Interdisciplinary method for assessment & treatment of chronic headaches

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Medical Management in an Interdisciplinary Headache Program

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IMATCH (Interdisciplinary Method for the Assessment and Treatment of Chronic Headache)
Role of Medical Management in Headache Practice

- Diagnosis of headache based on history and physical examination
  - History based on ICHD classification and determines chronic from episodic
  - Physical examination distinguishes primary headaches (exam, normal) from secondary headaches:
    - Structural lesion of the brain
    - Structural lesion of craniovertebral junction and c-spine
    - Raised ICP (idiopathic intracranial HTN)

- Manages medical conditions and reviews w/u
  - Initiates detoxification regimen
  - Infused bridge therapy and abortive therapy
  - Procedures (LP, blocks)

- Refers to consultants (e.g. sleep, EMG, neuroradiology)
- Communicates with PT, Psych and Nursing
  - Interdisciplinary team meeting and ad lib

International Headache Society Diagnostic Criteria for (1.1) Migraine (2013)

C. Headache has at least 2 of the following:
   - Unilateral location
   - Pulsating quality
   - Aggravation by or causing avoidance from routine physical activity
   - Moderate or severe pain intensity

D. During headache at least one of the following:
   - Nausea and/or vomiting
   - Photophobia and phonophobia

E. Not attributed to another disorder
Cervicogenic Headaches (ICHD-II, 2004; ICHD-III beta, 2013)

A. Pain, referred from a source in the neck and perceived in one or more regions of the head and/or face, fulfilling criteria C and D.

B. Clinical, laboratory, and/or imaging evidence of a disorder or lesion within the cervical spine or soft tissues of the neck known to be, or generally accepted as, a valid cause of headache.

Cervicogenic Headaches (ICHD-II, 2004; ICHD-III beta, 2013)

C. Evidence that the pain can be attributed to the neck disorder or lesion based on at least one of the following:
   1. Demonstration of clinical signs that implicate a source of pain in the neck.
   2. Abolition of headache following diagnostic blockade of a cervical structure or its nerve supply using placebo or other adequate control.

D. Pain resolves within 3 months after successful treatment of the causative disorder or lesion.

Cervicogenic Headaches (ICHD-II, 2004; ICHD-III beta, 2013)

- Tumors, fractures, infections, and rheumatoid arthritis of the upper cervical spine have not been validated as causes of headache, yet they are accepted.
- Cervical spondylosis and osteochondritis are not accepted as valid.
- When myofascial tender points are the cause, the headache should be coded under tension-type headaches.
Cervicogenic Headaches

Edmeads (1988) - In order for cervicogenic headaches to exist, there must be:
1. Pain sensitive structures in the neck
2. Identifiable pathological process or dysfunction
3. Pathways by which pain in the cervical segments are referred to the head.

Neurology 1988 Dec;38(12):1874-8

Pain Sensitive Structures in the Neck

- Vertebral Column
- Apophyseal joints
  - Atlanto-occipital (condylar) joints
  - Annulus fibrosis
  - Spinal ligaments
  - Vertebral periosteum and marrow
- Cervical muscles, roots and nerves
- Vertebral and carotid arteries

Comparison of Migraine and Cervicogenic Headache

<table>
<thead>
<tr>
<th>Feature</th>
<th>Migraine</th>
<th>Cerv. HA</th>
</tr>
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<tbody>
<tr>
<td>Recurrent episodes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Unilaterality</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Nausea/vomiting</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Photophobia</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Pulsating quality</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Mod-severe intensity</td>
<td>yes</td>
<td>yes</td>
</tr>
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Fredriksen, Hovdal, Sjaastad (1987)

Signs of neck involvement (11/11)
- Ipsilateral, diffuse neck/shoulder, or arm pain (10/11), and/or
- Provocation of attacks by neck movement.
- Myofascial trigger points found in 10/11 patients.
- Pfaffenrath: Failure to respond to indomethacin (additional feature).

