

ATHLETICS OMNIBUS – WARM UP AND STRETCHING

From the Athletics Omnibus of Richard Stander, South Africa

1. INTRODUCTION

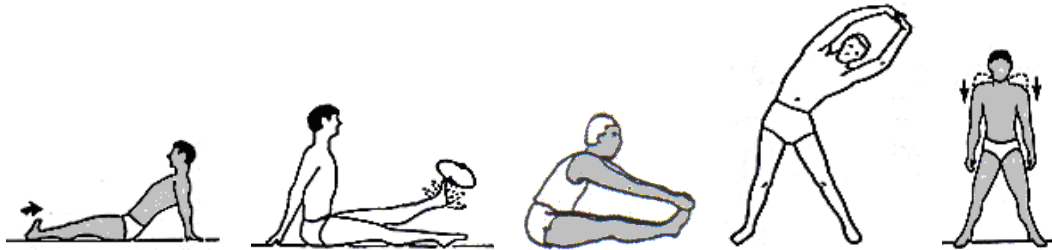
Movement of the body is made possible by moving the bones at the joints by means of a series of chronological contractions and relaxations of the muscles. The range of movement that a joint in the body can do is referred to as the flexibility, mobility or suppleness of the joint or limb. The greater the mobility of the joint, the more effective the muscles will be able to apply force on the joints and bones.

There are 3 recommended ways to develop the flexibility of the joints:

- **ACTIVE FLEXIBILITY**

Active flexibility exercises of the joints are done when the muscles are not assisted in any way. During active mobility exercises the joint limb is stretched slowly until maximum resistance is experienced in the joint muscles and ligaments.

Active flexibility exercises are recommended during the beginning stages of a warm-up and stretching session.



- **KINETIC FLEXIBILITY**

Kinetic flexibility takes place during the fast movements of body limbs. The weight of the limb will apply the momentum of the limb under stress until maximum resistance is experienced in the joint muscles and ligaments.

Active flexibility exercises are recommended during the final stages of a warm-up and stretching session when the muscles are warm and the blood circulation in the body is faster.



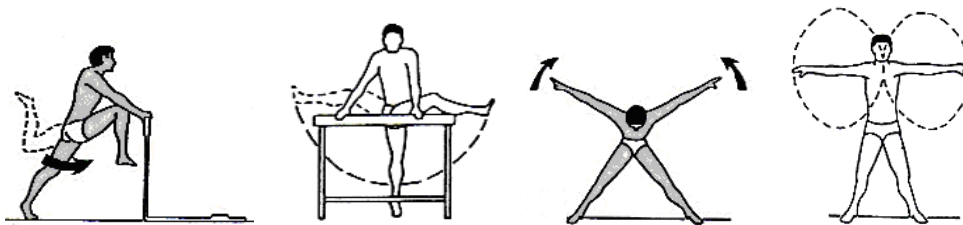
- **PASSIVE FLEXIBILITY**

Passive flexibility exercises are applied with the assistance of external force. A partner, equipment, etc. are used as external force on the joints until maximum resistance is experienced in the joint muscles and ligaments.

Active flexibility exercises are recommended during the final stages of a warm-up and stretching session when the muscles are warm and the blood circulation in the body is faster.

Passive flexibility exercises are done after training sessions or after recovery of injuries or long periods of inactivity. Passive mobility exercises are applied in an attempt to regain the mobility of the joint, or to try and push the joint beyond its normal range of movement.

Passive flexibility exercises are never applied prior to competition. The muscle takes too long to recover from passive mobility exercises and will not be fully recovered by the time the competition starts.



Of the three main components in the body that make movement possible (bones, joints and muscles), the muscles, referred to as soft tissue, are the most likely to lose mobility.

Because of the softness of the muscle tissue, a fair amount of time must be spent in warming up and stretching of muscles before the athlete becomes engaged in extreme physical activity such as competition. Warm up and stretching exercises will drastically reduce the risk of losing mobility of the muscles as a result of injury or stiffness.

To prepare the muscles for competition is a slow process and can take anything between 15 minutes to an hour depending on various circumstances.

The body must be warmed up longer in cold conditions than in warm conditions. In cold weather, warm-up exercises must be done with clothing that keeps the body warm, and in warm weather conditions do the stretching component in the shade to keep the body temperature as low as possible.

In warm weather it is wise to keep the upper part of the neck wet with a damp cloth. It will help the athlete to remain focused. Do not soak a hat in water and wear it on a warm day. It will lead to sunstroke.

The suggested order of maintaining flexibility or preparing for physical activity is as follows:

- 1.1. Warm up exercises
- 1.2. General stretching exercises
- 1.3. Specific warm up exercises
- 1.4. Specific stretching exercises
- 1.5. Skills session
- 1.6. Physical activity such as training or competition
- 1.7. General warm down exercises
- 1.8. General stretching exercises
- 1.9. Advanced stretching exercises

2. WARMING UP AND WARM DOWN EXERCISES

It is important that the athlete should warm up before stretching, training or competition. It is also important that the athlete spend some time to warm down after any form of physical activity.

