Routing Report

This routing report is provided to assist principals and athletic directors in ensuring that these resources are seen by all necessary school personnel. Each individual should check the appropriate box after having read this booklet and pass it on to the next individual on the list or return it to the athletic administrator.

☐ Principal  ☐ Other: ______________
☐ Athletic Director  ☐ Other: ______________
☐ Football Head Coach  ☐ Other: ______________
I hope you have had a relaxing and enjoyable summer vacation and that you are ready to start the 2012-13 school year.

In this booklet please find the necessary materials for football.

Please Note

- Each athlete must have nine (9) days of practice prior to the date of the scrimmage.
- Senior high football teams may start practice on Monday, August 6, 2012; this should allow you to either eliminate a Saturday practice or to use it as a make-up for athletes that miss a practice.
- Junior high football teams may start practice on Monday, August 13, 2012.
- This is the first year of the two-year cycle for district assignments.
- This is the first year of the new football playoff format. Each team can track their regular season progress and standings weekly on the MSHSAA website (www.mshsaa.org).
- Please read the Football Manual found on the MSHSAA website (www.mshsaa.org).

If I can be of any additional assistance, please don't hesitate to call. I look forward to working with you and your students this school year.

Best wishes for an enjoyable school year and good luck in the 2012 football season!
FALL PRE-SEASON PRACTICE GUIDELINES

Intent:
To encourage state high school athletic associations to recommend a pre-season acclimatization and recovery model for all sports that enhances student-athlete well-being.

Rationale:
Research has supported the findings, which indicate an increase in heat-related injuries resulting from inadequate pre-season acclimatization practices (1-12). Similarly, the incidence in stress-related injuries (i.e., Stress fractures, tendonitis) has been found to be directly proportional to the work-rest ratio of the athlete (6, 7, 13 – 15). For these reasons, it is the recommendation of the National Federation of High School Association’s (NFHS) Sports Medicine Advisory Committee and the National Athletic Trainers’ Association’s (NATA) Secondary School Committee that all fall sports use acclimatization and recovery principles to develop their fall pre-season practice schedules for the purpose of enhancing the student-athlete well-being. The primary focus of the pre-season period should be to provide an adjustment period to the intensity and duration of exercise and environmental conditions. The guidelines outline a fourteen-day period based on the science of acclimatization that also differentiates sports with equipment due to the unique stress on the body's heat dissipation capabilities. The foundation for this model was based upon the NCAA version adopted by the NCAA Committee on competitive Safeguards and Medical Aspects of Sports.

Definitions:
Prior to participation in any pre-season practice activities, all student-athletes should be required to undergo a Pre-participation Medical Examination (PPE) administered by a physician (MD, DO) or as required by state law.

The **Acclimatization Period** defined as the first fourteen calendar days of pre-season practice for all student-athletes. This period shall begin once equipment is used. Any practices conducted prior to the utilization of any equipment, protective or otherwise, shall not be considered a part of the **Acclimatization Period**. All student-athletes, including those who arrive to pre-season practice after the first day of practice are required to follow the guidelines of the first days of the **Acclimatization Period**.

During the **Acclimatization Period**, it is highly recommended that student-athletes not participate in more than six consecutive days of practice.

A **Practice** is defined as the time a participant engages in physical activity. It is highly recommended that each practice be no more than three hours in length. Warm-up, stretching, and cool-down activities are to be included as part of the practice time. All conditioning and/or weight room activities shall be considered practice.

A **Walk-Through** shall be defined as a teaching opportunity with no protective equipment (i.e., helmet, shoulder pads, catcher’s gear, shin guards, lacrosse sticks) or equipment related to a given sport (i.e., footballs, blocking sleds, pitching machine, soccer balls, marker cones). It is highly recommended the time engaged should not be more than one hour in length. This time does not include conditioning or weight room activities.

A **Recovery Period** is defined as the time between the end of one Practice or Walk-Through and the beginning of the next Practice or Walk-Through. During this time, it is strongly advised that no physical activity be permitted (speed, strength, conditioning, agility, or Walk-Through).
The Fourteen Day Acclimatization:

1. During the first seven calendar days, it is advised that participants not engage, in more than one practice per day.

2. If a practice session is interrupted by inclement weather or heat restrictions, it is advised the session may be divided for the good of the student-athlete's welfare as long as the total practice time does not exceed three hours for that session.

3. A Walk-Through is permitted during Days 1 - 6 of the Acclimatization Period. However, a one hour Recovery Period is advised between the end of Practice and the start of the Walk-Through or vice versa.

4. During Days 1-2 of the Period, with sports requiring helmets and/or shoulder pads, it is advised that the only protective equipment student-athletes may wear is a helmet. During Day 3-5, it is advised that only helmets and shoulder pads may be worn. It is highly recommended that live contact not be permitted during this time.
   a. Football only: During Days 3 – 5, it is permissible to initiate contact with blocking sleds and tackling dummies.

