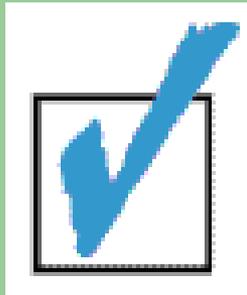


What is Stress?

Going for the 3 Increases: Increase in Health, Increase in Happiness & Increase in Energy

Strategies for
Success in Health
Management

By: James J. Messina, Ph.D.





Diathesis and Stress Interaction

- **Diathesis:** is the predisposition (genetics) of human body to disease or disorder
- **Stress:** refers to factors in environment: which offer challenge, distress, problems to solve, which are unique to each individual & are environmental condition which elicits disease or disorder in individual or are conditions in human which are ripe for disease or disorder



Definition of Stress

1. Is quality of an external stimulus
2. Is response to such stimulus
3. Is results from interaction between stimulus & response

Stress as a process involves

1. Environmental event (a stressor)
2. Its appraisal by individual
3. Various responses of organism
4. Reevaluations resulting from responses & changes in stressors



Cortex
evaluates
stressor

Hypothalamus

Pituitary
gland

Adrenal
gland

Release of cortisol
Increases release of
fat for energy, decreases
inflammation and
swelling but slows
healing

Release of
epinephrine
and
norepinephrine

Sympathetic division of the
autonomic nervous system

- Increased blood pressure,
heart rate, and respiration
- Increased blood flow to
muscles and away from
digestive organs
- Mobilization of energy reserves
(stored fats are released)
- Increased mental alertness

