Exercises for Developing Strength

It is important for you to maintain strength throughout your life. The developmental exercises shown in the following pages will help you build and maintain strength. There are no weights involved. These exercises are based upon gaining strength and endurance through repetition and regularity.

Some of these exercises are done using total body weight. Using your own weight is not easy, so you should be patient, and gradually increase the number of sets and repetitions as you get stronger. You cannot get into shape in one day, so don't try it. Be gradual and steady, for there is no other way to improve and enjoy it. As you become regular with these exercises, you will naturally develop a good foundation of fitness.

I have included exercises for the chest and arms, for the abdominal muscles, and for the ankles and lower legs. (These ankle and lower leg exercises are good for increased running and jumping efficiency and help prevent injuries to the ankle area.) Also, I have described a stair workout that is a great supplement for total leg and knee development.

These developmental exercises are good if you are already physically active, but they are extremely important if you are just beginning to exercise, or if you have taken a long lay-off from physical activity. If you have not been physically active lately, your muscles may have become small and weak (atrophied). These exercises, coupled with regular stretching, will help greatly in restoring full use and strength to weakened muscles.

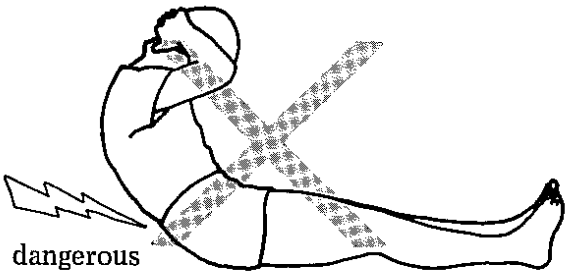
If you are a beginner, I suggest you start with strengthening the lower legs and ankles as a basic foundation of support for the entire body. The chest and arms should be gradually strengthened by doing knee push-ups. Your abdominal muscles are probably the most important muscles of your body, but often are the least developed. Learn how to strengthen your abdominals by doing these exercises on a daily basis. Your fingers, hands, wrists, and forearms can easily be strengthened by squeezing a ball.

All these exercises help strengthen the joints needed for free and easy movement. Supplement your physical activity, whether it be running, cycling, walking, swimming, tennis, racquetball, basketball, or whatever, with these developmental exercises.

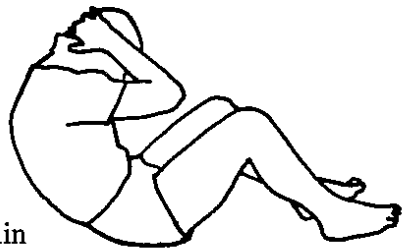
EXERCISES FOR THE ABDOMINAL MUSCLES:

The abdominal muscles are the strength center of the body. They are essential for endurance. They help keep your back free from pain, assist in proper movement, easy elimination of waste, in rhythmical breathing, and in standing erect. But few of us have ever felt the energy that goes with strong abdominals.

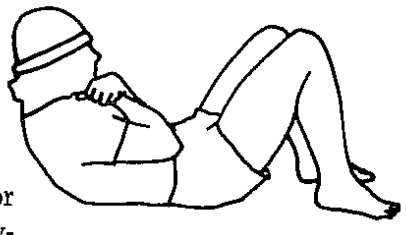
"Sit-ups" are generally considered the best exercise for strengthening abdominal muscles. Yet sit-ups offer little in the way of rhythm and can cause severe strain. Because of this, many people understandably detest sit-ups.



The straight legged sit-up is potentially dangerous for the lower back for this reason: your abdominal muscles can raise your body off the floor to about a 30° angle. To raise any further activates the primary hip flexor muscles, which are attached to the lower back. This puts severe stress on the lower back.

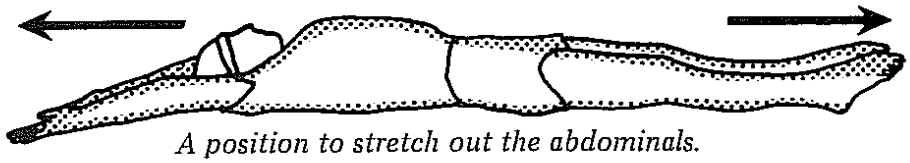


Bending your knees will relieve much of the strain in your lower back. The bent knee sit-up is good, as long as you do each sit-up fluidly and mentally concentrate on the abdominal muscles. Be careful of this exercise because people generally do too many repetitions, and when tired, jerk up quickly, which stresses the lower back.



The developmental exercise I do recommend for strengthening abdominals without straining the lower back is the *ab curl*. Here the upper body is curled forward no more than 30° and the lower back remains flat.

Here are three exercises and one variation that will work the upper, lower and sides of your abdominals. If your abdominals get tight doing these, just relax and straighten out your legs, put your hands over your head and reach in the opposite direction with a controlled stretch. Hold for 5-8 seconds. This should stretch the abdominals and relieve any tightness that might occur.



A position to stretch out the abdominals.

