THE BODY COACH

PAUL COLLINS

DYNAMIC DUMBBELL TRAINING

MEYER & MEYER SPORT

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The Body Coach Series

Dynamic Dumbbell Training

The Ultimate Guide to Strength and Power Training with Australia's Body Coach®

Paul Collins

Meyer & Meyer Sport

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About the Author

Paul Collins, Australia's Personal Trainer™ is founder of The Body Coach® fitness products, books, DVDs and educational coaching systems – helping people to get fit, lose weight, look good and feel great. Coaching since age 14, Paul has personally trained world-class athletes and teams in a variety of sports from Track and Field, Squash, Rugby, Golf, Soccer and Tennis to members of the Australian World Championship Karate Team, Manly 1st Grade Rugby Union Team and members of the world-renowned Australian Olympic and Paralympic Swimming teams. Paul is an outstanding athlete is his own right, having played grade rugby league in the national competition, an A-grade squash player, National Budokan Karate Champion and NSW State Masters Athletics Track & Field Champion.

A recipient of the prestigious 'Fitness Instructor of the Year Award' in Australia, Paul is regarded by his peers as the 'Trainers' Trainer' having educated thousands of fitness instructors and personal trainers and appearing in TV, radio and print media internationally. Over the past decade, Paul has presented to national sporting bodies including the Australian Track and Field Coaching Association, Australia Swimming Coaches and Teachers Association, Australian Rugby League, Australian Karate Federation and the Australian Fitness Industry as well as travelling to present a highly entertaining series of Corporate Health & Wellbeing Seminars for companies focused on a Body for Success™ in Life and in Business.

Paul holds a Bachelor of Physical Education degree from the Australian College of Physical Education. He is also a Certified Trainer and Assessor, Strength and Conditioning Coach with the Australian Sports Commission and Olympic Weight Lifting Club Power Coach with the Australian Weightlifting Federation. As a Certified Personal Trainer with Fitness Australia, Paul combines over two decades of experience as a talented athlete, coach and mentor for people of all age groups and ability levels in achieving their optimal potential.

In his free time, Paul enjoys competing in track and field, travelling, food and movies. He resides in Sydney, Australia

For more details visit: www.thebodycoach.com

A Word from The Body Coach®

For any person looking at increasing their muscular size, strength and tone and coordination as well as explosive power for improving general fitness and athletic performance – then *Dynamic Dumbbell Training* is the ultimate training guide for you. Let me explain!

Every piece of exercise equipment in the gym serves a purpose, but none so more than the dumbbell, commonly referred to as free weights or hand weights. *Dynamic Dumbbell Training* is more beneficial than exercise machines and barbells because exercises work on activating smaller stabilizing muscle groups to control the movement pattern through various planes of movement – increasing muscular activation and movement control. This means that you are no longer governed by the fixed position or limited range, instead you are drawn into the training process through better muscular coordination and control of both deep core and larger muscle group involvement aimed at replicating daily lifestyle or sport-specific movement patterns more accurately and ultimately improving Central Nervous System (CNS) recruitment, muscular coordination and fat loss.

In traditional strength training, dumbbells have been used to strengthen or isolate a muscle group or series of muscle groups in a fixed or stationary position standing or whilst lying, kneeling or sitting on a bench. With the introduction of *Dynamic Dumbbell Training* I aim to take you one step further with my breakthrough **3-Stage Dynamic Dumbbell Training System™:**

