

First Semester Basics of Surgery

METABOLIC RESPONSE OF INJURY



Sawa University

College of health and medical techniques

Department of Anesthesia

Stage: Second

جامعة ساوة الاهلية

كلية التقنيات الصحية والطبية

قسم تقنيات التخدير

المرحلة: الثانية

محاضرة رقم: 1

Lecture No. 1

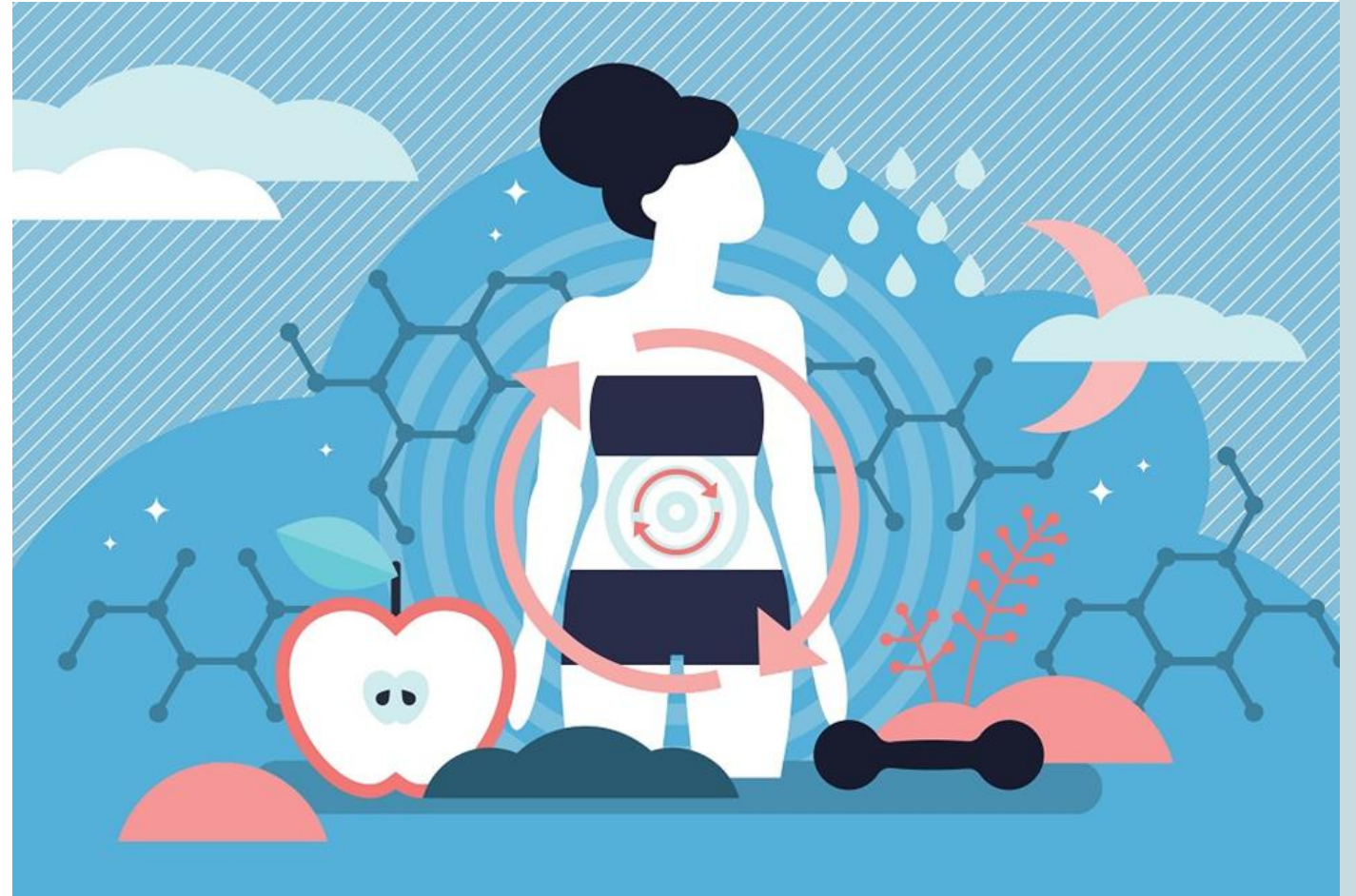
نظري

Theoretical

استاذ المادة : م.م. رباب سمير كاظم

METABOLISM

It is the complex system of interrelated biochemical reactions and physiological responses that required for maintaining the life.



