

PROVISIONAL

DELIVERY GUIDE

Theme: Physical training:
Optimising training

September 2015

GCSE (9–1) Physical
Education



We will inform centres about any changes to the specification. We will also publish changes on our website. The latest version of our specification will always be the one on our website (www.ocr.org.uk) and this may differ from printed versions.

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This resource is an exemplar of the types of materials that will be provided to assist in the teaching of the new qualifications being developed for first teaching in 2016. It can be used to teach existing qualifications but may be updated in the future to reflect changes in the new qualifications. Please check the OCR website for updates and additional resources being released. We would welcome your feedback so please get in touch.



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Introduction

Delivery guides are designed to represent a body of knowledge about teaching a particular topic and contain:

- Content: A clear outline of the content covered by the delivery guide;
- Thinking Conceptually: Expert guidance on the key concepts involved, common difficulties students may have, approaches to teaching that can help students understand these concepts and how this topic links conceptually to other areas of the subject;
- Thinking Contextually: A range of suggested teaching activities using a variety of themes so that different activities can be selected which best suit particular classes, learning styles or teaching approaches.

If you have any feedback on this Delivery Guide or suggestions for other resources you would like OCR to develop, please email resourcesfeedback@ocr.org.uk.

KEY



Click to view associated resources within this document.



Click to view external resources



Curriculum Content

Optimising training

- know the definition of the elements of FITT (Frequency, Intensity, Time, Type) and be able to apply these elements to personal exercise and training programmes.
- know different types of training, definitions and examples of:
 - continuous
 - fartlek
 - interval
 - circuit training
 - weight training
 - plyometrics
 - HIIT (High Intensity Interval Training).
- understand the key components of a warm up and be able to apply examples:
 - pulse raising
 - mobility
 - Stretching
 - dynamic movements
 - skill rehearsal.



Thinking Conceptually

Approaches to teaching the content

This topic lends itself to teaching through the integration of theory and practical lessons. Well-planned and carefully implemented practical lessons can provide engaging learning opportunities for the effective delivery of key theoretical concepts.

However, teachers may prefer to introduce the theoretical content in a classroom environment before attempting to apply the theory in practical lessons.

Common misconceptions or difficulties students may have

This topic is an important part of the large overarching theme of physical training. Students may struggle to understand the relationships between the various theoretical components of physical training and how they apply to the improvement of practical performance unless a clear progression from basic concepts is made.

An understanding of the FITT principle is made easier if students have firstly developed a firm grasp of the principles of progression and overload. Teaching the types of training needs to be firmly rooted in an understanding of the components of fitness to which they relate.

Conceptual links to other areas of the specification – useful ways to approach this topic to set students up for topics later in the course

Optimising training is a topic which links with many other areas of the GCSE PE specification and therefore provides numerous opportunities for reinforcing learning. Rather than forming a foundation for topics that will follow, the key function of the optimising training topics is that it provides students with the glue to stick together all the elements of the physical training section. Teachers may choose to deliver content as a stand-alone topic but it is suggested that they build towards a comprehensive understanding of optimised training.

The FITT principle explains how overload can be achieved within a progressive training programme. FITT should either be incorporated into the teaching of the principle of overload or introduced once training principles have been covered.



Thinking Conceptually

Types of training (continuous, interval, etc.) should be considered alongside the **components of fitness** to which they relate and in conjunction with **SMART goal setting**. The knowledge of how to optimise training needs to be applied to sport specific and **health, fitness and well-being** training programmes. Functional links with the **short-term** and **long-term (training) effects** of exercise on **the body systems** and **aerobic and anaerobic exercise** will provide opportunities to revisit these areas of the specification when introducing the different types of training.

Warming-up and cooling-down are integral to any training session and link to the **short-term effects of exercise on the body systems, injury prevention** and **mental preparation**.

Students can be helped to develop an integrated understanding of this topic by being involved in the design of a personal exercise programme.

