**Human Body: Secrets of Life Revealed**

**Episode 2: Survive**

**What is the core temperature our bodies must maintain?**

**37°C**

**What is the impact of changing our body temperature a few degrees either side of this optimal temperature?**

**Deadly. Organs fail due to disrupted chemistry**

**What happens to our bodies when they are at risk of becoming too cold? How does our body try to maintain its optimal body temperature? Think back to the video when the man was running on a treadmill in the cold room.**

**Adrenaline- stimulates cells to produce energy at a faster rate, this is then converted to heat**

**With reference to the man running in the warm room. What were two changes he described he was experiencing in order to increase heat loss?**

**Sweating & blood rushing to skin (vasodilation)**

**Describe ‘cold water shock’. What changes occur in the body to reduce heat loss?**

**Gasp, heart beats faster, blood vessels constrict at skin (vasoconstriction), uncontrollable shivering**

**What is the dangerous waste product produced when the children in freezing cold water try to reduce heat loss? Why is this dangerous? How does the body respond to this danger?**

**CO2. Increases acidity of blood (can be fatal), glomus cells in blood vessels detect increase in CO2, this sends message to brain to increase rate & depth of breathing to expel CO2**

**Why is the emotion of fear described as being important for our survival?**

**Designed to protect our body. First line of defence against potential threats, even before they have struck**

**How is the sense of fear developed?**

**Learned from those around us**

**What is the name of the response that the snake handler experienced when he first started dealing with snakes?**

**Fight of flight: Fear response**

**How did the researchers describe a phobia?**

**Example of fear response that is running out of control**

**Which part of the brain ‘lit up’ or became active when the patients were exposed to frightening images?**

**Amygdala**

**Which part of the brain was described as being responsible for bravery? Why was it described in this way?**

**Prefrontal cortex (telling amygdala to “settle down”)**

**Explain the changes that occurred to the snake handlers body when he spotted the snake in the garage:**

**Amygdala sends messages for pacemaker cells in heart wall makes heart beat faster. Adrenal glands release adrenaline, prepares body for fight or flight. Lungs expand airways to provide more oxygen for cellular respiration to occur. Sight, hearing & senses are sharper. Liver: stored glucose into the blood, provide energy for the muscles**

**How was the snake handler able to focus on completing his job? What further changes occurred to his body?**

**Prefrontal cortex kicks in- experience & safe memories inhibits amygdala signals, reduce adrenaline surges. Returns to calm state & can focus on the job**

**Why is the disgust reflex important for our body?**

**Microbial threat- deadly. Protect against bacteria for our survival**

**Why is pain important for our survival?**

**Protective response- alarm system and allows body time to repair itself**

**How did the man manage to increase his pain tolerance?**

**Distraction by another pain source**