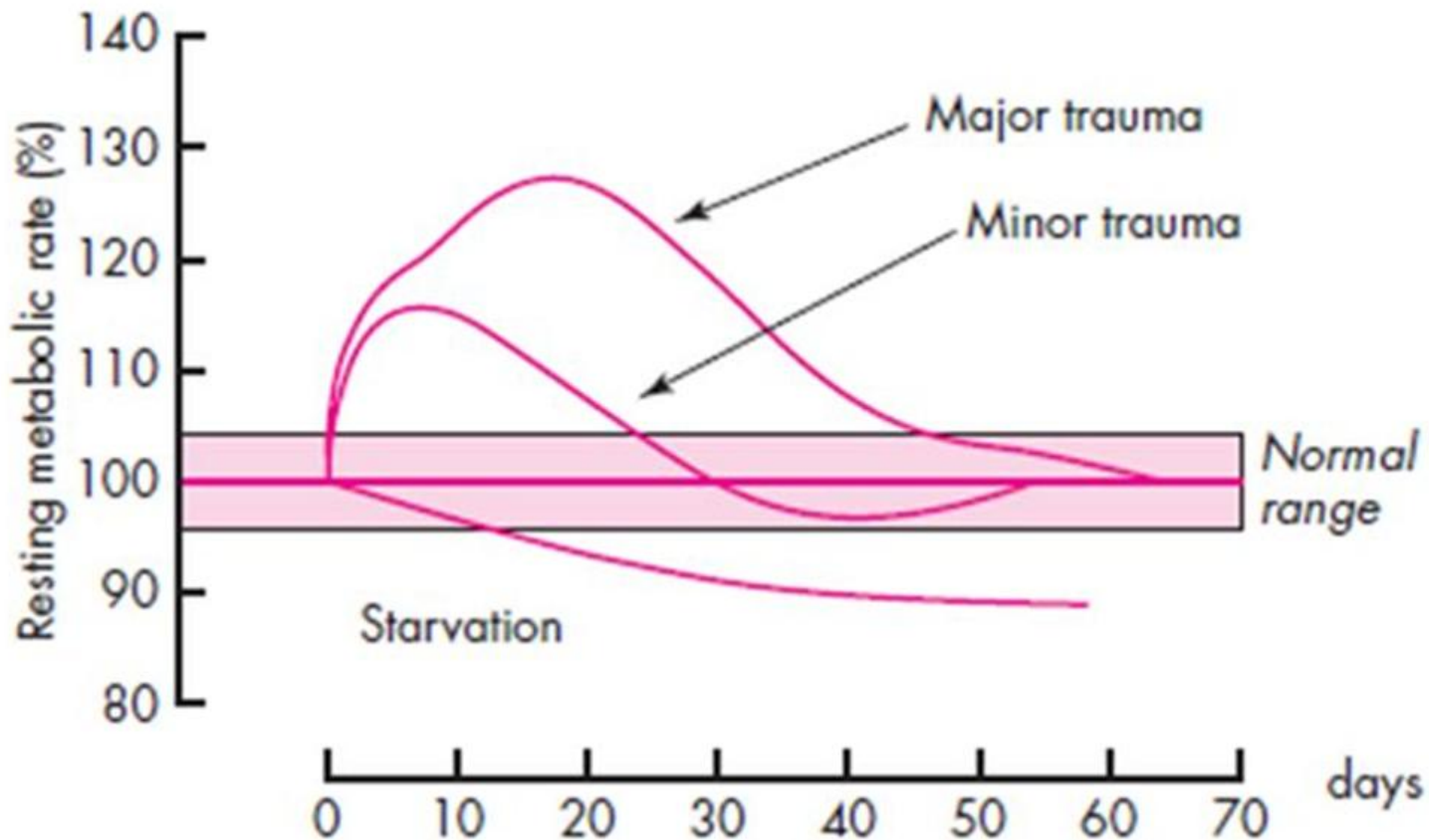


HOMEOSTASIS

A coordinated physiological process that maintain a balanced constant conditions in the internal environment .It is the foundation of normal physiology.

