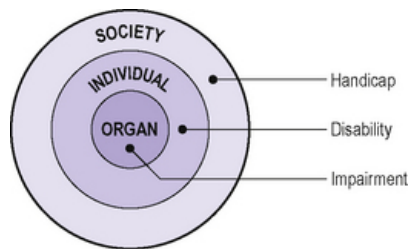


Impairment	Disability	Handicap
↓structures and function	activity limitations	↓participation in normal life roles

A significant deviation, loss, or loss of use of any body structure or body function in an individual with a health condition, disorder, or disease is called:

- A. Impairment  
B. Disability  
C. Handicap  
D. Deficiency

- The medical term "**deficiency**" describes a lack or shortage of something that may cause illness or impairment, e.g., limb deficiency, color vision deficiency, iron deficiency anemia.



The U.S. Department of Labor defines "disability" as someone who has a physical or mental impairment that substantially limits one or more major life activities.



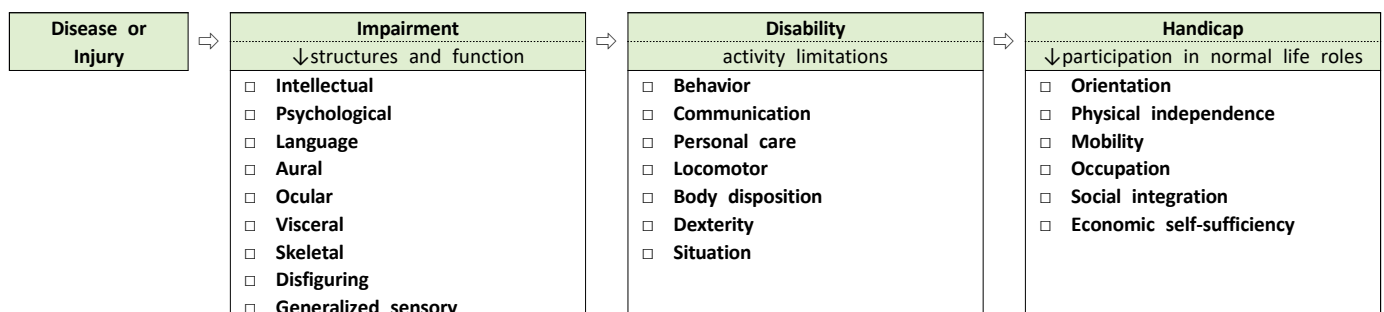
According to the WHO ICF (International Classification of Functioning):

<b>Impairment</b>	problems at the level of bodily structures and function.
<b>Disability</b>	arises from impairments and can result in activity limitations and participation restrictions.
<b>Handicap</b>	disadvantages related to disability that result in reduced participation in normal life roles.

Activity limitations and/or participation restrictions in an individual with a health condition, disorder, or disease is called:

- A. Impairment  
B. Disability  
C. Handicap  
D. Deficiency

Consequences of congenital or acquired condition



A person with a disability is someone with a **physical or mental impairment** that **substantially limits** one or more **major life activities**.

**Substantially limits:**

Unable to perform a major life activity or significantly restricted as to the condition, manner or duration under which it can be performed in comparison with most people.

