**Stress and the immune system**

**KEYWORDS:**

* **HPA** – the hypothalamic-pituitary-adrenal axis. Is long lasting (i.e. trauma, death etc)
* **SAM**- the sympathetic-adrenomedullary pathway. Short lasting (i.e. stressed over presentations)
* **ACTH** – Adrenocorticotropic hormone. Is produced in response to biological stress.
* **Stressor –** something that makes you stressed.
* A stressor is recognised by the higher brain centres. The HPA/SAM system is then activated. Then the hypothalamus sends a message to the pituitary gland, which then releases ACTH which travels to the adrenal cortex. This is where control is released which makes us more prone to infection by making the immune system weak.

**Links between stress and the immune system:**

* High levels of **corticosteroids** in the bloodstream reduce production of white blood cells which leads to the shrinkage of the thymus glands.
* Acute stress leads to a decrease in the cell functioning which increases the vulnerability to infections - **PROVED BY KIECOLT-GLESER ET AL.**
* Some experimenters found that short term stressors can boost the immune system as it enables it to prompt and fight against future infections that may enter the body- **PROVED BY SEGERSTON AND MILLER.**

**Research:**

* **Kiecolt-Glaser et al:** Carried out a natural experiment investigating whether the stress of short-term stressors had an effect on immune system functioning. Found that short-term predictable stressors reduce immune system functioning increasing vulnerability to illness.
* **Segerstrom and Miller:** Did a meta-analysis with 293 studies and stated that short-term stressors can boost the immune system as it allow it to prompt itself to be ready for future infections. The longer the stress the more the immune system shifts.
* **Cohen et al:**  394 participants completed a questionnaire which made them recall stressful situations. When exposed to the flu virus 82% were affected which shows that stressed people are more prone to infections.

**Marital problems and immune system:**

**Kiecolt Glaser** **et al** also did a study with people with marital problems who were injured with blisters. They found that blisters on arms of married couples healed slower after a conflicting talk rather than supportive. They found that women who are split suffer through poorer immune systems.

**Evaluation:**

Although most studies found a decrease in immune cell functioning Lazarus suggested that there are various reasons why a relationship between stress and illness is difficult to establish.

* Health – affected by many different factors such as genes and genetic influences.
* Health is generally stable and slow to change; due to this it is difficult to state that exposure to a certain stressor was the cause of the health change.
* To demonstrate how stress affects long-term health would involve continuous measurement over time. This is more expensive and impractical.

**Exam Questions.**

* Sandy and Ranbir have both been injured during a tennis match however Sandy has taken longer to heal. Sandy has been under stress due to work problems as well as having to plan a wedding. How has the stress resulted in her healing slowly?
* Evaluate studies that show a link between stress and the immune system.
* What else can affect the immune system apart from stress?
* Outline and evaluate the study done by Segerstrom and Miller.
* Where is control released and what does it do when released?