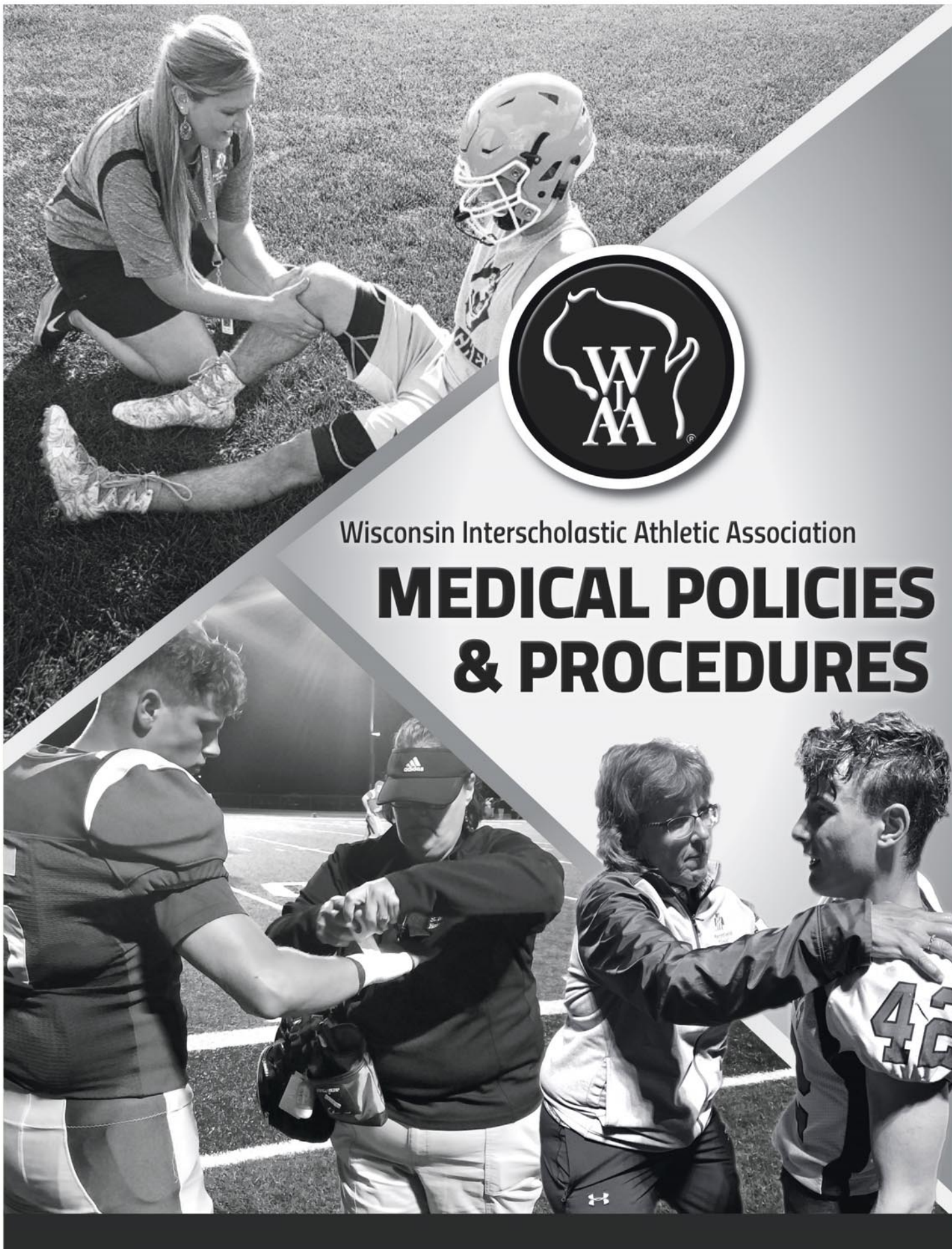




Wisconsin Interscholastic Athletic Association

MEDICAL POLICIES & PROCEDURES



INTRODUCTION

Policies and Procedures

The first section of this booklet contains WIAA approved administrative policies and/or procedures for member schools' athletic events. These policies and procedures have been reviewed by the WIAA Medical Advisory Committee, which is comprised of physicians, an athletic trainer and dietician.

