

THE COMPLETE GUIDE TO

Matt Lawrence

# OUTDOOR WORKOUTS



B L O O M S B U R Y



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**OUTDOOR**

**WORKOUTS**





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**Matt Lawrence**

B L O O M S B U R Y  
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## PREFACE

When deciding to write this book on outdoor workouts, I wanted to explore a number of factors. Firstly, I wanted to establish who I was writing this book for and who might benefit from reading it. I then revisited many of the training principles, exercises and activities I have utilised with clients in an outdoor environment as a personal trainer, and decided to incorporate a number of more recent training principles and equipment options that I currently use as part of my own training.

With this in mind, and for the integrity of this book, please understand that it would not be possible to incorporate every exercise variation that can be performed with every piece of exercise equipment in the open air. That said, you will hopefully enhance your training programme by applying many of the dynamic and sports-specific drills, functional exercises and workout plans in Parts Two and Three. I have included exercises for all major muscles and, where appropriate, have suggested possible conditioning techniques that encourage balance, agility, speed, strength and power, vital for functional fitness and applicable for many different sports.

Part One gives the reader a brief overview of simple physiology and covers some of the basic fitness principles in preparation for applying these principles in the next two parts of the book.

Part Two identifies specific functional and dynamic warm-up and stretching options, together with sport-related footwork and reactive balance drills to stimulate your motor skills,

which will prepare you for many of the workouts to follow.

Part Three, while being of value to fitness enthusiasts and personal trainers alike, also opens itself up to the relatively new exerciser who is not a member of a gym and is simply looking at options for exercising in the outdoors, whether that be at home in the garden, at a park or even at the beach. You might simply begin with fitness walking and potentially move up to jogging as your fitness improves, and you may even get to utilise the Trim Trail options in your local park (see pages 216–223). This section is also applicable to ‘new’ mothers, with a chapter on buggy workouts, together with a number of other outdoor activities that can be attempted either on your own or with someone else. Part Three is by far the largest section of this book as I wanted to demonstrate working out with minimal equipment in the early chapters before moving forwards to a complete ‘tour de force’ in [chapter 10](#), which looks at bootcamps, which are suitable for any trainer thinking about setting up or currently running their own programmes. The fitness enthusiast might like the style and diversity of exercise choices offered in bootcamp training and so might be motivated to sign up for a bootcamp class at their local park. For the bootcamp purists out there, I have moved away from the minimalist equipment aspect common to a number of bootcamps, as I have already covered many bodyweight-only exercises in previous chapters. For the purposes

of this book, I wanted to highlight the range and complexity of exercises that might be included in a 'professionally run' outdoor workout class.

I have specifically tried to steer away from the more conventional resistance exercises, as I wanted to demonstrate variety in regards to exercise selection and to encourage some lateral thinking in personal trainers and fitness enthusiasts alike. While I have listed certain exercises for use in certain environments, there is no definitive list and obviously there will be a cross over of exercises that can be used in many different environments and locations. After all, there are only a certain number of ways you can lift, pull, push, twist, squat and lunge to create the movement patterns relative to humans. For each workout chapter, I have designed simplistic workout plans, but again these programmes are by no means exhaustive and really only scratch the surface of what might be included, subject to the environment and time available and your fitness level and specific goals.

I hope this book encourages you to explore different options in your training repertoire, whether it is simply to try a new exercise or a complete new workout option, such as using kettlebells or suspension straps. Either way, I hope you will be motivated to try something new as a result of reading this book.

Once you understand the principles of overload and have also got to grips with safe and effective warm-up principles, then the world is your oyster. Only your imagination restricts how you

can modify an exercise. The internet has made available thousands of exercise variations and as long as you understand the potential benefits and risks associated with each exercise, then peruse at your will – visit sites such as YouTube, or make use of the many personal trainers creating video downloads that demonstrate their ideas to a mass audience. Be careful though, as sometimes the element of ego overrides the positivity of the exercise choice and it will not be appropriate for all fitness levels, such is the case of the 'look what I can do' syndrome of some 'fitness professionals' showcasing their skills online.