EVENT

You lose the only copy of your term paper, which is due in 2 days

Stage 1

Primary appraisal

Not a source of harm, a threat, or a loss

Is a source of harm, a threat, or a loss

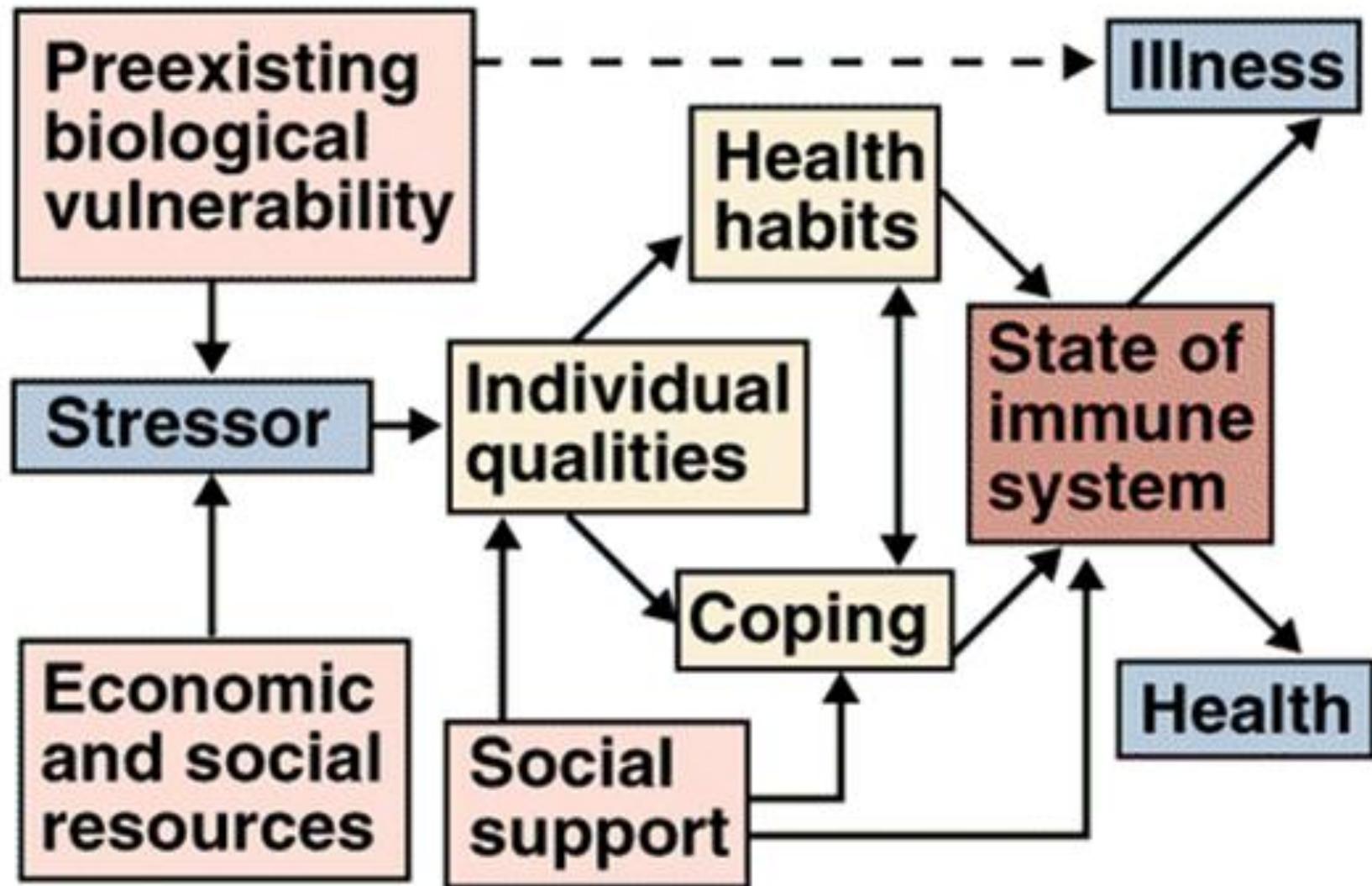
Stage 2

Secondary appraisal

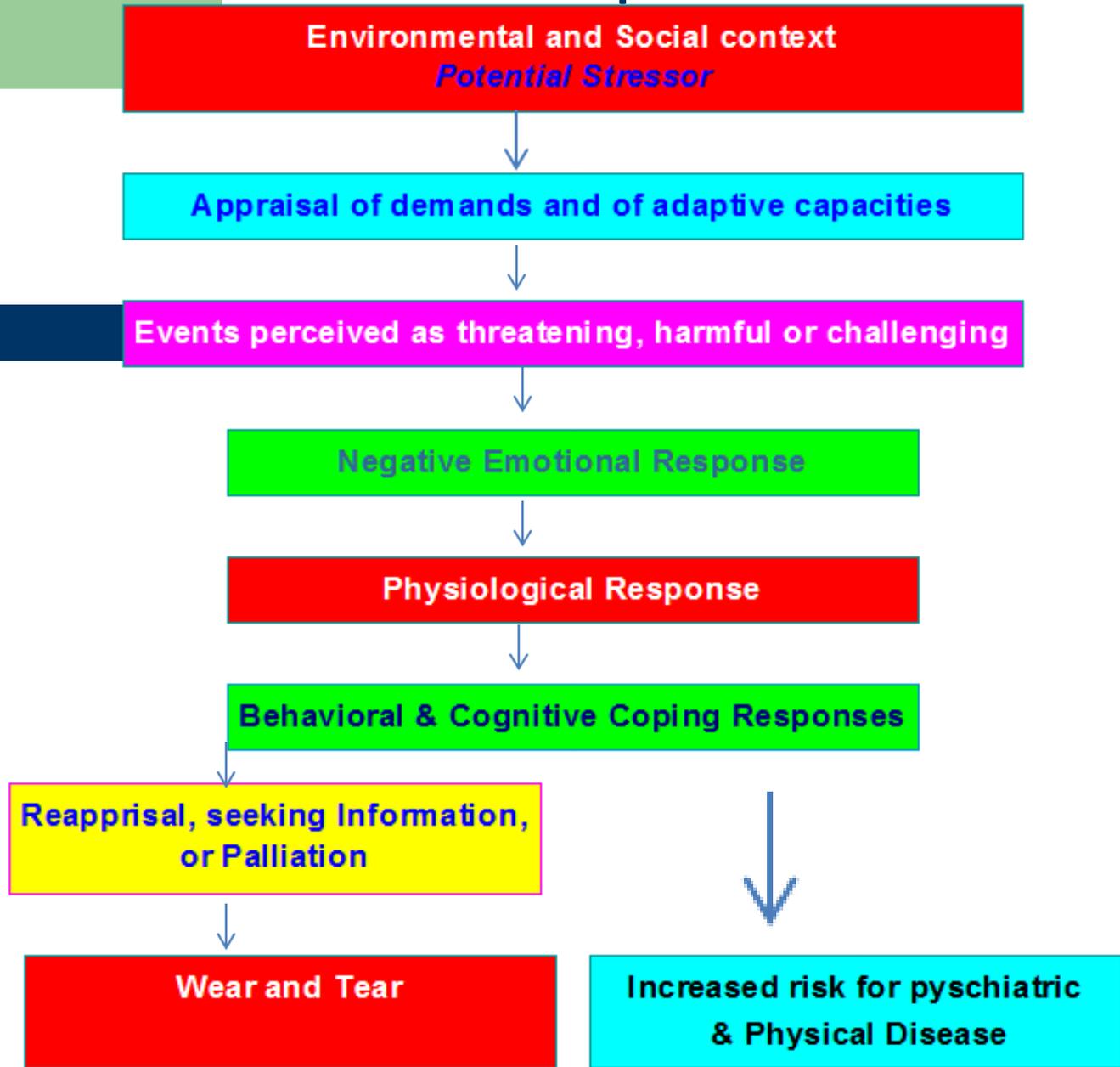
Sufficient resources to handle stressor—no distress