### Major Life Activities:

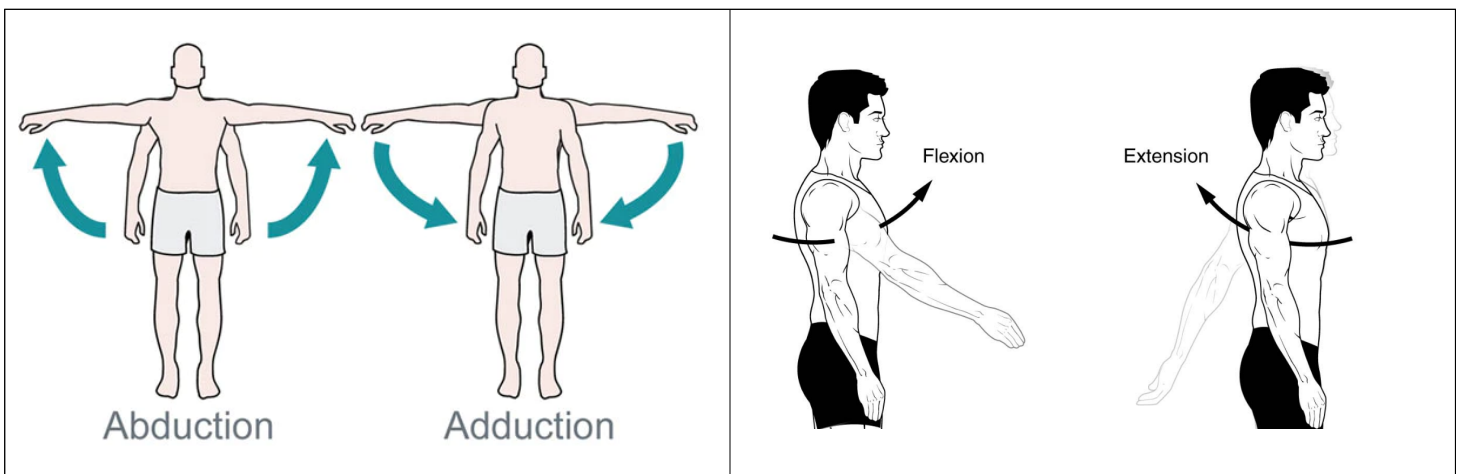
- Walking
- Seeing
- Hearing
- Speaking
- Performing Manual Tasks
- Breathing
- Learning
- Working
- Caring for Oneself

Disability as defined by the Americans with Disabilities Act (ADA) is

- A. an abnormality of the physiologic or anatomic structure or function.
- B. the barrier society places on the individual interacting in his/her community.
- C. a physical or mental impairment that substantially limits 1 or more major life activities.
- D. a rating based on an independent medical examination.

- The Americans with Disabilities Act defines **disability** as a physical or mental impairment that substantially limits 1 or more of a person's major life activities. The person has a record of such impairment, or is regarded as having such impairment.
- **Definition of a "major life activity" includes:** caring for oneself, performing manual tasks, seeing, hearing, eating, sleeping, walking, standing, lifting, bending, speaking, breathing, learning, reading, concentration, thinking, communicating, working.
- A **permanent disability rating** is used to determine financial compensation for an injury.

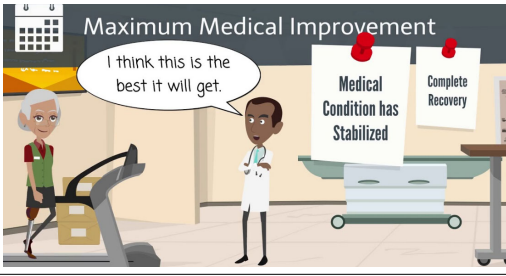
<b>Impairment</b>	the actual physiologic, anatomic, or psychologic abnormality.
<b>Disability</b>	a physical or mental impairment that substantially limits 1 or more of a person's major life activities.
<b>Handicap</b>	refers to the barriers society places on an individual to perform function in the community.



Repeatedly lifting the shoulder past which degree of flexion or abduction is associated with an increased prevalence of shoulder disorders?

- A. 10 degrees
- B. 30 degrees
- C. 45 degrees
- D. 60 degrees

- Repeatedly lifting the shoulder past 60 degrees of flexion or abduction is associated with an increased prevalence of shoulder disorders.





**Maximum medical improvement is the point where no further recovery or improvement from an injury is expected even with further medical attention.**

- An injured worker may reach a point in his or her recovery called maximum medical improvement (MMI). MMI occurs when a condition has stabilized and further functional improvement is unlikely, despite continued medical treatment or physical rehabilitation.

What does the term maximum medical improvement (MMI) mean?

- A. A patient's condition is no longer clinically significant
- B. No further treatment for the condition is required.
- C. No further treatment is reasonably expected to improve the condition.
- D. The physician and patient agree that the condition has stabilized.

- Maximum medical improvement (MMI)** is a term used to indicate that further significant recovery or deterioration of a condition is not anticipated to occur.
- The patient's condition may remain clinically symptomatic, as resolution of the condition may or may not occur. Ongoing treatment (eg, maintenance treatment) may be required following MMI.

Maximal Medical Improvement (MMI)	
	
has reached an effective clinical plateau	has been complete resolution of the symptoms

Which of the following statements describes maximal medical improvement (MMI), according to the American Medical Association's Guides to the Evaluation of Permanent Impairment 5th Edition?