However you decide to utilise this book, please remember that fitness is relative and there are no absolutes with training. In much the same way as you alone can determine what food you find the tastiest, it is also impossible for me to define what training plan is the best for you. Quite simply, the best training plan is the one that works for and is the most enjoyable to you.



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# PART **ONE**

EXERCISE PRINCIPLES



# BASIC CONDITIONING PRINCIPLES



## EXERCISE PHYSIOLOGY

Performing any movement or activity requires the heart, lungs and muscles to work at an increased intensity than when at rest, according to the nature and intensity of the activity. With this in mind, your base fitness level will be a factor in the nature of activity you should start with and subsequently progress to, and there are numerous training plans throughout Part Three that can be used as a guide for all fitness levels.

Whatever your reason for exercising, you need to listen to your body and understand your own fitness level. Are you able to walk for a couple of miles but the thought of going for a run gives you the shivers? Might you be able to jog comfortably for 30 minutes but can't perform a single push-up? It is important to understand that whatever your reasons for exercising – weight loss, general fitness, improved health or toning up – by following a suitable training programme you can improve your overall fitness. You can achieve goals if you apply yourself and commit to regular workouts that challenge you, whether you are on your own or working out with others.

When considering a training programme, you should begin with what you can do and work from there, performing the cardio or strength training

exercises that you can do safely and effectively under control and gradually increasing the intensity and/or resistance accordingly.

## THE CARDIOVASCULAR SYSTEM

Cardiovascular endurance is the body's ability to perform repeated movements over a period of time. The heart is required to pump more blood to the lungs, which oxygenate the blood before it returns to the heart and then it is pumped around the body to supply the muscles, organs and brain. As your heart is a muscle, if it is deconditioned it will have to work harder and beat faster to pump the blood around your body, even for relatively light exercise such as gentle walking. As the intensity of the exercise increases, your heart has to work harder, pumping more blood at a faster rate around your body. In addition, as more oxygen is required, your breathing will become faster and deeper to provide the oxygen that your blood needs to transmit to the muscles. While light to moderate activity can be sustained for relatively long periods through aerobic metabolism (relative to the individual), higher intensity activities cannot be sustained for as long. When the intensity of the activity causes greater oxygen demands from the muscles than can be supplied, you are forced to stop.

Aerobic exercise is exercise that can be maintained with a sufficient amount of oxygen for prolonged periods. This can also be categorised as short (2–8 minutes), medium (8–30 minutes) or long (30 minutes+).<sup>1</sup> Activities that are aerobic in nature are walking, jogging, circuit training, etc. But changes in intensity can push an aerobic activity into becoming *anaerobic* in nature. In this case, to maintain the activity you should reduce the intensity to allow a recovery element. Circuit training is a great aerobic workout with challenging exercises or intervals that push your heart rate up, followed by light active or passive sections which allow you to recover. Higher-intensity activities can be classed as *anaerobic* in nature because the demands of the activity cannot be sustained for long periods. The energy systems used primarily to fuel anaerobic activities differ according to the intensity and duration. For example, sprinting at top speed can only be maintained for a few seconds (8–12) before the intensity has to be reduced, whereas performing activities like shuttle runs or burpees might be maintained for between 30 and 90 seconds, depending on your fitness and the intensity achieved.

## INTERVAL TRAINING

The research to promote interval training (repeated intervals of more intense activity interspersed with recovery intervals at a lower intensity) over steady-state training (continuous exercise at the same intensity) is becoming quite overwhelming. However, one has to consider the target audience, together with fitness level and also, to a degree, what the exerciser is actually prepared to do.<sup>2</sup> I am a firm advocate that the most time-effective form of fitness training is undoubtedly interval training, as you can really challenge your aerobic and anaerobic fitness through quite demanding fitness

intervals. However, if time is not an issue and your goal is weight loss, for example, this does not have to be the only choice. The simple reality is that whatever you do, in regards to weight loss, it is all about calories consumed versus calories expended over time, not just a specific workout. Within most workout plans, however, it is useful to balance exercises and activities that help train both your aerobic and anaerobic systems for best results.

