

About Shoulder Replacement



Introduction

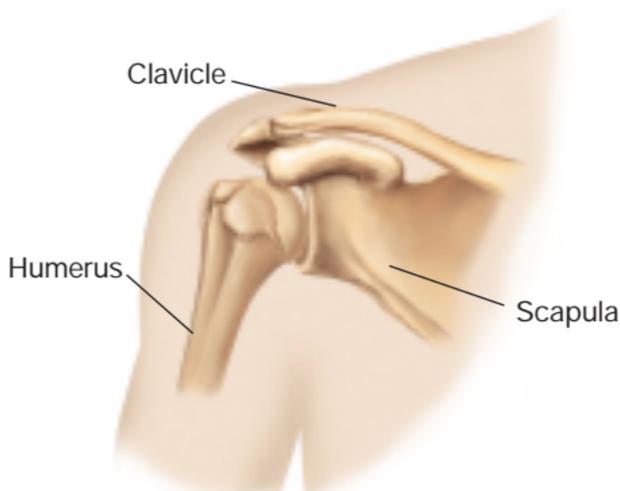
This pamphlet has been designed to give you an overview of shoulder replacement surgery, including the history of shoulder replacement and how your shoulder joint works. It will also tell you about the need for surgery, what to expect both before and after surgery, the importance of what to do when you return home and how to return to a normal lifestyle once you are back at home.

For more information about total joint replacement, visit **www.globalshoulder.com** and **www.jointreplacement.com**.

The Shoulder Joint

A joint is a junction where two or more bones meet. The shoulder joint is considered one of the most complex joints in the body, with three bones meeting there — the scapula (shoulder blade socket), clavicle (collar bone) and humerus (upper arm bone). The shoulder joint is unique in that the ball of the upper arm bone is two times larger than the socket of the shoulder blade. This creates a very mobile joint, but demands an extensive array of ligaments and muscles to keep the joint together. The muscles and ligaments together allow the free and easy movement found in the healthy shoulder.

The muscles around the shoulder include the powerful and large deltoid muscle which forms the bulk of the shoulder muscle mass; four smaller and deep muscles that comprise the rotator cuff; and multiple large muscles of the back and neck that help to stabilize the shoulder joint.



The Healthy Shoulder Joint

When Joint Problems Arise

The most frequent source of debilitating shoulder pain is arthritis. It is estimated that 40 million people in the United States have some form of arthritis.¹ That's one in every seven people, one in every three families. Of the more than 100 types of arthritis, the following three are the most common sources of joint damage:

Osteoarthritis, sometimes called degenerative arthritis, is a disease which involves the breakdown of the tissue (cartilage) that normally allows the joint to move smoothly. When the gliding surface of the cartilage is gone, the bones grind against each other, creating popping sounds, pain and loss of normal shoulder movement. This condition occurs primarily in people over age 50. Osteoarthritis commonly affects the hip, knee and shoulder.

Rheumatoid arthritis is considered a systemic disease because it can attack any or all joints of the body. It affects women

more often than men, and can strike both young and old. Rheumatoid arthritis causes the body's immune system to produce a chemical that attacks and destroys the protective cartilage that covers the joint surface.



The Arthritic Shoulder

Trauma-related arthritis results when the joint is injured, either by fracture, dislocation or damage to the ligaments surrounding the joint causing instability or damage to the joint surfaces.

When conservative methods of treatment (medications, physical therapy, etc.) fail to provide adequate relief, total shoulder replacement is considered. The development of total shoulder replacement began over 40 years ago, and in the United States over 9,500 people each year undergo this surgery to diminish pain and stiffness and restore mobility.² If your X-rays show destruction of the joint, you and your surgeon will decide if your degree of pain, deterioration and loss of movement is severe enough that you should undergo the operation.

Why You Need A Total Shoulder Replacement

The primary purpose of joint replacement is to relieve your pain. The secondary purpose is to increase your range of motion. The extent of improvement in your range of motion will depend on the severity of your preoperative condition, the length of time you have had the problem, the range of motion of your shoulder before surgery and your commitment to the preoperative and postoperative rehabilitation programs. Today,

your orthopaedic surgeon can replace your problem shoulder joint thanks to advances in technology. Total joint replacement is a remarkably successful operation that has transformed the lives of many people. Many of those who once suffered from severe pain and stiffness in a joint are again swimming, golfing, playing tennis and dancing.

Your Shoulder Evaluation

An orthopaedic surgeon specializes in problems affecting bones and joints. Your shoulder evaluation will begin with a detailed questionnaire. Your medical history is very important in determining whether surgery is necessary. It helps the surgeon understand your pain and limitations in activity and the progression of your shoulder problem.

After your history is taken, a physical exam is performed. The range of motion of your shoulder is measured and your muscle strength is evaluated. A small amount of fluid may be taken from your shoulder joint to check for infection.

X-rays are then taken of your shoulder joint. Bring any previous shoulder X-rays with you to help your surgeon plan the surgery and identify the correct size shoulder prosthesis, if necessary.

After your initial orthopaedic evaluation, the surgeon will discuss all possible alternatives to surgery. If the X-rays show severe joint damage and no other means of treatment has provided relief, total shoulder replacement may be recommended.

Components of Shoulder Replacement

Total shoulder replacement or shoulder arthroplasty is the replacement of the ball of the upper arm and socket of the shoulder blade with specially designed artificial parts, called prostheses, made of metal and polyethylene (a medical-grade plastic).

The humeral (upper arm) prosthesis consists of a metal ball that replaces the head of the humerus, and a body and stem that is secured into the upper arm bone. The glenoid (shoulder blade socket) prosthesis is made of a special polyethylene, and is designed to replace the socket part of the joint. The metal ball and stem units are selected by your surgeon from multiple sizes to fit the contour and shape of your humerus. This two-piece construct is known as a modular prosthesis.

This allows fitting of the ball and socket to your shoulder, which enhances the proper repair and tension of the muscles around the joint.

There are two types of shoulder replacement procedures. If the surgeon only uses the metal humeral (upper arm bone) components, the procedure is called a hemiarthroplasty. If the surgeon uses both the humeral components and the glenoid (shoulder blade socket) prosthesis, then the procedure is called a total shoulder arthroplasty. The surgeon decides which procedure to use based on the extent of damage to your shoulder.

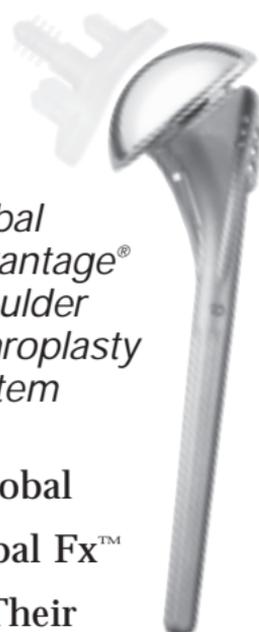
Your surgeon has chosen a prosthesis made by

DePuy Orthopaedics, Inc., Warsaw, Indiana, called the Global Advantage[®] Shoulder

Arthroplasty System, the Global C.A.P.[™] implant or the Global Fx[™] Shoulder Fracture System. Their

designs are based on numerous detailed investigations of the structure and mechanics of the shoulder joint. The glenoid (shoulder blade socket) prosthesis is

made of a plastic orthopaedic bearing polymer. The Global Advantage humeral (upper arm bone) stem is made of titanium to maximize the strength of the component



Global Advantage[®] Shoulder Arthroplasty System



Global C.A.P.[™] Resurfacing Humeral Head Implant

and the head is made of cobalt chrome, which provides a bearing surface for articulation with the glenoid (shoulder blade socket) component. The Global C.A.P. implant is typically for a younger patient with mild to moderate arthritis. This implant resurfaces the joint surface of the humeral bone. The Global Fx humeral stem is made out of cobalt chrome.

