

## Cranial Injury Complex

The **Second Neurological Unit** is comprised of the Cranial Injury Complex (C.I.C.) which represents the combination of labyrinthine and ocular reflexes and vestibulo-ocular reflex (V.O.R.) system *if present*. The C.I.C. is primarily responsible for anterior-posterior orientation of the head on the neck, balance and believed to be the trigger for the Defense Jaw (arming response) which is neurological unit three.

**Note:** If one is beginning this step on a different treatment day then the correction of gait reflexes, one will need to reevaluate integrity of all prior steps. If it has been only a few days, Category I may be clear however the gait reflexes in sections VII and XII of unit one will need to be partially redone. Generally one will only need to redo the simultaneous correction of posterior cloacal-labyrinthine and anterior cloacal-ocular reflexes in eyes open and closed.

**Screening:** At this point in the protocol, the anterior muscles neck will show significant defacilitation and be easy to demonstrate. Use caution in this demonstration if patient is presenting with neck / disc injury.



**I. Ocular – Labyrinthine correction:** Simultaneous stimulate ocular and labyrinthine reflexes in both eyes open and closed with respiration. The method is the same as outlined in prior sections VII and XII of unit one.

**II. Tonic Neck Righting Reflex correction:** Vigorously rub Tonic Neck Righting Reflex (T.N.N.R.) in both eyes open and closed. The T.N.N.R. is located within the soft tissues / muscles overlying the lamina of cervical vertebrae C 2-4.



**Note:** At this point in the treatment it would be advantageous to re-evaluate the integrity of corrections completed. A simple method would be to manually walk the patients while they are lying supine or have them stand up and walk around the room. Retest neck flexors for integrity in both eyes open and closed or challenge the ocular-labyrinthine reflexes in both eyes open and closed.

**Screening for Vestibulo-Ocular Reflexes:** If one has not already identified the presence or absence of the V.O.R. complex, then it can be determined easily at this point by inducing vestibular *motion* activity via eye movement using challenges listed. If V.O.R. is absent, skip section III and proceed to section IV–Weight Bearing.



- Retest neck flexors for integrity while patient moves eyes in any direction. If there was no change in integrity of neck flexors then V.O.R. is absent (approximately 30% of population). If when challenging the neck flexors with eye movement an obvious conditional inhibition *weakness* of neck flexors is elicited, then V.O.R. is present (approximately 70% of the time) thus one needs to proceed to the next step.
- While therapy localizing a vestibular reflex (finger in ear canal) to an ocular reflex with eye movement, a positive therapy localization will indicate the presence of a V.O.R deficit.

### III. Vestibulo-Ocular Reflexes:

The vestibulo-ocular reflexes (V.O.R.) represent one of the fundamental components of N.O.T. It is one of the main CNS neural pathways believed to be responsible for scoliosis. The V.O.R. correction is composed of several steps.

- **Vestibulo-Ocular correction:** Stimulate vestibular reflex (inner ear) with ear pull (45° down and cuudad) while simultaneously rubbing ocular reflexes or lift frontal bone at metopic suture on inspiration with eye movement (right-left-up-down).



- **TNNR-Vestibular reflex:** Stimulate vestibular reflex with ear pull while simultaneously rubbing TNNR with eye movement (right-left-up-down).

- **TNNR-Ocular reflex:** Stimulate vestibular reflex with ear pull while simultaneously rubbing ocular reflex or lift frontal bone at metopic suture on inspiration with eye movement (right-left-up-down).



- **TNNR-Sphenobasilar reflex:** Stimulate TNNR while simultaneously activating spheno-basilar motion with eyes open and closed with respiration.



- **TNNR-Pterygoid reflex:** Stimulate TNNR while simultaneously rubbing lateral pterygoid muscles with eyes open (right-left-up-down) and closed (without eye movement).



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**IV. Weight-Bearing correction:**

Standing and sometimes sitting check for anterior atlas using right and left tongue thrust or other diagnostic screening tool. Standing will always be present. If sitting posture also elicits anterior atlas lesion, this finding is highly suggestive of significant brain trauma, (i.e. concussion, stroke, severe heavy metal toxicity, etc.).

- **Anterior Atlas correction:** In weight bearing posture(s) as found.
- **Ocular – Labyrinthine correction:** Simultaneous stimulate ocular and labyrinthine reflexes in both eyes open and closed with respiration.
- **Tonic Neck Righting Reflex correction:** Vigorously rub Tonic Neck Righting Reflex (TNNR) in both eyes open and closed.

**Note:** If V.O.R. was previously identified and corrected in above steps (section III), continue with vestibulo-ocular corrections, otherwise cranial injury complex is complete.

- **Vestibulo-Ocular correction:** Stimulate vestibular reflex (inner ear) with ear pull (45°) while simultaneously rubbing ocular reflexes with eye movement (right-left-up-down). Additional TNNR sections are not necessary to repeat in weight bearing posture

**V. Front-Back Combination correction:** Represents correction of gait reflexes involving anterior cloacals and labyrinthine and posterior cloacals and ocular reflexes.

**Note:** This combination will only need to be performed if Pelvic Injury Complex is present (previously been identified).

**Note:** This step is placed here as it is easier to perform weight bearing than reclining (picture). It can be implemented at any time in the protocol after completion of anterior and posterior gait reflexes.

- Anterior cloacals and labyrinthine reflexes: rub with eyes open and closed with respiration.
- Posterior cloacals and ocular reflexes rub with eyes open and closed with respiration.



## Completes Neurological Unit Two