Concussion –
Fitting the Pieces Together for a Best Practices Model

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Objective

• End objective is to ensure student success

• Student success following concussion is dependent on the implementation of best practices for injury management

• Simple steps can be taken to help ensure a concussion management plan is in place that is in line with consensus based best practices

• This presentation will highlight the importance of concussion best practices and illustrate methods for implementation of a concussion management plan
Facts and Statistics

- 300-1,000 TBI-related ER visits per 100,000 people aged 15-64 years (CDC)
  - Highest rates among 15-24 age group (~1% of individuals)
  - Majority are mTBI (concussion) across all groups

- Almost 447,000 students and 45,000 faculty and staff across CSU campuses
Facts and Statistics

• Recent Harvard study of NCAA intercollegiate athletics suggests that 50-80% of all sport-related mTBIs go unreported
  • Football athletes report having 6 suspected concussions and 21 “dings” for every diagnosed concussion (a ratio of 27:1)
• Likelihood of contact sport athlete sustaining a concussion as high as 20% per season (5-20% for all contact sports)
• Close to 8,000 CSU NCAA athletes, with more than half involved in a contact sport. Thus...
  • 200-800 reported concussions
  • AND anywhere from 400-4,000 unreported concussive events
Facts and Statistics

• Many CSU campuses have
  • 2x as many Club and
  • 4x as many Recreational Sport athletes as they do intercollegiate athletes

• Students not involved in athletics still get into bicycle and motor vehicle accidents, end up in fights and fall off of bunk beds.
What is a concussion (mTBI)?

• Brain injury caused by a blow or jolt to body or head that disrupts normal brain functioning
  • Biomechanical forces acting to shake brain inside of skull
  • Complex pathophysiological process – neurometabolic cascade
  • May result in neuropathological changes (implications for disease)

• Symptoms can occur after a single or multiple (often milder and repetitive) impacts and can take minutes, hours or even days to present

• Highly individualized injury
  • Typically resolves spontaneously after days or weeks, though
  • Effects can linger months for upwards of 20% of injuries
Neurons and why we care

• Over **100 billion neurons** in your brain alone and many more neuroglia (help protect and support neurons)

• Communicate with chemicals and electrical signals to create/perceive YOUR ENTIRE WORLD

• **Concussion disrupts normal functioning**
  • Can have lasting and even permanent ramifications, especially if mismanaged
Common myths addressed

• A direct blow to the head is not required

• Symptoms may be subtle and can take time to settle in

• Loss of consciousness only occurs in ~5% of reported concussions

• Not all individuals experience headaches

• Pre-existing history of headaches, migraines, mood disorders and other related medical factors can complicate recovery related to certain symptoms and should not be seen as separate from or unrelated to concussive injuries
Signs and Symptoms

**Observed Signs**
- Disorientation
- Confusion
- Personality/mood changes
- Loss of memory
- Loss of consciousness
- Balance problems
- Slurred speech
- Vomiting

**Reported Symptoms**
- Headache
- Nausea
- Personality/mood changes
- Double or blurry vision
- Light or noise sensitivity
- Dizziness or off balance
- Mentally foggy or slow
- Difficulty concentrating
- Changes in sleep
Laws and policies

• CA AB 25 (Ed. Code 49475) – broadened to “all student-athletes”
  • An athlete who is suspected of sustaining a concussion or head injury in an athletic activity shall be immediately removed from the activity for the remainder of the day, and shall not be permitted to return to the activity until he or she is evaluated by a licensed health care provider, trained in the management of concussions, acting within the scope of his or her practice. The athlete shall not be permitted to return to the activity until he or she receives written clearance to return to the activity from that licensed health care provider.
  • Requires, annually, a concussion and head injury information sheet to be signed (by athlete and athlete’s parent or guardian) and returned to school site before the athlete may begin practice or competition.
Laws and policies

• CA AB 2127
  • Requires graduated return to play (RTP) protocol of no less than 7 days for all concussions (diagnosed by licensed health care professional)
  • Also puts limits on full-contact practice