Stage 1: Strength
Stage 2: Functional
Stage 3: Power

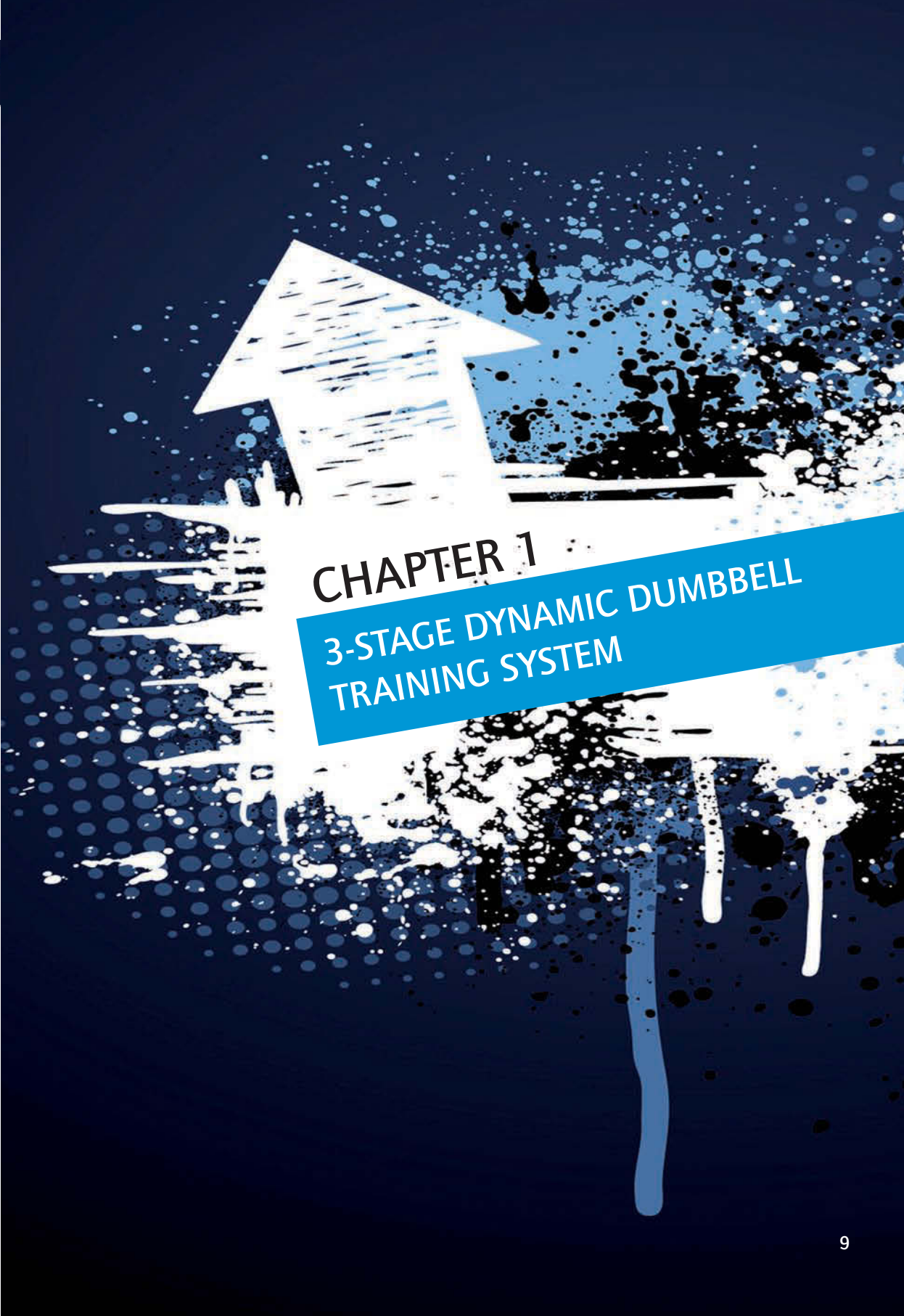
Each stage aims to progress you through a series of progressive strength and 'Sports-Specific' powerful movement patterns aimed at improving everyday lifestyle and athletic movement patterns on top of your strength gains.

This means that whilst I will be helping you establish a solid strength foundation through traditional dumbbell training methods, I will also be combining this with more functional and dynamic movement patterns performed in an athletic position on one's feet or an unstable environment such as sitting or lying on a **fitness ball** or using a **Kettlebell** and **Olympic Lifting** techniques for increased kinesthetic awareness, core stability and sports specificity through speed of movement and explosive power development.

Dynamic Dumbbell Training is loaded with exercise information beneficial for any athlete, exercise enthusiast, coach or trainer at any level. It contains all the fundamental guidelines for participating in a safe and efficient strength-training program, whilst sequencing exercises towards the development of more explosive power through my **3-Stage Dynamic Dumbbell Training System™**. This approach will ensure you gain good foundational strength, increased muscle mass and strength endurance whilst also challenging your body with more functional and dynamic movement patterns for achieving the ultimate athletic body.

Dynamic Dumbbell Training also aims to take the guesswork out of training by providing you with specific exercises and training routines. So, whilst there may be thousands of dumbbell exercises available, this often only brings confusion into the process; whereas 'my objective' is to bring specificity and focus into your weekly training program for a better learning experience and greater results with the Body Coach® Strength Training System! This way you know what you're doing and when, which is an important element for me as a coach – ensuring you are guided all the way!

I look forward to working with you!
Paul Collins
The Body Coach®



CHAPTER 1

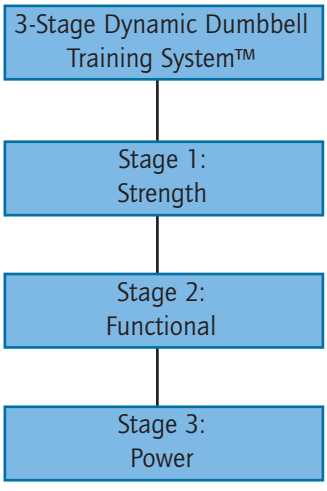
3-STAGE DYNAMIC DUMBBELL TRAINING SYSTEM

Every good exercise program starts with a method upon which training principles are based. In my book, *Awesome Abs*, I devised a 5-Phase Abdominal Training System for maximizing your core potential. In, *Speed for Sport*™ I devised a 6-Stage Fastfeet® Training Model for maximizing your speed potential. In *Functional Fitness* I devised a Functional Fitness Method (FFM) with '6- Key Movement Patterns' that aim to provide a balance of muscular strength, fitness and mobility throughout multiple planes of motion. In *Strength Training for Men*, I have devised the 5-Phase Core-Strength to Power Conversion Training System™ which aims to improve fundamental core-strength, mobility and coordination required for Olympic Lifting and power gains. In *Core-Fitness*, I introduced a new approach focused on cavity based training along with the Core-in-Motion Method™ for improved muscular control in functional athletic positions. In *Athletic Abs*, I introduced the Top 10 abdominal exercises of all time using the revolutionary Abdominal Wheel System™. And now, in this book I have developed a 3-Stage Dynamic Dumbbell Training System™ that progresses you through stages of strength, function and power training.

