



# Repetitive Shoulder Strain Injuries in Wheelchair Users

A repetitive strain injury is an injury caused by a task that is done repeatedly. Prolonged manual wheelchair use can lead to pain and repetitive strain injury (RSI) of the upper extremities, especially in the shoulders. The number of manual wheelchair users experiencing pain tends to increase with the time spent using a wheelchair. Although manual wheelchairs have improved tremendously over the past 15 years, many people continue to develop arm pain and injury due to repetitive use. Studies have shown that approximately 30-50% of persons with paraplegia report shoulder pain that interferes with their mobility.

## Causes

There are three mechanisms that may lead to shoulder injury in wheelchair users.

1. Wheelchair propulsion wears and weakens the rotator cuff (a group of four muscles surrounding and supporting the shoulder).
2. Lifting things overhead increases wear and tear on the rotator cuff.
3. Improper wheelchair transfers or lifting can cause shoulder injury.

Degenerative changes occur from repeated use of the rotator cuff muscles; these changes may include "wear and tear" of the cartilage.

The position and the repetitive loading of the shoulder joint for propulsion and transfers most likely contribute to these changes, along with muscle imbalance due to the mechanics of wheelchair propulsion.

For wheelchair users, fingers and shoulders tend to be the most common upper-extremity injuries due to a lack of flexibility and/or strength in the shoulder joint. Joint stability at the shoulder depends on muscle strength. If a joint and muscle aren't flexible, they can more easily be strained or sprained.

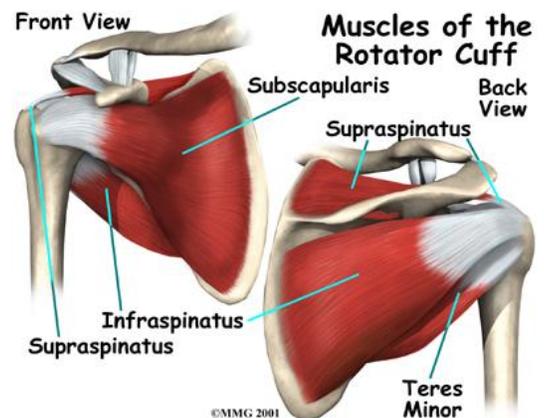
## Symptoms

Symptoms may include pain during range of motion, especially with overhead activities, transfers or wheeling.

## Diagnosis

Your doctor will review your symptoms and examine the injured area. The examination will likely include complete physical exam, including range of motion, flexibility and sensation. Your doctor may order further imaging to determine the type of injury.

Specific types of injuries may include:





- Impingement syndrome
- DJD (Degenerative Joint Disease)
- Rotator cuff tear/bicipital tendinitis
- Capsulitis
- Myofascial pain (pain centered around trigger points in muscles)
- Cervical radiculopathy (pinched nerve in the neck region)

### **Treatment**

Treatment may include rest and medications for pain treatment if needed. Compensatory techniques can be taught to reduce symptoms. Medical treatment of specific conditions will vary. It is most important to learn proper posture, weight bearing and weight maintenance.

Additionally, there are specific exercises which will help prevent further shoulder injuries. Flexibility and strong muscles are keys to help prevent shoulder injuries. Physical therapy may be useful in treating symptoms and preventing recurrence. Some specific exercises to strengthen the shoulder can also be helpful. These exercises should be performed on a continuing basis to prevent shoulder pain. Stretching exercises should be performed daily, and strengthening exercises performed every other day.