

# Neck Rehabilitation programme for Rugby players.



The programme consists of two parts, first the Therapeutic Exercise Programme to improve biomechanical function and secondly the Rehabilitation programme for neck conditioning.

## Therapeutic Exercise Programme

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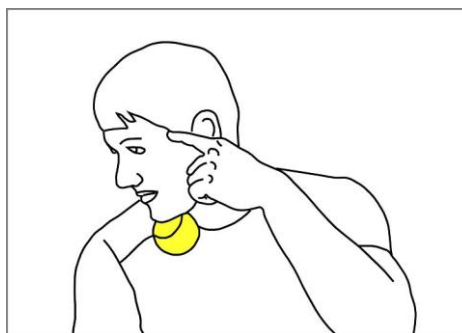
This part of the programme should be performed at least three times per week, preferably four times. Each of the sequences has to be repeated three times and the resistance to the rotation movement held for 6 seconds.

### ***EXERCISE SEQUENCE TO THE RIGHT***

Clutch a tennis ball under the chin and turn the neck to the right, until it felt as though the tennis ball is going to fall out. Now drop the right ear towards the right shoulder and place one finger of the left hand on the left temple. Turn the neck to the left while resisting the movement with the finger so that no movement occurs. Hold this isometric contraction for six counts and repeat three times.



Move the tennis ball to the middle of the clavicle and clutch the tennis ball under the chin. Turn the neck to the right as far as possible while clutching the tennis ball and then drop the right ear to the right shoulder. Place one finger of the left hand on the left temple and turn the neck to the left while resisting the movement with one finger so that no movement occurs.



Perform the same exercise sequence to the left. These therapeutic exercise sequences have to be repeated for four weeks. The therapeutic exercises remain the

same except for the amount of resistance to neck rotation. Resist rotation with two fingers during week two, with three fingers during week three and with the palm of the hand during week four.

## **Neck Rehabilitation Programme**

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### **Introduction**

The neck rehabilitation programme is divided into three phases of rehabilitation. The exercises should be performed at least 3 times, preferably 4 times per week. Once you can perform 3 sets of 20 repetitions of each exercise you can continue to the next phase. When you perform the programme after a neck injury start with the yellow Theraband or Theratubing (the rest of the programme will use the word "ThearaTubing", but TheraBand could also be used). Progress to red, then green, then blue and finally silver. In the absence of injury primary school rugby players can start with red TheraTubing and high school players can start with green.

### **General Principles when Performing the Rehabilitation Programme**

The following principles remained the same for all three phases of the neck rehabilitation programme.

#### ***Breathing***

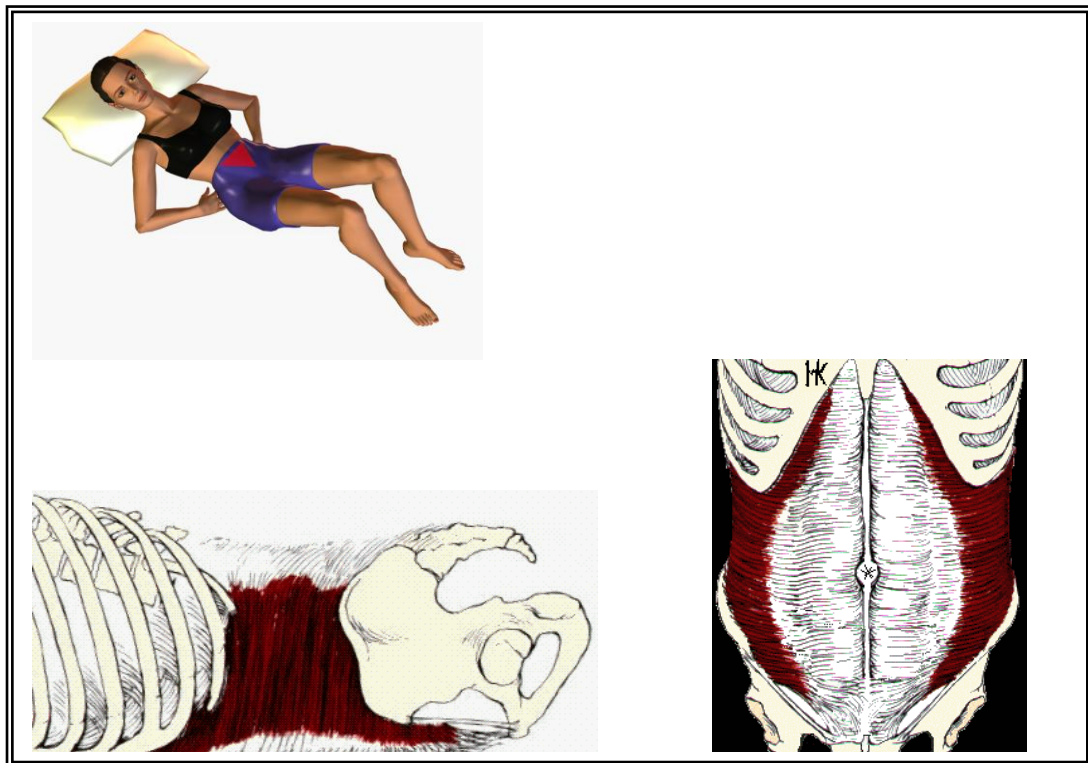
Inhale through the nose and exhale through the mouth. Concentrate on controlled breathing and focus on the "inner core". This filters out all the outside distractions and allows for the necessary control over the exercises. Relax while performing these exercises.

