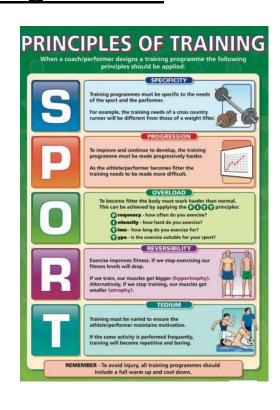
## **Year 11**

# Unit R042 Applying Principles of Training Spring 1 Blended Learning Booklet



Name:



Aim to complete two lessons each week.

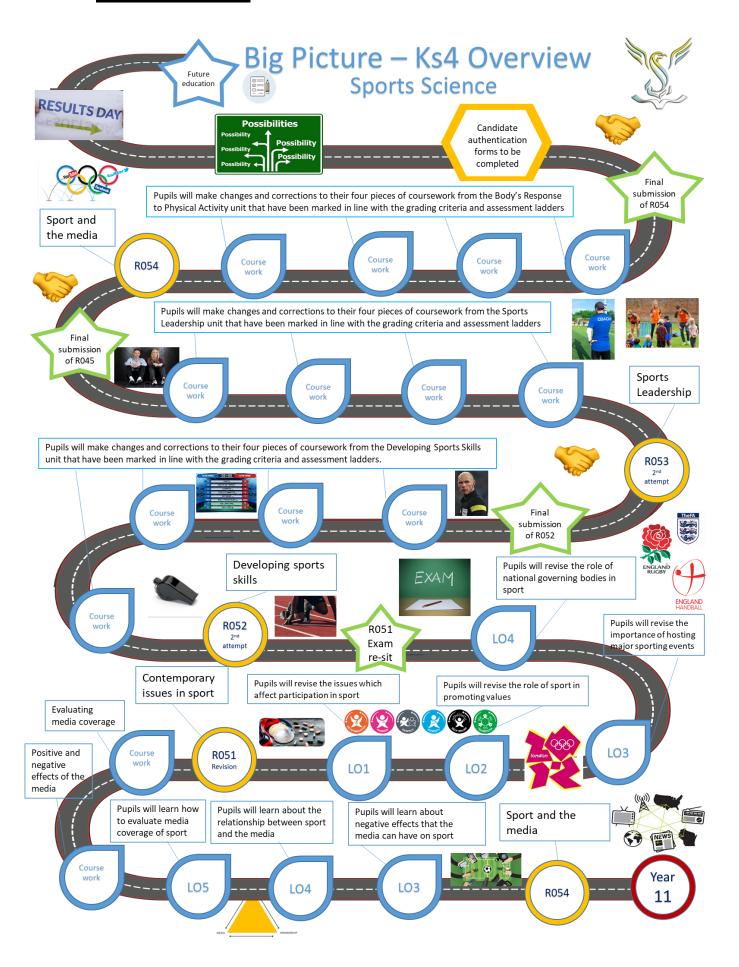
All video links and content are also uploaded on ClassCharts The knowledge organisers have all the key information and vocabulary to help with this unit.

Upload all work onto ClassCharts for feedback

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# **Big Picture**



**UP NEXT** 

## **Zoom in**



Subject: Sports Science Year: 11 Unit: R042 Applying Principles of Training

#### AIMS

To introduce students to

- · Know the principles of training in a sporting context.
- · Know how training methods target different fitness components.
- · Be able to conduct fitness tests.
- · Be able to develop fitness training principles.

#### DEVELOPING COURAGE

- \*C Writing, speaking and listening to others Using body language to help communication.
- \*O Freedom to speak safely in class without fear of faliure.
- \*U Showing respect for others in the team and valuing their contributions.
- \*R Staying with a problem until it is resolved.
- \*A Monitoring performance and sharing in
- \*G Taking on roles and responsibilities that support others in the learning environment.
- ·E Working in a positive atmosphere.

#### **CAREERS** · Sports nutrition

- Physiotherapy
- · Sports coach
- · PE teacher Personal trainer



Developing diet plans for sports perfromers.

The role of nutrients.

Effects of a poor diet

What is a healthy

balanced diet.





#### PREVIOUS LEARNING

- Factors that influence injury.
- Warm ups
- Cool downs
- Responding to injuries in a sporting context.
- · Responding to common medical conditions.

#### WHAT WE KNOW/ REMEMBER

## RECOMMENDED READING

#### PERSONAL OBJECTIVES

# **Knowledge Organiser**

The heart,

Imgs, blood & blood

vessels to deliver Oz

to working muscles.

for a prolanged time

without fatigue.

