

## BTEC SPORT, ACTIVITY AND FITNESS

### COMPONENT 2 - LEARNING AIM B – Nutrition for sport and activity

<b>Block A – Macronutrients (major food groups)</b>	
<b>Carbohydrates</b>	<p><b>Structure</b> – simple and complex carbohydrates</p> <p><b>Function</b> – to provide energy for; the brain functions, liver functions and muscle contractions</p> <p><b>Sources</b> – complex (pasta, rice, potatoes, oats, bread), simple (fruit, chocolate, sweets, glucose drinks), fibre (wholegrain breakfast cereals, wholewheat pasta, wholegrain bread and oats, vegetables).</p>
<b>Protein</b>	<p><b>Structure</b> – amino acids (essential and non-essential)</p> <p><b>Function</b> – building blocks that make up the structures of our body and allow us to grow and repair after exercise</p> <p><b>Sources</b> - to include chicken, turkey, fish, lean beef, meat substitute, beans, nuts and seeds.</p>
<b>Fats</b>	<p><b>Structure</b> – saturated and unsaturated fats</p> <p><b>Function</b> – role of saturated fats in increasing total cholesterol and link with coronary heart disease, role of unsaturated fats as an energy source</p> <p><b>Sources</b> – saturated fats (animal fats and dairy products), unsaturated fats (oily fish, pumpkin seeds, almonds, walnuts and avocados).</p>
<b>Calories</b>	<p>A measurement of energy in food and drink.</p> <p>Recommended daily allowance of calories – men 2500 calories (kcal) and women 2000 calories (kcal).</p>
<b>Benefits of carbohydrates</b>	<p>Role of complex carbohydrates and their importance in the release of energy in aerobic activities; role of simple carbohydrates in boosting energy before, during and after exercise</p>
<b>Benefits of protein</b>	<p>Role in promoting muscle growth, promotes increases in strength for sport or activity, role in repair of tissue/micro-tears after sport or activity to allow further training/reduced risk of injury</p>
<b>Benefits of fat</b>	<p>Role of unsaturated fats as the second energy source</p>

<b>Block B – Micronutrients (vitamins and minerals)</b>	
<b>Vitamin A</b>	<p><b>Function</b> – maintains normal eyesight to assist hand-eye coordination and positional awareness</p> <p><b>Natural source</b> – liver, mackerel and milk products</p>
<b>Vitamin B1</b>	<p><b>Function</b> – converts food into energy to produce energy for exercise</p> <p><b>Natural source</b> – rice, bran, pork, beef, peas, beans, soya beans</p>
<b>Vitamins C</b>	<p><b>Function</b> – maintains an effective immune system to prevent illness so the performer can train on a regular basis</p> <p><b>Natural source</b> – most fresh fruit and vegetables</p>
<b>Vitamin D</b>	<p><b>Function</b> – to keep bones, teeth and muscles healthy</p> <p><b>Natural source</b> – oily fish, red meat, liver, egg yolks, fortified foods.</p>
<b>Potassium</b>	<p><b>Function</b> – regulates fluid levels to ensure the performer is hydrated during exercise</p> <p><b>Natural source</b> – bananas, yoghurt, sunflower seeds, potatoes</p>
<b>Iron</b>	<p><b>Function</b> – increases the body's oxygen-carrying capacity to enhance aerobic performance by delivering oxygen to working muscles</p> <p><b>Natural source</b> – liver, lean meat, eggs, kidney beans, spinach</p>
<b>Calcium</b>	<p><b>Function</b> – provides increased bone strength, which reduces the risk of injury in contact activities</p> <p><b>Natural source</b> – milk and dairy products, whole grains, green vegetables.</p>
<b>Benefits to sport from vitamin A</b>	<p>Maintains good vision, which assists hand-eye coordination and positional awareness</p>

<b>Benefits to sport from vitamin B</b>	Increased ability to convert food into energy for exercise by metabolising the macronutrients
<b>Benefits to sport from vitamin C</b>	Prevents illness by fighting bacterial infections, which allows participants to train and play more often
<b>Benefits to sport from potassium</b>	When added to drinks helps maintain fluid and electrolyte balance levels during exercise, which helps the performer to regulate their body temperature
<b>Benefits to sport from iron</b>	Enhances aerobic performance as it promotes the growth of red blood cells, which transport oxygen to the muscles
<b>Benefits to sport from calcium</b>	Increases the strength of bones, which can reduce the risk of injury in contact sports.

### Block C – Hydration (levels of fluid in the body)

<b>Dehydration</b>	A harmful reduction in the amount of fluid in the body
<b>Recommended daily intake (RDI)</b>	Two litres
<b>Increased intake</b>	Additional one litre of fluid per hour of exercise participation, in response to hot conditions.
<b>Negatives of poor hydration</b>	Poor fluid choices lead to dehydration, which is when the blood plasma volume reduces (gets thicker) and reduces the body's ability to sweat.
<b>Benefits of hydration for sport and activity</b>	Maintaining a normal body temperature (37 degrees) through sweating so that participants do not overheat when training or competing. Lubrication for the joints so they can move more freely during sport and activity. Blood plasma is thinner so it can work effectively and transport oxygen and nutrients to the muscles during sport and activity.

### Block D – Improving nutrition for sport and activity

<b>Features of a healthy diet</b>	<ul style="list-style-type: none"> <li>o Recognising positive features of a healthy diet – eating the right percentage of macronutrients to stay healthy (carbohydrates at 50–60%, fat at 30% and protein at 12–15%); the inclusion of micronutrients; good hydration levels; eating at least three meals a day</li> <li>o Recognising areas for improvement to enhance a diet.</li> </ul>
<b>Methods to enhance sport and activity through nutritional change</b>	<ul style="list-style-type: none"> <li>o <b>Carbohydrate loading</b> – the process of using carbohydrates before a competition or event to provide lasting energy stores</li> <li>o <b>Timing of food intake</b> – before, during and after training to maximise energy for training and competition</li> <li>o <b>Types of food consumption before, during and after sport or activity</b> – complex carbohydrates the night before; simple carbohydrates before the activity to maximise glucose availability; protein consumption after the activity to repair muscle tears and promote growth</li> <li>o <b>Bowel emptying</b> – consuming foods high in fibre (whole grains) and timing of food consumption to aid digestion and empty bowel before exercise.</li> </ul>
<b>Legal supplements</b>	<p><b>Types of supplement</b> - vitamin B and vitamin D, protein supplements, pre-workout supplements, glucose-based isotonic drinks, caffeine drinks</p> <ul style="list-style-type: none"> <li>o <b>advantages</b> – enhanced performance, increased training time, increased intensity of physical activity, improved bone health, reduced recovery, increased energy, increased alertness and concentration</li> <li>o <b>disadvantages</b> – increased bowel movements, energy peaks and troughs, weight gain.</li> </ul>