The intensity-recovery element of interval training really depends on the extent of the intensity – hard/very hard/maximal effort – together with the recovery element – passive/light aerobic/moderate aerobic – and lastly the fitness level of the person in question. In addition, the work/rest ratio might need adjustment when repeated numerous times, i.e. as you perform the third/fourth/fifth/sixth interval etc., your recovery time might need to be longer. Basically, depending upon your fitness and level of intensity reached, the longer the interval, the shorter the recovery as a percentage of the interval.<sup>3</sup>

According to your fitness level, maybe try a rest/work interval of 3:1 for beginners (45 seconds' rest with 15 seconds' work) or for the more advanced 2:1 (30 seconds' rest and 15 seconds' work). For longer work durations of 30 seconds a 2:1 or 3:1 ratio might be appropriate (30 seconds' work: 60–90 seconds' recovery). Or for longer intervals at a slightly lower intensity, a 2:1, 1:1 or even 1:2 ratio might be relative (1 minute's work with 2 minutes, 1 minute or 30 seconds recovery respectively), according to fitness level and exercise intensity (see [table 1.1](#)).<sup>4</sup>

## Fitness and health benefits

One of the benefits of aerobic exercise is the improved efficiency and capacity of your

**Table 1.1** Interval workout example for sports training

	Distance training	Mid-distance training	Sprint training
Work/rest ratio	1:1	1:2	1:3
Effort time	5–15 min	30 sec–3 min	10–30 sec
Recovery time	5–15 min	60 sec–6 min	30–90 sec
Repetitions	2–5	5–10	10–20
Aerobic/anaerobic	Aerobic	Anaerobic	Anaerobic

*cardiovascular system*. The muscles you use to breathe allow you to have a lower, more efficient breathing rate as they become more conditioned. Your heart gets stronger and can pump more blood around your body with each contraction increasing your *stroke volume*.<sup>5</sup> This in turn effects your *cardiac output*, which is your stroke volume multiplied by your heart rate. As more blood is being pumped with each beat, your resting heart rate lowers. Consequently, your heart becomes more efficient both during exercise and while at rest. Aerobic training also benefits the muscles, increasing the size and volume of the *mitochondria* in the muscle cell wall.

Many of the health, fitness and performance benefits of regular aerobic exercise can be seen below:

- Strengthens heart and respiratory muscles
- Reduces blood pressure
- Increases number of red blood cells assisting oxygen transport throughout body
- Reduces risk of diabetes
- Helps to control weight
- Promotes psychological well-being

- Increases bone density (low and high impact weight-bearing activities)
- Improves neuromuscular efficiency
- Increases lean muscle tissue

## RESISTANCE TRAINING

Strength training challenges the muscles to respond to a resistance so that they adapt and become stronger. By increasing the resistance and/or variables of overload, this will stimulate the muscles to develop subject to the nature of overload and intensity applied, which is known as '*progressive overload*'.<sup>6</sup> Muscles are stimulated by creating a force on the muscle for it to respond to. This can be through gravity, as when you perform bodyweight exercises or lift dumbbells/kettlebells etc.; using *variable resistance*, such as a resistance tube; or to overcome forces as a result of the movement itself. This might be when using a ViPR (see chapter 5, p. 43), throwing a medicine ball, or trying to maintain form while using suspension cables and/or unstable bases.

