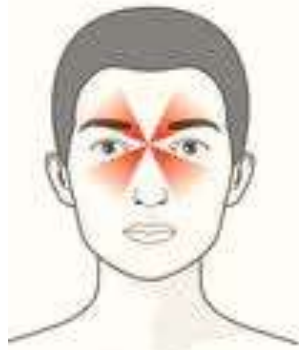


Tension-Type Headache: Prevalence and Etiology

- Tension-type headache is among the most common primary headache disorders.
- Lifetime prevalence ranges from **30% to 78%** in the general population.
- Chronic TTH is defined as headache occurring **15 or more days per month for more than 3 months**.
- Common contributing factors include:
 - excessive muscle activity related to stress,
 - cervical structural abnormalities causing nerve root compression,
 - muscle imbalance associated with poor posture.
- Symptoms may be aggravated by increased activity of the **neck, head, and periocular muscles**.
- Patients often report a sensation of **pressure**, persistent pain, and **neck discomfort**.

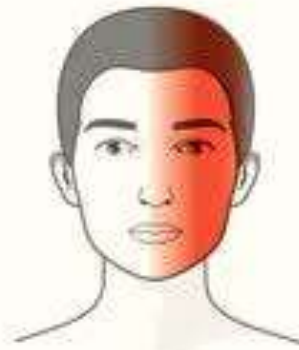
HEADACHE TYPE



Tension



Tension



Migraine



Cluster

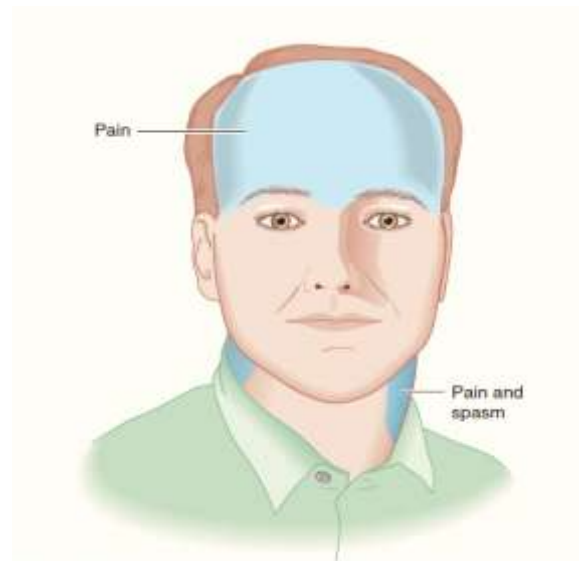


FIGURE 5-1 Distribution of signs and symptoms in a tension headache.

Tension-Type Headache (TTH)

based on headache frequency Classified as:

1. Infrequent episodic TTH <12 days/year
2. Frequent episodic TTH 12–180 days/year
3. Chronic type TTH ≥ 180 days/year.

- More common in **women** (3/2)

Significantly reduces:

- Work productivity
- Daily functioning
- Family and social activities

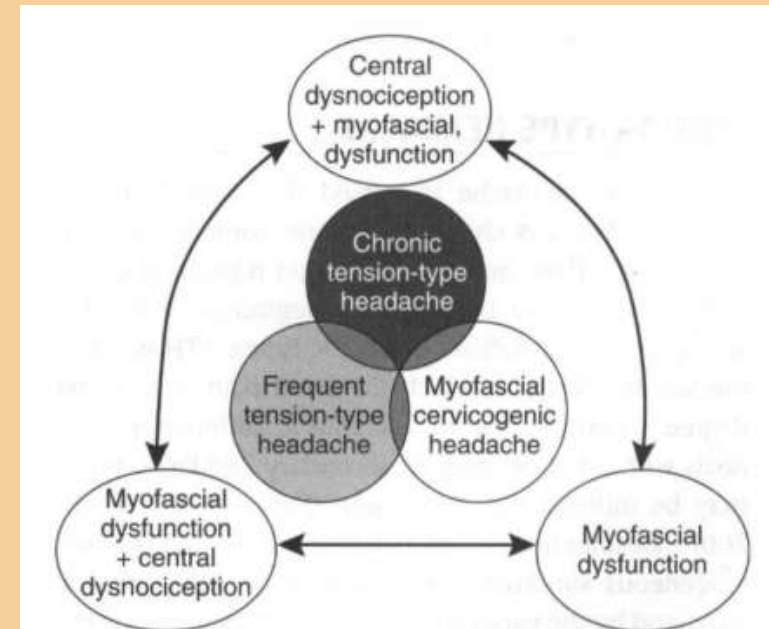
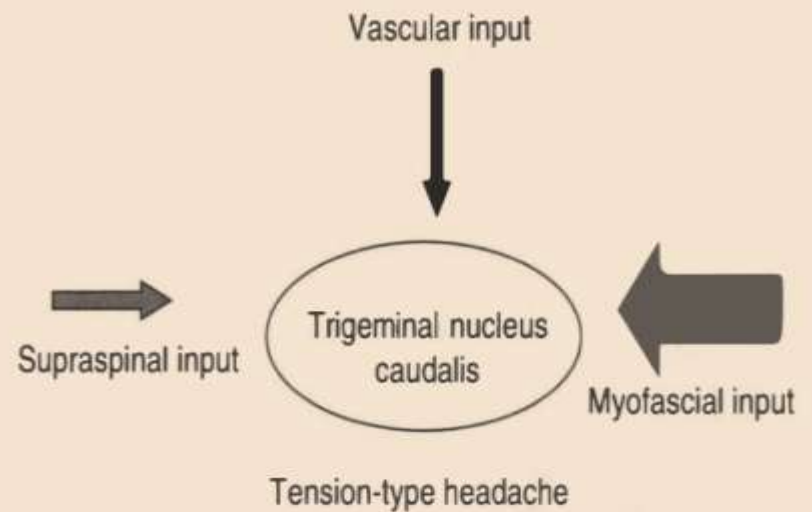
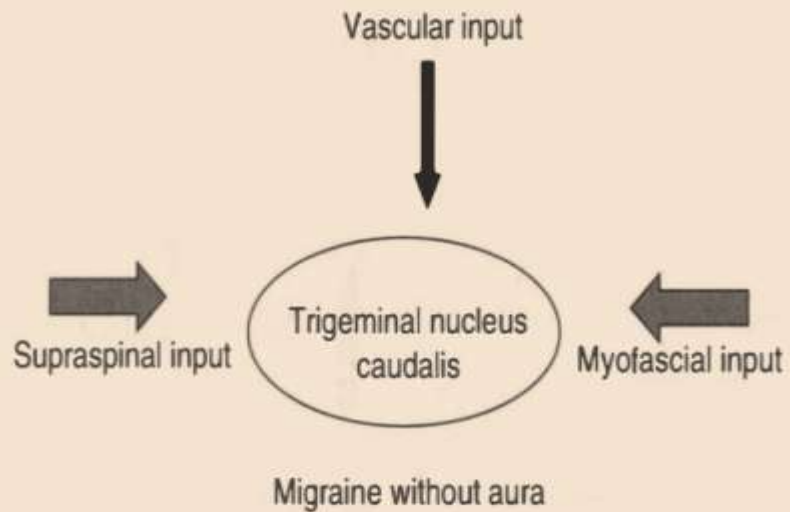
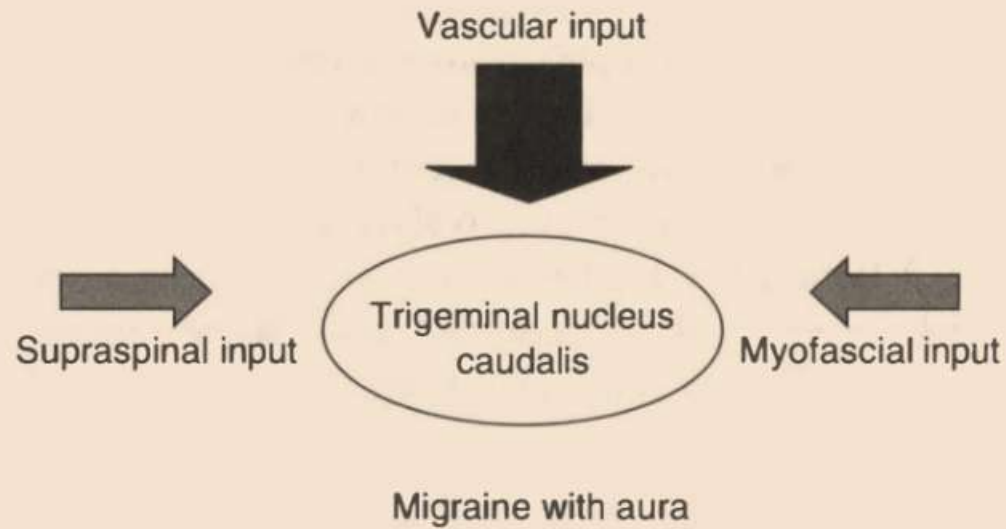