Davidoff (1998): Myofascial Pain in Relation to Headaches

- Myofascial pain syndromes characterized by the presence of trigger points (TrP) that refer pain to distant sites.
  - Active TrP spontaneously causes complaints of pain
  - Latent TrP are palpable but do not cause spontaneous pain.
  - Palpation of TrP refers pain to distant sites

Davidoff (1998): Myofascial Pain in Relation to Headaches

- Distinguished myofascial pain syndromes from fibromyalgia, which he considered a systemic disease.
- FM: characterized by tender points and not trigger points:
  - No jump sign, palpable band, ‘twitch sign’, or relief of pain when site is anesthetized
Davidoff (1998): Myofascial Pain in Relation to Headaches

• Cervicogenic headaches can be differentiated from migraines and TTH by local anesthetic blockade of C2 root, greater occipital nerve, and structures innervated by them (e.g. TrPoints).
• Trigger points innervated by lower cervical nerves do not directly cause headaches.

Cephalalgia 1998 Sep;18(7):436-48

Diagnostic Criteria for Tension-Type Headache (ICHD-II, 2004)

• At least 10 previous headache episodes fulfilling criteria B-D listed below.
• Number of days with such headache = 180/year (<15/month).

A. Headache lasting from 30 minutes to 7 days
B. At least 2 of the following pain characteristics:
   – Pressing/tightening (non-pulsating) quality
   – Mild or moderate intensity (may inhibit, but does not prohibit activities)
   – Bilateral location
   – No aggravation by walking stairs or similar routine activity

C. Both of the following:
   • No nausea or vomiting (anorexia may occur)
   • Photophobia and phonophobia are absent, or one but not the other is present

D. At least one of the following:
   • History, physical and neurological examinations do not suggest one of the disorders in groups 5-11
   • History and/or physical and/or neurological examinations do suggest such disorder, but it is ruled out by appropriate investigations
   • Such disorder is present, but tension-type headache does not occur for the first time in close temporal relation to the disorder
The environment of IMATCH

Psychology

Physical Therapy

Neurology

Nursing/ Education/ Coordination

Program overview

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Chronic Daily Headache (CDH) - Epidemiology

- Chronic Daily Headache – 15+ headaches per month
- 3.5% to 4% of population suffers from CDH
- Headaches account for 7.9% of all medical visits, and 9.7% of all emergency visits.

Bigal et al. (2008); DaFilippo et al. (2006); Stovner et al. (2006); Wiendals et al. (2006)
Chronic Daily Headache (CDH) - Epidemiology

- 12% of CDH cases resolve to intermittent headaches within 5 months.
- Both CDH and intermittent headache patients more likely to be female than non-headache primary care patients.
- Chronic Headaches are associated with lower SES, and a more frequent history of head & neck trauma.

Bigal et al., 2008; Wiersdals et al., 2006

Chronic Daily Headache (CDH) - Comorbidities

- Compared to patients with intermittent headaches, CHD patients:
  - More likely to overuse medication (67% vs. 3%)
  - More frequent sleep problems (44% vs. 8%)
  - More likely to smoke (45% vs. 19%)

AMPP – American migraine prevalence & prevention study

(Buse, et. al., 2010)
Depression & migraine

- Diagnosis
  - Cognitive Aspects
  - Affective Aspects
  - Somatic Aspects
- Common neurotransmitter substrate with pain

Anxiety & migraine

% with HADS anxiety score > 11

- None
- 7 days per month
- 7-14 days per month
- 14 days per month

(Zwart et al., 2003)
**Anxiety & migraine**

- Fears of movement
  - Inactivity and rumination
- Pre-morbid anxiety disorders


**Physical Consequences of CDH**

- Overuse of rest as a coping strategy
- "Roller coaster" activity

![Graph showing pain rating over uptime]

**Physical Consequences of CDH**

- Myofascial Pain Syndromes
- Reduced Endorphin Production
- Disuse Atrophy
- Increased Risk of Injury
Multidisciplinary Treatment of Chronic Daily Headache

- Medical therapy
  - Detoxification from rebound producing medication
  - Establishment of headache preventatives
  - Treatment of co-morbid depression and anxiety

- Physical therapy
  - Active vs. passive treatment
  - Strengthening and range of motion
  - Aerobic conditioning

- Psychological therapy
  - Pain behavior management
  - Family Education
  - Assertiveness training
  - Cognitive-behavioral psychotherapy
  - Sleep hygiene
  - Activity pacing
  - Relaxation and biofeedback
  - Self-esteem
Multidisciplinary Treatment of Chronic Daily Headache

• Nursing therapy
  – Pathophysiology of headaches
  – Dietary management
  – Mindfulness
  – Medical communications
  – Appropriate medication use
  – Headaches & intimacy
  – Autogenic relaxation
  – Discharge planning

What do we really do?