When you first begin, much of the training will be developing your *motor skills*, essentially learning the movement. However, this sounds easier than it

is. If you have never lifted a pair of dumbbells over your head before, sometimes it is not the weight of the dumbbells that causes the problem. You have the strength to lift them but the muscles and stabilising muscles haven't yet learned when and how to contract and with what force. Consequently your movement or motor skill is poor. Through repeated training, you will develop your motor skill and your nerves and muscles will become more efficient, a process called '*neuromuscular adaptation*'.<sup>7</sup>

When you have learned the *movement pattern*, then it is time to progress the overload. You may do this by simply increasing the resistance, but if that is not a simple option (as it might be in a gym with more equipment), you can increase the intensity by adding volume (more sets/repetitions), by reducing the recovery time, or by changing the nature of the exercise (such as the timing of each repetition or even using unstable bases). You can modify the programme itself so that it incorporates more intervals and/or *super-set* exercises, or modify the exercise selection by making the exercises harder, e.g. squats become squat jumps or push-ups become travelling push-ups over a distance etc. This is also true when considering your strength in relation to balanced positions. Combining exercises can also create a whole new perspective for overload. For example, performing a single-arm dumbbell press overhead might be manageable when standing upright but is considerably harder while maintaining the lower position during a forward lunge.

Each muscle has a mix of fast-twitch and slow-twitch fibres and all of us are born with a mix of these fibres. This is part of our genetic make-up and, to a degree, it predetermines who will be able to run the fastest or jump the highest in pure tests where technique or learned skill is not an issue.

Regardless of your genetic make-up, training can help condition your muscles and, subject to your training, intensity, diet and genetics, your muscles will respond accordingly. When performing challenging resistance exercises, there will be a degree of hypertrophy or muscle growth. But to really build bigger muscles, the kind of hypertrophy seen in bodybuilders' physiques, requires very intense conditioning techniques, often using heavy resistances, not just bodyweight. A bodybuilders' workout might include multiple set routines whereby repetitions in the final sets can drop to less than five, focussing on specific muscle groups. Many of the exercises in this book look at functional conditioning techniques, where the repetition range for most exercises is in excess of 15 and thus hypertrophy is not the main focus. The exercises within this book are designed for outdoor workouts and as such the overloads and resistances used will help stimulate the muscles and help create strength and improve general tone, but for greater muscle development and hypertrophy you should really look at training within a gym or health and fitness club, with more equipment and greater resistance to work with.

It is also important to remember the role of flexibility when training with resistance, as all too often the emphasis is on training the muscles for strength and endurance without allowing sufficient recovery and stretching to return the muscle back to its original length. Some of the dynamic stretches demonstrated in Part Two are geared more to the warm-up element of a workout. The appendix (*see pp. 233–240*) also covers self-myofascial release (SMR) techniques to assist in releasing particularly tight muscles, together with more conventional static stretches that might be more appropriate at the end of your workout.

Some of the many benefits of resistance training can be seen below:

- Increased bone density, which helps reduce the onset of osteoarthritis
- Reduced effects of diabetes in some people
- Lowered LDL (low-density lipoprotein) cholesterol
- Improved muscle tone, which can enhance confidence and self-esteem
- Improved posture and reduction in lower back pain
- Improved sleep patterns
- Increased muscle mass, enhancing metabolism and the body's ability to burn fat at rest.

## REST DAYS

If you are new to exercise, try and allow a 'rest' day between workouts, which will help you to recover and avoid overtraining and potential injury. If, however, you are an experienced fitness enthusiast, you will probably 'know your body' and how it responds to training – yet even so, always allow one or two lighter or rest days each week.

## PROGRAMME DESIGN PRINCIPLES

When designing a programme, a lot depends on your goals, the time you have available and your current fitness level, but rather than just occasionally trying a garden or park workout, a bit more structure is necessary to make the most out of your programme. As a rule, most training programmes incorporate the FITT (Frequency, Intensity, Time, Type) principles, as shown below.