5. Live Contact/Scrimmage:
   a. Sports listed as “No Contact” or Limited Contact”: It is advised that a scrimmage be permitted on Day 6.
   b. Sports listed as “Full Contact”: It is advised that the first live contact drills be permitted on Day 6. A scrimmage may be permitted on Day 13.

6. Beginning Day 8 and continuing through to Day 14, it is highly recommended that the practice schedule not exceed a 2-1-2-1 format. This means that a day consisting of two practices should be followed by a day with only one practice. One Walk-Through session would be permitted each day. If a two-practice day were followed by a day off, a two-practice day would be permitted on the following day.

7. On days when two practices are conducted, it is highly recommended that either practice not exceed three hours in length. Warm-up, stretching, and cool-down activities are included as part of the practice time. Practices should be separated with at least three continuous hours of recovery time between the end of the first practice and the beginning of the very next practice. It is highly recommended that student-athletes not participate in more that five hours of practice activities on these days and does not include Walk-Through sessions.

8. On days when a single practice is conducted, it is highly recommended that practices not exceed three hours in length. A Walk-Through is permitted and should be separated with at least one hour of continuous recovery time between the end of the first practice and the Walk-Through, or vice versa.

Disclaimer:
These guidelines provide general recommendations for conducting pre-season practice for secondary school-age student-athletes. In addition, these guidelines can be applied during the academic year to ensure the athletes arrive with adequate sport-specific conditioning. Actual practice should not be based solely on the information contained in these guidelines, but should be customized to the specific geographic location of the school or practice facility. Each individual using these guidelines is responsible for prudent judgment with respect to each practice, athlete and facility and each athlete is responsible for exercising caution when following these general recommendations.
The following program represents a sample program of the Pre-Season Practice Guidelines:

**Days 1 – 6**

**3 Hour Practice:**
- 7:00 a.m. – 7:15 a.m. Warm-up/Stretching Activities
- 7:15 a.m. – 9:45 a.m. On field Practice/Conditioning Drills/Weight Room
- 9:45 a.m. – 10:00 a.m. Cool Down

**3 Hour Recovery Period:**
- 10:00 a.m. – 1:00 p.m. No Activity

**1 Hour Walk-Through:**
- 11:00 a.m. – 12:00 p.m. Teaching Opportunity; No Equipment

**Days 8 – 14: 2-1-2-1 Format (2 Practices/Day)**

**3 Hour Practice:**
- 8:00 a.m. – 8:15 a.m. Warm-up/Stretching Activities
- 8:15 a.m. – 10:45 a.m. On Field Practice/Conditioning Drills/Weight Room
- 10:45 a.m. – 11:00 a.m. Cool Down/Stretching Activities

**3 Hour Recovery Period:**
- 11:00 a.m. – 2:00 p.m. No Activity

**1 Hour Walk-Through:**
- 2:00 p.m. – 3:00 p.m. Teaching Opportunity; No Equipment

**2 Hour Practice:**
- 3:00 p.m. – 3:15 p.m. Warm-up/Stretching Activities
- 3:15 p.m. – 4:45 p.m. On Field Practice/Conditioning Drills/Weight Room
- 4:45 p.m. – 5:00 p.m. Cool Down/Stretching Activities

**Days 8 – 14: 2-1-2-1 Format (1 Practice/Day)**

**3 Hour Practice:**
- 8:00 a.m. – 8:15 a.m. Warm-up/Stretching Activities
- 8:15 a.m. – 9:45 a.m. On Field Practice/Conditioning Drills/Weight Room
- 9:45 a.m. – 11:00 a.m. Cool Down/Stretching Activities

**3 Hour Recovery Period:**
- 11:00 a.m. – 2:00 p.m. No Activity

**1 Hour Walk-Through:**
- 12:00 p.m. – 1:00 p.m. Teaching Opportunity; No Equipment
References:


2012 FOOTBALL
SEASON REGULATIONS

Rules in this section are specific for football. Refer to Constitution, By-laws and Board of Directors Policies for regulations related to age, residence, scholarship, amateur status, etc.

1. PRESEASON
   a. An organizational meeting may be conducted prior to the season opening provided no instruction or practice is included.
   b. Issuing of equipment may take place prior to the earliest day for practice (August 6).

2. LENGTH OF SEASON
   a. High School - the earliest day practice may begin is Monday of Week 6 (August 6). The season ends on the Sunday of Week 22 (November 25).
   b. Junior High School sports seasons shall be twelve consecutive calendar weeks in length beginning with the first organized practice with any part of a sports squad and ending with the last interscholastic contest.
   c. The sports season for the ninth grade team may be scheduled at any time during the period beginning with the first possible practice date for the senior high school fall season and ending with the last day of school.
   d. The sports season for the seventh and eighth grade teams may be scheduled at any time during the period beginning with Monday August 15, and ending with the last day of school in the spring.

