

Montefiore Pediatric Orthopedic and Scoliosis Center

Children's Hospital at Montefiore

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ELBOW FRACTURE (Epicondyle)

■ ■ ■ Description

An epicondyle elbow fracture is a broken bone (fracture) in the elbow involving the attachment of the forearm muscles to the arm bone (humerus). This usually occurs in children. These fractures result from a separation at the growth plate, the weakest link in the growing skeleton, and the break may be complete or incomplete. The inner (medial) epicondyle is the attachment of the muscles that flex (bend down) the wrist, whereas the outer (lateral) epicondyle is the attachment of the muscles that extend (bend up) the wrist.

■ ■ ■ Common Signs and Symptoms

- Severe elbow pain at the time of injury
- Tenderness, swelling, and later bruising of the elbow
- Visible deformity if the fracture is complete and bone fragments separate (are displaced) enough to distort normal body contours
- Numbness, coldness, or paralysis in the elbow, forearm, or hand from pressure on the blood vessels or nerves (uncommon)

■ ■ ■ Causes

- Direct blow or force to the elbow
- Twisting injury to the elbow
- Indirect stress due to falling on an outstretched hand
- Violent muscle contraction
- Associated elbow dislocation }

■ ■ ■ Risk Increases With

- Contact sports, such as football, hockey, and rugby
- Sports in which falling is likely (basketball, skating)
- Children under 14 years of age
- History of bone or joint disease
- Poor physical conditioning (strength and flexibility)

■ ■ ■ Preventive Measures

- Appropriately warm up and stretch before practice or competition.
- Maintain appropriate conditioning:
 - Cardiovascular fitness
 - Elbow strength and flexibility
 - Endurance
- Wear protective equipment, such as elbow pads for football.

■ ■ ■ Expected Outcome

With appropriate treatment and normal alignment of the bones, healing can be expected. Surgery may be necessary to realign fractures that are displaced. Average healing time is 4 to 6 weeks in children.

■ ■ ■ Possible Complications

- Nonunion (fracture does not heal) or malunion (fracture heals in a bad position)
- Chronic pain, stiffness, loss of motion, or swelling of the elbow
- Excessive bleeding in the elbow or at the fracture site, causing pressure and injury to nerves and blood vessels (uncommon)
- Heterotopic ossification (calcification of the soft tissues about the elbow)

- Weakness of the wrist muscles
- Unstable joint following repeated injury or malunion of the bony attachment of muscle or delayed treatment
- Arrest of normal bone growth
- Abnormal angulation of the elbow

■ ■ ■ General Treatment Considerations

If the bones are in appropriate alignment (position), the initial treatment consists of ice and elevation of the injured elbow at or above heart level to reduce swelling. Medications are prescribed to help relieve pain. Immobilization by splinting, casting, or bracing for 4 or more weeks is recommended to protect the bones while they heal. A sling may afford comfort while in the cast or splint. Fractures that are displaced (not in appropriate alignment) may require surgery to restore and maintain the muscular attachment to its normal position. Surgery usually includes repositioning the bones and holding the position with screws or pins. After immobilization (with or without surgery), stretching and strengthening of the injured and weakened joint and surrounding muscles (due to the injury and the immobilization) are necessary. These may be performed with the assistance of a physical therapist or athletic trainer.

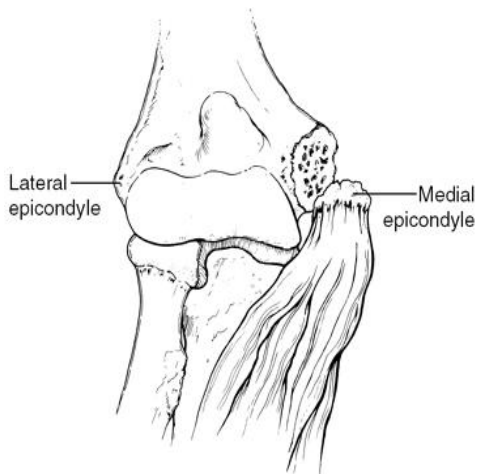


Figure 1

From Nicholas JA, Hershman EB: The Upper Extremity in Sports Medicine. St. Louis, Mosby Year Book, 1995, p. 770.

■ ■ ■ Medication

- Nonsteroidal anti-inflammatory medications, such as aspirin and ibuprofen (do not take within 7 days before surgery), or other minor pain relievers, such as acetamino-phen, are often recommended. Take these as directed by your physician. Contact your physician immediately if any bleeding, stomach upset, or signs of an allergic reaction occur.
- Strong pain relievers may be prescribed as necessary. Use only as directed and only as much as you need.