#### ***Neutral Position of the Tongue***

Place the tip of the tongue against the back of the front teeth as when saying the "n" sound. This ensures that the jaw remains relaxed and that the upper cervical spine region remains in the correct position.

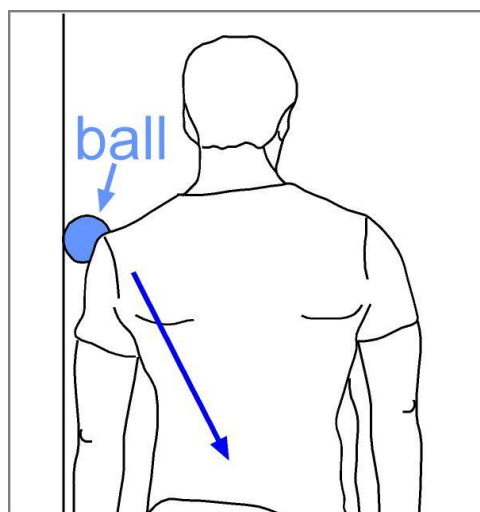
#### ***Core Stability***

This is the first basic step in the dynamic stabilisation of the vertebral column and the management of optimal posture. Maintain core stability while performing all the cervical spine exercises. Lie on the backs with both knees bent. Inhale deeply and on expiration pull the bellybutton in and up. Keep the red triangle area flat. The muscle contraction has to be maintained for as long as possible.



### ***Shoulder Stability***

In addition to core stability maintain shoulder girdle stability throughout the rehabilitation programme. Place a ball between the shoulder and the wall and visualise that the shoulder as the centre of a watch face (watch on the wall). The stability position of the **right** shoulder is approximately the 5 o' clock position and the 7 o' clock position for the **left** shoulder. Shoulder mobility can be improved by slow controlled movements through all the hours of the watch. The emphasis had to be on control and not speed.



## Strengthening and Re-establishing Neuromuscular Control

### *Deep Neck Flexors*

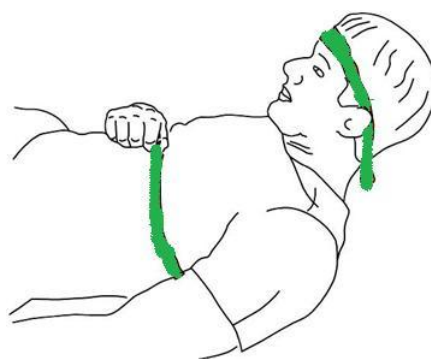
Lie on the back with the arms by the side, with a small rolled-up towel in the hollow of the neck. Pull the scapulas down towards the lumbar spine, tuck the chin in and lift the head only one centimetre from the ground. Do not use sternocleidomastoid muscles for this movement, but rather the deep cervical flexor muscles. The position should be held for six counts, or until the muscles fatigue, and the exercise had to be repeated six times.