3-Stage Progression

A method of progression in any training program needs to first be established to enable one to know where to start as well as where one needs to progress to. The innovative 3-Stage progression applied here allows the participant time to establish appropriate strength throughout the body, its muscles, joints, energy and nervous systems and progressively adapt to new functional and more powerful movement patterns for optimal athletic gains. Below are the 3 stages involved:

3-Stage Dynamic Dumbbell Training System™



Stage 1: Strength

The general strength preparation phase is based on a diverse range of strength movement exercises using dumbbells that aim to improve muscle coordination and endurance and neural adaptation, before progressing onto the goal of increasing the cross-sectional area of muscle and ultimately maximum strength. The main exercises provided in Stage 1 involve individual isolated exercises as well as compound movement exercises that target multiple muscle groups used in sports and for gaining overall athleticism. This stage includes exercise instruction in technique and breathing for increasing body awareness and maximizing muscular strength and endurance.

Stage 2: Functional

As general strength improves, more functional-based exercises can be added into the program for challenging strength and coordination. These exercises should not be performed alone, but rather in association with Stage 1 exercises, as in many instances the weight being lifted is reduced in comparison to Stage 1 due to the functional movement pattern and coordination required. As movement function and control improves, the dumbbell weight used is increased as well as the repetitions (or time) and sets to heighten the challenge – with quality of movement being the main objective here.

Stage 3: Power

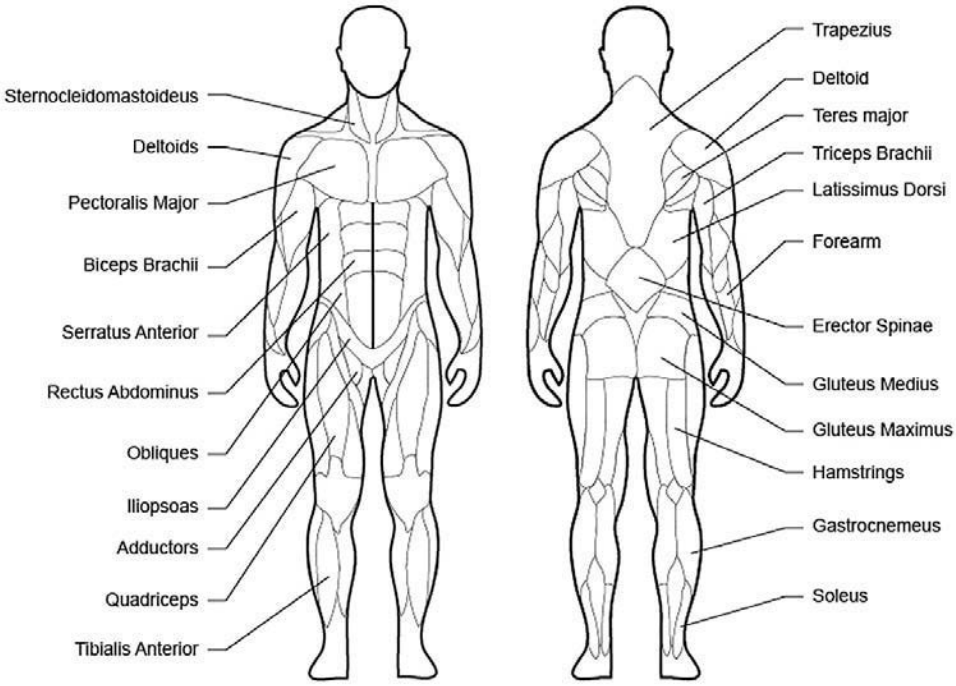
After developing strength and general functional movement patterns, your goal is to convert this into power. In Stage 3 we concentrate on exercises that link two or more strength foundation exercises together that form a part or sequence or a simulated Olympic Lifting style movement using dumbbells – generating a high level of speed, force and power. The objective here is to never sacrifice lifting technique for a heavier weight and ensure the strength and functional movement patterns are in place prior to implementing in Stage 3. This is essential for building technique and muscular coordination of more powerful lifts together with the continual adaptation of the neuromuscular framework as part of a power progression using sub-maximal loads for mastering technique before increasing loads.

Program Design

One of the most important elements of any sport or activity is a well-designed strength-training program. With the 3 stages now in place, a series of progressive strength training programs have been created to help guide you towards your goal. As appropriate strength gains require the attention of a number of training variables, being able to identifying and apply the 'Anatomy of Movement' on the following pages helps you to progress in your complete knowledge and understanding of training requirements and optimal performance.

Anatomy of Movement

Strength training has a variety of terms used to describe the movement patterns, muscle contractions and various descriptions when exercising. Simple terms often become more complex as training progresses which can seem confusing at times, although the more you get involved the more knowledge and understanding you'll have of your body. In this chapter, I will outline many of the important key words used throughout this book and also in a gym or sports training environment.



Muscle Chart

Muscle	Origin	Insertion	Function	Location
Abductors	Ilium	Femur	Brings hip away from body.	Front and rear side of hip region; TFL, Gluteus medius and minimus
Adductors	Pubis	Femur	Brings leg back to and across body.	Inside of upper leg (groin area)
Biceps brachii	Scapula	Radius and Ulna	Flexes elbow and moves forearm.	Front side of upper arm
Brachialis	Humerus and Septa	Coronoid process and Ulna	Flexes elbow.	Forearm
Brachioradialis	Humerus and Septum	Radius	Flexes and rotates elbow.	Forearm
Deltoid	Clavicle, Deltoid tuberosity, Acromion and Scapula	Deltoid tuberosity (Humerus)	Raises and rotates arm in all directions.	Shoulders
Erector spinae	Sacrum and Ilium	Upper Thoracic vertebrae	Extends spine and trunk back.	Back region (along spine)
Gastrocnemius	Femur Lower leg - back	Calcaneum (by Achilles tendon)	Raises heel when leg is straight.	Rear side of lower leg (calf muscle)
Gluteus maximus	Ilium	Femur	Moves hips forward.	Buttock region (rear side of hip)
Hamstrings (made of 3 muscles): 1. Biceps femoris 2. Semitendinosus 3. Semimembranosus	1. Ischium 2. Ischium 3. Ischium	1. Fibula and Femur 2. Tibia 3. Tibia	1. Bends knee. 2. Bends knee. 3. Bends knee.	Rear side of upper leg
Iliopsoas	Ilium, Sacrum, Thoracic and Lumbar vertebrae	Femur	Moves hips backwards.	Deep hip flexors
Latissimus dorsi	Lower Thoracic, Lumbar vertebrae and Sacrum	Humerus	Brings shoulders and arms back to body.	Rear sides of mid to upper back

