

Headaches

Course Description

"Headaches" is a live interactive webinar continuing education course for Athletic Trainers. This course analyzes the diagnostic classifications of headaches comparing clinical presentations, medical management, and therapeutic interventions for the adult population. Manifestations of headaches and management subsequent to post-traumatic injuries in adolescents are examined.

Course Rationale

The purpose of this course is to enhance the clinician's ability to identify the specific type of headache clients present with to facilitate selection of the most appropriate musculoskeletal and complementary therapy interventions to alleviate symptoms and maximize outcomes.

Course Goals and Objectives

Upon completion of this course, participants will be able to:

1. Compare the prevalence of and treatment procedures for headaches in the United States to other countries.
2. Distinguish the characteristics of the headache classifications: tension-type, migraine, cluster, and medication overuse headaches.
3. Describe the proposed physiologic and anatomic causes of headaches.
4. Compare the various methods of medical management for headaches.
5. Determine musculoskeletal interventions indicated to alleviate headache symptoms.
6. Identify complementary therapies including yoga and mind-body practices which may be appropriate to incorporate in therapeutic programs.
7. Explain the role of pacing interventions in self-management of headaches.
8. Describe the psychological manifestations of headaches in children and adolescents.
9. Identify the characteristics of post-traumatic headaches in adolescents.
10. Summarize the management strategies for post-traumatic headaches.

Course Provider – Innovative Educational Services

Course Instructor - Jodi Gootkin, PT, MEd

Target Audience – Athletic Trainers

Athletic Training Practice Domains - Treatment and Rehabilitation (0401 & 0404)

Level of Difficulty – Essential

Course Prerequisites – None

Method of Instruction/Availability – Live Interactive Webinar available on scheduled dates/times.

Criteria for Issuance of CE Credits – Verified attendance and at least 70% correct on the course post-test.

Continuing Education Credits – Three (3) hours of continuing education credit.

Fees - \$39.95

Refund Policy - Unrestricted 100% refund upon request. The request for a refund by the learner shall be honored in full without penalty or other consideration of any kind. The request for a refund may be made by the learner at any time without limitations before, during, or after course participation.

Course Outline & Schedule

Prevalence and Treatment of Headaches Internationally	0:00-0:10
Classifications of Headaches	0:11-0:15
Tension-Type	0:16-0:25
Migraine	0:26-0:35
Cluster	0:36-0:45
Medication Overuse Headaches	0:46-0:50
Interactive Discussion of Clinical Applications	0:51-0:60
Physiologic and Anatomic Causes of Headaches	1:01-1:15
Medical Management of Headaches	1:16-1:30
Musculoskeletal Interventions	1:31-1:50
Interactive Discussion of Clinical Applications	1:51-2:00
Complementary Therapies	2:01-2:10
Self-Management Interventions	2:11 -2:20
Psychological Manifestations in Children and Adolescents	2:21-2:30
Post-Traumatic Headaches in Adolescents	2:31-2:40
Management of Post-Traumatic Headaches	2:41-2:50
Interactive Discussion of Clinical Applications	2:51-3:00

Approval



Innovative Educational Services is recognized by the Board of Certification, Inc. to offer continuing education for Certified Athletic Trainers. BOC approved provider #P8858

Headaches

Live Interactive Webinar Presented by:
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jodiemail@comcast.net

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Overview of Course

This course analyzes the diagnostic classifications of headaches comparing clinical presentations, medical management, and therapeutic interventions for the adult population. Manifestations of headaches and management subsequent to post-traumatic injuries in pediatric populations are examined.

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Course Rationale

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Goals and Objectives

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2. Distinguish the characteristics of the headache classifications: tension-type, migraine, cluster, and medication overuse headaches.
3. Describe the proposed physiologic and anatomic causes of headaches.
4. Compare the various methods of medical management for headaches.
5. Determine musculoskeletal interventions indicated to alleviate headache symptoms.
6. Identify complementary therapies including yoga and mind-body practices which may be appropriate to incorporate in therapeutic programs.
7. Explain the role of pacing interventions in self-management of headaches.
8. Describe the physical and psychological manifestations of headaches in children and adolescents.
9. Identify the characteristics of post-traumatic headaches in adolescents.
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Disclaimer

- Application of concepts presented in this webinar is at the discretion of the individual participant in accordance with federal, state, and professional regulations.

