Chapter 10

Fitness training principles and methods

Text Sources


Training

- Training improves the physiological capacity of athletes to bring out the best performance possible.
- The demands of the sport can be identified by undertaking an activity analysis (Chapter 8).
- A training program needs to meet the demands of the game.
- Methods of training vary and a program should be well designed.
- Using a variety of training methods is possible, but must be specific to the sport chosen.
- Training programs need to follow key training principles.
Principles of Training

Fitness training principles and methods
Major training principles are:
- Specificity
- Progressive Overload
- Frequency
- Intensity
- Duration
- Adaptation (Chapter 11)

Additional Principles
- Individuality
- Diminishing Returns
- Variety
- Detraining (Reversibility)
- Maintenance
- Retraining
Specificity

Replicating characteristics of physical activity in the training. An athlete should train the specific; Energy systems, fitness components, muscle groups and skills required.

The specific type of training and its effect is specific to the individual athlete. Athletes differ in; Physiques, Muscle fibre composition, VO$_2$ max etc.

‘Soreness’ in athletes after games is an indication of a lack of specificity in training. This provides good feedback for coaches.

Training which replicates the competitive event is very useful. Using a variety of training methods is complimentary to athletes preparation prior to an event.

Case Study – Australian rules Football Training

Team games such as Australian rules requires specific drills and fitness activities to prepare the players for the game.

- Training usually consists of continuous training with other methods (Fartlek and interval) being used.
- Skill drills replicate game day fitness requirements.
- Pre-season is used to raise the base level fitness of players, whilst during the season the fitness needs only to be maintained.

VCE Physical Education - Unit 4
Coursework 10.1

- Complete the **laboratory task** on page 227 of Nelson Physical Education VCE Units 3 & 4.
Checkpoints

- Complete questions 1-4 page 228 of Nelson Physical Education VCE Units 3 & 4.
Progressive Overload

Progressive overload causes physical stress on the body. The body adapts to the training causing improved performances.

Workloads must be gradually adjusted upwards to increase stress on the body. Increase only one factor – make it gradual.

Eg. Resistance training include altering; Amount of resistance, recovery time, frequency of sessions, number of sets, range of motion, intensity level etc.

Eg. Running – Increasing Resistance via modified parachutes

*Note. ‘No Pain, No Gain’ – This is a misconception. Pain should not be experienced during training. Overloading when not prepared can cause injury.*
Periodisation (Overload Application)

Periodisation
A training year consists of; pre-season, in-season and off-season.
Each phase can be broken down into subphases.

- Subphases can be broken down further into macrocycles and shorter phases of training called microcycles.
- Timing when to overload, allowing for recovery phases, is essential.
- When the body is adapting, the new overload level should be put in place.
### Sample Running Program

<table>
<thead>
<tr>
<th>Stage of Program</th>
<th>Frequency (Times per week)</th>
<th>Intensity (%VO2 max)</th>
<th>Duration (Min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning (0-6 weeks)</td>
<td>3</td>
<td>60-70%</td>
<td>10-30</td>
</tr>
<tr>
<td>Development (7-13 weeks)</td>
<td>3-4</td>
<td>70-85%</td>
<td>30-45</td>
</tr>
<tr>
<td>Maintenance (14-20 weeks)</td>
<td>2-4</td>
<td>70-85%</td>
<td>20-30</td>
</tr>
</tbody>
</table>
Frequency

Frequency
Number of training sessions per week to ensure improvements in the desired fitness components and energy systems. Need to allow recovery/rest time.
Greater the frequency, the greater the results. However rest periods are required.
Frequency is determined by the fitness level of the individual and the nature of the activity.
Eg. Triathlon requires training twice a day to train each of the disciplines.
How often should we train?
- Elite – 5-7 times per week
- Club – 3 sessions per week
Aerobic v Anaerobic Training
Aerobic Training: 5-7 times a week at 75-85% max H.R.
Anaerobic Training: 3-4 times a week at 85-100% max H.R.
Intensity

Exertion level at which training is being performed (Quality of training).

Commonly measured as % of max. heart rate (220-age).

Can be measured manually or with heart rate monitors (bpm).