We lead them in, show them the way and them let them go!

We are the true boarder collies of the team and the glue that keeps everything running smoothly.
Yep!! That’s us… the big bad dog...

Nursing education occurs before, during and after the program.
Before the program

• Sales person and program “pitch” person / Program Concierge
  - Medical records retriever & reviewer.
  - Resource person for out of state referrals.
  - Insurance verification and authorization.
  - Scheduler.
  - Enrollment & admissions process and orientation into the program.

During the program

• Coordination of care, including management between IMATCH disciplines and ancillary departments.
• Education.
• Shoulder to cry on.
• Tough love advocate.
• Trouble shooter.
• Mindfulness supporter.
• Crisis drill sergeant.
• Discharge planner.

Nursing staff provide:

• Diagnosis overview twist on old information
• Symptoms retraining or breaking bad habits
• Medication (reinforce use and limitations)
• Diary (focus changes to emphasis on functional management)
• Sleep Management (review and reinforce)
• Activity/Exercise (focus on daily activity and reinforce benefits)
Nursing staff provide: cont.

• Diet (de-emphasis trigger response, reinforce maintenance and hydration)
• Triggers (de-emphasis )
• Crisis Plan (review compliance of plan, acknowledge positive accomplishments)
• Behavioral Support ( maintain rapport)
• Adherence (follow-up)

Diagnosis Overview

1. Reinforce the diagnosis and the outcome of treatment by reviewing the theories behind headaches, e.g. vascular, serotonin and neural (in simple terms).

2. Emphasize that education is geared towards “management” not cure of their headaches.

Symptom Management

This is all about retraining and breaking bad habits!!!!

1. Stop the cycle of overuse, under use, and misuse that likely contributed to their headache chronicity.
2. Review of current symptom management and lifestyle practices.
Medication Education

The focus changes to “less is best”.

1. Review their knowledge of current medications including purpose, dose, side effects and “off label” uses for headache management.

2. Continue to enforce the use of a diary to record use of abortive medication. This is essential if the patient has a history of rebound, or if there are multiple abortive medications prescribed.

3. Reinforce the importance of one drug for moderate and one drug for severe levels of pain and that treatment days are limited to 2 days per week.

Diary Education

Reinforcement of functional management is emphasized.

The diary helps keep patients on track with the things they can do to manage their headaches outside of medication.

1. Sleep
2. Food intake
3. Hydration
4. Exercise
5. Record of menstrual cycle (females)

Sleep Education

1. Reinforce the importance of regular sleep hours.
2. Avoid using the bed for any activities except sleep.
3. Avoid stimulants before bedtime.
4. Set routine habits before bedtime to help your body and mind transition into knowing it is time for sleep.
5. The hours you keep are just as important as the hours you sleep.
   - Same time to bed, same time out of bed
   - No naps!!
Activity & Exercise Education

1. Review the type, frequency, quality and duration of the activity the patient has been doing along with any benefit obtained.
2. "Are they really doing what they say they are doing"?
3. Many patients will state "they are exercising" but when narrowed down, the actual activities may be less than adequate.
4. Make sure they journal actual date, time and activity completed. If there are holes in their story ask them to bring journal to next appointment. Hold them accountable!!!

ENCOURAGE, ENCOURAGE, ENCOURAGE

Diet Education

1. Emphasis should be placed on using diet management as part of headache prevention... as well as contributing to an overall healthier body.
2. Hydration, hydration, hydration…. Record ounces of water taken in daily to ensure adequate hydration (the goal is 64 ounces per day).
3. Review diary to ensure they are eating at least three meals per day, since dietary gaps could lead to headache episodes.
4. Review caffeine intake.

