# Essential intervention No. 7

## Exercise and activity

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## KEY OBJECTIVES

- To know the difference between active, active-assisted, and passive exercise.
- To know the difference between exercises for mobilizing joints and exercises for strengthening weak muscles.
- To know how to identify which persons affected by BU need exercise and know how to choose which exercises are appropriate.
- To know how to do the exercises and activities correctly.
- To know how to teach the person affected by BU to do the correct exercises.
- To know how to adapt exercises and activities for various age groups.
- To know what can cause adverse effects during exercise and activity.

Exercises and activities are indicated when there is a risk of developing a contracture or when there is a potential problem with soft tissues, joint movement, or muscle weakness (see Annexes 8 and 9). The primary objective of exercise and activity in Buruli ulcer is to maintain or improve soft tissue length and joint range of motion (ROM). Much care is needed not to cause further tissue damage from using aggressive, repetitive type exercises and activity. This will lead to additional formation of fibrosis and limit function.

The second objective of exercise and activity is to strengthen muscles. Exercise and activity also help reduce stress and adhesions, as well as improve circulation and promote a sense of well-being. They can be organized individually or in groups, and can be located in a therapy room, at the hospital bedside, on the hospital grounds, or at home.

Activities of daily living and games are excellent methods of getting exercise, which help not only the physical but also the psychological and social aspects of the person's life. Because more than 50% of the persons affected by Buruli ulcer are under 15 years of age, interventions should be appropriate for children – for example, by turning the interventions into games in order to encourage normal development and provide learning opportunities.

**Figure 5.7.1** Exercises and activities can prevent disability and promote development (stimulate educational opportunities and participation)

## Games are good for exercise and development (Visual Health Information)

Figure 5.7.2

**Active exercise** involves using the person's own affected joints and muscle contraction to perform the exercise. This type of exercise can be adapted to include more repetitions and more resistance as the muscles get stronger. Weights can be made from bags filled with sand, rice, beans, etc. Greater degrees of motion can also be included as joints become more mobile and less stiff.

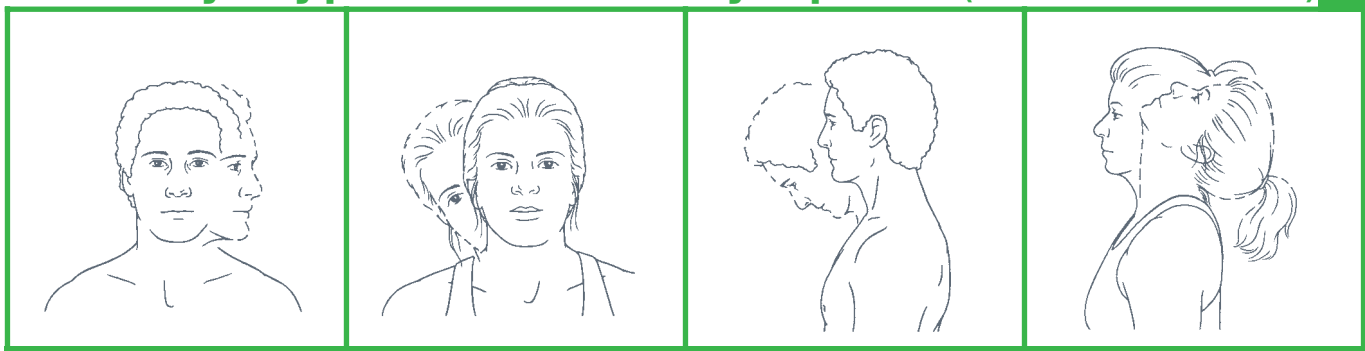
**Active-assisted exercise** involves using the person's own affected joints and muscle contraction to perform the exercise with the assistance of either the unaffected side or another person – usually when the person is unable to move the affected part through the total range of movement. This exercise may become more difficult as the person tries to move against gravity or resistance.

