

Strength and flexibility preparation for basic kicks in Taekwon-do ITF training.

With proper joint and muscle protection, footwork techniques in Taekwondo ITF do not negatively affect the health of practitioners, regardless of their level.

Kicks require not only strength and agility, but also precision and movement control, which makes their training extremely demanding. By analysing the work of the muscles and joints during the execution of the four most commonly used foot techniques, it allows me to suggest exercises to strengthen and optimise their performance.

Dollyo Chagi (low, medium and high) mainly engages the leg, abdominal and back muscles, which are responsible for generating force, stabilising the body and maintaining balance.



In the initial phase of the movement, the leg bends at the hip and knee joints and is then smoothly visited so that the thigh, together with the bent knee, approaches the target in a circular motion. In the last phase before striking the target, the knee joint is moved in an abrupt movement towards full straightening. After the impact, all actions proceed in reverse order. The main muscles involved in the performance of Dollyo Chaga can include:

- Leg muscles: quadriceps femoris (m. quadriceps femoris), biceps femoris (m. biceps femoris), gastrocnemius (m. gastrocnemius), tibialis anterior (m. tibialis anterior) and other leg muscles.
- Abdominal muscles: abdominal extensor muscles (m. rectus abdominis), oblique abdominal muscles (m. obliquus externus abdominis, m. obliquus internus abdominis) and other abdominal muscles
- Back muscles: back extensors (m. erector spinae) and other back muscles,
- Other muscles: iliac-lumbar muscles (m. iliopsoas), intercostal muscles (m. intercostales).

Ap Chagi Busigi is for the face, solar plexus and abdomen, scrotum, groin and free ribs (costa fluitante).



In Apcha Busigi, the knee lifts upwards and the leg flexes at the hip and knee joint. On reaching the target, the hip and knee joint straighten. A moment before the target is reached, the ankle joint works according to the impact area used. The kick requires the involvement of mainly the following muscles:

- Leg muscles: quadriceps femoris (m. quadriceps femoris), biceps femoris (m. biceps femoris), gastrocnemius (m. gastrocnemius), tibialis anterior (m. tibialis anterior) muscles
- Abdominal muscles: extensor abdominis (m. rectus abdominis), oblique abdominal muscles (m. obliquus externus abdominis, m. obliquus internus abdominis)
- Back muscles: back extensors (m. erector spinae)
- Other muscles: iliac and lumbar muscles (m. iliopsoas), gluteal muscles (m. gluteus maximus, m. gluteus medius), intercostal muscles (m. intercostales)

Yop Chagi Jurugi, is a side kick. Without doubt, it is one of the most effective techniques for attacking an opponent. The outer edge of the foot is used as an attack surface on the temple, axillary fossa, free ribs and carotid artery. The base of the nose, the tip of the chin and the solar plexus are secondary targets.



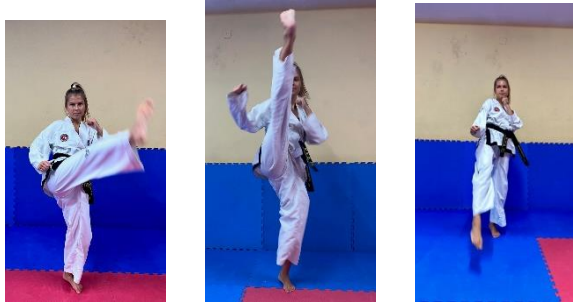
This technique is divided into low, medium and high side kick. The attacking surface must reach the target in a straight line in a rotational motion. Regardless of the stance, the outer edge of the foot must be brought to the inner knee joint of the supporting leg before the kick is executed. At impact, the toes of the kicking foot should point slightly downwards and the toes of the stationary foot should point outwards at an angle of approximately 75 degrees. For maximum height, the body should be tilted as far away from the kick as possible while maintaining balance. You should not kick diagonally as this is a waste of strength. The stationary foot rotates, allowing the hip to rotate during the kick. In the first phase, we slightly flex and invert the hip joint. Then we bring the entire lower limb as strongly as possible towards the body, and start straightening the hip and knee joints simultaneously. Once this is achieved, the reverse is done.

The following muscles are primarily involved when performing this technique:

- Quadriceps femoris muscle (m. quadriceps femoris) - a large muscle in the front of the thigh that is responsible for bending at the hip joint and straightening at the knee joint, allowing the leg to be lifted before kicking out.
- Gluteus maximus muscle (m. musculus gluteus maximus) - a strong gluteal muscle that is involved in stabilising the hip and facilitates lifting the leg to kick out.