The Abdominal Curl (Ab Curl)

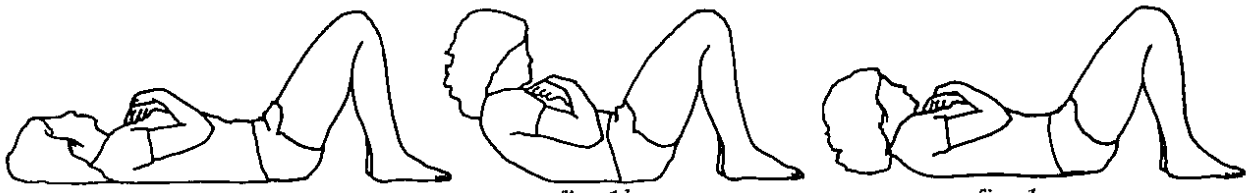


fig. 1a *fig. 1b* *fig. 1c*

Start on your back with knees bent and feet flat on the floor, hands across your chest (fig. 1a). Curl up, bringing your shoulder blades off the floor about 30° (fig. 1b), then lower back down to the floor (fig. 1c). Do not bob your head up and down, as this may strain your neck. Keep your head in a fixed position. Concentrate on the *upper abdominals* (solar plexis area), curling your upper body forward with your chin close to your chest (fig 1b). When you lower, or uncurl your upper body, the back of your head should not touch the floor because you are holding your chin near your chest (fig. 1c).

Do the ab curl at medium speed. Try 5 to 10. Concentrate on the muscles being used and on developing body rhythm.

The Elbow-Knee Ab Curl

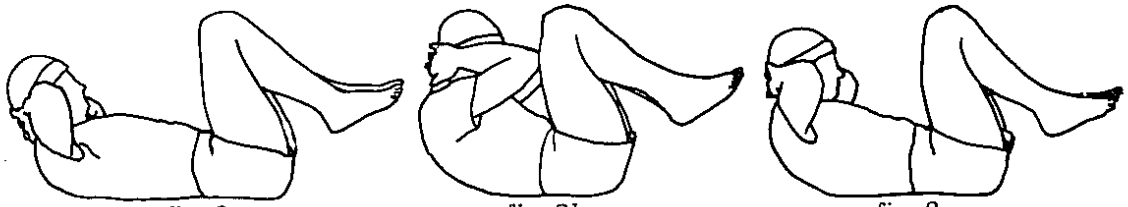


fig. 2a *fig. 2b* *fig. 2c*

This is done from the same starting position as the ab curl, but you interlace your fingers behind your head about ear level and raise your feet off the floor. Using your abdominal muscles, hold your upper body at about a 30° angle off the floor (fig. 2a). Now, bring your elbows forward, touching about 1-2 inches above the knees (fig. 2b). Uncurl as in fig. 2c, then raise your elbows and knees again as in fig. 2b. Your lower back should be flat at all times during these abdominal exercises.

Do this at medium speed to develop rhythm and strength. Do about 10. This works your lower and upper abdominals simultaneously.

The Alternating Elbow-Knee Ab Curl

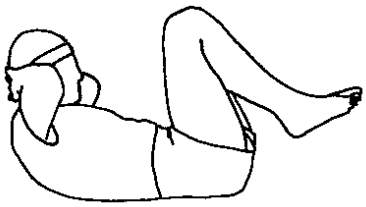


fig. 3a

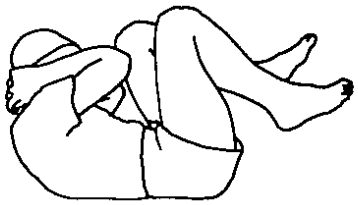


fig. 3b

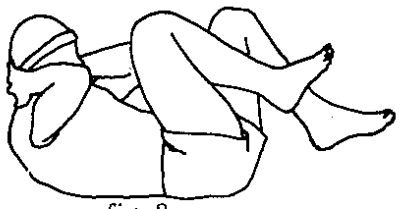
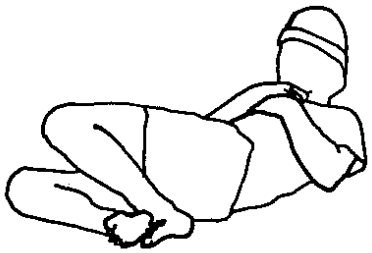


fig. 3c

The starting position is the same as for the elbow-knee ab curl. Raise your shoulder blades off the mat (fig. 3a) and alternate touching your right elbow to your left knee (fig. 3b) and then left elbow to right knee (fig. 3c). This would be one count. Keep your upper body in a flexed position during this exercise. The direction of knee movement should be forward and back, like riding a bicycle (only with less range of motion). To be able to touch knee to opposite elbow, your upper body will be turning slightly from side to side, but don't let your knees cross the mid-line of your body. Relax your ankles while doing these last two types of ab curls. Develop rhythm as you exercise. See what 10 repetitions feel like.

I suggest you develop your upper abdominals by initially concentrating on the first ab curl described, and then slowly work on the other two types and the variation shown below. Develop rhythm, strength and coordination. The last two exercises take more strength and coordination than the first. Start doing these for 3-5 minutes at a time, going from one exercise to another. Strong abdominals are extremely important for your health.

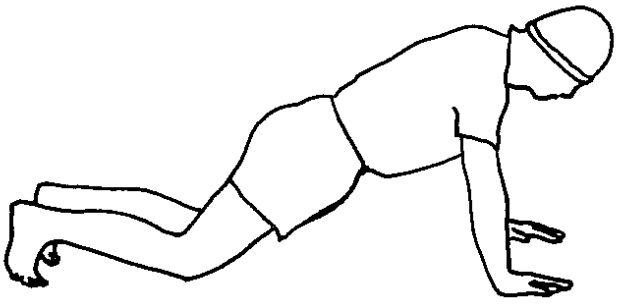
Variation of the Ab Curl



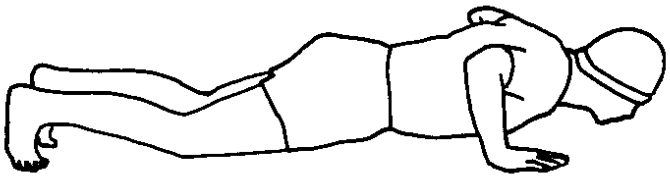
Lean your knees off to the right side. Pull your upper body forward, thinking of your chin going directly toward the top of your left hip. Concentrate on curling up, using your left side abdominal muscles. Be sure to keep chin close to chest; do not move your head up and down during the exercise. This exercise is tougher than it might look. Try 5 to 10, each side. □

EXERCISES FOR ARMS AND CHEST

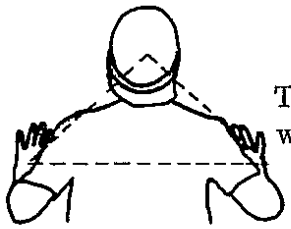
Knee push-ups are very good for upper body development and maintaining muscle tone. They can be done in different ways to work different parts of the arms and upper body, without putting a strain on the lower back.