Areas where links can be made to encourage a comprehensive understanding of both topics include:

- 1.1 Applied Anatomy and Physiology
 - Effects of exercise on body systems
 - Aerobic and anaerobic exercise
- 1.2 Physical Training
 - Components of fitness
 - Principles of training
 - Preventing injury in physical activity and training
- 2.1 Sports Psychology
 - Goal setting
 - Mental preparation
- 2.3 Health, fitness and well being
 - Health benefits of physical activity and consequences of a sedentary lifestyle



Thinking Contextually

ACTIVITIES

Links to a range of teaching and learning resources that can be used to enhance the delivery of the 'optimising training' topic are provided below.

Teachers may decide to teach the theory in a classroom environment before applying the knowledge and understanding to a practical setting. Flash card activities and the FITT grid can be used to help students develop their knowledge of the components of the FITT principle, the different types of training and the components and benefits of warming-up and cooling-down. These resources are also suitable for revision purposes.

Teachers are encouraged to deliver this topic whenever possible through the integration of theory in practical lessons. The 'HIIT Vs Continuous Training' activity provides the opportunity for students to consolidate their understanding of several aspects of physical training and anatomy and physiology by comparing two types of training designed to improve cardiovascular fitness. The High Intensity Circuit Training planning activity provides a frame work for developing an understanding of circuit training.

Various websites such as BBC Education, Top End Sports, Brian Mac Sports Coach and others, provide a range of e-resources for both teaching and learning. Links to several of these are provided, although some may be more useful as a teacher rather than a student resource.



Thinking Contextually

Activities	Resources
<p>ACTIVITY 1</p> <p>Flash card activities Teacher Resource 1 and Learner Resource 1</p> <p>Teacher instructions accompany a set of flash cards. The cards will need to be printed and laminated for use. Flash cards are most frequently used for revision/consolidation purposes. Each flash card has a key term on one side and a description on the other side. The activities outlined below are examples of ways in which the flash cards might be used. Tasking the students to create their own flashcards is also recommended.</p> <p>What am I?</p> <p>Students work in pairs or small groups. Students take it in turns to read out the <i>description side</i> of the flash card. The other student(s) must work out the key term being described.</p> <p>Describe me!</p> <p>Students work in pairs or small groups. Students take it in turns to read out the <i>Key term side</i> of the card. The other student(s) try to provide a detailed description of the term.</p> <p>Team shoot-out</p> <p>Teams take it in turns to shoot a basketball. If the shot goes in, the player gets to answer a question from the flash cards. If the shot doesn't go in, the next person from the other team gets to shoot.</p>	
<p>ACTIVITY 2</p> <p>FITT grid Teacher Resource 2 and Learner Resource 2</p> <p>This activity involves a research exercise followed by filling-in a grid with information on the frequency, intensity, time and type of training for five different components of fitness.</p>	



Thinking Contextually

Activities	Resources
<p>ACTIVITY 3</p> <p>HIIT vs Continuous Training Investigation Teacher Resource 3 and Learner Resource 3</p> <p>This activity is designed to encourage students to think about how training produces the desired improvements in fitness. It is a practically based activity that works as a teacher-led investigation into the effect of continuous and HIIT training on performance of a standardised test of cardiovascular endurance. It will require the students to participate in a training session three times a week for two weeks.</p>	
<p>ACTIVITY 4</p> <p>High Intensity Circuit Training Teacher Resource 4 and Learner Resource 4 and 5</p> <p>The aim of the activity is to help students understand how a circuit training session is designed.</p>	



Thinking Contextually

Activities	Resources
ACTIVITY 5 BBC Education (Bitesize) A range of Health Fitness and Training materials and links to other useful resources can be found in the GCSE physical education web pages. These include information on tailoring training programmes to help you achieve your fitness goals, the FITT acronym and calculating target zones make training more efficient. http://www.bbc.co.uk/education/topics/zp9d7ty	
ACTIVITY 6 Top End Sports This is an online source of information on sport, fitness, training and testing. Fitness Testing - comprehensive information on fitness testing for athletes. http://www.topendsports.com/testing/index.htm Fitness Training - link to some great fitness and training information. http://www.topendsports.com/fitness/index.htm	
ACTIVITY 7 Brian Mac Sports Coach Brian Mac's Sports Coach website is a good resource for teachers and students. It provides information on many aspects of training and coaching. It covers topics such as fitness testing, fitness development and training programmes. http://www.brianmac.co.uk/index.htm	
ACTIVITY 8 Sports Fitness Advisor This website styles itself as providing 'scientifically backed fitness advice for sport and life'. It is clearly laid-out and uses accessible language to provide information on training, which is organised by type (e.g. circuit, endurance) and by sport (from athletics to wrestling). http://www.sport-fitness-advisor.com/	