- Biceps femoris muscle (m.biceps femoris) - a muscle of the back of the thigh that is involved in straightening at the hip joint and facilitates striking the foot on target.
- gastrocnemius muscle (m.mesculus gastrocnemius) - a muscle of the back of the calf that is involved in straightening at the knee joint and enables the foot to strike the target firmly.
- The muscles of the shoulder girdle, which help to stabilise the body and maintain balance when performing the kicking technique.

Neryo Chagi is a descending kick technique. This technique is useful for attacking an opponent by avoiding an obstacle, such as another person.



The back heel reaches the target in a line directed downwards from the highest point of the raised leg. The point of attack should not be lower than the attacker's own solar plexus, as this may result in a loss of power. The main target of the attack is the head, with the secondary target being the shoulder rim (above the collar bone). The kick starts with an internal or external rotation of the hip joint combined with a strong flexion of the hip. Throughout the technique, the knee joint is straightened. Once the desired height is reached, there is a very dynamic straightening of the hip joint which increases the speed of the descent of the entire limb.

The following muscles are primarily involved when performing this technique:

- Quadriceps femoris muscle (m. quadriceps femoris) - a large muscle in the front of the thigh that is involved in bending at the hip joint and straightening at the knee joint, which enables the leg to be lifted upwards.
- Gluteus maximus muscle (m. musculus gluteus maximus) - a strong gluteal muscle that is involved in stabilising the hip and facilitates lifting the leg upwards.
- gastrocnemius muscle (m. mesculus gastrocnemius) - a posterior calf muscle that is involved in straightening at the knee joint.
- Shoulder girdle muscles such as the quadriceps (belonging to the superficial muscles of the back), the shoulder muscle and the parallelogram muscle, which help to stabilise the body and maintain balance when performing the kicking technique.
- The rectus abdominis muscle - a lower abdominal muscle that is involved in stabilising the torso and maintaining balance when performing a kicking technique.

Various human joints are involved during the execution of the aforementioned techniques. Depending on the football technique, they work in teams.

Movements in the hip joint. The hip joint (ischiofemoral joint), allows rotational and sliding movements within the joint. The hip joint connects the femur (femur) to the pelvic acetabulum (acetabulum) and is a key component of the musculoskeletal system, allowing full function of the lower limb. Surrounding the hip joint are many ligaments, muscles and joint capsules that stabilise the joint and allow it to move.

During hip flexion, the femur (thigh bone) moves towards the abdomen, bringing the thigh closer to the trunk. Various muscles can be used to perform hip flexion, such as the iliac crest muscle, quadriceps thigh muscle, gluteus maximus muscle, biceps thigh muscle and other muscles. The flexion movement at the hip joint is related to the work of the following muscles:

- Hip-lumbar muscle (m. iliopsoas): This is a large muscle that is made up of two parts - the iliac m. (iliacus) and the lumbar m. (psoas major). This muscle is one of the main flexor muscles of the hip joint and is often referred to as the 'hip muscle' for this reason. It starts at the lower lumbar spine and pelvic bones and ends at the femur.
- Quadriceps femoris muscle (m. quadriceps femoris): This is a group of four muscles located on the front of the thigh that are involved in many hip and knee movements, including hip flexion. One of these muscles, the rectus femoris, is also involved in lifting the leg and flexing the pelvis.
- Biceps femoris muscle (m. biceps femoris): This is a muscle located on the back of the thigh that is involved in hip flexion and in the knee flexion and hip rotation outward movements.
- Gluteus maximus muscle (m. gluteus maximus): This is the largest gluteal muscle, which starts at the sacrum and tailbone and ends at the femur. In addition to its role in the outward movement of the hip, it is also involved in flexion of the hip joint.
- Other muscles, such as the gluteus medius muscle (m. gluteus medius), the gluteus minor muscle (m. gluteus minimus) and the adductor muscles of the thigh (e.g. m. adductor longus, m. adductor magnus),

When straightening the hip joint, the femur moves in an upright direction in relation to the pelvis. Straightening of the hip joint is possible by engaging the following muscles:

- Gluteus maximus muscle (m. gluteus maximus): This is the largest gluteal muscle and is involved in straightening the hip joint. It is strong and helps to push the body forward during the movement.
- Biceps femoris muscle (m. biceps femoris): This is a biceps muscle that is located on the back of the thigh. Its one head (long head) also acts as an extensor of the hip joint.