Start on your hands and knees, with hands parallel to each other and a little more than shoulder-width apart. The wider apart your hands are, the more you work your chest (pectoral muscles).



Lower your body straight down until you barely touch your chest to the floor, then push yourself straight up to the starting position (first drawing above).

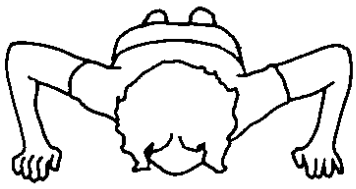


Think of a triangle, with a line drawn between your chin and two hands. This will keep your back straight and your butt from sticking up in the air.

To develop the back of your upper arms (triceps), place your hands about shoulder-width apart and keep your elbows close to your body. Don't let your elbows bow out, but keep them directly over your hands and next to the sides of your upper body. This is an isolation exercise for the triceps.



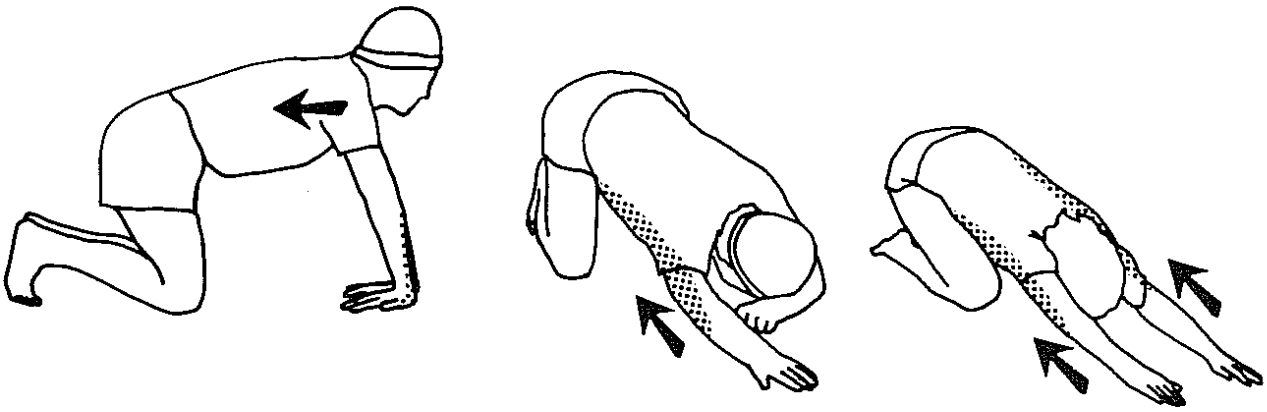
To develop triceps



To develop pectorals

Variation: Do push-ups on finger tips.

After doing push-ups, stretching in any of these positions below feels good:



Knee push-ups are great for both men and women. When done properly and in sufficient numbers they are extremely good for developing the chest and arms. For women they help to maintain the bustline, prevent sagging muscles, and improve muscle tone.

A Suggested Knee Push-Up Workout for a Beginner: 15 push-ups and then 15 seconds of stretching; 10 push-ups and another 15 seconds to stretch; and finally five push-ups and end the workout with a stretch for your shoulders, arms and chest. Use the previous two stretches in between the sets.

For a more advanced workout, start with 35 push-ups and work your way down, five at a time. □

EXERCISES FOR ANKLES, TOES, AND LOWER LEGS

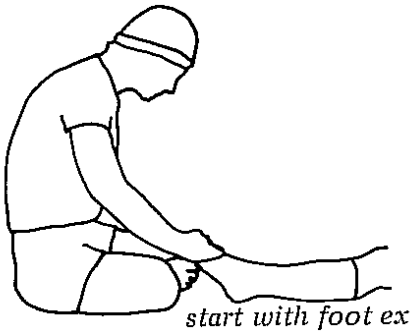
Most exercises for strength development are for body areas above the knees. Few people concentrate on developing their toes, ankles, and lower legs.

Through necessity, I devised a series of ankle exercises to help in the rehabilitation of injured athletes. As I experimented with these exercises, I found they not only helped in recovery from ankle injuries, but could be done regularly to prevent injuries and maintain strength and coordination in the lower legs and ankles.

The following exercises help develop strength in the tendons and muscles, and aid in the development of power in the toes, ankles, and lower legs. They can be done anywhere; all you need is someone to help you.

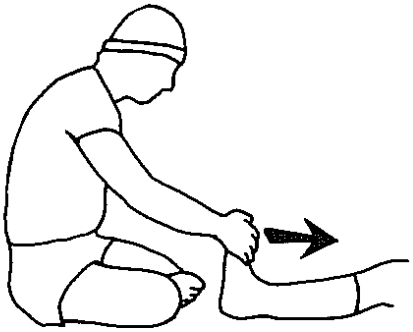
They could help a great many older people, who need to have this part of their bodies strong for everyday use. They are excellent for people who have weak ankles, or those who want to develop stronger lower legs for specific skills. And they should also be used to help prevent or lessen the chance of shin splints. Try these exercises for a few weeks to see if they make any difference in the way your legs feel.