Strang heart - good

Oz delivery

Aerobic system uses Oz

to break down carbohydrate

- energy.

Vital for endurance athletes - run,

swim, cycle. Developed by aerobic or

continuous training. Test - Multi-

stage (Bleep) fitness Test, Cooper 12

ME - 'the ability to repeat a movement without becoming fatigued.' Weight training - low weights, high reps can develop more slow twitch muscle fibres. I delaying onset of fatigue.

Vital - endurance athletes, run, swim, cycling.

min rum.

WHAT is vicloded?

- CARDIO VASCULAR

ENDURANCE / STAMINA

- FLEXIBILITY

- MUSCULAR ENDURANCE

- LAGILITY

- LMUSCULAR) STRENGTH - BALANCE

- SPEED

- CO-ORDINATION

- REACTION TIME

OF FITNESS

of a muscle to apply a force against a resistance. Amount of force generated depends on size of muscle. Developed by weight training - high weights low reps. Vital for throwing events in athletics, rugby - tackling & weight lifting - clean & jerk.

Test - I rep max. hand, in p test/

<u>WHY</u> test fitness levels?

Measures fitness PRE,

MID & POST training

schedule/programme.

Sets targets, enables
improvements to be seen,
aids motivation & can

compare to normative
data.

SPEED - the ability to move quickly across ground/ move limbs rapidly. Can be

- leg - sprinter

- arm/hand - boxer

- thought - decision
making by a rug by no. 10

Partly genetic, though
improved by training.
(interval training).

Vital for sprinter, (any
land), fast bowler.

CO-ORDINATION - the

bility to use z or more body

arts at the same time."

an be - HEAD ?

- HAND L EYE

:od/Eye- heading a football

2001/Eye→ catching a netball

- moving hand to hit

a ball is tennis

sot/Eye - taking a conversion

is rugby.

ital in racquet sports-badmiton,

Test - wall throw test / alt hound wall

REACTION TIME - 'the time

aken to respond to a given itimolos.' Vital vi sprinting, be

it running, swimming or cycling;

Test - Ruler Drop.

Learn all TEN & be able to link with Methods of Training (MOT)

AGILITY - 'the ability to change direction quickly & in control. 1 3 main areas

- Core - lower to upper body

- Balance - full control

- Flexibility - efficient movement

Vital- for a football/rugby winger. Test Illinois Agility

COMPONENTS OF FITNESS

BALANCE - the ability

to keep your centre of mass over a base of support.

Can be - static (still) eg holding a handstand

- dynamic (movig) tumbling in gymnastics

Vital - n gymnostics, donce

Test - the Standing Stalk Test

## POWER

speed x strength. the ability to perform a strength movement quickly.) The ability to move an object or athlete up or forward

Vital - throwing vi athletics, high jump, sprint starts. Developer by Plyometrics & weigh Training.

Test - standing hang Jump, Vertical/Sorges Jump.

FLEXIBILITY the

range of movement at a joint. ' Reduces risk o injury. Less likely to pu strain a muscle. Increases reach / stretch, due to stranger ligaments & more blood flow - muscles.

Vital - hurdling, dance gymnostics.

Test - Sit & Reach.

## REVERSIBILITY

Remember - Specificity

PROGRESSION

KEVERSIBILITY

NTENSITY

FREQUENCY

SPECIFICITY

you will lose gains' to fitness if you stop training eg-may lose gains in CVE if stop running 5km 3 times per week. Mani

OVERLOAD

TIME

TYPE

reasons - illness and for

injury.

#### OVERLOAD

need to

work the body harder than normal for <u>adaptations</u> to occur. However, the overload must be gradual. Too much, too soon may result in injury - Reversibility will occur. eg- a runner may run - more often

- faster / higher vitensity to develop their Carolio - Vascular Endurance. To overload the booky you must manipulate the F principle.

PRINCIPLES OF TRAINING

PROGRESSION is

used in conjunction with overload. Training must continue to become harder more difficult/more intense otherwise adaptations to the body will stop. However, training has to increase in intensity gradually, Otherwise it may lead to injury & reversibility.

training matches the activity, sport or position. eg Long dustance runner trains aerobically (continuous training). The training in rugby will differ for backs & forwards. In football a goalkeeper & midfielder need different components of fitness & so will train differently.

Progression & Overload can be maintained by manipulating 'now often' FREQUENCY - how many sessions? Add 1 more.