3. MINIMUM DAYS OF CONDITIONING PRACTICE
   a. The first three days of conditioning practice for each football team and for each individual player shall be without player equipment, excepting helmets, shoulder pads, jerseys and shoes. No body-to-body contact is permitted during these three days.
   b. There must be conditioning practices on a minimum of 9 different days (including the three days in 3.a.) before the preseason inter-school football scrimmage may be played.
   c. There must be a minimum of 14 conditioning practices on 14 different days before the first interscholastic game may be played.
   d. The 9/14 minimum days of conditioning practice prior to the first preseason inter-school scrimmage/regular season interscholastic game is a team and an individual requirement.

4. PRESEASON INTER-SCHOOL SCRIMMAGE
   a. Senior high schools only may participate in the preseason inter-school scrimmage.
   b. The preseason inter-school scrimmage shall consist of three or four schools.
   c. The preseason inter-school scrimmage must be under contract with participating schools.
   d. The preseason inter-school scrimmage shall be officiated by MSHSAA registered officials.
   e. Each participant shall have at least 9 individual days of physical conditioning practice prior to participating in the preseason inter-school scrimmage. The 9th day of conditioning practice must occur on a day preceding the day of the event.
   f. No kicking game shall be permitted.
   g. When there are four schools participating, a maximum of 3 quarters per team with a maximum of 12 offensive plays per quarter shall be allowed. When there are three schools participating, a maximum of 2 quarters per team with a maximum of 18 offensive plays per quarter shall be allowed.
   h. All game rules shall apply with the exception that coaches may be on the field to provide instruction.
   i. The scrimmage may only be conducted on the Friday or Saturday of Week 7 (August 17 or August 18).
   j. The host school shall determine the admission charge.

5. DATE OF FIRST GAME
   The first game may not be played before Friday, August 24.
6. **MAXIMUM ALLOWED GAMES**
a. The maximum number of games is 10 for senior high schools.
b. The maximum number of games is 8 for grade 9.
c. The maximum number of games is 6 for grades 7 and 8.
d. The MSHSAA district games are part of the maximum allowed games.
e. The MSHSAA regional, sectional, quarterfinal, semifinal and final games are not part of the maximum allowed games.

7. **INDIVIDUAL PARTICIPATION LIMITATIONS**
a. No player may play in more than four quarters on one calendar date.
b. No player may play in a total number of quarters for the season that exceeds five times the number of games played by the higher team on which he plays.
c. Each school shall be responsible for keeping a record of the participation of players of both teams.
d. MSHSAA By-Law 351 was amended by revising the way quarters of participation in kicking downs are now to be counted for play by counting kicking downs within a game as only 1 quarter of participation.

8. **FLAGRANT OR UNSPORTSMANLIKE CONDUCT**
a. The Board of Directors is vested with the power to suspend schools from membership for the unsportsmanlike conduct of teams, coaches, students or fans.
b. Each school is responsible for the conduct of its teams, coaches, students and fans at games both at home and away.
c. The Board may delegate to the Executive Director power to take immediate action when a situation demands such.
d. The party or parties concerned shall have the privilege of requesting a hearing before the Board of Directors at its next regularly scheduled meeting for a review of the case and the action taken by the MSHSAA Office.
e. The Board of Directors may, at its discretion, substitute a fine not to exceed the sum of $25 for each offense in lieu of suspension from the Association or may take any action that it deems advisable, that does not exceed the maximum penalty of 365 days suspension from the association.
f. A player who is ejected from a contest for unsportsmanlike conduct shall at a minimum be prohibited from playing in the next interscholastic contest at that same level.
g. A coach who is ejected during a contest for unsportsmanlike conduct shall at a minimum be prohibited from coaching and attending the next interscholastic contest for that team.
h. A player or coach who is ejected from the Preseason Inter-School Scrimmage for unsportsmanlike conduct shall at a minimum be prohibited from playing or coaching in the remainder of the Preseason Inter-School Scrimmage and in the next interscholastic varsity contest.

9. **PROHIBITION OF PRACTICE AT TOURNAMENT SITE**
a. Practice at regional, sectional through semifinal contests.
   1. There shall be no practice held on the field except for the home team on their home field unless the game is moved to a neutral site with an artificial surface.
   2. In the event that the game is moved to a neutral site with an artificial surface, if the field is available to both teams, one practice would be permitted for each team.
   3. Warm-up prior to game time shall be limited to a maximum of 75 minutes.
b. Practice at final contests.
   1. There shall be not practice held on the field.
   2. Warm-up prior to game time shall be limited to a maximum of one hour (and a minimum of 25 minutes at the Dom in St. Louis).
10. CONTEST CONTROL

a. All schools are responsible before, during and after a contest for the proper conduct of their coaches, athletes, students and other spectators.