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Course Outline/Schedule 3 hour live interactive webinar

Topic	Time
Prevalence of Headaches Internationally	0:00-0:15
Classifications of Headaches	0:16-0:20
Tension-Type Headache: Characteristics, Pathophysiology, Medical Management	0:21-0:30
Migraine: Characteristics, Causes, Pathophysiology, Medical Management	0:31-0:50
Interactive Discussion of Clinical Applications	0:51-0:60
Cluster Headache: Characteristics, Pathophysiology, Medical Management	1:01-1:10
Medication Overuse Headaches: Characteristics, Pathophysiology, Medical Management	1:11-1:15
Pharmacological Management	1:16-1:25
Medical Management	1:26-1:35
Musculoskeletal Interventions	1:36-1:50
Interactive Discussion of Clinical Applications	1:51-2:00
Complementary Therapies	2:01-2:10
Self-Management Interventions	2:11-2:20
Pediatric Physiologic Manifestations of Headaches	2:21-2:30
Pediatric Psychologic Manifestations of Headaches	2:31-2:35
Post-Traumatic Headaches in Adolescents	2:36-2:50
Interactive Discussion of Clinical Applications	2:51-3:00

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Emphasis of Course

- ▶ The goal is to provide the clinician with an understanding of the various types of headaches, their presentation, pathophysiological mechanisms and medical management to enhance development of comprehensive therapeutic plans to achieve therapeutic goals.

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Headache in the United States

- ▶ Cephalalgia (Headache) is the 5th leading cause of emergency department visits in the US and is among the top 20 reasons for outpatient medical visits.
- ▶ The burden is highest among females ages 18 - 44 where it is the 3rd leading cause of emergency visits.
 - ▶ Peak gender prevalence ratio of 3:1 females to males occurs at midlife .
- ▶ The burden is lowest among males 75 or older.

Smitherman, T. A., Burch, R., Sheikh, H. and Loder, E. (2013). The Prevalence, Impact, and Treatment of Migraine and Severe Headaches in the United States: A Review of Statistics From National Surveillance Studies. *Headache: The Journal of Head and Face Pain*, 53: 427-436. doi: 10.1111/head.12074

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Prevalence Internationally

Country	Prevalence	# Participants	Ages	Gender frequency	Associated Demographics
¹ United States	17-23%	Over 300K (multiple studies)	12 and older	Female 3x greater	Lower income and educational level
² Spain	9.69%	95K	16-70 years old	Female 3x greater	Lower educational level
⁴ Germany	13.4%	10K	18-65 years old	Female almost 3x greater	
³ China	23.8%	5K	18-65 years old	Female greater 2-3x greater	Cultural influences

- Similar global averages among world countries.

1-Smitherman, T. A., Burch, R., Sheikh, H. and Loder, E. (2013). The Prevalence, Impact, and Treatment of Migraine and Severe Headaches in the United States: A Review of Statistics From National Surveillance Studies. *Headache: The Journal of Head and Face Pain*, 53: 427-436. doi: 10.1111/head.12074

2-Fernández-de-las-Peñas, C., Palacios-Ceña, D., Salom-Moreno, J., López-de-Andrés, A., Hernández-Barrera, V., Jiménez-Trujillo, I., ... & Carrasco-Garrido, P. (2014). Has the Prevalence of Migraine Changed over the Last Decade (2003-2012)? A Spanish Population-Based Survey. *PloS one*, 9(10), e110530.

3-Yu, S., Liu, R., Zhao, G., Yang, X., Qiao, X., Feng, J., Fang, Y., Cao, X., He, M. and Steiner, T. (2012). The Prevalence and Burden of Primary Headaches in China: A Population-Based Door-to-Door Survey. *Headache: The Journal of Head and Face Pain*, 52: 582-592. doi:10.1111/j.1526-4610.2011.02061.x

4-Yoon, M. S., Katsarava, Z., Obermann, M., Fritzsche, G., Oezyurt, M., Kesselsinkel, K., ... & Maebus, S. (2012). Prevalence of headaches in Germany: results of the German Headache Consortium Study. *The Journal of headache and pain*, 13(3), 215-222.

Consider This!

Headache Classification

- ▶ The International Classification of Headaches was developed by the International Headache Society and recently updated in 2013 to be utilized as a standard classification for diagnosis, clinical practice, and specificity of research during drug trials and pathophysiology or biochemistry studies.

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Headache Classification cont.

Cranial Neuralgias

- Result from nerve irritation
- Trigeminal Neuralgia
- Optic Neuritis
- Facial Pain

Secondary Headache

- Caused by underlying medical condition
- Tumor
- Trauma
- Infection

Primary Headache

- Occurs independent of other medical conditions
- Tension Type
- Migraine
- Cluster
- Medication Overuse

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Red Flags

- ▶ These are warning characteristics that a headache may be due to an underlying medical condition requiring additional evaluation by the physician.
 - ▶ Thunderclap headache
 - ▶ Progressively worsening headache
 - ▶ Atypical aura lasting more than one hour
 - ▶ Orthostatic headache
 - ▶ Headache triggered by cough, Valsalva, or sneeze
 - ▶ Persistent morning headache with nausea
 - ▶ Impaired level of consciousness

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Consider This!

