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WARNING

The person who wrote this thesis is not responsible or liable to any person for any damage caused or alleged to be caused directly or indirectly by information presented in this booklet.

Consult your physician or doctor before starting any exercise programs, Children under the age of 15 years should consult a doctor or sports medicine specialist about the use of isometric stretches and about the maximum amount of weight permitted in other exercises.

If you "LISTEN" to your body you will be able to find a combination of loads and exercises that works for you.

Any muscle soreness or pain is a signal to stop exercises, do not resume your training if you feel any discomfort or even a trace of pain.

EXERCISE FOR THE LOWER BODY

This method of stretching consists of exercises that strengthen and elongate the muscles. The reason for stretching only muscles and not ligaments is explained later in this booklet.

I will show you a simple test that will convince you that it is only the tension of the muscles that keeps you from doing the splits.

If in a front split the angle between legs is less than 180 degrees, flex the knee of the front leg as in figure 1 and see what happens.

If you started stretching past the age when elongating ligaments was possible, you may have difficulty touching the ground with the front thigh of the rear leg in this split.

What keeps you from doing this is a ligament running in front of the hip joint, by tilting the pelvis forward or moving the thigh to the rear relaxes this ligament.

To achieve a nice flat split as in figure 2 you need to stretch the hamstring of the front leg and the muscles of the lower back, so you can tilt the pelvis forward whilst keeping your trunk upright.

If you think the structure of your hips will not let you do the side split, try this simple test. The leg resting on the chair as in figure 3, is resting in the position it would be in a side split, no muscles run from one leg to the other, so if you can do one half of the side split only the reflexive contraction of the muscles prevents you from doing a complete split with equal ease.

Please note when doing the side split, you not only spread the legs side ways, but also tilt the hips forward which pushes the buttocks to the rear see figure 4.

In a side split with the feet pointing up as in figure 5, the pelvis is kept straight while the thighs rotate outwards.

You cannot do the side split without either rotating the thighs outwards or tilting the pelvis forward. Spreading the legs without these additional movements twist and tightens the ligaments of the hip. The amount of outside rotation of the femur in the hip as seen in the first ballet position, decides the quality of your side split.

The rotation is limited by the muscles rotating the thigh inside, and by the shape of the hip joints, do not twist your ankles or knees, the turn has to be done in the hip joints only.



EXERCISE FOR THE LOWER BODY

The following program of exercises is designed for someone who is out of shape, if you are fit, if you run regularly, and if your back and abdomen are strong, then you can start doing the special stretching and strengthening exercises without delay.

Just make sure that the muscles that stabilize your body in these special exercises are stronger than their main movers.

Your lower back strength must be several steps ahead of the strength of your hip flexors, hamstrings and adductors. So if you are out of shape remember this first, strengthen your back and abdomen.

Even if your goal is only to increase flexibility being in good shape will help, running is a natural form of movement and prepares your legs and whole body for the following strength work.

Running will improve your cardiovascular fitness and thus, speed up the recovery after strenuous strength work. Make long strides, you want flexibility not speed, also avoid running on concrete as this puts too much strain on delicate knee joints. Skipping does not improve leg strength and flexibility as much as running does, but it is great for endurance, coordination and loosening of the body.

Do not ride a bike if you want to improve your flexibility, while you ride a bike the muscles of your legs work much less than their full range of motion, it may make them shorter.

Your lower back takes part in every large movement you make, forces generated by your limbs are conducted by this narrow column of vertebrae and muscles.

If your back is strong enough you can use the full strength of your limbs, but if your back is weak, the strength of your limbs are useless.

You cannot develop the strength of large groups of muscles, if your lower back does not provide them with a strong foundation. The stretching program you are about to read includes strength exercises, to ensure progress in this stretching and strengthening program, you should start with exercises for the lower back.

You will need a strong lower back for executing the kicks Taekwon-Do has to offer, because the muscles that lift the thighs are attached to the front of your lower back.

