

## Graded Neck Exercises for Torticollis

### General

The information in this sheet has been prepared by Professor D Marsden and Ms. Jahanshahi. It describes neck exercises suitable for torticollis. The exercises have been used successfully by a number of sufferers.

If you have any reservations about their suitability for you, consult your doctor before practising. The important thing to remember is do the exercises gently and not to use excessive force. To help you understand your torticollis better, normal head movement and the dysfunction in torticollis will be outlined first before describing the neck exercises.

### The neck muscles and normal movement

The neck and head are connected at a special joint. This joint is special because it allows the head to move in several different directions: up or down, turn to the left or right and tilt sideways to the right or left. Movements of the head around this joint are achieved by the coordinated action of different neck muscles. Numerous muscles, some near the surface and some lying deeper in the neck and shoulder area, are involved in moving the head and keeping it in different positions.

The muscles on the side of the neck that are mainly involved in turning the head to the right or left are called the 'sternocleidomastoid' muscles, or SCM for short. The SCM muscles on the two sides of the neck usually work in opposite ways. They are therefore called 'antagonistic' muscles. To turn the head to the right, the left SCM muscle tenses (contracts), while the right SCM relaxes. The opposite pattern occurs to turn the head to the left; the right SCM contracts while the left SCM relaxes. This opposite action of the SCM muscles is called 'reciprocal inhibition' and is controlled by the nervous system. When the head is upright, level and in line with the rest of the body, the two SCM muscles are both minimally contracting by approximately equal amounts.

### What is the dysfunction in Torticollis?

The exact cause and nature of the dysfunction in torticollis are unknown. Torticollis is a neuromuscular disorder. This means that there is a fault in the control of the working of the neck muscles by the nervous system. The muscles themselves are not defective or damaged. The direction of the abnormal head posture or involuntary head movement in torticollis may be backwards (retrocollis), forwards (antecollis), turn or tilt to the side (laterocollis), or a combination of these. The head may be permanently fixed in one of these abnormal positions or there may be frequent involuntary spasmodic movements of the head in one of these directions. In some cases head tremor and muscle jerks are also present. You will probably recognize your own torticollis as fitting one of these descriptions.

Studies of the activity of the neck muscles have shown that in torticollis there is a breakdown of the reciprocal inhibition of the two SCM muscles; so that instead of working in cooperation, with one muscle relaxing while the other tenses, the two muscles work inappropriately and tense simultaneously during head movement.

For example, if torticollis is to the left, the right SCM muscle contracts at times when it should be relaxing. After some time, the muscles begin to undergo some changes. The SCM muscle on the side opposite to the side of abnormal head position (right SCM muscle in the above example) becomes bulky and big or hypertrophied, because of overworking or over-contracting.

On the other hand, the SCM muscle on the same side as the abnormal head position (left SCM in the above example), fails to contract at times when it should and as a result of underworking or not contracting enough, over time becomes flabby or 'hypotrophied'.

The above is a simplified description of the problem in torticollis, and neck muscles other than the SCMs may be involved. Nevertheless, since the muscles are not working in cooperation, head movements become restricted. The head can only be turned to the centre of the body (midline position) or in the direction opposite to the side of torticollis with difficulty.

### **Graded Neck Exercises**

Graded means step-by-step. The exercises described below are designed to help you achieve normal head movement and position in a gradual step-by-step fashion.

**For maximum effect, the neck exercises are best practised after the diaphragmatic breathing and pleasant imagery exercises, when you are physically and mentally relaxed.**

These neck exercises can be graded in two ways.

Firstly: by gradually moving your head a little further in each direction each time.

Secondly: by trying to keep your head in the final target position for gradually longer periods of time (for example, turned right or tilted left).

Passive movement of the head: If you cannot move your head voluntarily in certain directions, get someone to help you at first. Lie on your back and ask the other person to move your head in the target direction using their hands. *Excessive force should not be used*, but your head should be moved a bit further in the target direction each day.