**Passive exercise** is done either by another person or by the person affected, using his or her unaffected side to move the affected limb. Passive exercise aims at maintaining or improving joint movement and stretching soft tissues, but does not strengthen the muscles. It is most effective when combined with serial splinting. Movement should be started slowly and be done gently to avoid trauma from overstretching. **Such trauma will cause inflammation of healing tissues and pain, reducing the person's desire to participate.**

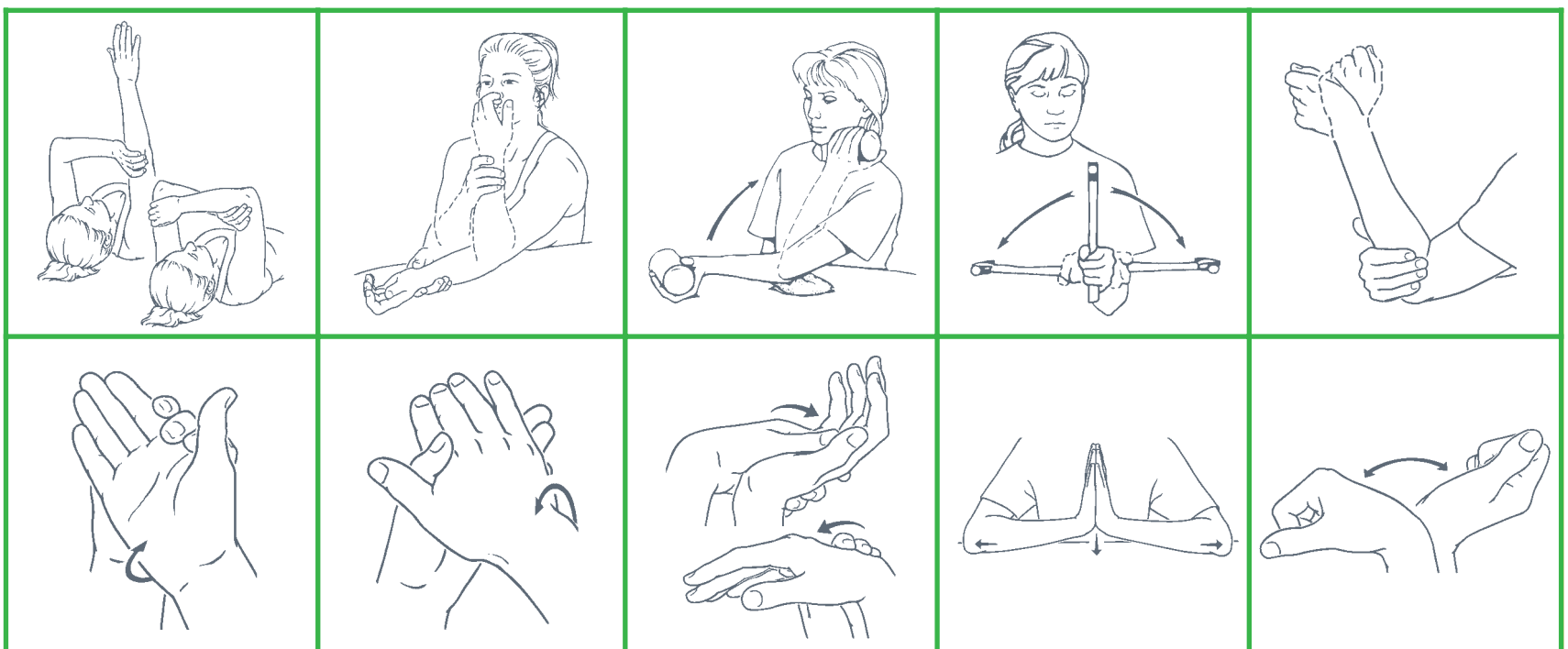
**Isometric exercises** allow muscles to contract without movement of the limb. They can be beneficial following grafting where immobilization is used with specific body parts until the graft takes (5–10 days). If pain increases and continues for more than 30 minutes after an exercise or activity, adjustments must be made by reducing the weight, the number of repetitions or the length of time for the exercise.

From the outset – when BU is first diagnosed – it is important to develop an appropriate programme of exercises that can be done by the person or a caregiver 5–6 times a day, 7 days a week. This will help decrease oedema and adhesion formation. It will also improve function and give the individual and the family a sense of responsibility for the rehabilitation process, both in the hospital and at home. Expensive and sophisticated exercise equipment is **not** needed for good results. The selection and adaptation of the exercise and activity is the most important part of getting such results. Therapy should be functional and fun.