## FREQUENCY

This relates to the number of times you exercise over the week or month and is dependent on the time you have available and, to an extent, your goals. If weight loss is your sole objective, the more times over the course of the day/week/month etc. you can exercise, the better, whether your workout is a simple walk or a complete bootcamp-styled workout. However, as with any new activity, you should look to find a healthy balance between training and rest time, so as not to cause injuries through insufficient rest or overuse.

## INTENSITY

The intensity or effort level again depends on the objective. For example, when training for a particular sport, the activities and intensities should closely match the sport itself, either directly by developing your skills or indirectly by developing your motor skills, strength and endurance relative to that sport. If weight loss is the goal, then finding a suitable intensity to match that goal is important. There is no point going 'flat out' performing five 25m shuttle runs only to have to sit out the rest of the workout because you are too tired and cannot continue. Always start at a level that you can maintain and increase from there as you begin to learn your fitness limitations. Quite simply, as with all training, don't push too hard, too quickly.

## TIME

This is simply how long you train for and is usually a reflection of the time you have available. A two-hour walk on a Sunday morning is great to assist weight loss but walking once a week will not improve your overall fitness. Ideally, you should factor in an additional 20–30 minutes' daily exercise or repeat the two-hour walk 2–3 times per

week. Similarly, attending a Saturday morning bootcamp is great, but unless you back it up with activity during the week, you might not achieve your goals as quickly as you want, if at all.

## TYPE

The type of exercise is also of importance and while it is important to cross-train to avoid injuries and to give the muscles and joints a recovery, it is equally important to balance muscle groups and intensity sessions when working with resistance or during cardio sessions. From this perspective I would not recommend doing complete full-body workouts on a daily basis, as the muscles need recovery time. If you have the time to train every day, then mix the training up by rotating outdoor workout sessions with walks, runs and even bike rides, and, where possible, always have one rest day or easy day per week.

## SUMMARY

- Cardiovascular fitness is the improvement of the heart lungs and muscles through aerobic and/or anaerobic training.
- Aerobic activity involves the large muscle groups and can be maintained for long periods, subject to the intensity.
- Anaerobic training requires working at higher intensities but this cannot be maintained for longer than 1–2 minutes.
- Resistance training can incorporate body-weight, external resistance (dumbbells, ViPRs, etc.) and resistance bands.
- Progressive overload is the graduated increment of various overloads to the exercise or programme over time.
- Progressions should incorporate the FITT principle with regards to overall programme design and development.

# FUNCTIONAL CONDITIONING PRINCIPLES

# 2

## FUNCTIONAL TRAINING

Functional training encourages movement patterns that closely mimic daily life or replicate a specific sporting action. All exercises come from simple movement patterns and include squatting, lunging, pushing, pulling, twisting and bending.<sup>8</sup> How we incorporate these principal movements into varied exercise programmes comes down to the specificity of the sport or activity, together with your fitness, motor-skill ability and neuromuscular integration.

Functional training has its origins in rehabilitation and for a long time the concept was simply a by-product of the therapy room, where it is used to help resolve injuries and movement and/or posture issues. Today, it is widely used in fitness instructing. However, sometimes trainers can get caught up in the 'functional phenomenon', forgetting all else. For example, functional training doesn't mean you have to hang from a suspension cable performing modified pull-ups with your feet on a BOSU (unless you need to perform similar movements within your sport, such as for kite-surfing or windsurfing perhaps).

Functional movement should be multi-planar in nature (movement in three planes of motion) as opposed to a single plane of motion, which is often the case when using conventional gym

equipment. The different planes and their relevant actions can be seen in [table 2.1](#).

For an exercise to be fully functional it should reflect a lifestyle activity or a specific sporting movement. To explain this further, when training your legs, while the seated leg-press machine might be great for developing pure leg strength in this position, the extent to how much of this strength is transferable to life situations is questionable. A better choice would be a split-stance dumbbell squat which replicates the functionality of sitting down or reaching down to pick something up. This can be progressed functionally by lunging forward to pick up two dumbbells, in a modified split-stance position, then standing up holding the dumbbells and finally stepping forwards to place them down on the floor again. This pick up/put down technique has a purpose relative to life movements and so has a functional perspective.