*Global Fx™
Shoulder
Fracture
System*



Before Surgery

All patients need to see their family physician or an internist for a thorough medical evaluation one to two weeks prior to hospital admission. This will ensure that any medical conditions, such as urinary tract infections, cardiac disease or high blood pressure, can be detected, treated and controlled prior to surgery - minimizing the possibility of your surgery being rescheduled. Your orthopaedic surgeon will need to obtain a report from your physician regarding your general medical health and copies of standard test results. You may be asked to obtain these reports from your physician. Some common tests that may be required include a CBC with platelets, P.T. and P.T.T. (blood clotting studies), and urinalysis and serum chemistries.

For some patients, typically those over 40, a chest X-ray (CXR) and an electrocardiogram (EKG) may need to be performed. This is usually scheduled two weeks prior to the date of the surgery. If lab studies, EKG or CXR are abnormal or outdated, you may need to have them repeated upon your arrival at the hospital to ensure the safest possible operation.

You will likely be asked to complete a past medical history form and bring it with you to the hospital. This information helps ensure that appropriate attention is provided to any medical condition that you may have. In some cases, you may be asked to lose extra weight. If you smoke, it is important to stop two weeks prior to surgery. Finally, you may want to donate your own blood ahead of time in the event that transfusions are needed during surgery.

Admission

Check with your surgeon to determine when you should plan to arrive at the hospital. Most patients are admitted either the day before or the day of surgery.

NOTE: You cannot eat or drink anything after midnight of the day prior to surgery.

Medications

It is essential that your surgeon be aware of any medications or supplements you are taking. Bring a list of all medications and dosages. If you are taking aspirin or certain arthritis medications, inform your surgeon; you may need to stop taking these two weeks before surgery. If you are taking aspirin under the direction of a physician for vascular or cardiac reasons, your doctor may advise you to continue taking it as directed. Your doctor may want you to donate your own blood ahead of time for a possible transfusion during surgery.

Minor Surgical Procedures or Dental Care

Do not schedule minor procedures such as urological manipulators or dental procedures such as a teeth cleaning, cavity repairs or oral surgery within two weeks of your scheduled surgery.

Sore Throats, Colds and Flu

If you develop a significant cold, sore throat or the flu within one week of your scheduled procedure, please call your surgeon. These conditions may increase the operative and anesthetic risks, and your procedure may need to be rescheduled.

Urinary Tract Infections

If you develop a urinary tract infection within two weeks of your scheduled procedure, contact your family physician for treatment, and call your surgeon. This condition may increase the risk of a postoperative infection, and your procedure may need to be rescheduled.

Pregnancy

Elective shoulder surgery is rarely performed during pregnancy. If you become pregnant prior to your scheduled surgery, contact your surgeon so that your surgery can be rescheduled.

Dentures and Contact Lenses

Contact lenses, dentures and plates **CAN-NOT** be worn in the operating room. Be sure to bring your container and solutions to keep these devices protected while you are in surgery.

Clothing

Remember to bring comfortable, loose-fitting bed clothing. A robe and slippers are recommended.

Daily Showers

It is recommended that you wash your involved arm, shoulder and surrounding regions daily, using either PhisoHex or Dial soap, for three to four days prior to admission.

Length of Stay

The normal length of stay varies from three to five days, although it may be longer or shorter depending on your individual case.

What to Expect Prior to Surgery

1. Depending on when you are admitted to the hospital, you may speak to and be examined by a member of the department of anesthesia. They will ask you several questions, explain the anesthetic procedure, and in some cases, allow you to choose the type of anesthetic used.
2. The nursing staff will take your temperature, pulse, respiration and blood pressure.
3. You will be visited by a member of the surgical team who will again perform a complete history and physical examination and be available to answer any of your last-minute questions.

4. Your family may visit you the morning of surgery in your room if you like. They should keep the staff at the nurses' desk informed of their location during your surgery.
5. Before going to the operating room:
 - a. Your shoulder area will be scrubbed and shaved.
 - b. You may brush your teeth and rinse your mouth, but do not swallow water.
 - c. Elastic support hose will be applied to your legs to help with circulation while you are lying on the operating room table.
 - d. You will be asked to empty your bladder.
 - e. To receive medications and blood transfusions (if necessary), an intravenous (IV) line will be started by the nurse on your hospital floor or in the holding area of the operating suite.
 - f. About an hour before your surgery, the nurse will give you two shots: one will help you relax, the other will dry your mouth and sinuses.
 - g. Shortly after you are given your preoperative medication, you will be transferred via stretcher from your bed to the preoperative waiting area.
6. In the operating room, you will be

transferred from the stretcher to a special operating room table. The room is equipped with special over-head surgical lights and anesthesia equipment.

The Recovery Room

You will awaken after surgery in the post-anesthesia recovery room, probably feeling as though you were only away from your hospital room for a few minutes. You will remain there until you have recovered from the anesthesia, you are breathing well, and your blood pressure and pulse are stable. If you experience pain, medication will be available. Your arm may be supported in a sling and some type of cold compress will be on your shoulder. Postoperative pain control is started immediately in the recovery room.

What to Expect After Surgery

- You may have a drainage tube coming out through your surgical dressing, which will be attached to a portable drainage apparatus. This system provides continuous, gentle suction to remove any blood that may be accumulating in the surgical area. It is usually removed on the first or second day after surgery. Your dressing will probably be changed on the first or second postoperative day, and cold compresses may be applied for up to two days.

- To prevent nausea immediately after surgery, you will only be given ice chips or sips of water and soft drinks. On the first postoperative day, you may begin drinking fluids and eating meals under the direction of your surgeon.

- The IV will remain in your arm for one to two days to administer fluids and antibiotics. This helps prevent infection and gives you proper nourishment until you are eating and drinking comfortably. It is normal to feel pain and discomfort after surgery. Be sure to inform your nurse of your pain, and medication will be ordered. You may be able to administer your pain medication through a push button attached to your bed. This system is called “Patient Controlled Analgesia” (PCA). The nurses will show you how to use this system, which is designed to prevent over-dosage of the pain medication. When the IV is discontinued - normally two to three days after surgery - you will begin taking oral pain medications.

- To prevent fluids from building up in your lungs, you will receive a breathing apparatus (an incentive spirometer) after surgery to encourage you to cough and breathe deeply. This will be used every hour while you are awake.