- A. Definitive care for the condition has been provided. Pain from the condition has resolved. Physiologic recovery is expected to be complete within 6 months.
- B. Sufficient time has passed for the expected healing and recovery from treatment to occur. All reasonable medical treatment has been offered. The condition has reached clinical plateau.
- C. Six months has passed beyond the designated time of recovery for the condition.
- D. The statutory length for complete treatment of the medical condition has expired.

- MMI** is reached after all reasonable medical treatments have been offered and sufficient time has passed for any expected healing and recovery to occur.
- This does not, of course, imply that there has been complete resolution of the symptoms or condition, but rather that the patient has reached an effective clinical plateau beyond which significant improvement or decline is not anticipated.
- There is no duration of recovery provided in the definition. There is no statutory length of treatment.

**Maximum medical improvement. Maximum Medical Improvement (MMI)** occurs when an injured employee reaches a state where his or her condition cannot be improved any further or when a treatment **plateau** in a person's healing process is reached.



Which intervention for carpal tunnel syndrome has been shown to improve symptoms?

- A. Ultrasound treatment for 2 weeks
- B. Nonsteroidal anti-inflammatory drugs
- C. Use of ergonomic keyboards
- D. Nocturnal splinting for 6 weeks

- Both **nocturnal** and **full-time splinting** have been found to alleviate symptoms in carpal tunnel syndrome.
- According to the Cochrane Report current evidence shows significant short-term benefit from oral steroids, splinting, ultrasound, yoga and carpal bone mobilization. Use of nonsteroidal anti-inflammatory drugs, ergonomic keyboards, and short-term ultrasound have not been found helpful in controlled trials.

Which treatment is shown to improve the symptoms of carpal tunnel syndrome for up to 1 year?

- A. Wrist/hand splint
- B. Oral corticosteroids
- C. Therapeutic ultrasound
- D. Tendon glide maneuvers

- Using a **wrist/hand splint** can improve the symptoms of carpal tunnel syndrome for up to 1 year.
- Therapeutic ultrasound and oral corticosteroids have been shown to provide only short-term relief.
- Tendon glide maneuvers have not been shown to affect the outcome of carpal tunnel syndrome.

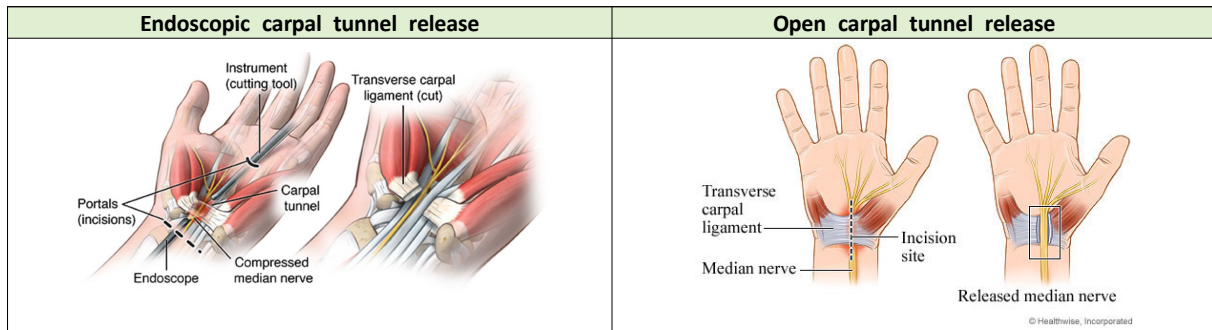
A 54-year-old, right-handed female presents for electrodiagnostic testing at the request of her primary care physician for mild and intermittent, nocturnal carpal tunnel symptoms of her dominant hand for 3 weeks. NCS testing today reveals mild carpal tunnel findings, including no denervation on EMG testing. Cervical radiculopathy has already been excluded. What is the most appropriate next treatment recommendation?

- A. Orthopedic referral for endoscopic carpal tunnel release surgery
- B. Trial of 3 weeks of hand therapy prior to considering surgical referral
- C. In-office carpal tunnel steroid injection today
- D. Educational pamphlet on carpal tunnel syndrome, instructions to continue wrist splinting and re-assess in 3 weeks

- Multiple standard of care guidelines recommend education and **splinting** as first line treatment for mild carpal tunnel symptoms that have been present for less than one month.
- For symptoms that persist or worsen beyond one-month, other interventions including steroid injection and hand therapy could then be considered.
- Carpal tunnel release surgery should not be considered for mild carpal tunnel syndrome unless symptoms persist or worsen beyond 6 months.