Pectoralis major and minor	Sternum	Humerus	Moves Humerus (arm) to chest.	Chest region
Quadriceps (made of 4 muscles): 1. Rectus femoris 2. Vastus lateralis 3. Vastus medialis 4. Vastus intermedius	1. Ilium 2. Femur 3. Femur 4. Femur	Tibia (Patellar tendon)	1. Extends leg out. 2. Extends knee. 3. Extends knee. 4. Extends knee.	Front side of upper leg (thigh)
Rectus abdominis	Costal cartilages, Medial inferiorcostal	Margin and Xiphoid	Brings trunk forward, and aids expiration.	Abdominal region
Rhomboids	Upper Thoracic vertebrae	Scapula	Pulls back Scapula (shoulder blades).	Upper back
Soleus (calf muscles)	Tibia and Fibula	Calcaneum (by Achilles tendon)	Raises heel when leg is bent.	Rear side of lower leg (calf muscle)
Tibialis anterior	Tibia	Metatarsal (large toe)	Raises front of foot.	Front side of lower leg
Trapezius	Starts at base of skull. Ends at last thoracic vertebra.	Scapula and clavicle elevation.	Elevates and lowers pectoral girdle. Also moves scapula towards the spine.	Neck and shoulder region
Triceps	Brachi, Scapula and Humerus	Olecranon process (elbow)	Extends forearm.	Rear side of upper arm

Anatomical Planes

The body itself is divided into four anatomical planes – Sagittal, Frontal, Horizontal and Oblique. The Sagittal plane divides the body down the center or vertically. The Frontal plane divides the body from front to back. The Horizontal plane divides upper and lower whilst the Oblique plane is diagonal. The table below lists the anatomical term and the corresponding description.

ANATOMICAL TERM	DESCRIPTION
Anterior	Front
Medial	Inside
Posterior	Rear
Lateral	Outside
Supine	Face up
Unilateral	One side
Bilateral	Both sides
Prone	Face down
Superior	Upper
Inferior	Lower

Each of the movements of the muscles of the body is described by the following terms:

- Abductor – Moves a limb away from the midline
- Adductor – Moves a limb toward the midline
- Extensor – Increases the angle at a joint (extends a limb)
- Flexor – Decreases the angle at a joint (flexes a limb)
- Pronator – Turns a limb to face downwards
- Supinator – Turns a limb to face upwards
- Rotator – Rotates a limb

Joint Actions

Muscular joints of the body provide a fulcrum point for muscles to be worked. There are six types of joint actions. In the table below I will describe the movement and example exercise:

EXAMPLE MOVEMENT	JOINT ACTION	MOVEMENT DESCRIPTION
Biceps Curl	Flexion	Decreasing joint angle by bending arm and raising dumbbell
Leg Extension	Extension	Increasing joint angle by lowering and straightening arm after curling
Deltoid Lateral Raises	Abduction	Movement away from the body midline
Chest Flyes	Adduction	Movement toward the body midline – bringing the dumbbells together up overhead from a lying position on back
Twisting the Arm	Rotation	Rotation about an axis
Circling the arm around	Circumduction	360-degree rotation

Types of Muscle Contraction

While it is known that muscle fibers can only contract and shorten, as a whole they can develop a force in more than one way as shown below:

Isometric • Where the muscle tension and muscle length remain constant
Concentric • Where the muscles shorten as the fibers contract
Eccentric • Where the muscles lengthen as tension develops
Isokinetic • Where the muscle contracts though its full range of movement

In each exercise there are four main functions of the associated muscles:

1. **Agonists** (prime movers) - generally refers to the muscle we are exercising.
2. **Antagonists** - the opposing muscle acting in contrast to the agonist.
3. **Stabilizers** - hold a joint in place so that the exercise may be performed. The stabilizer muscles are not necessarily moving during exercise, but provide stationary support.
4. **Assistors** - help the Agonist muscle doing the work.

The following table lists muscles and their opposing counterparts. These columns are reversed when exercising muscle on the right hand column; for example, the Antagonist becomes the Agonist and visa versa:

AGONIST (Prime Mover)	ANTAGONIST
Biceps	Triceps
Deltoids	Latissimus dorsi
Pectoralis major	Trapezius/Rhomboids
Rectus abdominis	Erector spinae
Iliopsoas	Gluteus maximus
Hip Adductor	Gluteus medius
Quadriceps	Hamstrings
Tibialis anterior	Gastrocnemius

In prescribing various exercises and training programs, it is important to have muscle balance to prevent injury. Muscular balance refers to the relationship between the Agonist and Antagonist. If the Agonist is much stronger than the Antagonist (or visa versa) the Agonist can overpower the Antagonist and lead to possible injury. To ensure muscular balance is achieved, a series of exercise tests need to be performed to find one's strengths and weaknesses from which appropriate programming can be designed.