Phase 1: Extension of the Ankle & Dorsi-Flexion of the Foot



start with foot extended

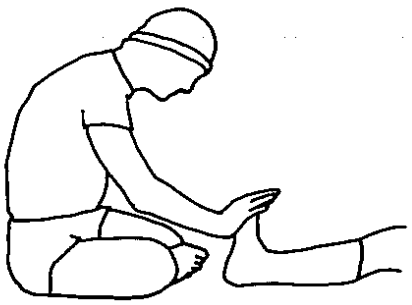
Have your partner set the palm of his right hand across your toes and on top of your left foot. He should provide *medium resistance*, so it allows full range of motion for your ankle.



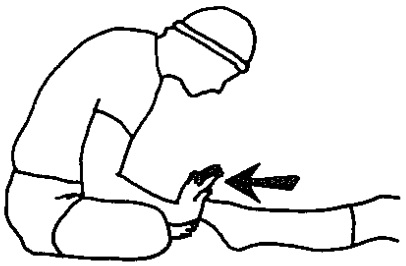
Extend your ankle at a medium, rhythmical pace against the resistance. By bringing your toes toward your shin (dorsi-flexing), you will be working the front of your lower leg (*anterior tibialis*).

At first do 20-25 repetitions per set. Your partner should help you by counting silently, while you concentrate on extending your ankle and dorsi-flexing your foot.

Phase 2: Flexing the Ankle and Extending the Foot



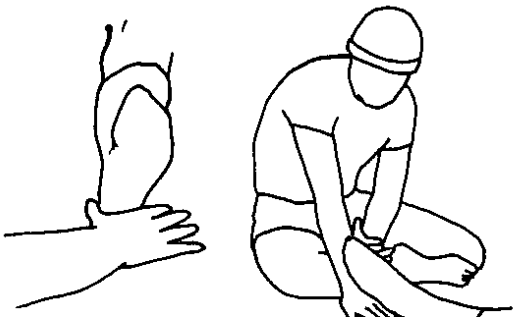
Next, have your partner place the palm of his right hand on the ball and toes of your left foot, with his thumb and index finger next to your big toe. Again, your partner should allow your ankle full range of motion, but provide enough resistance to make you concentrate. He should encourage you to use your toes as you push your foot into his hand.



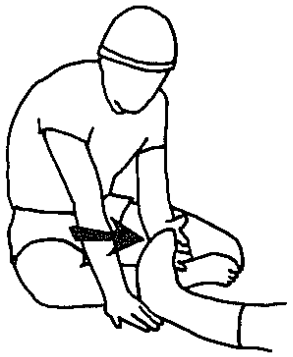
Work on flexing your toes at the end of each repetition for strength and power. Do 20-25 reps. After each movement forward, relax your ankle and foot while your partner pushes your foot quickly and gently back into the starting position.

Phase 3: Inward Movement of the Foot at Ankle Joint

Have your partner place the thumb and index finger of his right hand around the heel of your left foot. He shouldn't hold your heel, but provide a support to keep your leg and ankle fairly stable during the next two phases. The palm of his left hand should be placed on the inside of your left foot.



Move your foot in an inward direction, against the mild but constant pressure of his hand. Concentrate on moving at the ankle joint only. Work on a full range of motion. Develop strength. Do 20-25 reps.



Phase 4: Outward Movement of the Foot at the Ankle Joint

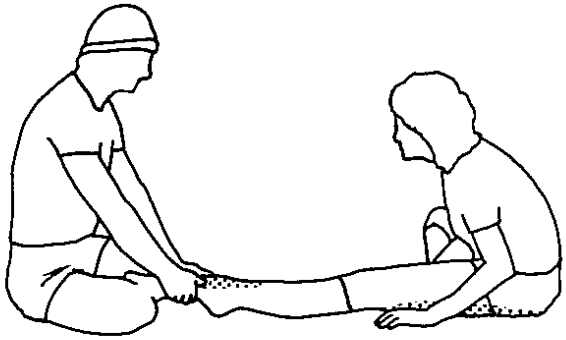
Have your partner switch hands and hold the heel of your left foot with his left hand and place his right hand on the outside of your foot, with his palm just below your little toe.



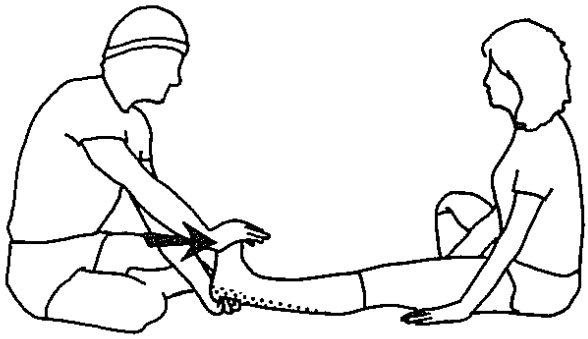
Now rhythmically move your foot in an outward direction. Concentrate on moving your foot at the ankle joint. Develop rhythm, concentrating on the range of motion. Do 20-25 reps.