b. Schools are expected to prohibit and/or eliminate pranks, mischief or any other activity involving destruction, theft, etc., of athletic facilities, equipment and material.

c. Schools will be held responsible for seeing that no damage to property, tearing down of goal posts, etc., is done by their students or fans.

d. Students engaging in vandalism will be considered ineligible.

e. School administrators are to be present, both home and away, and responsible for supervising and controlling coaches, players, cheerleaders, band members, other student groups, and all of their fans; and to take steps to prevent vandalism, violence and other acts of unsportsmanlike conduct.

f. There have been instances where fans have been permitted to gather and stand along the sidelines or end lines of playing fields and a number of instances have been reported in which fans have approached the sidelines near the end of the game.
   1. Generally, this is for the purpose of rushing onto the field to express jubilation over winning.
   2. In other instances, fans have cast disparaging remarks toward opposing players and officials.
   3. In either case, it creates a situation conducive to crowd control problems.
   4. All schools should take steps to educate their students and fans to refrain from moving onto the court or playing field following games.
   5. The practice of entering these areas following games does not contribute anything toward the most worthwhile objectives of interscholastic competition and can contribute toward misconduct.
   6. Under these conditions, the Board of Directors has adopted a policy authorizing and urging game officials to stop the game when this occurs, send the teams to the benches, and requests the host school administration to have the fans return to their seats or leave the field before play is continued.
   7. The game shall not continue until the fans comply.
   8. The primary responsibility for compliance with the game officials request falls on the host school, but the visiting school is also responsible for seeing that their fans remain in their seats.

Football Field Marking Requirement for 2007 and Beyond

A 2007 NFHS Football Rule change required a four-inch wide broken restraining line shall be placed around the outside of the field, at least two yards from the sidelines and end lines. The additional lines aid officials and game management in keeping non-team personnel outside the team box from getting too close to the field for their safety and the safety of the players and officials and allow for better game administration. This line is an NFHS Rule that must be placed on all natural grass fields without exception.

For stadiums where the playing surface is an artificial turf with multi-sport lines previously sewn into the surface that does not include the newly required football restraining line, listed below are some suggestions to meet new rule requirement:

1) For multiple-sport fields, use another line (possibly the soccer sideline) that is at least two yards from the football sideline.

2) Use the off field stand-up yard markers on each side of the field plus stand-up plastic cones alternating each five yards positioned at least two yards off the side line.

3) Use stand-up plastic cones two yards off each end line.

4) Use non-permanent chalk or paint of other non-permanent substance (removable tape, etc.) to temporarily place the required lines.

Advertising and/or commercial markings may not obstruct the yard lines, hash marks, or nine-yard marks (seven-yard marks for nine-, eight-, and six-player).

Please contact Harvey Richards at the MSHSAA Office if you have questions or for whatever reason cannot meet this new NFHS Football Rules requirement.
The change to MSHSAA By-Law 351.0 was submitted by the Football Advisory Committee changing player limitations by counting participation in kicking downs only as a maximum of one quarter of participation to enhance player development.

- Example 1: A player participates as a member of the kickoff team in all four quarters but does not participate in any other downs. In this situation the quarters of participation equal 1.
- Example 2: A player participates as a wide receiver in the 2nd and 3rd quarters and is the punter in all 4 quarters. In this situation the quarters of participation equal 3.

This change was voted on and passed by the member schools effective July 1, 2004.

MSHSAA By-Law 3.23.1 “PLAYER LIMITATIONS” now revises the way quarters of participation in kicking downs are counted for play beginning with the 2004-05 school year and reads as follows:

3.23.1 PLAYER LIMITATIONS

No player may play in more than four quarters on one calendar date or in a total number of quarters for the season that exceeds five times the number of games played by the higher team on which he plays.

Participation in kicking downs only (downs in which one team initially lines up in either a scrimmage kick or a free kick formation as per NFHS Rules) during a game would count as a maximum of one quarter of participation. Participation in other downs would count as one quarter of participation for each quarter the player participates up to a maximum of four quarters per game. Each school shall be responsible for keeping a record of the participation of players of both teams utilizing the MSHSAA standardized Football Player Participation Form.

The Football Advisory Committee also recommended and the MSHSAA Board of Directors approved the use of an official “Football Quarters – MSHSAA Participation Record.

- One sheet should be filled out for each game played at all levels.
- There is enough room on one sheet for 45 players.
- If you play more than 45 players in any particular game fill out a second sheet for that game.
- You may copy the enclosed sheet as often as necessary.
- Only the enclosed sheet will be accepted if a question is raised as to how many quarters a player has played.
- A sheet for each game should be filled out after the completion of the game and prior to the next scheduled game.

