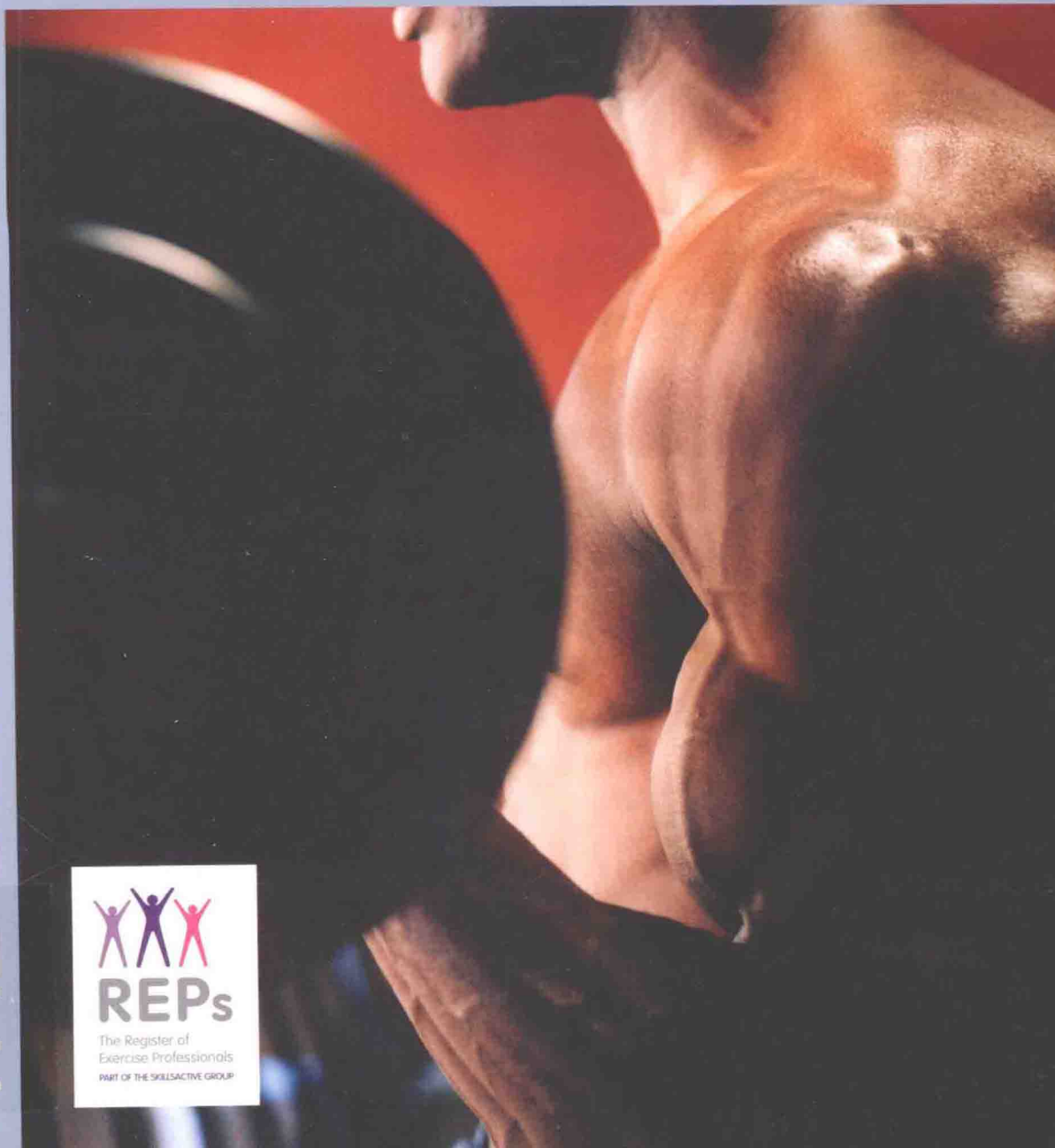


THE COMPLETE GUIDE TO

Dr Geoffrey K Platt

LIFTING HEAVY WEIGHTS



THE COMPLETE GUIDE TO
**LIFTING
HEAVY
WEIGHTS**



Dr Geoffrey K. Platt

B L O O M S B U R Y

This book has been awarded 4 CPD points by the Register of Exercise Professionals. REPs requires that all instructors regularly update their skills and knowledge, which is evidenced by the recording of 12 CPD points per year. If you already hold an industry qualification you can answer the questions at the end of each chapter as part of your professional development. For further information please visit the REPs website at www.exerciseregister.org.