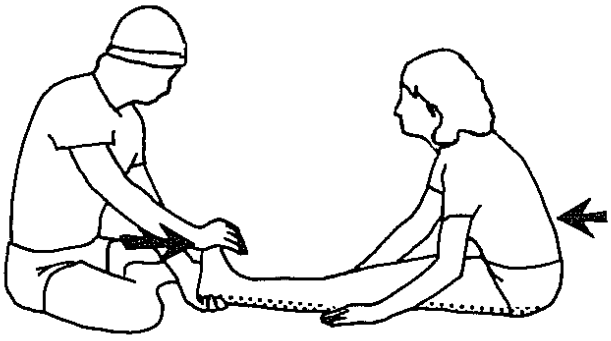
Working the ankle in all four directions is one set. Do these exercises continuously, 3-4 sets each ankle. As you become stronger, gradually increase the number of repetitions.



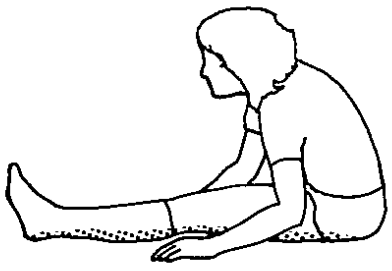
After you complete 3-4 sets of 20-25 reps each, your partner should gently extend your foot as shown below. Slowly lean forward to stretch the top of your foot. Hold a comfortable stretch for 10-20 seconds.



To stretch the back of the lower leg, rest your heel on the palm of your partner's hand. He should dorsiflex your foot and extend your ankle by pushing the ball of your foot toward the front of your lower leg. He will hold your foot in this position, giving a slight stretch to the calf. Hold for 15 seconds.



To increase the stretch, slowly bend from the hips, as your partner holds the stretch position. This should help stretch the entire leg even though you may only feel it in your calf. Get a good stretch. Do not strain. Hold 30-40 seconds. If you have sciatic nerve pain in the back of the upper thigh (hamstrings) this will help you to stretch the back of your leg without pain. Stretch only with a comfortable, controlled feeling.

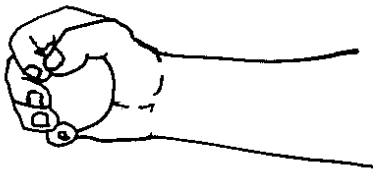


After your partner has released his hands from your foot, stretch your leg by bending forward from the hips. Now your leg should feel more flexible. Come out of each stretch position slowly. □

EXERCISES FOR FINGERS, HANDS, WRISTS, AND FOREARMS

Another developmental exercise which can be done anywhere is squeezing a ball. This strengthens fingers, hands, wrists and forearms. You need strength in these areas for many athletic activities as well as for performing everyday tasks. You can carry a rubber ball (about 2½ inches in diameter) in your pocket or in your car. Then, at normally wasted times, you can use it to develop these muscles that most of us take for granted.

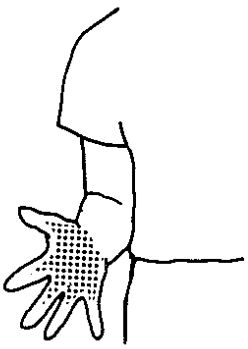
There are several ways to squeeze a ball. First, squeeze it in one hand with all your fingers and thumb. Squeeze until you feel your hand tire, then squeeze a few more times.

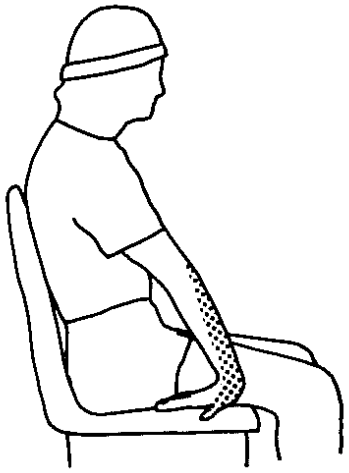


Another way is to use one finger and thumb. Start squeezing the ball between your little finger and thumb, then your ring finger and thumb, middle finger and thumb, and finally index finger and thumb. Do 8-10 squeezes with each finger. These exercises will isolate and develop muscles that need strengthening.



Develop strength and endurance by squeezing the ball many, many times. These squeezing exercises develop neglected muscles that will aid greatly in overall development and prevention of injury. Learn how to develop yourself by *doing*. Be aware of the little things that might help you develop more fully. This is an especially good idea if you use your body to make a living, as does a professional athlete or construction worker. Strengthen your hands and help yourself.

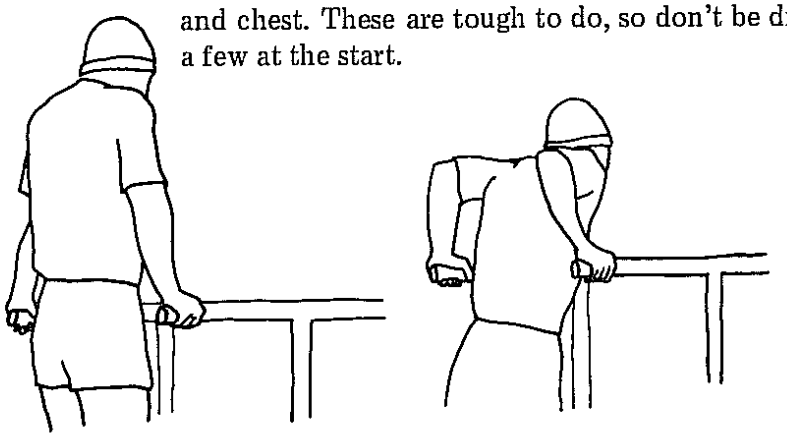




To stretch your hands after squeezing the ball, separate and extend your fingers. Hold for 5 seconds. Do twice. Also, stretch your forearm as shown on pp. 48 and 88. □

BAR DIPS

Bar dips, using your own body weight, are excellent exercises for upper arms and chest. These are tough to do, so don't be discouraged if you can only do a few at the start.