You will note that some of the items are identified as "policy" while other items are recommendations. All items included have been developed with the best interest of athletes in mind. Member school administrators are urged to know, understand and use all of the outlined policies and procedures.

Keep in mind there are WIAA regulations that have medical implications that do not appear in this booklet, e.g., baseball pitching regulations. Such regulations can be found in the various sections of the WIAA HANDBOOK. Athletic directors and coaches should be thoroughly familiar with all such regulations.

There are National rules in several sports which deal with health and safety. Examples are the football player that must leave the game for at least one play following injury and that any athlete is prohibited from continuing without a physician's written approval if they have been rendered unconscious. Each coach and game official should be thoroughly familiar with all such rules for their sport.

Medical Information

The second section of this booklet contains information the Medical Advisory Committee feels should be made available to member schools. We would appreciate it if athletic directors would share this information with their coaches. Some of it is information they should be aware of themselves, while other items would be appropriate for distribution to athletes. School personnel may photocopy pages as needed for distribution to coaches or athletes.

The information in this manual is written as guidelines except where noted and identified as a pre-requisite and/or requirement for participation. They are intended for educational purposes for coaches, athletic directors and school medical personnel. It is a consensus of the WIAA Medical Advisory Committee and should not be construed as a standard of care.

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Visit WIAA website for additional information and links or to download additional copies of this manual.

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Policies and Procedures

I. MEDICAL EXAMINATION PROCEDURES

A. General Requirement

The Rules of Eligibility of the WIAA, Article VII – Health and Behavior – state the following:

A student may not practice for or participate in interscholastic athletics until the school has written evidence on file in its office attesting to:

1. Parental permission each school year including an acknowledgement of receiving the school athletic code,
2. Acknowledgement of receiving the WIAA Rules of Eligibility,
3. Athletic Emergency Form,
4. Current physical fitness to participate in sports.
 - a. A preparticipation physical fitness form attesting to current physical fitness to participate in sports as determined by a licensed physician, Physician's Assistant (PA) or Advanced Practice Nurse Prescriber (APNP) no less than every other school year with April 1 the earliest date of examination (chiropractors are not accepted). School policy determines when an athlete may return to competition following an injury, except where rule book or WIAA tournament policies apply.
 - b. Physical examination taken April 1 and thereafter is valid for the following two school years; physical examination taken before April 1 is valid only for remainder of that school year and following school year. In the year when an examination is not required, an Alternate Year Athletic Permit Card must be signed by a parent or guardian and be on file.

Note: It is recommended that a student also have dental fitness attested by a licensed dentist.

B. Guide For Athletic Disqualification

Prepared by the Medical Advisory Committee.

(This guide applies particularly to football, basketball, wrestling, hockey, soccer, baseball and softball; however, there are aspects which will be of value to physicians in determining disqualification in other sports.)

A physician examining athletes in junior and senior high school must use good judgment in deciding whether or not to restrict a student from competition. The purpose of this presentation is to summarize some of the important factors to help physicians arrive at a logical conclusion so that a student is not unnecessarily prohibited from competing nor allowed to compete when he/she should be disqualified.

There are two major considerations for restricting persons from participation in athletics:

1. Is there a disease or condition which prevents the individual from competing fairly with others?
2. Is there a disease or condition which might be aggravated by athletic competition?

Both of these are relative and circumstances alter decisions. It is the examining doctor's responsibility to determine qualification or disqualification for athletic participation.

Conditions considered disqualifying:

1. **Maturity** must be kept in mind by the coaches as well as the physician when examining the athlete. The state of maturity varies greatly in adolescents of the same age. Almost all boys/girls have reached the same stage of maturity by the junior year in high school, but many freshmen and some sophomores are not mature and should be withheld from competing with boys/girls who are. At earlier levels, seventh and eighth grades, it is important to identify the boy/girl who is mature and prevent him from injuring his classmates in athletic activities. The large boy/girl is not always the mature boy/girl.

Clinical judgment of maturity in the male can best be based on the presence and degree of secondary sex characteristics – deep voice, acne, facial and body hair, auxiliary and pubic hair and the appearance of the external genitalia. The most helpful sign in evaluating the attainment of full sexual maturity is finding that the pubic hair has extended to the inner thighs.

Maturity in female athletes: The level of maturity is best judged on secondary sexual characteristics. These include breast budding, anterior pubic hair, velvety pubic hair, full breast and nipple development, and menarche. Full maturity relative to these factors are reached by 14 to 16 years of age in most females.