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Published in 2011 by
A&C Black Publishers Ltd
An imprint of Bloomsbury Publishing Plc
36 Soho Square, London W1D 3QY
www.acblack.com
www.bloomsbury.com

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ISBN 978 1 4081 3325 5

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A CIP catalogue record for this book is available from the British Library.

Commissioned by Charlotte Croft
Designed by James Watson
Cover photograph © Getty Images
Photographs on pages 8, 13, 28, 29, 31, 33, 39, 46, 48 and 56 © Shutterstock
Photograph on page 2 © Getty Images
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Illustrations on pages 10, 19, 20 and 53 by Greg Stevenson Illustrations
All other illustrations by David Gardner

This book is produced using paper that is made from wood grown in managed, sustainable forests. It is natural, renewable and recyclable. The logging and manufacturing processes conform to the environmental regulations of the country of origin.

Typeset in 10.75pt on 14pt Adobe Caslon by Saxon Graphics Ltd, Derby

Printed and bound in India by Replika Press Pvt Ltd

ACKNOWLEDGEMENTS

During a long and privileged career that has included weightlifting, powerlifting, strength and conditioning, fitness training, strength events, highland gatherings and heavy athletics, I have been honoured to have been coached, instructed, tutored and advised by some great men. I refer to men like Oscar State, Wally Holland, Hymie Binder, John Lear, Al Murray, Tamas Ajan, Gottfried Schodl, Vic Mercer, David Webster, Tom McNab and Wilf Paish. These men taught me a great deal about life, strength and the use of force, and for that I am eternally grateful.

I have enjoyed the privilege to work with some of the greatest athletes in the world in these sports, and again, I have learned from every one of them. Unfortunately there are too many to name. Each has been a strong character as well as an exceptionally strong athlete and they taught me what men have known for many centuries:

That intelligence and skill can only function at the peak of their capacity when the body is healthy and strong; that hardy spirits and tough minds usually inhabit sound bodies.

John F. Kennedy, 1960

I would like to express my appreciation to those who have helped me to improve my academic knowledge of these subjects, Mike Stone, Dave Collins and most of all to John Sproule, who together helped me to achieve my doctorate at the University of Edinburgh. Special thanks also goes to George Byng and Charles Revolta, who both assisted me by reviewing this book.

Finally, may I express my appreciation to my family, to my wife Annette and my daughters, Jenni, Laura and Ella, who have supported me throughout my career.

Geoff Platt, 2011



W.S.N. (Wales, Scotland and Northern Ireland)



Wales Weightlifting



Weightlifting Scotland

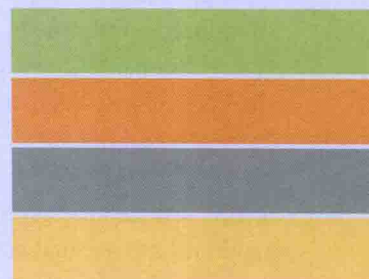


Northern Ireland
Weight Lifters Association

These are the National Governing Bodies for the sport of Weightlifting in these countries, as recognised by the International Weightlifting Federation.

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// INTRODUCTION

The lifting of weights is an extremely popular way to keep fit for many people. Weights are relatively inexpensive and allow large numbers of people to train together in a small area in relative comfort.

