



ADVANCED PERSONAL TRAINING

Science to practice

Edited by
Paul Hough and
Simon Penn

Effective fitness instruction and training programme design require an exercise specialist trainer to combine professional experience with strategies underpinned by scientific evidence. This is the first comprehensive fitness instruction and training programme design resource to explore the evidence-base of effective programme design, drawing on cutting-edge scientific research to identify optimum training methods and dispel some common myths around fitness training.

Putting clients' training goals at the centre of the process by focusing on their most common objectives – such as improving general health, enhancing cardiorespiratory fitness, decreasing body fat and increasing muscle mass – this book helps the reader develop a better understanding of the physiological principles at the core of successful programme design. Simple to navigate and full of helpful features – including applied case studies, example training programmes and guides to further reading – it covers a variety of key topics such as:

- pre-exercise health screening
- lifestyle and fitness assessment
- nutrition
- cardiorespiratory (endurance), resistance and core training
- recovery from exercise.

An essential text for fitness instructors, personal trainers and sport and exercise students, this book provides an invaluable resource for fitness courses, exercise science degree programmes and continued professional development for exercise professionals.

Paul Hough is a lecturer in health and exercise science at St Mary's University, Twickenham, UK. Paul is a British Association of Sport and Exercise Science (BASES) accredited sport and exercise scientist providing sport/exercise science support to amateur and elite athletes as well as organisations such as Virgin London Marathon and British Rowing.

Simon Penn is a senior lecturer in health and exercise science at St Mary's University, Twickenham, UK. Simon has delivered exercise and rehabilitation programmes to a wide range of populations (e.g. special populations, service personnel, elite athletes) throughout his career in the fitness industry and higher education.

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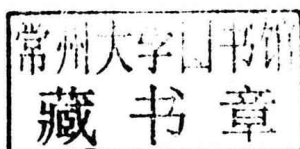
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Contributors

Nicola Brown, St Mary's University, Twickenham UK

John Downey, St Mary's University, Twickenham UK

Paul Draper, St Mary's University, Twickenham UK

Jessica Hill, St Mary's University, Twickenham UK

Contents

	<i>List of illustrations</i>	<i>vii</i>
	<i>List of contributors</i>	<i>xi</i>
1	Introduction <i>Paul Hough</i>	1
2	The components of fitness <i>Simon Penn and Nicola Brown</i>	9
3	Pre-exercise health screening <i>Paul Draper</i>	14
4	Lifestyle assessment and behaviour change <i>John Downey</i>	22
5	Nutrition <i>John Downey</i>	34
6	Fitness assessment <i>Simon Penn and Nicola Brown</i>	55
7	Fundamental principles of training <i>Paul Hough</i>	59
8	Training session design <i>Paul Hough</i>	67
9	Long-term training programme design (periodisation) <i>Paul Hough</i>	83
10	Warm-up/movement preparation <i>Paul Draper</i>	99
11	Cardiorespiratory fitness training <i>Paul Hough</i>	120

12	High-intensity interval training <i>Paul Hough</i>	149
13	Resistance training <i>Paul Hough</i>	170
14	Postural and core training <i>Simon Penn</i>	203
15	Cool-down <i>Simon Penn</i>	217
16	Recovery from training <i>Jessica Hill</i>	227
	<i>Index</i>	238

Illustrations

FIGURES

1.1	Example health benefits of regular physical activity	2
2.1	The components of fitness	12
3.1	PAR-Q	15
3.2	PAR-Q+ Page 1	18
4.1	An integrated display of relevant constructs for behaviour change	25
4.2	The stages of change from the Transtheoretical Model	26
4.3	Outline of the framework needed for effective motivational interviewing	27
5.1	Evidence-based components of the diet that support health	35
6.1	Test validity and reliability	57
7.1	Schematic of the super-compensation response following a suitable training stimulus and recovery period	60
7.2	The threshold for adaptation	61
7.3	The health-performance training continuum example	62
7.4	Trainability	65
8.1	Training session design process	67
8.2	Example of unbalanced resistance training programme using the muscle group method	71
8.3	Resistance training exercise order sequencing	73
8.4	A ten-point perceived exertion scale used to classify the intensity of a training session	76
9.1	Traditional single-peak periodisation model	86
9.2	Cyclist case study programme	90
9.3	Block periodisation: strength and hypertrophy case study	92
10.1	Main elements of a warm-up	99
10.2	The benefits of warming-up: summary	101
10.3	The effects of warming-up: summary	103
10.4	Dynamic stretch – Hamstring	105
10.5	Static passive self-stretch – Hamstring	105
10.6	PNF stretch – Hamstring	106
10.7	Static passive self-stretch – Pectorals	109
10.8	Summary guidelines – Structuring a warm-up	110