2. **Absence or Severe Disease of One of a Paired Organ**, The question of absence or severe disease of one of a

paired organ is a difficult question for sports administrators, coaches and physicians. Because of the difficulty in coming up with an answer that meets all concerns, the courts have taken the primary decision role. While coaches and physicians have struggled to define what is best for the athlete, the athletes and the parents have fought these solutions in the court and won.

Those organs of most consideration are the kidneys, the eye and the testicles. The risk of injury to these organs is small in all sports, but real. All safeguards must be taken if the athlete is allowed to participate. No matter what ruling the sports administrator, coach or physician makes, the parents can go to the courts and reverse all three decisions.

The American Academy of Pediatrics, the American Academy of Family Practice and the American Medical Association all feel that if there is only one of a paired organ left, then collision and contact sports should be restricted. This should be done at the earliest age possible so that the athlete is not playing youth football, middle school football and then be told at the high school level that they cannot play high school football. If at all possible, these athletes should be directed into the noncollision, noncontact sports. If they are to be allowed to participate, every safeguard must be taken to protect the uninjured paired organ that is left. This means special glasses for those with one eye, rib and flank protection for those playing football or hockey with one kidney, and sturdy cup protection for those who have one testicle.

The key is to help the athlete find other sports at a young age and to talk with parents, the athletes, and even sometimes, the lawyers to work out that which is best for the athlete.

3. **Disease of the Cardiovascular System** is an area of uncertainty for physicians who examine athletes. There is a tendency to be over-cautious. Many are denied athletic participation because of a functional heart murmur. Heart murmurs are not necessarily abnormal. The presence of a murmur is not in itself an indication to deny participation in sports. The athlete with a heart murmur should have a thorough investigation to determine the reason for the murmur.

The presence of organic heart disease, especially rheumatic or congenital heart disease, may be a reason for disqualification from competitive sports. Those who have mitral stenosis or aortic stenosis may be seriously harmed by severe exertion. Those with cyanotic congenital heart disease ordinarily limit their activity of their own accord.

A history of rheumatic fever does not necessarily disqualify an individual for competition.

Cardiac arrhythmia not associated with organic heart disease is not disqualifying.

Hypertension, usually defined in this age group as persistent systolic pressure over 140 mm Hg. or diastolic pressure above 90 mm Hg., should be evaluated by repeated examinations. It is not unusual to find many high school athletes with excessive blood pressure on an emotional basis. If it does not drop readily, further evaluation is necessary to rule out coarctation of aorta, unilateral kidney disease, or some other congenital abnormality.

4. **Hernia and Hydrocele** are considered disqualifying until repaired. Hydrocele is usually associated with a hernia, either readily apparent or concealed because it has not fully developed. The danger of hemorrhage into or around the hydrocele as the result of a blow is great. This can result in irreparable damage to the cord and the testicle. Repair should be done as soon as possible. Once repaired, the athlete can return to full competition.
5. **Head Injury** – No athlete shall return to play or practice on the same day of being diagnosed with a concussion or rendered unconscious. Any athlete suspected of having a concussion must be evaluated by an appropriate health-care professional that day. Any athlete with a concussion must be medically cleared by an appropriate health-care professional prior to resuming participation in any practice or competition. Return to play must follow a step-wise protocol which includes provisions for delaying return to play based upon the return of any signs or symptoms.

Note: Wisconsin state law requires concussion information sheets to be distributed and acknowledged for coaches, parents, and athletes before practice may be allowed.

6. **Orthopedic Conditions** are another area of uncertainty.

Epiphyseal diseases such as Osgood-Schlatter disease, Legg-Perthes disease, and other related osteochondroses do occur, and limitation of athletic competition needs to be determined on an individual case basis.

Back pain occurs in high school athletes. Any student who has persistent back pain should be x-rayed and closely evaluated for some congenital abnormality or early rheumatoid spondylitis. Spondylolysis and Scheuermann's disease (osteochondrosis of the vertebra) are examples of causes of back pain and should be considered as possible, temporary disqualification for contact/collision sports.

Some frequent abnormalities encountered are pes planus, genu valgum, genu varum, scoliosis and leg length

inequality. Each of these may be mild and cause no concern. On the other hand, each of these may be a marked degree and be clinically symptomatic. If this is the case, athletic competition should be restricted. The physician must decide.