■ ■ ■ Cold Therapy

Cold is used to relieve pain and reduce inflammation. Cold should be applied for 10 to 15 minutes every 2 to 3 hours for inflammation and pain. Use ice packs or an ice massage.

■ ■ ■ Notify Our Office If

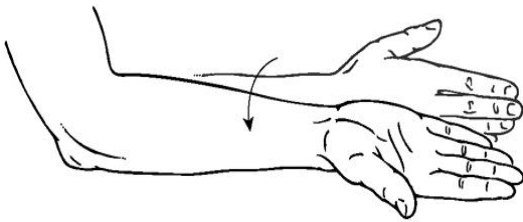
- Pain, tenderness, or swelling worsens despite treatment
- You experience pain, numbness, or coldness in the hand
- Blue, gray, or dusky color appears in the fingernails
- Any of the following occur after surgery: fever, increased pain, swelling, redness, drainage, or bleeding in the surgical area
- New, unexplained symptoms develop (drugs used in treatment may produce side effects)

EXERCISES

➤ RANGE OF MOTION AND STRETCHING EXERCISES • Elbow Fracture (Epicondyle)

These are some of the *initial* exercises you may start your rehabilitation program with after your physician/surgeon removes your cast or brace and states that you may start moving your elbow. Continue these until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please remember:

- Flexible tissue is more tolerant of the stresses placed on it during activities.
- Each stretch should be held for 20 to 30 seconds.
- A *gentle* stretching sensation should be felt.



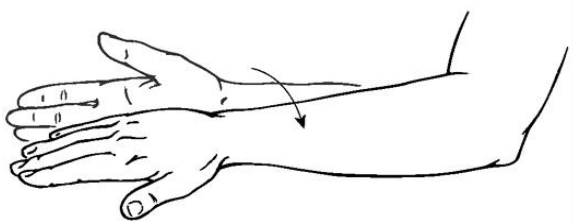
RANGE OF MOTION • Supination

1. Stand or sit with your elbow bent to **90** degrees.
2. Turn your palm upward as far as possible.
3. Hold this position for **30** seconds and then *slowly* return to the starting position.
4. Repeat exercise **2** times, **2** times per day.



RANGE OF MOTION • Supination with Elbow Flexed

1. Stand or sit with your elbow bent to **90** degrees.
2. Turn your palm up toward the ceiling as far as possible. Use your other hand to help turn it farther as shown.
3. Hold this position for **30** seconds and then *slowly* return to the starting position.
4. Repeat exercise **2** times, **2** times per day.



RANGE OF MOTION • Pronation

1. Stand or sit with your elbow bent to **90** degrees.
2. Turn your palm down toward the floor as far as possible.
3. Hold this position for **30** seconds and then *slowly* return to the starting position.
4. Repeat exercise **2** times, **2** times per day.



RANGE OF MOTION • Pronation with Elbow Flexed

1. Stand or sit with your elbow bent to 90 degrees.
2. Turn your palm down toward the floor as far as possible. Use your other hand to help turn it farther as shown.
3. Hold this position for **30** seconds and then *slowly* return to the starting position.
4. Repeat exercise **2** times, **2** times per day.



RANGE OF MOTION • Flexion

1. Bend your _____ elbow as far as you can actively.
2. Try to bend it a little farther with the other hand as shown until you feel a gentle stretch.
3. Hold this position for **30** seconds and then *slowly* return to the starting position.
4. Repeat exercise **2** times, **2** times per day.



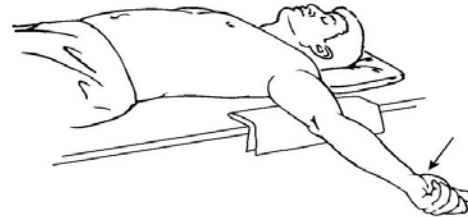
RANGE OF MOTION • Extension

1. Straighten your elbow as far as you can actively.
2. Try to straighten it a little farther with the other hand as shown until you feel a gentle stretch.
3. Hold this position for **30** seconds and then *slowly* return to the starting position.
4. Repeat exercise **2** times, **2** times per day.



RANGE OF MOTION • Flexion

1. Lie on your back with your _____ arm straight up in the air. Support your arm with the other hand as shown.
2. Let the gravity weight of your hand, wrist, and lower arm bend your elbow until you feel a slight stretch.
3. You may hold a small weight in your hand or wear a weight around your wrist (_____ lbs.) if approved by your physician, physical therapist, or athletic trainer to help stretch farther.
4. Hold this position for **30** seconds and then *slowly* return to the starting position.
5. Repeat exercise **2** times, **2** times per day.