Exercise Terminology

Exercise terminology is separated into 3 key areas:

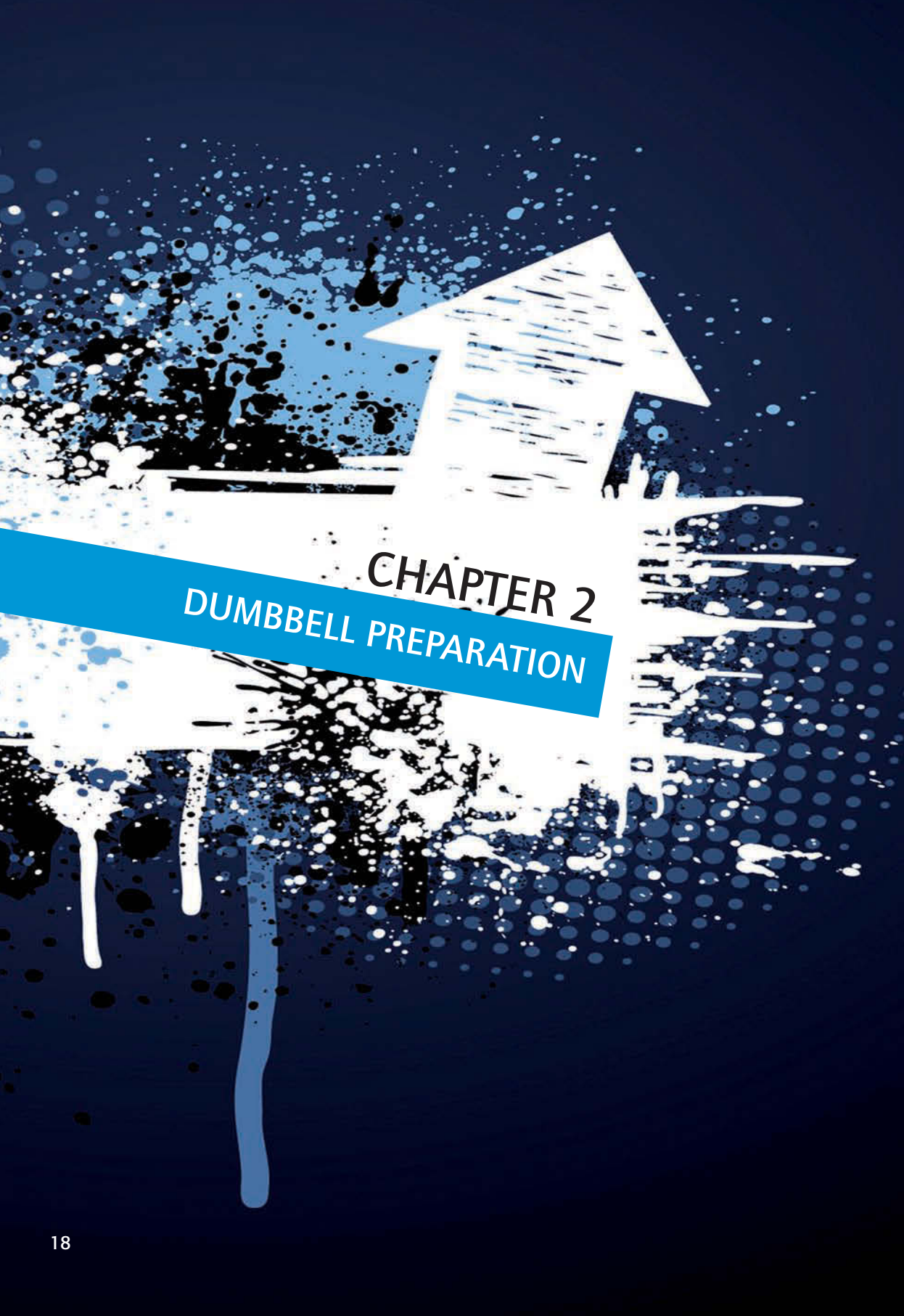
1. **Isolated** - is an exercise that involves just one discernible joint movement.
2. **Compound** - relates to an exercise that involves two or more joint movements.
3. **Static** - refers to holding a muscle in a static position relative to the desired body position.

Isolated and Compound Movements

All exercises vary in their movement mechanics. Isolated exercises refer to single joint exercises that target a specific muscle group, for example, the biceps arm curl exercise (elbow joint) specifically targets the biceps muscle group of the upper arm. On the other hand, compound exercises involve more than one joint such as movement at the ankle, knee, and hip with an exercise such as a squat. In most instances, the larger muscle groups incorporating larger muscle groups should always form the basis of your routine. Common compound movements are squats, presses, pull-ups and rows, as well as the Olympic Lifts and their assistance exercises (such as pulls, presses, shrugs on toes).




Ideally more difficult movements which use many joints and muscles are placed first in the workout, while simpler isolated exercises which move only one joint (such as biceps curls) are placed towards the end. Usually exercises for torso musculature (abdominals, obliques, lower back) are also placed at the end in order to ensure that they are fresh for more demanding exercises in the beginning, and able to provide as much torso support as possible.