- Your arm will be in a shoulder immobilizer, which protects and positions your shoulder, or it may be placed in a shoulder splint. Keeping a small pillow or folded blanket under your elbow while sitting or lying down will prevent the arm from falling back and straining the area of your operation.
- A trapeze bar attached to the bed will help you move about more easily. It is important that you use only your non-operated arm with the trapeze. You do not want to turn on or move your postoperative shoulder until instructed that it is alright to do so by your surgeon. The nurse will help you find comfortable positions.
- On the afternoon of the day of your surgery, the surgeon will evaluate the neurovascular status of your shoulder and may remove the sling and gently move your operated arm. The surgeon will give you instructions on how much you can or should move your arm.
- The nurses will encourage and help you to stand, walk and do your pendulum exercises (page 23) on the day after surgery. Your physician will also direct you on the use of your arm for special stretching and range of motion exercises.
- On the first or second day after surgery, you will be encouraged to use your involved

arm for some gentle living activities such as feeding yourself, brushing your teeth, shaving and drinking.

Exercises/Physical Therapy

The postoperative rehabilitation program normally begins the day of surgery. It consists of stretching exercises and normal, gentle daily activities. The postoperative rehabilitation program is critical, and it is important that you cooperate, follow your surgeon's instructions and work hard.

Pain medication may be taken prior to your therapy as you request. The members of the surgical team or a physical therapist will gently move your arm and shoulder through various positions while you relax. These early movements and exercises will help prevent stiffness and will help you regain shoulder motion. You will also work on tightening the muscles of your hand and arm by flexing your hand, wrist and elbow.

Your therapist will teach you the safest methods for getting in and out of bed or a chair, and on and off the toilet. You will be allowed to go to the bathroom and sit in a chair on the first day after surgery. Your therapist will check your progress daily and will keep your surgeon informed.

Progress

Depending on your progress, you will gain independence about one week after surgery. You will continue strengthening yourself in preparation of your return home. It is important for you to adhere to precautions and proper positioning techniques throughout your rehabilitation. Your stitches will be removed seven to ten days after surgery. It is not uncommon to still experience pain at the surgical site. Your recovery period may last three to six months.

Preparing to Go Home

Just before your discharge, you will receive instructions for your at-home recovery, including how and when to wear your shoulder sling, changing your bandage and bathing and showering. The surgical team will also give you directions and the necessary equipment to continue your rehabilitation program at home, any prescriptions for medication and a date for your return appointment.

At Home

Until you see your surgeon for your follow-up visit, you must take certain activity precautions. Look for any changes around your incision. Contact your surgeon if you develop any of the following:

- 1. Drainage and/or foul odor from the incision.*
- 2. Fever (100.4 degrees F or 38 degrees C) for two days.*
- 3. Increased swelling, tenderness, redness and/or pain.*

Take time to adjust to your home environment - it is okay to take it easy. You may need help with your daily activities, so it is a good idea to have family and friends prepare to help you. It is normal to feel frustrated, but these frustrations will soon pass.

Resuming Activities

1. Walk as much as you like, but do not tire yourself.
2. With the help of family or friends, you will need to do the exercises you learned in the hospital four to six times daily as directed by your physician. These exercises will gradually increase the movement in your joint, so it is important to do them as scheduled. Do not skip your stretching exercises.
3. As necessary, rest in bed. Be sure to rest on your back.
4. For bathing, sit in a bathtub and wash. Wash your armpit with warm water and dry the area thoroughly. Five or six days after surgery, your surgeon may allow you to take a shower.

To do this, you should remove the bandage, but leave the sutures in place. After the shower, apply a clean bandage. Use only roll-on or stick deodorants. Avoid spray deodorants because they may irritate your incision.

5. Your surgeon will tell you when you can begin driving a car.
6. You may return to work when authorized by your surgeon.

You are encouraged to return to your normal eating and sleeping patterns as soon as possible, and to be as active as possible in order to control your weight and muscle tone. But remember to increase your activity level or exercises only as your surgeon has directed. Increasing activity too quickly may cause injury and damage to the healing tissue. Avoid activities that could cause stress on your shoulder, especially those that may result in a collision or fall such as contact sports or skiing. During your follow-up visits, your surgeon will discuss your progress with you.

Contact Your Family Doctor If...

You develop colds, fever, sore throat, pulmonary problems, cardiovascular problems or other general physical difficulties that cause you concern.

Contact Your Surgeon If...

You develop an increase in shoulder pain, drainage, swelling, elevated temperature or have questions about your rehabilitation program.

Medication/Pain Control

It is normal for you to have some discomfort, but it will be unusual for you to use pain medication more than five to seven days after surgery. You will receive a prescription for pain medication before you leave the hospital. If a refill is needed, please call your surgeon's nurse at least five days before you run out of pills. Remember to call your surgeon if you have an increase in discomfort or pain.

Special Instructions

You may be seen six weeks, five months and twelve months after your surgery. You may also see your surgeon once a year after the first year, even if you are not having any problems.

Note for the future: You should always tell your dentist or physician that you have an artificial joint. If you are having dental work performed, please notify your dentist or physician so that they can give you antibiotics for the day before and day

of your dental care. Antibiotics must be used before and after any medical or dental procedure. This precaution must be taken for the rest of your life.

Any infection must be promptly treated with proper antibiotics because infection can spread from one area to another through the blood stream. Every effort must be made to prevent infection in your artificial joint. Your surgeon can give you instructions on the use of special antibiotics. If you have any questions about the use of antibiotics, call your surgeon.

Shoulder Rehabilitation Program

The postoperative rehabilitation program is divided into two phases:

Phase I

The shoulder stretching exercises are done first so that you can regain as much shoulder motion as possible.

Phase II

Strengthening exercises are used to regain strength of all the muscles around your shoulder. These exercises are done only after you have completed Phase I.

Regardless of your age, it is necessary to first regain shoulder motion with the following special stretching exercises before you begin strengthening the muscles around your shoulder.

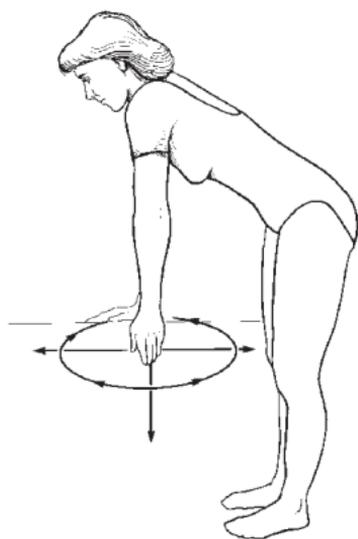
Your surgical team will give you detailed instructions on which stretching exercises to do and how often you should do them. You will begin strengthening exercises only after you have obtained as much motion as possible. Ordinarily, the strengthening program begins six to 12 weeks following your operation. Do **not** begin strengthening exercises until your surgical team has provided the necessary supplies and instructions on which exercises to perform and how often to perform them.

The following are examples of the various types of stretching and strengthening exercises that will be given to you by your physician. Your physician may use this pamphlet as a working guide for your program.

