

# **MOOC 1 – Unit 3**

## **Stress responses: biopsychosocial perspective**

### **Chapter 1**

#### **Pre-Acute Stress Phase from Brain-Body-Person Perspective**

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# **MOOC 1 – Unit 3**

## **Stress Responses: Biopsychosocial Perspective**

### **Chapter 1 : Pre-Acute Stress Phase from Brain-Body-Person Perspective**

Introduction

1.1 Brain - body connection

1.2 Person, stress, and time

1.3 Person, body, and stress reactions

Psychological  
Early  
Intervention

## Chapter 1 : Pre-Acute Stress Phase from Brain-Body-Person Perspective

### Introduction



A healthy organism is able to **react and adapt** to daily stressors through a process of allostasis.

**Allostasis** is a process that maintains the internal stability of an organism through **physiological** and/or **behavioural change**.

On the level of organism, allostasis represent **stress reaction** (response).



## Chapter 1 : Pre-Acute Stress Phase from Brain-Body-Person Perspective

### 1.1 Stress and brain body connection



The **stress response** includes an **effective, evolutionarily preserved, and complex system**, which manifests itself in the **modulation of the central nervous system (CNS)**, managing learning, memory, and strategic decisions.

This system **detects stressful events and interprets them** as real or potential threats. **Integration of information** about the stressor may lead to **rapid activation** of the Sympathetic-Adreno-Medullary (**SAM**) axis and the Hypothalamus-Pituitary-Adrenal (**HPA**) axis as two major components that are involved in the stress response.

## Chapter 1 : Pre-Acute Phase from Brain-Body-Person Perspective

### 1.2 Person, stress, and time

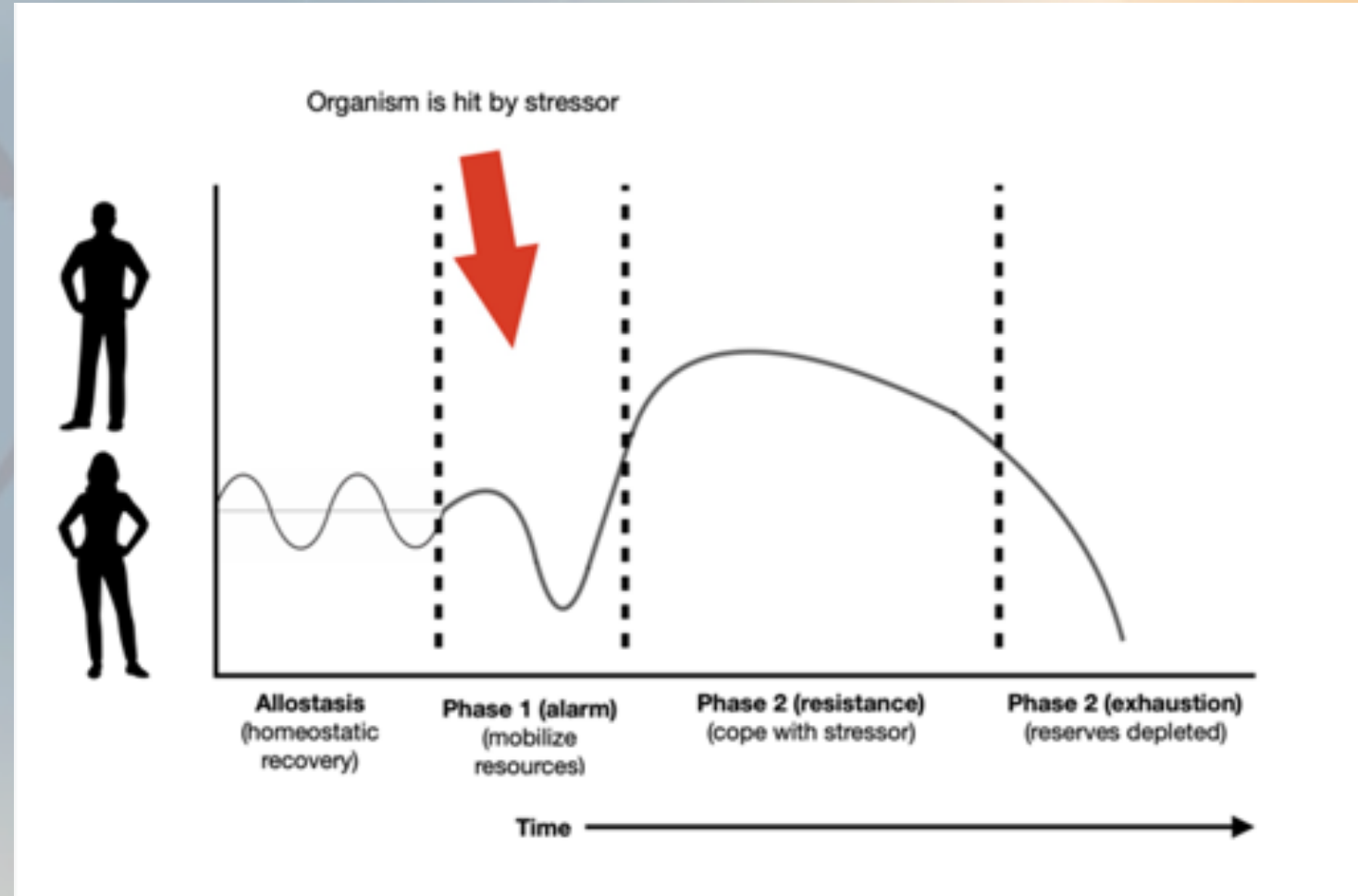


**Allostasis** – permanent real-time reactions of organism that help to cope with common loads.

When a stressor occurs:

→ **GAS** (General Adaptation Syndrome, Selye, 1936):

1. Phase (**alarm**)
2. Phase (**resistance**)
3. Phase (**exhaustion**)





## Chapter 1 : Pre-Acute Phase from Brain-Body-Person Perspective

### 1.3 Person, body, and stress reactions

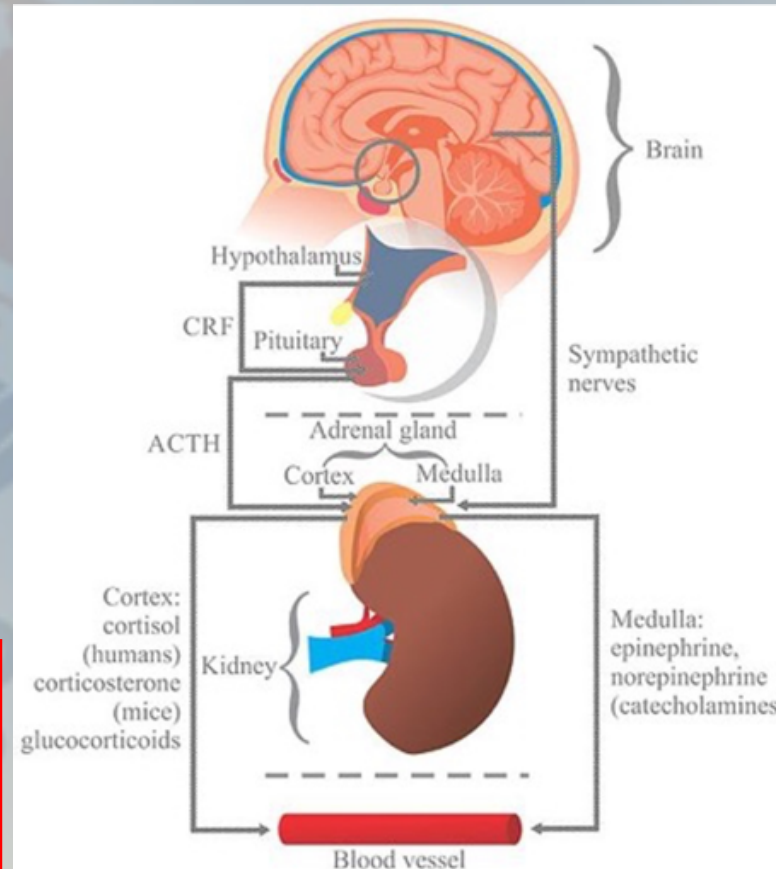
#### Human body's reaction to stress

##### Short-term stress response

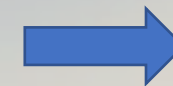
**Stress affects → Hypothalamus**  
(send nerve signals to) → **Spinal cord** (send nerve signals to) → **Adrenal medulla** (secretes) → **Adrenaline and Noradrenaline**

##### Long-term stress response

**Stress affects → Hypothalamus**  
(releases CRH to) → **Pituitary gland** (send ACTH to) → **Adrenal cortex** (secretes) → **Cortisol and Aldosterone**



leads to



*Rising blood sugar level; Higher blood pressure;  
Faster breathing; Faster metabolism; Increased  
attention; Slower digestion and lower kidney  
function*

*Higher blood volume; Higher blood pressure;  
Processing of proteins and fat to glucose;  
Higher level of blood sugar; Immunosuppression;  
Lower production of sexual hormones;  
Cardiovascular problems; Kidney failure*



## Chapter 1 : Pre-Acute Phase from Brain-Body-Person Perspective

### 1.3 Person, body, and stress reactions

Stressor → Stress reaction → Changes in body → Stress symptoms

**Physical:** Nervousness and shaking, ringing in the ear, cold or sweaty hands and feet; Chest pain and rapid heartbeat; Dry mouth and difficulty swallowing; Aches, pains, and tension in muscles; Nausea, diarrhea, constipation; Headaches; Low energy; Insomnia; Frequent cold and infections; Loss of sexual desire and/or ability.

**Emotional:** Feeling overwhelmed, losing control or need to take control; Easily agitated, frustrated, moody; Difficulty relaxing and calming down; Feeling bad about yourself, lonely, worthless, and depressed; Avoiding others.

**Cognitive:** Forgetfulness and disorganization; Racing thoughts; Inability to focus; Poor judgment; Constant worrying; Pessimism.

**Behavioural:** Indecisiveness; Reckless behaviour (e.g., increased alcohol, drugs, or cigarettes use); Nervous behaviours (e.g., nail biting, fidgeting, or pacing); Change in appetite (eat too much or not eating); Procrastination and avoiding responsibilities.

**Symptoms change in time since stress reaction starts and are interconnected**

(some symptoms are more typical in the early phase of stress reaction and some in the later phase)



## Chapter 1 : Pre-Acute Phase from Brain-Body-Person Perspective

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How to be better prepared for stress:

### 1. Healthy lifestyle:

- a) Daily physical activity
- b) Daily adequate water intake
- c) Daily adequate food intake
- d) Enough of good sleep

### 2. Learn to understand own emotions;

### 3. Learn to understand of (i)rationality of own thoughts;

### 4. Train to regulate own thoughts (e.g., de-catastrophizing);

### 5. Build some coping strategy (strategies);

### 6. Learn how to relax;

### 7. Build your own network of social support;

### 8. Be open to help from outside.