Trigger Education

1. De-emphasize trigger avoidance since this promotes anxiety, stress and decrease function.
2. Stress is the most common trigger for exacerbating any type of headache.
3. Emphasis should be on daily routines that reduce negative lifestyle activities which can trigger headaches, such as poor sleep habits, eating habits and activity habits.
4. Teach patients that using trigger avoidance as a means to get special accommodations for routine activities or life events is detrimental to overall function.
Crisis Plan

1. Focus on modifiable behavior strategies and away from medical rescue. Offer support and encouragement in the process.
2. Review symptoms, medications, are they “more of the same” or “is something new occurring”?
3. Make patient accountable…. do not give in to the “we’ll call something into your pharmacy” plan of action.
4. Facilitate appropriate follow-up referral if warranted (physician/physical therapist/psychologist/counselor).

Behavioral Support

“Nurses can find themselves very busy doing administrative functions in their daily practices, leaving little time to listen and educate patients. There are no licensing constraints prohibiting nurses from providing emotional and behavioral support. This can be the most rewarding and beneficial aspect in a patient’s plan of care and make a difference in the success or failure of treatment goals”.

After the program

1. Discharge summaries completed and sent to patient and local physicians.
2. Primary contact person after discharge from IMATCH for all questions, concerns and to facilitate adherence with IMATCH plan of care.
3. Maintenance & distribution of outcome studies and follow up care.
By the end of each day we feel like we have been balancing a cupcake on our heads.

Evidence Informed Physical Therapy Management of Headache

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Sunni Klein PT,MSPT
Kay Cherian PT,MPT,Cert MDT

Have you ever been tempted to suggest this treatment?

By the end of this talk you should have better suggestions than this!
Objectives

• Review evidence to identify common musculoskeletal impairments in patients with headache (HA)
• Review evidence for PT interventions for patients with HA
• Discuss common outcome measures used by CCF IMATCH program
• Provide outcomes of CCF IMATCH patients

Common Musculoskeletal Impairments

• Impaired upper cervical joint mobility
  – Palpable upper cervical joint dysfunction (Jull, 2007)
  – C1/C2 loss of motion via flexion and rotation test (FRT) (Ogince, 2006)

Flexion-Rotation Test

• Normal ROM with FRT has been reported as 44 degrees (Hall, 2004).
• Patients with CH have an average of 17 degrees less rotation toward the HA side with the FRT (Hall, 2004)
• FRT had .91 sensitivity and .90 specificity in identifying patients with CH (Ogince, 2006).
• Loss of motion with FRT has not been reported in patients with migraines.
Common Musculoskeletal Impairments

- Impaired deep neck flexor endurance
- Assessed via craniocervical flexion test (CCFT) (Zito 2006, Jull 2008)
  - Staged test that uses pressure biofeedback to determine if the patient can maintain pressure at each stage:
- Assessed via "nod and lift" test (Harris 2005)
  - Harris reported means of 24 seconds in subjects with neck pain and 39 seconds in subjects without neck pain.
  - Edmondston reported that the MDC for this test was 17 seconds (Edmondston 2008)

Cranio cervical Flexion Test

Tuck and Lift Test
Common Musculoskeletal Impairments

- **Forward Head Posture (FHP)** can be measured via craniovertebral angle.
- A craniovertebral angle < 55° suggests greater FHP.
- There is a positive correlation between FHP and HA frequency (Fernandez de las Penas, 2006).

![Diagram of craniovertebral angle]

Common Musculoskeletal Impairments

- **Trigger Points**
- Can refer pain to occipital region, temporal region, frontal region, orbit, and ear.
- Common muscles: suboccipitals, upper trapezius, masseter, temporalis, and sternocleidomastoid.