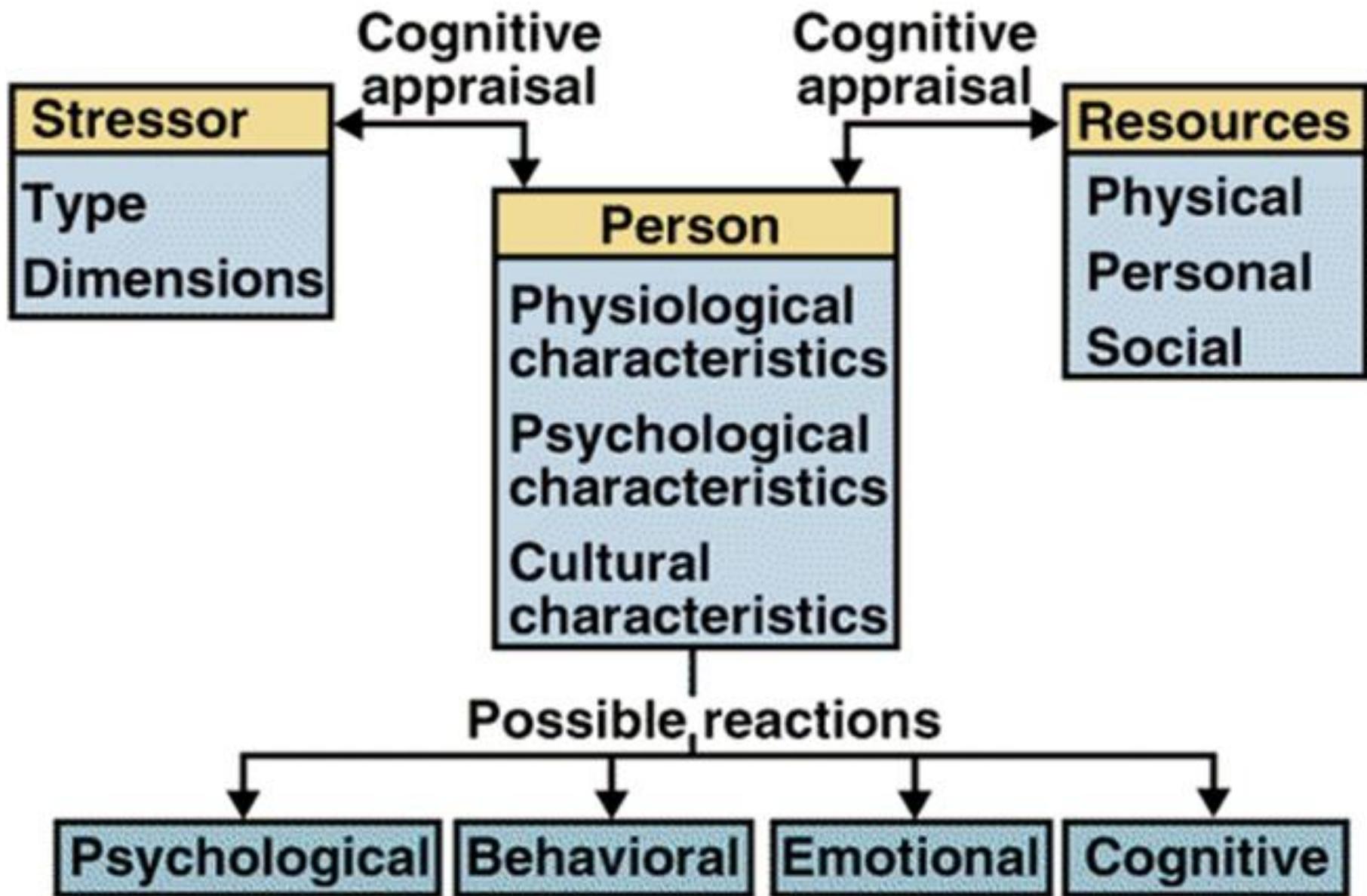
Insufficient resources to handle stressor—distress

