neers test
O'Briens test
Resisted empty and full can tests
Scapulohumeral rhythm
Sulcus test
The 'Scarf' acromioclavicular joint test

Upper limb nerve provocation tests
Upper limb tension test (ULTT 1) – median nerve bias
Upper limb tension test (ULTT 2) – radial nerve bias
Upper limb tension test (ULTT 3) – ulnar nerve bias

Assessment of lower limb stability and muscular control
One-legged squat

Warm-up stretching programmes
Dynamic stretching warm-up
Static stretch warm-up

Proprioception/balance exercises
BOSU hops
Single-leg BOSU balance
Single-leg BOSU squats

Weight training examples
Bench press
Squat

Rehabilitation exercises
Eccentric Achilles tendon exercises
Eccentric patella tendon exercises
Knee drives
Nordic hamstring exercises

Core stability exercises
Floor core exercises
Gym ball core exercises

Other
30-second neurological examination
Application of a cervical collar

Preface

As a training sports physician I felt there was a lack of teaching material that was both practical and which suited my way of visual learning. I was desperate to find a book or DVD that took me through symptoms, signs, investigation and management combined with a list of possible differential diagnoses that was visual and reflected how we manage patients in the clinic. I was pleased to find that after working together with Andy at London Irish Rugby Club he had a similar train of thought. We therefore hatched the idea of developing a book and DVD that was very practical, visual, and, most importantly, gave information from both a physician's and physiotherapist's perspective. The project has taken several years to develop and the final product will hopefully be of value to sports physicians, physiotherapists, osteopaths, chiropractors, sports masseurs and all those training in these fields as well as keen athletes.

Mike Bundy
London, 2009

Having worked as a physiotherapist in sport for a number of years, it has become very apparent that there are a vast number of clinical signs, tests, techniques and exercises that clinicians have to remember. While there are a number of other textbooks available, I have yet to find one that has taken me through the assessment techniques to the clinical findings and then to the rehabilitation techniques to treat the injury in an easy-to-follow and visual manner. Having worked with Mike for a number of years, we felt that we could produce a book which would provide clinicians with all the necessary information to accurately assess, diagnose and rehabilitate a wide variety of commonly occurring sports injuries in a new and exciting format. In doing so, we have incorporated photographs into the book and videoclips onto the interactive DVD to highlight a number of the important tests and exercises. We hope that all the clinicians who read this will find it very useful.

Andy Leaver
London, 2009

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M.B.
A.L.

Chapter 1

Training and conditioning

CHAPTER CONTENTS

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The conditioning of athletes is an area which has become very popular and that has made significant advances in recent years. It is an ever-changing discipline because there has been a much greater emphasis placed on athletes being at the peak of physical condition for their sporting event, whether this be by having a greater cardiovascular capacity or being 'fitter' or by being stronger. This has led to strength and conditioning coaches being widely employed in most sporting disciplines to devise training programmes to ensure that the athletes are at the peak of their physical condition so that they are able to compete at the best of their ability in their competitions or matches.

It is, however, an ever-changing area with new and different concepts being devised all the time in an attempt to push the boundaries of physical performance and give the athlete an edge over their competitors. This is achieved by the strength and conditioning staff analysing the specific demands of each individual competitor. The physical demands obviously differ between sports but they can also differ between team mates who play in different positions on the same team. For example, the strength and conditioning programme for a prop in rugby will be quite different to that of a winger on the same team because of the different physical demands placed on each of them in the game. Therefore, it is very important to remember that the programmes need to be tailored to the individual and should be sport-specific for the greatest benefits to occur. For example, a cyclist needs to cycle and sports which are running-based, such as football and rugby, need their athletes to run and so on.

This chapter will discuss some of the different training techniques that are being employed and give some examples of useful sessions for some athletes.

AEROBIC TRAINING

Aerobic training is simply where oxygen is present and is used to generate energy when the glycogen stores in the muscles are broken down to produce glucose and hence allow muscle contractions to continue. It is the most common type of training and that done by members of the public who are trying to 'keep fit'. This is because it has been shown to have numerous health benefits:

- It improves the efficiency and strength of the cardiac (heart) muscle itself. This causes hypertrophy or enlargement of the heart, which leads to increased pumping efficiency and consequently a reduction in the resting heart rate.
- It strengthens the respiratory muscles which facilitate the flow of air into and out of the lungs.
- It increases the number of red blood cells to which oxygen binds and hence aids its transportation around the body and to the muscles.
- It improves the efficiency of circulation which helps reduce blood pressure.
- It can help in reducing stress as the exercise triggers a hormonal release which is involved in controlling anxiety and alertness levels.