Active range of motion: The head can normally move in different directions: up or down, turn to the right or left, tilt so that the ear touches the right or left shoulder. To increase active range of motion (that is how far you can move your head), move your head in each of these directions at least several times a day. Move your head as far as you can in each direction but do not use too much force and avoid producing severe pain.

You can perform these head movements in front of a mirror. A mirror is helpful because it gives you visual feedback. This means that by looking at yourself in the mirror, you will know how successful you have been in moving your head in the target direction. This feedback or information will help you improve your performance the next time you try.

Maintaining head in body midline: Many torticollis sufferers no longer know whether their head is straight or not. To learn to keep your head in the body midline so that you are looking straight ahead, use a mirror. You can also check that your chin is aligned with the bony V-shaped cavity that you can touch with your hand in front and below your neck. Practise moving your head to the body midline position in front of a mirror and check that the underside of your chin is parallel with the floor. Practise this several times with your eyes open in front of a mirror and try to keep your head in the midline position for gradually longer periods of time. Then close your eyes and try to keep your head in the midline.

Correct neck and head posture while sitting: First you need to sit correctly. To do this, sit up straight, move back in your chair, and maintain the natural hollow that is present in your lower back when you stand. To correct the posture of your neck and head, retract (pull back) your head into your neck without moving your shoulders. This involves tucking your chin backwards and down into your neck. This chin tuck exercise reduces the leverage of your SCM muscles. You can initially perform it in front of a mirror to check that you are doing it correctly. Repeat this exercise at intervals when sitting for long periods of time (for example, when writing, reading, at work). Interrupt your activity briefly and correct your head and neck posture using the chin tuck exercise.

Regular practice (about twice a day) of these graded neck exercises, will prevent your head becoming 'frozen' in one position, and will ensure that you can move your head in all directions.

## Important

- Before starting any exercise regime you should consider consulting a qualified physiotherapist to ensure the regime is suitable for you and consult your own doctor if you have a medical condition or are taking medication or have any other related concerns.
- You should not undertake any exercises, without professional or qualified supervision.
- Any exercise holds an element of risk if undertaken without supervision. These exercises are performed at your own risk. Please consult a doctor if necessary before you perform any of the exercises mentioned.
- If you feel any discomfort during exercise stop immediately.

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The following is a useful addendum to the information provided above.

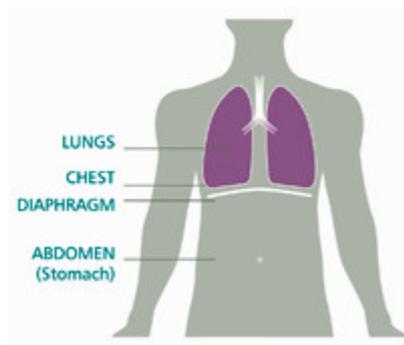
Please note: the following extract was not produced by Professor D Marsden and Ms. Jahanshahi

### Physical Relaxation: Diaphragmatic Breathing

*(an extract from Dystonia Self-help Techniques) a Dystonia Society Supplementary Information Sheet)*

Research has shown that there is a strong relationship between feelings of anxiety and fast, shallow breathing. On the other hand, it is difficult to remain physically tense while breathing deeply, slowly, and regularly.

You can use a method of breathing called diaphragmatic breathing to relax quickly in stressful situations. The diaphragm is a muscle which separates the abdomen (stomach) from the chest (see diagram). When the diaphragm is used during breathing, there is maximum flow of air into and out of the lungs.



First, you need to prepare yourself for practising diaphragmatic breathing. Choose a suitable place and time of day, so that you are less likely to be disturbed or interrupted. Loosen any tight items of clothing so that your stomach and chest can move freely. Sit on a comfortable armchair or lie down on a comfortable surface. Get yourself in a comfortable position, uncross your legs and let your muscles unwind. Before you start the diaphragmatic breathing sit or lie quietly for a few minutes and observe the pattern and rate of your breathing. Then start.