Characteristics of Headaches

- ▶ Classification of primary headaches is related to:
 - ▶ Frequency
 - ▶ Duration
 - ▶ Location of Pain
 - ▶ Sensations Experienced
 - ▶ Symptoms
 - ▶ Impact on Activity
- ▶ Having patient maintain headache diary prior to therapy session will assist in identifying the specific type of headache.

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Common Types of Primary Headaches

- ▶ Tension Type Headache (TTH)
- ▶ Migraine
 - ▶ With Aura
 - ▶ Without Aura
- ▶ Cluster Headache
- ▶ Medication Overuse Headache
- ▶ Common finding among all types is normal clinical evaluation

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Consider This!

Tension Type Headache (TTH)

- ▶ Previously referred to as
 - ▶ Stress Headache
 - ▶ Ordinary Headache
 - ▶ Muscle Spasm Headache
- ▶ This is not the same as Cervicogenic Headache though some symptoms may seem similar.

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Tension Type Characteristics

Frequency	10 or less episodes on average in one year
Duration	Lasts 30 minutes to 7 days
Pain Location	Originates in posterior cervical region spreading across top of head to eyes
Sensations	Bilateral tightness, pulsing
Symptoms	Pain is increased or relieved with specific positions. No gastrointestinal symptoms
Activity	Not aggravated by activity
Etiology- Triggers	Neck or temporomandibular joint (TMJ) dysfunction Poor Posture Fatigue Stress

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Pathophysiology of Tension Type Headache

- ▶ Several theories with none widely supported related to the cause of the headache pain.
 - ▶ Most easily diagnosed type of headache clinically during evaluation.
- ▶ While previously referred to as psychogenic or psychomyogenic, recent studies refute this indicating an underlying biologic mechanism.
- ▶ Peripheral pain mechanisms in cervical region are the likely cause.

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Pathophysiology Tension-Type cont.

- ▶ Injury to or arthritis of cervical spine results in tension of posterior cervical musculature increasing pressure on face and head nerves.
- ▶ Poor Posture contributes to overuse of these muscles which triggers headache.
- ▶ Central Sensitization of pain over time occurs.

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Pathophysiology Tension Type cont.

- ▶ Psychological or physical stresses lead to **somatization** manifesting as abnormal muscle contractions in the cervical area.
 - ▶ Stress such as unresolved personal, professional, or social conflict
 - ▶ Hormonal changes
 - ▶ Awkward positioning of cervical spine

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Consider This!

Medical Management of Tension-Type

- ▶ Pharmacological and therapy interventions indicated.
- ▶ If therapy evaluation does not indicate TTH, referral to other healthcare professional for additional diagnostic tests and treatment may be necessary.
- ▶ Therapy is directed at the cause of pain:
 - ▶ Increase cervical mobility and flexibility
 - ▶ Strengthen cervical and scapular stabilizers
 - ▶ Improve posture and endurance
 - ▶ Ergonomic assessment

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Consider This!

Migraine

- ▶ This type of headache has a high prevalence, socioeconomic impact, and personal burden.
- ▶ Migraine with aura:
 - ▶ Presents with transient neurological symptoms preceding the headache.
 - ▶ Patients may experience premonitory and resolution phases in days before/after the headache.
- ▶ Migraine can also occur without aura.
 - ▶ Previously termed common migraine

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Migraine WITHOUT Aura

Frequency	Acute - Less than 15 days a month Chronic - Greater than 15 days a month
Duration	4 - 72 hours
Pain Location	Unilateral on anterior head
Sensations	Moderate to severe frontotemporal or retro-orbital pulsating/throbbing pain
Symptoms	Individual appears systemically ill Nausea and/or vomiting Photophobia Phonophobia
Activity	Exacerbated with activity resulting in avoidance
Etiology	Neurobiologic Specific individual triggers

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Consider This!

Migraine WITH Aura

- ▶ Previously referred to as:
 - ▶ Hemiplegic Migraine
 - ▶ Complicated Migraine
- ▶ Debilitating unilateral migraine pain and characteristics are the same as without aura with the addition of aura symptoms presenting themselves.
- ▶ Aura is a complex of neurological symptoms experienced within **one hour before the headache pain**.
- ▶ Symptoms develop over greater than 5 minutes gradually spreading lasting up to 60 minutes for each symptom.

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Consider This!