7. **Epilepsy and Diabetes**, when under control, are not necessarily causes for restriction from athletics.
8. **Skin Diseases** comprise an area often overlooked for at least temporary disqualification, when infections, bacterial, viral or fungal are present. Herpes infections are extremely contagious, especially in wrestlers. The student with this infection should be restricted until the infection is controlled.
9. **Asthma and Other Respiratory Conditions** are not disqualifying. Appropriate consultations are recommended.

The physician must exercise careful judgment in making his/her decisions about participation of an individual in athletics. His/her decision must be based on accurate diagnosis of the condition, on reasonable knowledge of the disease process, on intimate knowledge of the many types of sports and the physical needs of each, and on his/her evaluation of the person. If the physician is not aware of these considerations which should affect his/her decision, then the decision may be harmful to the athlete, to the team, and to himself/herself. With proper education and treatment asthmatic individuals should be able to participate in all WIAA sports. They should also be allowed to use their prescription inhaler medications if they are needed during their sports.

C. Physical Exam Cards

1. Card For Year Of Full Medical Exam (Physical Examination Card)

See form on website www.wiaawi.org/Portals/0/PDF/Forms/PPE-form.pdf

2. Card For Alternate Years (Alternate Year Athletic Permit Card)

WISCONSIN INTERSCHOLASTIC ATHLETIC ASSOCIATION ALTERNATE YEAR ATHLETIC PERMIT CARD

Physical Date _____ SCHOOL YEAR 20_____ - 20_____

NAME _____ GRADE _____ DATE OF BIRTH _____

Last First Middle Initial

Present Address _____ Telephone _____

Parents' Place of Employment _____

Family Physician _____ Family Dentist _____

Name of Private Insurance Carrier _____ Telephone _____

Subscriber Member Name (Primary Insured) _____

1. I hereby give my permission for the above named student to practice and compete and represent the school in WIAA approved sports.
2. I also attest to the fact that the above named student has had no injury or illness serious enough to warrant a medical evaluation prior to participating this school year.
3. Pursuant to the requirements of the Health Insurance Portability and Accountability Act of 1996 and the regulations promulgated thereunder (collectively known as "HIPAA"), I authorize health care providers of the student named above, including emergency medical personnel and other similarly trained professionals that may be attending an interscholastic event or practice, to disclose/exchange essential medical information regarding the injury and treatment of this student to appropriate school district personnel such as but not limited to: Principal, Athletic Director, Athletic Trainer, Team Physician, Team Coach, Administrative Assistant to the Athletic Director and/or other professional health care providers, for purposes of treatment, emergency care and injury record-keeping.
4. It is recommended that information regarding your child's allergies and prescribed medication be made available.

PARENT: If there is any question that this student may not be qualified for athletic competition without, at least, a partial re-evaluation, contact your medical advisor before signing card.

SIGNATURE OF PARENT _____ DATE _____

ALL STUDENTS PARTICIPATING IN INTERSCHOLASTIC ATHLETICS MUST HAVE THIS ALTERNATE YEAR CARD ON FILE AT THEIR SCHOOL PRIOR TO PRACTICE OR PARTICIPATION

II. RECOMMENDATION FOR SECURING MEDICAL OPINIONS

From time-to-time, athletic injuries or medical conditions will occur that are either unique or outside the general area(s) of expertise of the first attending physician. In such cases, the athlete and/or his/her parents may wish to ask for a second opinion regarding the return of their son/daughter to competition. The following guidelines are designed to assist member schools and coaches in those schools in dealing with such cases.

- A. Usually one opinion is all that is needed. It is best if the physician involved is the family physician or one he/she has recommended if the injury is outside his/her area of expertise.
- B. If a second medical opinion is desired, the first physician should be so informed by the parents or legal guardian. The physician selected should be one who has appropriate speciality training with experience with the type of medical problem involved.
- C. The decision to return an athlete to participate/play in their sport should be made in conjunction with the parents/legal guardian, the athletic trainer, the medical provider, the athlete themselves, and if necessary, the school athletic director; all who are responsible for the safety and medical well being of the athlete. This should all be done in accordance with respective school policies already in place. The final/ultimate decision must be left to the school itself after input from the above parties.
- D. Member schools are strongly urged to make their position on such questions a matter of written record.

