Madigan Army Medical Center
Musculoskeletal Treatment Guidelines

SYMPTOMATIC FLAT FEET

Diagnosis/Definition

- Chronic repetitive aching type discomfort in the medial aspect of the foot while standing and walking.
- Decreased medial longitudinal arch height with medial talar head prominence.
- Asymptomatic flat feet do not require treatment.

Initial Diagnosis and Management

- History and physical examination.
- Appropriate radiographic (weightbearing feet) and laboratory studies (rheumatology panel evaluation in patients with inflammatory, bilateral, and other joint presentations).

Ongoing Management and Objectives

- Initial primary care treatment for foot pain should include a three-month trial period of the following:
  - NSAIDs
    - Adults - 200 to 400 milligrams (mg) every four to six hours as needed for up to 2 weeks. Example: Ibuprofen
    - Take tablet or capsule forms of these medicines with a full glass (8 ounces) of water.
    - Do not lie down for about 15 to 30 minutes after taking the medicine. This helps to prevent irritation that may lead to trouble in swallowing.
    - To lessen stomach upset, these medicines should be taken with food or an antacid.
  - Over-the-counter arch pads for insoles (i.e., Polysorb or Dr. Scholl's)
  - Soft supporting shoes (running or walking type)
  - Calf stretching
  - Decreased activity (rest).

Indication a profile is needed

- Any limitations that affect strength, range of movement, and efficiency of feet, legs, lower back and pelvic girdle.
- Slightly limited mobility of joints, muscular weakness, or other musculo-skeletal defects that may prevent moderate marching, climbing, timed walking, or prolonged effect.
- Defects or impairments that require significant restriction of use.

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Specifications for the profile

- Weeks 1-12
  - No running and jumping
  - No rucking
  - Walking to tolerance
  - Swimming recommended

Patient/Soldier Education or Self care Information

- See attached sheet
- Demonstrate deficits that exist
  - Describe/show soldier his/her limitations
- Explain injury and treatment methods
  - Use diagram attached to describe injury, location and treatment.
- Instruct and demonstrate rehab techniques
  - Demonstrate rehab exercises as shown in attached guide
  - Warm up before any sports activity
  - Participate in a conditioning program to build muscle strength
  - Do stretching exercises daily
- Ask the patient to demonstrate newly learned techniques and repeat any other instructions.
- Fine tune patient technique
- Correct any incorrect ROM/stretching demonstrations or instructions by repeating and demonstrating information or exercise correctly.
- Encourage questions
  - Ask soldier if he or she has any questions
- Give supplements such as handouts
- Schedule follow up visit
  - If pain persists
  - The pain does not improve as expected
  - Patient is having difficulty after three days of injury
  - Increased pain or swelling after the first three days
  - Patient has any questions regarding care

Indications for referral to Specialty Care

- Adult patients with no improvement of symptoms after the three-month trial period can be referred to the Podiatry Clinic.
- Pediatric patients with no improvement can be referred to Pediatric Orthopedics.

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Referral criteria for Return to Primary Care

- Patients not requiring surgery will be given a biomechanical examination and an orthotic prescription prior to being returned to primary care for chronic management.
- Patients requiring surgery will be followed in the Podiatry Clinic until the perioperative period is complete. Patients will then be given an orthotic prescription before being returned to the primary care provider for chronic management.

Normal Arch

Flat Arch

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Exercises

#1

- Sit with your back and legs supported.
- Place the rubber pads below your toes.
- Move the Foot Trainer back until the rubber pads touch the top of your feet.
- Slowly move your feet toward your body while you resist with the Foot Trainer.



#2

- Lie on your back with both of your legs bent and your feet flat on the ground.
- Move your exercising leg up toward your body.
- Hold the Foot Trainer Handle with both hands then and place the rubber pads below your toes.
- Move The Foot Trainer forward until you feel the rubber pads touch the top of your feet.
- Slowly move your lower leg upward while you resist with the Foot Trainer.