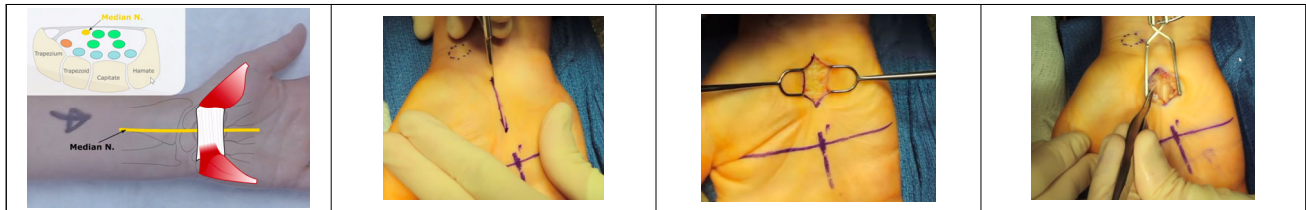
Injecting corticosteroids near the carpal tunnel is a common treatment. Steroids reduce swelling in the connective tissue, which relieves the pressure on the median nerve.



A 44-year-old, right-handed female presents for electrodiagnostic testing at the request of her primary care physician for chronic carpal tunnel symptoms of her dominant hand. Her symptoms have been moderate to severe for at least six months and NCS testing today reveals moderate to severe carpal tunnel findings without denervation on EMG testing. According to multiple guidelines on carpal tunnel syndrome, what is the most appropriate next treatment recommendation?

- Orthopedic referral for endoscopic carpal tunnel release surgery
- Trial of 3 weeks of hand therapy prior to considering surgical referral
- In-office carpal tunnel steroid injection today and instructions to continue wrist splint
- Referral to a chronic pain program

- Multiple standard of care guidelines recommend surgical intervention for moderate to severe carpal tunnel syndrome that has persisted beyond 6 months, with or without prior non-surgical treatments.
- Option (b) is incorrect because hand therapy, including "nerve glide" exercises have not consistently demonstrated benefit.
- Option (c) is incorrect because corticosteroid injections offer only good short-term relief. Wrist splinting has only demonstrated utility for CTS that is less than 6 months in duration and is typically more successful for mild or moderate cases.
- Option (d) is incorrect since there are no identified psychosocial concerns.



Anterior shoulder dislocation	Posterior shoulder dislocation
97%	3%

What is the most common musculoskeletal injury that is caused by exposure to an electrical shock?

- Thoracic compression fracture
- ACL tear with medial meniscal fraying
- Posterior fracture-dislocation of the humeral head
- Hyperextension injury of the wrist

- The most common orthopedic injury after electrical shock is a posterior fracture-dislocation of the humeral head. Scapular fractures as a direct result of electrical shock have also been reported.
- The mechanism of fracture in **electrical injury** is postulated to be **forceful muscle contraction**. In shoulder dislocations, massive contraction of the infraspinatus and teres minor along with the deltoid, latissimus dorsi, and teres major force the humeral head superiorly and posteriorly against the acromion and medially against the glenoid fossa, causing the humeral head to lodge behind the glenoid rim.
- Similarly, forceful muscle contractions in the thoracic spine are likely the mechanism by which thoracic compression fractures occur as a result of low-voltage electrically induced injury. Spinal fractures caused by electric shock are very rare. Other fractures associated with electrically induced injury usually result from a fall at the time of injury.

- The mechanism of posterior shoulder dislocation is believed to be unbalanced muscle contraction. During **seizure** activity, the internal rotator muscles of the shoulder contract with greater force than the external rotators, which causes the humeral head to move superiorly and posteriorly.

- **Hand-arm vibration syndrome (HAVS)** is caused by occupational exposure to vibrating hand tools. HAVS has three main components:
  - 1) Peripheral neuropathy of the hands that produces numbness, tingling, or both in a glove distribution. Loss of dexterity may occur.
  - 2) Secondary Raynaud's phenomenon of the hands, sometimes referred to as vibration white finger (VWF).
  - 3) Musculoskeletal problems. These are the least specific manifestations and may include complaints of weakness, discomfort, and pain of the hands, wrists, forearms, and elbows.
- Patients of hand-arm vibration syndrome can recover if they stop using vibrating power tools as soon as symptoms begin. If you continue using power tools, especially without preventative measures, the symptoms are likely to worsen and persist long after you stop using vibrating tools.
- Advanced HAVS may be irreversible and there is no effective treatment. Medications can sometimes be effective in reducing the frequency and severity of blanching attacks, and anti-inflammatory medications can be used to reduce pain symptoms.



