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 |
| 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 |
| 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 |
| 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** |
| 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 |
| 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 |
| 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** |
| 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** |
| Urine Analysis |  | * Urine tests can be done to diagnose certain **health conditions** * High levels of glucose in the urine is a sign of **diabetes** |