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PHYSICAL PROFILE

For use of this form, see AR 40-501; the proponent agency is the Office of The Surgeon General

1. MEDICAL CONDITION: SYNTOMATIC FLAT FEET

2.

P	U	L	H	E	S

3. ASSIGNMENT LIMITATIONS ARE AS FOLLOWS: WEEKS 1 -4 , NO RUNNING, JUMPING AND MARCHING, RECOMMEND SWIMMING, WALKING TO TOLERANCE.

CODES

4. THIS PROFILE IS ☐ PERMANENT ☒ TEMPORARY EXPIRATION DATE:

5. THE ABOVE STATED MEDICAL CONDITION SHOULD NOT PREVENT THE INDIVIDUAL FROM DOING THE FOLLOWING ACTIVITIES

☒ Groin Stretch	☒ Thigh Stretch	☒ Lower Back Stretch	☒ Neck & Shoulder Stretch	☒ Neck Stretch
☒ Hip Raise	☒ Quads Stretch & Bal.	☒ Single Knee to Chest	☒ Upper Back Stretch	☒ Ankle Stretch
☒ Knee Bender	☒ Calf Stretch	☒ Straight Leg Raise	☒ Chest Stretch	☒ Hip Stretch
☐ Side-Straddle Hop	☒ Long Sit	☒ Elongation Stretch	☒ One-Arm Side Stretch	☒ Upper Body Wt Tng
☐ High Jump	☒ Hamstring Stretch	☒ Turn and Bounce	☒ Two-Arm Side Stretch	☒ Lower Body Wt Tng
☐ Jogging in Place	☒ Hams. & Calf Stretch	☒ Turn and Bend	☒ Side Bender	☒ All

6. AEROBIC CONDITIONING EXERCISES

- ☒ Walk at Own Pace and Distance
- ☒ Run at Own Pace and Distance
- ☒ Bicycle at Own Pace and Distance
- ☒ Swim at Own Pace and Distance
- ☒ Walk or Run in Pool at Own Pace

- ☐ Unlimited Walking
- ☐ Unlimited Running
- ☐ Unlimited Bicycling
- ☐ Unlimited Swimming

- ☐ Run at Training Heart Rate for ____ Min.
- ☐ Bicycle at Training Heart Rate for ____ Min.
- ☐ Swim at Training Heart Rate for ____ Min.

7. FUNCTIONAL ACTIVITIES

- ☒ Wear Backpack (40 Lbs.)
- ☒ Wear Helmet
- ☒ Carry Rifle
- ☒ Fire Rifle

With Hearing Protection

- ☐ KP/Mopping/Mowing Grass
- ☐ Marching Up to 2 Miles
- ☒ Lift Up to 15 Pounds
- ☐ All

PHYSICAL FITNESS TEST

☐ Two Mile Run	☐ Walk
☒ Push-Ups	☒ Swim
☒ Sit-Ups	☐ Bicycle

8. TRAINING HEART RATE FORMULA

MALES 220 FEMALES 225

MINUS (-) AGE
MINUS (-) RESTING HEART RATE
TIMES (X) % INTENSITY
PLUS (+) RESTING HEART RATE

50% EXTREMELY POOR CONDITION
60% HEALTHY, SEDENTARY INDIVIDUAL
70% MODERATELY ACTIVE, MAINTENANCE
80% WELL TRAINED INDIVIDUAL

9. OTHER

TYPED NAME AND GRADE OF PROFILING OFFICER	SIGNATURE	DATE
TYPED NAME AND GRADE OF PROFILING OFFICER	SIGNATURE	DATE

ACTION BY APPROVING AUTHORITY

PERMANENT CHANGE OF PROFILE ☐ APPROVED ☐ NOT APPROVED

TYPED NAME, GRADE & TITLE OF APPROVING AUTHORITY	SIGNATURE	DATE

ACTION BY UNIT COMMANDER

THIS PERMANENT CHANGE IN PROFILE SERIAL ☐ DOES ☐ DOES NOT REQUIRE A CHANGE IN MEMBER'S
☐ MILITARY OCCUPATIONAL SPECIALTY ☐ DUTY ASSIGNMENT BECAUSE:

TYPED NAME AND GRADE OF UNIT COMMANDER	SIGNATURE	DATE

PATIENT'S IDENTIFICATION *(For typed or written entries give: Name (last, first, middle), grade, SSN, hospital or medical facility)*

UNIT

ISSUING CLINIC AND PHONE NUMBER

DISTRIBUTION
UNIT COMMANDER - ORIGINAL & 1 COPY
HEALTH RECORD JACKET - 1 COPY
CLINIC FILE - 1 COPY
MILPO - 1 COPY

DA FORM 3349, MAY 86 REPLACES DA FORM 5302-R (TEST) DATED FEB 84 AND DA FORM 3349 DATED 1 JUN 80, WHICH ARE OBSOLETE
USAPPC V1.00

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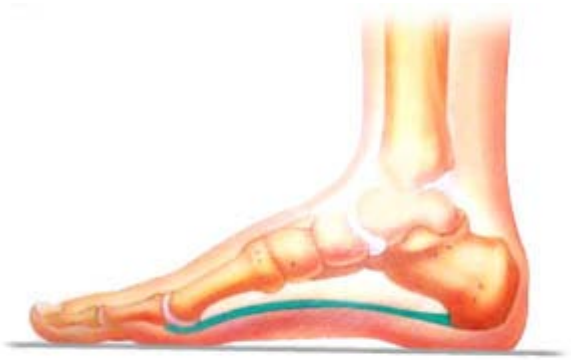
PATIENT INFORMATION

Flat Feet (or Flat Arches)



Normal Arch

Flat Arch

The normal arch functions as a shock absorber for our entire body. Each time we step down, we place up to 5 times our body weight on the foot, depending on whether we are walking, running, or jumping. If there was no shock absorber in the foot, the force of each step would eventually fracture or dislocate the bones of the foot, leg, and lower back. When the arch is flat (a flat foot), it is "sick" and cannot function properly. If left untreated, this will lead to a completely collapsed foot which cannot function as a shock absorber at all; and, this in turn will cause constant pain in the foot, and eventually the knee, hip, and lower back.

Causes: The normal arch is made up of bones and joints which are held tightly together in a precise relationship. In order for the arch to flatten out, the ligaments and tendons which hold the bones and joints together must be more flexible than normal. This abnormal flexibility may be a result of: the genes we inherit from our parents, the weakening of muscles and ligaments caused by advancing age, neuromuscular diseases, or injury. Injuries may include one severe trauma, or years of standing for long periods of time in the wrong types of shoes (those with high heels or those with poor support). This flexibility of the bones, joints, and soft tissues is what causes the foot problems which are related to flat arches or feet. The following conditions are the most common foot problems seen in flat feet:

1. PRONATION is the most common and damaging medical problem that may occur as a result of flat arches. Pronation is a turning outward of the foot at the ankle, so that one has a tendency to walk on the inner border of the foot. You can test for pronation by looking at the leg and foot from the back. Normally you can see the Achilles Tendon run straight down the leg into the heel. If the foot is pronated, the tendon will run straight down the leg, but when it lies on the heel, it will twist outward. This makes the inner ankle bone much more prominent than the outer ankle bone. Because pronation is a twisting of the foot, all of the muscles and tendons which

run from the leg and ankle into the foot will be twisted. If left untreated, pronation may be the cause of heel spurs, plantar fasciitis, frequent ankle sprains, shin splints, weak and painful arches, and eventually knee, hip, and lower back pain.

2. STRUCTURAL DEFECTS are foot problems that may occur because the bones and joints of the foot are not held together with the normal amount of tension. This allows the bones and joints to move into abnormal positions causing: bunions, hammertoes, neuromas, calluses, and corns. If these problems are left untreated, they become progressively more painful and debilitating.

