BTEC SPORT LEVEL 3

UNIT 2

KNOWLEDGE ORGANISERS

BTEC LEVEL 3	Question 1: Lifestyle factors & screen information	Year Group: 12/13

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Positive lifestyle factors and their effect on health and well-being

KG 1 – Benefits of exercise

Physical		Economic	
1.	Strengthens bones	9.	Reduces NHS costs
2.	Improves posture	10.	Creates employment
3.	Improves body shape	11.	Reduces absenteeism from work
4.	Reduces risk of CHD	**Psychological**	
5.	Boosts energy levels	12.	Improves concentrations
6.	Improves flexibility and balance	13.	Relieves stress
Social		14.	Reduces depression
7.	Encourages social interaction and social skills	15.	Improves sleep
8.	Increases confidence / self-esteem		

KG 2 - Government recommendations

16.	**Exercise** **Children**: 60 minutes a day Activity across the week to develop movement skills, muscular fitness, and bone strength. **Adults**: 150 minutes a week moderate or 75 minutes vigorous. X2 strength training days a week.
17.	**Calorie Intake** Men – 2,500 Women – 2,000
18.	**Fluid Intake:** 2-2.5 litres of water a day (moderation of caffeine intake)
19.	**Alcohol:**14 units a week
20.	**Sleep**: 8 hours

KG 3 - Benefits of a healthy balanced diet

21.	Improves immune system
22.	Maintain healthy weight
23.	Reduced risk of chronic diseases – diabetes, osteoporosis, hypertension and high cholesterol

KG 4 - Strategies for improving dietary intake

24.	Timing of meals
25.	Eating less/more of certain food groups
26.	Five a day
27.	Reducing salt intake
28.	Healthy alternatives

KG 5 - Positive risk-taking activities

29.	Participation in outdoor and adventurous activities
30.	Endorphin release
31.	Improves confidence
32.	Reducing salt intake
33.	Healthy alternatives

BTEC LEVEL 3	Question 1: Lifestyle factors & screen information	Year Group: 12/13

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Negative lifestyle factors and their effect on health and well-being

KG 6 - Smoking, health related risks

1.	Cancer
2.	Lung disease
3.	Increase risk of heart attacks and strokes
4.	Infertility
5.	Chronic Obstructive Pulmonary Disease (COPD)

Every years, around 100,000 smokes in the UK die from smoking related causes.

KG 7 - Alcohol, health related risks

6.	Liver damage
7.	Weight gain
8.	Brain Damage
9.	Hypertension (High blood pressure)
10.	Depression

Men and women are advised not to regularly drink more than 14 units in a week.

KG 8 - Sleep and Stress

Long term effects of stress:

12.	Stomach ulcers
14.	Heart disease / heart attack
15.	Angina
16.	Hypertension

Effects of poor sleep:

17.	Poor mental health
18.	Memory problems
19.	Poor immune system
20.	Overeating

The NHS recommend 8 hours of good quality sleep a night for the body to function properly.

KG 9 - Sedentary Lifestyle

21.	Health risks associated with inactivity

KG 10 - Interpreting screening information

21.	**Blood Pressure** Ideal blood pressure: 120/80mmHg High blood pressure is 140/90mmHg or higher
22.	**Resting heart rate** Heart beats per minute. Average ranges: Males is 68 bpm Females is 72 bpm
23.	**Body Mass Index (BMI)** <18.5 – Underweight 18.5-24.9 – healthy 25-30 – above healthy recommendation >30 – classed as being obese.
24.	**Waist to hip ratio test** Can determine levels of obesity. Divide waist in cm by hips in cm. Average ranges: Male – 0.90-0.95 Female – 0.80-0.86

Exam Q – Key word

Interpretation
Learners are able to draw the meaning, purpose or qualities of something from stimulus.