DEFINITION OF KICKING DOWN: Any down in which a team initially lines up in a free kick or scrimmage kick formation as defined by NFHS Rules.
FOOTBALL QUARTERS MSHSAA PARTICIPATION RECORD

DATE: __________  HOME SCHOOL: ______________________  VISITING SCHOOL: ______________________

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The NOCSAE Football Helmet Standard was first published in 1973. Manufacturers immediately began making helmets that would pass the test standards. Every player participating under either NCAA or NFHS football rules must wear a helmet on which the seal “Manufacturer Certifies Meets NOCSAE Standards” is permanently affixed on the outside portion of the helmet.

Licensed reconditioners themselves test used helmets to the original standard applicable when the helmet was new.

The NOCSAE helmet standards are voluntary test standards that have been developed to reduce head injuries by establishing requirements of impact attenuation for football helmets/face masks, baseball/softball batting helmets, baseballs and softballs and lacrosse helmets/face masks. These standards are adopted by various regulatory bodies for sports, including the National Collegiate Athletic Association (NCAA) and the National Federation of State High School Associations (NFHS).

NOCSAE continually studies all types of helmets and test conditions, and the severity of the tests will be changed when credible evidence is presented that such changes will affect injury reduction.

The NOCSAE helmet standard is not a warranty, but simply a statement that a particular helmet met the requirements of performance tests when it was manufactured or reconditioned. For football helmets, NOCSAE does recommend that the consumer adhere to a program of periodically having used helmets recertified. Because of the difference in the amount and intensity of usage on each helmet, the consumer should use discretion regarding the frequency with which certain helmets are to be recertified.

Those helmets which meet the NOCSAE standard must bear the seal, “Meets NOCSAE standards” and the logo for that type of helmet. The seal and the logo are permanently branded on the outside rear portion of the helmet.

The NOCSAE standard does not require the use of specific brand name replacement parts when helmets are reconditioned. Neither the test, nor the performance standard, call for any specific materials or designs. The standard speaks only to the performance of the helmet when new, or after reconditioning and recertification.

**NOCSAE Recertification Licensees 2011-12***

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<td>J &amp; H Athletic Equipment Reconditioning, Inc.</td>
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*Complete contact information for these companies can be found on the NFHS web site at [www.nfhs.org](http://www.nfhs.org) under the sport of football.*
REDUCING BRAIN AND SPINAL INJURIES IN FOOTBALL

In 1998, the National Athletic Training Association (NATA) extended invitations to a large number of professional organizations to gather for the purpose of developing guidelines for the emergency management of the athlete with a suspected spinal injury. Discussion centered on the “pre-hospital” care of the athlete with discussions occasionally drifting into emergency room care. The guidelines as developed by the inter-association task force were approved by those in attendance. Included in this meeting were representatives of manufacturers of sports helmets (Riddell, Schutt, etc.), NOCSAE and the Paralyzed Veterans of America. The purpose of this meeting was to discuss equipment concerns with manufacturers and to formulate a plan to distribute information to all participating organizations. The following guidelines were adopted:

GENERAL GUIDELINES

• Any athlete suspected of having a spinal injury should not be moved and should be managed as though a spinal injury exists.
• The athlete’s airway, breathing and circulation, neurological status and level of consciousness should be assessed.
• The athlete should not be moved unless absolutely essential to maintain an airway, breathing and circulation.
• If the athlete must be moved to maintain airway, breathing and circulation, the athlete should be placed in a supine position while maintaining spinal immobilization.
• When moving a suspected spine injured athlete, the head and trunk should be moved as a unit.
• One accepted technique is to manually splint the head to the trunk.
• The emergency medical services system should be activated.

FACE MASK REMOVAL

• The facemask should be removed prior to transportation, regardless of current respiratory status.
• Those involved in the pre-hospital care of injured football players should have the tools for face mask removal readily available.

FOOTBALL HELMET REMOVAL: The athletic helmet and chinstrap should only be removed …

• If the helmet and chin strap do not hold the head securely, such that immobilization of the helmet does not always immobilize the head.
• If the design of the helmet and chin strap is such that even after removal of the face mask, the airway cannot be controlled or ventilation provided.
• If the facemask cannot be removed after a reasonable amount of time,
• If the helmet prevents immobilization for transportation in an appropriate position.
    o Spinal immobilization must be maintained while removing the helmet.
    o Helmet removal should be frequently practiced under proper supervision.
    o Specific guidelines for helmet removal need to be developed.
    o In most circumstances, it may be helpful to remove cheek padding and/or deflate air padding prior to helmet removal.