Other muscles: the rectus femoris muscle (m. rectus femoris), the adductor muscle of the thigh (m. adductor magnus), the sheath muscle (m. sartorius) and others, m

During thigh inversion at the hip joint, the femur (thigh bone) moves outwards, away from the centre of the body, causing the limb to move to the side. To perform thigh inversion at the hip joint, various muscles can be used, such as the gluteus maximus muscle, gluteus medius muscle, quadriceps of the thigh and other muscles. The muscles responsible for hip joint inversion are:

- Gluteus medius muscle (m. gluteus medius): This is the gluteal muscle, which is located on the lateral side of the pelvis. Its main function is to invert the hip joint and stabilise the pelvis during gait and other movements.

- Gluteus minor muscle (m. gluteus minimus): This is the smaller gluteal muscle, which is located below the gluteus medius muscle. Its functions are similar to the gluteus medius muscle, namely hip inversion and pelvic stabilisation.

- Other muscles: external obturator muscle (m. obturatorius externus), internal obturator muscle (m. obturatorius internus), anterior hamstring muscle (m. psoas major) and others.

During thigh adduction at the hip joint, the lower limb moves towards the medial axis of the body. The muscles responsible for hip joint adduction are primarily:

- The adductor longus muscle (m. adductor longus): This is a muscle located on the inside of the thigh that runs along its length. Its main function is to adduct the hip joint and stabilise the pelvis.

- Adductor short muscle (m. adductor brevis): This is the smaller adductor muscle, which is located below the adductor longus muscle. Its function is similar to that of the adductor longus muscle, i.e. adduction of the hip joint.

- Adductor major muscle (m. adductor magnus): This is the largest of the adductor muscles and is located on the inside of the thigh; it also has stabilising and rotational functions.

- Other muscles: crest muscle (m. gracilis), semitendinosus muscle (m. semitendinosus), semimembranosus muscle (m. semimembranosus).

During internal rotation at the hip joint, the lower limb rotates internally downwards. Internal rotation causes external rotation of the pelvis and displacement of the knees and feet into a more internal (medial) position. Internal rotation causes activation of the extrinsic and intrinsic muscles of the thigh and stabilisation of the knee and tarsal joints. All these movements and displacements are coordinated by a muscular and joint system that works in harmony. The muscles responsible for 'circulating the leg' inwards are primarily:

- The obturator minor muscle (m. iliopsoas): This is a combination of two muscles, the iliopsoas major (m. psoas major) and the iliacus muscle (m. iliacus), which join together and attach to the inner surface of the thigh. It is the main muscle responsible for hip flexion, but is also involved in internal rotation of the hip joint.

- Vertebral-iliac muscle (m. quadratus lumborum): This is a muscle located in the lumbar region of the spine that is involved in rotational and lateral movements of the spine, but can also affect internal rotation of the hip joint.

- Other muscles: the gluteus minor muscle (m. gluteus minimus) and the iliolumbar muscle (m. psoas minor),

During external rotation at the hip joint, the lower limb rotates internally downwards. External rotation causes internal rotation of the pelvis and movement of the knees and feet into a more external (lateral) position. External rotation of the leg activates the muscles outside and inside the thigh and stabilises the knee and tarsal joints. The muscles responsible for the outward "circulation of the leg" are primarily:

- The gluteus maximus muscle (m. gluteus maximus): This is the largest muscle of the gluteus maximus, which attaches to the sacrum, the coccyx and to the surface of the posterior femoral crest. It is the main muscle responsible for hip extensibility (straightening), but is also involved in external rotation of the hip joint.

- Gluteus medius muscle (m. gluteus medius): This is a muscle located in the lateral gluteal region that stabilises the hip joint and is involved in external rotation of the hip joint, especially in the hip flexion position.
- Gluteus minor muscle (m. gluteus minimus): This is a smaller muscle located deeper than the gluteus medius muscle, which is also involved in external rotation of the hip joint.
- Other muscles: The external obturator muscle (m. obturatorius externus) and the external oblique muscle (m. piriformis) are also involved in external rotation of the hip joint, although their influence on this movement is less.