Thinking Contextually

Activities	Resources
ACTIVITY 9 Free Trainers Planning an exercise training programme There are many fitness websites providing information on how to design a personal exercise plan but few are free. 'Freetrainers' requires membership but as the name suggests, signing-up is free. Individuals can use the website to create their own work-outs or can download ready-made programmes. Teachers should fully familiarise themselves with this site so that they can help their students to navigate through the potentially confusing wealth of information. Teachers might prefer to use the site to download training programmes to share with their students. http://www.freetrainers.com/exercise/	
ACTIVITY 10 ExRx.net (Exercise Prescription on the Internet) ExRx.net is a free online resource. It includes an animated directory of exercises, as well as exercise instructions, work-out design templates, fitness assessment calculators, reference articles and more. This is a very useful resource for teachers. http://www.exrx.net/Beginning.html	



Teacher resource 1 Optimising Training

Flash Card Activities - Teacher Information

REVISION / CONSOLIDATION OF LEARNING

AIM

The aim of these activities is to help students consolidate their learning of Optimising Training. Each flash card has a key term on one side and a description on the other side. The activities outlined below are examples of ways in which the flash cards might be used. Tasking the students to create their own flashcards is also recommended.

ORGANISATION

You will need to print and ideally laminate the flash cards. There are 14 cards in the Optimising Training flash card set. You can choose to use the 'description' side of the card as the starting point OR the 'key term' side. Activities for each of these starting points are outlined below:

What am I?

Students work in pairs or small groups. Students take it in turns to read out the description side of the flash card. The other student(s) must work out the key term being described.

Describe me!

Students work in pairs or small groups. Students take it in turns to read out the key term side of the card. The other student(s) try to provide a detailed description of the term.

Team shoot-out

This is a fun way to kick start a lesson and as well as consolidating previous learning of theory content.

Split the group into two teams.

Teams take it in turns to shoot a basketball. If the shot goes in, the player gets to answer a question. If the shot doesn't go in, the next person from the other team gets to shoot.

When a shot goes in, the teacher reads out one part (one bullet point) of the description side of a randomly chosen flash card. The student has to choose whether to answer or ask their team for help. If they answer correctly, without help, they win their team 3 points. If they have to ask the rest of their team to help them answer, they only get 2 points (if the team gets it right). If the team need to ask for a second bullet point to be read out, only 1 point can be scored. Don't forget to keep a score sheet - and reward the winning team.

You don't have to use a basketball hoop – lots of other challenges work equally well. For example at the start of a lesson where you are looking at agility you might set-up two Illinois agility tests, side by side. Race members of each team around the test; with the winner earning their team the right to answer the question



Continuous training

- **Training without any breaks or rest periods**
 - **Aerobic training**
 - **Moderate to vigorous exercise (60-85% maximum heart rate)**
- **Exercise for 30 – 60 minutes each session**

Fartlek

- **Means 'speed play'**
- **Continuous exercise where the intensity (speed) of training can be changed**
- **Training may include periods of jogging, sprinting and walking**



Interval training

- Training with periods of exercise alternating with periods of rest
- Can be aerobic or anaerobic

HIIT (High Intensity Interval Training)

- Type of interval training
- Exercise should be 'all-out' or very high intensity
- Exercise periods should be short (1 minute or less)
- Rest periods should be long (approx. 4 minutes)



Weight training

- **Type of interval training**
- **Type of training used to develop strength**
- **Involves using sets and repetitions**
- **Body has to overcome resistance**

Plyometric training

- **Training that involves bounding, hopping and jumping**
- **Muscles stretch before they contract, in one continuous movement**
 - **Used to develop speed, strength and power (combined speed and strength = power)**



