Al-Mustaqbal University

Collage of Engineering

Prosthetics and Orthotics Engineering

Second Stage

PROSTHETICS I

Asst. Lec. Muntadher Saleh Mahdi

2st term – Lecture 2

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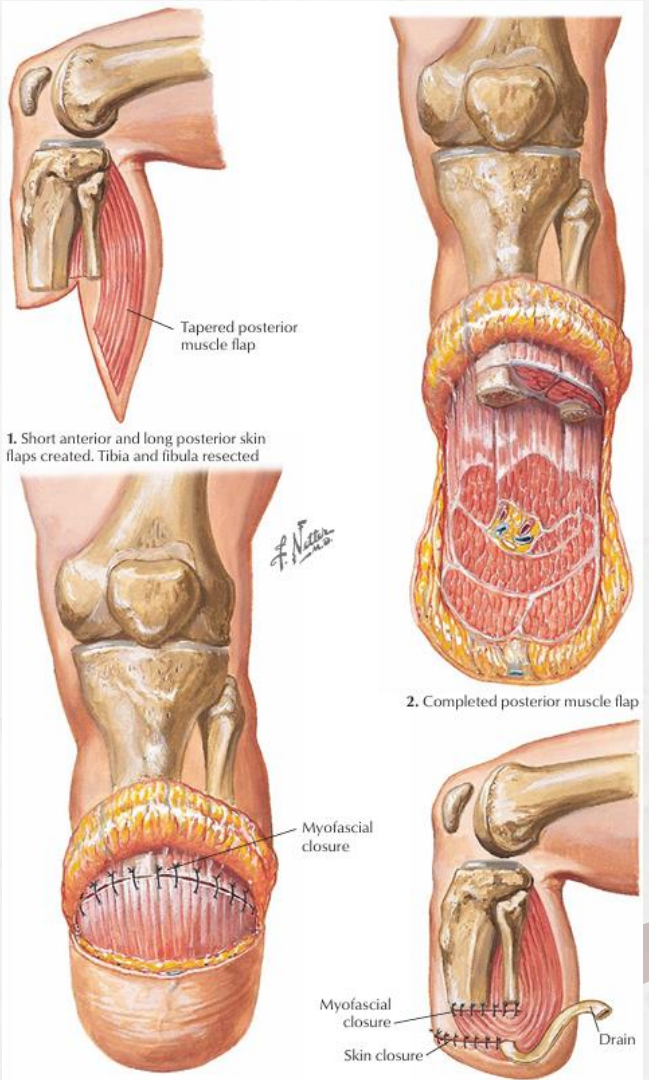
Muntadher.saleh.mahdi@uomus.edu.iq



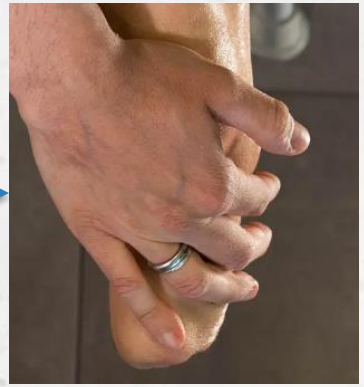

BRAINSTORMING

Transtibial Prosthetics

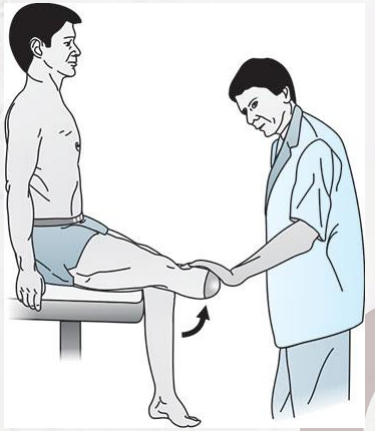
(I) Initial Evaluation and Examination

1- Physical Examination:

Inspection and Palpation: Check the limb by looking and feeling.



Muscle Performance: Test muscles using manual muscle testing (MMT).



(I) Initial Evaluation and Examination

1- Physical Examination:

Range of Motion (ROM): Assess both active (user moves) and passive (examiner moves) movements.