III. REGULATIONS REGARDING MEDICAL COVERAGE AT ATHLETIC CONTESTS

For all games and practices, emergency procedures should be in place as per DPI and Wisconsin Statute 121.02(1)(g) Emergency Nursing Service.

These should include, but are not limited to, such things as:

- A. A physician available by phone or on location.
- B. Phone location and phone numbers available for contacting physician and/or EMS.
- C. Coverage may be obtained from athletic trainers, Nurse Practitioners, Physicians Assistants, or others with adequate training.

IV. RECOMMENDED QUALIFICATIONS OF PHYSICIANS COVERING ATHLETIC EVENTS

Physicians covering WIAA athletic events should be able to handle the following medical conditions and emergencies:

- A. Be able to handle medical emergencies and injuries including but not limited to:
 - 1. To understand and be able to start cardiopulmonary resuscitation.
 - 2. To be able to evaluate and manage respiratory distress and obstruction.
 - 3. To be able to give injections and start intravenous fluids.
 - 4. To manage allergic reactions and anaphylactic shock.
 - 5. To monitor and treat medical conditions such as diabetes, asthma, and seizure disorders.
 - 6. To understand and be knowledgeable in blood transmitted infections such as Hepatitis B and HIV.
- B. To evaluate and manage musculoskeletal injuries to include:
 - 1. To evaluate, treat, and protect individuals with head and neck injuries, especially those where helmets are used.
 - 2. To evaluate, treat, and protect musculoskeletal injuries including strains, sprains, dislocations, and fractures.
 - 3. To evaluate and handle traumatic wounds including, if necessary, first aid management to control bleeding and to treat wounds, including suture wounds, if appropriate.
 - 4. To evaluate and treat in the emergency setting other injuries that occur such as eye injuries, heat and cold injuries, etc.
 - 5. To evaluate and treat internal organ trauma.

V. MEDICAL AUTHORITY AT WIAA TOURNAMENTS

A. When No Physician and/or LAT is Present

The host school athletic director should assume responsibility for the following items. In some situations, the athletic director may wish to have each head coach assume this responsibility for their home contests.

- 1. TELEPHONE
 - a. Be certain a telephone is accessible or have a cell phone on location.
 - b. Have the following numbers easily accessible:
 - (1) Local EMS.
 - (2) Physician (if agreed upon in advance).
 - (3) Police Department.
 - (4) Hospital.
 - c. Post all numbers at telephones.
 - d. Give all numbers to:
 - (1) Announcer.
 - (2) Coaches (visiting and home).
 - (3) Managers and trainers.
- 2. EMERGENCY FACILITY AND SERVICE

- a. Alert local medical services to the fact that you are conducting an event.
 - (1) Hospital emergency room.
 - (2) Ambulance service.
 - (3) Rescue squad.
 - (4) Prior to season, alert physicians to schedule and possible need for assistance.
3. WHEN AN EMERGENCY OCCURS
 - a. Be prepared in the event that you must transport an athlete without the services of an emergency vehicle.
 - (1) Have a plan for method of transportation of an athlete that requires non-emergency medical care. Designate an adult to transport. See page 10-11.
4. IMMEDIATE CARE
 - a. Know who will administer first aid or immediate care if needed.
 - (1) Coach or designated medical provider covering event.
 - b. Alert all individuals involved in the contest as to who will administer first aid and where they can be found.
 - c. No athlete shall return to play or practice on the same day of being diagnosed with a concussion. Any athlete suspected of having a concussion must be evaluated by an appropriate health-care professional that day. Any athlete with a concussion must be medically cleared by an appropriate health-care professional prior to resuming participation in any practice or competition. Return to play must follow a step-wise protocol which includes provisions for delaying return to play based upon the return of any signs or symptoms. Any athlete deemed unconscious must have medical evaluation and clearance before being allowed to return to participation.
5. DETERMINING WHETHER OR NOT ATHLETE MAY RETURN TO COMPETITION
 - a. Coach has basic responsibility; however, official can rule athlete may not continue.
6. EQUIPMENT
 - a. Have all emergency equipment on hand and readily available.
 - (1) Have close at hand and well-labeled.
 - (2) Alert all to its location.
 - (3) Be sure it is in working order.
 - (4) Be certain someone present knows how to use it.
7. NOTIFICATION
 - a. Have a procedure set for notifying parent or legal guardian of an injured athlete.
 - (1) Have telephone numbers available (home, work, other).
8. FOLLOW-UP REPORTS
 - a. File a report on each incident in the student's personal file. Use a standardized accident/injury report form, or give at least the following information:
 - (1) The name of the individual involved.
 - (2) Date of the incident.
 - (3) Type of injury.
 - (4) Mechanism of the injury.
 - (5) First aid given.
 - (6) Where the individual was sent, i.e., home, hospital, physician's office.
 - (7) Who was notified of the injury.
 - (8) Notation regarding any instructions given to the injured party regarding follow-up.