BTEC LEVEL 3	Question 2: Provide and justify lifestyle modification techniques	Year Group: 12/13

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KG 1 - Smoking

Strategies to quit

1.	Acupuncture
2.	NHS smoking helplines
3.	Nicotine Replacement Therapy (NRT)
4.	Quit Kit support packs
5.	NHS smoking services

KG 2 - Alcohol

Reducing alcohol consumptions

6.	Self-help groups
7.	Counselling
8.	Meditation
9.	Drink with food
10.	Hypnotherapy
11.	Avoid stocking up
12.	Non alcohol alternatives

KG 3 - Stress

Managing stress

13.	Goal setting
14.	Relaxation
15.	Physical activity
16.	Positive self talk
17.	Time management
18.	Change work-life balance
19.	Breathing techniques

KG 4 - Sleep

Improving sleep

20.	Having a bedtime routine
21.	Avoid a heavy meal 2 hours before bed
22.	Have a warm bath
23.	Breathing techniques
24.	Listen to relaxing music
25.	Avoid drinking caffeine before bed

KG 5 - Barriers to exercise

26.	Lack of time	31.	Lack of energy
27.	Self-conscious	32.	No exercise partner
28.	Poor health	33.	Little support to exercise
29.	Bad weather	34.	Location
30.	Cost	35.	No transport

KG 6 - Common barriers to change

36.	**Time** Prioritise daily routine Walk/run/cycle to work Exercise during lunch breaks/take the stairs
37.	**Money** Walking/jogging instead of the gym Exercise at home (Gardening/house work/workout DVDs)
38.	**Transport** When commuting, get off at a stop earlier and walk Park your car further away Local to work, walk or cycle
39.	**Energy/motivation** Schedule when you have the most energy Invite a friend Set achievable goals.

BTEC LEVEL 3	Question 3 : Provide and justify nutritional guidance	Year Group: 12/13

KG 1 – Common Terminology

1.	**RDA**	Recommended daily allowance
2.	**Energy Measures**	Calories, joules, kilocalories. Kilojoules.
3.	**BMR**	Basic metabolic rate. Minimum rate of metabolism in an individual who is not digesting or absorbing food. BMR represents the lowest rate of energy usage that can sustain life.

KG 2 – Key words

4.	**Macronutrients**	Required in large amounts on a daily basis.
5.	**Micronutrients**	Required in a smaller amount but essential or disease prevention and well-being.

KG 3 – Carbohydrates

Carbohydrates are your bodies most available source of energy. They can be stored in the muscles later for energy but excess carbs not required will be converted into fat.	**45-65% of diet**

6.	Simple - These are sugars and a **quick energy source**. E.g. Sugar, Jam, Sweets and fizzy drinks.
7.	Complex - Broken down **slowly to release energy** over long periods. E.g. Bread, pasta, rice and potatoes

KG 4 – Protein

The main role of protein is to build and repair tissue. Can also be a secondary source of energy when carbs and fats are limited.	**10-35% of diet**

8.	**On average:** Men should consume around 55g a day Women should consume around 45g a day
9.	Complete proteins: Meat, Milk and Fish
10.	Incomplete proteins: Cereals, Bread and Beans

KG 5 – Fats

Fats are important for normal growth and development. They can also be important for energy as it has the most concentrated source of energy. Too much saturated fat in a diet can cause significant health problems.	**20-35% of diet**

11.	**Gov recommendation** Men should consume no more than 30g a day Women should consume no more than 20g a day
12.	Saturated (animal products) Meat, Dairy, Butter and Cream
13.	Unsaturated (plant products) Avocado, Nuts. Olives and Soybeans.

KG 6 –Vitamins and Minerals

14.	**Vitamin A**	Needed for the normal functioning of the eyes and the respiratory tract and keeps immune system healthy. Found in green vegetables and carrots.
15.	**Vitamin B**	Essential for the support of the breakdown and release of energy from food. Found in eggs and lean meat.
16.	**Vitamin C**	Helps protect cells and keeps them healthy and maintain healthy connective tissue. Found in vegetables and citrus fruit.
17.	**Vitamin D**	Needed for the absorption of calcium and keeping bones healthy. Found in fish, eggs and sunlight UV.
18.	**Calcium**	Helps to build strong bones and teeth and ensures blood clots normally. Found in milk and green leafy vegetables.
19.	**Iron**	Needed for the formation of haemoglobin in red blood cells to help the transport of oxygen. Found in liver, meat and nuts.

BTEC LEVEL 3	Question 3 : Provide nutritional strategies	Year Group: 12/13

KG 6 – Hydration

Effects on fluid amounts

17.	**Climate**	Hot/humid climate will require an increase in fluid intake as the bodies ability to keep cool is reduced.
18.	**Levels of exercise**	Athletes need to ensure they are fully hydrated before, during and after exercise.
19.	**Time of year**	Athletes should be encouraged to take more care when hydrating in the summer months due to higher outdoor temperature.