Aura Symptoms

- ▶ Important to note that during aura there is **NO PAIN**.
- ▶ Unilateral and fully reversible aura symptoms in descending order of prevalence include:
 - ▶ Visual disturbance
 - ▶ Altered sensation
 - ▶ Aphasia and or dysarthria
 - ▶ Motor weakness
 - ▶ Brain stem symptoms (vertigo, tinnitus, ataxia)

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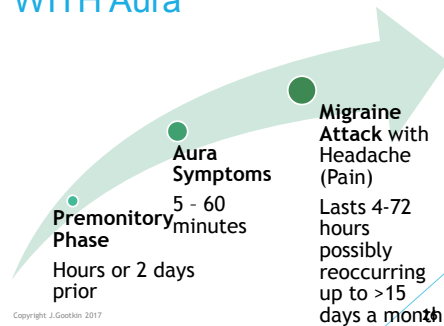
Premonitory Phase

- ▶ Migraine with aura is also associated with a premonitory phase in the **hours or up to two days prior to the aura/headache**.
- ▶ Individuals experience symptoms that may alert them to an impending migraine.
 - ▶ Fatigue
 - ▶ Difficulty concentrating
 - ▶ Neck stiffness
 - ▶ Light/sound sensitivity
 - ▶ Nausea
 - ▶ Blurred vision
 - ▶ Yawning
 - ▶ Pallor

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Chronology of Migraine WITH Aura



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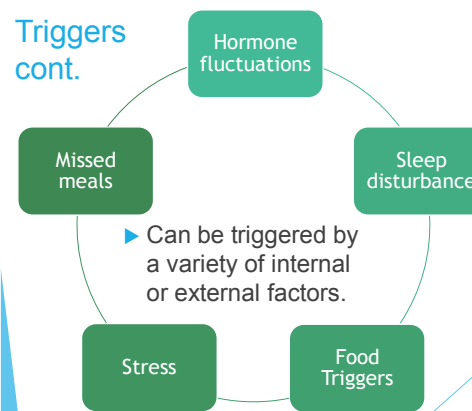
Migraine Triggers

- ▶ Certain factors influence the body in a manner that induces the development of a migraine.
- ▶ Maintaining a journal can assist in identifying these factors as they vary for each person.

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Triggers cont.



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Migraine Food Triggers

- ▶ Food triggers may include:
 - ▶ Tyramine containing foods such as aged cheese, soy sauce, cured meats.
 - ▶ Monosodium glutamate
 - ▶ Nitrates
 - ▶ Alcohol

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Pathophysiology of Migraine WITHOUT Aura

- ▶ Previously considered to be primarily vascular in nature, but imaging studies in recent research demonstrate no cerebral blood flow changes.
- ▶ Now recognized as a neurobiologic disorder.
- ▶ Postulated to be related to sensitization of pain pathways or of central nervous system origin.

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Consider This!

Pathophysiology of Migraine WITHOUT Aura

- ▶ Functional imaging studies identified altered hypothalamus activation which may serve as an initiator of migraine related to its role in nociceptive, autonomic and stress processing mechanisms.

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Consider This!

Pathophysiology of Migraine WITH Aura

- ▶ During aura, imaging studies have revealed decreased regional cerebral blood flow in the cortex corresponding to the clinically affected area causing oligemia.
- ▶ Important to note the vascular supply remains above the ischemic threshold during the episodes.

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Pathophysiology of Migraine WITH Aura cont.

- ▶ Increased presence of incomplete Circle of Willis may contribute to development of migraine.
- ▶ Research has identified a 2x increased incidence of ischemic stroke in individuals with migraine, but the mechanism is unclear.

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Migraine with Hemiplegic Aura

- ▶ True hemiplegic migraine results in motor weakness which may persist for weeks
 - ▶ Not "plegia" (paralysis) as name indicates.
- ▶ It is often also associated with brainstem symptoms.
- ▶ A genetic predisposition has been identified with gene mutations resulting in altered coding of
 - ▶ Calcium channel
 - ▶ Sodium Channel
 - ▶ K/Na-ATPase

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Medical Management of Migraine

- ▶ Pharmacological, behavioral management, and lifestyle strategies indicated.
- ▶ Therapy and musculoskeletal interventions do not appear to manage symptoms in acute attacks. Research varies as to their benefit in reducing frequency and intensity of headaches.

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Cluster Headache

- ▶ This is a rare type of headache often misdiagnosed which occurs almost exclusively in males.
- ▶ May also be referred to as Trigeminal Autonomic Cephalgia
- ▶ Autonomic symptoms consistent with alterations in functioning of the Trigeminal nerve occur during acute attacks.

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Cluster Characteristics

Frequency	One every other day up to 8 times a day Attacks occur in series lasting weeks or months (cluster periods)
Duration	15-180 minutes
Pain Location	Unilateral retro-orbital/supraorbital and/or temporal
Sensations	Very severe pain of burning or boring quality
Symptoms	Profuse lacrimation Nasal congestion Rhinorrhea Forehead/facial perspiration Ptosis
All ipsilateral	
Activity	Restlessness/agitation
Etiology	Genetic Neurobiologic

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Pathophysiology of Cluster

- ▶ An autosomal dominant genetic predisposition is noted in a very small percentage of cases.
- ▶ Imaging and animal studies indicate hypothalamic activation which may initiate the alteration in parasympathetic outflow to cephalic, ocular, and nasal structures.
- ▶ This accounts for the symptoms of eye tearing, nasal congestion, and unilateral orbital pain.