Figure 1.1 Hypothesis for Tension-Type and Cervicogenic Headache



Current Treatment Challenges

Pharmacological Management

•Episodic TTH:

- Simple analgesics
- Nonsteroidal anti-inflammatory drugs (NSAIDs)

•Chronic TTH:

- Amitriptyline
- Mirtazapine (preventive therapy)

Limitations of Medication

•High economic burden

•Common adverse effects:

- Dry mouth
- Drowsiness
- Dizziness

•Overuse of acute medications may result in medication-overuse headache (MOH)

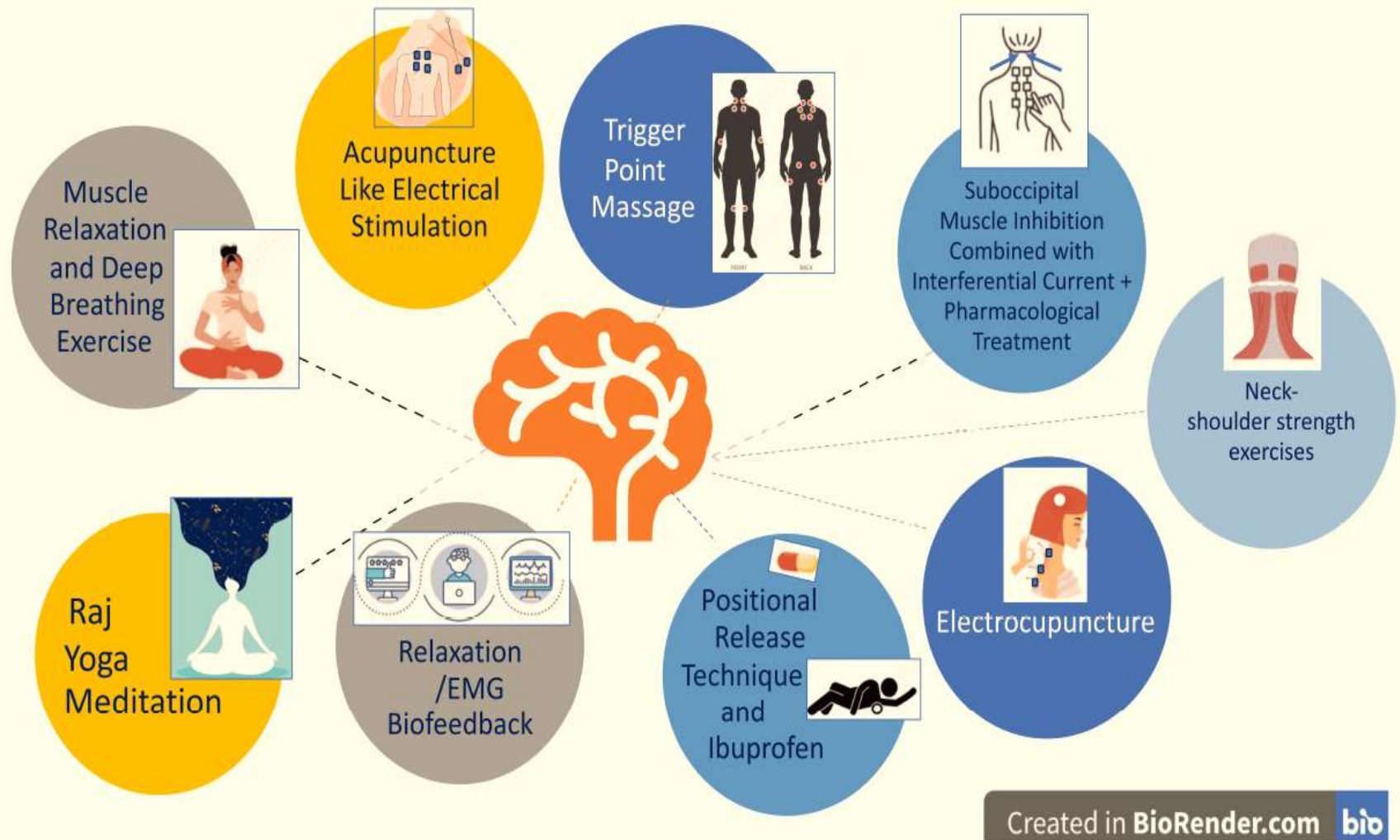


FIGURE 3. Summarized physiotherapy intervention approaches in CTTH. EMG: electromyography. The images were specifically created using BioRender (<https://www.biorender.com/>).