Sensory Testing and Skin Assessment: Check skin condition and sensitivity.

(2) Collaboration in Prosthetic Rehabilitation

Teamwork is Key:

Involvement: Rehabilitation involves the combined efforts of the physician, therapist, prosthetist, and the patient.

Importance: Each person provides essential information and support.

Outcome: Working together ensures the best possible results for the patient.

(3) Prosthetic Candidacy

1- Motivation:

Meaning: The individual’s determination and belief are important.

Role: A strong will to succeed helps in the rehabilitation process.

(3) Prosthetic Candidacy

2- Support System:

Peer Support: Interactions with others who have undergone similar experiences provide invaluable advice and encouragement.

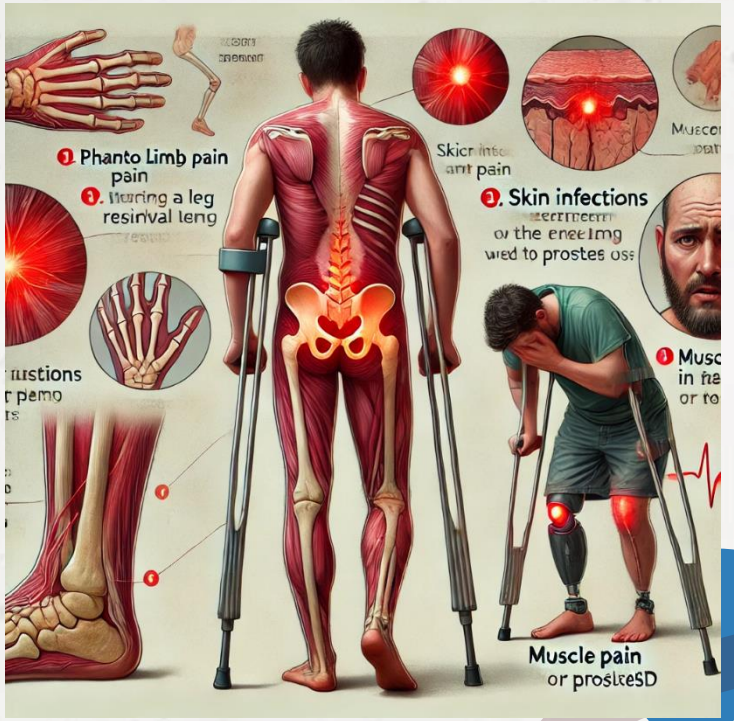
Online Resources: Websites and support groups offer additional help and information.

(4) Challenges and Solutions in Prosthetic Rehabilitation

1- Dealing with Comorbidities:

Meaning: Amputations often come with other health issues.

Solution: Address these additional complications for better rehabilitation.

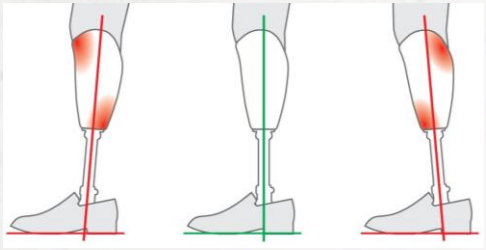


(4) Challenges and Solutions in Prosthetic Rehabilitation

2- Customization:

Skin Issues: Use appropriate materials for comfort.

Pressure Points: Adjust the socket to relieve pressure.



Limb Dysfunction: Use specialized prosthetic options.

(4) Challenges and Solutions in Prosthetic Rehabilitation

3- One Size Doesn't Fit All:

Physical Fit: Ensure the prosthesis fits well.

Functional Fit: Align the prosthesis functionality with the user’s specific needs.

(5) Prosthesis Design – Striking the Right Balance

1- Weight vs. Functionality:

Challenge: Adding features to a prosthesis can make it heavier.

Impact: Increased weight can lead to more energy use and fatigue.

(5) Prosthesis Design – Striking the Right Balance

2- Materials and Techniques:

Advancements: Modern designs use new materials and techniques.