Dehydration

19.	This is a reduction in the normal water content of your body, when you lose more fluid than you take in.
20.	Dehydration can lead to decreased blood pressure, increased heart rate and increased core body temperature.

Hyperhydration

21.	This is an increase in the normal water content of your body, when you take in more fluid than you lose.

KG 7 – Ergogenic aids

Ergogenic aids are used to improve performance during high-intensity exercise.

22.	**Energy gels/bars**	Helps replenish carbohydrates Helps replenish glycogen/calories Deliver a quick supply of energy to your muscles when needed.
23.	**Protein drinks**	Can reduce muscle soreness post-training Increase muscle size and strength Reduced hunger Can be expensive
24.	**Carbohydrate loading**	Used to maximise storage of glycogen in the muscles 48hrs before performance Involves less training and more carbohydrates before an event.

KG 8 – Sports Drinks

Sport drinks aim to provide three nutrients:
Carbohydrates – to replace energy
Water – Replace fluids
Electrolytes – replace minerals lost by sweating.
There are **3 types** of sports drinks.

25.	**Isotonic**	• Contain the same concentration of glucose to water as blood. (4-8% or up to 8g per 100ml of water). • They contain sodium, making them quicker to absorb into the bloods stream. • Useful for prolonged exercise and can be sued before exercise.
26.	**Hypertonic**	• High energy, concentrated sports drinks containing over 8% of carbohydrate; they are absorbed more slowly than isotonic drinks. • Not ideal for optimal rehydration and may need to be consumed with other fluids. • They are best used in the recovery phase after exercise.
27.	**Hypotonic**	• Have a lower concentration of carbohydrates and are more diluted than isotonic and hypertonic drinks. • They contain less than 4% carbohydrates (4g per 100ml of water) and are generally well absorbed and well tolerated. • When sweat losses are small, these drinks encourage fluid replacement. • Their salt concentration is lower than body fluids.

Beckfoot	BTEC LEVEL 3	Question 4 : Examine training methods for different components of fitness	Year Group: 12/13	enjoy learn succeed

KG 1 – Physical fitness

Physical fitness is related to overall fitness. The more physically fit an individual is, the less chance of developing health issues.

1.	**Aerobic Endurance**	The ability of the cardiorespiratory system to work efficiently, Supplying nutrients and oxygen to working muscles during sustained physical activity.
2.	**Muscular Strength**	The maximum force (in kg or N) that can be generated by a muscle or muscle group.
3.	**Muscular Endurance**	The ability of the muscular system to work efficiently, where a muscle can continue contracting over a period of time against a light to moderate fixed resistance load.
4.	**Flexibility**	Having an adequate range of motion in all joints of the body, the ability to move a joint fluidly through its complete range of movement.
5.	**Speed**	The ability to move the whole body quickly or move limbs rapidly.
6.	**Body Composition**	The relative ratio of fat-to-fat-free mass (vital organs, muscle, Bone) in the body.

KG 2 – Skill-related fitness

Skill- related fitness involves skills that enhance and allows an individual to perform an activity, skill or sport.

7.	**Agility**	The ability of a sports performer to quickly and precisely move or change direction without losing balance or time.
8.	**Balance**	Static and dynamic balance, the ability to maintain centre of mass over a base of support.
9.	**Coordination**	The ability to control movement of two or more body parts, smoothly and efficiently to perform a motor task.
10.	**Reaction Time**	The time taken for a sports performer to respond to a stimulus and the initiation of their response.
11.	**Power**	The ability to produce a maximal force in the shortest period of time possible

KG 3 – Aerobic Endurance training methods

Training Threshold / 70-80% MHR

	M.O.T	Description	Advantages & disadvantages can include:	
12.	**Continuous Training**	Training at a steady pace at moderate intensity for a minimum period of 30 minutes	Good for beginners and effective for weight loss	Can be boring and risk of injury running on harder surfaces.
13.	**Fartlek Training**	The intensity of training is varied by running at different speeds or over different terrains	Can adapt to different fitness levels	Easy to skip hard sections
14.	**Interval Training**	A work period followed by a rest or recovery period	Can replicate team sports	Hard to keep on going if suffering fatigue
15.	**Circuit Training**	Different stations/exercises are used to develop aerobic endurance.	Easily adapted and can change every session	Takes time to set up and needs equipment.
16.	Equipment required for aerobic endurance training: gym based, outdoor-based.			