Mechanisms, Posture, and Quality of Life

- Tension-type headache (TTH) is strongly associated with **forward head posture (FHP)**, neck muscle imbalance, and sustained muscle tension.
- Overactivity of the **suboccipital** and **upper trapezius** muscles may contribute to pain and postural dysfunction.
- Reduced activity of the **longus colli** and other deep cervical stabilizers may worsen cervical instability.
- Postural correction, stabilization exercise, and relaxation of overactive muscles may reduce headache intensity, neck pain, and functional imbalance.
- Chronic muscle fatigue and abnormal posture can create a **vicious cycle** of neck pain and headache.
- Psychological factors such as **anxiety** and **depression** may also worsen symptoms.
- Quality of life should be assessed using both pain-related and psychosocial measures.



Table 1. Muscles Treated with Dry Needling for Tension Headaches — Referral Patterns and Key Features

Muscle	Headache Referral Zone	Common Triggers	DN Accessibility
Suboccipitals	Back of head, top of skull, behind the eye	Screen use, forward head posture, stress	Moderate depth; requires precise angulation
Upper Trapezius	Lateral neck to temple and mastoid	Sustained shoulder elevation, stress, poor posture	Superficial and accessible; high-yield target
Sternocleidomastoid	Vertex, behind eye, forehead, behind ear	Head-forward posture, whiplash, upper chest breathing	Superficial; requires care near carotid
Temporalis	Temporal region, upper teeth	Jaw clenching, bruxism, stress	Superficial; easily accessible
Splenius Capitis	Top of skull ("skullcap" pattern)	Sustained neck rotation, forward head posture	Moderate depth; accessible through cervical paraspinals
Semispinalis Capitis	Back of head and occiput	Prolonged neck extension or flexion	Moderate depth; treated alongside suboccipitals
Masseter	Cheek, ear, eyebrow, lower teeth	Jaw clenching, TMJ dysfunction, stress	Superficial; often treated with temporalis

Cervical Stabilization and Exercise

- Relax overactive muscles: suboccipital, upper trapezius, SCM.
- Strengthen deep neck flexors, especially longus colli.
- Add postural correction, stabilization, and manual therapy.
- Eyeball exercises may improve muscle tone and reduce headache impact.

Eyeball Exercises in TTH

- Eyeball exercises may reduce **headache impact, neck disability, and suboccipital muscle tension.**
- They are often used with **cervical stabilization** and manual therapy.
- Possible mechanism: relaxation of eye and neck muscles, reduced nerve compression, and improved postural control.