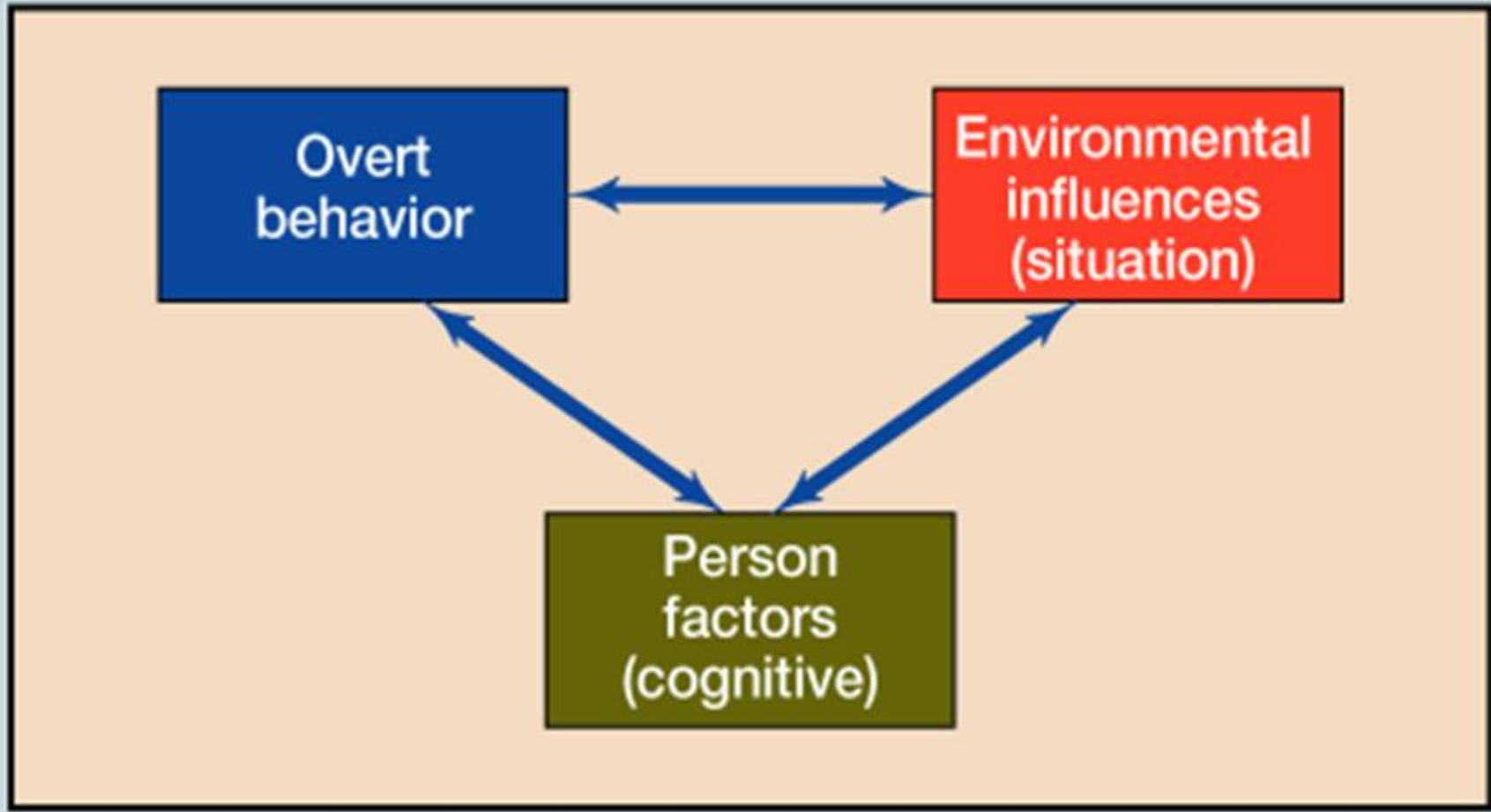
A Model of Stress and Illness



The Stress Response







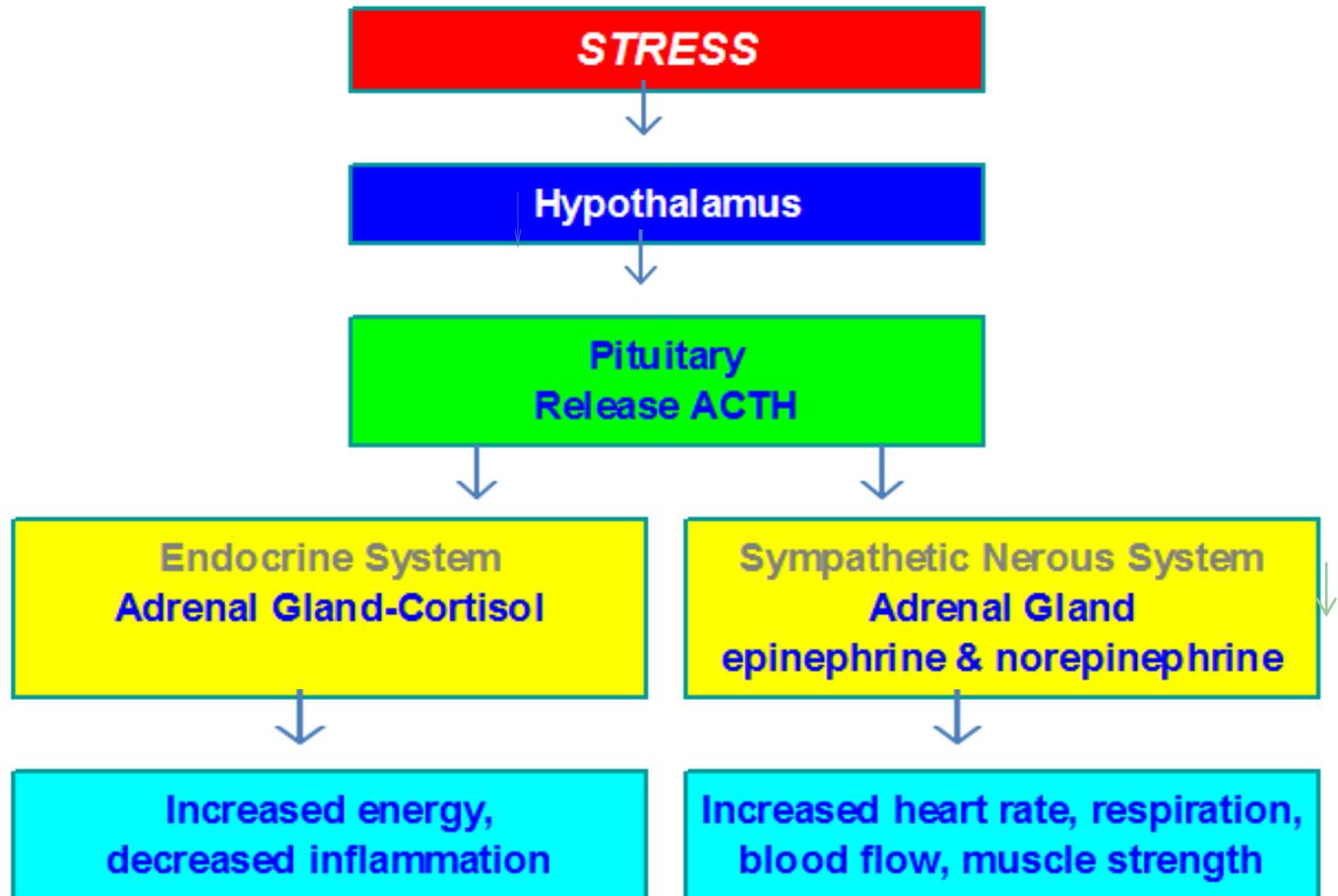


Physiological Effects of Stress

1. Sympathetic Nervous System (system responsible for mobilizing body resources in urgent situations) stimulates adrenal medulla of adrenal glands
2. Adrenal stimulation results in production of Catecholamines, Epinephrine & Norepinephrine, affecting body's heart rate, respiration, blood flow & muscle strength
3. Stress causes pituitary gland (structure connected to hypothalamus in forebrain) to release andreno-corticotropic hormone (ACTH).
4. ACTH stimulates adrenal cortex of adrenal gland to secrete glucocorticoids. Most important of glucocorticoids is cortisol which mobilizes body's resources by increasing energy & decreasing inflammation especially in injuries



Physiological Effects of Stress



The Body's Reaction to Stress

Blood vessels in skin, skeletal muscles, brain, and viscera constrict.