## FUNCTIONAL CONDITIONING PROGRESSION

From a training perspective, functional movements should begin with bodyweight exercises moving through various planes of motion. Then introducing a stabilisation requirement, additional



**Table 2.1** Planes of motion

Plane of motion	Motion/action	Example
Sagittal plane	Flexion/extension	Walking, squatting, biceps curl, frontal raise
Frontal plane	Adduction/abduction Side flexion	Jumping jack, air jack, lateral raise, side bending
Transverse plane	Rotation (interior and exterior) Horizontal flexion/extension	Abdominal woodchop, golf swing, reverse flye

resistance and finally dynamic power.<sup>9</sup> This is more applicable to sports, as most sports require movements in all directions.

Using the principles above, take a functional movement like a squat, because every day you will replicate this movement by sitting on a chair, for example. When you can perform a squat with correct technique, challenge your stabilisation within the movement, such as by squatting while on a BOSU (*see* chapter 5, p. 42). This helps train your proprioceptive system, which analyses how balanced you are and which muscles to contract to keep your balance, and will improve *total body integration*, i.e. the involvement of all nerves, muscles, joints and ligaments working together to perform a specific movement. When you can squat with good form on a BOSU, introduce resistance without using the BOSU and squat using a barbell or holding dumbbells. As your movement becomes competent then reintroduce the BOSU and perform the squat using the extra resistance before gradually applying dynamic speed under control.

To improve your jump, you would need to train your motor skills, nerves and muscles, collectively to improve your jump height. You should incorporate functional jump-related exercises, which could include resisted jumps using weighted vests and resisted jumping from unstable bases in which

the movement patterns resemble the end movement. In this way you train the nerves and muscles in a directly similar way to the desired movement.

## THE KINETIC CHAIN

Mobility and flexibility are the building blocks of strength, speed, power endurance and agility.<sup>10</sup> Physical performance is about movement development and, while previous training principles have focused on training muscles in isolation, often for hypertrophy, the current focus is to train the movement rather than the muscle. Rather than focus on *isolation exercises*, functional training trains muscles and joints '*holistically*', integrating groups of muscles and joints throughout a movement that challenges your balance, improves your stabilisation and develops your co-ordination. Consider walking up stairs carrying a heavy load – the increased weight might throw your natural centre of gravity out slightly, causing you to have to adjust your stance or movement to stay balanced. If this fails at any point, you might need to hold on to the wall or take a step back. This 'neuromuscular awareness' can be trained to improve, and as the muscles of the trunk are required for all upright postures, training on an unstable base can assist your *stabiliser* and

*neutraliser* muscles to respond rapidly, improving your balance and co-ordination. The science behind this holistic or integrated training process starts with understanding the *kinetic chain*.

The kinetic chain is an integrated functional unit comprising muscles, tendons, ligaments, fascia, nerves and bones.<sup>11</sup> All these elements need to work in harmony for optimum movement and performance. This synergy of working together is known as *neuromuscular efficiency*. Where there are imbalances within this unit, problems can occur, such as decreased performance, muscle trauma or even injury. If one muscle group is weak, other muscles might have to compensate to maintain a movement; this is known as '*synergistic dominance*'.<sup>12</sup> An example of this might be where certain gym enthusiasts over-train their chest muscles, with little time spent training their back; the result being short tight chest muscles and long weak back muscles. This imbalance disrupts the efficiency of the neuromuscular system and the kinetic chain is compromised. It is necessary to try and recondition the weakened muscle through appropriate training to help restore the balance in the kinetic chain.