Once the exercise can be performed without fatigue of the deep neck muscles progress by performing flexion of the neck, chin to chest. The emphasis must be on control and not on speed.

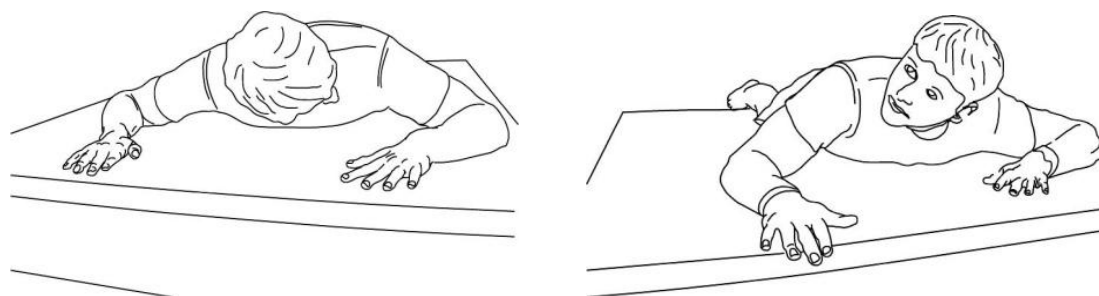


The deep cervical flexor muscle exercise progress in phase two and three to flexion movement against resistance. Start with the TheraTubing colour suggested in the introduction for phase two and progress to the next level as indicated. The TheraTubing should be placed around the head and then thread underneath the scapula and across the chest so that the TheraTubing can be held with one hand. If you have assistance that person could hold the TheraTubing perpendicular to the surface.

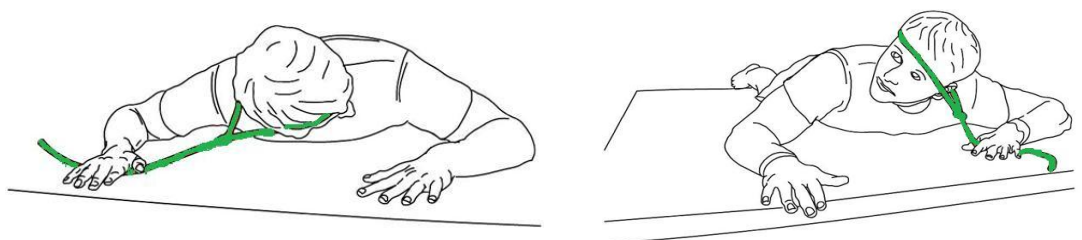


## ***Proprioceptive Neuromuscular Facilitation (PNF) Movement Pattern***

The proprioceptive neuromuscular facilitation movement pattern for the neck must be performed during phase one. Lie on the stomach with the leg together. Create a diamond shape with the arms. Rotate the neck to the side aiming the tip of the nose to the tip of the shoulder. Then rotate the neck to the opposite side, following a diagonal line, ending with the nose pointing to the ceiling.



During phase two this exercise should be performed against resistance as suggested in the introduction. Tie one end to fit around the head. Hold the other end with one hand so that when the neck is moved to the “nose down” position there is resistance against the movement. Repeat six times to each side. Change the loose end of the Theraband to the opposite hand, subsequently resisting the movement from the “nose up” position to the nose pointing towards the tip of the shoulder position. Also repeat 6 times. Progress resistance as suggested in the introduction.

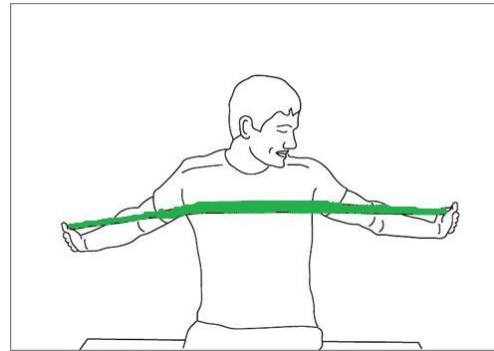
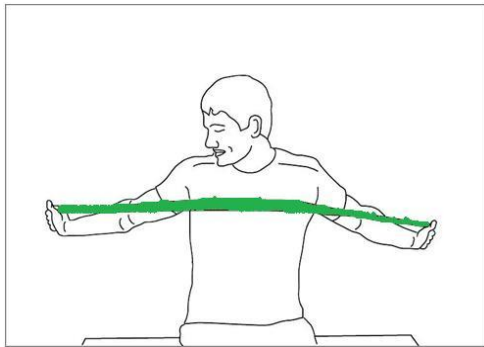