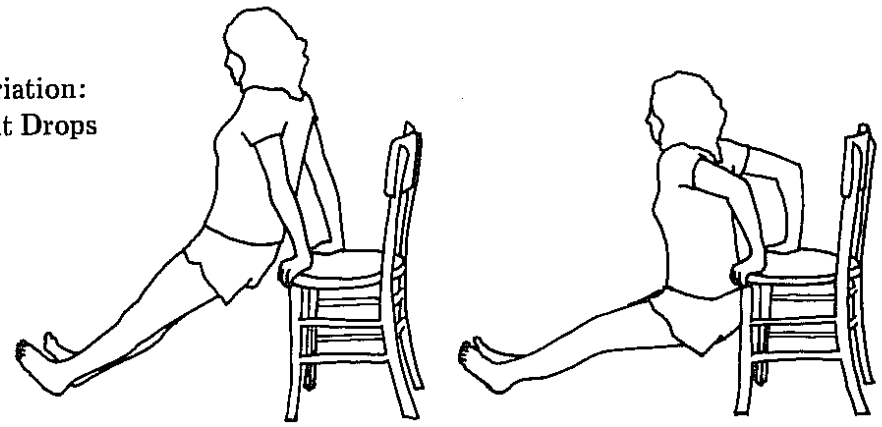


Starting position is with arms straight on the parallel bars. Lower yourself to a 90° bend at the elbows, and return to starting position by straightening your arms. This is one repetition.

Start with what you can easily do for one set, even if you can only do one or two dips at a time. For example, I may be able to do 10 dips once, but after that I would be too tired to do 10 in the next two sets. But if I choose to do 8 in the first set, I will not burn myself out. Then I can do 8 for the second, and 8 again for the third set.

Getting turned off before you get started is usually the result of an approach to exercise that is too drastic. Do not extend yourself to the point where there is a negative effect. This can be a basic cause of *not doing*.

Variation:
Seat Drops



Use a sturdy chair. Start with arms straight, as shown, then bend arms to about 90° or until your butt touches the floor. Then straighten your arms back to the starting position. Start with just a few and gradually work up. These will strengthen the chest and back of upper arms. They are good to do on trips or indoors.

Be careful with this exercise if you have or have had elbow or shoulder problems. □

CHIN-UPS

Chin-ups, or pull-ups, are also a very good natural exercise. They strengthen shoulders, arms, chest and back.

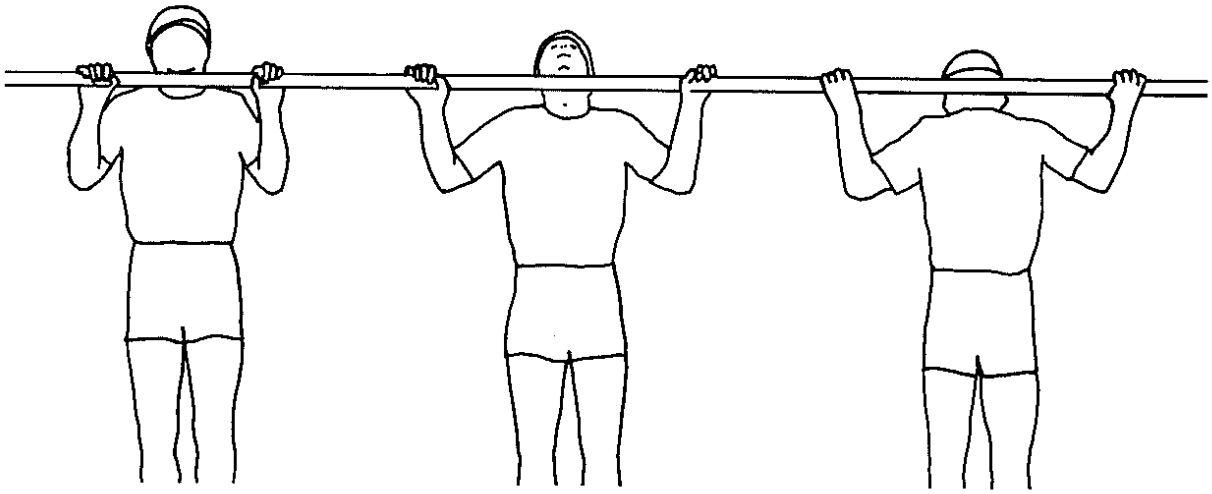


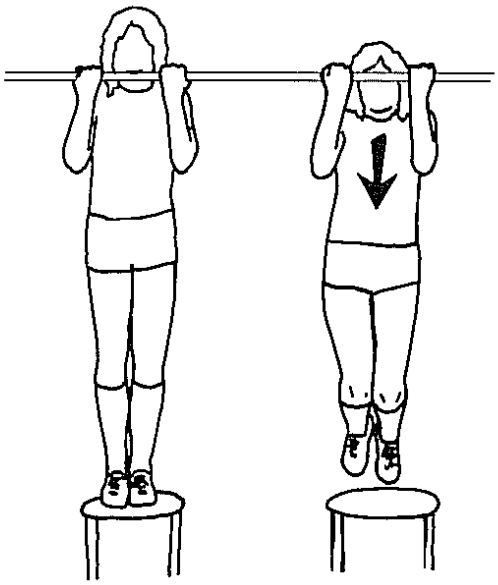
fig. 1 *fig. 2* *fig. 3*

Chin-ups can be done with a forward grip, hands about shoulder-width apart (fig. 1). Or, to develop your shoulders, use a wide grip (fig. 2). A good way to develop the lats (*latissimus dorsi*), the big muscles along the sides of your back, is to do the chins behind your head, using a wide grip. Raise up until you almost touch the back of your neck to the bar (fig. 3.). In all three types of chin-ups, lower yourself to original starting position with arms straight.