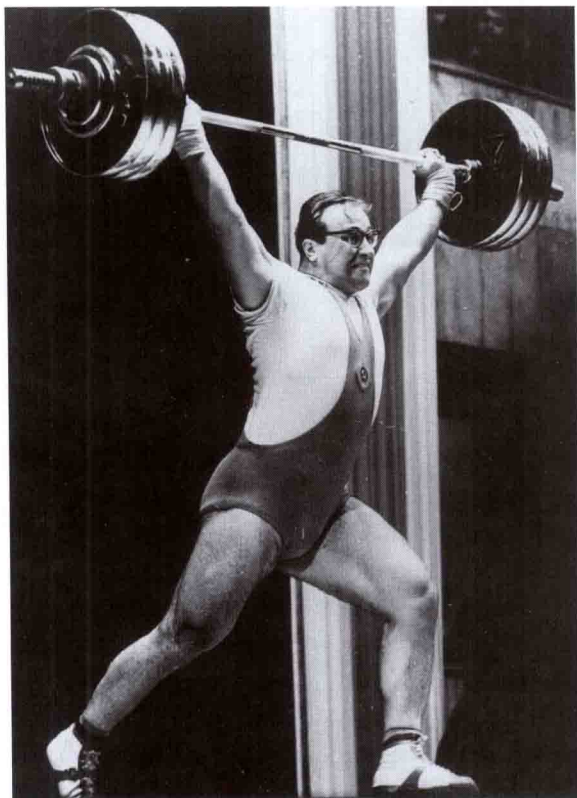
Going to the gym is seen by many people as a very sociable activity where they can meet their friends, build up a sweat, relieve the stresses of the week and get fit. Gyms are warm, bright, welcoming places which are open at times that suit busy people, whether it be early morning, late evening, at weekends, or during the working day for shift workers. They can work out with friends or focus on their personal training, and they can seek advice about their programme, their diet or their lifestyle from experts.

But lifting weights means different things to different people. Some people lift weights to get strong; some to get bulkier; some to get smaller; some to get fitter; some to get fatter; some people may want to recover after an injury; some may want to cope with a disability. A gym is a place where you can build the body that you want. For this reason, it can be a very personal place.

HISTORY

The history of lifting weights goes back several thousand years, with evidence that early man competed with his neighbours to test his strength by lifting stones. It was Hippocrates, the 'Father of Modern Medicine', who introduced science to the sport when he wrote 'that which is used develops, and that which is not used wastes away'. The ancient Greeks, with their love of sport and their belief in the importance of the human body, developed the subject further and it was Milo of Croton who first illustrated the principles of progressive resistance training, which are set out in chapter 1.

Gaining strength remained the objective of all lifting of weights until the second half of the 19th century. It was at about this time that there was an increase in interest in health and exercise. The 'physical culture movement' used weights to get fit, to strengthen their skeletons and to develop their muscles. Physical culturalists tested their strength, but lifting heavy weight was not their *raison d'être*.



Russian heavyweight weightlifter Yuri Vlasov in action during the 1962 World Championships, which he won to achieve the official title of strongest man in the world

The lifting of weights underwent fundamental changes in the late 1950s and early 1960s. This started when Oscar State, the General Secretary of the International Weightlifting Federation (IWF), got together with the British Athletics Coach, Geoff Dyson, to write a book entitled *Weightlifting for Athletics*. It advocated the use of lifting weights to improve performance in athletics and over the following years the lifting of weights to improve sporting performance

expanded until, in 1988, the East German Olympic Committee required that all athletes seeking selection for the Olympic Games, irrespective of their sport, undertake a programme of Olympic Weightlifting designed to improve the explosive extension of the hip, knee and ankle. These actions are all components of the running, jumping, throwing and kicking that are a part of almost every sport. The only sport that is an exception is sailing.

Also in the 1960s, governments around the world started to recognise the positive value of sport and exercise to the health of a nation, as well as to its financial well-being. Accordingly, many started to introduce 'sport for all' policies that saw the introduction of publicly funded community sports centres that usually included one of the newly designed multigyms. Soon it became acceptable for all sections of the community to participate in lifting weights in order to improve their health and fitness. In practice, this meant women and young people starting to use the new gyms and it focused attention on the whole range of components of fitness, from strength to endurance, muscular endurance, flexibility, speed, fitness and body composition.