![Diagram of trigger points]

Common Musculoskeletal Impairments

- **Temporomandibular Dysfunction (TMD)** is associated with increased HA frequency via convergence of afferent input at trigeminal nuclei from trigeminal afferents and afferents from the upper cervical spinal nerves.
- Common TMD impairments:
  - Joint dysfunction/derangement
  - Myofascial pain
  - Impaired motor control
  - Parafunctional habits

![Diagram of temporomandibular joint]
Common Impairments Associated with Chronic Tension Type Headache (CTTH)

- Active trigger points in upper trap, sternocleidomastoid, suboccipitals and temporalis muscles have been reported to be associated with CTTH. (Fernandez de las Penas, 2006)
- Degree of FHP correlates with HA frequency and duration. (Fernandez de las Penas, 2006)
- Impaired DNF endurance has also been reported in patients with CTTH (Fernandez de las Penas, 2007)

Common Impairments Associated with Cervicogenic HA

- Palpable cervical segmental joint dysfunction (levels C0-C4)
- Impairment in the CCFT via excessive use of SCM
- Loss of range of motion in to extension and rotation bilaterally
- These 3 findings identified cervicogenic HA with 100% sensitivity and 94% specificity (Jull 2007)

Evidence for Physical Therapy Interventions for HA

- Exercise
  - Deep neck flexor endurance training
  - Neck and scapular strengthening
- Manual Therapy
  - Joint mobilization/manipulation
  - Trigger point therapy
Cochrane Review: Exercise for HA

- “Low to moderate quality evidence supports self mobilization, craniocervical endurance, and low load cervical scapular exercises in reducing pain, improving function and global perceived effect in the long term for subacute/chronic cervicogenic HA” (Kay, 2012)

Deep Neck Flexor Endurance Training

- Isometric deep neck flexor training using techniques described by Jull et al have been shown to have efficacy in treating CH via RCT. (Jull, 2002)
- DNF endurance training was equally as effective as spinal manipulative therapy at decreasing HA frequency, HA intensity, and neck pain.
- “Although the response to treatments was similar there was up to a 10% better chance of achieving good or excellent outcome with the combined therapies.” (Jull, 2002)

Endurance training or strength training for CH?

- Ylinen 2010 RCT with n=180 females who were assigned to 3 groups (strength group, endurance group, control group)
- At 12 month follow up HA intensity had decreased by 69% in the strength group, 59% in the endurance group and 37% in the control group.
Ylén et al interventions

- Performed over a 12 month period
- Strength group emphasized resisted neck exercises
- Endurance group emphasized tuck and lift
- Both groups also used dynamic exercises for the shoulders

Self Mobilization Exercises

- Hall RCT looked at use of C1/C2 self SNAG’s vs placebo in patients with CH and a positive FRT. (Hall, 2007)
- Self SNAG group showed significant improvements in AROM via FRT immediately after the exercise
- Self SNAG group reported significant improvements in headache symptoms as measured via a headache index at 4 and 12 month f/u.

Joint Mobilization/Manipulation

- “A combination of therapist-driven cervical manipulation and mobilization with cervico-scapular strengthening was most effective for decreasing pain outcomes in those with CGH” (Raciki, 2013; systematic review)
- “The RCT’s suggest that physiotherapy and spinal manipulative therapy might be an effective treatment in the management of CGH” (Chiabi, 2012; systematic review)
Joint Mobilization/Manipulation

• Should follow pragmatic examination with emphasis on asterisk sign production
• Reproduction of HA symptoms on exam is good prognostic indicator.
• Interventions used in IMATCH include thrust, non thrust, and muscle energy techniques

Trigger Point Therapy for HA

• Evidence exists for treatment of CTTH via trigger point therapy delivered to: (Fernandez de las Penas, 2013)
  – Upper trapezius
  – Sternocleidomastoid
  – Temporalis
  – Suboccipitals
  – Extraocular muscles

• Trigger point treatment to SCM resulted in decreased HA and neck pain, improved DNF performance, active cervical AROM, and pain pressure threshold immediately and at 1 week follow up. (Bodes-Pardo, 2013)
Recommendations

- Pragmatic physical therapy management should include:
  - Cranio cervical endurance and strength training
  - Manual joint mobilization/manipulation to cervical and thoracic spine
  - Trigger point therapy
- Manual therapy and exercise delivered concurrently may be more effective than when delivered in isolation.