Phase I Shoulder Stretching Exercises

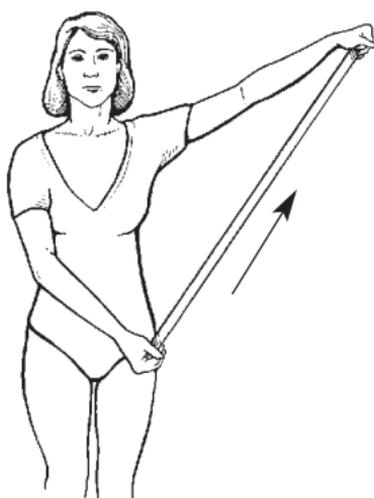
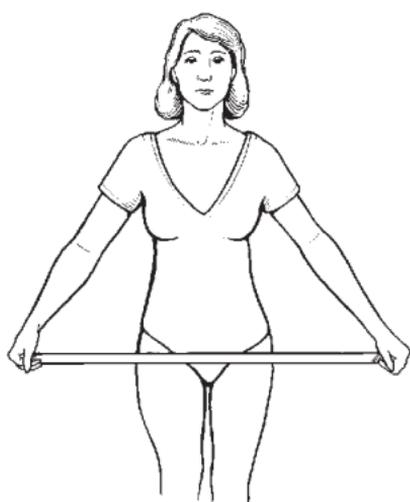
These exercises demonstrate the stretching of the left shoulder.