Warm up and warm down exercises should be functional. Warm up and warm down exercises has the following advantages for the athlete:

- Warm up and warm down exercises helps to prevent muscle stiffness.
- Warm up and warm down exercise helps to relax the muscles and allows the muscles to contract faster during competition (Better muscle co-ordination).
- Warm up exercise improves blood circulation and enable oxygen to reach the muscles faster during competition.
- Warm down exercises allows the body to cool down slower and give the body longer time to remove waste materials that remained behind in the muscles after intense physical activity.
- The body temperature rises which improves metabolism in the muscles.
- The body (heart) can adjust easily to sudden intense activity such as the start of a race.

A light jog 1km to 5 km can be regarded as a general warm up or warm down session.

Acceleration runs can serve as specific warm-up exercises for track athletes and runners, run-ups can serve as specific warm-up exercises for jumpers and practice throws can serve as specific warm-up exercises for throwers.

Specific stretching exercises should only be done only after a session of specific warm-up exercises was done.




3. STRETCHING EXERCISES








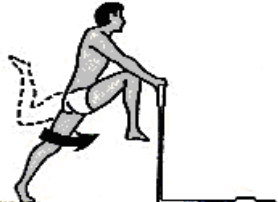

- General stretching exercises must be done prior to a training session or race, while more intensive stretching can be done after the training session. Intensive stretching exercises can form part of warm down exercises.
- Static (gradual) stretching exercises are better than ballistic (jerking) stretching exercises. Static stretching exercises stretch muscles evenly and without a jerking action and thus prevent injuries to muscles. Static stretching exercises will allow the muscle to stretch beyond the point where it will stretch under normal circumstances.
- The thicker muscles such as hamstring muscles must be stretched more than the thinner muscles such as hip stabilizers.
- Stretching must be functional to ensure that the muscles are fully prepared for the specific physical activity.
- Advanced stretching exercises that require external force from another athlete or coach must be done only after training sessions under a controlled environment or supervision. Advanced stretching exercises should not be done before competition.

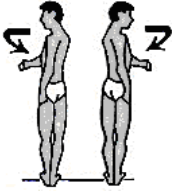



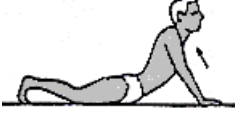




STRETCHING EXERCISES HAVE THE FOLLOWING ADVANTAGES:



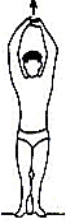
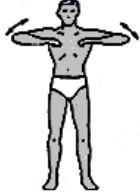
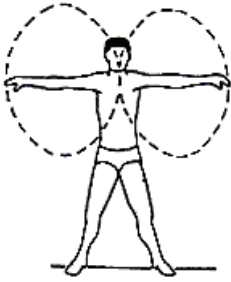


1. If stretching exercises are done regularly, suppleness of the muscles is regained and maintained.
2. Continuous intense training causes muscles to shorten as a result of the continuous contractions. Stretching exercises allow the muscle to return to its original state
3. Supple muscles leads to faster muscle-reaction
4. It improves the mobility of the limbs.


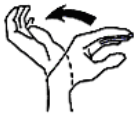


Recommended stretching exercises for athletes can be seen below. The first column gives a brief description of how the exercise should be done. The second column shows an illustration of how the exercises should be done and the last columns list the event the exercise is suitable for:

VERBAL DESCRIPTION OF STRETCHING EXERCISE	VISUAL DESCRIPTION OF STRETCHING EXERCISE	TYPE OF EVENT															
		Sprints	Distance Races	Steeple chase	Hurdles	Cross Country	Road Running	Race Walking	Long Jump	Triple Jump	High Jump	Pole Vault	Shot Put	Discus Throw	Hammer Throw	Javelin Throw	
Stand in an upright position and raise both ankles as high as possible to stand on the toes.	 Toes	X	X	X	X	X	X	X	X	X	X	X					
Stand in an upright position. Rest the toes on an object with the heels not touching the ground. Press the heels down as far as possible	 Calves and Achilles tendon	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sit down and lean backwards with the torso while supporting the torso with the hands on the ground. Pull the toes upwards as far as possible and relax.	 Achilles and shins	X	X	X	X	X	X	X	X	X	X	X					