LIFTING WEIGHTS TODAY

There are five competitive sports and contests that revolve around lifting weights. They are:

1. WEIGHTLIFTING

Otherwise known as Olympic Weightlifting, this is contested at all levels, from the Olympic Games, World Championships and Commonwealth Games to continental, national, regional and local championships.

Weightlifting consists of the two overhead lifts: the *snatch* and the *clean and jerk*. An athlete is awarded three attempts at each exercise on a rising bar (one on which the weight is only permitted to remain the same or to increase) and the best successful attempt at each exercise is added together to give a total that determines the winner.

Olympic weightlifting records*

- The world record for the snatch is 213kg or 470lbs
- The world record for the clean and jerk is 263kg or 580lbs

2. POWERLIFTING

Powerlifting is contested at World Championships and at continental, national, regional and local championships.

Powerlifting consists of the three strength lifts: the *squat*, the *bench press* and the *dead lift*. An athlete is awarded three attempts at each exercise and the athletes all take their first attempts, second attempts and third attempts. The best successful attempt at each exercise is added together to give a total that determines the winner.

Powerlifting records*

- The world record for the squat is 457.5kg or 1007lbs
- The world record for the bench press is 352.5kg or 777lbs
- The world record for the dead lift is 408kg or 898lbs

**Note: On 1/1/11, bodyweight classes changed; these are the records for the unlimited bodyweight category.*

3. BODYBUILDING

Bodybuilding is about creating the perfectly shaped body, with each part of the body developed and in proportion to the rest of the body. Weights are not lifted in competition, which involves posing to show your shape to best effect, but are used to build the body.

Bodybuilding is effectively run by companies who organise tournaments where they feel that there is a need.

There are also other activities that require a considerable amount of strength training in order for people to compete in them:

4. 'STRONGEST MAN' CONTESTS

These are contests usually run for television where all the competitors usually hold titles from previous participation in powerlifting competitions. Events usually include squats, dead lifts, overhead lifts, barrel or stone lifts and truck or aeroplane pulls.

5. HIGHLAND GATHERINGS

These are traditional events held all over Scotland and other places in the world with a Scottish community. Events include caber, Scottish hammer, 28lb (13kg) weight for distance, 56lb (26kg) weight for height and shot putt. Many weightlifters, powerlifters and athletic throwers participate.

GYM INSTRUCTION

The building of new community sports centres and the rapid expansion of the numbers of people using the gyms coincided with a Government initiative to move away from academic qualifications, based on a knowledge of theory, towards vocational qualifications which focused

on practical skills. The British Amateur Weight Lifters Association (BAWLA) was approached by the Sports Council on behalf of the Department for Education and asked to adapt their Teachers Award course for weightlifting coaches into a new course for fitness instructors.

Later SPRITO (the Sport and Recreation Industry Training Organisation), now called Skills Active, was set up to bring together employers in the fitness industry to agree professional standards for those working in the industry. It standardised the awards so that there was a Level 2 Fitness Instructor Award (roughly equivalent to a GCSE) and a Level 3 Personal Trainer Award (roughly equivalent to an A-level). It also changed the syllabuses for the courses by increasing the required knowledge of diet, nutrition, weight control, endurance, fitness etc, and generally reduced the content on specifically lifting heavy weights, in order to cater for the new

market which consisted of increasing numbers of women and young people.

Many gym instructors have recently expressed the feeling that there has been a recent resurgence in the popularity of lifting weights in order to improve, and test, strength. Recently, there have been a number of incidents in which athletes have been injured while using heavy weights, which indicates that the quality of coaching and support available to those wishing to use heavy weights has fallen and that more work is needed to raise standards.