These factors have been shown to help reduce the risk of cardiovascular disease and hence produce significant health benefits. Consequently, aerobic exercise in a variety of forms has grown in popularity in the non-elite sporting population to maintain health and keep fit.

Training zone

The training zone is the heart rate that needs to be achieved by an athlete for the benefits to the cardiovascular system to be achieved. The individual needs

their heart rate to be between 65% and 85% of the maximal heart rate for between 20 and 40 min for a cardiovascular benefit. This needs to occur regularly for these benefits to be maintained and improved further. This should be at least three times per week in the non-elite population.

Maximum heart rate

There are a number of ways to calculate a person's maximum heart rate for training purposes. The simplest way to calculate it and to easily recommend to athletes is as follows:

$$220 - \text{age} = \text{Maximum heart rate (beats/min)}$$

For a 30-year-old, the training zone is as follows:

$$220 - 30 = 190 \text{ (max heart rate in beats/min)}$$

$$190 \times 65\% = 123 \text{ beats/min}$$

$$190 \times 85\% = 161 \text{ beats/min}$$

Therefore this athlete needs to keep their heart rate between 123 and 161 beats/min for the duration of the exercise of at least 20 min for a training effect to be achieved.

Aerobic testing

As the conditioning demands on athletes have changed, coaches and conditioners have continued to search for ways to objectively measure fitness so that they can ascertain how an athlete is performing, but also to monitor the effectiveness of their training programmes. If athletes have baseline fitness tests conducted and then they are re-tested, improvements in cardiovascular fitness can be measured.

VO_2 max testing

VO_2 max testing is the gold standard or most accurate test of aerobic or cardiovascular fitness. Its definition is the athlete's maximum capacity to utilise oxygen in a graded exercise test. The testing procedure is not readily available as it requires the athlete's ventilation to be measured very accurately with the concentrations of oxygen and carbon dioxide of inspired and expired air being measured while the athlete performs the graded exercise test on a treadmill or static bike. An athlete's VO_2 max is reached when their oxygen uptake remains constant even though the intensity of the exercise test increases. It is measured in litres/minute (L/min) or millilitres/minute per kilogram (mL/min/kg) of body weight. A score for an elite athlete who participates in an aerobic event such as a rower, long distance runner or cyclist should reach approximately 75 mL/min/kg.

Bleep test

The VO_2 max test is not possible for the majority of athletes, so other tests have been devised to give an objective measure of cardiovascular fitness. The bleep test is perhaps the most common test. It is simply a running-based test which comprises a 20 m shuttle where the athlete has to complete the shuttle inside timed bleeps on a pre-recorded audio tape or CD with the bleeps gradually becoming quicker, thus increasing the intensity of the test. The athlete achieves their score by the level of the test they reach and the number of shuttles in that level. The test goes to Level 21, but an elite athlete should be able to reach at least Level 14 on the test.

TYPES OF AEROBIC TRAINING

Conditioning staff are always looking at developing different training sessions to give the athletes the greatest training benefits. As discussed earlier, it can be in its simplest form maintaining the athlete's heart rate within their training zone for the duration of the session. This is not as effective for elite athletes who need their cardiovascular system to be stressed more vigorously to gain the greatest benefits; therefore other examples will be discussed.

Interval training

Interval training involves the athlete working at near full exertion, i.e. approximately 90% of their maximal heart rate for a period of time, and then interspersed with a rest period of much lower intensity exercise or relative rest. The session is most beneficial when the work to rest ratio is approximately 1 : 1; that is the time of effort is similar to the rest period. As the session progresses, the athlete's recovery will not be complete and their heart rate will not return to its normal resting level. The rest period is often simply a walk back recovery to the starting position or can be a very low intensity continuation of the same exercise. The sessions should be made relevant to the athlete and the demands of their specific event, i.e. running for running-based sports and a rowing session for rowers, etc.