During phase three the PNF movement pattern remains the same as for phase two at the end of the movement perform 10 small oscillations attempting to increase the range of motion every time. If this is no longer a challenge increase the speed of the movement. Repeat the fast exercise 20 times.

## **Cervical Spine Mobilising Exercises**

### ***Mobilising Exercise for Neck Rotation***

For phase one pull the green Theraband across the chest with the shoulders in approximately 90 degrees of abduction. Stabilise the shoulder girdle and turn the neck slowly to the right, trying to look at the tip of the shoulder. Now slowly turn the neck to the left and repeat the movement six times to each side.



### ***Mobilising Exercise Spine Extension***

During phase two the following spine extension mobilising exercise is included. Lie on the stomach with the arms by the side. Proceed by lifting both legs up as far as possible without straining the lower back. Hold this position for 20 - 30 seconds, while breathing evenly. Return to the starting position and now lift the upper body, with the support of the arms, without straining the lower back. Keep the hips on the floor. Hold this position for 20 – 30 seconds while breathing evenly.



### ***Mobilising Exercise for Spine Flexion***

For phase three a spine flexion mobilising exercise is included. Draw the knees up to the chest while lying on the back. Tuck the chin in to the chest so that the spine assumes a C-shape. Now perform a rocking movement from head to sacrum while maintaining the C-shape of the spine and repeat 10 times.

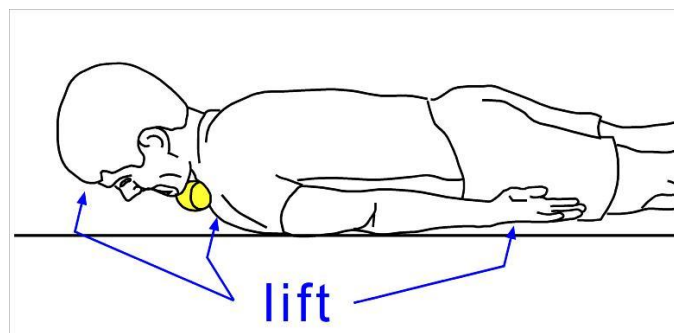


## **Neck Stability Exercises**

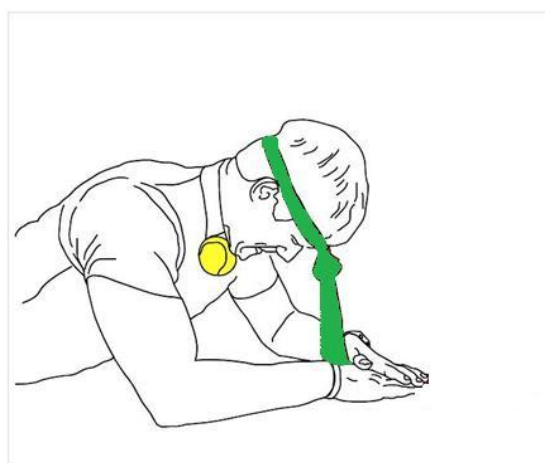
### ***Neck Stability Exercise in Prone***

For phase one the following neck stability exercise has to be done. Lie on the stomach with the arms by the sides and legs together. Inhale to prepare for lengthening through the spine

while tucking in the chin while holding a tennis ball under the chin. On exhalation stabilise the shoulder girdle and then stretch the fingers towards the toes while lifting the upper body and arms off the floor. Hold the tennis ball tucked under the chin. Hold this position for six seconds and repeat six times.



For phase two resistance is added as suggested earlier. Move the arms to under the face while positioning the TheraTubing around the head (legs together). Prepare for lengthening through the spine while holding the tennis ball under the chin. Hold the loose end of the TheraTubing and on exhalation push up against the resistance. Lift the head up and back as far as possible and repeat 10 times. For phase three progress this exercise to resistance and if this is no longer a challenge perform the exercise with speed. You could use someone for assisting with holding the TheraTubing so that you could still have your arms by your sides.