EQUIPMENT REMOVAL

• Appropriate spinal alignment must be maintained. There needs to be a realization that the helmet and shoulder pads elevate an athlete’s trunk in the supine position. Should either be removed, or if only one is present, appropriate spinal alignment must be maintained. The front of the shoulder pads can be opened to allow access for CPR and defibrillation.
• Additionally, the task force encourages the development of a local emergency care plan regarding the pre-hospital care of the athlete with a suspected spine injury. This plan should include communication with the institution’s administration and those directly involved with the assessment and transportation of the injured athlete.
• All providers of pre-hospital care should practice and be competent in all of the skills identified in these guidelines before they are needed in an emergency situation.
Athlete Mouthguards: Know the Differences!
Are You Getting the Anticipated and Expected Protection?
by
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Coaches and trainers have all heard, “My mouthguard is uncomfortable. I can’t talk clearly with it. It makes me gag. Why should I wear it?” Many football players experience discomfort, difficulty in breathing, problems with speech, and lack of retention with their mouthguards. It has gotten to be such a problem that many professional football players do not utilize any type of mouthguard. In fact, at the collegiate level where mouthguards are mandatory equipment, many of the athletes do not wear mouthguards. On any given Saturday, it is easy to spot which athletes, especially quarterbacks, are not using mouthguards. And those that are wearing mouthguards are left with a false sense of security if they are utilizing one that does not fit properly. The resultant injury can come at a high cost when it comes to dental and medical treatment, and can be career and life threatening if concussions are sustained.

At impact, when protection is most needed, there is none. Basically, store-bought mouthguards generally do not fit the athlete as accurately as professionally made custom made mouthguards. A properly fitted mouthguard would not dislodge at impact. Custom made mouthguards made by a qualified health professional do fit the athlete accurately. There are four types of mouthguards; types I, II, III, and IV. Type I is the store bought over-the-counter STOCK mouthguard. They are removed from the bag and placed directly in the mouth. There is no attempt at fit. When push comes to shove, they offer very little security. They are the least expensive and offer the least protection. They are kept in the mouth by constantly biting down and putting pressure against the teeth. Also available over-the-counter is the Type II-BOIL & BITE Mouthguard. This is the most common type of mouthguard worn today. However, they come in limited sizes and with little attempt at proper fit. The athlete forms the mouthguard by placing it in boiling water and molds the shape with tongue, lip, and finger pressure. These distort easily as warm body temperatures are sufficient enough to warp and deform the mouthguard. Also, during formation, the athlete is asked to bite down creating such a thin surface that there is no separation between the upper and lower jaws to prevent a possible concussion. Again, a false sense of security.

In 1993, a paper by Joon Park, Department of Biomedical engineering at the University of Iowa College of Dentistry commented, “Unless dramatic improvements are made in these products, they should not be promoted to the customers as they are now.”

We often see players trim these type II mouthguards off at the back so they cover only the anterior teeth. In virtually every case, they are cutting these mouthguards because they do not fit and are uncomfortable. Once you shear off the posterior segment of the mouthguard, you are removing the protective properties for concussion. The mouthguard needs coverage to at least the first molar, at a specific thickness of at least 3mm, to be preventive.

The third variety is the Type III-Vacuum Custom Made Mouthguard built by the team dentist or trainer from a model or cast of the athlete’s mouth. An exact impression is taken for a plaster or stone mold to fabricate a mouthguard with a vacuum machine. Until recently, this was believed to be the best mouthguard available. The medical/dental literature is now describing that over time these mouthguards can undergo memory change, so the mouthguard which fits at the initial insertion, after several weeks of performing in the athletes mouth, becomes loose, thins out and perforates as the athlete chews through it. There is no way to insure a proper thickness. In the past, when making these Type III mouthguards, health care providers had to remake them every few weeks to insure proper protection for athletes.

Now, with the Type IV variety, the mouthguards last the entire season. Today’s state of the art mouthguard is believed to be the Type IV Pressure Laminated Custom Made Mouthguard. It is fabricated by the team dentist or trainer from several layers of mouthguard material in a special heat/pressure lamination machine. Due to the method of production, the material maintains its fit and protective thickness over prolonged periods of time. The true test of a comfortable protective mouthguard is whether or not it can be worn without using a strap. Does it stay in the mouth comfortably without hindrance in speech and breathing? Can it be worn by the quarterback comfortably without impeding performance?

It is essential that mouthguards maintain a perfect fit and sufficient thickness for the prevention of concussion. The medical/dental literature has shown that the number of concussions caused by a blow to the chin can be dramatically reduced when a proper mouthguard is worn. During impact to the chin, in most instances, the temporal bone is violated as it houses nerves, blood supply, and auditory and balance mechanisms existing the base of the brain.
J.M. Stenger, in his classic paper published in the Journal of the American Dental Association as far back as 1964, recognized that dental/facial injuries, concussions and head and neck injuries were dramatically reduced when mouthguards were worn by the Notre Dame football team. Other well-established papers by William Haunts and P.J. Chapman, reported that properly fabricated custom mouthguards reduced the rate of concussion as well as dental and mandibular injuries. Chapman further stated, “The use of mouthguards should be encouraged in all contact sports as the most important value of the mouthguard is the concussion saving effect following impact to the mandible. This fact alone should make the wearing of mouthguards compulsory in all contact sports”.