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Medical Management of Cluster

- ▶ Pain is excruciating deeming it a 'true medical emergency' by some researchers.
- ▶ The rapid onset to peak pain time limits use of abortive therapies so prophylactic pharmacological management is suggested.
- ▶ Treatment with 100% oxygen may alleviate acute symptoms.
- ▶ Potential triggers to avoid during a cluster period include:
 - ▶ Alcohol
 - ▶ Histamines
 - ▶ Nitroglycerin

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Medication Overuse Headache

- ▶ Previously referred to as:
 - ▶ Rebound Headache
 - ▶ Drug Induced Headache
- ▶ This type of headache specifically occurs in patients with a pre-existing primary headache disorder who have been overusing medications for greater than 3 months.

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Medication Overuse Headache Characteristics

- ▶ These headaches are superimposed over the existing primary headache and tend to be more incapacitating.
- ▶ Symptoms last for > 15 days a month.
- ▶ Typically patients wake up with a headache which increases with activity.

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Pathophysiology of Medication Overuse Type

- ▶ Typically triggered by overuse of simple analgesics, nonsteroidal anti-inflammatory medications, caffeine, ergotamines, and triptans.
- ▶ Patients may interpret symptoms of the "new" headache as the primary headache and consume additional doses of medication which leads to a cycle of overmedicating.

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Medical Management of Medication Overuse Type

- ▶ The only effective treatment is to withdrawal from the overused medication.
- ▶ Patient education on adverse effects of seemingly mild OTC medications is important to avoid development.
- ▶ Have the patient include medication use as part of headache diary to track trends.

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General Management of Headaches

- ▶ Diagnostic, laboratory, and therapeutic evaluation typically do not yield physical findings which poses challenges for developing a treatment plan.
- ▶ Identification of the specific type of headache is critical to determining effective interventions.
 - ▶ Having the patient create a symptom journal will assist in discovering patterns and triggers.

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Management cont.

- ▶ A discrepancy appears to exist between outcome measures utilized in research studies and those desired by patients.
- ▶ Current research guidelines suggest the assessment measure for positive pain outcomes to be "pain free within 2 hours" while recent surveys reveal patients desire:
 - ▶ Relief of headache pain in 30 minutes
 - ▶ Ceasing of symptom progression
 - ▶ Return to functioning normally within 1 hour
 - ▶ Prevention of reoccurrence

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Pharmacologic Management of Headaches

- ▶ Abortive medications are taken as needed when the headache occurs to alleviate symptoms during an attack.
- ▶ Prophylactic/Preventative medications are taken daily to limit the frequency and severity of attacks.
 - ▶ Typically utilized for patients when the headache disrupts participation in activity.

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Pharmacologic Management Tension Type

- ▶ Abortive medications to alleviate acute symptoms include:
 - ▶ Over the counter (OTC) analgesics
 - ▶ Nonsteroidal Anti-inflammatories (NSAIDs)
 - ▶ Triptans if also experience migraines
- ▶ Prophylactic medications to correct sleep disturbances and depression that are associated with increased frequency of headaches :
 - ▶ Anti-depressants.
- ▶ Cervical Epidural Nerve Block

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Consider This!

Pharmacologic Management Migraines

- ▶ Abortive medications for management of acute symptoms include:
 - ▶ Triptans
 - ▶ Ergot derivatives
- ▶ If migraines significantly limit functional participation in work, school, and life, prophylactic medications include:
 - ▶ Beta Blockers
 - ▶ Calcium Channel Blockers
 - ▶ Anti-depressants
 - ▶ Anti-seizure medications

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Consider This!

Pharmacological Management Medication Overuse

Headache

- ▶ Tapered withdrawal from overused abortive medication is the only effective intervention.
- ▶ The goal is to discontinue use of the offending medication for 3-4 months.
- ▶ An important component is patient education that symptoms will increase before reliving and they must avoid self medicating.

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Medical Management of Headaches

- ▶ Management of headaches includes both pharmacological and non-pharmacological interventions depending upon the specific diagnosis, level of disability, and patient preference.
- ▶ In general, management is aimed at preventing the headaches as opposed to aborting the symptoms.
- ▶ For positive outcomes, assess the response to medications in addition to therapeutic, lifestyle, and behavioral interventions.⁵⁰

Peripheral Nerve Blocks (PNB)

- ▶ The benefits of nerve blocks for headache management is variable in the research.
- ▶ The intervention may be effective in the management of primary headache disorders (tension type, migraine, and medication overuse type), cervicogenic headaches, and cranial neuralgias.
- ▶ Goals of the PNB are to relieve an acute attack, terminate a headache cycle, or transition out of the medication overuse pattern.