B. When Licensed Physician (M.D. or D.O.) Is Present

The designated tournament manager should assume responsibility for the following items:

1. SEND THE TOURNAMENT PHYSICIAN THE FOLLOWING ITEMS AND INFORMATION PRIOR TO THE EVENT

- a. Tickets or information as to where they can be picked up.
 - b. Parking information and pass, if necessary. Reserve a space for physician.
 - c. Specifically where and to whom to report upon arrival at contest site.
 - d. Reminder to bring along normal emergency materials.
 - e. Copy of WIAA policies regarding tournament physicians.
 - f. Make hospitality room available to tournament physician and guest.
2. UPON THE PHYSICIAN'S ARRIVAL
- a. Familiarize him/her with the facilities including:
 - (1) Where he/she will be seated.
 - (2) Location of training room, if one is available.
 - (3) Location of telephone
 - (4) Where the tournament manager will be located.
 - b. Provide him/her with:
 - (1) Normal procedures for calling an emergency vehicle.
 - (2) A pad of paper on which to make notations regarding injuries attended to during the course of the event, instructions for an athlete, a coach, a parent, a legal guardian, second tournament official, etc.
 - c. Introduce him/her to:
 - (1) Licensed athletic trainer, if one is available.
 - (2) Participating coaches.
 - (3) Physicians traveling with the competing teams, if any.
3. FAMILIARIZE YOURSELF AND THE TOURNAMENT PHYSICIAN WITH THE FOLLOWING WIAA POLICIES
- a. The tournament physician's relationship to:
 - (1) Licensed athletic trainers – The tournament physician's opinion shall always supersede that of a licensed athletic trainer. **(Be certain all on-site medical staff/EMT's have been introduced, pre-game)**
 - (2) Physician traveling with a competing team.
 - (a) If the coach wishes, he/she may have such a "team physician" attend to his/her player. Such a "team physician" must be seated on the team bench if he/she is to do the initial examination of an injured athlete.
 - (b) If such a "team physician" is seated elsewhere, the tournament physician shall be the first responder with the athlete, and then at an appropriate and convenient time, turned over to the "team physician."
 - (c) Teams should be alerted to the requirement that any "team physician" they bring with them must be identified and introduced to the tournament manager, tournament physician and contest officials.
 - (d) To avoid creating any situation in which the tournament physician and "team physician" might be in disagreement as to whether or not an athlete can continue to compete, the decision will be made by the tournament physician.
 - (3) Forms provided by the WIAA are to be used to ensure that an athlete does not continue in competition until he/she has followed all instructions given him/her by the attending physician and/or licensed athletic trainer.
 - b. Tournament physician's responsibility and authority:
 - (1) Basic purpose of having a tournament physician in attendance is to:
 - (a) Render medical assistance.
 - (b) Render medical judgments regarding whether or not athletes should be allowed to continue to participate.

- (c) Neither the coach nor official can deny a licensed athletic trainer or physician an opportunity to examine the athlete.
 - (2) In some cases, it may be necessary to defer final judgment regarding further participation for a given athlete to the next attending tournament physician whether it be in another session of the same tournament or in a subsequent tournament.
- Note: It is imperative that the tournament physician notify the tournament manager and/or the WIAA staff member in attendance of the need for future physician examination of an athlete before continued participation. It is highly desirable that details be provided any subsequent tournament physician in writing by the original tournament physician.
- (3) Before leaving a tournament, or an individual tournament session, a tournament physician should notify the WIAA personnel on hand and/or tournament manager of any significant injuries he/she has attended to. Written records of such injuries should be kept and should include the following information:
 - (a) Number and/or name of injured athlete and school.
 - (b) Nature of the injury.
 - (c) Treatment given.
 - (d) Instructions given and to whom:
 - 1) Coach
 - 2) Athlete
 - 3) Parent
 - 4) Legal guardian
 - (4) It should be understood by all that the tournament physician has the authority and would be expected to proceed onto the area of play even though action may be continuing because the game officials are unaware of an injured participant. The team of the injured athlete should not be assessed a time out or any other penalty for such action by the tournament physician.
 - (5) Tournament managers might wish to provide visiting schools with emergency telephone numbers and/or physicians' names for use during off hours in the event they find themselves in need of medical attention, prescription medicines, etc.