Treatment: In the child and adolescent, treatment must be directed to supporting the individual bones and joints which make up the arch, and to aid the arch in its job as a shock absorber during the individual's growing years. This support of the individual components of the arch will prevent the arch from flattening out further as growth continues, allowing a normal arch to be formed. Aiding the development of a normal arch is accomplished through the use of custom-made orthotics. Custom-made orthotics allow the all-too-flexible muscles and ligaments in the foot and ankle to tighten as growth continues, while taking over the job of a shock absorber. The use of custom-made orthotics will help to prevent biomechanical and structural foot problems from developing, thus reducing the probability of the following diseases from occurring in adulthood: pronation, shin splints, bunions, heel spurs, plantar fasciitis, serious ankle injuries and hammertoes.

Custom-made orthotics are medical devices that gently support not only the arch, but each individual bone and joint which makes up the arch; and, because of the space-age materials used in their construction, custom-made orthotics allow the arch to become a much more efficient shock absorber. Over-the-counter arch supports will not allow the growing foot to produce a more normal arch, because they do not support the individual components of the arch and foot, thus allowing the arch to collapse further. Custom-made orthotics will help to prevent the further collapse of the arch and foot.

In the adult, treatment of flat feet must be directed to supporting the individual bones, joints, and muscles which make up the arch; and to provide adequate shock absorption for the entire body. This will help to alleviate pain in the foot, ankle, leg, knee, hip, and lower back. Preventing pain and the total collapse of the arch is accomplished through the use of custom-made orthotics. Custom-made orthotics are medical devices which gently support not only the arch, but each individual component of the arch and foot. Also, because of the state-of-the-art materials used in the construction of custom-made orthotics, they allow the arch to become a much more efficient shock absorber. This not only relieves arch and foot pain, but prevents the pain from returning, and keeps the arch from flattening out further. Custom-made orthotics help to relieve the pain caused by bunions, hammertoes, heel spurs, plantar fasciitis, shin splints, neuromas, and muscle weakness. Over-the-counter arch supports may give temporary relief, but because they do

not support the individual components of the arch, the pain will return; and as the support wears out, the arch will fall further (custom-made orthotics do not wear out; they last for years).

Custom-made Orthotics: Our custom-made orthotics for the treatment of flat feet have been developed over the past 30 years. What makes these orthotics unique is their ability to support the individual components of the arch, not just the "arch" as a whole, and to act as an efficient shock absorber. Our custom-made orthotics are constructed of the latest space-age thermoplastic materials. These materials not only provide the support which is needed, but they also have a "memory." This memory allows the orthotic to compress slightly when pressure is applied to it, but when the pressure is released, the orthotic returns to its original height and shape. This ensures maximum comfort, while guaranteeing that the arch will always be supported at its most efficient height. In children this will help to promote the development of a normal arch, and act as a shock absorber during the growing years. In an adult, our custom-made orthotics help to prevent the further collapse of the arch; they act as shock absorbers and they will help to reduce pain in the arches, the entire foot, leg, knees, hips, and lower back. These custom-made orthotics are comfortable, will last for years, and will fit into all flat shoes, and shoes with heel heights of up to 1 1/2 inches.

One of the most common foot disorders is a flat foot. About 40 percent of people have flatfeet. If you have a flat foot, the arch on the inside of your foot is flattened.

Flatfeet usually don't cause a problem. However, flatfeet can contribute to problems in your feet, ankles, knees and hips. You may experience pain and other symptoms if you have other alignment problems in your lower legs that, when combined with high-impact activities such as running and jumping, place an increased load on the bones and muscles of your lower legs.

Simple corrective devices are available to help prevent complications of flatfeet.

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Input was provided by:

- Occupational Therapy Clinic
- Physical Therapy Clinic
- Orthopedic Clinic
- Family Practice Clinic
- Okubo Clinic
- 555 Engineers
- 1st Brigade
- 3rd Brigade
- 62nd Medical Brigade

POC:

- Outcome Management

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