Circuit training

- **Type of interval training**
- **Training that involves 8-12 different exercises performed one after the other**
- **Exercise periods usually short and high intensity**
- **Rest periods usually short**
- **The same muscle group is not exercised twice in a row**

Flexibility training/ stretching

- **Training used to develop flexibility/to increase range of movement**
- **Can be passive or active**
- **Can be static or dynamic**



Frequency

- The F of the FITT principle
- Frequency = how often/how many days a week you train
- Frequency depends on fitness level and on the type of training you are doing
- To overload using Frequency - you would train more often, e.g. 3 times a week rather than 2

Intensity

- The I of the FITT principle
- Intensity = how hard you train
- Intensity depends on fitness level and on the type of training you are doing
- To overload using Intensity - you would train harder, e.g. lifting 30kg rather than 25kg



Time

- The first T of the FITT principle
- Time = how long each training session is/training duration
 - Time will depend on the intensity of the training session
- To overload using Time - you would train for longer, e.g. running for 25 minutes on a treadmill, rather than 20 minutes

Type

- The second T of the FITT principle
- Type = which type of training
- Type of training will depend on the fitness component and muscle groups you are training



Warm-up

- **Important part of any training session**
 - **Involves three stages:**
 1. **Gentle aerobic exercise**
 2. **Stretching**
 3. **Sport specific movements**
 - **Prepares body for exercise**
 - **Aims to increase breathing, heart rate and muscle temperature**

Cool-down

- **Important part of any training session**
 - **Involves two stages**
 1. **Gentle aerobic exercise**
 2. **Static stretching**
 - **Aims to slowly decrease breathing, heart rate and**



Teacher resource 2 Optimising Training

FITT grid - Teacher Information

AIM

The aim of this activity is to help students develop an understanding of the FITT principle and how it applies to different types of training. A definition of FITT can be found here: http://www.bbc.co.uk/schools/gcsebitesize/pe/exercise/1_exercise_principles_rev1.shtml. Learners could be asked to undertake an internet search to find the level of information required. Some useful sites could include:

<http://www.sport-fitness-advisor.com/fitt-principle.html>
<http://exercise.about.com/od/weightloss/g/FITTprinciple.htm>
http://www.workoutsforyou.com/article_fitt.htm

The grid on the following page is an example completed grid and can be used to show suggested answers to the activity.

ACTIVITY

- This activity involves teachers working through the information with students completing the blank grid.
- Teachers are encouraged to engage students in a structured discussion of each row of information (FITT).
- Teachers should give the range of possible answers to students so that they can match the answers to the type of training/component of fitness.
- The information is detailed and teachers might choose to provide a simplified version.

WORKSHEET INSTRUCTIONS:

Hand out blank grids

1. Define FITT
2. Define cardiovascular endurance, muscular endurance, speed, strength, flexibility
3. IDENTIFY THE TYPE OF TRAINING

Ask students to select the most appropriate Type of training for the named components of fitness. Which type of training would be most appropriate to improve (and maintain) the named components of fitness (cardiovascular endurance, muscular endurance, speed, strength, flexibility)?

TYPE

Continuous	Interval /HIIT	Weight training	Stretching
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4. IDENTIFY THE FREQUENCY OF TRAINING

Ask students to select the appropriate Frequency for each type of training /component of fitness, from the list. How many times a week should you train to improve (and maintain) the named components of fitness (cardiovascular endurance, muscular endurance, speed, strength, flexibility) using the selected types of training?

FREQUENCY

Daily (minimum 3 days/week)	Whole body exercise 3-5 days/week
Each major muscle group should be trained 2-3 days/week	Each major muscle group should be trained 2-3 days/week
3-4 days/week	

Teacher resource 2 Optimising Training

FITT grid - Teacher Information

5. IDENTIFY THE INTENSITY OF TRAINING

Ask students to select the appropriate Intensity for each type of training/component of fitness, from the list. How hard should you train to improve (and maintain) the named components of fitness using the selected types of training?