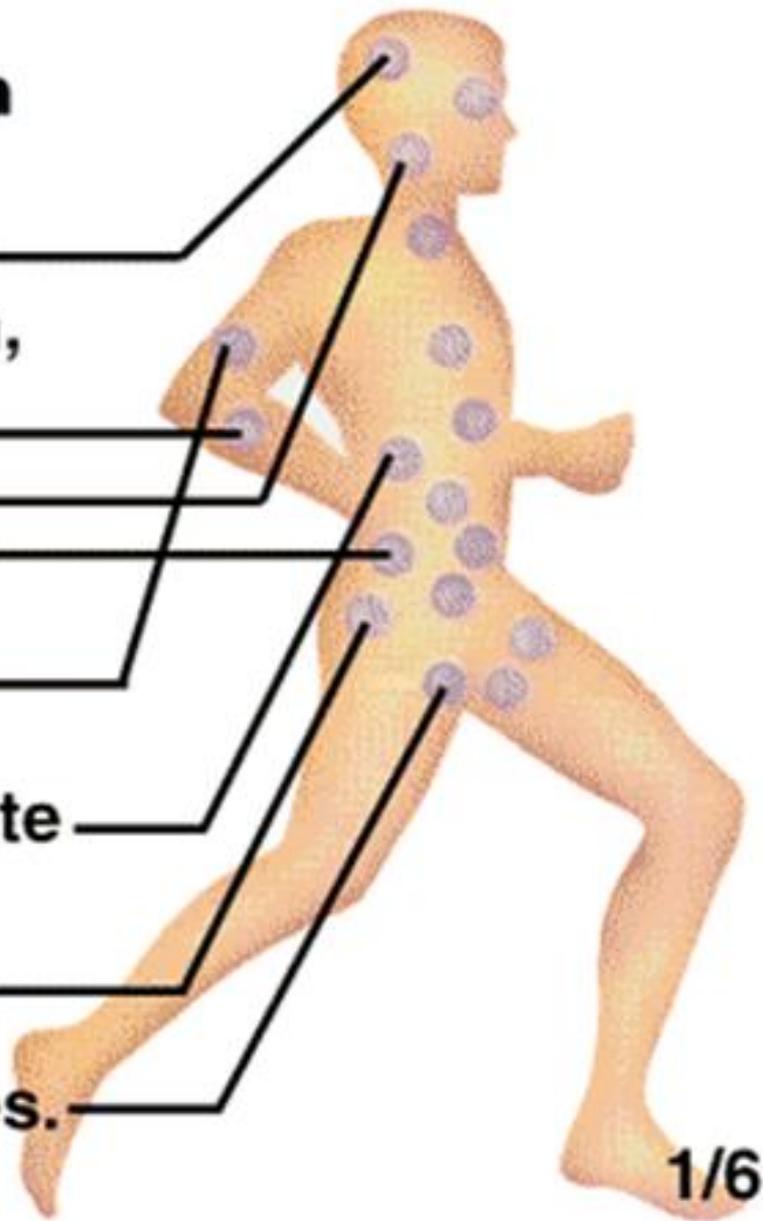
Sweating increases.

“Goose pimples”

Adrenal glands stimulate adrenalin secretion.

Anal sphincter closes.

Urinary sphincter closes.