Possible Bar Dip and Chin-up Workout: For every three dips try to do at least one chin-up. If this is not the right ratio for you, try two to one, or whatever. The most important thing, again, is to get a workout you can handle, both mentally and physically.

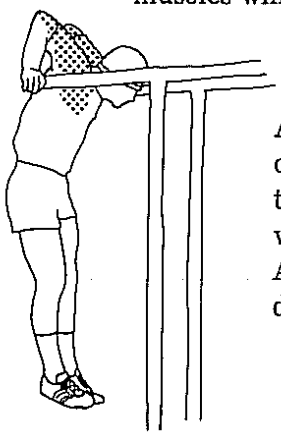
A dip/chin workout could be something like this: three sets of 4 dips and three sets of 2 chins. Alternate the dips and chins—one set of dips, then one set of chins, etc., until you finish. A total of these 18 movements done five times a week would equal 90 dips and chins. Doing these exercises regularly will improve your upper body strength.

The chins and dips are important, but so is your approach in learning how to do things for yourself. Experience is the basis of learning and understanding about yourself and your limits. The enjoyment of staying fit is one of the necessary ingredients of basic human development.

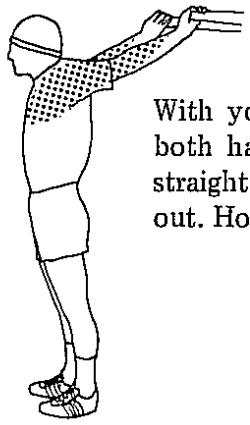


If you are unable to do one chin-up, you can strengthen your upper body by starting the exercise with your chin above the bar. Use a stool to get up to this position. *Slowly* lower yourself. This will greatly strengthen the arm and shoulder muscles. Do several at a time.

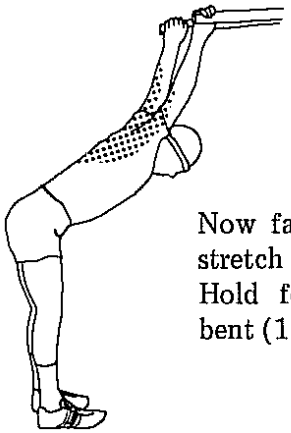
Stretches to Use During a Dip and Chin Workout: Do these stretches in between sets. Stretching will allow you to do more repetitions because your muscles will not be as tight.



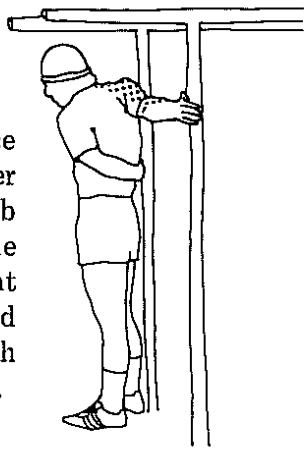
After completing a dip workout, stretch the muscles of the chest and upper arms by allowing your elbows to bend past the 90° angle. Keep your body still as you hang. (Your chest will be about even with your hands.) Hold for 3-8 seconds. A certain amount of strength is needed to do this stretch, so do not try it until you can easily do 12 to 15 dips properly.



With your back to the parallel bars, reach behind you with both hands and grab the inside of the bars. Keep your arms straight behind you. Look straight ahead, with your chest out. Hold 10-20 seconds.



Now face the bars. As you hold the bars with your hands, stretch your back and arms by letting your chest hang down. Hold for 10-15 seconds. Be relaxed. Keep knees slightly bent (1 inch).



To isolate and stretch the front of one shoulder and arm, face the bars and grab one bar with your right hand about shoulder height. Then, with your left hand, reach behind you and grab the other bar. As you keep your right shoulder close to the bar, look over your left shoulder in the direction of your right hand. By looking over your shoulder, you should get a good stretch in your arm and the front of your shoulder. Stretch both sides. Hold, in a comfortable position, for 10-15 seconds.

These stretches help keep the upper body free of tension and tightness and complement strength development. □