INTENSITY

- **Moderate and/or vigorous (60-85% maximum heart rate)**
- **90-100% maximal speed**
- **Moderate to hard (60%–70% 1RM)**
- **Stretch to the point of feeling tightness**
- **Light to moderate (less than 50% 1RM)**

6. IDENTIFY THE TIME OF TRAINING

Ask students to select the appropriate Time for each type of training/component of fitness, from the list. How long should you train to improve (and maintain) the named components of fitness using the selected types of training? For some types of training this is not given in minutes or seconds but in how many sets and repetitions.

TIME

- **Static stretch**
 - 10–30 seconds
 - 2-4 repetitions
- **8–12 repetitions**
- **2-4 sets**
- **Rest intervals of 2–3 min between each set**
- **A rest of at least 48 h between sessions**
- **15–20 repetitions**
- **1-2 sets**
- **Rest intervals of 2–3 min between each set**
- **A rest of at least 48 h between sessions**
- **30-60 minutes/day**
- **Less than 10 seconds**
- **4-20 repetitions**
- **Work : rest ratio of at least 1:6**

6. Which comments apply to which type of training/component of fitness?

COMMENTS

- **Progressively overload by increasing resistance, and/or repetitions per set, and/or frequency**
- **Progressively overload by increasing frequency, intensity and/or number of repetitions**
- **Progressively overload by increasing resistance, and/or repetitions per set, and/or frequency**
- **Progressively overload by stretching to the point of feeling tightness**
- **Stretching is most effective when the muscle is warm**
- **Progressively overload by increasing time, frequency, and/or intensity**
- **Can also use HIIT**

Learner resource 2

	Cardiovascular Endurance	Muscular Endurance	Speed	Strength	Flexibility
Frequency	Whole body exercise 3-5 days/week	Each major muscle group should be trained 2-3 days /week	2-3 days/ week	Each major muscle group should be trained 2-3 days /week	Daily (a minimum of 3 days/ week)
Intensity	Moderate to vigorous (60-85% maximum heart rate)	Light to moderate (less than 50% 1RM)	90-100% maximal speed	Frequency	Frequency
Time	30-60 minutes/day	<ul style="list-style-type: none"> • 15–20 repetitions • 1-2 sets • Rest intervals of 2–3 min between each set • A rest of at least 48 h between sessions. 	<ul style="list-style-type: none"> • Less than 10 seconds • 4-20 repetitions • Work : rest ratio of at least 1:6 	<ul style="list-style-type: none"> • 8–12 repetitions • 2-4 sets • Rest intervals of 2–3 min between each set • A rest of at least 48 h between sessions. 	<ul style="list-style-type: none"> • Static stretch <ul style="list-style-type: none"> - 10–30 s - 2-4 repetitions
Type	Continuous	Weight training	Interval /HIIT	Weight training	Stretching
Comments	<ul style="list-style-type: none"> • Progressively overload by increasing time, frequency, and/or intensity • Can also use HIIT 	<ul style="list-style-type: none"> • Progressively overload by increasing resistance, and/or repetitions per set, and/or frequency 	<ul style="list-style-type: none"> • Progressively overload by increasing frequency, intensity and/or number of repetitions 	<ul style="list-style-type: none"> • Progressively overload by increasing resistance, and/or repetitions per set, and/or frequency 	<ul style="list-style-type: none"> • Progressively overload by stretching to the point of feeling tightness. • Stretching is most effective when the muscle is warm



Learner resource 2

	Cardiovascular Endurance	Muscular Endurance	Speed	Strength	Flexibility
Frequency					
Intensity					
Time					
Type					
Comments					



Teacher resource 3 Training for Cardiovascular Fitness

Which is more effective, Continuous or HIIT training?

AIM

This activity is designed to encourage students to think about how training produces the required improvements in fitness. It is a practically based activity that works as a teacher-led investigation into the effect of continuous and HIIT training on performance of a standardised test of cardiovascular endurance. It will require the students to participate in a training session three times a week for two weeks. As such, students should be provided with a full explanation of the aims of the activity and what is involved.