Movement at the knee joint. The knee joint, also known as the ankle and knee joint, is one of the largest and most important joints in the human body. It is a hinge-type joint, allowing flexion and extension movements of the lower limb. The knee joint connects the femur (femur) to the tibia (tibia) and to the fibula (fibula), forming a complex joint system. The main movements in this joint are straightening and bending.

When the knee joint straightens (extensifies), the angle between the thigh and shin increases and the hip stabilises and lifts. In addition, the quadriceps muscles of the thigh (including the rectus and adductor muscles) become more active and the calf muscles (including the biceps and gastrocnemius muscles) become relaxed. Straightening is mainly controlled by several muscles that work synergistically to allow the lower limb to straighten at the knee joint. The knee joint is one of the most stressed joints in the body as it transmits the forces associated with walking, running, jumping and other physical activities. It is also stabilised by ligaments, muscles and articular cartilage, which play an important role in maintaining its functionality. Muscles responsible for straightening the joint include

- The quadriceps femoris muscle (m. quadriceps femoris): This is a group of four muscles located on the front of the thigh, which is the main muscle that straightens the knee joint. These muscles are the m. rectus femoris, m. adductor thigh (vastus medialis), m. vastus intermedius and m. vastus lateralis. Together they act on the knee joint, straightening it and allowing the leg to be straightened.
- Popliteus muscle (m. popliteus): This is a small muscle located on the back of the thigh that is involved in straightening the knee joint, especially during the initial stage of the straightening movement. It is also involved in the internal rotation of the tibia during straightening of the knee joint.
- Gluteal muscles (m. gluteus maximus, m. gluteus medius, m. gluteus minimus): Although not the main muscles that straighten the knee joint.
- Other muscles: the biceps femoris muscle (m. biceps femoris), the semimembranosus muscle (m. semimembranosus), the semitendinosus muscle (m. semitendinosus), the adductor muscles (m. adductores), the sheath muscle (m. sartorius) and others, which can also help to straighten the knee joint depending on body position and type of movement.

During flexion (flexion) of the knee joint, the angle between the thigh and shin is reduced. Flexing the leg at the knee joint brings the lower limb closer to the trunk, requiring the muscles of the front of the thigh to shorten and the muscles of the back of the thigh to lengthen. In addition, bending the leg at the knee joint moves the pelvis forward and causes the hip and lumbar muscles to contract. Flexion of the knee joint is possible due to the activity of the following muscles:

- Quadriceps femoris muscle: This is a group of four muscles located on the front of the thigh, which connect by a tendon to the patella and attach to the upper part of the tibia. The quadriceps femoris muscle is the main muscle responsible for straightening the knee joint, but also plays a role in knee flexion.

- Biceps femoris muscle: This is one of the muscles of the posterior thigh muscle group, known as the biceps femoris muscle group. The biceps femoris muscle has two heads - long and short - and attaches to the pelvic bone and the head of the fibula. Its main function is to flex the knee joint, but it also plays a role in straightening the hip joint and rotating the lower limb outwards.

- The semitendinosus muscle (Semimembranosus) and semimembranosus muscle (Semitendinosus): These are the other two muscles of the biceps thigh muscle group, which also attach to the pelvic bone and shinbone. They perform the function of flexing the knee joint, as well as straightening the hip joint and rotating the lower limb outwards.

- Adductor longus muscle (Gracilis): This is a long, thin muscle located on the inside of the thigh. It attaches to the pubic bone and the tibia. Its main function is to adduct the thigh, i.e. to move the leg towards the centre of the body, but it also plays a role in flexing the knee joint.

Movements in the ankle joint. The ankle joint (actually the ankle and knee joint), is one of the main joints of the human lower limb. It is a complex joint that connects the tibia (tibia) to the ankle (talus), allowing the movements of flexion, extension, internal and external rotation of the foot. The ankle joint is important for maintaining stability and mobility of the foot. It is stabilised by ligaments, joint capsules and muscles that maintain the correct position of the bones and allow controlled movements of the foot.

When straightening the ankle joint, the foot is lowered (moves in the sole direction). This movement is made possible by the work of several muscles,:

- The triceps surae muscle (Triceps surae): This is a group of three muscles located on the back of the calf, consisting of two main muscles - the gastrocnemius muscle and the soleus muscle. The triceps calf muscle attaches to the calcaneus via the Achilles tendon and plays a key role in straightening the ankle joint, especially in dynamic movements such as jumping and running.