CHAPTER 2
DUMBBELL PREPARATION

When you're looking for a piece of exercise equipment that offers the body a unique challenge, you can't look past a pair of dumbbells and for good reason. They're portable and allow you to work different muscles at different angles for a complete full body workout. The challenge itself comes from the weight of the dumbbells generally being held in both hands whilst being pulled, pushed or raised through various angles or ranges of motion. In other cases, the dumbbells are simply used to add extra weight to a movement such as a squat exercise and even more challenging squat with a overhead dumbbell press, right through to exercises that ignite the Central Nervous System (CNS) with simulated Olympic-Lifting movements that aim to increase maximal strength and power development. Whichever the case you can be assured that you'll also be challenging your center of gravity and strengthening your inner core.

Types of Dumbbells

We now live in a day and age where the latest engineering technology makes exercise more compact, cost effective and efficient. Such is the case of the new dumbbell block training system that encompasses a set or series of dumbbells formed into an adjustable weighted block where a specific weight can be chosen through the simple adjustment of a pin. The more traditional types of dumbbells include old school round-end-molded dumbbells, hexagon head shapes and fixed plate types generally found at a gym as a set on a rack ranging in weight from increments of 2.5kg right up to 60kg or more (1kg = 2.2 pounds). Most importantly, you also have a more cost efficient adjustable type home kit available where weight plates can be added to a dumbbell handle and a threaded screw-on or spin-lock collar or spring-loaded clips used to hold the plates in place. This is important to understand because different exercises require different weights. So, no matter what your budget or situation you'll find a pair or series of pairs, adjustable set or block type to suit your training needs.

Training Accessories

The major accessories generally used in line with dumbbell training include an **adjustable bench** that allows a lying pattern on a flat, incline or decline surface. If working out at home, this takes away the need for three individual benches because adjustments can be made to suit each exercise on this one bench. On the other hand a more portable and cost-effective training accessory is the **fitness ball** commonly referred to as a Swiss ball, physio ball or stability ball. My recommendation here is that you must invest in a quality anti-burst type fitness ball with a weight rating of 500kg or more to ensure effective support, movement and safety.

So, whether you have the luxury of working out in a gym with a full set of fixed plate dumbbells along with flat, incline and decline benches as well as additional benches such as the high bench, preacher curl or lower back raise; or you simply work out at home with an adjustable set of dumbbells and a fitness ball – either way you have the ingredients to achieve great results!

Applying the 3B's Principle™

Every exercise has a number of key elements to consider when setting up and performing a movement. Applying correct technique from the onset will help establish good form that is ultimately maintained until the number of repetitions or set is completed. After reviewing Anatomy of Movement, the key elements required in order to maintain good body position whilst exercising form part of a simple exercise set-up phrase I've termed the **3B's Principle™**:

1. Brace

Activating and bracing your abdominal (core) muscles whilst exercising is important because it helps increase awareness of your body position as well as helping unload any stress placed on the lower back region.

2. Breath

In dumbbell training, you **breathe out** when you exert a force – such as pushing the dumbbells overhead in the shoulder press exercise or rising up straight from a squat position. You then **breathe in** with recovery – such as lower the dumbbells back down from overhead or lowering the body and bending the legs when performing a squat. Breathing should remain constant throughout each exercise.

3. Body Position

To complete the 3B's Principle™, the third 'B' relates to one's ability to hold a good body position and technique with each exercise. In all exercises, ensure good head and neck, spine and pelvic alignment is maintained at all times with the rest of the body. The overall focus of each exercise should therefore be on quality of the movement.

So, next time you perform any exercise, simply apply the 3B's Principle™ from start to finish in order maintain correct technique and body posture to help maximize your strength gains.

Functional Warm-up

As the scientific knowledge and understanding of our body and training practices improve, it seems a Functional (or Dynamic) Warm-up plays a number of crucial roles towards improving the quality of movement and athletic performance:

- Gradually increasing your heart rate and core body temperature by performing activities on the move.
- Setting your muscular and nervous systems in motion.

- Working muscles and joints through an appropriate range of movement.
- Heightening the ability of your muscles to contract and be ready for activities that follow reducing the risk of injury.
- Allowing you to warm up your muscles so that they are ready to work at full speed.
- Improving physical and mental alertness by setting a tone to follow for the rest of the session.
- Incorporating a routine of exercises to improve balance, technique, coordination and range of movement.
- Improving athleticism through good technique and range of motion.

Muscles that are warm and without movement restrictions ensure movement quality of the strength training exercises that follow. This is maximized when applying the 3B's Principle™ with each exercise to ensure good body posture whilst helping maximize strength, functional and power gains.

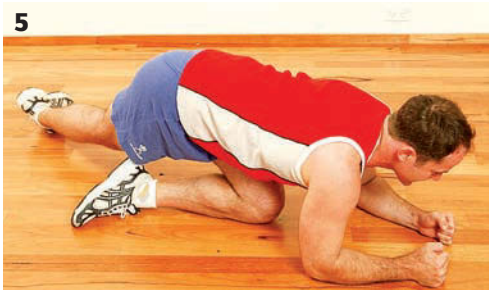
Warm-up Progression

The first stage of a good warm-up is increasing the heart rate and muscle temperature through cardiovascular movement such as walking or a light jog; or using a stationary bike or rowing machine, treadmill or something similar for approximately 5-10 minutes. This also helps to bring one's mindset to the exercise program that follows.