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Peripheral Nerve Blocks cont.

- ▶ Injection of medication near the Greater/Lesser Occipital, Supraorbital or Supratrochlear nerve produces anesthesia.
- ▶ Recommended medication lidocaine and/or bupivacaine.
 - ▶ Corticosteroid may be added for management of cluster headaches.
- ▶ Symptom relief may last several weeks or months.

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Blumenfeld, A., Ashkenazi, A., Napchan, U., Bender, S. D., Klein, B. C., Berliner, R., ... & Robbins, M. S. (2018). Expert consensus recommendations for the performance of peripheral nerve blocks for headaches—a narrative review. *Headache: The Journal of Head and Face Pain*, 58(3), 437-446.

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Botulinum Toxin A

- ▶ Botulinum toxin A is an FDA approved treatment for the prophylactic management of chronic migraines defined as greater than 15 headaches per month.
- ▶ Review of research indicates:
 - ▶ Small to modest benefit in decreasing chronic migraines.
 - ▶ No decreased in frequency of chronic tension headaches.
- ▶ Speculated that a placebo effect may account for headache improvement.

Jackson J, Kuriyama A, Hayashino Y. Botulinum Toxin A for Prophylactic Treatment of Migraine and Tension Headaches in Adults. *JAMA*. 2012;307(16):1736-1745. Doi:10.1001/jama.2012.505.
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Consider
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Surgical Treatment

- ▶ Surgical alteration of migraine trigger sites identified with botox injection appears to result in long term elimination or reduction in frequency, duration, and intensity of migraines.
- ▶ Nerve decompression is achieved through surgical modification to musculature and other structural components surrounding the nerve.
 - ▶ Example – removal of corrugator muscle group.

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Grayson B, Krieger J, Davis J, and Amini S. Five Year Outcome of Surgical Treatment of Migraine Headaches. *Journal of the American Society of Plastic Surgeons*. 2011;127(2):603-608. Doi: 10.1097/PRS.0b013e31819e5466

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Lifestyle Changes

- ▶ Lifestyle management is beneficial for tension type and migraine headaches.
 - ▶ Optimizing sleep
 - ▶ Regular exercise
 - ▶ Stress reduction
 - ▶ Ensuring regularity of meals
 - ▶ Identification of triggers

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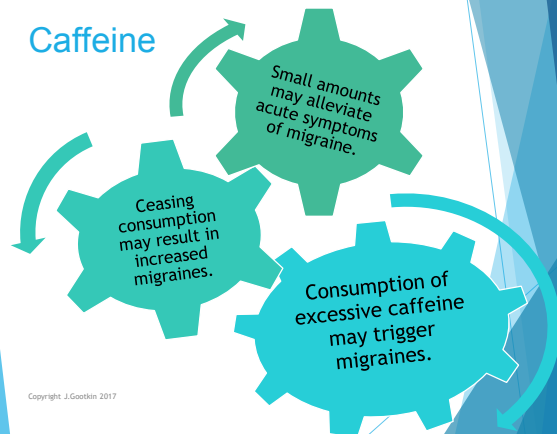
Lifestyle Changes cont.

- ▶ Regular aerobic exercise may decrease the intensity of headaches.
- ▶ Healthy diet with identification of food triggers can avoid migraines.
 - ▶ Aged cheese
 - ▶ Wine
 - ▶ Chocolate
 - ▶ Food additives
 - ▶ Excess caffeine

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Caffeine



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Dietary Fatty Acid Levels

- ▶ Omega 6 and 3 fatty acids are located in vascular, immune, myelin, glial and neuronal cell membranes and function to regulate pain related biochemical pathways.
- ▶ Lipid mediators derived from Omega 6 elicit pronociceptive effects.
- ▶ Lipid mediators derived from Omega 3 elicit antinociceptive effects.

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Dietary Fatty Acid cont.

- ▶ A recent study analyzing biochemical lipid outcomes and headache characteristics focused on increasing dietary intake of Omega 3 and lowering intake of Omega 6 fatty acids.
- ▶ Positive results on management of headache were achieved:
 - ▶ Decreased headache pain duration and frequency
 - ▶ Improved quality of life assessment scores
 - ▶ Increased antinociceptive pathway markers

Ramsden, C. E., Faurot, K. R., Zamora, D., Suchindran, C. M., MacIntosh, B. A., Gaylord, S., ... & Mann, J. D. (2013). Targeted alteration of dietary n-3 and n-6 fatty acids for the treatment of chronic headaches: a randomized trial. *PAIN*, 154(11), 2441-2451.