Exercise 1



Exercise 2A



Exercise 2B



Exercise 3



Exercise 4A

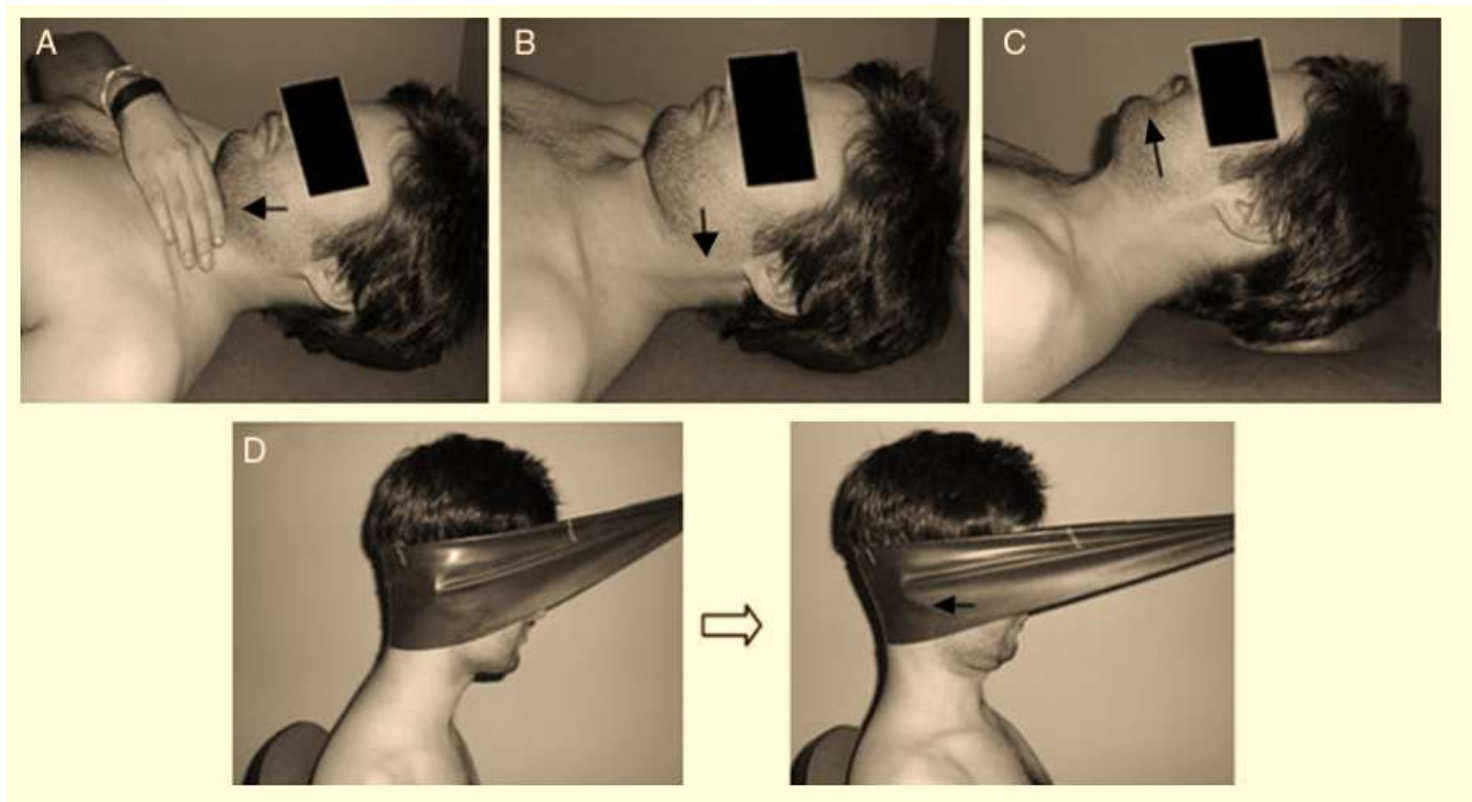


Exercise 4B



Figure 1 Exercises that were used in the motor control therapeutic exercise program: 1) Craniocervical flexion exercise, 2) Craniocervical flexion exercise, 3) Neck strengthening exercise, 4) Craniocervical flexion exercise, 5) Craniocervical flexion exercise.

Effects of physical therapy and relaxation techniques on the parameters of pain in university students with tension-type headache: A randomised controlled clinical trial



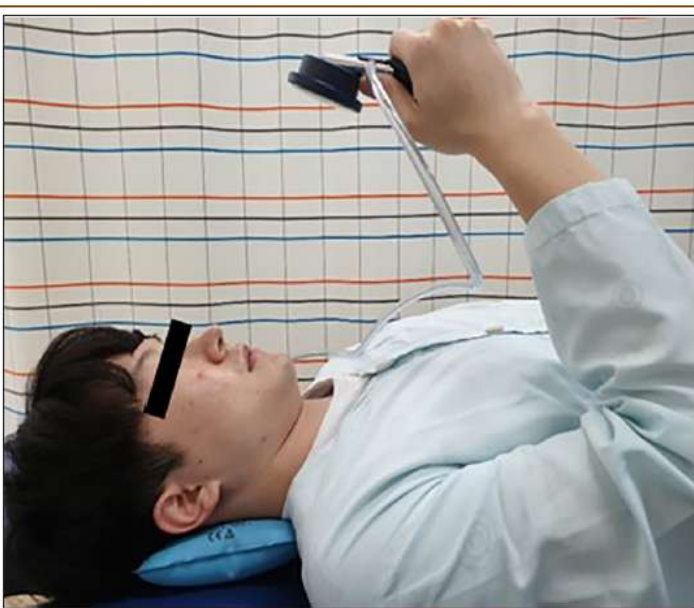


Figure 2. Cervical stabilization exercise using pressure biofeedback.