ORGANISATION

1. Pre-training test: students will all need to complete a standardised test of CV endurance, such as the Multistage fitness test.
2. Students will then need to be split into two groups. One group will be the HIIT training group and one the continuous training group.
3. Students will need to train for 20 minutes (HIIT or continuous) for 2 weeks/3 times a week.
4. Post-training test: students will need to repeat the CV endurance test that they took before the start of training.
5. Students should complete a physical activity readiness questionnaire (PAR-Q) if local regulations require this.
6. There are student question sheets which may be used to support the investigation.

ACTIVITY

Session 1

- Warm-up
- All students participate in a selected test of CV endurance (Results must be recorded)
- Cool down

Sessions 2- 7 (training)

Students are randomly allocated to either a HIIT or continuous training group. Depending on local guidelines, students may/may not be able to do their training independently. Teachers should plan the training sessions accordingly.

HIIT training group

- Warm-up
- Exercise:
 - 30s all-out exercise (ideally on a cycle ergometer/static gym bike, but any all-out exercise that uses the whole body or large muscle groups will do)
 - Followed by 4 min 30 s recovery/active rest
- Repeat: X 4
- Total time = 20 minutes
- Cool down

Continuous training group

- Warm-up
- 20 min non-stop exercise at moderate/vigorous intensity (60-85% maximum heart rate). Using %HRmax to estimate intensity, a 15-16 year old should exercise at approx. 123-175 bpm
- Cool down

Session 8

- Warm-up
- All students repeat the selected test of CV endurance (Results must be recorded)
- Cool down

Teacher resource 3 Training for Cardiovascular Fitness

Which is more effective, Continuous or HIIT training?

Teachers might like to read some of the science behind this investigation:

One useful article is Gibala, MJ (2007). High-intensity interval training: New insights, Sports Science Exchange, 20(2), 1-5. http://g-se.com/uploads/biblioteca/gssi_interval_trainig.pdf

The American College of Sports Medicine's (ACSM's) public information brochure on high-intensity interval training may also provide useful information:

Click the link below to download a free print-quality PDF. <https://www.acsm.org/docs/brochures/high-intensity-interval-training.pdf>



Teacher resource 3 Training for Cardiovascular Fitness

Which is more effective, Continuous or HIIT training?

Continuous Vs HIIT training – Student question sheet 1

What is continuous training?

Exercise training without any breaks or rest periods.

How often should you train using this method?

3-5 sessions per week.

How hard should you work in continuous training?

Moderate to vigorous intensity
60-85% HRmax/40-65%HRR/RPE (Borg's 6-20 scale) 12-14 'somewhat hard'.

How long should you train for?

For at least 20 minutes
Ideally between 30 and 60 minutes each training session.

How would you warm-up for a continuous training session?

1. Light aerobic activity (to increase HR, muscle blood flow and raise body temp)
2. Stretching – static/dynamic (to increase range of movement at joints i.e. improve flexibility and possibly improve performance).

How would you cool-down after a continuous training session?

1. Gradually reduce intensity – (to gently return body to its pre-exercise state).
2. Static stretching – (to increase the range of movement and therefore decrease the risk of injury in people with tight muscles).

What is HIIT training?

High Intensity Interval Training.

How often should you train using this method?What is HIIT training?

2-3 session per week.

How hard should you work in HIIT training?

High Intensity.
Over 80% HRmax.



Teacher resource 3 Training for Cardiovascular Fitness

Which is more effective, Continuous or HIIT training?

How long should each interval last?

Usually approx. 30 seconds for each exercise bout.

How long should each recovery/rest period last?

Usually approx. 4-5 minutes active recovery between each exercise bout.

How many times should the exercise be repeated?

Usually 4 repeats so that total exercise time = approx. 20 minutes.

How would you warm-up for a HIIT training session?

1. Light aerobic activity (to increase HR, muscle blood flow and raise body temp).
2. Stretching – static/dynamic (to increase range of movement at joints/ i.e. improve flexibility and possibly improve performance).

How would you cool-down after a HIIT training session?

1. Gradually reduce intensity – (to gently return body to its pre-exercise state).
2. Static stretching – (to increase the range of movement and therefore decrease the risk of injury in people with tight muscles).



Learner resource 3 Continuous Vs HIIT training

– Student question sheet 1

What is continuous training?

How often should you train using this method?

How hard should you work in continuous training?