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Musculoskeletal Interventions

- ▶ Identification of the specific type of headache is critical as manual therapy interventions are unlikely to be beneficial for most of the primary types of headaches.
- ▶ Manual therapy, postural retraining, and ergonomic assessment are beneficial components for management of tension type headaches focusing on cervical/scapular mobility and strength.

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Musculoskeletal Interventions cont.

- These conditions perpetuate and aggravate each other through musculoskeletal mechanisms.
- Potential common CNS activation of the trigeminal nerve pathway may contribute to increased risk for combined presence of the pathologies.

Migraine and Tension Type Headache

Temporomandibular Disorders

Sleep Bruxism

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Cervicogenic Headaches

- ▶ Clinicians may also treat patients with headaches not meeting diagnostic criteria for the 4 primary categories.
- ▶ Cervicogenic headaches are secondary headaches arising from musculoskeletal dysfunction in the upper three cervical segments.
- ▶ Hypothesized that the trigeminocervical pathway conducts pain from the upper three cervical nerve roots through spinal cord to converge with trigeminal nerve
 - ▶ This results in pain that may be mistakenly perceived as face/head pain.

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Cervicogenic Headaches cont.

- ▶ Must be distinguished from other headache types to establish effective intervention plan.
- ▶ Characteristics include:
 - ▶ Exacerbation of pain with neck movement and/or external pressure over upper cervical or occipital region
 - ▶ Sustained or awkward neck positions provoke pain
 - ▶ Ipsilateral neck, shoulder, or arm pain.
 - ▶ Unilateral moderate non-throbbing neck pain

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Cervicogenic Headache cont.

- ▶ Interventions should target musculoskeletal dysfunction possibly:
 - ▶ Decreased neck ROM especially extension
 - ▶ Tight upper trapezius, SCM, scalenes, levator scapulae, pectoralis major/minor, and/or suboccipital muscles.
 - ▶ Painful joint dysfunction of the upper cervical joints
 - ▶ Impaired muscle function and lack of endurance of the deep neck flexors

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Complementary Therapies

- ▶ Should be combined with pharmacologic and musculoskeletal management to maximize outcomes.
- ▶ Implementation of techniques as preventative mechanisms should be assessed over approximately 3-6 months for effectiveness.
- ▶ Use of these strategies to manage acute symptoms may be beneficial also.

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Complementary Therapy Tension Type

- ▶ Interventions focus on improving mood, relaxing muscle tone, and shifting pain perception.

• Progressive Relaxation	• Guided Imagery
• Cognitive Behavioral Therapy	• Biofeedback
• Feldenkrais	• Behavioral Therapy
• Acupuncture	• Craniosacral Therapy
• Tha Chi	• Qui Gong
• Yoga	• Herbal Supplements

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Consider This!

Complementary Therapy Migraines

- ▶ Self awareness of triggers and aura beneficial to attempt to avoid migraines.
- ▶ Acute symptoms may also be managed with
 - ▶ Biofeedback
 - ▶ Behavioral Therapy
 - ▶ Acupuncture
 - ▶ Craniosacral Therapy (possible long term benefits)

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Self Management Interventions for Headaches

- ▶ Focused patient education should be incorporated into therapeutic programs. Some examples include:
 - ▶ Identification and minimizing of triggers
 - ▶ Appropriate medication use to avoid overuse
 - ▶ Relaxation and stress management
 - ▶ Normalization of sleep
- ▶ As self management develops, confidence increases resulting in decreased medication use as a primary coping tool.

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Self Management cont.

- ▶ Clinicians particularly occupational therapy professionals can explore with patients behavioral strategies to minimize migraine triggers such as overscheduling or perfectionistic thinking, and altered sleep patterns.
- ▶ Training in relaxation strategies, lifestyle assessment, pacing, and cognitive-behavioral therapy can aid patients in developing self-efficacy which correlates to decreased migraine-related disability.
- ▶ Need to explore barriers to implementation of management strategies.

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Activity Pacing

- ▶ This coping strategy which is utilized by individuals with fibromyalgia, rheumatoid arthritis and chronic pain is also applicable to headache sufferers to enhance quality of life by managing intensity and duration of headaches.
- ▶ Pacing is:
 - ▶ "Self regulation of tasks and activities in order to keep physical exertion and mental stress levels below the individual's headache threshold"^{70*}
- ▶ It avoids overscheduling by prioritizing and planning activities so that there is a balance between activity and rest.

* McLean, A., Coutts, K., & Becker, W. J. (2012). Pacing as a treatment modality in migraine and tension-type headache. *Disability and Rehabilitation*, 34(7), 611-618.