Pendulum Exercise

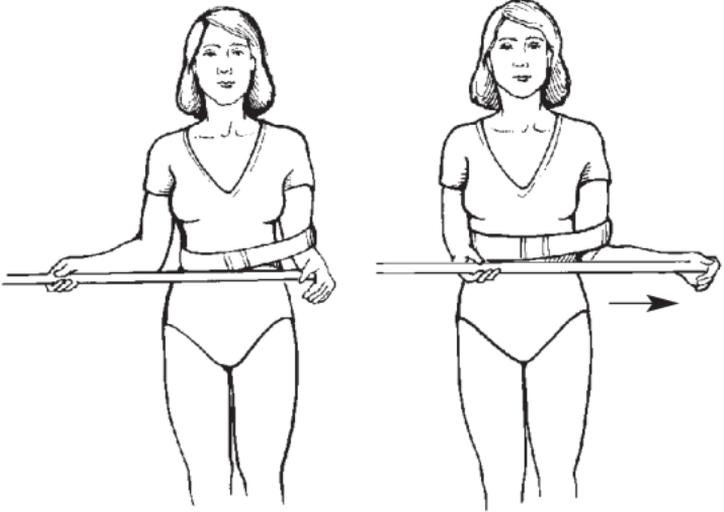


Stick Exercises

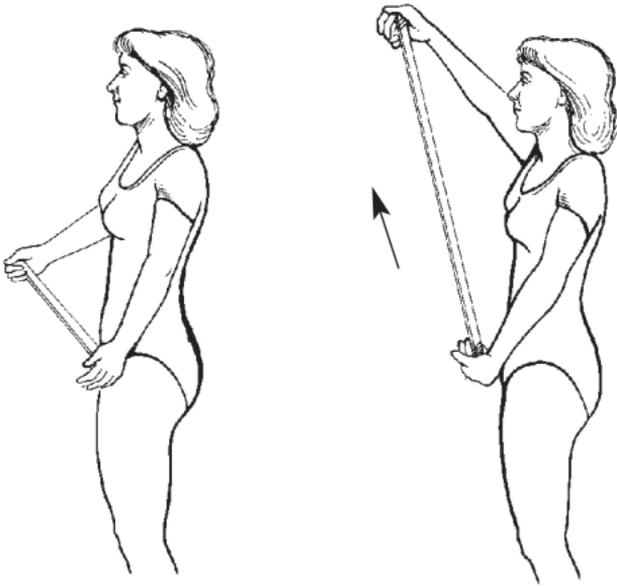
Abduction



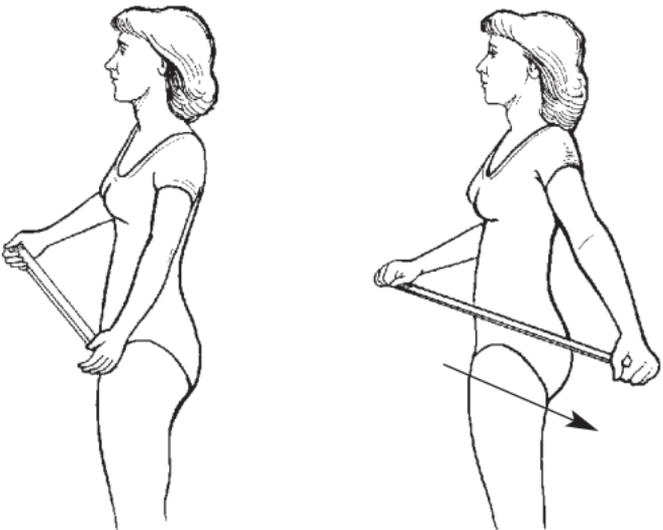
External Rotation



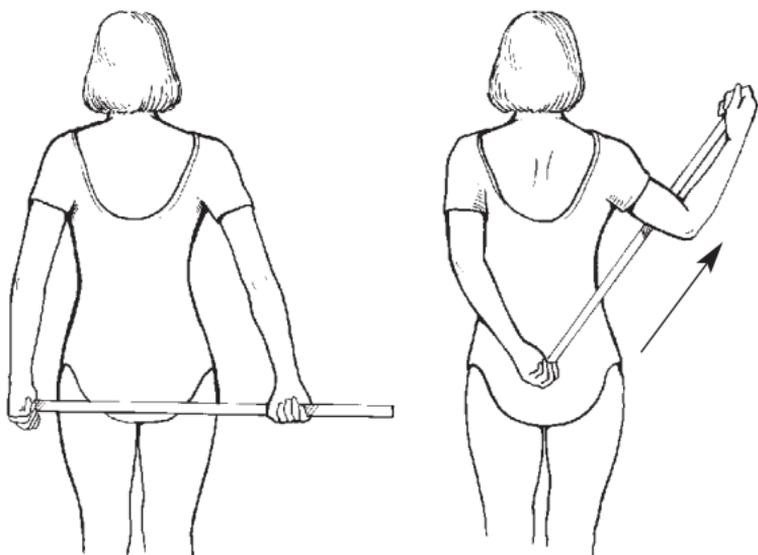
Flexion



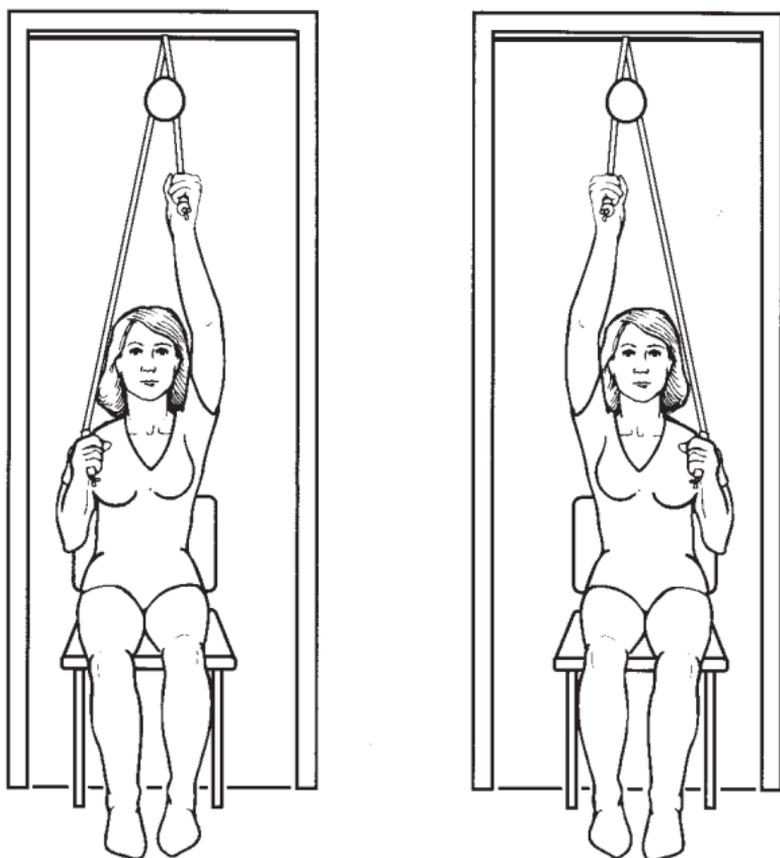
Extension



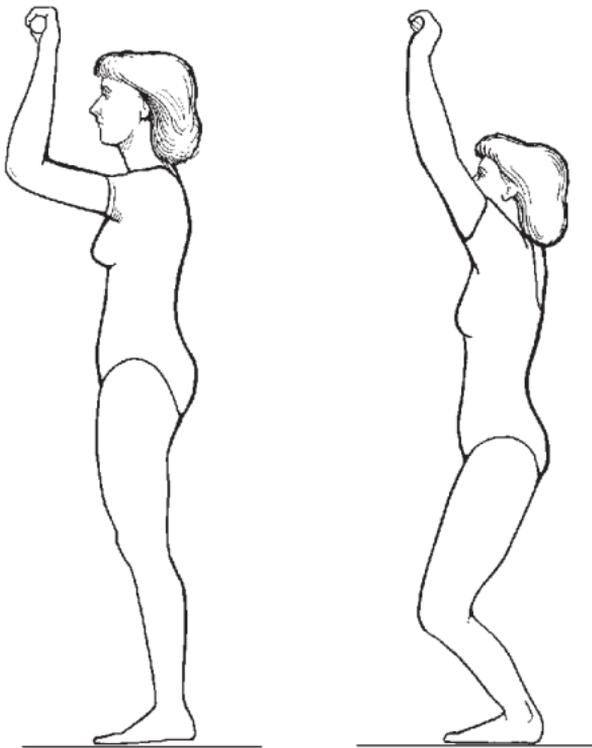
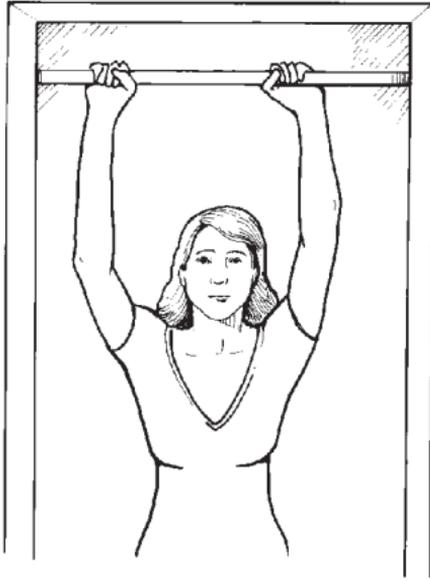
Internal Rotation



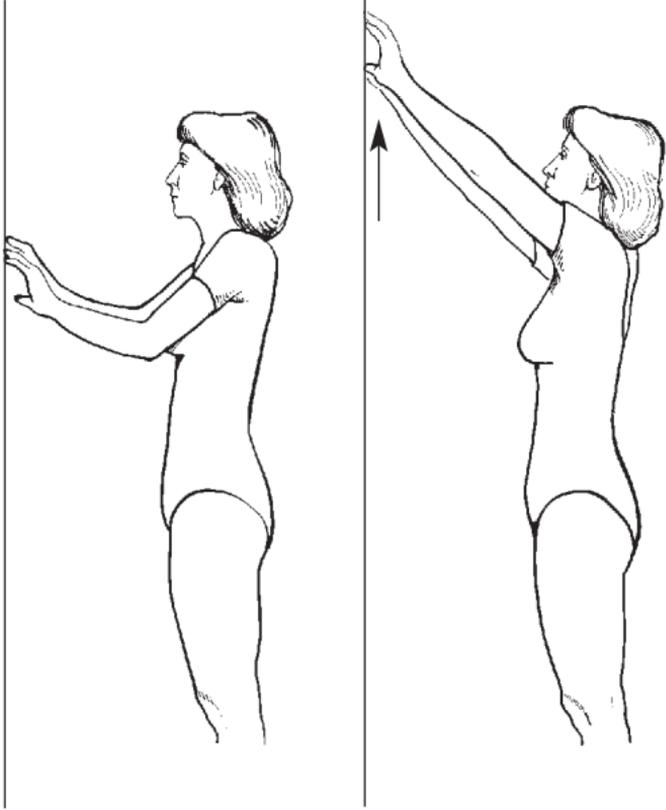
Pulley



Overhead Bar



Wall Walking (both arms)



Door Hanging



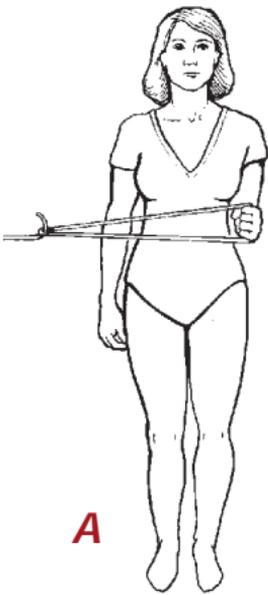
Posterior Stretching



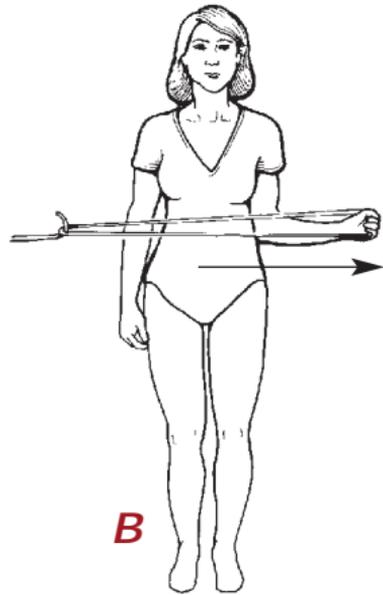
Phase II Shoulder Strengthening Exercises

These exercises demonstrate the strengthening of the left shoulder.