10.9	Flow chart – Structuring a warm-up	115
11.1	The Borg rating of perceived exertion scale	126
11.2	Schematic of cardiorespiratory training methods	130
11.3	Examples of physiological adaptations to long-term cardiorespiratory training	131
11.4	Schematic representation of the dose-response relationship between level of physical activity/CRF and mortality risk	132
11.5	The ‘cross-over’ concept	138
11.6	Fat and carbohydrate oxidation at different exercise intensities	139
12.1	Interval training intensity classifications	150
12.2	Example high-intensity interval training protocols	152
12.3	Change in body fat following a 20-week training intervention	158
12.4	Examples of physiological adaptations in relation to different high-intensity interval training protocols	160
13.1	Example resistance training set sequencing schemes	173
13.2	The health benefits of resistance training	178
13.3	The effect of different training modalities on body composition	190
14.1	Optimal standing posture	204
14.2	Common postural abnormalities	205
14.3	Upper crossed syndrome	207
14.4	The cylindrical definition of the core	208
14.5	The local muscular group	210
14.6	Low-load stability tests and exercises	212
14.7	High-threshold stability and strength exercises	213
15.1	Cool-down summary	223

TABLES

4.1	Commonly used behaviour change theories/models	23
5.1	Dietary intake assessment methods	36
5.2	The impact of fat by category on blood lipids	38
5.3	Overview of the main micronutrients and accompanying sources and signs of deficiency and toxicity	41
8.1	Resistance training exercise selection methods	72
8.2	Training zones based upon percentage of maximum heart rate	78
8.3	Quantifying resistance training volume: repetition volume and volume load	80
9.1	Periodisation v. random variation: advantages and disadvantages	85
9.2	Example of a traditional periodisation model for a 5-km runner	89
9.3	Training residuals: the approximate duration before components of fitness decline following the cessation of training	93
9.4	An example of an undulating periodisation training week	94
10.1	Examples of recent study findings: effect of warm-up stretches on performance	107

11.1	Cardiorespiratory training intensity domains	121
11.2	Example metabolic equivalents of different physical activities	122
11.3	Maximum heart rate prediction equations	124
11.4	Heart rate training zones	125
11.5	Using the talk test during cardiorespiratory exercise	127
11.6	Fat oxidation and energy expenditure measured at different running speeds	140
12.1	High-intensity interval training protocols for improved health outcomes	154
12.2	High-intensity interval training protocols for performance outcomes	162
13.1	Neurological adaptations to resistance training	171
13.2	Resistance training classifications	172
13.3	Advanced resistance training methods	175
13.4	Advanced resistance training tempo techniques	177
13.5	Example fat loss resistance training sessions	194
14.1	Anatomical landmarks	204
14.2	Muscle imbalances of common postural abnormalities	206
16.1	Recovery strategies and populations most likely to benefit from the use of each strategy	234

range of daily activities such as walking, stair-climbing, lifting objects, etc. Exercise is a sub-set of PA; the distinguishing factor is that exercise is planned and structured, and has the objective to maintain or improve a component of fitness (see Chapter 2). This is an important distinction given that clients sometimes associate PA with a structured exercise programme and/or a gym-based environment. Although the purpose of this book is to provide a scientific framework for designing effective exercise programmes, trainers should also promote the benefits of daily PA outside the gym environment.

The potential health benefits of daily PA were noted over 2,500 years ago by the Greek physician Hippocrates. Over the past six decades a large amount of scientific evidence has amassed which supports this notion. Regular PA has consistently been associated with lower rates of all-cause mortality and chronic disease (Booth et al., 2008). Furthermore, regular PA has been shown to improve numerous components of health, examples of which are presented in Figure 1.1. These benefits can be achieved outside conventional gym-based programmes through adopting an active lifestyle (see page 3).