Kicks generate tremendous force that the lower back has to withstand while being suddenly twisted and bent.

The strength of your back depends on the strength of your abdomen, tensing the muscles of the abdomen increases inner abdominal pressure and thus supports the lumbar portion of your spine.

To strengthen your abdomen you will need to do sit ups and crunches, in your daily workout do all abdomen exercises before the lower back exercises, your long term strength training can also begin with abdomen exercises.



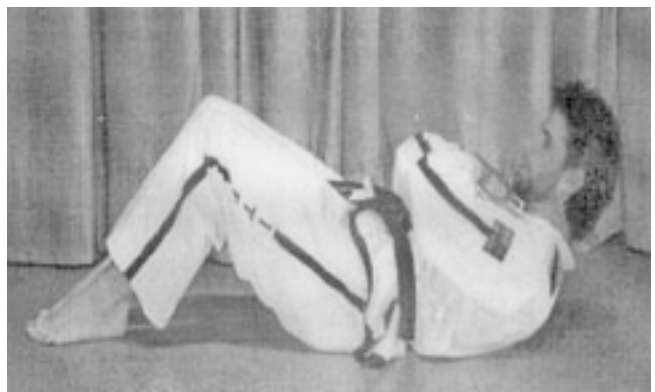
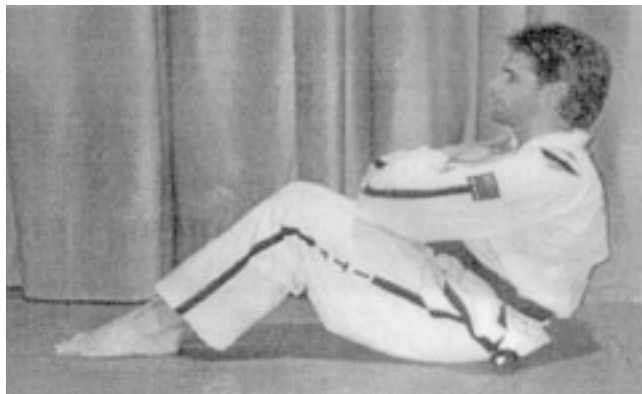
ABDOMINAL STRENGTHENING EXERCISES

SIT U P'S Start by laying on the floor with knees bent, As you start the upward movement the lumbar portion of your back should be pressed to the floor, this will tilt your pelvis forwards.

Slowly, raise your head followed by the shoulders, when you return to the starting position the lumbar section should be the first to touch the floor, followed by the thorax section of your back.

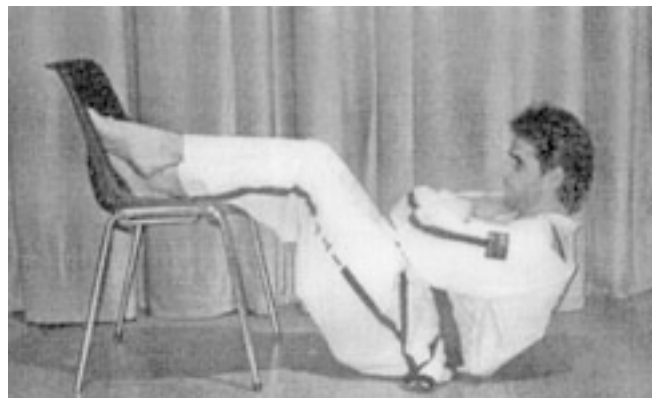
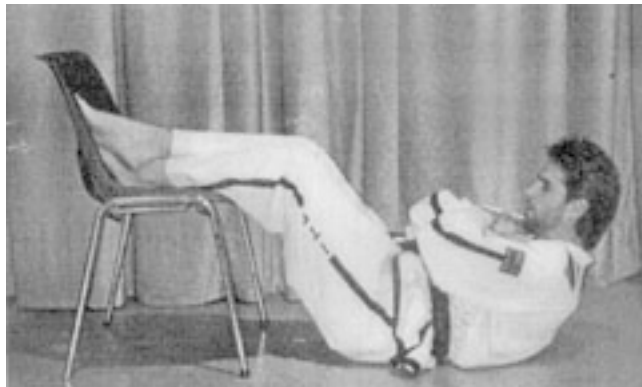
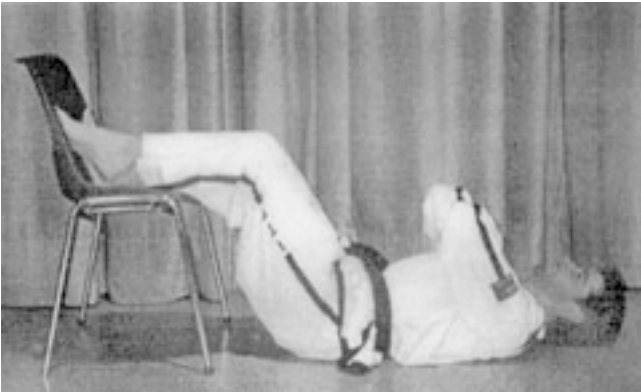
Relax and let your pelvis straighten out, let your lower back arch naturally, coordinate the pace of movement with your breathing and do every movement carefully.