• CA AB 1451
  • Mandates biannual concussion training for all coaches

- A written concussion management plan
- Annual process that ensures student-athletes are educated about signs and symptoms of concussion
- Any student-athlete who exhibits signs, symptoms or behaviors consistent with concussion shall:
  - be removed from practice or competition
  - be evaluated by medical staff member with experience in the evaluation and management of concussion
- Any student-athlete **diagnosed** with a concussion may not return to activity for at least remainder of day **** NOT CONSISTENT WITH GUIDELINES
- Medical clearance shall be determined by the team physician or designee according to the concussion management plan
NCAA Concussion Policy and Legislation
(2015 NCAA Conference)

• Establishes a review mechanism for concussion procedures and protocols to determine whether athletics departments have submitted a concussion safety protocol that...
  • Meets the requirements of legislation AND
  • Is consistent with the Inter-Association Consensus: Diagnosis and Management of Sport-related Concussion Guidelines
    • Education management plan – student-athletes, coaches, ATC, AD, team physician
    • Pre-participation “baseline” assessments
    • Recognition and diagnosis – assessments, remove from play at least a day
    • Post-injury assessments – what test, how often, eval. by physician
    • Return to activity plan – return to play and return to learn
CSU Sport Clubs Guide (Sept 2014)

- Recommends Athlete Injury Prevention Program (AIPP) that contains a “policy and practice in place to address concussions” (CMP)
- Urges Clubs to “take a conservative approach” and lists minimum components for concussion protocol, including, but not limited to:
  - Education prior to training or competition for students, coaches, and other applicable persons
  - Training for coaches on signs and symptoms, and sideline assessment protocol
  - Documentation of all training, education, and baseline assessments
  - Track incidents of concussion (suspected and confirmed)
  - Return-to-play protocol (should include return-to-learn campus policy)
  - Annual review of SC and/or campus concussion policy and practices
Education

**NCAA** requires:

- “Institutions should provide applicable NCAA concussion fact sheets or other applicable educational material annually to student-athletes, coaches, team physicians, athletic trainers, and athletics directors. There should be a signed acknowledgement that all parties have read and understand these concussion facts and their institution’s concussion management plan.”

**CA AB 1451** requires:

- Training for sports coaches on understanding the signs and symptoms of concussion and the appropriate response to concussions.
  - Required to receive updated bi-annual concussion training.
What is a Concussion Management Plan?

A series of policies, procedures and actions that aim to:
• Assist in identifying an individual with a potential concussion, and
• Ensure that any individual diagnosed with a concussion receives appropriate care and attention while on campus (at school or work) in order to aid in their recovery.
Campus divisions and resources related to CMP (Who?)

- NCAA Intercollegiate Athletics
- Sport Clubs
- Student Activities
- Student Health
- Student Disability Resources
- Campus-wide
- Concussion Program (resources) on campus
Concussion Management Plan

Education: Prevention, Identification & Management
- Coaches, Athletic Trainers, Athletic Director and Staff
- Student-athletes, guardian (if minor)
- Concussion Management Team

Testing and Treatment
- Baseline testing
- Post-injury assessments
- Return to Learn and to Play Plans
**Essential components of a CMP**

- **Education**
  - students, coaches, and other applicable persons

- **Training** for coaches and athletic training staff
  - signs and symptoms, and identification and management protocol

- **Baseline assessments** for individuals in contact sports
  - Computerized neurocognitive testing, balance assessments, etc.

- **Post-injury assessments** for all suspected concussions

- **Return to activity protocol** (return-to-learn and return-to-play)

- **Documentation** of all training, education, and baseline assessments

- **Track** incidents of concussion (suspected and confirmed) and management

- **Annual review** of CMP policy and practices
Concussion Education (HSU)

Annual for student athletes, coaches, athletic trainers, athletic directors, related health professionals and any additional designated parties as pertinent

- Prior to season
- Content
  - Definition of concussion
  - Prevention strategies
  - Signs/symptoms
  - What to do if a concussion is expected
  - Process for return to learn and return to play
  - Responsibilities of specified parties
- Acknowledgement/signature of understanding (documentation kept on file)
Baseline and Post-injury Management (HSU)