**If you regularly use vibrating power tools, consider the following methods to prevent HAVS:**

- ☐ Maintain your power tools regularly to prevent excess vibration
- ☐ Break from power tools every 10 minutes rather than long, uninterrupted work
- ☐ Keep your hands warm while using power tools
- ☐ Don't smoke to ensure healthy blood flow through your body at all times
- ☐ Operate power tools with loose holds and change positions often

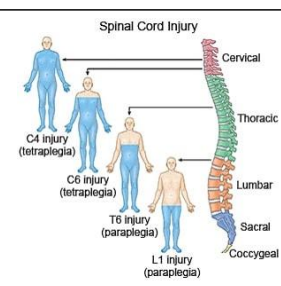
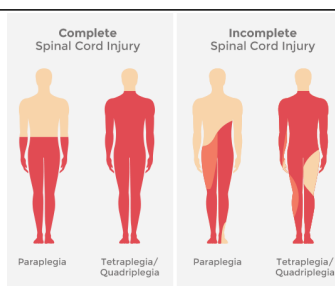
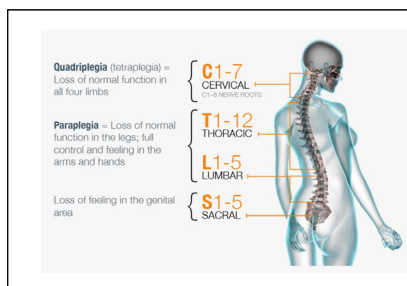
Which of the following conditions is strongly associated with use of a power stonecutting tool?

- A. Cervical degenerative disc disease
- B. Hand-arm vibration syndrome
- C. Lateral epicondylitis
- D. Radiocapitellar arthritis

- Vibrating power hand tools are associated with the diagnosis of hand-arm vibration syndrome (HAVS).
- Neck and lower back degenerative disc disease are not attributed to the operation of power hand tools.
- Elbow arthritis is also not associated with the use of power hand tools.



- **Raynaud's phenomenon** is a condition resulting in discoloration of the fingers and/or the toes after exposure to changes in temperature (cold or hot) or emotional events. Skin discoloration occurs because an abnormal spasm of the blood vessels causes a diminished blood supply to the local tissues.



According to the Americans with Disabilities Act (ADA), an individual with a complete T12 spinal cord lesion with a bachelor's degree would be able to perform the essential job functions of which of the following positions without accommodation?

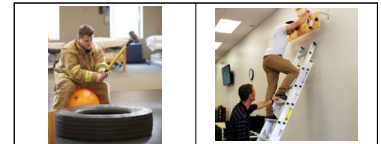
- A. Commercial truck driver
- B. Plumber
- C. Data analyst
- D. Warehouse worker

- Accommodation would be needed for someone with paraplegia to work as a commercial truck driver.
- The individual presumably has no training as a plumber and would therefore be unable to work as plumber.
- An analyst is a sedentary clerical position that could be done by a person with paraplegia with readily available computer interface approaches.
- A warehouse clerk is a physically demanding job that would likely require some type of accommodation for a person with paraplegia (e.g., a robotic exoskeleton), if any were available.

<b>Work conditioning &amp; Work hardening</b>	<ul style="list-style-type: none"> <li>Work conditioning and work hardening are high levels of therapeutic intervention designed to help patients regain enough function to return to work. These therapies are ideal for patients that have already progressed through traditional physical therapy but still lack full function in relation to specific duties required on the job. Work conditioning and work hardening utilize real or simulated work tasks to help prepare patients for a safe transition back into the work force while preventing new or worsened injuries.</li> </ul>		
<b>Work conditioning</b>	<ul style="list-style-type: none"> <li>Work conditioning is a rigorous conditioning program designed to help patients regain their systemic, neurological, cardiopulmonary and musculoskeletal functions. This includes strength, mobility, power, endurance, motor control and functional abilities. Work conditioning provides a middle step in the process of returning to work. The goals of a work conditioning program are to restore the patient's physical capacity and functional abilities, to prevent the recurrence of the same injury, and to decrease their fear of returning to work.</li> </ul>		
<b>Work hardening</b>	<ul style="list-style-type: none"> <li>Work hardening is an individualized, highly-structured program designed to help patients return to their pre-injury work level in a safe and timely manner. It aims to help patients regain their biomechanical, cardiovascular, metabolic, neuromuscular and psychosocial functions in conjunction with their work tasks. Work hardening is multidisciplinary, using a physical therapist, occupational therapist, psychologist and vocational specialist. It includes strengthening and flexibility exercises, cardiovascular conditioning, spine and joint stabilization exercises and job task training (i.e. pushing, pulling, crouching, lifting, bending, sitting, or twisting).</li> </ul>		
<b>Who can benefit from work conditioning &amp; Work hardening</b>	<input type="checkbox"/> Police Officers <input type="checkbox"/> Firefighters <input type="checkbox"/> Electricians <input type="checkbox"/> Plumbers <input type="checkbox"/> FBI Agents	<input type="checkbox"/> Correction Officers <input type="checkbox"/> Mechanics <input type="checkbox"/> Construction Workers <input type="checkbox"/> Healthcare Providers <input type="checkbox"/> Painters	<input type="checkbox"/> Delivery Drivers <input type="checkbox"/> Post office employees <input type="checkbox"/> Chefs <input type="checkbox"/> Any other labor-intensive professionals