1. Place one hand on your stomach and the other on your chest.
2. Breathe in slowly through the nose so that the hand on your stomach rises gently as our stomach moves out. Do not push out your stomach, let it rise gently, as you take in a breath. Your chest should stay relaxed and move little.
3. Breathe out slowly through the mouth so that the hand on your stomach falls as your stomach moves down. Again, your chest should stay relaxed and move very little while you are breathing out. As you breathe out feel your shoulders and the back of your neck loosening and sinking lower and lower as the air leaves your body. Imagine that each breath is washing tension out of your muscles. Say the word 'relax' to yourself, each time you breathe out. If you find steps 2 and 3 difficult at first, sit or stand in front of a mirror and practise.
4. Once you have learned steps 2 and 3, you need to learn to breathe slowly, to develop the pattern of deep and slow breathing that is characteristic of relaxed states. To do this, add a slight pause each time after breathing in, and a longer pause after breathing out. Alternatively, count to three in your head while breathing in, and to four while breathing out. Either method will help you slow down your breathing and deepen your relaxation.

Try not to hold or force your breaths during diaphragmatic breathing. At first, when you are learning this new pattern of breathing, it may appear rather artificial and difficult. With practice you will be able to achieve a natural, regular and comfortable rhythm of deep and slow diaphragmatic breathing. The first few times that you practise diaphragmatic breathing, if you feel lightheaded or dizzy, it means that you are breathing too deeply and too quickly. One way to get rid of the dizziness is to breathe into a paper bag for a short time. It may sound silly but it works.

Once you have mastered diaphragmatic breathing the next step is actually using it in stressful situations. Develop ways of reminding yourself to use diaphragmatic breathing. For example, if you tighten up and your dystonia seems to get worse when you are late or in a hurry, put a dot on your watch and each time you glance at your watch and see the dot, practice diaphragmatic breathing.

Diaphragmatic breathing is a particularly practical method of relaxation, because once you have learned it, you can use it in any situation (walking, driving, at work, at home, in social situations) to relax quickly without others noticing.

### **Quick Mental Relaxation: Pleasant Mental Imagery**

By practicing diaphragmatic breathing, you will learn to quickly relax your body. To achieve total relaxation, you need to be mentally as well as physically relaxed. Using pleasant mental imagery (picturing scenes in your 'mind's eye') is a quick way of mentally relaxing. Pleasant imagery is relaxing, because while you are totally absorbed in a positive mental image, you will stop worrying and thinking negative thoughts. You can carry out this imagery exercise after you have achieved a comfortable and regular rhythm of deep and slow breathing.

Close your eyes and clear your mind. Think of a relaxing, pleasant and enjoyable scene. This may be a scene that you remember (for example, an enjoyable day out on the beach or in the country) or it may be a scene of your own creation, experiment with a few images to find out which you find most relaxing. Once you have decided on the particular relaxing scene try to get a clear and vivid image of it in your head. See and feel everything that is part of the scene as if it was happening now. In doing this, remember that you have five senses.

First try to picture the scene in detail in your mind's eye. Picture it as clearly as you can. Try to focus on one or two things in the scene. Then let your mind go back to picturing the whole scene. Now try to concentrate for a while on any physical or bodily feelings associated with the scene. There may be feelings of warmth and relaxation. Concentrate on these feelings and try to make them as real as possible.

Now think of any pleasant odour or scents that may be associated with the scene. For example, the smell of freshly cut grass in the country or the smell of the sea on the beach. Think of any tastes that you may associate with this relaxing scene and if there are any, try to remember and imagine them. Finally, think of all the sounds that are associated with this scene. For example, the relaxing sound of the waves of the shore, or the gentle whisper of a breeze on the shore.

To become proficient at quickly relaxing yourself physically and mentally practice diaphragmatic breathing and pleasant mental imagery at least twice a day. Once you have mastered these skills you can start using them in stressful situations.

Important Note

*The contents of these Information Sheets are provided only as information and are in no way intended to replace the advice of a qualified medical practitioner or professional government advisor. The Society strongly advises anyone viewing this material to seek qualified advice on all matters relating to their treatment and / or circumstances. Furthermore, rapid advances in medicine and changes to government legislation may cause information contained in the Information Sheets to become outdated.*