Baseline assessments (biannually as long as injury-free)
- ImPACT® computerized neurocognitive test
- Standardized balance assessments, SAC/SCAT

If a suspected concussion has occurred, the athlete is:
- Removed from play immediately and for at least 24 hours (NCAA recommendation/CA Bill AB25/California Interscholastic Federation's Bylaw 313/Consensus Statements)
- Seen by healthcare professional trained in evaluation and management of concussion
- Prescribed immediate cognitive and physical rest (and emotional)
- Administered post-injury ImPACT® and additional assessments as soon as possible (not within first 24 hours and dependent on symptom severity) and until scores resolve
- Prescribed graded program for return to learn and return to play
- Given final clearance from team physician or trained medical professional before return to full participation/competition (uncontrolled contact)
“Return to Learn”
Academic Accommodations

• Involve some combination of Disability Resources, Student Affairs and Student Health to develop plan

• Typical accommodations exist, for example:
  • Excused absences
  • Rest periods during day/labs/longer classes
  • Extended time on assignments or tests
  • Quieter exam room
  • Note taker or ability to record lectures

• BUT, each individual injury requires a tailor-fit based on symptoms
RTL Academic Plan

Step 1
Full cognitive/academic rest – no screens

Step 2
Light academic activity – limited attendance, light work

Step 3
Increased academic activity – increased attendance, work load

Step 4
Full time attendance – single class exceptions as necessary (e.g. PE or labs)

Step 5
Full academic program – full time attendance for all classes, testing resumes
RTP Physical Activity Plan

Individual must be at least 24 hours symptom free at rest and with cognitive exertion before beginning RTP

**Step 1**
Increase heart rate – 5-15 minutes of light exercise (no resistance)

**Step 2**
Moderate exercise – limited head and body movement, moderate intensity (sport specific)

**Step 3**
Non-contact exercise – increase intensity, sport-specific drills, no contact

**Step 4**
Full practice – reintegrate into full contact practice

**Step 5**
Play – return to competition
Objectives of CMP

Ensure student success
  • Short and long-term brain health

Help protect universities from undue liability

Remember…
Mismanaged injuries can have lasting or permanent repercussions

Potential immediate long-term sequelae
- Irritability, anxiety and depression, and even suicidal thoughts
- Challenges related to movement and balance
- Difficulty with attention span, concentration and memory
- Impediments to judgment and impulse control
- Reductions in reaction time

Potential delayed long-term sequelae
- CTE... AD... Parkinsonism... ALS, CTEM (mimics ALS)
  - Onset for CTE younger than early-onset dementia (symptoms often begin in 30s)
Mismanaged concussions = Lawsuits
Who’s getting sued and why?

Who?
- NCAA
- Schools – HS, colleges and universities
- Coaches
- Athletic trainers

Why?
- Primary: Negligence
- Other reason: Premises Liability
Concussion lawsuits – Negligence

• No concussion protocol or an inadequate protocol
• Did not follow concussion protocol
• Provided inadequate safety equipment
• Provided inadequate training to the athletes
• Lack of informed consent… not aware of risks
• Failure to refer to appropriate medical care
• Lack of training or supervision
  • Coaches, trainers, or referees
Significant settlements and judgments

Walen vs. Portland State U. - $5 million, negligence
Plevretes vs. La Salle U. - $7.5 million, negligence
Eveland vs. San Marcos SD - $4.3 million, negligence
Gill vs. Tamlapias High - $470,000, premises liability
Lystedt vs. Tahoma SD - $14.6 million, negligence
Kwasny vs Bishop U - $7.5 million, negligence
How to protect against litigation

• Develop and implement CMP based on best practices

• KEEP RECORDS!
  • Education – when occurred and who received
    • Student pledges
    • Coaches and staff certifications
    • Attendance of seminars and trainings
  • Assessment Records
    • Records of diagnosis
    • Return to activity progression and
    • Signed clearance to return to activity by medical staff
Questions or Comments?