<p>Sit on the ground with the legs flat on the ground. Turn the foot clockwise and anti-clockwise in circular motions. Alternate the exercise on both feet.</p>	 <p>Ankle ligaments</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<p>Sit on the ground with the legs flat on the ground. Put the hands on the lower leg and pull the torso towards the knees.</p>	 <p>Hamstrings and lower back</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<p>Sit on the ground with the legs flat on the ground. Put the hands on the left lower leg and pull the torso towards the knee. Alternate the exercise on both legs.</p>	 <p>Hamstrings and sides</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<p>Lie on the back while placing the arms sideways. Swing the straightened leg across the body until it touches the ground on the opposite side. Alternate the exercise with both legs</p>	 <p>Hip flexors</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<p>Sit upright with the legs crossed and the hands on the knees. Push the knees gradually towards the ground.</p>	 <p>Groin</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<p>Sit upright and place the foot next to the knees on the opposite side of the leg. Place the arm on the knee and press the leg across the torso. Alternate the exercise with both legs.</p>	 <p>Hip flexors</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<p>Place the leg chest high on an object. Grab the lower leg with both hands and pull the torso towards the knee. Alternate the exercise with both legs.</p>	 <p>Hamstring and calf</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<p>Place the hands on an object chest high and place the feet approximately 1 m away from the object. Swing the one leg up towards the torso with the leg in a bent position. Swing the leg back and upwards behind the back. Alternate the exercise with both legs.</p>	 <p>Foot, calf and groin</p>	X	X	X	X	X	X	X	X	X	X					
<p>Place the hands on an object chest high and place the feet arm length away from the object. Swing the one leg from side to side with the leg in a straight position. Swing the leg back and upwards behind the back. Alternate the exercise with both legs.</p>	 <p>Hip flexors</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

<p>Stand in an upright position, with the feet together. Place the hand across the chest and turn the shoulder across the chest as far as possible. Alternate the exercise with both shoulders.</p>	 <p>Shoulders</p>																
<p>Place the feet one stride length apart, feet pointing forward. Push the hip forward and towards the ground until the leading leg is bent in a 90° angle. Alternate the exercise on both legs.</p>	 <p>Thighs</p>	X	X	X	X	X	X	X	X	X	X						
<p>Place the feet one stride length in front of the body and lower the hip forward and towards the ground until the leading leg is bent in a 90° angle. Raise the opposite arm upwards and backwards. Alternate the exercise with both legs.</p>	 <p>Thigh and upper back</p>								X	X	X	X	X	X	X	X	X
<p>Place the feet twice the shoulder width apart and lower the hip side ways and then downwards. Alternate the exercise to both sides.</p>	 <p>Thigh and hip flexors</p>												X	X	X	X	
<p>Lie on the stomach and place the hands next to the shoulders and press the torso upwards without lifting the hips from the ground.</p>	 <p>Upper trunk</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<p>Lie on the stomach and grab both ankles with the hands. Pull the feet towards the back of the head.</p>	 <p>Thigh</p>								X	X	X	X	X	X	X	X	X
<p>Rest the body on the hands, positioned directly underneath the shoulders, and the heels of the feet. Press the hip upwards as high as possible.</p>	 <p>Back, abdominals and groin</p>	X	X	X	X	X	X	X	X	X	X	X					
<p>Place the hands on an elevated area with the feet on the ground with the buttocks hanging in mid air. Push the buttocks forward across the feet.</p>	 <p>Shoulders and upper back</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<p>Stand with the feet apart and lean forward with the torso, with the arms held sideways. Press the hands upwards as far as possible.</p>	 <p>Back and shoulders</p>												X	X	X	X	

<p>Stand in an upright position with the feet placed on the ground directly underneath the shoulders. Hold the hands together and pull the arms up above the head. Push the torso sideways while keeping the arms above the shoulders. Alternate the exercise to both sides.</p>	 <p style="text-align: center;">Side</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<p>Stand in an upright position with the feet placed on the ground directly underneath the shoulders. Hold the hands together and the arms straight behind the back. Push the hands upwards without changing the position of the torso.</p>	 <p style="text-align: center;">Shoulders</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<p>Stand in an upright position. Hold the hands together above the head and push the hands upwards as far as possible.</p>	 <p style="text-align: center;">Shoulders and neck</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<p>Stand in an upright position and hold the arms up, bent at the elbows, in line with the shoulders. Press the elbows upwards as far as possible.</p>	 <p style="text-align: center;">Shoulders and neck</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<p>Stand in an upright position with the arms held out sideways. Move both hands backwards in a circular manner. Gradually increase the diameter of the circular movement. Change direction of the circular movement once maximum range is reached.</p>	 <p style="text-align: center;">Shoulders</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<p>Stand in an upright position. Place the feet directly underneath the shoulders. Press the shoulders down and then pull the shoulders up as high as possible.</p>	 <p style="text-align: center;">Shoulders and neck</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<p>Place the arms above the head and grab the elbow with the opposite arm's hand directly above the head. Pull the elbow towards the head. Alternate the exercise on both sides.</p>	 <p style="text-align: center;">Shoulder and upper arm</p>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Push the head to the side while pushing down the opposite shoulder. Alternate the direction of the head to the left, right, front and back.	 Neck	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Point the hand upwards and swing the hand backwards and forward as far as possible	 Wrist														X	X	X	X
Place the fingers up to the second joint on a flat surface hip high. Press the wrist down and then upwards.	 Wrist														X	X	X	X
Stand on the hand and knees with the fingers pointing towards the knees. Keep the hands still while moving the torso gradually backwards and forward.	 Wrist													X	X	X	X	X

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