I prefer this exercise over the crunches because the character of this exercise is more natural, your muscles start relaxed tense as you raise your trunk, relax again at the top then tense as you lower your trunk back to the floor and relax again.



ABDOMINAL STRENGTHENING EXERCISES

ABDOMINAL CRUNCH Start by laying on the floor, put your lower legs on a bench, from this position try to touch your ribs to your pelvis, head and shoulders should lead the movement. If you, have a weak back this exercise is more suited to you than the sit up's, keep your back pressed to the floor whilst maintaining proper form.



ABDOMINAL STRENGTHENING EXERCISES

REVERSE CRUNCH This exercise is more effective for developing the lower part of the abdomen. Start by laying on a bench or on the floor with thighs perpendicular to your trunk, with knees bent, do not lower your thighs any more if you want to spare your hip flexor muscles or your lower spine to which this muscle is attached, bring your knees to your face.

If your back hurts you after doing sit up's or crunches, it can be caused either by the muscles of the lower back being to weak, or by the wrong position of your spine in the exercises that are shown.

If you do sit-ups in your workout you should do them before back exercises and if you do crunches they should be done after back exercises.

Back and abdomen exercises are to be done at the end of your workout, as the last exercise before stretches, do not do any more repetitions of the abdominal exercises if your back muscles are tired or if the form becomes sloppy.

All strength exercises shown in this booklet are to be done slowly, make full stops at the beginning and at the end of each movement.

All the movements starting with the lower back exercises and ending in isometric stretches with the legs are shown in the order you should introduce them into your training program.

Some exercises should be done all year round, through your whole athletic career, dead lifts, crunches, sit up's as well as squats are such exercises.

Some exercises can be replaced by other exercises depending on your needs.