How long should you train for?

How would you warm-up for a continuous training session?

How would you cool-down after a continuous training session?

What is HIIT training?

How often should you train using this method?

How hard should you work in HIIT training?



Learner resource 3 Continuous Vs HIIT training

– Student question sheet 1

How long should each interval last?

How long should each recovery /rest period last?

How many times should the exercise be repeated?

How would you warm-up for a HIIT training session?

How would you cool-down after a HIIT training session?



Learner resource 3 Continuous Vs HITT training

– Student question sheet 2

Which training group are you in?

Which test of cardiovascular fitness did you use?

What was your score in this test before training?

What was your score in this test after training?

Have you improved your score or not? Can you explain this?

Overall, in your class, which type of training produced most improvement in test performance? Can you explain this?

Ask others in the class: Who enjoyed their training most (students in the Continuous or HITT group)? Why was this?

Why might enjoyment be an important factor for people undertaking a training programme?



Learner resource 3 Continuous Vs HITT training

– Student question sheet 2

Extension task

Collect all the fitness test scores for students in your class. Calculate the average values and plot the results on a graph to illustrate the differences before and after training for both training groups.



Teacher resource 4 High intensity circuit training

- Teacher Information

AIM

The aim of this activity is to help students understand how a circuit training session is designed. There are 12 exercise cards. Each has a picture on one side and space on the other for students to complete.

ORGANISATION

You will need to print and ideally laminate the exercise cards. You will also need to print out blank copies of the student worksheet. The activity is a planning exercise but it is expected that the students will be given the opportunity to run /take part in the planned circuit, either in the same lesson or in a follow-up lesson. Effective reviewing the HICT once it has been performed will provide many opportunities for linking between different topics within the specification. Another follow-up activity might involve students adapting the circuit to make it sport specific.

ACTIVITY

1. Explain the aim of the activity to the class
2. Hand-out the student worksheets and copies of the exercise cards
3. Arrange students in pairs or small groups to complete the activity
4. Lead the students through the worksheets (teacher answers are supplied on the following pages)
5. The exercise order on the completed table is there for guidance only. Any other order, where the muscle groups being exercise are effectively rotated, will be just as effective.

YouTube

There are YouTube videos that run through a circuit, such as:

<https://www.youtube.com/watch?v=U6etLKswjq8>

Or <https://www.youtube.com/watch?v=l8cpjmZkz3I>

iPhone apps

There are iPhone apps that run through a circuit, such as:

<https://itunes.apple.com/us/app/7-minute-workout-seven-high/id650276551?mt=8&ign-mpt=uo%3D4>

Or <https://itunes.apple.com/gb/app/7-minute-workout/id650762525?mt=8>



Teacher resource 4 High intensity circuit training

- Teacher Information

Introduction to circuit training

- Circuit training is a type of **interval training**
- It usually involves participants performing between **9 and 12** exercises, one after another
- Each exercise is performed for specific **length of time**, or a specific number of **repetitions**
- Each exercise is performed at a specific **intensity**
- There is usually a rest period between **each exercise**

High Intensity Circuit Training (HICT)

- HICT is a quick and efficient way to get fit
- It uses short, intense exercise bouts and short rest periods, so overall exercise time **is less**
- HICT can help improve your **cardiovascular endurance, muscular endurance and strength**
- HICT can help you lose **excess body weight and body fat**
- Because it involves high intensity exercise, it may not be suitable for the following people:
overweight/obese, detrained, previously injured, the elderly
- People with high blood pressure /heart disease should avoid isometric (static) exercises
- All exercises should be performed using the correct technique while breathing properly (no breath holding)

Exercise Selection

Important things to remember when choosing the exercises:

All major muscle groups should be exercised equally (to allow a balance of strength)

The exercises should be safe and appropriate for the participant

Exercise Order

Important things to remember when choosing the exercise order:

Allow muscle groups a rest after they have been exercised

If an exercise significantly increases your heart rate (e.g. total body, dynamic), follow it with an exercise that will allow heart rate to recover

Exercise time/number of repetitions

Important things to remember when choosing the timing/number of reps for a HI circuit:

Participants cannot maintain high intensity exercise for long.