A review of the fitness industry has revealed a need to expand the training courses available to fitness instructors and personal trainers who want to assist those people who want to lift heavy weights. SkillsActive has accredited these courses as Continuing Professional Development (CPD) for those working in the industry and for those who want to work with

CYQ Level 2 Certificate in Fitness Instructing (gym-based exercise)

Unit description

Anatomy and physiology for exercise

Health, safety and welfare in a fitness environment

Principles of exercise, fitness and health

Know how to support clients who take part in exercise and physical activity

Planning gym-based exercise

Instructing gym-based exercise

CYQ Level 3 Certificate in Personal Training

In addition to units 2–4 above, learners need to complete:

Unit description

Anatomy and physiology for exercise and health

Applying the principles of nutrition as part of a personal training programme

Programming personal training with clients

Delivering personal training sessions

the athletes looking to improve their strength for whatever reason.

The syllabus for the new courses has been written by the author of this book, which itself has been written to support the courses and to provide a reference for those taking them. The areas covered in the new courses will include:

Techniques of the exercises

The heavier that the weight gets, the better that the technique needs to be.

Training methods and recovery methods

Advanced training methods and advanced recovery methods are required to lift the heaviest weights.

Safety

While all weights need to be treated with respect and handled with care, this is especially so when lifting the heaviest weights, where death and serious injury await those who fail to deal with them properly.

Drugs

It is no longer acceptable for professional coaches and instructors to brush aside questions relating to drugs in sport. This is an important issue that can result in imprisonment, suspension and humiliation in the press. Care must be exercised when taking any medication, as the World Anti-Doping Agency (WADA) list contains some medications available in petrol stations and newsagents, as well as those available only on prescription.

Welcome to the *Complete Guide to Lifting Heavy Weights!*

// THE PRINCIPLES OF TRAINING



INTRODUCTION

In order to lift heavy weights, it is necessary to undertake long periods of regular, i.e. daily, hard training, and to lift progressively heavier weights while improving or at least maintaining all the other aspects of fitness. This will require a disciplined lifestyle in which attention is paid to early bedtimes, a balanced and healthy diet and moderate living. It will also require consideration to be given to doing everything possible in order to speed up recovery from training.

The strongest lifters in the world have traditionally come from Russia, Bulgaria and Eastern Europe and these athletes typically undertake five training sessions each day for six days each week, with one rest day to allow them to recover from their training. This level of training needs to be built up slowly or it will very quickly cause an athlete to collapse with exhaustion rather than significantly improve their strength.

This book is going to look at the principles of sports science that apply to training and recommend ways in which they can be implemented in a training programme designed to maximise strength gains. It must, however, be borne in mind that every person is an individual

with their own strengths and weaknesses; the application of these principles will be very much a bespoke process for the athlete and his or her coach.

THE ATHLETE TODAY

Every training programme should revolve around the athlete. Each person is different, with different strengths and weaknesses, and these must be taken into consideration when designing his or her ideal training programme. It is good practice to begin by measuring the athlete in every way that comes to mind: physically, physiologically and even psychologically. The table on the opposite page shows one way in which this can be done, but you can add to this in any way that you think is appropriate. Be honest and do not gloss over any weaknesses. Use them to help build the athlete instead.

At this point, the athlete will probably have completed some training already and you should review their strengths and weaknesses, and their likes and dislikes, in the work that they have done so far.

Know your athlete	
Topic	Notes
Name	
Age	
Actual age	
Developmental age	
Training age	
Gender	
Occupation	
Height	
Weight	
Skill	
Experience	
Fitness	
Injuries	
Illnesses	
Other sporting activities	
Contact details	
Mother	
Father	
Grandparents	
Performance	

THE FUTURE CHAMPION

An athlete should give some consideration to what they will have to look like and what they will have to be able to do if they are to be a champion. Many 16–18-year-old young men decide that they want to become sports champions. They are often tall and skinny when they make this decision, and if they are 1.83m/6'0" tall and weigh 75kg/11st 8lb, experience tells us that they will have to put on a considerable amount of weight, preferably muscle, before they start to win medals and titles.