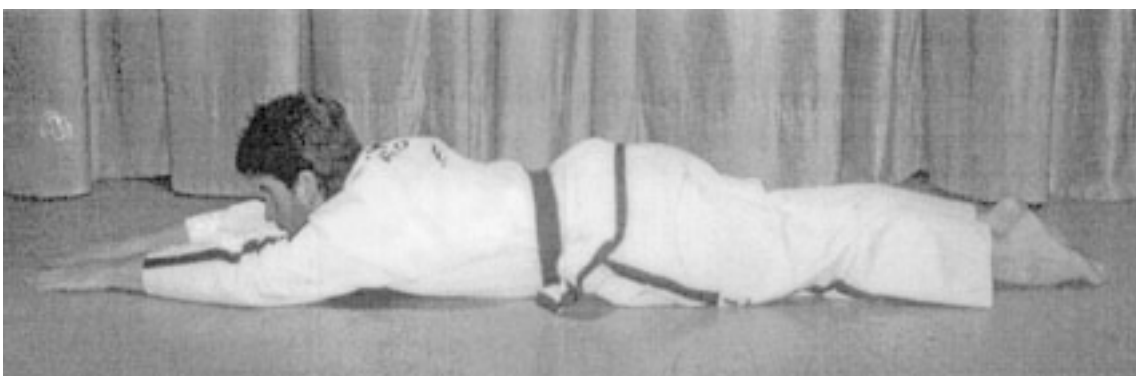
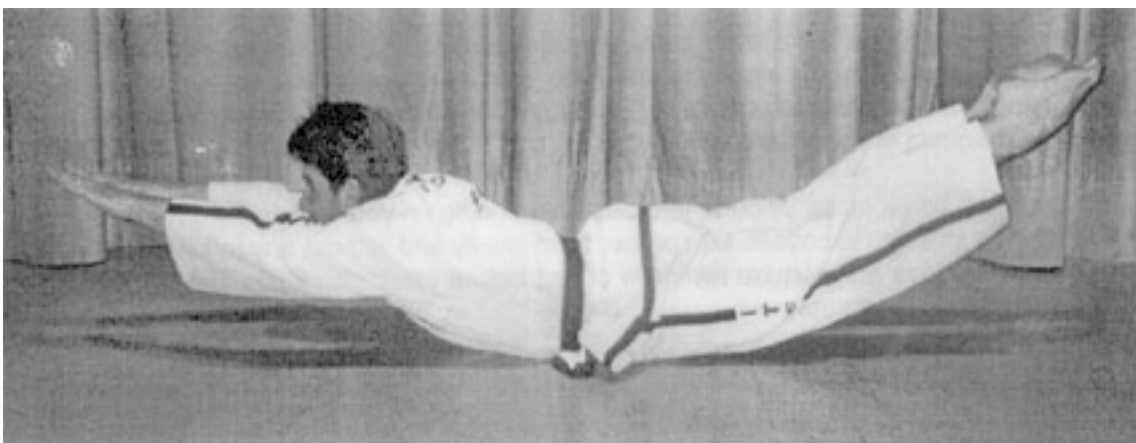
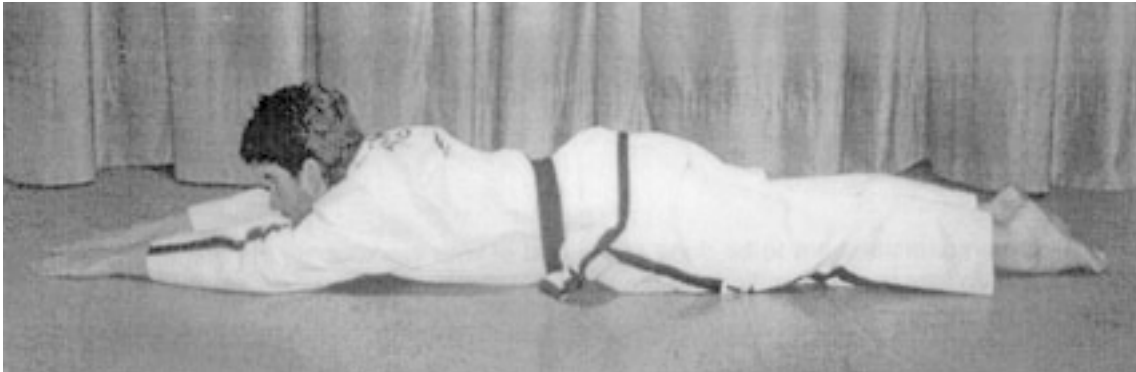
Do all the following strength exercises with proper form slowly and without any jerking motions. Strenuous back exercises may require two days of rest before exercising again, this will most certainly change as your athletic form improves.

LOWER BACK STRENGTHENING EXERCISES

BACK EXTENSIONS ON THE FLOOR Lay on your stomach lift your head, shoulders and legs. Hold for a few seconds and then relax again.

If your lower back muscles are short or if you have excessive lumbar lordoses, this exercise may aggravate these conditions.

