S3 Biology Body Systems Learning Outcome Checklist

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| Activity | -/+/\* | by the end of the unit you should know… |
| Muscles – skeletal |  | * The skeleton has three functions – **protection** of vital organs, **support** for the body to keep upright & muscle attachment for **movement**
* **Skeletal muscles** are attached to the skeleton to allow movement
* To calculate an **average**, divide the sum of the numbers by the number of numbers added up
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| Homework 1 |  | * When skeletal muscles contract and relax repeatedly without rest they **fatigue**
* Muscle fatigue is caused by a build of **lactic acid** from anaerobic respiration
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| Antagonistic muscles |  | * **Tendons** attach muscles to bones
* When a muscle **contracts** it shortens and **pulls** on the bone
* Muscles **cannot push** they can only pull
* Skeletal muscles work in **antagonistic** **pairs** to bring about movement
* When the **bicep** contracts it **bends** the arm
* When the **tricep** contracts it **straightens** the arm
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| Bicep curl -force investigation |  | * **Input** variable is the one changed in an experiment
* **Output** variable is the one measured as the results
* Other variables must be **controlled** to ensure a **fair test**
* An experiment should be repeated and the results averaged to make them **reliable**
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| Muscles - breathing |  | * **Inhaling** = the **diaphragm** and **intercostal** **muscles** contracting, making the chest expand which draws in air
* **Exhaling** = **diaphragm** and **intercostal** **muscles** relaxing, making the chest smaller which pushes out air
* Air travels from the mouth and nose down the **trachea** (windpipe)
* The trachea splits into two **bronchi**, taking air to each lung
* The bronchi further divide into smaller air passages called **bronchioles**
* At the end of the bronchioles there are **air sacs**
* Air sacs are the location of **gas exchange** between the air in the lungs and the blood
* At the air sacs oxygen **diffuses** from the air to the blood
* At the air sacs **carbon dioxide diffuses** from the blood to the air
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| Muscles – Cardiac & Circulatory System |  | * **Arteries** take blood away from the heart
* **Veins** take blood back to the heart
* The main vein is the **vena cava**
* The main artery is the **aorta**
* The top two chambers in the heart are called **atria** (singular = atrium)
* The bottom two chamber in the heart are called **ventricles**
* The **valves** in the heart stop the blood from flowing backwards
* Blood is supplied to the heart muscle by the **coronary arteries**
* The **right** side of the heart contains **deoxygenated** blood and pumps it to the lungs
* The **left** side of the heart contains **oxygenated** blood and pumps it to the rest of the body
* The muscle of the **left ventricle is thicker** than the right ventricle
* To calculate a **ratio** find a factor common to both values and divide them by the common factor
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| Homeostasis –blood glucose |  | * **Insulin** & **glucagon** are hormones released by the **pancreas**
* Insulin converts **glucose to glycogen**
* Glucagon converts **glycogen to glucose**
* Glycogen is stored in the **liver** and **muscles**
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| Homeostasis –osmoregulation |  | * **Osmosis** is the diffusion of water across a selectively permeable membrane (e.g. cell membrane)
* **Kidneys** remove the toxic waste called **urea** from the blood and **control water balance** in the body
* Small molecules are **filtered out** of the blood by the kidneys
* Useful molecules (some water and all glucose) are **reabsorbed** back into the blood in the kidneys
* The liquid containing excess water and urea is called **urine**
* When **ADH** is released by a gland in the brain, it causes the kidney to reabsorb more water
* **Renal arteries** take blood to the kidneys
* **Renal veins** take blood from the kidney
* **Ureter** takes urine from the kidney to the bladder
* **Bladder** is a temporary store of urine
* Urine leaves the body via the **urethra**
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| Urine Analysis |  | * Urine tests can be done to diagnose certain **health conditions**
* High levels of glucose in the urine is a sign of **diabetes**
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