- Tibialis anterior muscle (Tibialis anterior): This is a muscle located on the anterior side of the lower leg, attaching to the fibula and providing elevation and straightening of the foot. The fibularis anterior muscle is the main muscle responsible for straightening the ankle joint, especially when lifting the foot upwards.

- The long toe flexor muscle (extensor hallucis longus): This is a muscle running along the anterior side of the shin that attaches to the great toe of the foot. Its main function is to flex the great toe, but it also plays a role in straightening the ankle joint.



- The long flexor muscle of the lesser toe (extensor digitorum longus): This is a muscle located next to the long flexor muscle of the great toe, which attaches to the lesser toes of the foot. Its main function is to flex the lesser toes, but it also plays a role in straightening the ankle joint.

When flexing the ankle joint, the foot moves in a dorsal direction, which causes it to lift in an active, muscle-controlled manner. The following muscles are involved in this movement:

- Biceps femoris muscle: This is a muscle located on the back of the thigh that consists of two heads - a long and a short one. Both heads of the biceps femoris muscle attach to the fibula and the head of the fibula, and are responsible for bending the knee joint and flexing the ankle joint.

- Long fibula muscle (Peroneus longus): This is a muscle located on the lateral aspect of the calf, which attaches to the first metatarsal bone (the clinoid bone). Its main function is to flex and retract the foot, i.e. to bend the ankle joint and move the foot outwards.
- Tibialis anterior muscle (Tibialis anterior): This is a muscle located on the anterior side of the lower leg that attaches to the ischium and the first metatarsal bone. Its main function is to lift and flex the foot, i.e. to flex the ankle joint and lift the foot upwards.
- The short soleus muscle (Flexor hallucis brevis): This is a muscle located in the foot that attaches to the hallux bone and the first metatarsal bone. Its main function is to flex the great toe of the foot and also to flex the ankle joint.

In order to strengthen the strength of the muscles, increase the ranges of mobility of the joints involved in foot techniques, the competing group of the Wroclaw Sports Taekwon-do Club performed the following exercises. In order to diversify the exercises for a beginner or advanced group, it is suggested to use rubbers with different levels of tension.

Leg adduction while standing straight	
<p>Standing straight with the buttocks tight and the pelvis curled forward, perform an adduction of the straight leg. Lock the leg in a maximum close position for 2 seconds. Controlling your balance, return to the starting position. For balance, we can hold onto a wall with one hand. To engage the deep muscles we stand without additional support.</p>	
<ul style="list-style-type: none"> - perform 12-15 repetitions in this exercise - repeat 3 times with a 45s pause per leg - yellow rubber beginners, orange rubber intermediate, red rubber advanced 	

Straight leg extension

Standing straight with your glutes tight and pelvis tucked forward, perform a leg inversion to maximum height. Lock the leg in the maximum height position for 2 seconds. Controlling your balance, return to the starting position. For balance, we can hold onto a wall with one hand. To engage the deep muscles we stand without additional support.

- perform 12-15 repetitions of the exercise
- repeat 3 times with a 45s pause per leg
- yellow rubber beginners, orange rubber intermediate, red rubber advanced




Leg raise, lying down


Lie down on the floor. Place one end of the resistance band on a stable surface. Tie the other end around the ankle. Perform a knee lift while holding 2-3 at maximum position.


- Perform 12-15 repetitions.
- repeat 3 times with a 45s pause per leg
- yellow rubber beginners, orange rubber intermediate, red rubber advanced


The exercise can be performed with a partner, working legs alternately.





Knee raise while standing	
Stand upright with your back to where the resistance band is attached. Raise the bent leg to its maximum height. Hold it in the highest position for -23 seconds, then return to the starting position.	
<ul style="list-style-type: none"> - perform 12-15 repetitions in the exercise - repeat 3 times with a break of 45s per leg - yellow rubber beginners, orange rubber intermediate, red rubber advanced <p>We can change the exercise to lifting the straight leg. The third version is to perform the full Ap Chagi Bushgi.</p>	