Ask your Instructor or Physio to show you the best exercise that suits your needs.



LOWER BACK STRENGTHENING EXERCISES

BACKEXTENSIONSONTHEBENCH Your navel should start at the edge or just over the edge of the bench. Keep your back arched, slowly straighten your body until it is parallel to the ground.

When you can do three sets of 10-15 repetitions with additional weight greater than 1/3rd of your body weight, then you can start to begin exercises for the legs.

To improve the flexibility of your legs you have to strengthen them first.

Start with general exercises that involve all the muscles then gradually introduce more specific exercises that isolate the muscle group or groups that you want to stretch.

If you want to do side split, your specific exercises will focus on the adductors of the thighs.

And, if you want to perfect the front split, you will add exercises for the hamstrings, squats and lunges are general exercises for all the muscles of the legs.

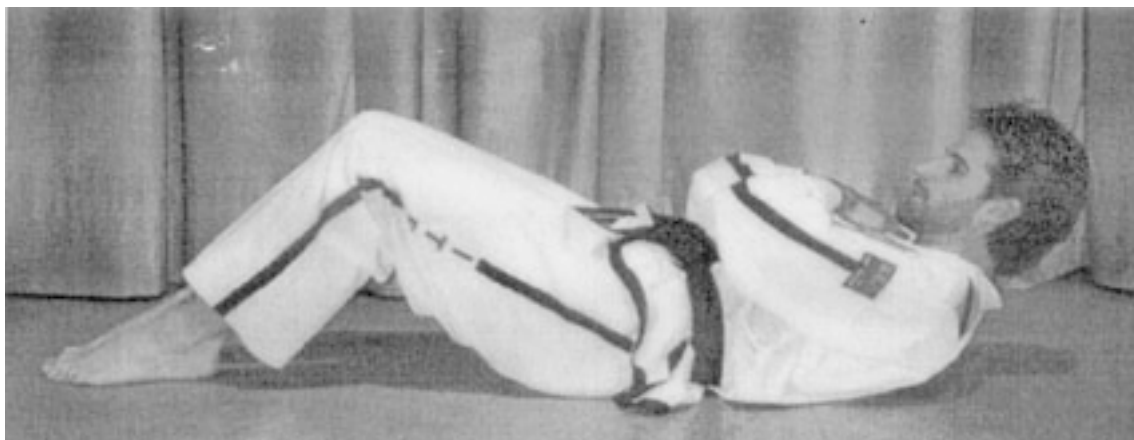
You need to strengthen all the muscles first, so that when you do specified work later like adductor strengthening, the weakness of other muscles will not hold you back.

LOWER BACK STRENGTHENING EXERCISES

LEG RAISES Leg raises develop the iliopsoas muscles also called the hip flexors, you will need great strength and endurance in these muscles to create the strength that is needed for the inner thighs which also makes you kick with greater power.

Start doing these exercises with other general, non-specific leg exercises as soon as your lower back is strong enough not to bother you during or after leg raises.

Remember always use proper form.



LOWER BACK STRENGTHENING EXERCISES

GOOD MORNING LIFT Put a barbell on your shoulders behind your neck.

Lock the barbell between your neck and shoulders, bend forward at the waist while bending your knees, at the bottom of the movement your chest should rest on your thighs, slowly move up whilst straightening your knees. You can do a much easier exercise than this by using two dumbbells in each hand. Start by bending your waist followed by your knees. At the bottom of the movement your chest should be touching your knees.

DEAD LIFT Lift the barbell by using your leg and back muscles.

Arch your back so as to maintain your lumbar lordoses, keep the barbell as close to your body through out the whole lift.

This exercise is only for those of you who have strong healthy backs and strong abdomen muscles.

SQUATS This is the most basic exercise for all the muscles of the legs.

It effects mainly the quadriceps, buttocks, the upper part of the hamstrings and the tensor fateor lato. You can put a barbell across your shoulders or put a dumbbell in each hand.