Work hardening programs are intended to

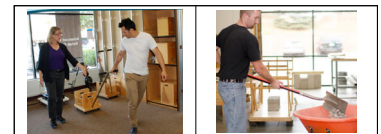
- simulate specific job activities.
- assist patients who have been out of work for many years.
- improve the injured worker's condition.
- remove work restrictions.



- Work hardening** should be considered if a high quality, reputable program is available.
- Treatment should be geared toward returning the patient to their specific job and should include a psychological component.
- Interdisciplinary treatment should use real or simulated job activities in a graded fashion according to patient tolerance.
- A general conditioning/strengthening program that tries to simulate job duties (without psychological component) would be a **Work conditioning** program.

Work hardening incorporates which of the following components?

- Injury prevention education, ergonomics education, and nutrition education
- Therapeutic exercise, psychological support, and work simulation
- Therapeutic exercise, leadership training, and ergonomics education
- Workplace safety training, nutrition education, and wellness

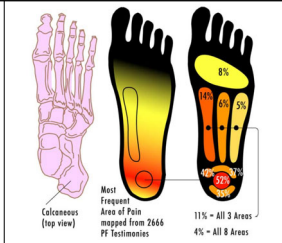


- Work conditioning** should restore the client's physical capacity and function. **Work hardening** should be work simulation and not just therapeutic exercise, plus there should also be psychological support.
- Work hardening** is an interdisciplinary, individualized, job specific program of activity with the goal of return to work. **Work hardening** programs use real or simulated work tasks and progressively graded conditioning exercises that are based on the individual's measured tolerances.
- Work conditioning** and **work hardening** are not intended for sequential use. They may be considered in the subacute stage when it appears that exercise therapy alone is not working and a biopsychosocial approach may be needed, but single discipline programs like **work conditioning** may be less likely to be effective than **work hardening** or interdisciplinary programs. (GARF, 2006)

(Washington, 2006)

Work conditioning	Work hardening
<ul style="list-style-type: none"> <li>Typically refers to intensive therapy to get people "back into shape"</li> <li>May include exercises to strengthen weak muscles, cardiac/respiratory endurance, and some work simulation</li> <li>Usually 3-4 hours a day/ 3x per week</li> </ul>	<ul style="list-style-type: none"> <li>More intensive program usually 6-8 hrs a day/ 5x per week</li> <li>Work simulation</li> <li>Education re:               <ul style="list-style-type: none"> <li>Injury prevention</li> <li>Advocacy for accommodations</li> </ul> </li> <li>Job site analysis and recommendations for modifications</li> </ul>

- Plantar fasciitis is a disorder of the connective tissue which supports the arch of the foot. It results in pain in the heel and bottom of the foot that is usually most severe with the first steps of the day or following a period of rest.
- Most cases of plantar fasciitis resolve with time and conservative methods of treatment. For the first few weeks, those affected are usually advised to rest, change their activities, take pain medications, and stretch. If this is not sufficient, physiotherapy, orthotics, splinting, or steroid injections may be options. If these measures are not effective, additional measures may include extracorporeal shockwave therapy or surgery.



Which of the following is a risk factor for plantar fasciitis?