Aspiring athletes should look at those who are achieving what they themselves want to achieve in

the future. What height and weight are their role models? Athletes should make notes of what they see. In all likelihood, they will have to be roughly the same size and shape in order to achieve the same or better results in the future.

It may be at this time that an athlete realises that they are unlikely to achieve their ambitions and that they may need to review, and possibly change, them. It is better for an athlete to do that now, rather than realise after 10 years of hard work that they were never going to achieve their initial goals and that they have wasted a great deal of time and effort in attempting to achieve the impossible.

Many very tall athletes have considered becoming champion weightlifters before realising that few Olympic champions in weightlifting are much over 1.83m/6'0 tall, even in the heavy and super-heavyweight classes. If you are a little over this norm then you can simply be a tall weightlifter who trains hard, but if you are well over this norm, you must decide either to be the best that you can be as a weightlifter, or you must seek an alternative: many young men in this position have decided to take up shot putting, discus throwing or hammer throwing etc, where taller men have been more successful.

THE TRAINING ROUTE

The athlete, having fixed two points in their life (where they are now and where they want to be in the future), can start to give some thought to the route that they will need to take in order to achieve their goals. This does not mean that the route is set in stone and cannot be changed, but it does give the programme a serious sense of direction until it is varied. A good example of this process is a story that has often been repeated about Mark Foster, the Olympic swimmer. It is said that he returned home after a Commonwealth Games disappointed at his performance and worried that he needed to improve his time by one second if he was to win the Olympic Games in a little more than a year. He decided that he was likely to compete in 25 races during that year leading up to the Olympics and that he needed to improve his time by 0.04 seconds ($1.00 \text{ second} \div 25 \text{ races}$) in each race in order to achieve his goal.

The calculations that most athletes make will be considerably more difficult than the one set out above, for a number of very good reasons. The

most difficult factor is that a substantial proportion of young men making a decision to commit to becoming champions are less than 18–21 years of age and therefore may not have completely finished their final growth spurt, so they may grow taller. The second factor is that most tasks get harder as we continue them, so that the initial progress is rapid, but will diminish as we continue, so we should not rely on relentless progress. The third factor is that, for a variety of reasons, certain elements in our progress need to be undertaken at certain stages of our development or training and, if training time is limited, then other elements may have to be deferred to fit them in.



A good example of an element being focused upon at a particular stage of development or training is flexibility. Up to approximately 16 years of age, most young men will accept the advice of their coach and undertake the training that they are given to do. After this time, they will often reject advice and refuse to complete the training that they are given. Coaches who are aware of this problem will set up a training programme to prioritise flexibility training at an early stage of the athlete's development, so that it is not such a problem if the athlete cuts back on it later. If the coach fails to recognise this problem and the athlete then refuses to complete the flexibility training, then the athlete's prospects will be severely diminished. Another area where athletes may be reluctant to work is repetitive technique training, which they often find boring.

THE COMPONENTS OF FITNESS

When identifying the training route, the athlete and coach need to consider each of the components of fitness.

STRENGTH

Definition: The ability to lift a maximum weight or overcome a maximum resistance for a single repetition.

Examples: The best examples are powerlifters and weightlifters.

ENDURANCE

Definition: The ability to keep on exercising for a prolonged period of time.

Examples: Marathon runners and triathletes.

MUSCULAR ENDURANCE

Definition: The ability to keep on working one or more muscles for a prolonged period of time.

Examples: Tug of war and arm wrestling.

FITNESS

Definition: The ability to recover after exertion.

Examples: Football players and boxers who are able to rest between runs or rounds.

SPEED

Definition: The ability to move at the highest speed.

Examples: Sprinters (who move the body along the track) and throwers (who move their arms).

FLEXIBILITY

Definition: The ability to move a joint through the widest range of movement.

Examples: Gymnasts and hurdlers.

BODY COMPOSITION

Definition: The amount of fat in the body, usually expressed as a percentage.

Example: Bodybuilders.