IMATCH Outcome Measures

- Headache Disability Inventory
- Dizziness Handicap Inventory
- Neck Disability Index
- Numeric Pain Rating Scale

Headache Disability Inventory

- Developed by Jacobsen et al in 1994
- Has 25 items divided in to functional and emotional subscales.
- Options for each item are yes(4 points), sometimes(2 points) and no(0 points).
- A higher score is considered to indicate greater disability.
- Unable to identify a published MCID.
HDI Outcomes

N = 374
Mean Difference = -32.55
95% CI = [-30.05, -35.04]

Dizziness Handicap Inventory

- Developed by Jacobsen et al in 1990
- Has 3 domains
  - Functional (9 items)
  - Emotional (9 items)
  - Physical (7 items)
- Options for each item are yes (4 points), sometimes (2 points), and no (0 points).
- Unable to locate a published MCID.

DHI Outcomes

N = 357
Mean Difference = -19.08
95% CI = [-16.88, -21.20]
Neck Disability Index

- Developed in 1991
- 10 items with 0-5 score assigned to each item.
- Expressed as either total/50 or total ×2=\%age
- Multiple published MCID’s
  - 5 pts or 10\% decrease (Stratford, 1999)
  - 19\% decrease (Cleland, 2008)

NDI Outcomes

Number of Patients: 337
Mean Difference: -5.022
95\% CI: [-4.98, -5.06]

Numeric Pain Rating Scale

- 11 point scale
- In patients with neck pain the MCID is 2.1 points. (Cleland, 2008)
- Unable to locate a MCID for the NPRS for headache patients.
Numeric Pain Rating Scale

- Mean Difference: -2.5
- 95% CI: [-2.30, -2.71]

References


References

References


IMATCH Individual Treatment Overview

Overview

- Initial evaluation on Monday
- 2 individual sessions per week
  - T, TH
  - 30 min sessions
  - Address mechanical findings of initial evaluation
  - Progress notes completed on the 4th and 6th individual treatments
Initial Evaluation

• 48 year old female presenting with headaches for the last 8 years which became daily 18 months ago.
• Married with 2 boys, ages 9 and 13
• Quit her job in marketing 12 months ago
• Stopped exercising and stopped going to her children’s sporting events
• Spends 15 hours a day in bed
• Headaches are left sided, they start in her neck and move to the top of her head “horn like”
• Reports jaw pain, grinds her teeth at night
• Feels light headed at times but denies dizziness
• Denies tinnitus, motion sickness and nausea

Common findings

• Upper cervical
  – C0-C1 mobility, spacing
  – C1-C2 rotation
  – C2-C3 mobility
  – Tightness of suboccipital musculature
  – DNF weakness
  – Patient habits and functional postures
Common Findings

- Lower cervical
  - Abnormal range of motion for findings for flexion, extension, sidebending, rotation
  - Decreased lordosis
  - Trigger points and soft tissue restrictions of trapezius, levator trapezius, sternocleidomastoid
  - Myotomal weakness

- Thoracic spine
  - Range of motion
  - Abnormal joint mobility
  - Scapular position in relation to thoracic spine

- Jaw region
  - Subjective reports of parafunctional habits
  - Decreased ROM, deviations
  - Audible sounds with active movement
  - Tenderness to palpation of extraoral and intraoral musculature
  - Resting position, posture

Manual techniques for cervical spine
Progression of treatment

- Goal is to increase independence with HEP and attempt to move away from manual treatment unless necessary
- Incorporate postural exercises into the patient’s daily activity
- Modify reps, resistance based on patient’s tolerance and response to treatment

Pitfalls with individual physical therapy treatment

- Compliance with HEP
- Response to infusions
- Patient activity level
- Family involvement
- Current medical status
  - Vascular involvement
  - Systemic hypermobility
  - Vestibular involvement
  - Greater occipital nerve involvement

Final look

- Communication with MD, nursing and PT
- Get patient actively involved in exercises
- Stress proper posture at all times and compliance
- Change in parafunctional habits
- Patient education on body mechanics
IMATCH group PT

Group Overview

- M/W/F cardiovascular exercise and group stretches
- T/Th general resistance training
- 1-2 licensed therapists and 1 therapy technician
- Every afternoon 3-4pm
- Setting: fitness center gymnasium in same building as the headache center.
  - Music, fitness center members often playing basketball, bright lights.