Examples are as follows:

- Running
  10×400 m with 1 min recovery between each repetition
  12×200 m with 30 s recovery.
- Rowing
  6×500 m ergo with 2 min recovery between reps.
- A pyramid session for ergo or bike
  10 s on, 10 s off
  20 s on, 20 s off
  30 s on, 30 s off
  40 s on, 40 s off
  50 s on, 50 s off
  60 s on, 60 s off
  50 s on, 50 s off
  40 s on, 40 s off
  30 s on, 30 s off
  20 s on, 20 s off
  10 s on, 10 s off

There should be a 2-min rest between sets and repeat three sets. The 'on' period should be with high levels of resistance and at near maximal effort, with the 'off' period at low resistance but continuing the exercise.

Fartlek training

Fartlek training is similar to interval training in that there are periods of high intensity training interspersed with low intensity periods. It is continuous training and therefore is often used by long distance runners as a training method. The session can last for up to 45 min and can, in fact, include anaerobic bursts if it is required in the athlete's event.

An example of a Fartlek session might be:

- 5 mile run at normal speed
- 8×90 s bursts of increased intensity at 800 m pace with 2–3 min between each increased intensity burst.

Conditioning games

These have become popular training methods in team sports where the athletes play small sided games which are relevant to their sport. The aim is for the athlete to maintain their heart rate at between 75% and 90% of their heart rate maximum for the duration of the game. By keeping the number of team members fairly small, it ensures that all the athletes work maximally for the duration of the game and it is difficult for them not to join in the game and rest.

A good example would be a 3-a-side game of football for 5×5 min periods, or 2-on-2 basketball for 5×3 min periods.

Heart rate monitors

A recent product which has led to further monitoring has been heart rate monitors which are worn by athletes during their sessions and actually record their heart rate throughout a training session.

In this way, their effort levels can be monitored and conditioners and coaches can ensure that their athletes are maintaining their heart rate at the desired levels of towards 85% of the heart rate max for the whole session. It is an accurate way of observing heart rates through a session but also the rate of recovery, which is another good indicator of cardiovascular fitness as this occurs faster in fitter individuals.

ANAEROBIC TRAINING

Anaerobic training is training or exercise where the athlete triggers the metabolism of the glycogen without oxygen present. It occurs in intense exercise which lasts for less than 2 min and is effective in building muscle mass and power. It does, however, lead to the production of waste products such as lactic acid, which is detrimental to muscle function, and therefore, this type of exercise cannot last for longer than 2 min because of the lactic acid build up.

The point where lactic acid builds up in the muscle and circulatory system is termed the *lactic threshold* or *anaerobic threshold* and occurs when the lactic acid is produced more quickly than it can be removed or metabolised. When the lactic threshold is reached, the athlete is unable to continue to perform at the same level and this is often described as 'hitting the wall'. It is, however, possible to train and increase this threshold so that the athlete can perform for longer at the same or greater intensity before the threshold is reached.

For this training effect to occur, the athlete must work maximally and to fatigue. Their recovery period means that as the session progresses, it is just insufficient for the athletes to meet their targets. As long as the athletes continue to put in maximal effort, they will achieve a training effect and improve their lactic threshold. For this to occur, the work to rest ratio needs to be approximately 1:2–4, with the total work time being between 4 and 8 min.

Examples of such sessions are as follows:

- 10×200 m (aim to complete within 30 s) with 90 s recovery
- 5×400 m with 5 min rest
- 10×60 m sprints with 60 s recovery.

Therefore, any event or sport where the athlete is required to work to maximum intensity for periods of up to 2 min needs to include this form of training in their programmes.

STRENGTH TRAINING

Strength training is where different forms of resistance are used to build strength, size and endurance of muscles. It is important for athletes to include strength training in their training programmes, as significant benefits to their function can be achieved, including improved joint function and reduced injury risk given to them by the increased size and strength of the muscles acting over the joints. Weight training is the commonest form of strength training and the principles underpinning it will be discussed further here.

Principles of training

There are different forms of strength training which give rise to different results and improvements in the athlete's performance. It is the differences in the number of repetitions, sets, speed of exercise, weightlift or force required and tempo which cause slightly different adaptations to the muscles and differentiate between the different forms of strength training.