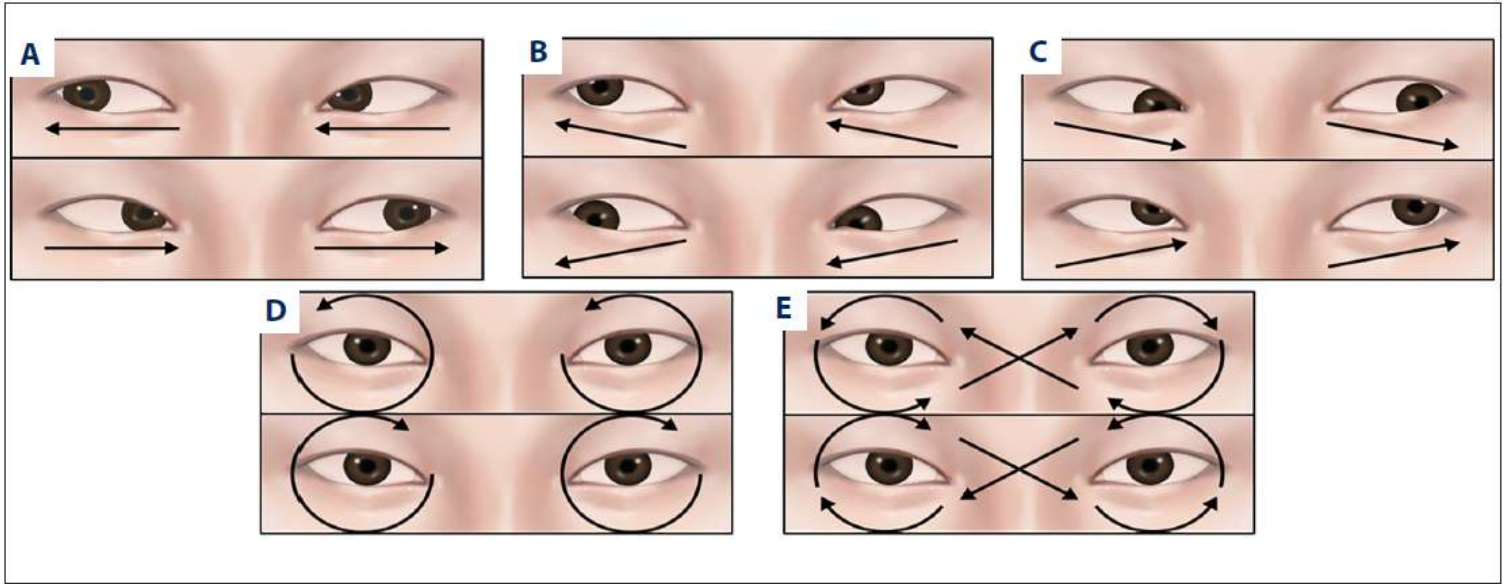


Figure 3. (A-E) Eyeball exercise program.

Exercise protocol

Shoulder
Abduction



Isometric
Cervical
Flexion



Horizontal
Row



Isometric
Cervical
Extension



Vertical
Row



Isometric
Cervical
Lateral
Flexion



Horizontal
Abduction



Relaxation Training

- Heaviness and warmth exercises
- Cardiac and respiratory regulation
- Forehead cooling

Specific exercises for neuromuscular re-education

1- Cervical Motor Control Exercises

Deep craniocervical flexor training, Flexor–extensor synergy retraining, Dynamic neck retraction with Thera-Band resistance

2- Stretching

Trapezius, Sternocleidomastoid, Scalene, suboccipital, and pectoral muscles

Effects of Exercise on Tension-Type Headache

- **Resistance exercise** may:
 - Reduce **headache frequency**
 - Reduce **headache intensity**
- **Aerobic exercise** may:
 - Reduce **headache intensity**
- **Strength exercise** may:
 - Reduce headache intensity
 - *Possibly* increase headache frequency
- Exercise appears to have **little or no significant effect** on:
 - Headache duration
 - Medication use
- **Resistance exercise may reduce headache intensity by:**
 - Decreasing activation of **myofascial nociceptors**
 - Reducing **peripheral sensitization**
 - Improving neuromuscular function of the cervical region

- **Combination physiotherapy** appears more effective than single interventions for **tension-type headache (TTH)**.

- Effective multimodal programs may include:

- Manual therapy (MT)

- Soft tissue techniques

- Exercise

- Postural correction

- TENS

- Dry needling

- Neural mobilization

Intervention	Main outcome
Acupuncture-like electrical stimulation	↓ headache frequency, intensity, duration
Electroacupuncture	↓ headache intensity
Trigger point massage	↓ morning headache intensity
Suboccipital inhibition + interferential current	↓ disability, ↓ headache impact
Relaxation / EMG biofeedback	Pain control support
yoga	Non-pharmacological support
Muscle relaxation + deep breathing	↓ tension, better symptom control
Neck-shoulder strength exercises	↓ headache intensity, frequency, duration