ADDUCTOR FLYS

Short or weak adductors are the reason why most of us cant do side or front splits.

This exercise isolates the adductors and lets them work from a stretched position, so you can stretch and strengthen them at the same time.

Start with no weight and gradually increase the number of repetitions up to a 100.

After reaching 100 repetitions, add weights, for example 1 half pound and work back to 100 repetitions, each time you do 100 repetitions increase the weight, after at least 4 weeks and you have increased the weight so much that you can only do 30 repetitions in a set, do 2 or 3 such sets in a workout.

After doing sets of 30 repetitions for about 4 weeks it is time to increase the load so that you can only do 15 repetitions in a set, the weight will be to heavy to lift in this position on the floor, so you will have to introduce one more exercises for the adductors the adductor pulldowns.



ADDUCTOR PULLDOWNS

It is best to lift heavy weights in this exercise rather than using the Adductor machines at the gym, because the adductor machines currently in gym's, have only one weight stack, that you lift with both legs which means your stronger leg can and does take over depriving your weaker leg of the benefits of the exercise. The worst of these machines have devices that increase the resistance as you perform the movement. You can follow adductor pulldowns with 1 or 2 sets of 30 repetitions of adductor fly's initially when the weights are low you can do adductor fly's every day.

When you reach the sets of 30 repetitions easy, you may feel that exercising less often is better.

Please remember, if your lower back becomes tense or very hard and even lift's off the ground when you do adductor fly's "STOP" doing them and drop this exercise from your training program until you make your lower back strong enough.

You should start the main part of your workout with adductor exercises, because they are so difficult. Because this exercise stresses the lower back so much, it should be done when the back is not tired.

Do not lift your leg above your waist, this will spare your lower back.

Making sure your adductors are doing most of the work here and not some other muscles, for example muscles of the trunk.

When doing adductor pulldowns you must make sure that the form of this exercise is the same for each leg. Find points of reference at the gym or on the floor, which will let you, do this exercise symmetrically.

ISOMETRIC STRETCHES

After making your legs strong enough by doing all the previous exercises shown, so far should you start doing isometric stretches.

Many of you will be able to do the isometric stretches without going through the previous exercises, depending on your rank or level of ability.

If you feel you get muscle soreness after isometric stretches, you are advised to go through the whole muscle strengthening program.

Muscle soreness is a sign that you have damaged your muscles, mainly the connective tissue.

Usually the isometrics are done after all the dynamic exercises because of there effect on coordination and because there intensity is lower than that of the dynamic exercises that usually pressed them.

There are 3 different methods of doing isometric stretches.

1st method; stretch the muscles, not to there maximum, though just enough that the muscles begin to tighten, what for a few seconds and stretch again.

Once you can't stretch any further in this position, apply short strong tension to increase further increase in muscle length, Hold the last stretch for up to 30 seconds.

2nd method; stretch and tense for as long as you can, relax stretch and tense until you get muscle spasms. Relax and decrease the stretch then increase it tense and so on.

The last tension should be held up to 5 minutes, it could make some people scream.

3rd method; tense your thighs, relax then stretch your muscles nearly to there maximum, then tense for 3 to 5 seconds.

Tense and relax in turns to stretch further and further till the stretch can not be increased holding the last tension for up to 30 seconds.

No matter what method of isometric stretches you chose, when doing the stretches breath, as naturally as possible.

If you are just beginning the isometric exercises, you should start with mild tensions, lasting for 2 to 3 seconds.

Increase the time and the intensity of the tension, as time progresses.

The attempt to develop strength from isometric stretches only, my lead to a stagnation of strength in only 6 to 8 weeks.

ISOMETRIC STRETCHES

To develop exceptional strength as well as flexibility, also do dynamic strength exercises like lifting weights which use the same muscles.

A few weeks after doing the isometric stretches, your stretching may stop improving. If your muscles get sore after doing isometrics, it means the connective tissue of your muscles are too weak, you can make them stronger by doing the previously shown dynamic exercises with low weight and high repetitions.