Training Zones (% Max HR)
- ATP-PC 95-100%
- Lactic Acid 85-95%
- Aerobic 70-85%

Note. Athletes can train above their training zones to get additional benefits.

Eg. Distance runners can train at 85% max HR have; Increased VO$_2$ max, more tolerant to lactic acid and an enhanced aerobic performance.

Lactate Inflection Point and Training
The LIP (Approx 75% VO$_2$ Max) varies in athletes and can be raised via specific training methods.
Duration

- Duration can refer to the length of a each training session or the length of the training program.
- Aerobic zone – Minimum of 30 minutes to gain benefits. Can be achieved in smaller amounts.
- Training programs should be at least 6 weeks long, with 12 weeks being ideal.
- Anaerobic programs 8-10 weeks.
- Strength 6 weeks
- Flexibility gains can be made after only a few sessions.
- Training effects are often very gradual and people need to be patient to observe physical and physiological benefits.
Checkpoints

- Complete questions 1-6 page 234 of Nelson Physical Education VCE Units 3 & 4.
Additional Principles of Training
Fitness training principles and methods
**Individuality**

In team games, each player has different physiological demands. Individual programs should be developed in addition to team training sessions.

Eg. Hockey – Compare needs of stationary goalkeeper with a midfielder.

However, it is important that teams do train together as it builds club cohesion, mateship etc. Coaches can also work on team tactics and strategies.

Eg. AFL Training - Each player has an additional individual training program which is based on their playing position/s.

Clubs also take into account the players’ Training history, injuries, illness etc.
Diminishing Returns

Fitness gains are hard once into program.
Unfit people have greater gains at the start of the program but then have little gains later in the program.
Fitness gains ‘diminish’ once the athlete gets close to their maximal level of fitness.
Genetic potential will determine if the unfit athlete will eventually pass the initially fit athlete.
Overload can be used when fitness levels plateau.
Variety

Mix training sessions up to avoid boredom from repetition.
A variety of training methods should be used.
Try minor or major games, but keep skills/energy systems specific.
Eg. Cricketers playing a game of baseball or golf.
Note. The principle of specificity should be maintained
In team games, the coach should introduce new drills or activities regularly.
The coach can also use different club leaders to take training.
Detraining and Retraining

Also called ‘reversibility’. Loss of fitness is very quick than the initial gaining of fitness. The body returns to its untrained state unless fitness is maintained. Most fitness is lost after 4-8 weeks of detraining. Generally, the longer the training program, the more gradual the loss occurring.

Physiological changes include; Increase in HR, decrease in mitochondrial enzymes and decrease in blood volume. See fig 10.11 p.236

Aerobic loss is quicker (2-4 weeks) than anaerobic.

Eg. A distance runner and a sprinter both have a months break from training. The distance runner would be worse off than the sprinter.

Retraining
All training benefits must be regained by a new training program after a long period of detraining.

After injury, the athlete needs a comparable period of time to regain fitness.
Maintenance, Tapering and Peaking

Maintenance
Frequency can decrease once at the desired level of fitness.
But intensity must remain the same.
A maintenance program should be used off-season to avoid the effects of detraining.

Tapering
Decrease in training levels in the weeks leading up to the major event.
Allows for more recovery time and extra energy storage.

Peaking
Refers to the planning of training so that an athlete reaches their optimum readiness at a particular determined time.
Checkpoints

- Complete questions 1-3 page 237 of Nelson Physical Education VCE Units 3 & 4.
Coursework 10.2

- Complete the **structured questions** on page 237 of Nelson Physical Education VCE Units 3 & 4.
Designing a Training Session and a Training Program

Fitness training principles and methods
Designing a Training Session

A training session should include;

- **Warm Up** - An active warm up which raises muscle temperature and causes sweating.
- **Stretching** – Stretch major muscle groups used in the physical activity. Prevents injury.
- **Skill Development** – Basic skills worked on and some tactics can be incorporated.
- **Main Conditioning Session** – Main training session which works on the major fitness components.
- **Recovery/cool down** – Intensity needs to taper off. Reduces stiffness after training sessions. Further flexibility work can also be done.
Checkpoints