Exercise 1: External Rotation

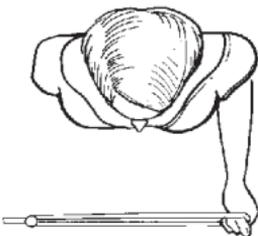


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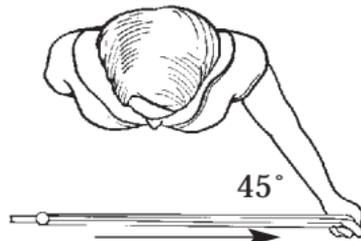


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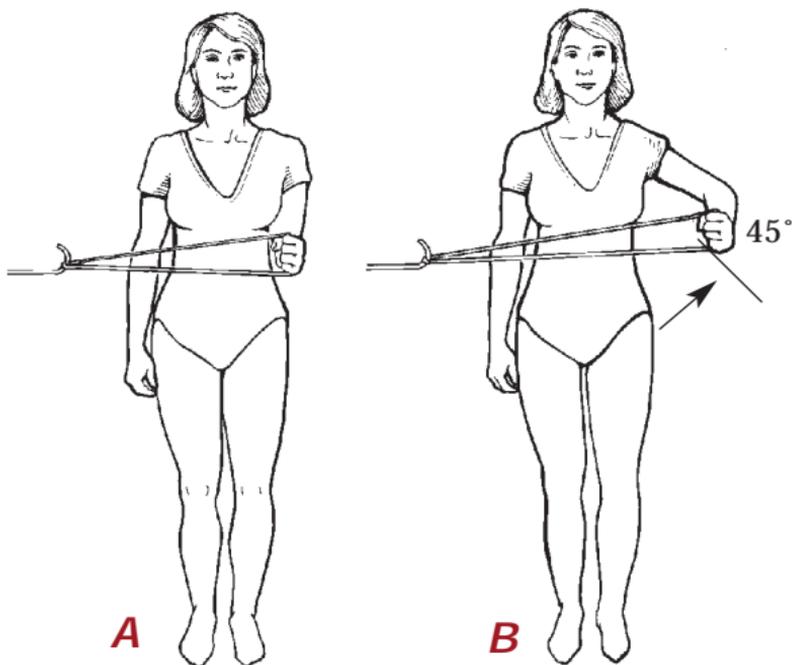
1A



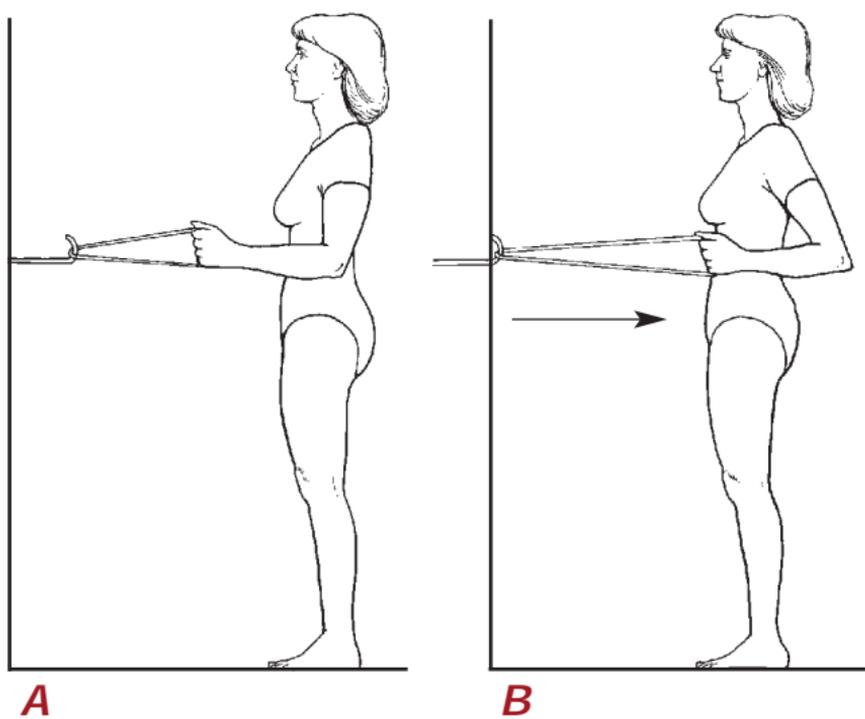
1B



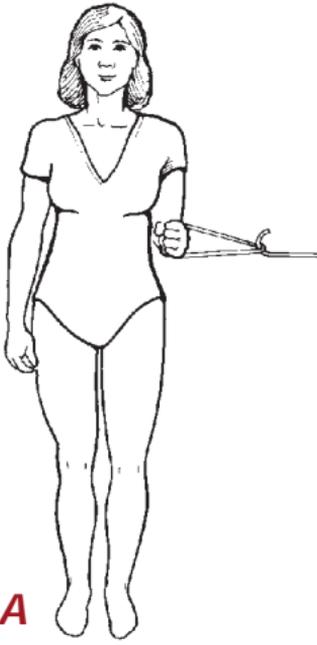
Exercise 2: Abduction



Exercise 3: Extension

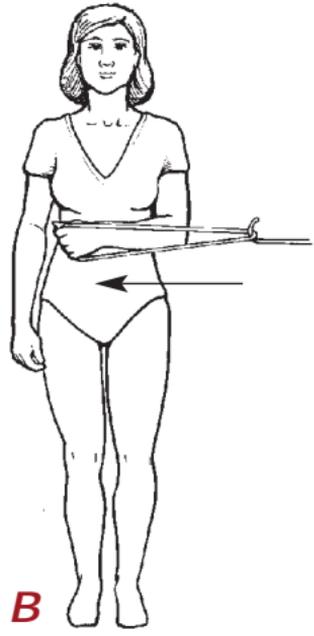


Exercise 4: Internal Rotation



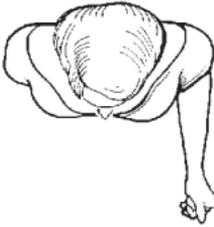
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4A