VI. MEDICAL ATTENTION IN THE ABSENCE OF PARENTS

Schools are required to have written evidence on file in its office attesting to parental permission as well as an Athletic Emergency Form. Every two years each athlete is required to have on file a physical examination card filled out and signed by a physician and a parent. That card carries a statement granting permission for emergency medical care to be given to the athlete. It is recommended that schools carry these cards or photocopies of them, and a copy of the Athletic Emergency Form granting parental permission for emergency care of the athlete.

VII. RETURN TO COMPETITION FOLLOWING INJURY OR ILLNESS

A. Regular Season Same Contest And/Or Day

1. Licensed Athletic Trainer And/Or Physician Present
 - a. Official stops contest because of injury or illness.
 - b. Official instructs scoring bench to start clock if appropriate.
 - e.g., Injury time, or recovery time.
 - c. Official beckons coach to examine athlete.
 - d. If deemed necessary by official or coach, either shall beckon licensed athletic trainer and/or physician to examine athlete. (Neither coach nor official can deny licensed athletic trainer and/or physician an opportunity to examine the athlete.)
 - e. If only a licensed athletic trainer or physician is present, he/she will determine whether or not the athlete can continue.
 - f. If licensed athletic trainer and physician confer, and there is a difference of opinion, the physician's decision is final.

- g. Licensed athletic trainer and/or physician notify the following individuals in the order listed:

(1) Official

Note: The official may overrule a coach, licensed athletic trainer, or physician that decides to allow an athlete to continue. He may not, however, overrule a coach, licensed athletic trainer, or physician that decides an athlete should not continue.

(2) Coach

(3) Athlete

- h. Official notify the following in order listed:

(1) Opponent and his/her coach.

(2) Scoring table and/or contest management.

2. No Licensed Athletic Trainer And/Or Physician Present

- a. Official stops contest because of injury or illness.

- b. Official instructs scoring bench to start clock if appropriate.

e.g., Injury time, or recovery time.

- c. Official beckons coach to examine athlete.

- d. Coaches decides whether or not athlete can continue.

Note: The official may overrule a coach that has decided to allow an athlete to continue. He may not, however, overrule a coach that has decided an athlete should not continue.

- e. If athlete will not continue, official notifies the following in the order listed:

(1) Coach.

(2) Athlete.

(3) Opponent and his/her coach.

(4) Scoring table and/or contest management.

B. Following One Or More Days Absence

School policy determines when an athlete may return to competition following an injury, except where rule book or WIAA tournament policies apply.

VIII. MINIMUM DAYS OF PRACTICE BEFORE COMPETITION

The minimum days of practice required before first competition are as follows:

Baseball	.7 days
Basketball (boys and girls)	.7 days
Cross Country	.7 days
Football	14 days
Golf (boys and girls)	.3 days
Gymnastics	20 days
Hockey (boys and girls)	10 days
Soccer (boys and girls)	.7 days
Softball	.7 days
Swimming and Diving (boys and girls)	.7 days
Tennis (boys and girls)	.4 days
Track & Field	.7 days
Volleyball	.7 days
Wrestling	10 days

IX. UNCONSCIOUS PARTICIPANT

The following general statement appears in the WIAA Season Regulations for all sports.

"Any athlete deemed unconscious must have medical evaluation and clearance before being allowed to return to participation."

X. OXYGEN/IV FLUIDS

Oxygen administered by mechanical means for recuperative purposes is not permitted.

Fluids provided intravenously is considered an invasive procedure used only in emergency situations. An athlete may not return to competition the same day.

XI. COACHES DISPENSING SUBSTANCES

THE FOLLOWING IS AN EXCERPT FROM THE MEDICAL ADVISORY COMMITTEE MINUTES OF THE MEETING ON MAY 29, 1979.