- Complete questions 1-2 page 239 of Nelson Physical Education VCE Units 3 & 4.
Methods of Training

Fitness training principles and methods
Training Methods

- Interval Training
- Continuous Training
- Fartlek Training
- Circuit Training
- Plyometric Training
- Flexibility Training
- Resistance Training

Other Methods

- Speed Training
- Pilates
- Swiss Ball
- Skill Training
Interval Training

Intervals of work followed by rest (ATP/PC replenishment). Rest time can be active.
Terminology See table 10.4 p.240
Recovery time determines energy system used.
Variables in interval training;
- Distance/duration, intensity, duration of rest, activity during rest, number of sets, frequency of training.
By varying any of the variables we can progressively overload the athlete. See table 10.6 p.241
Energy System training See table 10.5 p.241
Benefits
- Highly structured, specific to game, can measure progress, all energy systems can be trained, minimal equipment required.

**Lactate tolerance** exercises occur at high intensities and usually involve intermediate interval training. At these high intensities, athletes/muscles produce large concentrations of lactate and the body adapts to this by improving it's clearance and alkalai buffering capacity.
## Interval Training

### Examples of interval training for running

<table>
<thead>
<tr>
<th>Energy systems</th>
<th>Interval time</th>
<th>Work intensity</th>
<th>Repetitions</th>
<th>Rest interval</th>
<th>Work-to-rest ratio</th>
<th>Training frequency</th>
<th>Suitable sports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphate</td>
<td>3–8 seconds</td>
<td>95 per cent of maximum heart rate</td>
<td>8</td>
<td>3</td>
<td>40 seconds</td>
<td>1:5</td>
<td>3</td>
</tr>
<tr>
<td>Lactic acid</td>
<td>8–25 seconds</td>
<td>85 per cent of maximum heart rate</td>
<td>4</td>
<td>2</td>
<td>75 seconds</td>
<td>1:3</td>
<td>3</td>
</tr>
<tr>
<td>Aerobic</td>
<td>30–240 seconds</td>
<td>75–85 per cent of maximum heart rate</td>
<td>3</td>
<td>2</td>
<td>240 seconds</td>
<td>1:1</td>
<td>4–5</td>
</tr>
</tbody>
</table>

### The impact of variable manipulation

<table>
<thead>
<tr>
<th>Variable</th>
<th>Current training</th>
<th>Manipulation to cause overload</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work interval distance</td>
<td>100 metres</td>
<td>Longer</td>
<td>Changes the predominant energy system to lactic acid</td>
</tr>
<tr>
<td>Work interval time</td>
<td>15 seconds</td>
<td>Shorter</td>
<td>Creates higher intensity, requiring more phosphate energy</td>
</tr>
<tr>
<td>Rest interval time</td>
<td>45 seconds</td>
<td>Shorter</td>
<td>Changes the work-to-rest ratio to less than 1:3, so lactic acid becomes the predominant energy system</td>
</tr>
<tr>
<td>Rest interval type</td>
<td>Rest</td>
<td>Slow jog</td>
<td>Appropriate as long as the intensity of jogging remains low</td>
</tr>
<tr>
<td>Number of repetitions</td>
<td>8</td>
<td>Increase</td>
<td>Appropriate, although too many will lead to gradual depletion of adenosine triphosphate and reliance on lactic acid</td>
</tr>
<tr>
<td>Number of sets</td>
<td>2</td>
<td>Increase</td>
<td>More appropriate than a continual increase in repetitions</td>
</tr>
</tbody>
</table>
Continuous Training

- Long, slow distance (LSD) training.
- No rest or break period for at least 20 minutes.
- Works aerobic energy system.
- Time should meet demands of game length.