STAIRS

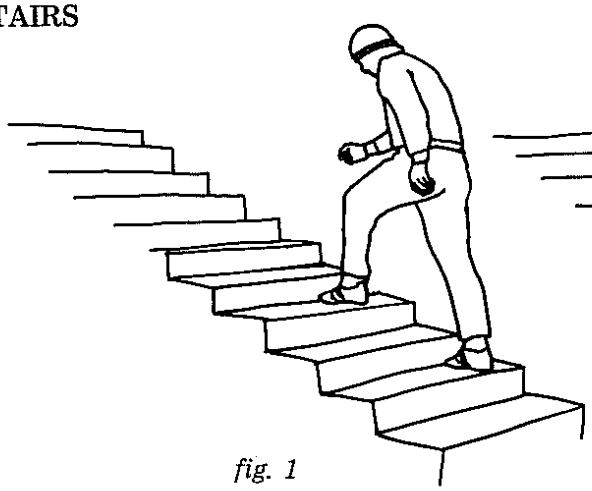


fig. 1

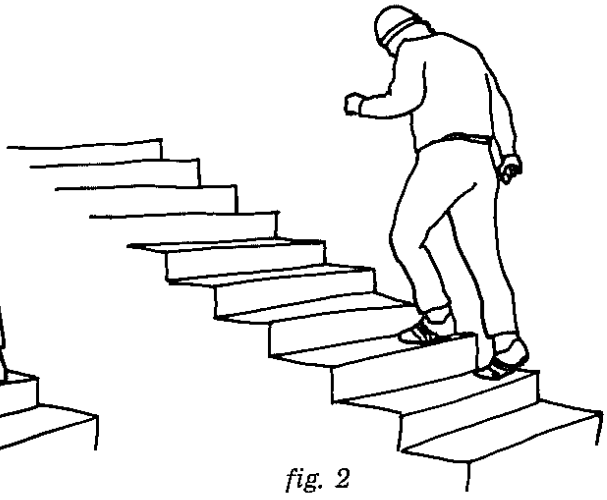


fig. 2

Walking and ruhning stadium stairs or steps is a great supplemental workout for the development of strength and endurance. It is a tremendous conditioner of the lower and upper leg muscles, the knees, helps in the prevention of leg injuries, and is a fine cardio-respiratory activity. Even if you run or cycle a lot, you use some leg muscles more fully than others. A workout on stairs exercises many neglected leg muscles. You can find this out for yourself by trying it.

Doing the stairs is a no-pressure workout, a completely individual activity. You do what you can, at your own speed and at your own rhythm. There is no easy way to go up and down. As your legs and heart gradually become stronger, it will get easier.

A stadium is an excellent place for this workout. First you walk the stairs, taking two steps at a time (skip one step in between) to the top of the grandstand (fig. 1). *Walk, do not run.* Use a long stride to pull yourself up. By walking, you increase the muscular strength work by having less forward momentum than you would have by running. Walk at a medium and steady speed to the top; this may be harder than you think. After you reach the top, return to the bottom immediately and start over again.

Come down in a flowing, slightly transversing pattern, not straight down. Coming down straight creates a lot of stress on the knees and ankles.

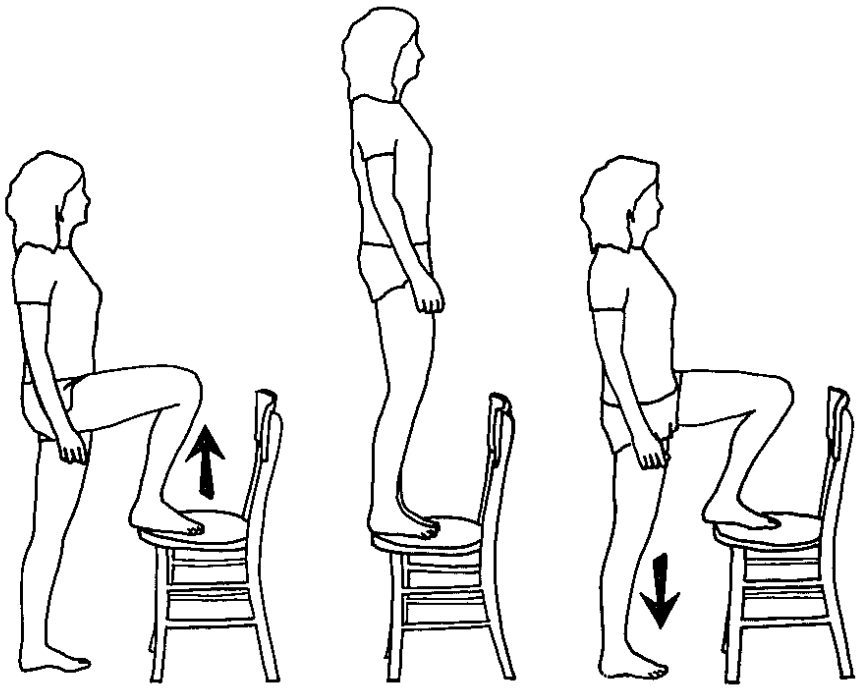
If you want to *run* the stairs, do so one step at a time without skipping any steps (fig. 2). Make sure you hit each step with the ball of your foot. Then use your toes to push off, driving your knee high, so that you can easily make each step. When running, concentrate on moving your feet quickly. Work on leg speed until you reach the top. Return quickly to the bottom. Be under control. This is a concentrated, continuous-motion workout.

A good supplemental stair workout would last about 30 minutes, but you must gradually work your way up to being able to do this. When you begin a new activity, always start with a workload you can handle. Do not burn yourself out by over-doing at the beginning. Be kind to yourself and gradually develop your strength and stamina, so you are not discouraged by hard work. Before increasing your workload, keep the same stair workout for two weeks, doing it at least three times a week.

I have had a great place to discover the benefits of a supplemental stair workout. While working with the Denver Broncos on rehabilitation, I got into doing the stairs at the Mile High Stadium with several of the players. There it is possible to walk 56 steps or run 112 steps from bottom to top. I usually put in 20 round trips in 30 minutes, which is a fairly condensed workout. (Going up and down the stairs counts as one trip.) Find a stadium or grandstand that allows for walking as well as running steps.

Before and after doing the stairs, stretch your upper and lower legs. You will surely need it.

In your everyday living, walk stairs instead of taking an elevator. It's a vigorous workout for people who want to increase their efficiency in running, walking, cycling, football, track, tennis, basketball, etc. Most athletes benefit greatly by regular activity on the stairs.



Step ups are also a good workout. Use a sturdy, strong chair or bench, 14-20 inches high. Start at a low height and gradually work up to using something higher as you get stronger. Step with one leg at a time, putting your foot flat on the chair or bench and then bring the other leg up. Almost straighten your legs at the top but keep knees slightly bent (1 inch). Do step ups, starting with right leg first, then left leg. step down one leg at a time. Start slowly and gradually increasing speed as you get used to it. If possible, get to where you can do step ups for 5-10 minutes at a time. Good to do when traveling or when weather is bad. □