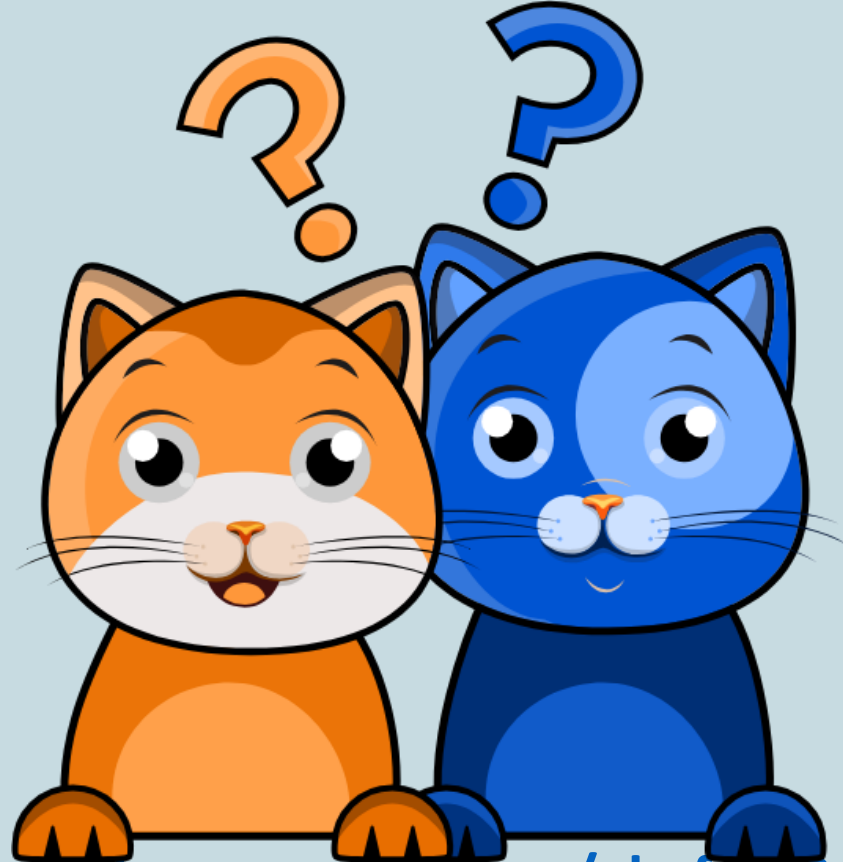
Examples: Maintaining temperature, oxygen, water and electrolytes and blood pressure.

- ✓ Metabolic response to injury is **graded**
- ✓ the more severe the injury, the greater the response in metabolic and immunological changes



In this case, which statement is more accurate?