Examples: Jogging, cycling, rowing, walking

Max Intensity – 80-85% max H.R
Min Intensity - 65-70% max H.R
Time – at least 20 minutes

Benefits:
- Less demanding than anaerobic training.
- Provides health benefits.
- Low risk of injury

Physiological benefits:
- Lowered resting H.R
- Increased stroke volume
- Thicker heart muscle
- Increase muscle enzymes
- Reach steady state quicker
- Slower lactate accumulation
- Faster recovery

F = Frequency (At least 3 to 4 sessions per week)
I = Intensity (In aerobic zone)
T = Time (Minimum of 20 minutes)

T = Type (Whole body activities that use large major muscle groups)
Training and LT/LIP

- VO₂ max is just one's ability to take up, transport and utilise maximal amounts of oxygen at maximal aerobic exercise.
- To increase one's VO₂ max, exercise has to be performed at intensities at or above lactate threshold (LT/LIP).
- Intensities somewhat higher than LT are usually used and believed by most (70% of literature) to be the best for raising VO₂ max, LT intensity has been shown to be just as effective at raising VO₂ max in some athletes (30% of literature).
Fartlek Training

 Variation of continuous training.
 It involves short bursts of intense work during a continuous activity.
 Fartlek is Swedish for ‘Speed Play’.
 Works both aerobic and anaerobic systems.
 Session can be either structured or unstructured.
 Can be done in small areas and is suitable for all fitness levels.
 Intensity – sub-maximal which changes.
 Overload – Increase frequency, duration, distance of intense bursts.
 Covering same distance in less time.

 Benefits;
 - Energy systems can be trained.
 - Adds variety to a continuous training program.
Coursework 10.3

- Complete the **written work** on page 243 of Nelson Physical Education VCE Units 3 & 4.
Circuit Training

Uses stations (6-15) that focus on specific components of fitness.
A complete circuit should take between 5 and 20 minutes with 15-30 seconds rest between each station.

Coaches can design a circuit manipulating the following variables;
- Fitness components used
- Type and number of exercises
- Number of reps
- Number of circuits to be completed
- The length of recovery

Specificity – Exercises can be made specific to the game.
Time- A lap should take 20 minutes with 15-20 break.
Overload – Number of reps, time, laps, recovery time, resistance.

Benefits;
- Develops a range of fitness components.
- Maintains interest – can be varied.
- Can be used to work on weaknesses.
- Progress can be measured.

Examples; Step-ups, sit-ups, press-ups, squat jumps, shuttle runs, pull ups.
Circuit Training Methods

Three main types of circuits:
1. Fixed load
   - 50 seconds per exercise
   - 3 circuits in 20 minutes
   - Loading is increased each set (See table 10.7 p.244)
2. Fixed time –
   - Max reps in time given
3. Individual load –
   - Max reps in 1 minute.
   - Athlete works at 60, 70 or 75% rep max. (See table 10.8 p.245)
   - Or Score is halved and attempted in 2/3 of the time taken to do three complete circuits.

<table>
<thead>
<tr>
<th>Stations</th>
<th>Score for 1 minute</th>
<th>Half score</th>
<th>Time and date</th>
<th>Time and date</th>
<th>Time and date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skipping</td>
<td>50</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Situps</td>
<td>60</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pushups</td>
<td>50</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agility run</td>
<td>5</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basketball throw</td>
<td>20</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stepups</td>
<td>50</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicine ball throw</td>
<td>20</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ladder climb</td>
<td>5</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shuttle run</td>
<td>10</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial time (three circuits)</td>
<td>21 minutes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target time</td>
<td></td>
<td></td>
<td></td>
<td>14 minutes</td>
<td></td>
</tr>
</tbody>
</table>
Checkpoints

- Complete questions 1-5 page 246 of Nelson Physical Education VCE Units 3 & 4.
Plyometric Training

New name for skipping, bounding and jumping – developed in Eastern Europe and Russia.
- It develops muscular power from a stretch reflex.
- Trains eccentric aspect of muscular contraction. Speed is vital.
Example; Leaping, bounding, hopping, rebounding.

Note – Height should not exceed 25cm (Low impact), 35cm high impact.

Overload – Altering sets or reps.

Low Impact
Reps – x10  Sets- x 1-5  Recovery – 3 min

High Impact
Reps – x10-25  Sets – 1-5  Recovery-10min

Benefits;
- Trains neuromuscular system.
- Develops power
- Replicates game movements
- Minimal equipment required.