### ***Shoulder Stand Neck Stability Exercise***

Lie on the back with the palms on the floor and legs together. The next step is to press down with the palms beside the body and raise the legs to 90°. Attempt to tilt the legs towards the chest in a pendulum like movement of the legs. Follow by exhaling and gently lifting the buttocks and back off the floor. As the back is raised, bend the arms and use the hands to support the raised body. Maintain normal breathing. Now press the palms forward to straighten the back while pointing the toes and pulling the chest to the chin. Hold this position for 30 seconds initially and slowly increase the length of time the pose is held. From the phase 2 shoulder stand progress to phase three by slowly lowering both legs to the floor

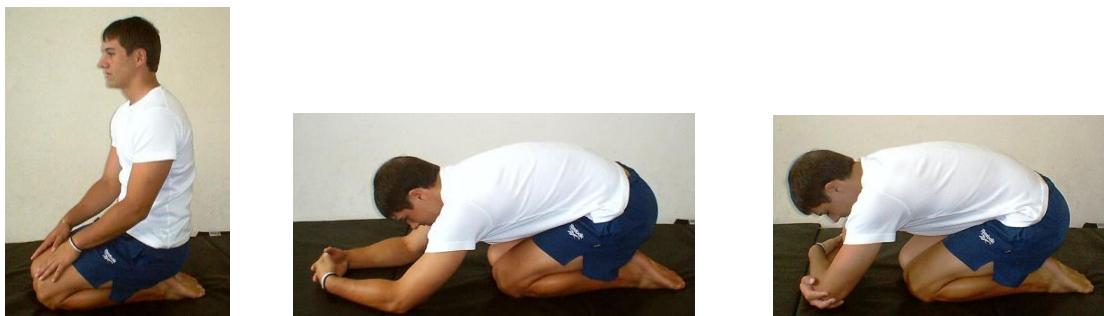


as far as possible. Try to touch the floor with the toes (keeping the knees straight) without injuring the spine.



### ***Head Stand Neck Stability Exercise***

The head stand sequence is important as a closed kinetic chain exercise. If involved in a tackle where the head is driven into the ground the neck muscles must be able to support bodyweight. The same principle applies when a scrum collapses or in a ruck and maul situation. Sit comfortably and focus on the exercise. Bend forward and rest the elbows and forearms on the floor. Keep the elbows pressed down while moving the hands forward so that the fingers can be interlocked to make a tripod shape. Continue by bringing the crown of the head down on the floor, with the palms pressed on the back of the head. Raise the hips while walking forward on the toes until the back is straight. Now gradually reduce the pressure on the head, by pressing down on the elbows and forearm to stabilise the trunk. Breathing has to be even and hold the position initially for a period of 20 – 30 seconds. For phase three lift the toes off the floor and straighten the body for the full head stand position.





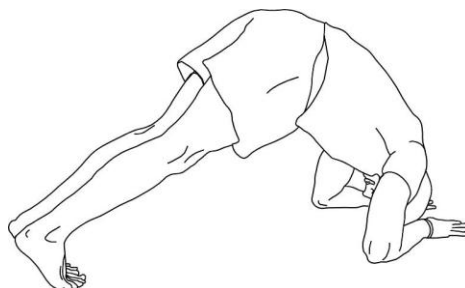
### ***Perturbation For Neck Stability***

The following exercise forms part of the phase three programme, using one of the stages of the shoulder stand sequence. Balance in this position while another player gently push in different directions. Once confident and strong enough, ask the other player to try and push off balance.



### ***Closed Kinetic Chain Dynamic Stability Neck Exercise***

The final neck stabilising exercise included in phase three uses one of the positions assumed during the head stand. This is a closed kinetic chain, dynamic stability exercise. In this head stand position imagine that the head is in the centre of a watch face. Roll the head from the centre to the 12 o'clock position and then from the centre to the 6 o'clock position. Move as far as comfortable. Now move from 9 o'clock to 3 o'clock. When this is no longer a challenge progress by moving through all the hours of the watch. Initially perform these movements slowly and then increase the speed of the exercises until they the movements can be performed quickly without discomfort.