## Exercises by body part and lower-extremity amputation (Visual Health Information) Figure 5.7.3



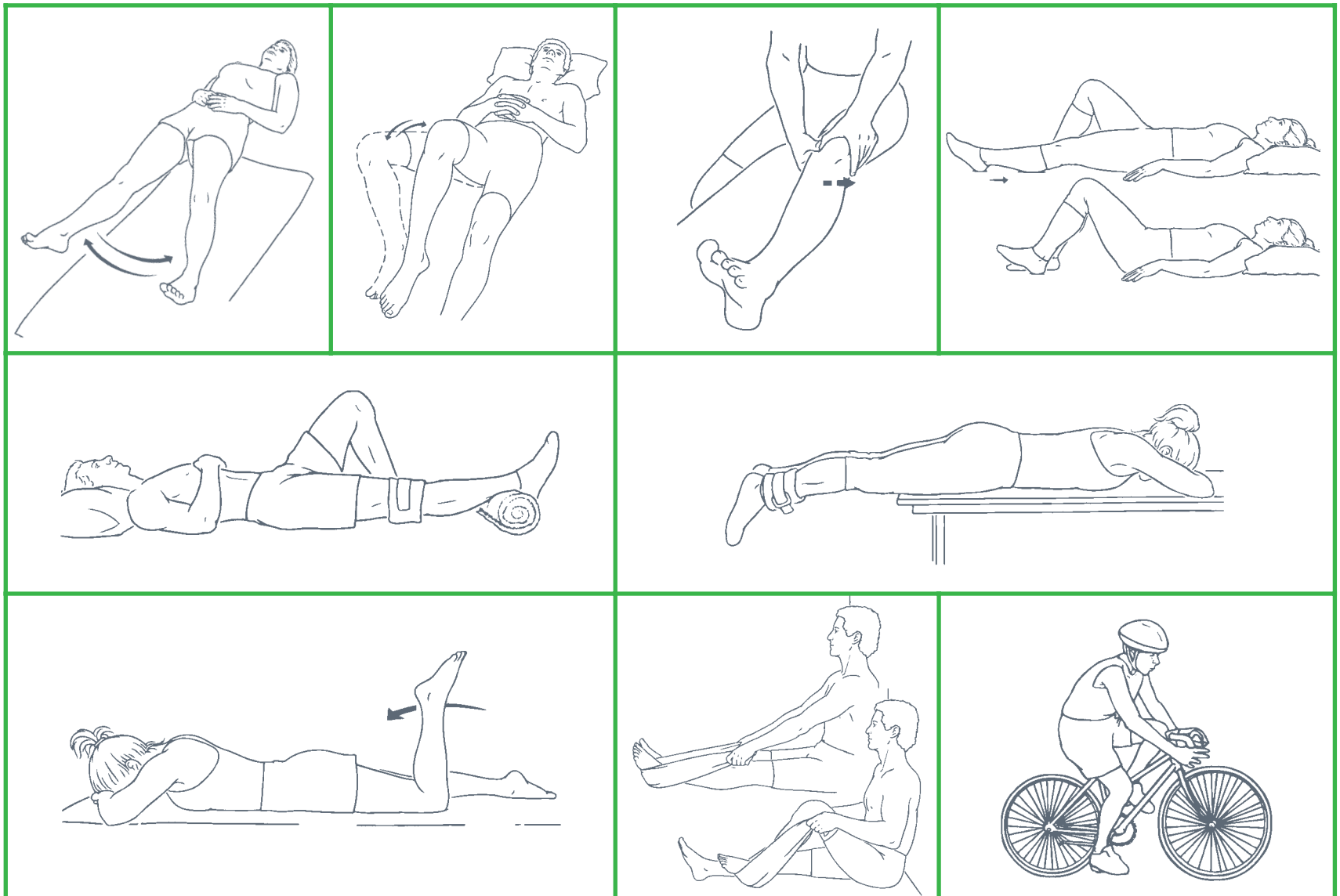
■ Head and neck



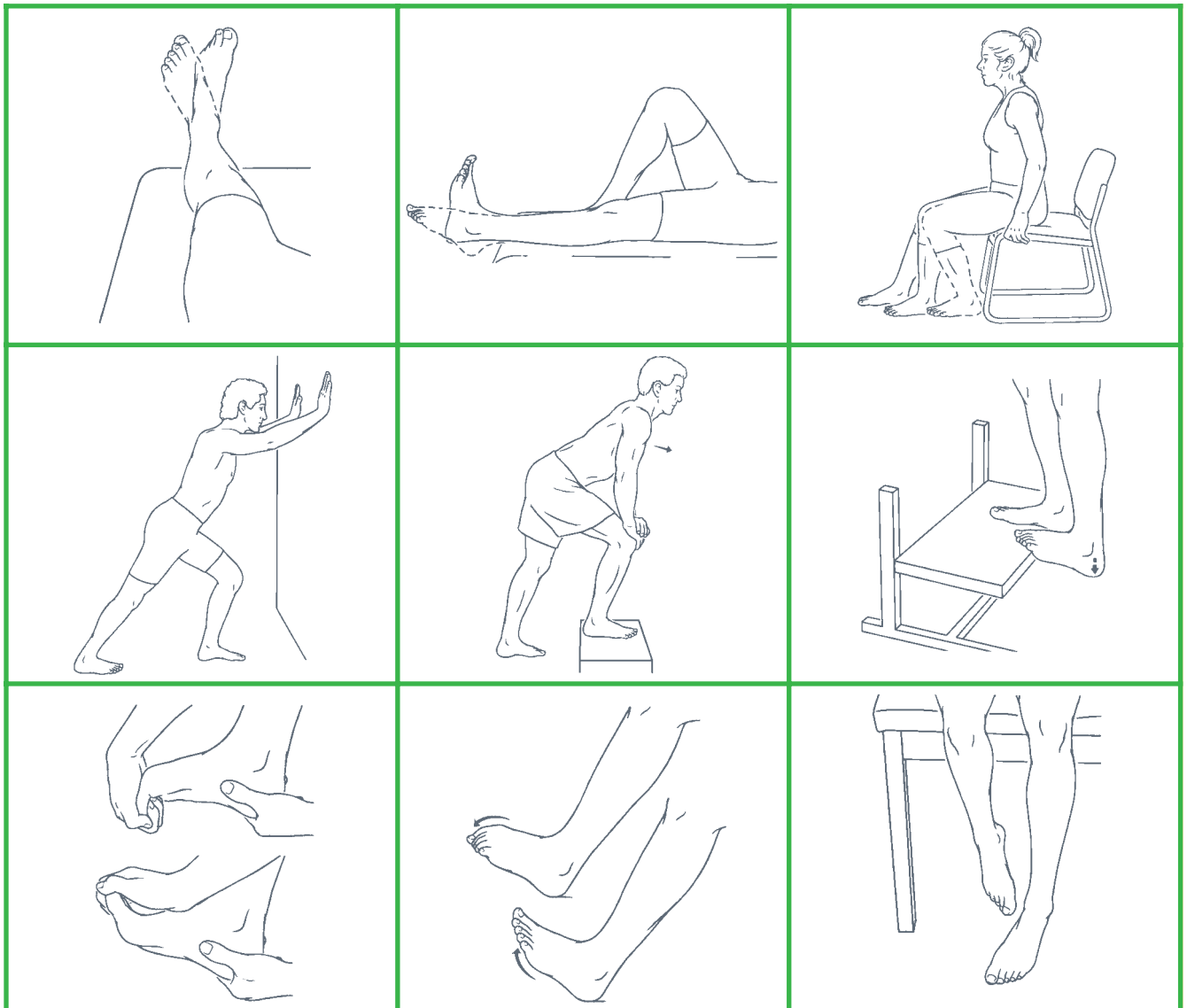
■ Elbow, forearm and wrist

■ Trunk or lumbar and shoulder

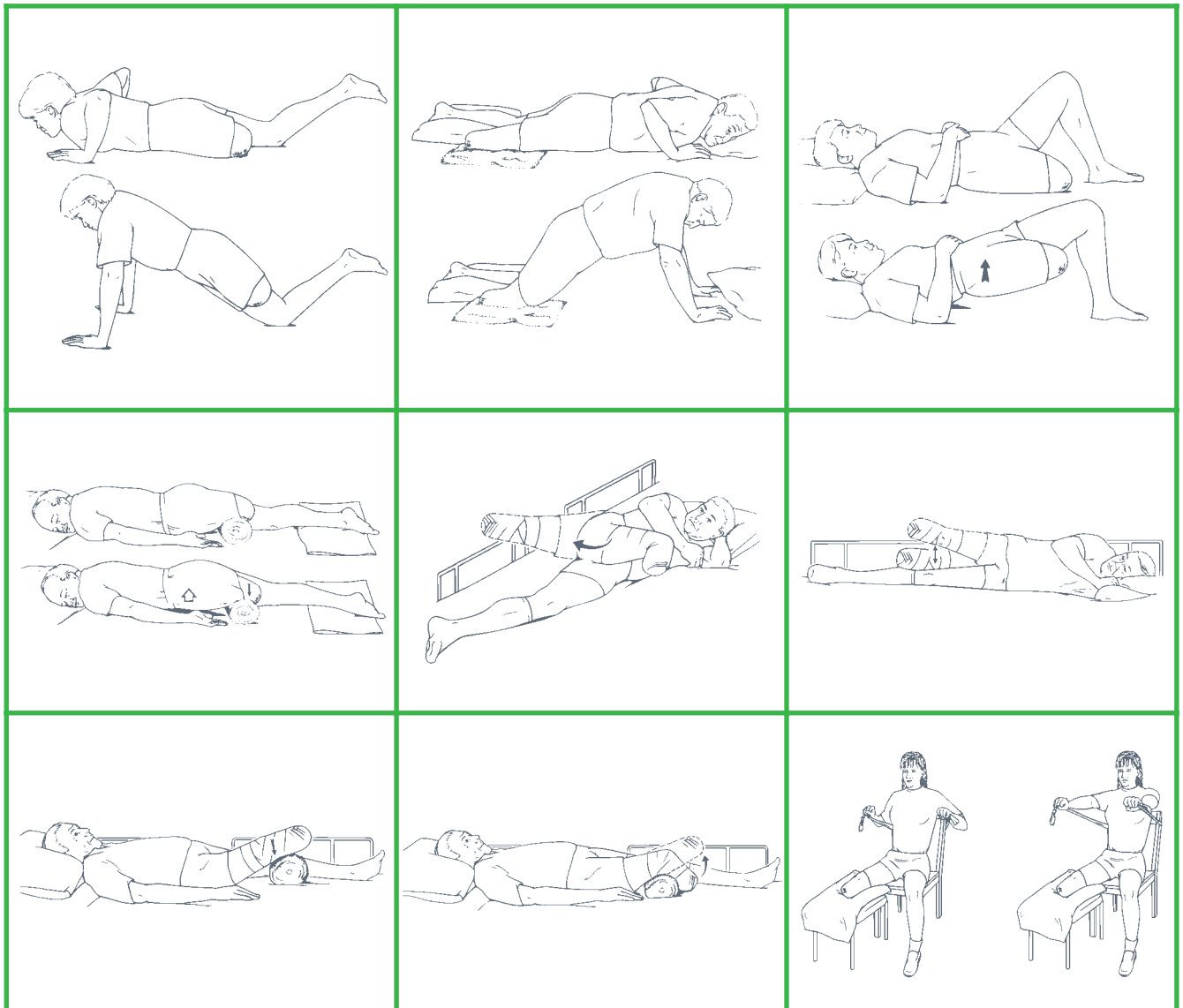
Hand, finger and thumb



■ Hip, leg and knee

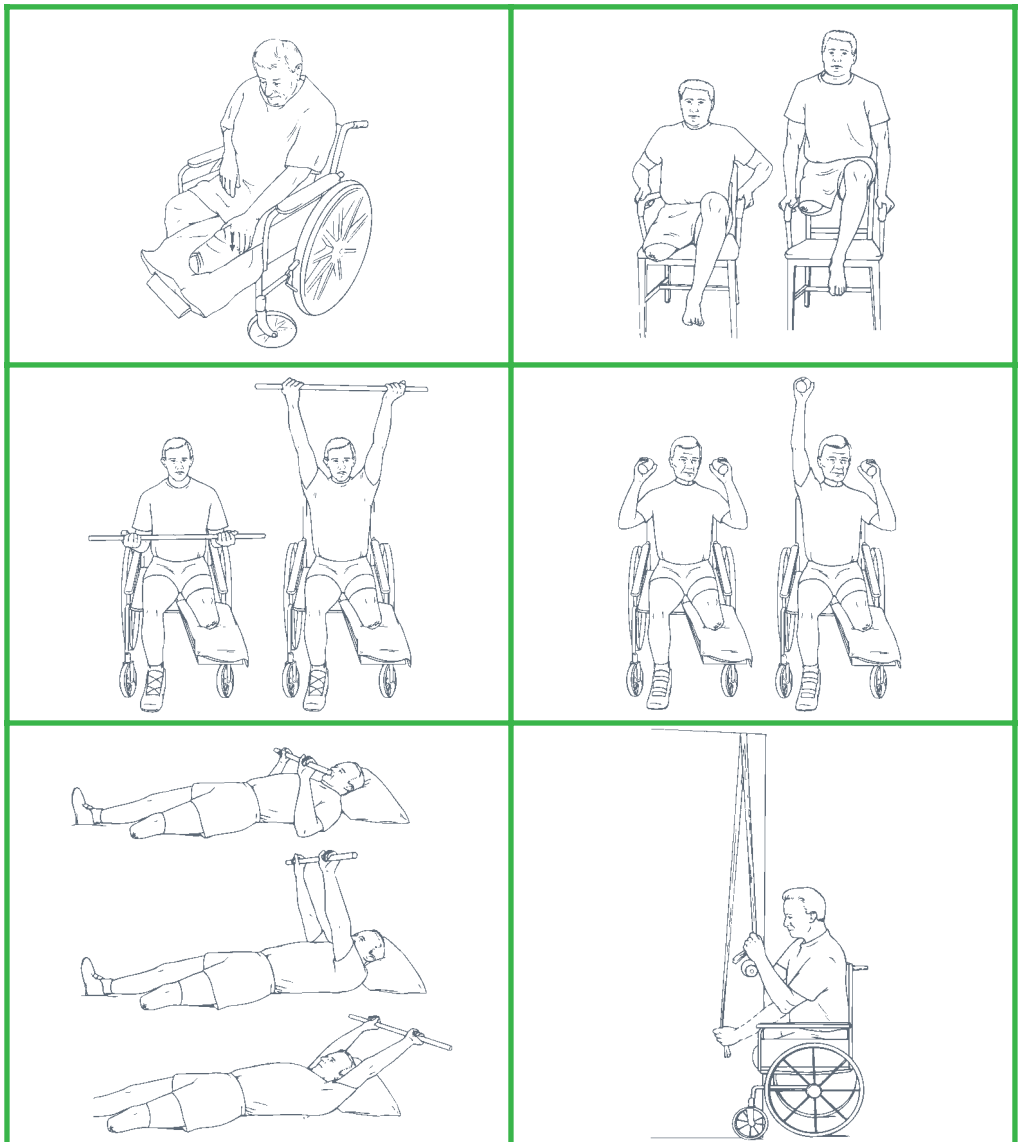


Ankle, foot and toes



■ **Exercises for lower extremity amputations**

*(continued on next page)*



**Exercises for lower extremity amputations** *(continued)*

## Summary of joint mobilization and strengthening principles

**ACTIVE MOBILIZATION** requires the individual to contract his or her own muscles.

### Goals

The goals are to reduce adhesions, prevent muscle weakness, or restore muscle strength and endurance. In addition, this mobilization promotes active personal involvement.