The second stage focuses on range of movement and control of each joint. This is achieved by combining a dynamic movement through a range of motion followed by brief stretch or series of stretches whilst the muscle is warm, except where a joint is hypermobile and a stability approach is required for better muscle control (no stretching). During this period you can also gauge whether specific muscles require further stretching or muscle control techniques. This pattern is demonstrated below as part of the Coach Collins™ Warm-up Sequence. (Also refer to my Speed for Sport™ book.)

Coach Collins™ Warm-up Sequence Cycle 1

Instructions:
Complete the following warm-up sequence from 1-8 before repeating drills on opposite leg for a total of 16 movements for 6 seconds each *(approximately 3 minute dynamic warm-up stretching sequence).*



1. Start by performing 6 x stationary lunges with left leg forward.
2. Lower rear knee to ground and tilt pelvis forward to stretch rear thigh for 6 seconds.
3. Lower left forearm onto front thigh whilst extending right arm overhead and leaning the body across to the left side for 6 seconds.
4. Lean body back and straighten front leg whilst placing hands on thigh to support lower back and stretch for 6 seconds.
5. Bend the front leg and rest across shin whilst taking rear leg across body and resting on forearms and stretching for 6 seconds.
6. Raise onto both hands in a front support position and rest the right foot on the heel of the left foot and stretch for 3 seconds before performing a few light bounces for 3 seconds.
7. Step the left leg forwards and place both hands on front thigh keeping torso long and tall whilst stretching for 6 seconds.
8. Step forward with feet shoulder-width apart, with arms inside knee whilst pushing knees out for 6 second stretch.

Coach Collins™ Warm-up Sequence Cycle 2

Using a light pair of dumbbells, perform the following exercise sequence in a continuous manner. Perform eight (8) repetitions before moving onto the next exercise – without rest! This aims in warming up the muscles, tendons and joints of the upper body for more demanding exercises ahead as well as bringing focus and attention to establishing good body position. Hence, any muscular tension or restriction at this stage needs to be addressed prior to further training.

1. Perform 8 x front raises
2. Perform 8 x side raises
3. Perform 8 x upright rows
4. Perform 8 x bent over rows
5. Perform 8 x overhead presses
6. Perform 8 x biceps curls
7. Perform 8 x triceps extensions
8. Perform 8 x 45-degree chest presses

Coach Collins™ Warm-up Sequence Cycle 3

Using a light pair of dumbbells, perform the following exercise sequence in a continuous manner. Perform eight (8) repetitions before moving onto the next exercise – without rest! This aims in warming up the muscles, tendons and joints of the lower body.

1. Perform 8 x alternate leg lunges
2. Perform 8 x overhead squats
3. Perform 8 x alternate leg side lunges
4. Perform 8 x push-presses

The next stage of a dumbbell warm-up involves performing one set of repetitions using a lighter pair of dumbbells prior to each specific strength exercise. This enables you bring focus and attention to each exercise and the more demanding dumbbell weight that soon follows.

Progressive Resistance Training

In any physical activity, your muscles grow in response to the challenge placed upon them. Over time the muscles adapt to this stimulus and require an additional challenge for muscular strength gains to occur. The stimulus for this to occur evolves around **'8 Key Elements',** some of which work simultaneously together, including:

8 Key Elements	Description
1. Exercise intensity	Weight (or mass) being lifted; based upon a percentage of one's maximum lift or 1RM (repetition maximum) used by advanced athletes and coaches for establishing training loads, reps and sets
2. Speed of movement – repetition ratio	Speed ratio of concentric and eccentric movement as well as mass being lifted – i.e. slow, fast or a combination of both, for example - 3:1:1 Ratio (or 3 seconds eccentric, 1 second transition, 1 second concentric) used in hypertrophy. Variations of these ratios apply, which can manipulate the intensity and max-strength gains
3. Time muscle is under tension	Number of repetitions being performed; speed of movement and the exercise intensity
4. Type of exercise	Actual exercise and movement being performed for specific muscle group – as there are many variations for each muscle group
5. Volume of work	Total number of repetitions and sets being performed as well as the frequency
6. Rest periods	Recovery period between exercises and sets can dictate fatigue or regeneration
7. Frequency	How often you train each week
8. Mental focus	How much effort and focus you put into your training session

In strength training using dumbbells, variations of these '8 Key Elements' play a major role in the outcome of your training. Many people can lift weights for years without change to their body shape or strength levels. So, to help take you to a new level in your training knowledge, understanding and approach we utilize the **Foundation Strength Training Zone Chart** (as follows). This training guideline is aimed at helping you understand the training zone you need to work on in order to improve your strength and your goals. Along the journey, there is a little work to be done by regularly adapting and applying the **8 Key Elements** as part of the Foundation Strength Training Zones.

Foundation Strength Training Zones	Repetition Range	Percentage of 1RM	Training effect
1. Muscle Endurance • **Stages 1-2**	12-20+ reps	40-60%	Aimed at developing a muscle's ability to contract over an extended period. Primarily for use in Stages 1 and 2 to allow the muscles, tendons and joints of the body time to adapt as part of a general preparation phase all athletes must acquire.
2. Muscle Hypertrophy • **Stage 1**	8-12 reps	60-80%	Aimed at solely increasing the cross-sectional area of the targeted muscle. In many instances, better results come from a slower speed of movement ratio for each repetition. Primarily for use in Stage 1.
3. Maximal Strength **Testing RM** (repetition maximum) • **Stages 1 & 3**	4-8 reps 1-3 reps	80-90% 100%	Aimed at increasing one's neuromuscular efficiency, strength and coordination between muscle groups. In many instances, better results come from a faster speed of movement without technique breakdown. Primarily for use in Stages 1 and 3 and also used for testing one's 1-3RM for assessment and measuring improvements.
4. Power **(a) Technique** – can be applied with stages 1-3 in order to obtain skill and lifting technique **(b) Explosive movements** • **Stage 3**	4-8 reps 1-5 reps	30-60% 75-100%	Aimed at transferring maximal strength gains by increasing the speed at which you apply a force using more complex exercises such as multi-joint and Olympic-Lifting techniques using dumbbells. Technique needs to first be learned at a lower intensity before applying more explosive force using heavier dumbbells. Primarily for use in Stage 3.