## **Flexibility Exercises**

Performed static stretches for phase one and two and ballistic stretches in phase three. The starting position and method of stretching remain the same for all three neck stretches, only the position of the head changes. Hold all stretches for 30 seconds and repeat 3 times each.

### ***Starting Position and Method for all Stretches***

Sit on one hand, the side to be stretched, with the back straight and the shoulders relaxed. Position the neck as explained for each of the stretches. Hold the neck in this position with the other hand. Do not pull on the neck. To feel the stretch pull down the scapula by bending the elbow.



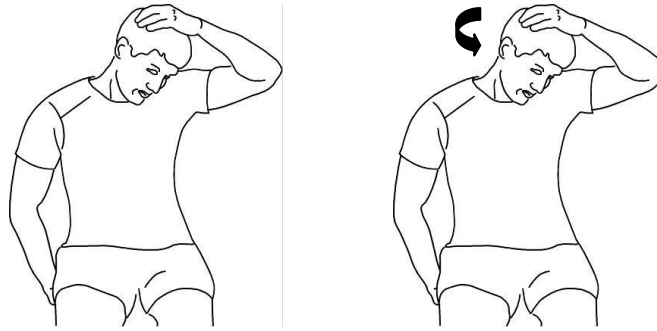
### ***Stretch for the Lateral Neck Muscles***

Perform lateral flexion of the neck as far as comfortable. Hold the head and pull down the scapula. Feel the pull on the side of the neck. For phase three perform a ballistic version of this stretch by completing 10 small oscillation movements with the head.



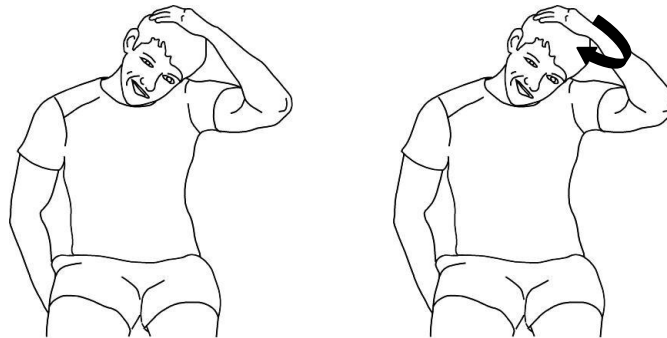
### ***Stretch for the Posterior Muscles of the Neck***

Perform a combined movement of flexion, rotation and lateral flexion away from the side being stretched, until the muscles pull at the back of the neck. Hold this position with the elbow bent. For phase three perform a ballistic version of this stretch by completing 10 small oscillation movements with the head.



### ***Stretch for the Lateral and Prevertebral Neck Muscles***

While maintaining the end position of the previous stretch, rotate the head to the side being stretched. Hold the head and pull down the scapula. Feel the stretch on the side and front of the neck. For phase three perform a ballistic version of this stretch by completing 10 small oscillation movements with the head.



### **Nerve mobilising exercises**

#### ***Phase One Nerve Mobilising Exercise***

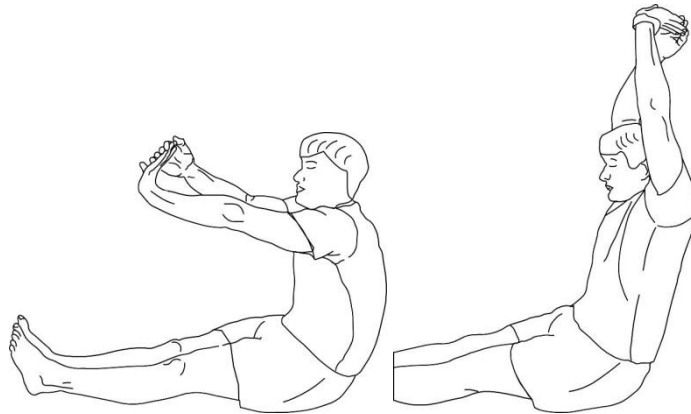
The nerve mobilising exercise for phase one is as follows: sit with the body weight supported on the arms with the palms flat on the floor and the fingers pointing posteriorly with the thumbs to the lateral side. Straighten the elbows while maintaining the stability position of the scapulas. In this position try to elevate the sternum while inhaling. Hold this position for six seconds. Relax while exhaling and repeat this exercise six times.



