

# Apple Cart

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## Cervicogenic Headache Physiotherapy Assessment and Management

Approximately 70% of the people who suffer from frequent intermittent headache complain of neck symptoms<sup>1</sup>. This proposes the possible relationship between the cervical spine and headache. Such cervical spine related headaches are termed as Cervicogenic headache. As always, an accurate diagnosis is important in the effective treatment of the headache.

### Mechanism

Cervicogenic headache is characterised by a dull pain that is referred from the upper cervical spine. This is primarily contributed by sustained poor cervical position which puts excessive compressive forces onto the cervical structures. Examples of such position include ipsilateral tilt of the neck or forward head posture where the head is tilted to one side or is forward relative to the neck and shoulders. This results in the compression of C1 to C3. The nerves exiting from C1-C3 converge into the trigeminocervical nucleus; when irritated can cause a nociceptive response to the head resulting in a headache.

Compression further causes the reduction of C1-3 intervertebrae space. The reduction of the intervertebral space causes the irritation of the respective nerves exiting from C1 to 3 which supply sensation to the base of the skull and jaw on the ipsilateral side of the cervical dysfunction. The trigeminocervical nucleus further amplifies the nociceptive sensation to

the head.

Poor cervical posture also encourages the suboccipital muscles to contribute to the compression of the upper cervical spine. These muscles attach from the base of the skull to the upper cervical spine. The forward head posture places the suboccipital muscles in a shortened position. If this posture is not corrected, over time the suboccipital muscles adapt and shorten. This can lead to a vicious cycle of further compression of the upper cervical spine, reducing mobility in the spine and accentuating the forward head posture.

Forward head posture also leads to muscle imbalance in the cervical spine. There is a discrepancy between the strength and endurance of the smaller anterior cervical muscles which are thought to be the primary stabilizers and the larger global muscles, which are thought to be "movers". Due to the weakness of the stabilizers, the larger cervical muscles are recruited to take over the stabilizing role. The sternocleidomastoid muscle is one such muscle and it has found to be overactive and is riddled with trigger points. On the other hand, the endurance of the deep cervical flexor muscles has been found to have significant deficits when tested using Craniocervical Flexion test.

Apart from musculoskeletal problems, cervicogenic headache sufferers are found to have sensorimotor deficits. Kinesthetic sense is found reduced when joint position error is measured in

sufferers. Using a sprained ankle as an analogy. Proprioception, of a sprained ankle is reduced as the sensorimotor feedback is impaired. This can lead to a high probability of re-injury. Similarly, the cervicogenic headache sufferer will have a deficit in his/her cervical joint proprioception, affecting balance and possible impairment in the eye movement control.

### Physiotherapy Clinical Assessment

Apart from subjective assessment<sup>1</sup>, there are three main physical tests that will help to determine the diagnosis of Cervicogenic headache.

#### 1. Range of motion

Limited in all range of the cervical spine. Specifically the rotation of the C1-2.

#### 2. Joint mobilization

Palpation for joint dysfunction at C1 to C3 vertebrae. C1-3 joints are often found to be hypomobile in patients on the ipsilateral side of the headache.

#### 3. Craniocervical flexion test with Pressure biofeedback

This measures the endurance of the deep neck flexors, stabilisers of the cervical spine. In supine lying, the pressure biofeedback is placed behind the skull and subject is asked to perform upper cervical flexion to activate the deep flexion in 24-26mmhg. If the subject fails to sustain the pressure of the biofeedback for 10 sets of 10 seconds, this indicates weakness

and poor endurance of the deep neck flexors. This sustained pressure must be done independently without the assistance of the larger superficial muscles like Stenocleidomastoid, scalenes etc. Weakness of the deep neck flexors has been indicated in cervicogenic headache.

The additional tests include

#### 4. Joint position error

It is a test commonly used to measure the kinesthetic sense of the cervical joint. In the test, the subject is placed into an ideal head position and is asked to relocate the same head position when the vision is occluded. The test is positive if the subject fails to relocate the ideal position as set by the therapist.

This test is greatest in those subjects who complaint of dizziness in addition to their neck pain.

#### 5. Standing Balance

Cervicogenic headache sufferers may have impairment in their standing balance but there is no strong evidence to state the specificity of the test except that the sensorimotor system may be affected. The standing balance consists of 6 tests which gradually increases the challenge with different types of base of support, visual feedback and different types of surfaces.

### Physiotherapy Management:

To manage this condition, a multimodal approach is required.

#### 1. Poor Posture

After knowing the contribution of cervicogenic headache due to the forward head posture. It is crucial to correct the posture by retraining to their neutral neck posture, giving ergonomic advices and discussing strategies to reduce the aggravating factors of the symptoms.

#### 2. Movement dysfunction of the upper cervical spine

Several studies<sup>4,5</sup> have shown that manipulative therapy including high velocity and low velocity thrust mobilisation as shown to reduce the movement impairment of the upper cervical spine. This encourages better mobility of the spine leading to less painful movement dysfunction. Active range of motion exercises will also be given to promote mobility of the cervical spine. Active exercise is an reinforcement of the movement after manipulative therapy as some range of gained from passive treatments may be lost. For example, to cervical flexion of C1-2 and rotation of C1-2 with assisted strap<sup>5</sup> (see figure 1).

#### 3. Muscle system

Tight muscles like suboccipital and sternocleidomastoid muscles are released with deep tissue

massage. It is very important to train the stabiliser muscles like deep neck flexors in their strength and endurance with the use of exercises and tool such as pressure biofeedback used in CCFT. These will help to normalise the muscle component

giving a better stabilisation and control to the cervical spine.

#### 4. Sensorimotor control

A set of exercises targeting on sensorimotor control is included for subjects with or without dizziness. These exercises will rehabilitate subjects suffering from dizziness and at the same time prevent if the subjects have yet to have dizziness. The exercise programme will include training of the head relocation, balance and oculomotor practices

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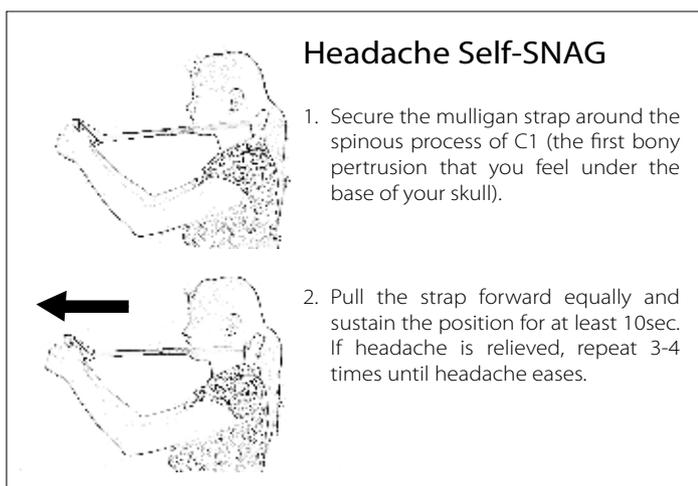


Figure 1

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We can be reached at  
T: 6226 3632 or  
E: [enquiry@coreconcepts.com.sg](mailto:enquiry@coreconcepts.com.sg)  
W: [www.coreconcepts.com.sg](http://www.coreconcepts.com.sg)