## FUNCTIONAL TRAINING EQUIPMENT

Functional fitness programmes often involve the use of balance or unstable training methods while performing an exercise or activity using an additional overload. Equipment used in functional fitness exercises might include some or all of the following (see also chapter 5, pp. 41–44):

- Cable machine
- Stability ball

- Wobble board/Reebok core board/rocker board/ BOSU/balance disc
- Resistance tubes
- Kettlebells
- Suspension Training® systems
- TRX® Rip™ Trainer
- Sandbag/Powerbag
- ViPR
- Medicine ball
- Dumbbells
- Club/hammer/rope/tyre

## FUNCTIONAL CONDITIONING FOR SPORTS

Functional strength is the ability to apply your strength in an environment that is more relative to the action or movement in your required sport.<sup>13</sup> For the sports enthusiast, *functional strength* is important, but there is a big difference between *absolute strength* – your ability to lift a specific weight from a stable environment such as a bench press – and transferable or functional strength. Functional strength is determined according to the amount of force or power you can apply relative to the demands of the activity or sport.

- **Power** is about exerting force against a resistance or object. This requires a strong core and integration of muscles and joints to apply the force within a movement. This would occur when you dynamically step upwards on to a step or bench, leap off a rock or jump over a breakwater during a beach workout.
- **Speed** is fundamental in sports, but while pure speed is only relative in events such as the 100m or 200m events in athletics, acceleration and the ability to pass an opponent or

competitor is useful in nearly all other sports, such as football or rugby. This focuses on your ability to change pace and add intensity, together with your agility, weight shift and rapid direction change.

- **Agility** is about applying acceleration and deceleration relative to your sport. Having the ability to change direction at speed involves a number of biomechanical considerations, together with adjustments in speed, power, strength, co-ordination, dynamic balance and dynamic stabilisation. In sport you need to be able to change direction, stop, rotate, jump and leap, often repeatedly, without losing your body position or form.
- **Co-ordination** can cover many aspects, and while this skill is imperative to enhance your overall development, the nature of the sport or activity will dictate the extent of your motor-skill development.
- **Reactions** are extremely important in all sports, whether responding to adjustments in the terrain you are running on or encountering an environment that you have not planned for, such as a stray dog deciding it wants to join in your shuttle run in a park workout.
- **Balance** is often associated with agility, yet it does not actually have to involve movement. From a functional perspective, balance is very important when holding a position while performing a specific exercise or movement, such as stand-up paddleboarding or martial arts. Yet balance becomes far more important in specific sporting applications.
- **Proprioception** is the way that the body reacts and recovers from being unbalanced. Any external force, such as gravity, a strong wind or an unstable floor, can cause the body to lose

its balance ability for a moment. The muscles are constantly providing feedback to the brain about their surroundings and forces acting on them. The brain sends messages via the nerves to the muscles on how to respond and when. This two-way process of internal feedback using sensory awareness and muscle and joint sensitivity creates this complex system of 'proprioception'.<sup>14</sup>

Functional training should always be geared towards an end goal. For example, within a sports context you should integrate appropriate equipment and stabilisation techniques that help to mimic the specific sporting movement. Then challenge these movements by increasing the stabilisation required to help integrate the muscles and develop functional strength, relative to the sporting movement. If sport is not the main focus then any exercise that incorporates multi-planar movement with varying levels of graduated stability and resistance can be applied as appropriate.

## SUMMARY

- Exercises should be based on life movements or sporting actions relative to the individual, the nature of the sport and their ability.
- Training programmes should be individualised so that they are geared to training the specific needs of the individual.
- Programmes should be integrated and progressive using a variety of multi-planar exercises and with appropriate overload to develop movement with increased flexibility, enhanced core strength, muscular strength and power, together with improved balance.