Adherence

Despite the widely promoted benefits of PA and exercise, one of the biggest issues that trainers encounter is poor client engagement and exercise adherence. Clients are prone to abandoning an exercise programme for a number of reasons, for example if exercise does not meet their expectations and/or they lose motivation (Whaley & Schrider, 2005). Most adults who engage in a diet/exercise intervention experience improvements in health, fitness and body composition. The problem, which has yet to be solved, is improving long-term adherence of positive behaviours (e.g. regular exercise, good quality diet). A potential reason for poor adherence/lack of engagement with PA and healthy living advice is because the relationship between the fitness professional and client can be too didactic, whereby the professional provides specific advice in the hope that the client will adhere to this guidance, i.e. 'you need to do this, to achieve ...'. Providing accurate and relevant advice is obviously a fundamental role of the fitness professional. However, clients must be empowered to take an active role in their own health/fitness rather than passively following advice, which

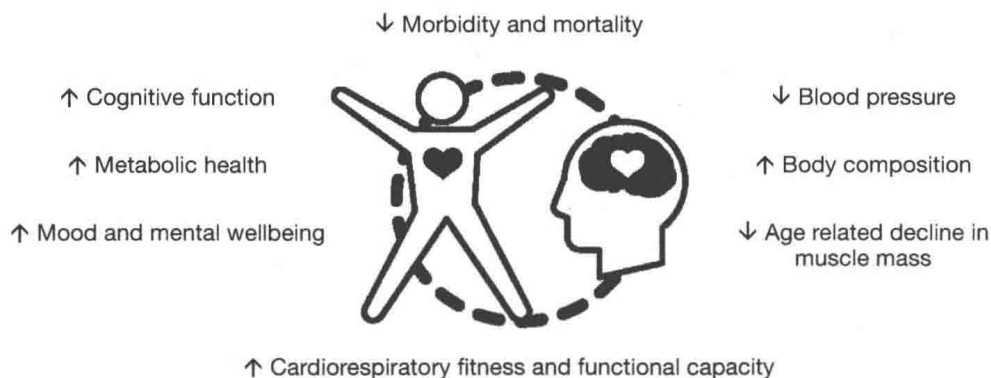


FIGURE 1.1 Example health benefits of regular physical activity.

is unlikely to be an effective long-term strategy. Thus, the exercise programme is only 'part of the puzzle' in improving health, fitness and performance (see Chapter 4).

The majority of guidelines presented within this book are based on evidence gathered from scientific studies. However, the exercise professional must consider that the strategies only work if the client engages with the exercise programme, i.e. exercise programmes do not work if they are not done! This seemingly obvious point is often overlooked when trainers devise exercise programmes which have a strong rationale, but fail to gauge the practicality of the approach or the client's feedback. For example, perceived enjoyment of exercise is an important determinant of exercise adherence (Hagberg et al., 2009). Continuous cardiorespiratory training (e.g. cycling for 30 minutes, five days per week) is an effective strategy for improving cardiorespiratory fitness, but it is unlikely to be an effective long-term strategy for a client who dislikes the training method. Health and fitness interventions have to include strategies that encourage a permanent change in positive self-selected and self-motivated behaviours to be truly effective (see Chapter 4). An example of one of these strategies is to promote an active lifestyle.

ACTIVE LIFESTYLE PROMOTION

A common reason people give for not exercising on a regular basis is 'lack of time' (Trost et al., 2002). This is possibly because of misconceptions associated with exercise. For example, some clients may believe that exercise must be performed in a gym and each session must last around an hour. One of the issues of promoting exercise instead of PA is that exercise can be more difficult to incorporate within a client's lifestyle based on the 'time barrier'. This is not an issue for 'fitness enthusiast' clients who are engaged with their fitness programmes, as these clients will typically modify other areas of their life, such as social or leisure activities, to maintain their fitness routine. However, a large majority of the clients a trainer will work with will not fall into this category. This is evident in the high attrition rates within exercise programmes (Wilson & Brookfield, 2009). Therefore, trainers should provide 'active lifestyle' guidance alongside their exercise programme to enable the client to work towards their health/fitness goals outside the gym environment. Active lifestyle guidance is a simple and effective means of increasing regular PA within a daily routine (Barr-Anderson et al., 2011). There are a number of methods to achieve this, such as using stairs instead of escalators, active commuting, standing desks and walking meetings. Unlike exercise within a gym, monitoring PA levels has historically proved difficult for trainers and clients. However, the development of technological devices, such as activity trackers, enables the client and trainer to objectively monitor daily PA levels, which can improve adherence to PA-based interventions (Lyons et al., 2014).

Sedentary time

The term sedentary is derived from the Latin 'sedere' meaning 'to sit' and is used to describe periods of inactivity outside sleep. The majority of people in non-physical