حسب ما سبق ما اكثر عبارة صحيحة؟



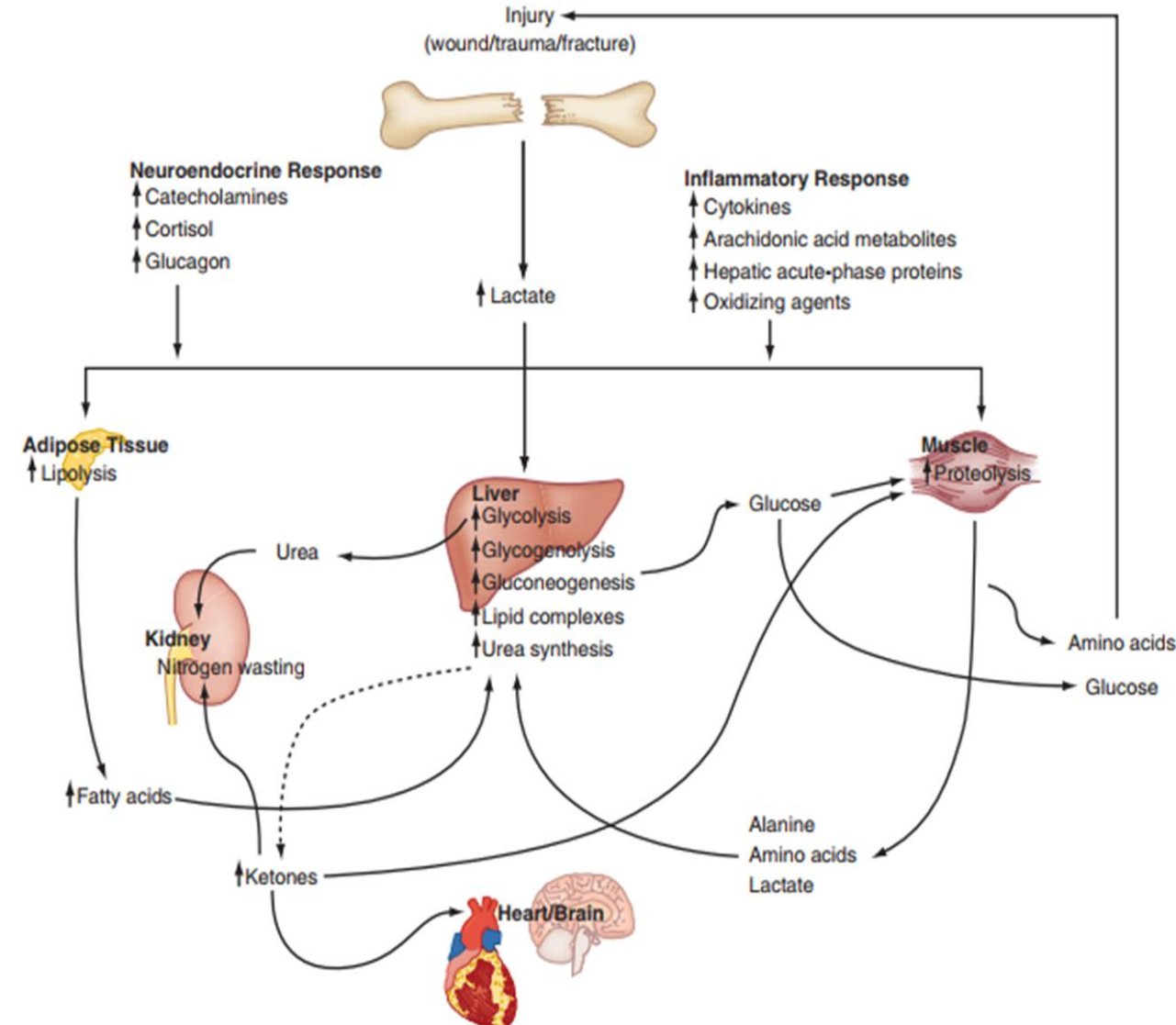
<https://www.menti.com/alwfs2x8urvs>

THE METABOLIC RESPONSE TO INJURY

Is activation of groups of metabolic, hormonal and immunological changes following injury to restore homeostasis

Response Phases

'ebb' and 'flow'



EBB PHASE

Characterized by:

- 1-Occurs during the first few hours after injury.
- 2-Patients were cold and hypotensive.

FLOW PHASE

If the patients survive the Ebb phase, they entered the Flow phase.

It is divided into:

1. **Catabolic** flow phase
2. **Anabolic** flow phase

Catabolic flow phase

Characterized by:

- 1- The initial flow phase.
- 2- It lasts about a week.
- 3- High metabolic rate.
- 4- Break down of protein and fat stores.
- 5- Weight loss.