INTENSITY- 'how hard'. increase Heart Rate working at/add weights Time - 'how long' the sessions last. Train for longer / less rest.

TYPE- the 'method' of training. Add/alter method.

#### INTERVAL

periods of work, periods of rest. Rest can be active (walking) or just rest . <u>Vital</u> for sprint activities - run, swim, . cycle & games players - eg basketball. work - rest - work Focus - time, intensity, no. of reps, no. of sets & rest period.

The following are all types of interval training.

CIRCUIT & can develop

CVE, MS & ME. Complete exercise

- rest - next exercise. 8-12 stations. Repeat 2-3 times (Progression & Overload) Work alternate muscle groups to avoid injury/fatigue.

WEIGHT - can use free weights and/or resistance machines.

MS- high weight /low reps ME- low weight / high reps I rep - a complete movement 1 set - number of reps. (8-10) Vital in speed, strength & power events. eg-rugby, throwing. Exercise muscle groups.

NEED to Know ....

CONTINUOUS

- FARTLEK

- CIRCUIT - INTERVAL

- WEIGHT

- PLYOMETRIC

- HIIT

METHODS

OF

TRAINING

HIIT - High Intensity Interval Training - periods of high intensity work followed by rest repeat. 80-90% MHR. Overload - increase work time, decrease rest.

IPLYOMETRICS - develops power. lapid & repeated stretch & contract of muscles. Max force, short time. Develops explosive -ness. Bounding, hopping, throw & jumping.

CONTINUOUS - non stop/no

rest periods. Minimum - Zomins at a steady (low/moderate) pace. work at 60-80 % MHR. MHR= 220 - age. Develops Carolio-Vascular Endurance. (CVE) walk, run, cycle, swim. In Sport - Pre-season training for games players - high focus. on continuous training.

continuous training as 'non stop' though also similar to interval as periods of high & low intensity. Swedish for 'SPEED PLAY'. Involves changes in pace/speed & gradient GR8 for games players as works both aerobic & amaerobic systems. Football, rugby, hockey - many changes in pace. Develops CVE

eg sprint,

recovery rum.

Arms - shot putter Legs - footballer Body - wrestler

#### Lesson 1 and 2

## Know the principles of training in a sporting context

<u>LI:</u>	: understand the principles of training in a sporting context
<u>St</u>	<u>carter</u>
W	/hat is a training programme?
•••	
•••	
•••	
	Define principles of training
Tł	ne principles of training are:
	•
	•
	•
	•
	•

Principle of training	What is it?	Things to consider:	Sporting example
		F	
Progression		Т	
		Т	
		A	
Specificity			
Reversibility / Regression			

Moderation		
Variance		

Complete the table to show the principle of **Progression** in an athletes training programme:

	Week 1	Week 2	Week 3	Week 4
Frequency				
How often				
Intensity				
How hard				
Time				
How long				
Type				
What type				

Adherence	
commitment	
How does us	sing the FITTA principle ensure an athlete is progressing in their
chosen spor	t?

Link the following training activities to the **Specific** sports:

100M SPRINT 10KM RUNS 3 TIMES A

WEEK

RUGBY RUN, REST, RUN, REST, RUN

REST ETC...

FOOTBALL REACTION TRAINING

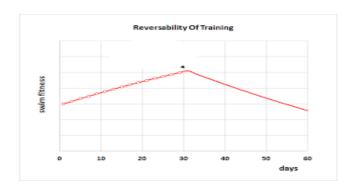
**OVER 30M** 

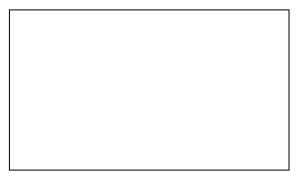
MARATHON UPPER BODY WEIGHT

**TRAINING** 

#### **Reversibility / Regression:**

Identify on the graph below where the athlete has **Reversed / Regressed** in their training and explain what is now happening to their performance.





Complete the table to show how often a professional footballer and a beginner would **moderate** their training. Write down whether they would:

Trian Rest

Play a game

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Professional							
Beginner							

What different methods of training could an athlete use to show variance in
their training programme?
Think about the different things you do when you train.

Create a 2 week basic training programme that shows your understanding of variance.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Week 1							
Week 2							

#### Lesson 3 and 4

<u>Starter</u>

#### Be able to conduct fitness tests

List as many fitness components sportsman/sportswomen would need in your chosen sport.

LI: how different training methods target the different components of fitness

Task 1								
Describe each of the following components of fitness:								
Component of fitne	ess	Definition	Sporting	Example				

#### Task 2

Create a player profile that identifies the importance of each component in order for your chosen player to be successful in your chosen sport.