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Pediatric Headaches

- ▶ Primary headache types can occur in children/adolescents but is often misdiagnosed because of challenges in the diagnosis process.
- ▶ Children may have difficulty describing symptoms for accurate classification.
- ▶ Many characteristics particularly of migraine do not develop until later in life with headaches presenting with different characteristics in pediatric patients.

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Pediatric Headache Treatment

- ▶ Treatment is similar to adults including lifestyle modification, behavioral management, abortive and preventative medications.

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Migraine Variants

- Specific syndromes may present in children which are associated with migraine but do not meet criteria for primary categories.
- These are more common in children with familial history of migraine and have been indicators of children who go on to develop migraines later in life.
 - The reason for this is unknown.

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Migraine Variants cont.

	Cyclic Vomiting Syndrome	Abdominal Migraine	Paroxysmal Torticollis
Description	Episodes of intense vomiting followed by complete resolution lasting 1 hour up to 5 days.	Moderate to severe dull middle abdominal pain associated with vasomotor symptoms lasting 1 hour up to 3 days.	Episodes of unilateral head tilt lasting minutes to several days.
Cause	Triggered by lack of sleep, stress, and co-existing illness.	Idiopathic	Abnormality of calcium channel gene
Onset Age	3-5 years old	7-10 years old	2- 8 months
Treatment	<ul style="list-style-type: none"> • Sleep induction • Antiemetics • Preventative medications 	<ul style="list-style-type: none"> • Trigger avoidance - maybe prodrome for migraine • Preventative medications 	<ul style="list-style-type: none"> • Pharmacologic management

Pediatric Comorbidities

- A variety of concurrent diagnoses may exist with headaches in this population. It is important to identify relationships to develop effective treatment plans.
 - Depression/Anxiety
 - Sleep Disorders
 - Attention Deficit Hyperactivity Disorder
 - Epilepsy
 - Tourette syndrome

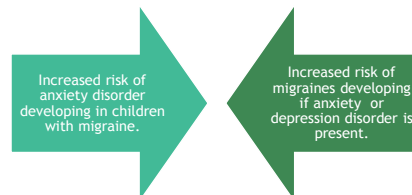
Bellini, B., Arruda, M., Cescut, A., Saulle, C., Persico, A., Carotenuto, M., ... & Guidetti, V. (2013). Headache and comorbidity in children and adolescents. J Headache Pain, 14(1), 79.

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Pediatric Psychological Manifestations

- Correlation between primary headache anxiety and depression.



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Pediatric Sleep Disorders

- While lack of sleep or disrupted sleep habits may be a trigger for migraines in adults, in children it is recognized as a primary management strategy to resolve migraine attacks.
- Melatonin appears to reduce the frequency, intensity and duration of headache attacks in children.
- Sleepwalking appears to be more prevalent in children who suffer from migraines.

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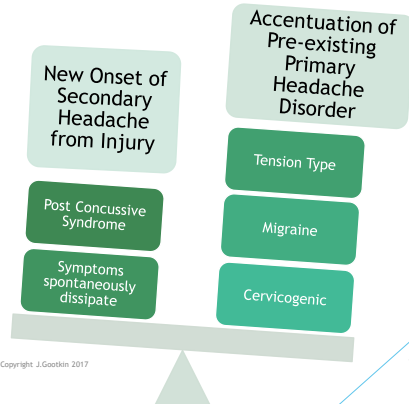
Athlete Assessment

- Following head trauma immediate assessment includes neurological checks and evaluation with a concussion assessment tool.
- Removal from participation and emergency medical care may be necessary based on severity of injury.
- After ruling out life threatening causes, detailed analysis of headache should occur to determine interventions.

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Post Traumatic Headaches



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Post Traumatic Headaches cont.

- ▶ Develops in individuals sustaining head trauma resulting in concussion with either no loss of consciousness or less than 30 minutes of loss of consciousness
 - ▶ Glasgow Coma Scale (GCS) >13
- ▶ Headache develops within the first 7 days post injury or recovery of consciousness.
- ▶ Chronic type can last greater than three months.
- ▶ Symptoms represent an accentuation of the pre-existing primary headache so symptoms most typically resemble tension type or migraine.

Consider This!

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Post Traumatic Headaches Acute Treatment

- ▶ If secondary headache, typically self limiting not lasting more than 3 months.
- ▶ Good sleep hygiene
- ▶ Pharmacological Management
 - ▶ Avoid overuse of analgesics
 - ▶ Prophylactic medications indicated for symptoms of primary headache disorder.
 - ▶ Melatonin if sleep disruption present

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Management of Post Traumatic Headaches cont.

- ▶ Prolonged symptoms may be exacerbation of tension or migraine headache with management directed at those diagnoses.
- ▶ Behavioral interventions to manage pre-existing primary headache disorder.

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