KG 4 – Core stability training

17.	The main function of the core is to stabilise and provide support. Core stability is an important role in postural balance and injury prevention.	
Methods:		
18.	**Pilates**	Focuses on core strength to improve general fitness and well-being. It is appropriate for all ages and abilities
19.	**Yoga**	Focuses on core stability , strength, flexibility and breathing for both physical and mental well- being.
20.	**Gym based exercises**	Plank, V-sit and bridge
21.	Both can be completed at home or in the gym. To increase intensity you can add equipment (kettlebells/ use various machines/resistance bands/stability balls)	

BTEC LEVEL 3	Question 4 : Examine training methods for different components of fitness	Year Group: 12/13

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KG 5 – Muscular Strength and Endurance training methods		
STRENGTH		
21.	Strength training can increase muscle size and tone, bones density, metabolic rate and connective tissue strength. Workload is measured by intensity and the 3 main components are: Weight, number of repetitions (reps) and number of sets.	
ENDURANCE		
22.	Muscular endurance can increase muscle tone. It also increases the size and number of mitochondria (important for aerobic energy). It should come AFTER strength training and is progressive over time.	
23.	You train the muscles to overcome fatigue and increase number of reps over weight.	
INTENSITY		
24.	**STRENGTH - HIGH WEIGHT LOW REPS** Rest- High intensity= more rest, lower intensity= less rest	
25.	**ENDRUANCE - LOW WEIGHT- HIGH REPS** Rest- work-rest ratio 1:1 (same rest time as it took to complete the previous set)	
	M.O.T	**Description**
26.	Pyramid Sets	Uses an upwards and downwards sequence in weight, reps and sets. Starting with light weights to allow joints and muscles to warm up. It involves an intense routine as the muscles become overloaded.
27.	Circuit training	Different exercises/ stations allowing you to target different muscle groups.
	Equipment for strength training	**Advantages & disadvantages can include:**
28.	Free weights	Can be used at home Requires good prior knowledge
29.	Fixed Resistance Machines	Safer than free weights Expensive and gym based.

KG 6 – Flexibility training		
Methods:		
31.	**Static stretching**	This stretch is controlled and slow. Can be Active (done individual) or Passive (assisted stretches).
32.	**Dynamic stretching**	Involves taking the muscles through its full range of movement. It can replicate movements which are common in sports.
33.	**Proprioceptive neuromuscular facilitation (PNF)**	Increases flexibility as it alternates between contractions and relaxation. It usually involves a 10 sec push phase followed b a 10 sec relaxation phase, repeated several times.
Types of stretches		
34.	**Maintain stretch**	Performed to maintain general flexibility after exercising to return muscles back to its normal length to reduce injury.
35.	**Developmental stretch**	Performed to increase muscle length and flexibility. Normally performed at the end of the session.
36.	**Pre-activity stretch**	Performed to get muscles ready for exercise to improve performance and reduce injury risk.
37.	**Equipment**	Towel, band, belt, mat or partner.

KG 7 – Agility training	
38.	Agility is influenced by body balance, speed, coordination and skill.
Methods of training	
39.	SAQ (Speed, agility and quickness)
40.	Sport specific drills.

KG 8 – Balance training		
39.	Balance is used throughout all sports. To improve balance it is important to work and engage core muscles.	
Methods:		
40.	Static Training	This can involve single leg balances, but to progress you can add equipment and move on to dynamic
41.	Dynamic training	This can include a wobble cushion/ balance board to progress.

BTEC LEVEL 3	Question 4 : Examine training methods for different components of fitness	Year Group: 12/13

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KG 9 – Speed training		
Training Threshold / 80-100 % MHR		
Recovery		
43.	Recovery is an essential part of speed training. It is required to replenish energy stores and maintain technique to reduce injury. There should be 72+ hours between sessions.	
	M.O.T	**Description**
44.	Hallow sprints	Replicates the pattern of a constant change of speed. Involves sprinting for a set distance, slowing down and accelerating for a set distance.
45.	Acceleration sprints	Speed is gradually increased: jog to stride to sprint.
46.	Interval training	Work intervals are short but the intensity is or as close to maximal.
47.	Resistance drills	This methods makes muscles work harder. This can help develop speed over a short distance.
48.	**Equipment**	Resistance bands, parachutes. Bungee rope, resistance tyres.