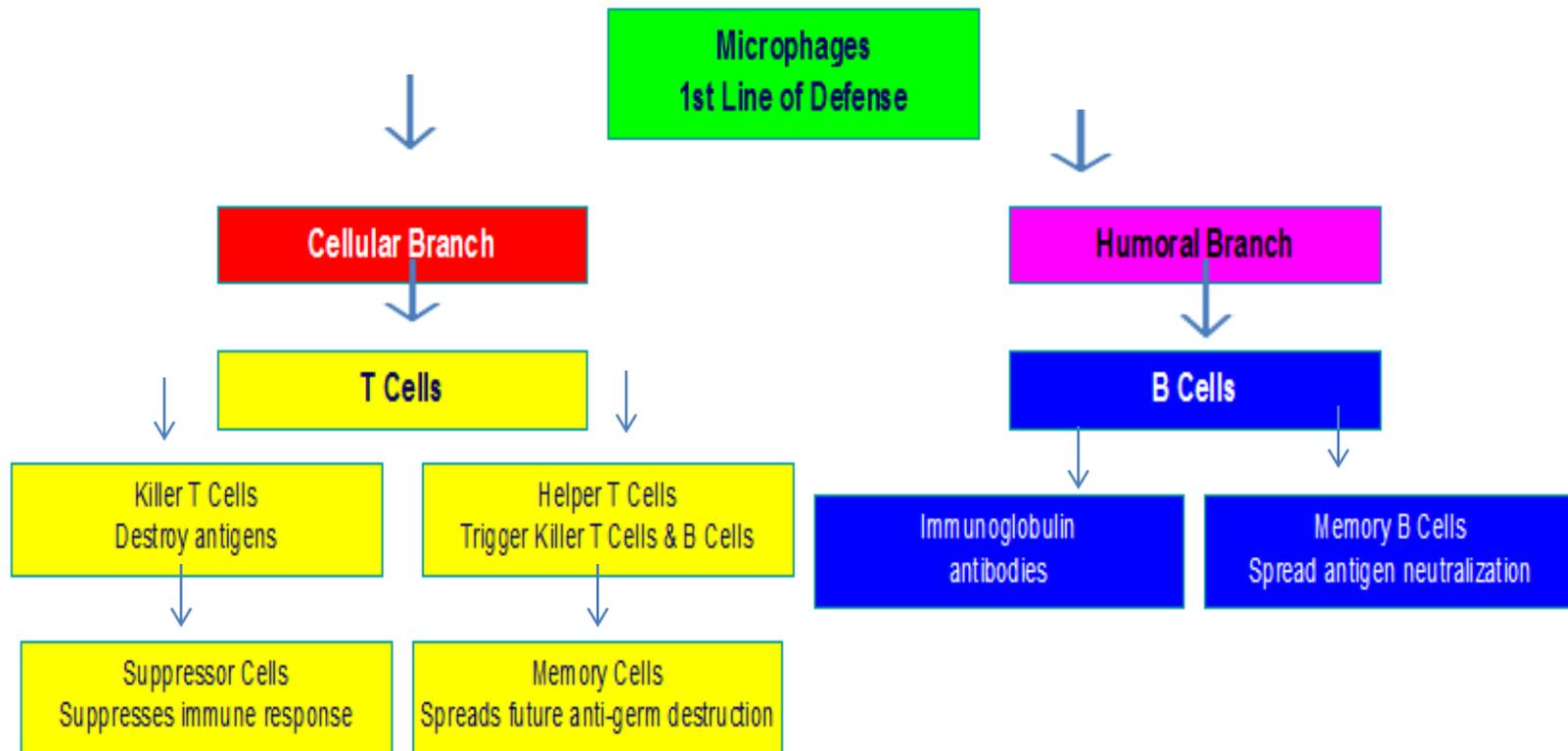


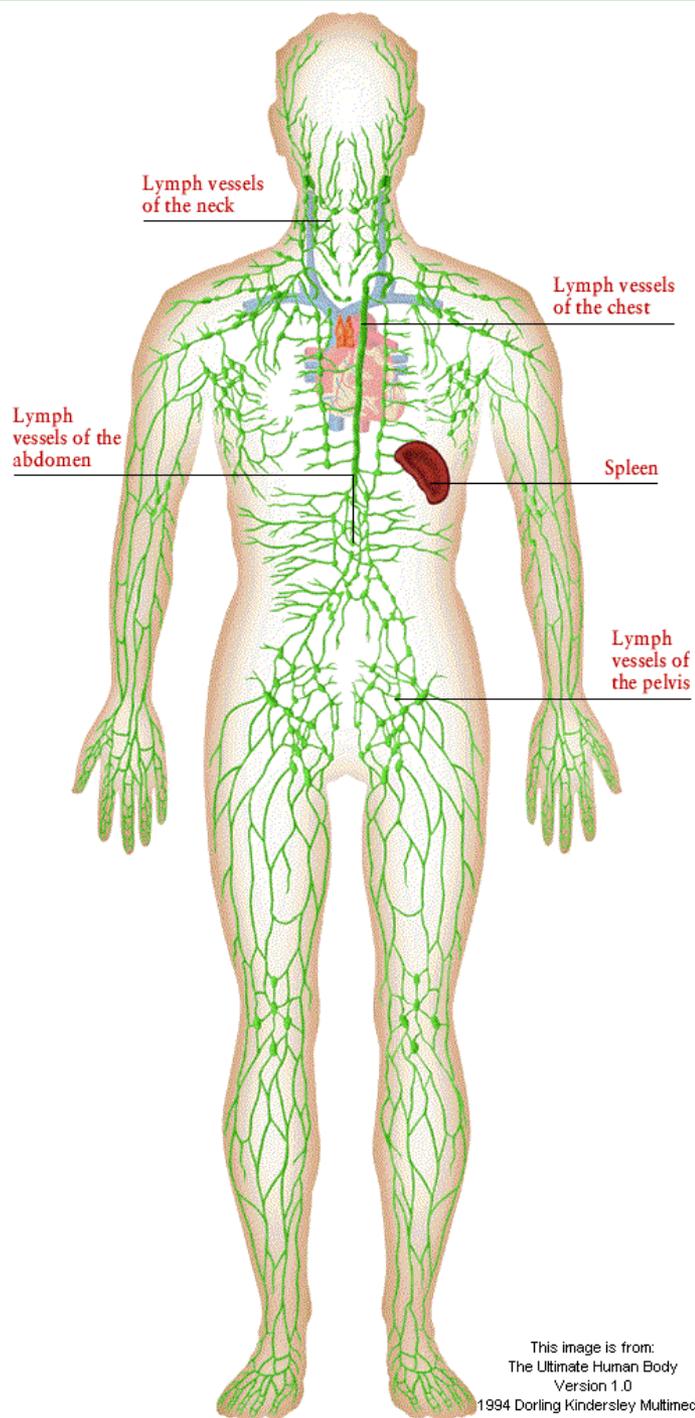
Negative Impact of Prolonged Stress Response