Not only does each sport require a different blend and balance of each of these components, but each athlete will also require an individual blend and balance, depending on their physiology, physique and technique. These components of fitness relate to each other as set out in figure 1.1 (overleaf).

At this point we should have decided on the changes to the physique and physiology that the athlete needs to make in order to become a champion and we can now start to consider the best ways to go about making these changes.

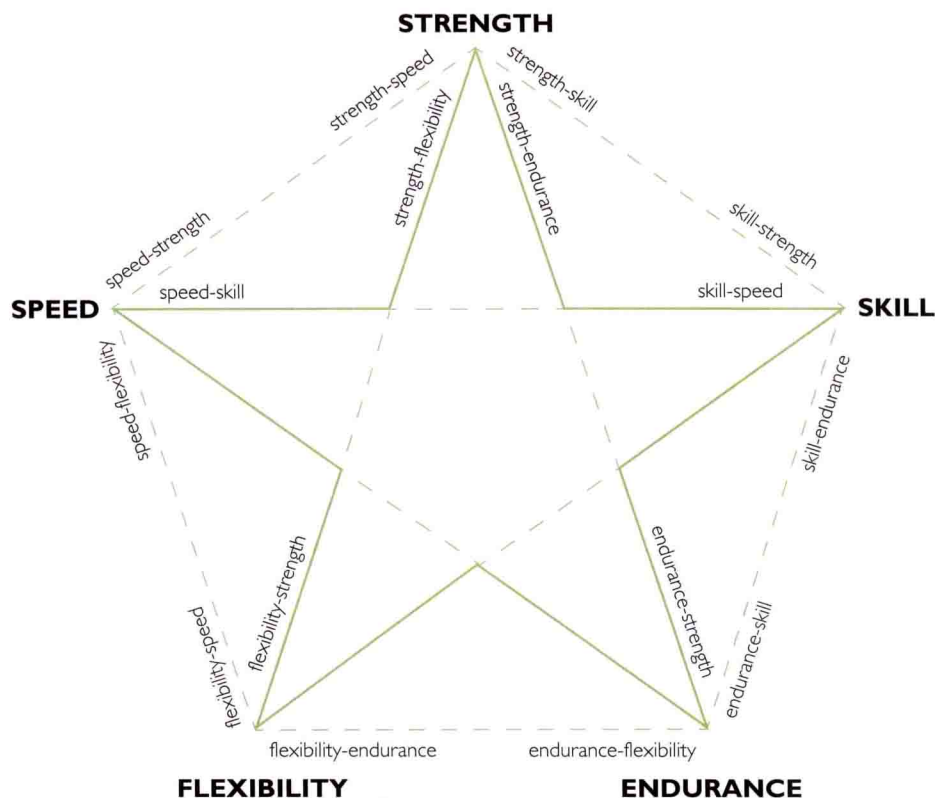


Figure 1.1 Relationship between the components of fitness

THE PRINCIPLES OF TRAINING

All training must be:

PROGRESSIVE

Definition: Continuously getting harder as the athlete adapts to it.

Explanation: In ancient Greece there was a man called Milo of Croton. His father was a farmer and owned a cow. The cow had a calf and Milo made a point of lifting the calf onto his back in order to get stronger. Over the next two years the calf grew into a full grown cow and Milo grew into a weightlifter. There was no way that Milo would

ever have lifted a cow unless he had started with the calf and trained up.

SPECIFIC

Definition: All training must be focused on the goals to be achieved.

Explanation: There is very little point in an ambitious young weightlifter running a marathon in training. His endurance will improve, but it will not reflect in his ability to get stronger and lift more.

VARIED

Definition: Training requires a certain breadth.

Example: While training needs to be specific to the task, to select just one exercise and work on it several times each day to the exclusion of everything else will soon become very boring and result in a drop in motivation. It will also result in a very narrow type of strength.

PLANNED

Definition: Each session needs to build on the previous one and prepare for the next one.

Explanation: Anecdotal evidence suggests that the former East German coaches celebrated an athlete reaching puberty by presenting them with a printed diary of the proposed training sessions for the next 12 years. These would only vary in cases of injury.