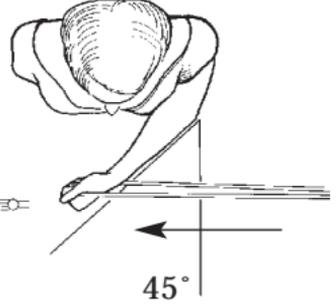


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4B

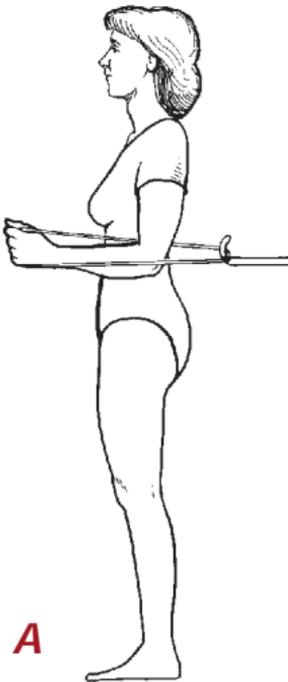


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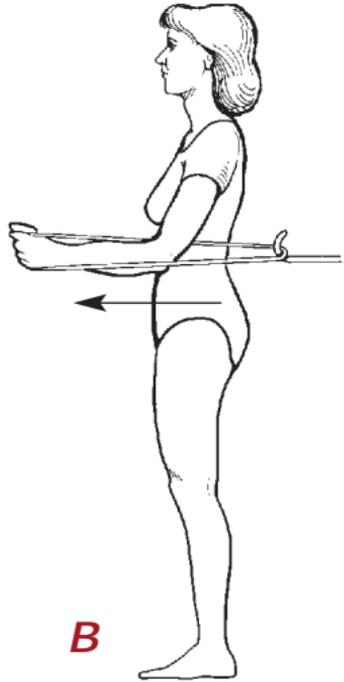


45°

Exercise 5



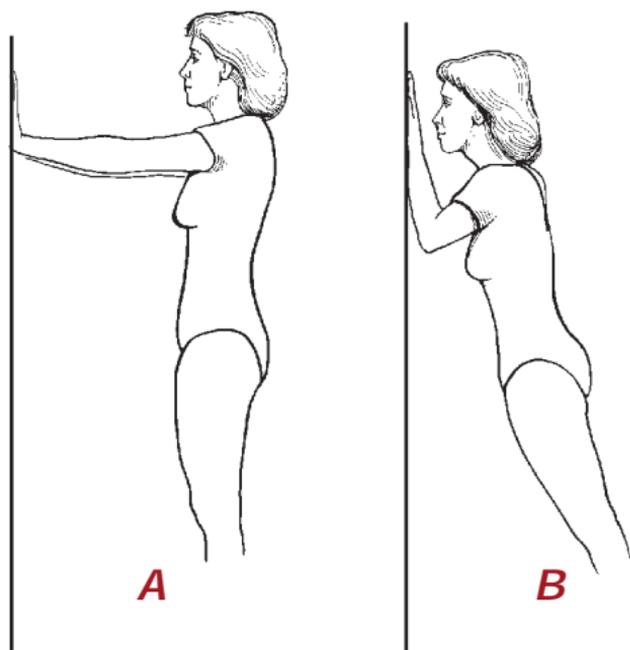
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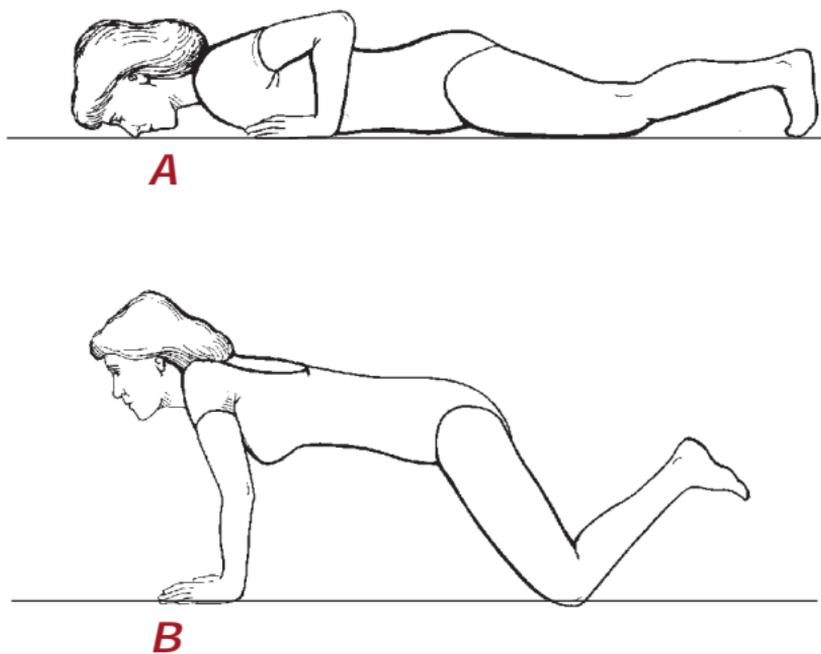
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Push-Up Exercises

Wall



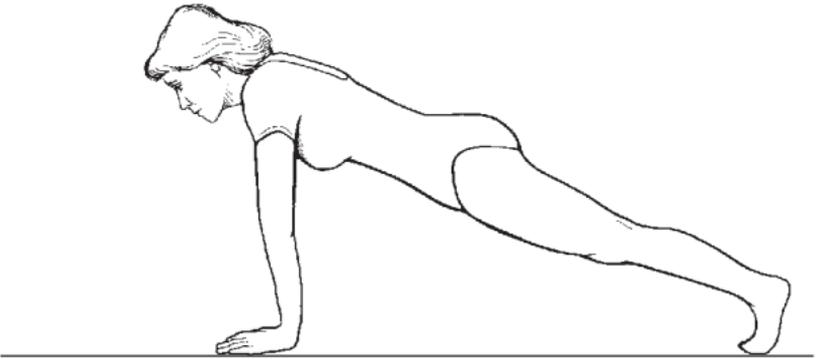
Knee



Regular

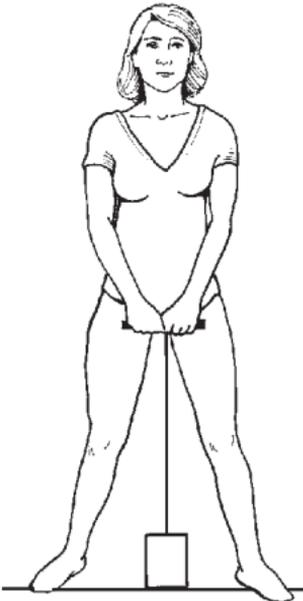


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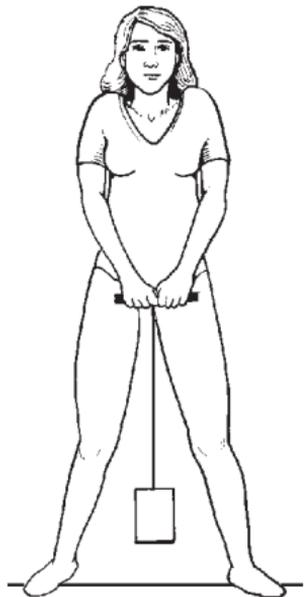