#### 1 = no important at all

#### 10 = essential

e.g. Usain bolt, 100m sprint, power = 10, cardiovascular endurance = 1, agility = 1, muscular endurance = 3, balance = 7, strength = 8, flexibility = 5.

Players name:Co	ourtney Laws	<b></b>

Sport:.....Rugby.....

COMPONENT	SCORE	COMPONENT	SCORE

Sports Science

R042 Applying the principles of training

#### Lesson 5

#### **Applying principles of training**

#### LI: know the equations of aerobic and anaerobic exercise

#### **Starter**

Link each of the components of fitness with the correct definitions.

STRENGTH

An even distribution of weight enabling someone or something to remain upright and steady

**POWER** 

Is the ability of a **muscle** or group of **muscles** to repeatedly exert force against resistance.

MUSCUAR ENDURANCE

The ability to quickly change body position or direction of the body.

CARDIOVASCULAR ENDURANCE

The range of motion of your joints or the ability of your joints to move freely.

**BALANCE** 

The maximal force you can apply against a load.

**FLEXIBILITY** 

The ability of the heart, lungs and blood vessels to deliver oxygen to your body tissues over a prolonged period of time.

**AGILITY** 

Is the ability to exert maximum force as quickly as possible, as in jumping, accelerating and throwing.

There are two types of training we can do that are controlled by our breathing:

0

Aerobic exercise uses oxygen to fuel the body, can be maintained for			
periods of time. It includes activities like			
and The			
intensity of the exercise is and the duration is			
Anaerobic exercise uses no oxygen to fuel the body as energy is produced from the			
supplies already in the body and is used for powerful bursts.			
Activities are usually less than seconds. It includes activities like			
and			
The intensity is and duration is			

Lesson 6

#### Lesson 6

#### LI: Identify a variety of training methods

TARGETED COMPONENT OF FITNESS	SPECIFIC TRAINING METHOD	DEFINITION/ WHAT IS INVOLVED	PRACTICAL EXAMPLE OF EXERCISES OR A SESSION
	Continuous training	Continuous training is a type of physical training that involves activity without rest intervals.	Running/ swimming/ cycling/ rowing for 30minutes at a moderate intensity.
Cardiovascular training	Fartlek training		

	Interval training	
	Resistance machines	
Resistance training (muscular endurance & strength)	Free weights	
	Circuit training	
Power training	Interval training	

	Plyometric training	
	Repetition and acceleration sprint training	
Flexibility training	Static stretching	

	Dynamic stretching	
	Passive stretching	
	Agility ladders	
Agility training		

	Agility hurdles	
Balance training	Balance board	
	Exercise ball	

# Pre coursework tasks

## Assessment preparation

Think about the tasks that your teacher may set you to assess your knowledge of the principles of training. Make sure you:

- know what the principles of training are and can relate them to different activities
- are clear about what is meant by:
  - progressive overload

moderation

specificity

o variance.

o reversibility/regression

How will you demonstrate the application of each of these to different sporting activities?

#### Mark scheme

10'	Know the principles of training in	a sporting context
Marie band 1	Mark hand 2	Mark band 3
training with a <b>few</b> examples.	of training with a range of	Describes <b>all</b> of the principles of training with a <b>range</b> of <b>developed</b> examples which are applied to <b>specific</b> sporting contexts.

#### Assessment preparation

Think about the tasks that your teacher may set you to assess your knowledge of training methods. Make sure you:

- know what the components of fitness are
- are clear about what is meant by:
- cardiovascular training
- resistance training
- o power training

- flexibility training
- agility training
- balance training.

How will you demonstrate how each of these training methods can be used to improve certain fitness components?

How will you demonstrate that you understand how training methods can be used to target a combination of fitness components?

#### Mark scheme

LO2: Know how training methods target different fitness components				
Mark band 1	Mark band 2	Mark band 3		
Outlines aerobic and anaerobic exercise supported with a few examples of training methods. Identifies some of the components of fitness and a limited range of specific training methods which target them.	Describes aerobic and anaerobic exercise supported with some relevant examples of training methods.  Identifies some of the components of fitness and describes a range of specific training methods and how they can target fitness components, both individually and in combination.	Comprehensively describes aerobic and anaerobic exercise supported with a wide range of relevant examples of training methods.  Identifies most of the components of itness and describes a wide range of specific training methods and how they can target fitness components, both individually and in combination.		