Specificity

It is vital that the exercises which are integrated into each athlete's programme are specific to their individual needs to improve performance in their event. There are now hundreds of exercises that can be tried in the gym which all train the muscles in a slightly different range or different movement pattern.

The strength and conditioning trainers must analyse the movements that occur in the athlete's event and try to replicate these movements in the gym. For example, the squat exercise is very useful when athletes require a sprint or explosive start to running or if jumping is required in their sport.

Also, it has been shown that when training the muscle, the gains are often task- or movement-specific. For example, when strengthening the quadriceps, squat training shows improvements in this form of closed chain knee extension, specifically the squat, but there is no carry over or improvement in open chain knee extension strength. Therefore, it is not just as simple as doing an exercise which uses the muscle group but, importantly, it should be movement- and event-specific for each individual.

Also, not every athlete will require every type of weight training in their programme because the demand of each sport is slightly different. For example, a sprinter will not require endurance training as it is not part of their sport, but of paramount importance is making improvements in power and strength. Likewise, a marathon runner will not need power training and should concentrate on endurance and strength sessions instead.

Strength

For specific strength to be gained the exercise programme must have the following components:

- The weight must be between 75% and 95% of their 1-repetition maximum (1RM) weight
- There should be between 2 and 5 repetitions (reps) in each set of exercises

- There should be between 2 and 5 sets of each exercise
- The session should have between 4 and 10 exercises for the athlete to complete
- The athlete should have between 2 and 5 min of rest between sets
- The speed of exercise should be between 60% and 80% of the maximum speed at which the exercise could be performed
- There should be 2–3 strength sessions per week for up to 6 weeks for strength adaptations to occur.

Power training

Power training is an important component of many athletes' training programmes to provide them with greater force production and at greater speeds. The exercises transfer well to ballistic athletic movements and require good recruitment pattern of the muscles to be effective.

A power session should follow these principles:

- The weight should be moved as quickly as possible through the available range
- 3–5 reps per set
- 3–5 sets
- Work at 40–60% of 1RM
- 3–5 min rest between sets
- A power session needs to be included for at least 6 weeks for advances to be made.

Hypertrophy training

Hypertrophy is where increases in muscle bulk occur. Hypertrophy sessions should follow the following principles:

- 8–15 repetitions per set
- 3–5 sets
- The intensity should be at 60–80% of 1RM
- The rest period between sets should be 1–2 min so that a degree of fatigue occurs.

Endurance training

This component of a training programme requires a far greater number of repetitions and is most commonly used by endurance athletes rather than those who play team sports such as football and rugby.

An endurance session should be based on the following basic principles:

- 25+ reps to fatigue
- 2–3 sets
- 1–2 min rest between sets
- Intensity of 40% of 1RM.

WHAT EQUIPMENT TO USE?

Weight training can be carried out in two main forms. The first adjunct to weight training is by using free weights such as dumbbells and barbells, and second, by weight machines.

Figure 1.1 Bicep curl.

Free weights

Free weights are where the athlete utilises dumbbells, barbells, medicine balls and other objects to provide the weight or resistance to the exercise. Using free weights allows the athlete to exercise through a full range of movement and perform multijoint exercises. They do, however, require more trunk stability and technique to safely do the exercises. While this can be limiting to novice trainers, it is seen to be a more beneficial training approach for experienced athletes. For examples of exercises using free weights, see the bicep curl in Figure 1.1 and the shoulder press in Figure 1.2.

Weight machines

Weight machines offer a stable base from which exercises can be carried out and are therefore considered to be safer, and thus better for novice weight trainers or athletes recovering initially from injuries. The range of movement is, however, more limited and tends to only allow single joint exercises.

INJURY PREVENTION

As with all areas of training, injuries can occur. It is important with all types of weight and conditioning training that a graduated programme is employed that allows the athlete or individual to adapt to the training gradually.

Figure 1.2 Shoulder press.

It is vital that the athlete is taught the correct technique first and that they can reproduce this throughout a training session. Once this has been achieved, they can gradually increase the intensity of the sessions to ensure that they do not sustain an injury. It is only at this point that more rigorous testing can be considered.