Cardiovascular

- Education regarding warm-up/cool-down importance
- Education/instruction in correct use of machines. Access to treadmills, elipticals, nustep, recumbant bike, airdyne bike, stair climbers, indoor and outdoor tracks.
- Monitoring of target heart rates and use of RPE (beta blockers)
- Encouraged varied activities throughout the program and encourage exercise at various intensities while monitoring HA response.
Cardiovascular

- Typical progression:
  - 5 minute warm-up, 5 minute cool down
  - 1st week: 20 minutes in target heart rate
  - 2nd week: 25 minutes in target heart rate
  - 3rd week: 30 minutes in target heart rate
- Challenges:
  - Balance issues
  - Pain behaviors
  - Pre-existing issues including CV risk factors

Stretching

- Major muscle groups
- Cueing for
  - posture
  - sustained stretches 30 seconds
  - gentle stretch but no pain
  - avoid bouncing/ballistic movements
- Led by the patients in their final week of treatment
Resistance training

- Major muscle groups (Core, LEs and UEs)
- Introduction to equipment, safety considerations, adaptations as needed based on the patient.
- Cues provided for
  - Posture/neutral cervical alignment
  - Correct use of machines and equipment (bands, therapy balls, free weights)
  - Maintaining normal breathing pattern
- Guarding of patients as necessary with position changes

Resistance training

- Education regarding weights/reps. Generally encourage low resistance and high reps
- Typically, first day 10 reps with light weight and following this we have the patient progress towards 30 reps prior to increasing resistance.
- Use of training logs to help patients monitor their progress with pictures and written instructions of each exercise.
- Goal for patient to be independent by the end of the three weeks.
Resistance training

• Final strength training day:
  – About 30 minutes of education in small group (1-3 patients) regarding:
    – Additional LE exercises with use of ankle weights in standing and mat exercises
    – Progressions of abdominal exercises
    – Discussion regarding ways to stay motivated (setting short term goals, workout buddy, gym membership…)
    – Education regarding recommended frequency of exercise once they arrive home
Fear avoidance behaviors

• Education is often not enough to help patients reduce their fear avoidance behaviors.

• "It is recommended to gradually increase activities starting at a lower level that is appropriate and acceptable to the patient. For low fear patient, self monitored gradual increase in activity may be adequate; for high-fear patients, therapist guided and monitored graded exposure of feared and avoided activity may be indicated."


• Benefits of group vs individual exercise
  – Socialization following isolation associated with chronic pain and headache
  – Patients see others with similar complaints completing activities successfully.

Varkey et al (2011)

• Exercise as migraine prophylaxis: A randomized study using relaxation and topiramate as controls. Age 18-65 with 2-8 migraine (with or without aura) attacks each month >1 year. Excluded if using prophylaxis (or antipsychotic or antidepressive meds) in the last 12 weeks, regular exercise, regular practice of relaxation
  – 4-12 weeks of baseline period followed by 12 week treatment period. F/u at 3 and 6 months after treatment.

Varkey et al. Interventions

- Exercise group trained with PT 40 minutes 3x/week based on indoor cycling, including 15 minute warm up (RPE 11-13), 20 minute exercise period (RPE 14-16) and a 5 minute cool down (RPE 11-13).
- Relaxation group trained with PT 1x/week for 6 sessions and practiced at home daily with a CD.
- Topiramate group—dosage slowly increased by 25 mg every week until the dosage reached the highest dose that the individual could tolerate with a maximum of 200 mg/day.

Varkey et al. Results

- Change in number of migraine attacks during the last month of treatment compared with baseline showed mean reduction of 
  -0.93 (95% CI 0.31-1.54) attacks in the exercise group
  -0.83 (95% CI 0.22-1.45) attacks in the relaxation group
  -0.97 (95% CI 0.36-1.58) attacks in the topiramate group
- No significant difference in migraine attacks observed between the groups (p=0.95)

Varkey et al. Conclusions

• Exercise may be an option for prophylactic treatment of migraine in patients who do not benefit from or do not want to take daily medication.
References