Considerations;
- Athlete needs sound strength and endurance
- Use less stressful drills for beginners
- Not recommended for children under 15 years old.
- Train on shock absorbing surfaces
- Frequency – 2 (off-season) and 1 (in-season).
- Recovery time – 48 hours
(a) Low-impact plyometric drills

- Light medicine ball
- Side jumps
- 360° Jumps
- Skipping
- Low hops
- Steps
- Jumps
- Throwing a ball

(b) High-impact plyometric drills

- Jumps onto, over and from 35-cm benches
- Hop, step and jump
- Heavy medicine ball
- Alternate leg bounding
- Double leg bounding
- Reactive/drop jumps
- Speed hops
Flexibility Training

Ability of specific joints to move through the range of motion required.

Methods;
1. Passive (Static) – Holding stretch for 15-30 sec
2. Slow Active Stretching (SAS) – Stretch, relax then re-stretch. Used in aerobics.
3. Proprioceptive Neuromuscular Facilitation (PNF) – Usually partner assisted stretch. Full lengthening of muscle which contracts isometrically.
4. Ballistic* – Moving through range of motion using momentum.
*Not recommended unless well warmed up.

Frequency – 3-4 sessions p.w
Should be included in addition to any training program.
Flexibility is required in all sports.

VCE Physical Education - Unit 4
Weights (Resistance) Training

Improves muscular strength, power and endurance.

Terminology-
- Rep – Single effort
- Rep Max (RM) – max number of reps in a row
- Set – Number reps in a sequence
- Resistance – Amount of weight

Benefits;
- Non specific groups can be targeted
- Variety of exercises used
- Strength, power and endurance can be targeted
- Record progress on performance chart.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Strength</th>
<th>Power</th>
<th>Muscular endurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load</td>
<td>85–100 per cent RPM</td>
<td>30–70 per cent RPM</td>
<td>50–60 per cent RPM</td>
</tr>
<tr>
<td>Exercises</td>
<td>3–5</td>
<td>2–4</td>
<td>4–6</td>
</tr>
<tr>
<td>Repetition</td>
<td>1–4</td>
<td>4–12</td>
<td>15–100</td>
</tr>
<tr>
<td>Sets</td>
<td>3–10</td>
<td>3–6</td>
<td>2–4</td>
</tr>
<tr>
<td>Rest and recovery</td>
<td>3–6 minutes</td>
<td>2–6 minutes</td>
<td>2 minutes</td>
</tr>
<tr>
<td>Speed of contraction</td>
<td>Slow to medium</td>
<td>Fast</td>
<td>Medium</td>
</tr>
<tr>
<td>Frequency</td>
<td>2–3</td>
<td>2–3</td>
<td>2–3</td>
</tr>
</tbody>
</table>
Resistance Types

1. **Free weights (isotonic)**
   - Traditional form
   - Uses dumbbells and barbells
   - Dynamic movement
   - Works concentric and eccentric phases.

2. **Fixed resistance (isometric)**
   - Holding a fixed position while the muscle contracts against resistance
   - Tension increases but the muscle stays the same length.
   - Increases strength in the static position – minimal use in dynamic sports.
   Examples: Pushing against a wall, handstands, crucifix position on the roman rings.

3. **Isokinetic**
   - This is known as ‘accommodating’ resistance.
   - Machines can adjust the load as the body part moves through the range of motion.
   - Limited benefits to the speed in which the machine will operate.
   Examples: Cybex, Kincom, Biodex and Hydragym.
Coursework 10.4

- Complete the **written report** task on page 253 of Nelson Physical Education VCE Units 3 & 4.
Speed Training

Speed training draws on other training methods.
It requires rehearsal of the neural pathways responsible for speed.
Speed is dependent on stride frequency and stride length.

1. Stride Frequency
   - Speed strength exercise
   - Plyometrics
   - Downhill running
   - Windy day running
   - Resistance techniques (Parachute)

2. Stride Length
   - Developing strength, power, endurance and technique analysis.

See table 10.14 p.255
Pilates and Swiss Ball

Pilates
Gentle method of developing core body strength.
Strengthens the deep postural muscles.
Classes improve breathing and posture.
Integrates physical & mental conditioning, relaxation and breathing techniques.
Relieves stress, fatigue, physical discomforts and increases self-confidence.