#### ***Phase Two Nerve Mobilising Exercise***

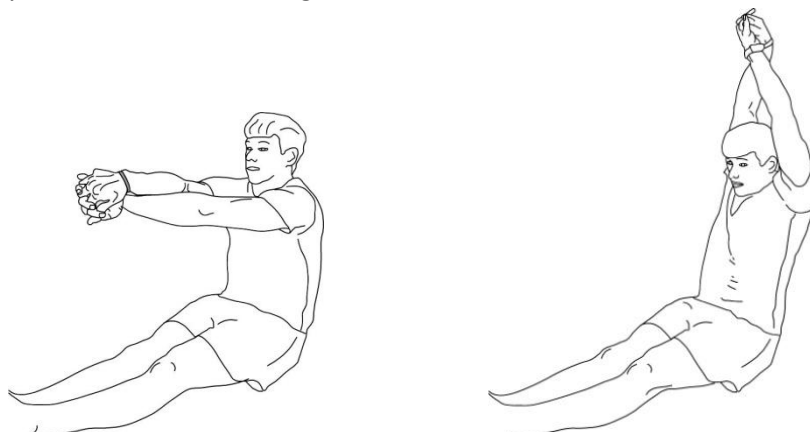
Sit with the legs straight with the knees flat on the ground. Straighten the left hand in front with the elbows straight and the wrists extended so that the fingers points superiorly. With

the right hand pull the fingers (including the thumb) posteriorly until it pulls. Hold this position for 10 seconds. For the second part of the exercise elevate the arms with the elbows next to the ears. Hold this position for 10 seconds.

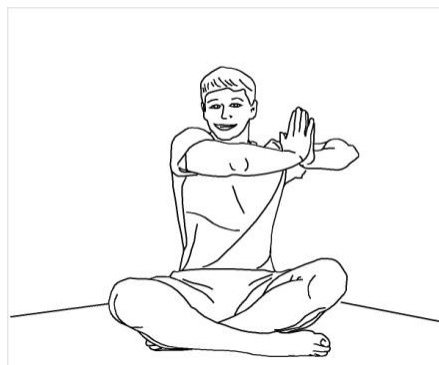


### ***Phase Three Nerve Mobilising Exercises***

Sit with the legs straight out in front with the knees flat on the ground. Cross the arms at the elbows and interweave the fingers, palms together. Hold this position for 10 seconds. Subsequently elevate the arms and again hold for 10 seconds.



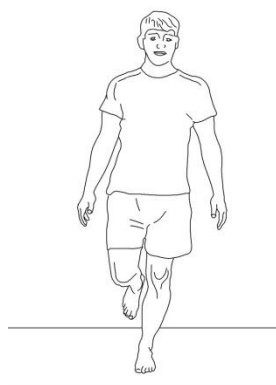
Sit with the palms together and the elbows and shoulders at the same height. Move slowly to the left until the hands are in front of the shoulders. Feel the pull at the back of the upper arms and hold this position for 10 seconds. Repeat the same movement to the right and hold for 10 seconds.



## **Balance**

### ***Phase One Balance Exercise***

Stand on one leg, without the knees touching and with the supporting leg slightly bent. Maintain core stability, close the eyes and balance for as long as possible, without putting the other foot down.



### ***Phase Two Balance Exercise***

Stand on one leg and shift weight forward, backwards, and to both sides, slowly and controlled. Simulate passing or kicking movement pattern, pivoting on the supporting leg. Once these movements are easy, perform them with closed eyes.



### ***Phase Three Balance Exercise***

Hold onto the Surgical Tubing with another player holding onto the other end. Perform the same balancing exercises as for phase two, the difference being that the other player has to try and pull off balance. Perform these exercises shortly after warm-up and not after a physically tiring exercise session, since balance and coordination was found to be poor following muscle fatigue, therefore increasing the risk of injury.