Outcome: Each strength-training zone targets the two specific skeletal muscle tissue fibers in different ways. Consisting of both **slow twitch** (aerobic-orientated) and **fast twitch** (anaerobic) contracting muscle fibers, the speed and intensity at which you train manipulates how the muscles respond and work together. As muscle fibers blend together, the slow twitch element responds generally to low power production and resistance to fatigue; whereas fast twitch fibers, which have low fatigue resistance, respond to high power production important in power sports and sprinting. This helps dictate the training cycles you undertake in order to build a strength foundation towards a more powerful foundation using a periodization model.

In most instances, no single training model fits all. So, think of this chart like a tree without branches. What I'm providing you with here is a training model that provides a benchmark for you to apply, but as you grow so do your branches (just like that of a tree) and variables of the strength training zones need to be adjusted, adapted and manipulated from the '8 Key Elements'. For instance, a simple adjustment of the speed of movement can make dramatic changes to the training intensity. A common mistake often made by athletes and gym-goers is moving the dumbbell or performing an exercise too fast. Here's one example:

> If your goal is to build your chest region and you were performing 8 reps in 8 seconds (1 second a rep) on the dumbbell bench press, the time the muscle is under tension is minimal compared to if I asked you to perform each repetition using a 3:1:1 ratio – 3 seconds lowering, 1 second transition/hold and 1 second explosion upwards with dumbbells (for a 5 second repetition x 8 reps = 45 seconds under tension). Whilst strength gains may occur performing faster repetitions, increasing the cross-sectional area or size of a muscle works best following the 3:1:1 ratio – or its variations such as 3:0:1 or 2:0:1. In saying this, a faster speed (and heavier dumbbells) may be used at certain times within a training plan to increase maximum-strength – to suit your training objectives. There is where our training process called periodization fits into the equation incorporating the 8 Key Elements, Foundation Strength Training Zone's and the information that follows.

Periodization Plan

To help maximize one's performance all-year-round, we transfer the foundation training zone chart phases into a scheduled training cycle called periodization. This process allows an athlete to plan yearly, quarterly, monthly, weekly and even daily the type of training they will perform in order to work towards peaking for an event or series of events. Within this framework, training loads and volumes (sets, reps, percentage of maximum lifts) are manipulated in order to achieve specific training goals.

The scientific nature of this training approach relates to the specific requirements of each sport. For a seasonal athlete, a training cycle may consist of a 12-month period involving an off-season (transition) phase, pre-season and competition phases. This annual training plan is subdivided into periods of time to suit these phases for improving strength or fitness or speed over a period of time. This is referred to as macro-cycles, for example, a preparatory phase may consist of 16-weeks; within this 16-week period it may be broken down into 4 x 4-week cycles (macro-cycles) that build up in intensity towards the competition phase. Within a macro-cycle are smaller weekly cycles called micro-cycles that are used to plan daily training sessions.

The benefit of a periodization plan is that it provides a training plan platform for improvements in strength, maximum strength and power to occur through ongoing measurement testing. In a sporting environment where multiple physical components such as speed, fitness, strength and agility and skills sessions are required in parallel the periodization plan allows you to plan each session as well as recovery. Think of it like attending school or college where you have a

yearly class schedule broken down into terms or semesters with holiday breaks in-between. Along the way there is regular testing just like playing competitive sport before a final series (or final exam).

Here is a general example of how a periodization plan for a sporting team may look – with multiple variations for each sport:

Training Phases	Pre-season			Competition			Transition		
Macro-cycles	4-weeks								
Micro-cycles									
Key Training Elements*									

Within each macro-cycle (4 weeks) is a weekly micro-cycle involving key training elements* such as: Strength, Speed, Agility, VO_2-Max, Testing and so forth along with skills training that accommodate the sports-specific requirements. In the case of Dynamic Dumbbell Training you could incorporate a periodization plan with a specific goal of improving strength, muscle size or fat loss – through measurable targets and testing and training applying a linear or non-linear training approach.

Linear and Non-Linear Training Approach

In Dynamic Dumbbell Training, we start off with a **linear training approach** which involves establishing a strength foundation (training base), improving technique and muscle fiber response whilst working towards maximal power output in stage 3. The linear training approach involves decreasing the volume and increasing the intensity each week in order to maximize strength, power or combination of both. There are many variables that can be used (refer back to 8 Key Elements). Here is one example:

- Weeks 1-4: 1 x 12-15reps
- Weeks 5-8: 2 x 10-12reps
- Weeks 9-12: 3 x 8-10reps
- Weeks 13-16: 4 x 6-8reps

A **non-linear approach** alternating between phases of higher volume and higher intensity throughout a cycle can also be applied for more advanced athletes and those within a competitive period. For instance, a non-linear approach may be performed over 3-4-week cycles or within a weekly cycle itself, for example: Monday low intensity (12-15 reps); Wednesday high