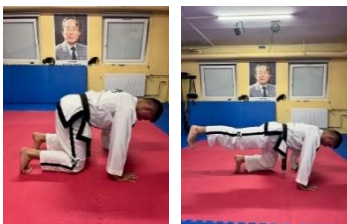
Full rotation of the straight leg while standing	
Lift the straight leg to its maximum height. Keep the abdominal and back muscles tight at all times. After 5 seconds, twist the body and support leg at a 45 degree angle towards the wall. Hold the leg for another 5 seconds. Finally, rotate the foot so that it is fully facing the wall, with the raised leg positioned so that the heel is facing upwards. Repeat the whole procedure in the opposite direction. Keep your body upright at all times. Keep your leg at one height.	
<ul style="list-style-type: none"> - Exercise for 1 min. - repeat 2 times with a 45s pause per leg 	


Dollyo Chagi kick sitting	
Sit sideways to a wall. Attach the resistance band to the rake and strap the other end around the ankle. Perform kicks for 45s as fast as possible. By to make the exercise more difficult we give up the hand support.	
<ul style="list-style-type: none"> - perform 12-15 repetitions of the exercise - repeat 3 times with a 45s pause for each leg - yellow rubber beginners, orange rubber intermediate, red rubber advanced 	


Sit-up leg raise with bent leg.	
<p>Perform a straight sit-up. Bend one leg at approximately 90 degrees so that the foot is under the knee of the other leg. Alternately raise and lower the straight leg. Keep moving until the exercise is complete.</p>	
<ul style="list-style-type: none"> - Exercise for 2 minutes - repeat 2 times with a 30s pause per leg 	


Bringing the leg forward	
<p>Sit up straight. Bend one leg at a 90 degree angle so that the foot is under the knee of the other leg. Place the other leg behind the hips. Lift the opposite leg and bring it forward into full extension. After the lunge, return the leg to the starting position.</p>	
<ul style="list-style-type: none"> - Perform this exercise for 2 minutes - repeat 2 times with a 30 second break per leg 	


Lift knee to the side while kneeling.	
<p>Kneel on one knee. The foot rests on the sole. Tighten the back and abdominal muscles and bring the knee to the side, trying to lift it as high as possible. Return to the starting position. Throughout the exercise, keep the knees of both legs 2 cm above the ground.</p>	
<ul style="list-style-type: none"> - Perform the exercise for 2 min. - repeat 2 times with a 30s pause per leg 	


Lift leg to the side and straighten it while kneeling.	
<p>Kneel on one knee. The foot rests on the sole. Tighten the back and abdominal muscles and bring the knees to the side, trying to lift as high as possible. At the highest position, straighten the leg back so that the foot is pointing to the ground. Return to the starting position. Throughout the exercise, keep the knees of both legs 2 cm above the ground.</p>	
<ul style="list-style-type: none"> - Perform the exercise for 2 min. - repeat 2 times with a 30s pause per leg 	


Hip rotation in a 90/90 position	
<p>Sit on the ground. Extend your legs at a 90 degree angle. Rest the foot on the heel and bend the leg at 90 at the knee joint. Without the help of your arms, keep your body upright and rotate to the left and right so that your knees are on the ground at the same time.</p>	
<ul style="list-style-type: none"> - Perform this exercise for 2 minutes - repeat 2 times with a 30s pause 	


Couch stretches	
<p>Kneel with your leg resting against a wall so that your whole shin is against the flat surface of the wall. Press the knee at the junction between the wall and the floor so that the whole tibia is against it. Pull the foot of the adjacent leg upwards. Move the leg forward so that the shin bone of the leg is perpendicular to the floor. Lower the hips towards the floor, tensing the gluteal muscles. Keep your torso straight.</p>	
<ul style="list-style-type: none"> - Hold the position for 2 minutes - Repeat 2 times with a 30s pause per leg 	


Hip joint mobilisation lying down	
<p>Put a strap or belt on your foot. Keeping the leg straight at the knee at all times, draw the leg towards you. Keep the free leg and body straight.</p>	
<ul style="list-style-type: none"> - Hold the position for 2 min. - Repeat 2 times with a break of 30s per leg <p>A regular belt can be used in this exercise.</p>	


Advanced hip mobilisation lying down.	
Put a strap or belt on your foot. Keeping the leg straight at the knee at all times, draw the leg towards you. In addition, put the strap across the thigh at the hip joint. And move away from the point of attachment. Duration and repetition as in the previous exercise.	
<ul style="list-style-type: none"> - Perform this exercise for 2 min. - repeat 2 times with a 30s pause per leg 	