#### Assessment preparation

Think about the tasks that your teacher may set you to assess your knowledge of fitness testing. Make sure you:

- know how to carry out a range of fitness tests
- are clear about what is meant by:
  - reliability
  - validity
  - maximal tests
  - o sub-maximal tests
  - o normative data.

How will you demonstrate that you understand how to interpret the results of fitness testing?

#### Mark scheme

LO3: Be able to conduct fitness tests				
Mark band 1	Mark band 2	Mark band 3		
Carries out fitness tests which produce <b>basic</b> results, which are recorded with <b>limited</b> accuracy. Consideration of protocols and guidelines is <b>superficial</b> .	Carries out fitness tests which produce a range of results, which are recorded with some accuracy.  Some consideration of protocols and guidelines is evident.	Carries out fitness tests to produce an extensive range of results, which are recorded with precision. Consideration of protocols and guidelines is clearly evident.		
Interpretation of the results is limited.	Interpretation of the results is <b>clear</b> with <b>some</b> reference to normative data, reliability and validity.	Interpretation of the results is <b>clear</b> and <b>detailed</b> reference to normative data, reliability and validity is made.		

# Assessment preparation

Think about the tasks that your teacher may set you to assess your knowledge of fitness training programmes. Make sure that you know:

- how to design a fitness training programme
- how to evaluate a fitness training programme.

How will you demonstrate that you have interpreted results appropriately and thought about how training could be suitably amended in the future?

#### Mark scheme

L04: Be	e able to develop fitness training progra	
Mark band 1 The programme aims show some relevance to some of the initial data	Mark band 2  The programme aims show relevance to most of the initial data gathered.  Most of the principles of training have been applied with some effectiveness	The programme aims show relevance to all of the initial data gathered. All of the principles of training have been applied effectively in its design. The
in its design. The programme meets <b>few</b> of the specific needs and requirements identified in the aims.	in its design. The programme meets most of the specific needs and requirements identified in the aims. May need minimal individual support to	needs and requirements identified in the aims. Fitness training programme is designed <b>independently</b> .
design the fitness training programme.	Mark band 2	Mark band 3  Evaluation is comprehensive and
Evaluation is <b>brief</b> with <b>limited</b> reflection on the design and delivery of the programme; suggestions for improvement are general rather than specific.	Evaluation is <b>detailed</b> and reflects on <b>many</b> aspects of the design and delivery of the programme.  Ideas for improvement are <b>mostly</b> relevant and considered.	reflects on <b>most</b> aspects of the design and delivery of the programme.  Ideas for improvement are <b>specific</b> and <b>justified</b> .

# **Assessment Ladder**

Current Pathway	Unit 1: Applying principles of training Learning objective 1		
	Knowledge and Understanding	Skills	
	Describes all of the principles of training with a range of developed examples which are applied to specific sporting contexts.	Ability to work independently to create to create high standard of coursework	
MB3 8-10 marks		Extensive use of principles of training examples to back up discussion.	
MB3		Extensive and correct use of principles of training terminology.	
	Describes most of the principles of training with a range of relevant examples.	Ability to produce some coursework with some comprehension of the task	
MB2 5-7 marks		Wide use of principles of training examples to back up discussion.	
MB		Wide and correct use of principles of training terminology.	
narks	Outlines most of the principles of training with a few examples	Ability to create some coursework.	
MB1-4 marks		Some principles of training examples used.	

Current Pathway	Unit 2: Applying principles of training Learning Objective 2	
	Knowledge and Understanding	Skills
	Comprehensively describes aerobic and anaerobic exercise supported with a wide range of relevant examples of training methods.	Ability to work independently to create to create high standard of coursework
MB3 12-15 marks	Identifies most of the components of fitness and describes a wide range of specific training methods and how they can target fitness components both individually and in combination.	Extensive use of component of fitness examples to back up discussion.  Extensive and correct use of component of fitness
M	Combination.	terminology.
	Describes aerobic and anaerobic exercise supported with some relevant examples of training methods.	Ability to produce some coursework with some comprehension of the task
MB2 7-11 marks	Identifies some of the components of fitness and describes a range of specific training methods and how they can target fitness components both individually and in	Wide use of component of fitness examples to back up discussion.
W	combination.	Wide and correct use of component of fitness terminology.
MB1 1-6 marks	Outlines aerobic and anaerobic exercise supported with a few examples of training methods.	Ability to create some coursework.
	Identifies some of the components of fitness and a limited range of specific training methods which target them.	Some component of fitness examples used.