Each exercise for HICT should last 20-30 seconds.

Rest between exercises

Important things to remember when choosing how long to rest:

Rest after each exercise needs to be short for HICT (less than 30 seconds)

To be time efficient, transition between exercises should be less than 15 seconds

Teacher resource 4 High intensity circuit training

- Teacher Information

Planning a High Intensity Circuit Training session

Exercise Selection

There are 12 exercise cards. On each card:

1. Name the exercise (e.g. Jumping Jacks)
2. State which muscle groups are used (i.e. Lower body/Upper body/Total body/Core)
3. Give instruction for performing the exercise (Nb. for some people you may need to provide an alternative exercise)

Exercise Order

This order is an example only. Any other order, where the muscle groups being exercised are effectively rotated, will be just as effective.

Station	Exercise	Muscle groups
1	Jumping Jacks	Total body
2	Wall sit	Lower body
3	Press-ups	Upper body
4	Abdominal crunches	Core
5	Step-ups	Total body
6	Squats	Lower body
7	Triceps Dips	Upper body
8	Plank	Core
9	High knee run	Total body
10	Lunge	Lower body
11	Rotating press-ups	Upper body
12	Side plank, switch sides half way	Core

Exercise time/number of repetitions

How long/how many reps each exercise should be

20-30 seconds for each exercise

Rest between exercises

How long the transition between exercises should be

10-15 seconds to move from between exercises

1-5 minutes rest between circuits

Number of repeats (sets)

How many times the circuit should be repeated

2-3 repeats (if transitions/rest periods are managed effectively total circuit time is ~20 or ~30 min, and HI exercise time is about 12 to 18 mins)

Learner resource 4 High intensity circuit training

– Student worksheet

Introduction to circuit training

- Circuit training is a type of
- It usually involves participants performing between exercises, one after another
- Each exercise is performed for specific , or a specific number of
- Each exercise is performed at a specific
- There is usually a rest period between

High Intensity Circuit Training (HICT)

- HICT is a quick and efficient way to get fit
- It uses short, intense exercise bouts and short rest periods, so overall exercise time
- HICT can help improve your
- HICT can help you lose
- Because it involves high intensity exercise, it may not be suitable for the following people:
- People with high blood pressures /heart disease should avoid isometric (static) exercises
- All exercises should be performed using the correct technique while breathing properly (no breath holding)

Exercise Selection

Important things to remember when choosing the exercises:

Exercise Order

Important things to remember when choosing the exercise order:

Exercise time/number of repetitions

Important things to remember when choosing the timing/number of reps *for a HI circuit*:

Rest between exercises

Important things to remember when choosing how long to rest:



Learner resource 4 High intensity circuit training

– Student worksheet

Planning a High Intensity Circuit Training session

Exercise Selection

There are 12 exercise cards. On each card:

1. Name the exercise (e.g. Jumping Jacks)
2. State which muscle groups are used (i.e. Lower body/Upper body/Total body/Core)
3. Give instruction for performing the exercise (Nb. for some people you may need to provide an alternative exercise)

Exercise Order

Station	Exercise	Muscle groups
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Exercise time/number of repetitions

How long/how many reps each exercise should be

Rest between exercises

How long the transition between exercises should be

Number of repeats (sets)

How many times the circuit should be repeated



Learner resource 5



Name of exercise:

Muscle groups used:

Instructions:



Name of exercise:

Muscle groups used:

Instructions:



Learner resource 5



Name of exercise:

Muscle groups used:

Instructions:



Name of exercise:

Muscle groups used:

Instructions:



Learner resource 5



Name of exercise:

Muscle groups used:

Instructions:



Name of exercise:

Muscle groups used:

Instructions:



Learner resource 5



Name of exercise: –

Muscle groups used:

Instructions:



Name of exercise:

Muscle groups used:

Instructions:



Learner resource 5



Name of exercise:

Muscle groups used:

Instructions:



Name of exercise:

Muscle groups used:

Instructions:



Learner resource 5



Name of exercise:

Muscle groups used:

Instructions:



Name of exercise:

Muscle groups used:

Instructions:





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