Hip flexion stretch with the strap in a step.	
Hook the tape onto a ladder or other object. Place it at the junction of your buttocks and hip. Stand sideways to the attachment point. Move the leg with no tape backwards doing a . Straighten the cornered leg. All the while tensing your glutes and braced body, kneel on your knee so that your knee does not touch the ground.	
<ul style="list-style-type: none"> - Hold the position for 1.5 minutes - repeat 2 times with a break of 30s per leg 	


Back chain loosening	
Place the attached tape at the junction of the thigh and hip. Take a step to keep the tape tight. Bend in half and rest both hands on the ground. Perform alternating lunges and bends of the leg with the tape. Duration and repetition as in the previous exercise.	
<ul style="list-style-type: none"> - Hold the position for 1.5 min. - repeat 2 times with a 30s pause per leg 	


Olympic squat against a wall with external rotation	
Position your glutes as close to the wall as possible. Position your feet on the wall wider than your hips so that lying down resembles a wide squat. Bring the jointed foot over the left knee. Press the bent leg towards the wall.	
<ul style="list-style-type: none"> - Hold the position for 2 min. - repeat 2 times with a 30s break per leg 	


Olympic squat against a wall with external rotation using a band	
Position your glutes as close to the wall as possible. Position your feet on the wall wider than your hips so that lying down resembles a wide squat. Using a band, tie your knees together and place the tape behind your back.	
<ul style="list-style-type: none"> - Hold the position for 2 min. - repeat 2 times with a break of 30 per leg. 	


Fence sit with tape.	
Put your leg through the tape and, sitting up, move your leg backwards. Keeping the other leg straight, rotate the trunk and head outwards.	
<ul style="list-style-type: none"> - Hold the position for 2 min. - Repeat 2 times with a 30s pause. 	

Kneeling down	
Perform a kneeling sit. Feet are extended and pressed against the floor. Feet must be straight in full sole flexion.	
<ul style="list-style-type: none"> - Hold the position for 2 min. - repeat 2 times with a break of 30 per leg. <p>Advanced version: try lying on your back without taking your shins off the floor</p> <p>Advanced version: lift your hips with your hands.</p>	

One-legged squat with tape on hip	
Attach the tape to a ladder or other object. Place it at the junction of your buttocks and hip. Move the leg with the tape backwards so that the position resembles a sentence. Straighten the corner leg. All the time tightening your buttocks and stiffened body, kneel down on your knee.	
<ul style="list-style-type: none"> - Perform this exercise for 2 min. - repeat 2 times with a break of 30s per leg 	

One-legged bends with external rotation	
Place your right foot on a high chair, ladder or box and press down with your hand. Move the left leg backwards and lower the right knee outwards.	
<ul style="list-style-type: none"> - Hold the position for 2 min per leg - repeat 2 times with a break of 30 s per leg 	

Seated hip mobilisation.	
Sit on a chair or bench and bring the right leg over the left knee. Holding the right foot with the left hand, press the knee towards the floor.	
<ul style="list-style-type: none"> - Hold the position for 2 min. - repeat 2 times with a break of 30 per leg. 	

Knee bend with lever	
Roll the belt as tight as possible to form a small roll. We then place the belt in knee flexion. We grab the shin and draw the heel towards the buttocks. The foot should be in a straight position.	
<ul style="list-style-type: none"> - Hold the position for 2 minutes per leg - Repeat 2 times with a break of 30 seconds per leg 	

The exercises presented were performed three times a week for a period of three months. Each exerciser noticed a significant increase in mobility at the hip joint. This resulted in increased range

when performing foot techniques, improved speed and strength. Those who early on had difficulty performing multiple techniques without lowering the leg, performed them more freely. The majority of athletes suffered from hip and knee pain.

Muscle-strengthening exercises are performed in order to have a strong and fit body. This translates into both appearance and health, as well as speed, strength and effectiveness of kicks in Taekwon-do. Strengthening training also helps to prevent injuries and other indispositions. Mobility in Taekwon-do is extremely important. It minimises the risk of injury and increases athletic ability, economy of technique or efficiency of power transfer.

Good mobility, makes it possible to achieve correct movement patterns and maintain correct posture. Hence, better movement mechanics are gained, enabling muscles to generate more power. It has many benefits, which contributes to correct and better function. It is important to remember that for mobility to be effective, it must be performed correctly.

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