It has also been demonstrated in the literature that both intracranial pressure and bone deformation were reduced with proper mouth protectors.

When the Type IV Heat Pressure Laminated Custom Mouthguards are made by the dentist or trainer, all posterior teeth can be comfortably covered with a predicted and consistent prescribed thickness to properly separate the teeth from blows to the jaw. In turn, the force of impact can be absorbed and equally distributed throughout the mouthguard. With proper thickness in the posterior segment of the mouthguard, the mandible (lower jaw bone) and maxilla (upper jaw bone) are separated and the force is not transmitted to the base of the brain. In football, when mouthguards are not worn, the mandible is placed in the most vulnerable position for injury and concussion, upwards and back into the fossa and base of the skull due to the tight strap that keeps the helmet on. It is no coincidence that the player that least wears a mouthguard (quarterback) is the athlete that sustains the most concussions from blows to the chin. It is also reported that once an individual has endured a first concussion he is four times more likely to experience another. Mouthguards can be properly made for speech and comfort and still fulfill the important job of concussion prevention.

The benefits of the new Type IV Pressure Laminated Mouthguard will be publicized more frequently in the near future. A mouthguard that fits properly, is comfortable, and is worn will be protective and reduce the number of injuries and concussions now evident at all levels of football. In this litigious society, it is important that the athlete knows all the options for injury prevention and makes the educated decision on what he/she wants to wear. One would not think of wearing ill-fitting helmets or other protective equipment. They why are athletes wearing ill-fitting mouthguards? Health professionals, coaches, and athletes all understand the value and need for measures to prevent injuries and maintain a healthy quality of life achieved by not bearing life debilitating injuries.

Concussive pain and blackouts don’t necessarily end with retirement. One need only to observe athletes such as Muhammed Ali, Jerry Quarry, Al Toon, Merrill Hodge and others to realize the possibility that repeated concussions can lead to permanent brain damage. Adding several years to a player’s career can be beneficial both financially and professionally and it is important to maintain the athlete’s quality of life well past retirement.

Also, it is essential to properly treat athletes who have a history of concussion and do all that is possible to help prevent further episodes. Dentally, once teeth are lost they do not heal or grow back. They are gone forever and the athlete is condemned to being a dental cripple for the rest of his/her life. By acknowledging that there are substantial differences in mouthguards, we can seriously look at providing a much higher level of protection for athletes.

NOTE: The above is a reprint, as it appeared, in the American Football Quarterly, Volume 2, Fourth Quarter 1996.
SUGGESTED GUIDELINES FOR MANAGEMENT OF HEAD TRAUMA IN SPORTS

Head trauma is a common problem in sports that has the potential for serious complications if not managed correctly. Even what appears to be a “minor ding or bell ringer” without loss of consciousness has a real risk of catastrophic results in a youngster who is returned to action too soon. The medical literature and lay press are reporting instances of death from “second impact syndrome” even after mild concussions. This increased vulnerability of the brain to concussions close together and the cumulative effects of multiple concussions are becoming known risks that need to be addressed.

At many athletic contests across the country, there is a lack of trained and knowledgeable individuals making the decision to return concussed athletes to the game. Frequently, there is undo pressure from various sources (parents, player, and coach) to return a valuable athlete to action ASAP. In addition, there is often unwillingness by the athlete who wants to play to report headaches and other findings that she/he knows will prevent his/her return to play. Research is now revealing some fairly objective, easy-to-use tests that can easily be performed on the sidelines which appear to identify subtle residual deficits that may not be obvious from the traditional evaluation. Although having base line data on the athletes at the time of the pre-participation examination enhances the usefulness of these tests, recent studies suggest the ability to differentiate concussed from non-concussed athletes with some of these instruments. These identifiable deficits frequently persist after the obvious signs of concussion are gone and appear to have relevance to whether an athlete can return to the game in relative safety. The significance of these deficits is still under study and the evaluation instruments represent a work in progress. However, even in their present state of evolution, their effectiveness, validity, and ease of utilization make them a much preferable way to assess a youngster after a concussion than the hit-and-miss methods now being utilized across the country. Again, these should not be utilized exclusively without consideration of the severity and nature of the injury, the interval since the last head injury, the level of play and the clinical judgment of the examiner depending on his or her training.

The National Federation of State School Associations recommends that State Associations distribute this information to the athletic directors in all their member schools so that persons making sideline decisions to allow an athlete to return to play can benefit from the latest knowledge on how to assess concussed athletes for warning signals that might suggest they not return to the game. In addition to the usual observations as to whether the athlete “seems OK,” some assessment of orientation, memory, and coordination at rest and after physical exertion is important to have a comprehensive knowledge of the athlete’s mental status.