Athletes also need to ensure that their training programmes are well planned to ensure that there are adequate rest periods between sessions and that there is sufficient time to train fully before an event or match.

An example of this is the runner who trains for a marathon. Often, individuals decide to do a marathon but do not give themselves sufficient time to build up their training schedule and subsequently suffer overuse injuries.

This is an important consideration for all athletes, regardless of their event, to ensure that the correct technique is implemented and that training programmes are well planned and scheduled.

Chapter 2

Injury prevention

CHAPTER CONTENTS

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The ability to prevent an injury is the 'holy grail' of all sports therapists. To reduce the occurrence of an injury and thereby keep the athlete training and competing is the ultimate in excellent care. There are many factors that contribute to achieving this goal and there are many factors that we have no control over that may jeopardise our best efforts; however, one way of identifying which athlete is at risk of what injury, is to perform a screening or profiling medical. This is a top-to-toe musculoskeletal survey of the athlete, taking into consideration their sport, playing position, demands of the sport, their morphology, strength, stature, muscle balance, proprioception, posture, biomechanics, joint range of movement and stability, body control, flexibility and coordination. This is a long list but the process involves progressing through the body, examining each joint and muscle group with the insight of the athlete's past injury history, identifying as you go along any deficiencies, imbalances, structural abnormalities or injuries that would put the athlete at risk of injury. A suggested medical examination protocol is shown in Figure 2.1.

For this process, a list of identified weaknesses can then be addressed by prehabilitation exercises. 'Prehab' exercises to address deficiencies have been shown to reduce injury incidence and are now an integral part of athlete training regimes. There is no fool-proof plan that will keep athletes injury-free but below are some of the essential factors that need to be addressed to succeed.

CORE STABILITY

'Core stability' has been an 'in-vogue' area for sports medics, conditioners and coaches alike. It relates to the musculature around the trunk and pelvis and the move towards ensuring that an athlete has a stable trunk and pelvis which will provide the base for all other movements of the limbs to work from.

It is an area where there is a spectrum as to what it actually means and what should actually occur. Some physiotherapists are at one end and talk about segmental stability of each spinal level, while it tends to be the conditioners who are at the other end of the spectrum and who see it as using all the trunk muscles strongly together to provide the base. In practice, a middle ground needs to be found and both groups of people need to interact and work together to provide the athlete with the best possible programme.

Everyone is in agreement that this stable base around the trunk and pelvis is required to allow the athlete to perform to the best of their ability, but that it is also important to help prevent injuries. It has been shown that instability or excess movements at and around the pelvis can cause compensatory movements to occur at the more distal joints. For example, athletes who have poor gluteal control around their hip and pelvis are unable to control the hip in load-bearing positions, which can cause the hip to internally (medially) rotate. This puts extra

Medical screening/profiling

Date of examination:___/___/___

Name: _____ Date of birth: ___/___/___

Date of last game: ___/___/___ Completed game: Yes / No

Examining doctor: _____ Signature: _____

A. MEDICAL HISTORY

Significant past medical history

Diabetes	☐	Heart disorder	☐
Epilepsy	☐	Murmurs	☐
Asthma	☐	Palpitations	☐
Heartburn	☐	Ulcer	☐

Other significant medical history: _____

Family history _____ Infectious diseases _____

Smoker: Yes / No No. per day: _____ Alcohol: Yes / No Amount per week: _____

Current medications: _____

Current supplements: _____

Preferred NSAID: _____

Allergies: _____

Date of last concussion: ___/___/___

Number of concussions in past 12 months: _____

Other concussion history: _____

Regular strapping: _____

Date of last dental check, mouthguard fitting: _____

B. PLAYING HISTORY and INJURY MANAGERS

Club	Position	Games last 12 months
Treating therapists	Physiotherapist	Doctor

Figure 2.1 Medical examination form.