Swiss Ball
Like pilates, the swiss ball develops the deep postural muscles.
The exerciser uses the ball for;
- Static movements
- Dynamic movements
- Postural movements
Can be used in gyms, home (Eg. Fitball) or the workplace.
Motor Skill Development

Motor skills can be learnt and developed through training. We obtain some skills genetically, however training will enhance these abilities further.

Stages of Learning
- Cognitive – Beginner
- Associative – Learning
- Autonomous – Expert.

Skill level will depend on;
- Age, gender, feedback given, recognition of faults, being able to correct faults, perceived ability, level of practice, motivation, physical maturation, fitness capacity, memory.
Checkpoints

- Complete questions 1-6 page 257 of Nelson Physical Education VCE Units 3 & 4.
Test Your Knowledge

- Complete the review questions 1-3 page 259 of Nelson Physical Education VCE Units 3 & 4.
Complete the chapter questions on page 71-87 of Nelson *Peak Performance* Physical Education VCE Units 3 & 4.
Read the summarised information of pages 81-95 of PHYS ED Notes and complete the revision questions.
The rate of fitness improvement as shown in the graph is known as

A. diminishing returns.
B. retraining.
C. de-training.
D. maintenance.
Identify the correct order of the following plyometric exercises from low stress to high stress.

<table>
<thead>
<tr>
<th>Plyometric exercise</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-leg hops (for distance)</td>
<td>A</td>
</tr>
<tr>
<td>Depth jumps (short contact time)</td>
<td>B</td>
</tr>
<tr>
<td>Jump rope (two foot contact)</td>
<td>C</td>
</tr>
<tr>
<td>Stair jumps (up stairs)</td>
<td>D</td>
</tr>
</tbody>
</table>

A. C D A B
B. D C A B
C. A D C B
D. B C D A
Below is a sample of a short-interval training program.

<table>
<thead>
<tr>
<th>Sets</th>
<th>Repetitions</th>
<th>Distance (m)</th>
<th>Time (s)</th>
<th>Rest interval (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>12</td>
<td>20</td>
<td>2.2</td>
<td>10</td>
</tr>
</tbody>
</table>

In the table below, which of the following alternatives does not demonstrate the correct application of the progressive overload principle to the program shown above?

<table>
<thead>
<tr>
<th></th>
<th>Sets</th>
<th>Repetitions</th>
<th>Distance (m)</th>
<th>Time (s)</th>
<th>Rest interval (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3</td>
<td>13</td>
<td>20</td>
<td>2.2</td>
<td>10</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td>12</td>
<td>22</td>
<td>2.2</td>
<td>10</td>
</tr>
<tr>
<td>C</td>
<td>4</td>
<td>12</td>
<td>20</td>
<td>2.2</td>
<td>10</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>12</td>
<td>20</td>
<td>2.2</td>
<td>9</td>
</tr>
</tbody>
</table>
After evaluating the games analysis results, the coach used the information to devise a training program for the player.

What type of training would be most beneficial in increasing the aerobic capacity of the player and therefore aiding in their recovery between work periods?

A. anaerobic threshold training
B. weight training
C. sprint training
D. continuous training
Web Links – Chapter 10

• AFL home page: http://afl.com.au
• Information about the history of Pilates: http://www.pilates.com/history.html
• Review of soccer training methods: http://www.physioroom.com/research/training_methods_1.php
• Coaches Info – Sports science information for coaches: http://www.coachesinfo.com
• Track and field conditioning information: http://www.elitetrack.com/main.php
• Georgia State University (USA) – information about swimming: http://www2.gsu.edu/~wwwfit/swimming.html
• American College of Sports Medicine: http://www.acsm.org/
• Sports Coach UK – training principles: http://www.brianmac.demon.co.uk/trnprin.htm
• Sports Coach UK – planning the training: http://www.brianmac.demon.co.uk/plan.htm
• Sports Coach UK – personal exercise plan: http://www.brianmac.demon.co.uk/pep.htm
• Sports Coach UK – training programs: http://www.brianmac.demon.co.uk/trainprog.htm
• Case study (plyometric training) from The World Sports Science Training Workbook: http://www.pponline.co.uk/