Anabolic flow phase

Characterized by:

- 1-The late flow phase.
- 2- follow the catabolic phase.
- 3- Last from two to several weeks.
- 4- Protein and fat stores are restored.
- 5- Weight gain.

MEDIATORY OF INJURY RESPONSE

- 1. NURO-ENDOCRINE (HORMONAL)
- 2. IMMUNE SYSTEM (CYTOKINES)

NURO-ENDOCRINE RESPONSE TO INJURY

characterized by:

Actively secreting pituitary and elevated counter regulating hormones which are cortisol, glucagon, and adrenalin with decrease in the level of insulin

IMMUNOLOGY RESPONSE TO INJURY

Is an interaction between:

- 1- Innate immune response (macrophage).**
- 2- Adaptive immune response (B and T cells)**
- 3- Cytokines release.**

Systemic inflammatory response syndrome (SIRS):

Is an inflammatory reaction affecting the whole body and is an exaggerated defense response to harmful stimuli. Is due to overstimulation of the inflammatory response.

SYSTEMIC INFLAMMATION RESPONSE SYNDROME (SIRS)

- **Two or more of the following critical :**

1- Body temperature $>38^{\circ}\text{C}$ or $<36^{\circ}\text{C}$.

2- Pulse rate >90 beats/min.

3- Respiratory rate >20 breaths/min. or Pco_2 <32 mm.Hg.

4- WBC count < 4000 mm³ or >12000 /mm³.