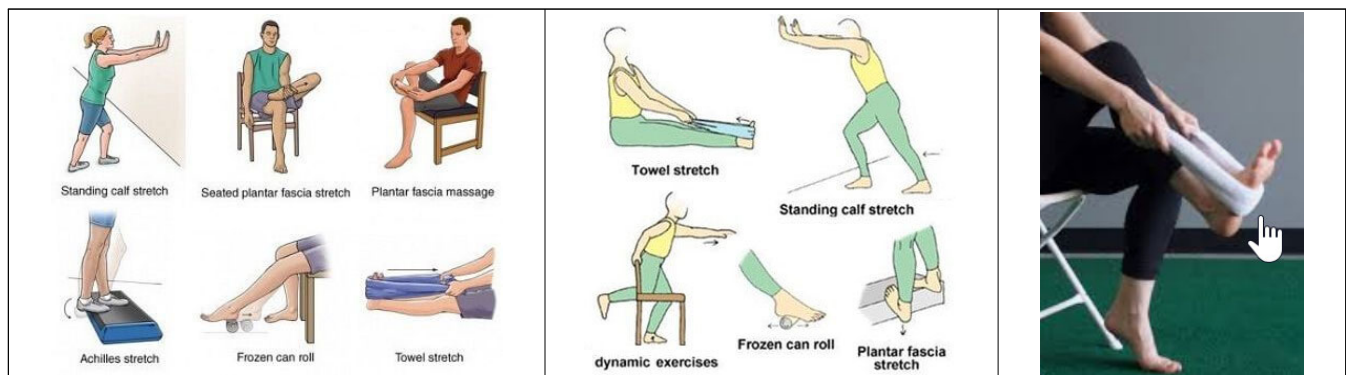
- A. Female gender
- B. Age younger than 40 years
- C. Normal medial arch
- D. Obesity

- Obesity is a risk factor for plantar fasciitis.
- Plantar fasciitis affects both men and women equally.
- It also most commonly occurs in people between the ages of 40 and 70 years.
- Factors that increase the tension on the plantar fascia, such as decreased subtalar motion, pes cavus (high medial arch), pes planus (low medial arch), and a tight Achilles' tendon, may contribute to plantar fasciitis.

Which first line treatment for plantar heel pain is most effective?

- A. Therapeutic ultrasound
- B. Plantar stretches
- C. Corticosteroid injections
- D. Extracorporeal shock wave therapy (ESWT)


- Nineteen randomized trials of treatment of plantar heel pain were reviewed. Trial quality was noted to be generally poor. There was no evidence to support effectiveness of therapeutic ultrasound. There were no randomized trials evaluating surgery. There was limited evidence for the superiority of corticosteroid injections over orthotic devices. There are few studies demonstrating the effectiveness of Extracorporeal shock wave therapy (ESWT), with systematic reviews demonstrating poor quality and no conclusive evidence in reducing night pain, resting pain, and pressure pain in the short term.
- In most patients with PF, conservative treatment usually is sufficient. Initially, a period of rest accompanied by anti-inflammatory agents (ice pack/heat, NSAID's), stretching, and an orthosis is recommended. There is no difference in which types of orthosis (foot pad or heel insert) is used, although plantar stretching seems to be more effective.
- If the patient remains symptomatic, corticosteroid injection and night splint (especially in patients with symptoms greater than 6 months in duration) may be reasonable. Extracorporeal shock wave therapy (ESWT) should be considered prior to any surgical intervention in patients with refractory Plantar fasciitis.



- Plantar fasciitis (PF) is the most common reason for heel pain. The efficacy of extracorporeal shock wave therapy (ESWT) as an ideal alternative to conservative treatments and surgery is controversial, and almost all previous articles compared general ESWT with placebo without indicating the kind of shock wave.
- Its mechanism of action is based on acoustic mechanical waves that act at the molecular, cellular, and tissue levels to generate a biological response. Increasing evidence suggests that extracorporeal shockwave treatment (ESWT) is safe and effective for treating several musculoskeletal disorders

	LU	LI	ST	SP	HT	SI	UB	KD	PC	SJ	GB	LV
FIRE POINT	10	5	41	2	8	5	60	2	8	6	38	2
WATER POINT	5	2	44	9	3	2	66	10	3	2	43	8

YIN-YANG BALANCING ACUPUNCTURE (平針 평침)

		Ipsilateral		Contralateral	
		FIRE	WATER	FIRE	WATER
SYSTEM 1					
SYSTEM 2					
SYSTEM 3					
SYSTEM 4					

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