C. SIGNIFICANT PAST SURGICAL/INJURY HISTORY (including any lost playing time in past 12 months):

Neck : Thoracic : Torso : Lumbar : Sacral

Shoulder : Elbow : Wrists : Hands

Hips : Thighs : Groin : Knees : Shins : Ankles : Feet

D. IMMUNISATION STATUS/BLOOD TESTS

TYPE	YES / NO	DATE OF BOOSTER/TEST
Tetanus		
Polio		
Hepatitis A		
Hepatitis B		
Ferritin	Level: _____	
Hep B abs		
Blood group		

D. PHYSICAL EXAMINATION

Height: _____ cm Weight: _____ kg Pulse: _____ PEF: _____

Urinalysis: Glucose _____ Protein _____ Blood _____ Nitrates _____ Bili _____

Visual acuity: Right _____ Left _____ (without glasses)

Right _____ Left _____ (with glasses)

CNS: _____ Fundoscopy _____

CVS: _____

Respiratory: _____

Abdomen: _____

ENT: _____

Cx spine: _____

Thoracic spine: _____

Fingers/thumbs (incl. UCL): _____

Wrists: _____

Marfanoid: Yes / No Ligamentous hyperlaxity: Yes / No

Standing:

Figure 2.1, cont'd

Posture: _____ Feet: _____ Pelvic symmetry: _____

1 leg squat: (R) _____ (L) _____ Lunge: (R) _____ (L) _____

Gluteal control _____ Trendelenberg _____

Proprioception (R) _____ (L) _____ Hop ¥ 10 (R) _____ (L) _____

Squat _____ Duck walk _____

L/spine: ROM: _____ Quadrant: _____

Ankle dorsiflexion (R) _____ (L) _____

Shoulder

ROM (?arc) Abduction (R) _____ (L) _____

ER/IR (R) _____ (L) _____

Scapula ? wasting _____ SHR (R) _____ (L) _____

Rotator cuff power (R) _____ (L) _____

Impingement tests (R) _____ (L) _____
(Neers/Hawkins)

ACJ Tenderness (R) _____ (L) _____ Scarf test (R) _____ (L) _____

Stability AP stability (R) _____ (L) _____ Relocation (R) _____ (L) _____

Apprehension (R) _____ (L) _____ Sulcus (R) _____ (L) _____

Labral tests _____

Other: _____

Spine (supine)

Slump (R) _____ (L) _____ Thomas' (R) _____ (L) _____

Thomas' adductor (R) _____ (L) _____ Flexion (R) _____ (L) _____

SLR (R) _____ (L) _____ Hamstring tightness (R) _____ (L) _____

Leg length _____ Pelvic symmetry _____

Core stability _____ Activating TA: Sit up _____ SLR _____

Hip ROM (IR/ER) (R) _____/ _____ (L) _____/ _____

Faber (R) _____ (L) _____ Quadrant (R) _____ (L) _____

Hip flexor strength (R) _____ (L) _____

Adductor tenderness _____ Power _____ Squeeze _____

Figure 2.1, cont'd

Pubic symphysis _____ Inguinal canal _____ Psoas _____

Spine (prone)

L/Sp tenderness _____ L/Sp mobility _____

Facet tenderness _____ SIJ _____

Glut/Ham control & power (R) _____ (L) _____

Quad length (heel to buttock) (R) _____ (L) _____

Dial test (R) _____ (L) _____

Knee

Effusion (R) _____ (L) _____ PFJ _____

ROM (Ext/flex) (R) _____ / _____ (L) _____ / _____

Ligaments: MCL (R) _____ (L) _____ LCL (R) _____ (L) _____

ACL: Ant draw (R) ____ (L) ____ Lachman (R) ____ (L) ____ Pivot (R) ____ (L) ____

PCL: (R) _____ (L) _____

Joint line: Tenderness (R) ____ (L) ____ McM (R) ____ (L) ____ Apley's (R) ____ (L) ____

Sup tib – fib (R) _____ (L) _____

Other: _____

Ankle

ROM TCJ (PF/DF) (R) ____ / ____ (L) ____ / ____ STJ (R) _____ (L) _____

Power (R) _____ (L) _____

Stabilty: Ant draw (R) _____ (L) _____ Talar tilt (R) _____ (L) _____

Palpation JLT (R) ____ (L) ____ Sinus tarsi (R) ____ (L) ____ Cuboid (R) ____ (L) ____

5th M/tarsal (R) _____ (L) _____

Syndesmosis: ER stress (R) _____ (L) _____ Squeeze (R) _____ (L) _____

Other: _____

E. GENERAL COMMENTS

_____

_____

_____

_____

_____

Figure 2.1, cont'd