KG 10 – Coordination training		
There are 3 types of coordination		
48.	Hand-eye	Needed for racquet sports
49.	Foot-eye	Needed to keep a ball under control
50.	Hand-to-hand	Needed to be able to switch the ball between both hands when dribbling.
Ways to improve coordination		
51.	Ball catching exercises	Throw a tennis ball against the wall, catching with one hand and then the other.
52.	Racket drill	Bounce a ball on a racket, palm facing up first then alternate with palm facing up and palm facing down.
53.	Juggling drills	These can help with coordinating and ball control/

KG 11 – Balance training		
54.	Balance is used throughout all sports. To improve balance it is important to work and engage core muscles.	
Methods:		
55.	Static Training	This can involve single leg balances, but to progress you can add equipment and move on to dynamic
56.	Dynamic training	This can include a wobble cushion/ balance board to progress.

KG 12 – Reaction training		
56.	Reaction training is important for many sport which have to react to a stimulus. E.g. football goalkeeper and a 100m starting gun. The equipment you can use are: whistles, visual stimulus, reaction ball and auditory stimulus.	
Ways to improve reaction time		
57.	Kneeling to sprint	Kneel on all fours; on a command given by the coach react quickly and sprint 10m.
58.	Ball and drop reaction drill	With a partner the ball should be held at shoulder height and out to one side of the body and then dropped. The athlete needs to react, accelerate and attempt to catch the ball before it bounces for a second time.

KG 13 – Power training		
59.	Plyometric exercises enhance explosive power and performance. It relies on maximal effort and the high speed of movement for each rep.	
60.	Lower body plyometric training	Exercises can include: squat jumps, bounding and box drills.
61.	Upper body plyometric training	Medicine ball throwing and catching and clap push ups
62.	**Equipment**	Ladders, Cones, Benches, hurdles, boxes and medicine balls

BTEC LEVEL 3	**Question 5:** Design a fitness training programme **Question 6:** Justify the fitness training programme	Year Group: 12/13

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When designing a fitness programme, you need to ensure you include all the major components to make it personalised to your client

KG 1 – Goal Setting		
1.	**Aim**	The details of what they would like to achieve (link to client)
2.	**Objective**	How they intent to meet their aims
3.	**Specific**	Make sure the goals are precise
4.	**Measurable**	Goals must be quantifiable to track progress
5.	**Achievable**	To ensure goals are set which will be met.
6.	**Realistic**	Goals have to be within their reach
7.	**Time**	A set period of time to reach the goal
8.	**Exciting**	The goal has to be motivational
9.	**Recorded**	The process has to be recorded to be accountable of progress

KG 2 – Principles of training		
FITT is used to guide and develop unique fitness plans for individuals and to ensure suitable progression over time.		
10.	**Frequency**	Is how often you train a week, ensuring there are rest days. Beginners should have 3 sessions per week and build up to more.
11.	**Intensity**	Is how hard you train. Factors- weight, distance, HR and time. Need to make sure you have a balance of overload but not overtraining.
12.	**Time**	Is what type of exercise you have chosen. Ensuring it is appropriate to the needs and ability of your client. Making sure it is varied to reduce boredom.
13.	**Type**	Is how long you are training for. Beginners should work for 20-30 mins when training aerobic fitness then increase to 45-60 mins when fitness levels increase

KG 3 – Additional principles of training		
14.	**Variation**	To vary training to keep it fun and give the body different challenges.
15.	**Individual needs**	Successful training programmes suit the individual needs
16.	**Progression**	Gradually increasing training to improve fitness but avoid injury and overtraining.
17.	**Rest and recovery**	Ensuring there is enough rest time for muscles to repair.
18.	**Overload**	Training above what they normally do. You need to work harder to allow the body to develop.
19.	**Adaptation**	The process of the body getting use to a particular exercise or training program through repeated exposure. It allows the body to adapt and it becomes easier to perform.
20.	**Reversibility**	If you stop training, due to injury/holiday, any progressions made will start deteriorating within a short time.
21.	**Specificity**	The training must be matched to the needs and demands of the individual.

KG 4 – Training cycles		
18.	**Periodisation**	Are structured training cycles
19.	**Macrocycles**	The main part of a meet their aims training programme, they are 1-year to 4-year training cycle. Macrocycle are divided into a number of mesocycles.
20.	**Mesocycle**	These are monthly training cycles (unusually 4-24 weeks), used to help control work-to-rest ratios. Each mesocycles is divided into a number of micro cycle.
21.	**Micro cycle**	These are weekly training plans. Specific adaptations to demonstrate the FITT principles.