B

Shoulder Shrug Exercises

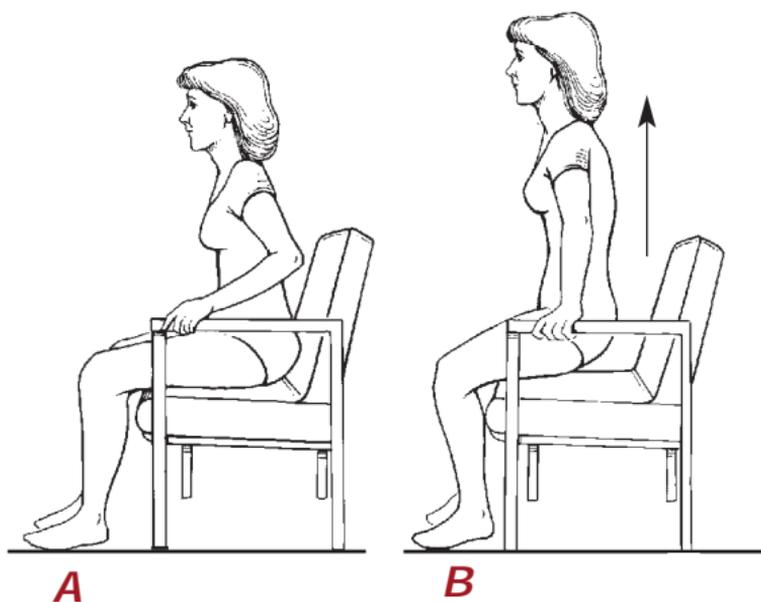


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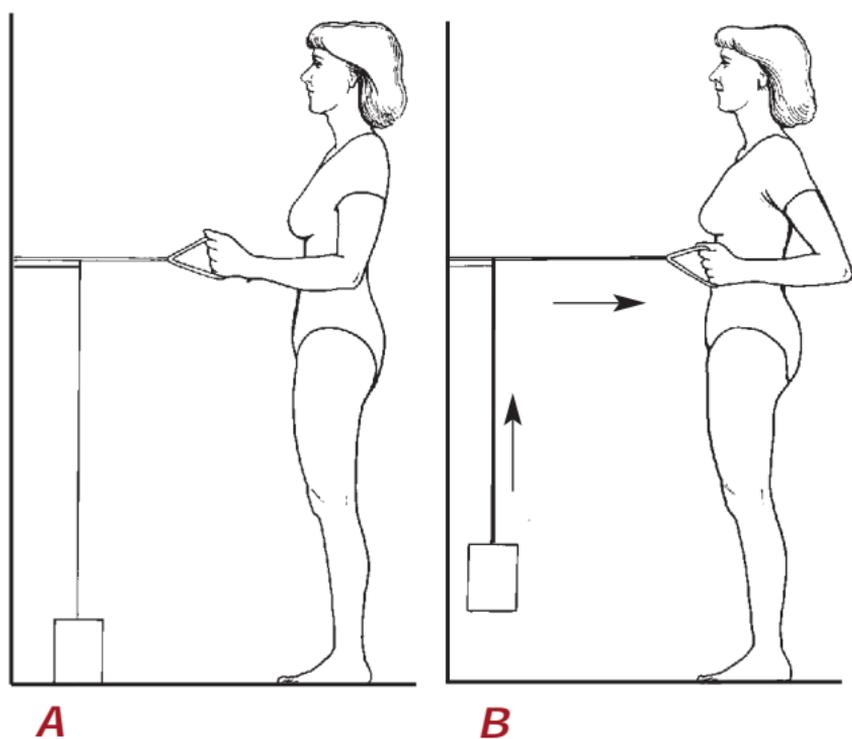


B

Shoulder Press-Up Exercises

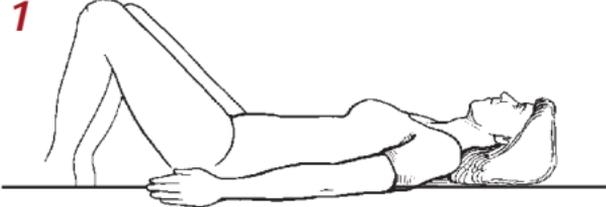


Pulley Strengthening Exercises



Anterior Deltoid
Strengthening Program

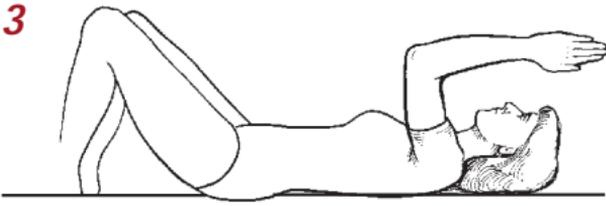
Step 1



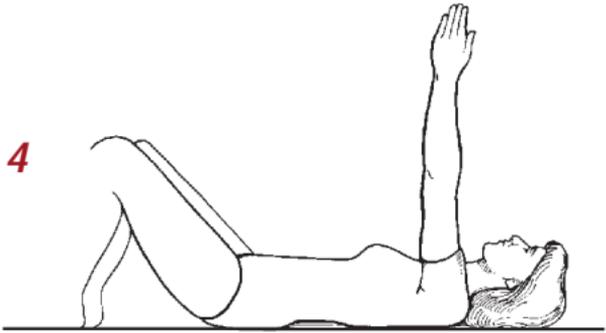
Step 2



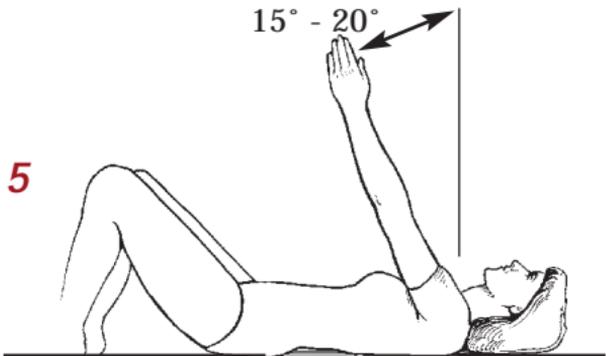
Step 3



Step 4



Step 5



Q) How long will I be in the hospital?

A) Shoulder replacement surgery generally involves three to five days in the hospital, but can be longer if you live alone or experience any problems.

Q) When will I be able to move my shoulder?

A) You will be instructed in the active use of your arm for the gentle activities of daily living on the first postoperative day.

Q) What do I wear?

A) You should be able to wear regular clothes after surgery, i.e. a loose fitting, buttoned shirt and comfortable trousers/skirt. Women may find a bra uncomfortable in the early days. You will be instructed to wear your sling for a week or two after your surgery when you are out in public. It usually is not necessary to wear the sling when you are in your home.

Q) Will I need to do anything special when I go home?

A) You will need to perform the special rehabilitation exercise program as directed by your surgeon.

Q) When can I return to work?

A) This depends on your job. On average, you may return in one to two weeks for light work and 12 to 16 weeks for heavier work. A more accurate assessment of the time you will need to take off work will be given by your surgeon.

Q) When can I drive?

A) Driving is usually permitted after one to two weeks if the car has power steering. If not, it will take approximately four to six weeks until you'll be ready to drive. Your surgeon will advise you in special situations.

Q) Will I have a scar?

A) Yes, there will be a scar, however, the formation of scars varies from patient to patient.

The Global Shoulder glenoid components and the HRP humeral components are intended for cemented use only.

REFERENCES

1. Federal Centers for Disease Control and Prevention (CDC), 2004.
2. Solucient LLC, Inpatient View, Baltimore, MD, 2002.

For more information about total joint replacement, visit

www.jointreplacement.com or www.globalshoulder.com.



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