Benefits: These advancements improve mobility and energy efficiency.

(6) Predicting Functional Outcomes

Positive Outlook: Most people with transtibial amputations can regain their previous level of function.

Special Attention: Certain health conditions or complications might need extra care.

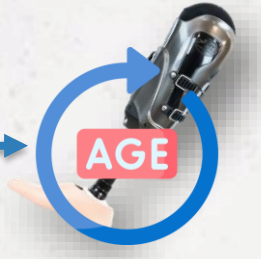
(7) Classifying Functional Potential – The K-Levels

K-levels are a system used to determine a person's functional ability for prosthetic use.

K-levels help ensure:

Correct Prosthesis: Matching the right prosthesis to the user's abilities.

Individual Rehabilitation: Aiding in the user's rehabilitation process.



Medicare Regulation: Helping regulate Medicare provisions for prosthetics.

MCQ

1) What is the cornerstone of the initial prosthetic evaluation and examination?

a) Interview

b) Setting rehabilitation goals

c) Physical examination

d) Collaboration with prosthetist

2) Which of the following is not a factor in determining prosthetic candidacy?

a) Motivation

b) Support system

c) Weight of the prosthesis

d) Health history

MCQ

3) What does the classification of "K-levels" ensure?

a) Proper weight distribution

b) Correct alignment of prosthesis

c) Right prosthesis prescribed for user’s ability

d) Customization of prosthetic designs

4) Why is customization important in prosthetic rehabilitation?

a) Ensures a snug fit for the socket

b) Proper range of motion

c) High energy efficiency

d) Aligns prosthesis functionality with individual needs

MCQ

5) Which material is known for making prosthetics durable and lightweight?

a) Steel

b) Plastic

c) Kevlar

d) Aluminum

6) Why is the initial interview process important in prosthetic evaluation?

a) To assess the physical condition of the patient

b) To understand the patient's cognitive level and health history

c) To begin manual muscle testing (MMT)

d) To evaluate both active and passive range of motion (ROM)

MCQ

7) Which component helps reducing pressure points in custom prosthetics?

a) Suitable interface materials

b) Lightweight materials

c) Flexible double-spring keel

d) Sensory testing

8) How does setting rehabilitation goals benefit the patient?

a) Enhances energy efficiency

b) Provides a clear path for achieving mobility and function

c) Customizes prosthetic designs specific to an individual's needs

d) Improves the durability of prosthetics

MCQ

9) How does the collaboration between physicians, therapists, and prosthetists impact prosthetic rehabilitation?

a) Creates a more durable prosthesis

b) Ensures a cohesive and supportive rehabilitation process

c) Reduces the need for manual muscle testing

d) Simplifies the initial physical examination

10) What is the main purpose of including a fenestrated heel in prosthetics design?

a) Enhancing pressure distribution

b) Reducing shock

c) Increasing the height of prosthetics

d) Providing resistance to different footwear

MCQ

11) What is the purpose of muscle performance testing in prosthetic evaluation?

a) To assess the strength and function of individual muscles

b) To check the condition of the skin

c) To evaluate the cognitive level of the patient

d) To measure the weight of the prosthesis

12) Which K-level describes a user with the ability for high-impact activities and agility?

a) K0

b) K1

c) K2

d) K4

MCQ

13) Which of the following is a component of muscle performance?

a) Sensitivity

b) Flexibility

c) Palpation

d) Inspection

14) What is a key factor in determining prosthetic candidacy?

a) Weight of the prosthesis

b) Motivation of the individual

c) Color of the prosthesis

d) Brand of the prosthesis

MCQ

15) Why is a support system important in prosthetic rehabilitation?

a) Provides aesthetic enhancements

b) Offers emotional and practical support

c) Decreases the weight of the prosthesis

d) Ensures proper skin care

16) What should be done if issues are noticed during sensory testing and skin assessment?

a) Ignore the issues

b) Adjust the prosthesis without consulting a professional

c) Document the problem and notify a healthcare professional

d) Stop wearing the prosthesis permanently.


Thank
you