RANGE OF MOTION • Extension

1. Lie on your back and rest your elbow off the edge of the bed as shown. You may also sit at a table with the upper arm supported in a similar manner.
2. Let the gravity weight of your hand, wrist, and lower arm straighten your elbow until you feel a slight stretch.
3. You may hold a small weight in your hand or wear a weight around your wrist (_____ lbs.) if approved by your physician, physical therapist, or athletic trainer to help stretch farther.
4. Hold this position for **30** seconds and then slowly return to the starting position.
5. Repeat exercise **2** times, **2** times per day.

➤ STRENGTHENING EXERCISES • Elbow Fracture (Epicondyle)

These are some of the *initial* exercises you may start your rehabilitation program with until you see your physician, physical therapist, or athletic trainer again or until your symptoms are resolved. Please remember:

- Strong muscles with good endurance tolerate stress better.
- Do the exercises as *initially* prescribed by your physician, physical therapist, or athletic trainer. Progress slowly with each exercise, gradually increasing the number of repetitions and weight used under their guidance.



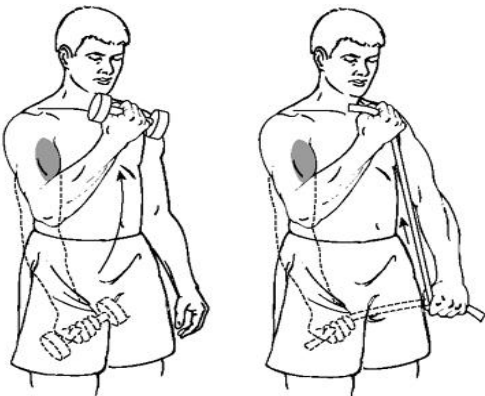
STRENGTH • Elbow Flexion, Isometric

1. With your involved/injured arm on the bottom and the palm of that hand facing upward, assume the position shown.
2. While resisting with the top hand, try to bend the elbow of your involved/injured arm.
3. Do not allow your elbow to move.
4. Hold this position for **30** seconds, then relax.
5. Repeat exercise **2** times, **2** times per day.



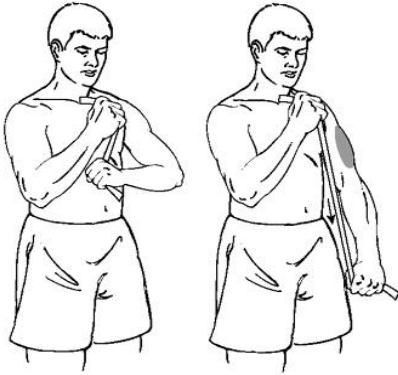
STRENGTH • Elbow Extension, Isometric

1. With your involved/injured arm on top and the palm of your hand facing you, assume the position shown.
2. While resisting with the bottom hand, try to straighten the elbow of your involved/injured arm.
3. Do not allow your elbow to move.
4. Hold this position for **30** seconds, then relax.
5. Repeat exercise **2** times, **2** times per day.



STRENGTH • Elbow Flexion

1. Stand with your arm straight and your *palm* facing forward.
2. Bend the elbow as shown using a pound weight or rubber band/tubing as shown.
3. Hold this position for **30** seconds and then *slowly* return to the starting position.
4. Repeat exercise **2** times, **2** times per day.



STRENGTH • Elbow Extension

1. Hold the rubber band/tubing with your _____ hand on the bottom as shown.
2. Straighten out your elbow, stretching the rubber band/tubing for resistance.
3. Hold this position for **30** seconds and then *slowly* return to the starting position.
4. Repeat exercise **2** times, **2** times per day.



STRENGTH • Pronation

1. Sit with your forearm supported on a table and the hand over the edge and your palm facing up toward the ceiling.
2. Hold a _____ oz. hammer or a stick with a weight on the end in your hand as shown.
3. Turn your palm and hand toward you to a “thumbs-up” position.
4. Hold this position for **30** seconds and then *slowly* return to the starting position.
5. Repeat exercise **2** times, **2** times per day.



STRENGTH • Supination

1. Sit with your forearm supported on a table and the hand over the edge and your palm facing the floor.
2. Hold a _____ oz. hammer or a stick with a weight on the end in your hand as shown.
3. Turn your palm and hand toward you to a “thumbs-up” position.
4. Hold this position for **30** seconds and then *slowly* return to the starting position.
5. Repeat exercise **2** times, **2** times per day.