### Precautions

Care needs to be taken to mobilize slowly, limiting repetitions, length of time or weight, and resistance given during the exercise or activity. All these components should be increased slowly to prevent pain and inflammation. **If pain or inflammation is caused, then one or more of these components needs to be adjusted.**

### Technique

- If full movement is not possible because of muscle weakness, no weight or resistance should be applied to the exercise or activity. Some assistance to complete full movement may be needed.
- If the full movement can be made independently but not repeated 10 times, then no resistance or weight should be added to the exercise or activity.
- Once the movement can be made 10 times against gravity, then weight and resistance can be added to the exercise or activity.
- Adaptations or modifications may be necessary to permit the person to do the exercise or activity alone.

**PASSIVE MOBILIZATION** involves movement of the joints by an external force. Stretching can be done manually or achieved with splinting. Stretching exercises, combined with splinting the joint in its newest position after the exercise, is the most effective intervention when there are soft tissue contractures. Manual stretching exercises alone are not as effective for joint mobilization when soft tissues have contractures.

### Goals

The goals are to prevent joint stiffness or restore joint movement affected by soft tissue contractures.

### Precautions

Care needs to be taken to mobilize slowly and position carefully, in order to prevent damage to the soft tissues – which causes pain and inflammation. **Aggressive passive mobilization that forces the joint and causes pain results in unnecessary trauma to joints and newly-healed tissues. Contractures are made worse. In addition, the pain causes the person to become more anxious and lose the ability to relax and cooperate.**

### Technique

- Movement is done slowly and smoothly, following the planes of movement.
- Hold the body parts proximal to the joint that will be moved.
- Mobilize slowly and smoothly, gently holding this position to its full extent for the count of 20–30 seconds. **There should be no pain.**