1. There is a negative impact on body's organs, mental functioning & Immune system
2. There is an impact on immune system which impedes immune system from destroying viruses, bacteria, tumors & irregular cells
3. Stress impacts immunosuppression & it is an important influence on health & illness of individual



Immune System impacted by Stress





Stress affects your immune system

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The Ultimate Human Body
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Hormone Stress Cascade during Severely Stressful or Traumatic Events

1. **Hypothalamus** is activated by messages from nervous system or blood stream during a “stressful event” & it releases CRH which initiates fight-flight response
2. **Corticotrophin-releasing hormone (CRH)** is a polypeptide hormone secreted by hypothalamus into pituitary portal system where it triggers release of adrenocorticotrophic hormone (ACTH) from pituitary gland. During stress it surrounds pituitary gland which then releases ACTH.
3. **Adrenocorticotrophic Hormone (ACTH)** stimulates adrenal glands to release Cortisol & Adrenalin
4. **Cortisol & Adrenalin** increase heart rate & metabolic rate



ACTH - Adrenocorticotropic Hormone

1. ACTH stimulates adrenal cortex of adrenal gland to secrete glucocorticoids. Most important of glucocorticoids is cortisol which mobilizes body's resources by increasing energy & decreasing inflammation especially in injuries
2. ACTH triggers "survival hormones" during stressful event especially Cortisol until threat is removed
3. With long-term stress or constantly repeating triggers such as with re-experiencing hormone release does not shut down



Cortisol

1. Cortisol is an aging hormone
2. Elevated amounts of Cortisol damages hippocampus which results in accelerated aging responses throughout body
3. An elevated amount of Cortisol leads to depression & feelings of fatigue



Hippocampus

1. The Hippocampus is involved in learning & memory
2. Damage to hippocampus causes memory problems & interferes in new learning & even current memory
3. Victims of PTSD have been found to have smaller hippocampus- the more memory problems they had the smaller was their hippocampus
4. Adults who have been severely physically and/or sexually abused have similar memory problems with reduced hippocampus
5. Smaller hippocampus does result in dissociative symptoms- greatest decrease in volume of hippocampus correlates to most pronounced symptoms of dissociation
6. Depression is also associated with reduced hippocampus size



Bilateral response of brain to stress and trauma

- Major stress & trauma are right side of brain activity – rich in images of stressor & trauma
- Left side of brain which involves talking shuts down in severe stress & trauma. The Broca's area of brain on left side of brain becomes unresponsive under severe stress & trauma & individuals are heard to say: “I don't have words to tell you what I have experienced.”
- There is a need to help both sides of brain to recover from the stress & trauma so there is a need for bilateral processing similar to used such as is done in EMDR
- It is important to realize that humans use their body to help their brain think through things & to process stress and trauma



Signs of Physical response to Stress

Stress results in increased:

- heart rate
- blood pressure, respiration
- perspiration
- pupil dilation
- muscle tension



What are results of chronic stress?

In the state of chronic stress there is chronically elevated:

- heart rate
- blood pressure
- respiration are chronically elevated

Common stress-related illnesses include:

- Coronary artery disease
- Peptic ulcer
- Mental illness



It is important to work on Your Relaxation Response

The signs of this relaxation physical response include decreased:

- heart rate
- blood pressure
- respiration
- pupil dilation
- muscle tension

It is important to daily use the stress-management strategy to evoke relaxation physical response