It is difficult to know how many months it will take to perform the high repetition exercises that strengthen the connective tissue of your muscles, After you have found out that the muscles are too weak for the isometrics.

To find out, you will periodically have to test the reaction of your muscles to isometric exercises.



EARLY MORNING STRETCHES

Do the early morning stretches, every morning before breakfast, if you want to be able to throw high kicks without having to warm up.

First warm up all the joints by flexing and twisting each of them, then do a few sets of arm swings, and leg raises in all directions.

The whole routine can take about 30 minutes for beginners and 10 to 15 minutes for experts. After reaching your desired level of flexibility, you will need less work to maintain it.

You shouldn't get tired during the early morning stretches, the purpose of this stretch is to reset the nervous regulation and the length of the muscles for the rest of the day.

Do not work too hard because tired muscles become too elastic, and if you overdo it, you will defeat the purpose of this exercise.

After warming up do a few sets of leg raises to the front and sides.



LEG RAISES TO THE FRONT

All leg raising exercises should be done in sets of 10 or 12 repetitions. Relax your legs as you move them.



LEG RAISES TO THE SIDE

In leg raises to the side, you may need to bend your trunk forward to raise the leg.

In time you will get better, you will learn how to keep your trunk upright while permitting your pelvis to twist and tilt, so the leg can be raised above the head.

Once you have done these early morning stretches, you can now go onto the exercises that are performed during the day.



TYPICAL DAILY WORKOUT

Begin, your warm up with joint rotations, starting either from your toe's or your fingers. The principles are from distant joints to proximal, to the centre of the body and from one end of the body to the other, top to bottom or vice versa, ending with the part of the body that will be used first in the next exercise.

You can warm up your joints by doing simple coordination movements while jogging in place. Doing coordination exercises will keep you from getting bored, and will also help improve your coordination, all of this combined with leg raises front side and rear in sets of 10 to 12 repetitions per leg.

Do as many sets as it takes to reach your full range of motion in any given direction. Usually for properly conditioned athletes, 1 set in each direction is enough.

The whole general warm up should take about 20 minutes, about 10 minutes is dedicated to stretching. Do not do static stretches before a workout that consists of dynamic actions. The goals of this warm up are, an increase in awareness, improve coordination, improve elasticity, and contractibility of muscles and a greater efficiency of the respiratory and cardiovascular system.

Static stretches, isometric or relaxed just don't fit in here. Isometric tension makes you tired and decreases your coordination. Passive relaxed stretches on the other hand have a calming effect that can even make you sleepy.

After this general warm up you can move onto a specific warm up or exercise relative to your training programme. You should gradually increase the range and speed of your movements.

Now that your work out is over, the exercises shown in this booklet have made some of the most inflexible of people reach the ultimate goal the hanging splits, (between two chairs) the ultimate in flexibility and strength.

If you do isometrics 4 times a week then the isometrics that follow a technical workout can be done less strenuously, than on the week when they would follow a strength workout.

If you exercise every other day do the whole set after each workout. It's not the number of exercises or their originality which makes this stretching system so effective, it is the method of using and arranging the exercises in your long term training and in each work-out that makes the system work.

The principles of sport physiology and methodology that this programme is based on can not be changed to suit someone's personal preferences. If your workout habits clash with this method of flexibility training, you have to decide, do you want flexibility and results or do you want your habits.

ACKNOWLEDGEMENTS

I would like to start by thanking the people who help me put this booklet together, firstly Mr Mark Rounthwaite who took time out to pose for photos featured in this booklet.

Mr Rounthwaite's support and positive guidance has helped me to reach the goals that without his support would probably never have happened.

Another special thanks goes out to Mr Jon Sadden who also took the time to pose for photos.

A big thanks goes out to Mr Shaun Carver for the time he spent scanning the photos of Mark and Jon, and yes you're right, scanned photos do look better than the stick figures I was going to use.