It should be remembered however that, unfortunately, all training is:

REVERSIBLE

Definition: All training gains are lost in approximately a third of the time that it took to make them.

Explanation: Training needs to be relentless. It is not possible to train hard, and take breaks for holidays or parties. The benefits of three weeks hard work will be lost if the athlete then misses training to go on holiday, or as a result of an injury. He or she has simply wasted the coach's time and his or her own time.

It is now necessary to set a timescale for these targets to be achieved. Coaches and athletes need to consider their ambitions and when these can reasonably be achieved. It may be that the athlete has set his or her heart on winning an Olympic gold medal. Olympic Games only take place every four years and it will be necessary to identify which

Games the athlete can reasonably expect to target, so that training can be arranged accordingly.

LONG-TERM GOALS

As a result of the planning undertaken so far, a number of targets should have been set. A very simple example may look something like the table on page 12.

Although a very simple example, this set of goals covers each of the components of fitness set out above. It is accepted that an endurance runner would not consider a 400m run as an endurance activity, but it is in the context of a weightlifter. All young people need to develop their hearts and lungs and achieve reasonable levels of fitness, and it is interesting that at a recent UK Athletics seminar the world champions for each of the throwing events (the shot, discus, hammer and javelin) all announced that they regularly ran 10,000m cross-country runs every month, despite their bodyweight being over 125kg.

The scores for flexibility and fitness reflect a personalised programme for each individual athlete in which his or her range of motion is measured in a range of specific exercises.

Some targets do not require the athlete to improve to achieve them, but may require considerable effort in order to maintain them. Many young men can eat anything and still maintain a body composition of 10% bodyfat at 16 years of age. If those young men then double their bodyweight by training, they will clearly struggle to keep their bodyfat at 10%. The same young men may find it easy to run a lap of a track in 60 seconds as a 16-year-old at 70kg, but considerably harder as an adult at 140kg. These are extreme examples set out to make a specific point.

Setting long-term goals

Goal	Category	At 16 years	At 26 years
Height	Development	1.70m	1.80m
Weight	Development	70kg	120kg
Best clean	Strength	60kg	180kg
Best jerk	Strength	65kg	190kg
Best snatch	Strength	40kg	140kg
Best squat	Strength	70kg	220kg
Dead lift hold	Muscular endurance in grip	20 sec	40 sec
Best 40m run	Speed	4 sec	3.5 sec
Best 400m run	Endurance	60 sec	60 sec
Body composition	Body composition	10%	10%
Flexibility score	Flexibility	67	80
Fitness score	Fitness	70	80

SHORT-TERM GOALS

Specific annual targets should be set for each of the interim years, so that progress may be monitored regularly and effort and focus adjusted accordingly. At this stage, consideration should be given as to whether the improvements required by the programme are seriously achievable or whether they need to be reset. If this is not done then disappointment will inevitably be the result in the future.

These targets should be agreed publicly so that both sides have ownership of them. Failure to achieve these goals may result in the breakdown of the relationship between athlete and coach, but both parties need to be aware of the current situation at all stages of the relationship.

LIFESTYLE

In designing a programme for an athlete, a great deal of factors need to be taken into consideration

by the coach or trainer. Clearly all the targets need to be met, but there also needs to be: balance between improving fitness and improving technique; a removal of overlap; opportunities to recover from the training; and opportunities to compete during training.

None of this is worth undertaking until the athlete accepts that first and foremost his or her lifestyle must change. Until the 1980s, there was an acceptance among young athletes that they had to tolerate a Spartan existence and most of them were proud of this. Recent press coverage of professional sportsmen and women partying late into the night has confused many young athletes, who now fail to recognise the value of a healthy lifestyle.

Recently I drove three athletes to a competition. These were young men hoping to achieve selection for the Junior World Championships later in the year. On the way home after the competition one started making calls on his mobile phone to hire DVDs for when he returned. Another placed