We have outlined some guidelines below that may be helpful in establishing a protocol at your institutions. Please bear in mind these are general guidelines and must not be used in place of the central role that physicians and certified athletic trainers must play in protecting the health and safety of student athletes.

CONCUSSION EDUCATION AND MANAGEMENT PROTOCOL

Education
Concussions are common in sports. The Missouri State High School Activities Association (MSHSAA) believes that education of coaches, officials, athletes, and their parents or guardians are key to safely returning a student athlete to play. Appropriate immediate care after a suspected concussion, and follow up incorporating a multi-disciplinary team that includes the coach, parent or guardian, athlete’s physician, team physician and athletic trainer (if available), and school representatives, also are important for the proper management of a sport-related concussion.

Each school district will receive educational materials for coaches, athletes, parents, and school officials, required forms for student athlete participation and parent/guardian consent, and recommended medical clearance forms for return to play.

Annually, MSHSAA member school districts will ensure that every coach, student athlete, and parents or guardians of a student athlete completes a concussion and head injury information sheet and returns it to the school district prior to the student athlete’s participation in practice or competition. Officials will receive training from their parent organization. Each official’s organization will require annual concussion training and maintain a signed head injury information sheet for each official.

Recognition and Evaluation of the Athlete with a Concussion
1. Recognition of the signs and symptoms of a concussion is important. Every member of the team-athlete, teammates, coaches, parents or guardians, officials, athletic trainers, and team physicians have a duty to report a suspected concussion. Not all school districts have medical personnel available to cover every practice and competition; therefore, the coach is the person in the best position to protect the player and must be aware that not all student athletes will be forthcoming about their injury.
2. An official shall not be responsible for making the diagnosis of a concussion. The official can assist coaches and medical staff by recognizing signs and symptoms of a concussion and informing the coach and medical staff of their concerns.

3. The coach, ATC, or physician on site should evaluate the athlete in a systemic fashion:
   a. Assess for airway, breathing, and circulation (basic CPR assessment).
   b. Assess for concussion.
      i. Any unconscious athlete should be assumed to have a severe head and/or neck injury and should have their cervical spine immobilized until a determination can be made that the cervical spine has not been injured. If no medical professional can make the assessment, the athlete should be transported to an appropriate emergency care facility.
      ii. A conscious athlete with no neck pain can be further evaluated on the sideline.

4. An athlete experiencing ANY of the signs/symptoms of a concussion should be immediately removed from play. Signs/Symptoms of a concussion include:

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<thead>
<tr>
<th>PHYSICAL</th>
<th>COGNITIVE</th>
<th>EMOTIONAL</th>
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<tbody>
<tr>
<td>Headache</td>
<td>Feeling mentally “foggy”</td>
<td>Irritability</td>
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<tr>
<td>Nausea/Vomiting</td>
<td>Feeling slowed down</td>
<td>Sadness</td>
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<tr>
<td>Dazed/Stunned</td>
<td>Difficulty concentrating</td>
<td>More emotional</td>
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<tr>
<td>Balance problems</td>
<td>Difficulty remembering</td>
<td>Nervousness</td>
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<tr>
<td>Visual problems</td>
<td>Forgetful of recent information</td>
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<tr>
<td>Fatigue</td>
<td>Confused about recent events</td>
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<tr>
<td>Sensitivity to light</td>
<td>Answers questions slowly</td>
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<td>Sensitivity to noise</td>
<td>Repeats questions</td>
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5. Evaluation
   a. Following any first aid management, the medical team, or coach in the absence of medical personnel, should assess the athlete to determine the presence or absence of a concussion. The SCAT (Sideline Concussion Assessment Tool) and SCAT2 are effective assessment tools that are readily available and can assist with the assessment.
   b. The athlete should be monitored for worsening or change in signs and symptoms over the next 24 hours. Instructions should be given to the parent or guardian as to signs and symptoms that may require further or more emergent evaluation.

6. Management of a Concussion and Return to Play
   a. An athlete determined to have a concussion or have concussion-like symptoms will be removed from practice or competition and is not allowed to return to practice or competition that same day.
   b. If an athlete displays concussion-like signs or symptoms, the athlete should be assumed to have a concussion until further medical evaluation can occur. “WHEN IN DOUBT, SIT THEM OUT!”
   c. Written clearance from a physician (MD or DO), Advanced Nurse Practitioner in written collaborative practice with a physician, Certified Physician Assistant in written collaborative practice with a physician, or Certified Athletic Trainer in written supervision of a physician, must be provided prior to return to play.
   d. Following a concussion, the athlete should have both physical and cognitive rest until symptoms have resolved.
   e. An athlete must be asymptomatic at rest and with exertion prior to return to play.
   f. A graduated return to play protocol has been outlined by the Third International Concussion in Sport Group Statement (2008, Zurich), is recommended by the NFHS (nfhs.org), and may be used to guide return to play following medical clearance.