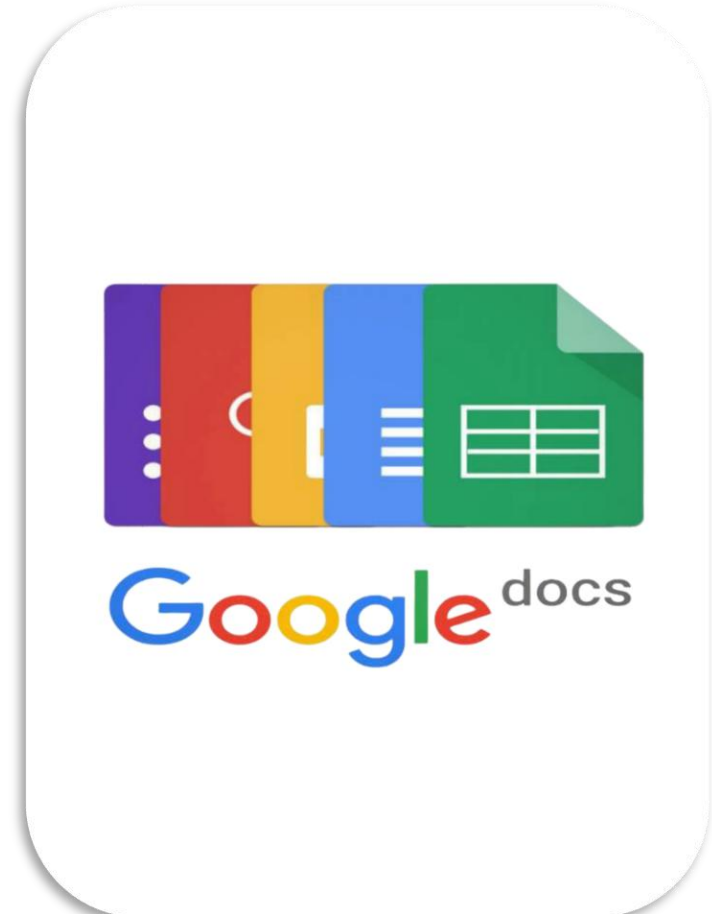
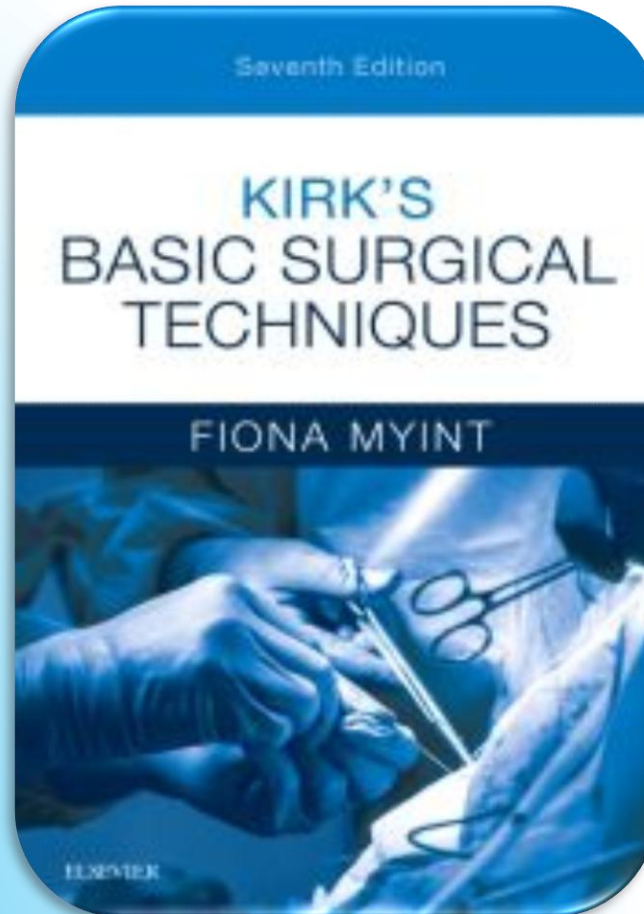
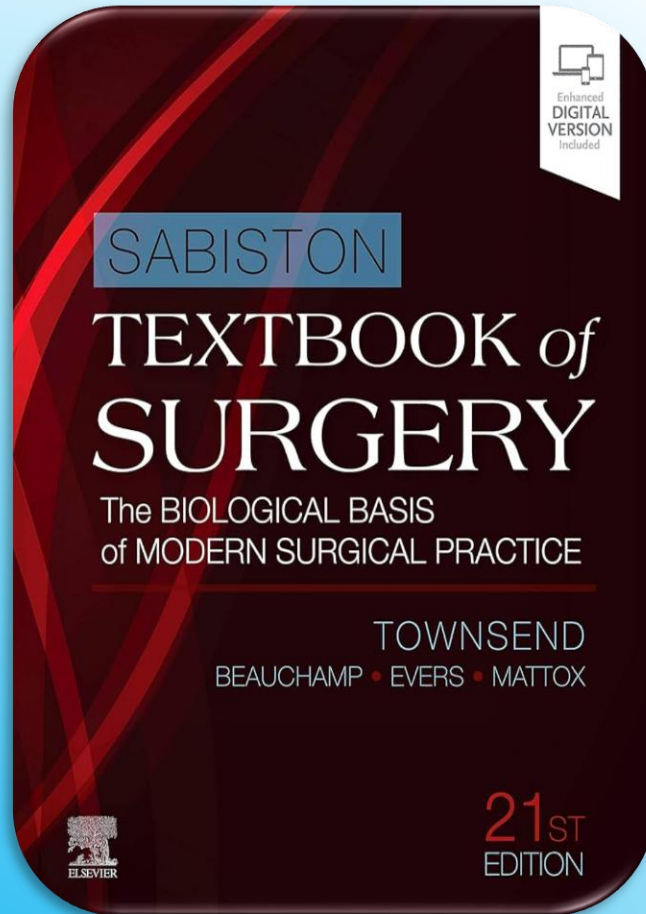
SIRS + suspected or present source of infection = Sepsis



FACTORS THAT COMPOUND THE RESPONSE TO INJURY

1. Volume loss (continuing hemorrhage)
2. Hypothermia
3. Tissue oedema
4. Systemic inflammation
5. Starvation
6. Immobility

REFERENCES



Basic surgical technique, Fiona Myint, seventh edition
Text book of surgery, COURTNEY M. TOWNSEND, JR., MD, 21 edition, 2022



THANK YOU

م.م. رباب سمير كاظم