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# PART TWO

WARMING UP PRINCIPLES  
AND GUIDELINES

# // FUNCTIONAL WARM-UPS

# 3

## WARMING UP

While in the past static stretching formed the basis of most warm-ups, recent research has suggested that it is important that the muscle is warm and has been taken through its full range of movement relative to the activity to follow.<sup>15</sup> The incidence of injury has been shown to be greatly reduced when the warm-up is performed appropriately and relatively according to the sport.<sup>16</sup> Activities and movements within your warm-up should replicate the nature of the following activity, albeit at a lower intensity. If your workout is to go for a run, then warm up by walking and light jogging. If you are intending to work out with weights, you should mobilise the joints and perform exercises or movements that take the joints through similar movement patterns to your workout routine.<sup>17</sup> This should begin with light resistance to stimulate the muscles.

A warm-up should also prepare your body for aerobic and even anaerobic activity, by placing demands on your cardiovascular system to increase your heart rate and consequently assist oxygen transportation via the bloodstream to the muscles.

Movements should also be rhythmic and dynamic in nature and allow for sufficient progression in intensity, helping to reduce the risk of

injury. For example, if you are beginning a sprint training session, you should include sprints as part of your warm-up, but at a reduced yet progressive intensity. After performing many of the warm-up techniques demonstrated later in this section, you should incorporate some acceleration movements to include progressive sprint drills, starting at a comfortable speed – perhaps 30–50 per cent intensity – and building up gradually to 80–85 per cent intensity.

Warming up for a multi-movement sport, such as football, tennis or rugby, should involve a far more varied repertoire of movement, twists, turns, accelerations, sprints and jumps as part of the preparation for the game itself. While this book does not focus on these sports, many of the dynamic warm-up drills, together with the footwork and agility drills in [chapter 4](#), will assist your motor-skill development relative to many sports.

It is also important following a workout or activity session that adequate time is spent cooling down. A cool-down effectively allows the body to dissipate waste products such as lactic acid and reduces the chances of blood pooling, light head- edness and/or muscle cramps. Blood pooling is simply when the blood is not being pumped around the body sufficiently and during intense exercise,



stopping abruptly would not allow de-oxygenated blood to be pumped back to the heart adequately. In addition, cooling down reduces the amount of adrenaline in the blood and allows a safe time to return your heart rate to normal.

The following selection of functional warm-up exercises incorporates dynamic movements and stretches, and it is important to graduate your



### Static versus dynamic stretching

The case for static pre-stretching as opposed to dynamic stretching is still open, yet arguably dynamic movement that takes the muscle through its full range safely and relative to the movements required within the sport is far more appropriate. My only concern, having worked with numerous enthusiasts of all fitness levels and varying body awareness, is that sometimes it is useful to incorporate a static stretching element in your warm-up, as often some enthusiasts do not have the movement quality to achieve a suitable stretch through dynamic movement alone. In these situations, providing it is not detrimental to the warm-up process, I would suggest that static stretches of the hamstrings and calf muscles have their place.

speed and/or nature of movement as you progress through the list. You can perform as many as you wish, depending on the nature and intensity of the workout to follow. For sports enthusiasts, I would recommend performing the majority in the order shown, but for the general enthusiast the importance is that you warm up safely by mobilising your joints, increasing your heart rate and incorporating full-body movements to prepare you for your workout. From that perspective, feel free to pick and choose from the exercises provided, making sure that by the end, you feel warm and energised, and that your muscles and joints are ready to work!



**Ex 3.1** Arm rotations/circles**Modifications**

- Keep your arms bent with hands near your shoulders to reduce the movement arc, yet still rotate your elbows in a circular movement past your ears and head.
- Alternatively, you can perform the movement with alternate arms in a 'backstroke' technique, one arm after the other.
- You can also rotate both your arms in a forward direction, repeating as before.
- To challenge your co-ordination, you can rotate one arm backwards while rotating the opposite arm forwards. In this case aim for 10–15 rotations before reversing the movement direction for each arm and repeating.

**Starting position and action**

- Stand upright in a neutral stance and with your arms by your sides.
- Slowly lift both arms forwards, past your ears and over your head in a circle, and back down to your sides.
- Initially, circle your arms around slowly a few times before gradually increasing speed to a more dynamic action.
- Repeat circles 10–15 times.