COACHES DISPENSING SALT TABLETS, DEXTROSE TABLETS, ETC.

A number of individuals have contacted the WIAA office inquiring as to what the legal ramifications are for coaches who dispense tablets of one kind or another. The Committee was asked for their reaction to this type of practice in general. It was the Committee's feeling that the WIAA should do everything it can to discourage the dispensing of any substances. **It is the Committee's recommendation that the WIAA adopt the position that:** "School personnel and coaches should not dispense any drug, medication or food supplement except with extreme caution and in accordance with policies developed in consultation with parents, health-care professionals and senior administrative personnel of the school or school district." (see page 18, l)

Note: This position statement is not intended to discourage athletes from ingesting "non-ergogenic" nutritional supplements such as sport drinks and sport bars. These products contain carbohydrates and electrolytes helpful in returning a depleted athlete to a "natural state".

Medication administration in schools is governed by Wis. Stat. sec. 118.29. This statute allows private or public school administrators, principals, school boards, or cooperative educational service agencies to assign the responsibility of medication administration for a student to any employee or volunteer of a school, county children with disabilities education board, and cooperative educational service agency. Individuals selected to administer medications must receive the assignment in writing by the administrator of a school district, board, or agency, and receive the appropriate instruction or training by a health care professional. The law states that individuals may not be required to administer medications to students by any means other than ingestion; however, if individuals are willing, they may be trained to give medications by other routes of administration. School personnel administering medications to students are exempt from civil liability if acting in good faith and have appropriate training. Health care providers are not exempt from liability. Consultation with appropriate health care professionals is needed in the development and periodic review of written policies governing the administration, storage, record-keeping, and training of authorized individuals administering medications.

Administration of medication in school is a complex process, complicated by the health status of the student, the nature of the medication, the route of administration, the availability of nursing staff to delegate administration, and the availability of school staff to assume this responsibility. School nurses are governed by Wis. Admin. Code sec. N 6 in determining if a task, such as medication administration, is appropriate to be delegated to personnel without a health care license.

On March 1, 2011, 2009 Wisconsin Act 160 revised the medication law requiring school districts to provide Department of Public Instruction (DPI) approved medication training for all medication and receive all medication from parents in an appropriately-labeled container. In accordance with 2011 Act 86, the training requirements were modified and medications do not need to be supplied by parents. This edition of Administration of Medications to Pupils represents changes in Wis. Stat. sec. 118.29, which became effective December 9, 2011.

A complete copy of the above state statute is included in Administration of Drugs to Pupils, Third Edition, February 2012 published by the Wisconsin DPI <http://sspw.dpi.wi.gov/files/sspw/pdf/sndrugscomplete.pdf> and available at <https://docs.legis.wisconsin.gov/statutes/statutes/118/29>.



WISCONSIN INTERSCHOLASTIC ATHLETIC ASSOCIATION

5516 Vern Holmes Drive • Stevens Point, WI • 54482-8833

Phone 715-344-8580 • FAX 715-344-4241 • email info@wiaawi.org • website www.wiaawi.org

TO: Athletic Directors of WIAA Member Senior and Junior High Schools

FROM: Stephanie Hauser, Executive Director

SUBJECT: Emergency First-Aid Check List

The attached form has been developed by this office with the help of our Medical Advisory Committee. It is intended to help coaches keep emergency information at hand should it be needed during the course of a practice session, or contest.

Reproduce this form giving each of your head and assistant coaches a copy with instructions to fill in the pertinent data and to carry it on their clipboard, or in the first-aid kit.

All coaches are encouraged to discuss their emergency response plan with staff and athletes and to practice the response plan each season.

You may wish to have a copy of each team's emergency information in your files, also.



EMERGENCY FIRST-AID CHECK LIST

Complete This Form And Carry It With You For All Practices And Games

School _____

Coach _____

Sport/Venue _____

Location of Telephone(s): Nearest practice site _____ Phone # at site _____

Nearest game site _____ Phone # at site _____

Location of AED: Nearest practice site _____

Nearest game site _____

EMERGENCY TELEPHONE NUMBERS

EMS Vehicle _____ Physician _____ Hospital/ER _____

HAVE A PLAN which **TELLS** the people **WHAT TO DO**.

Call 911 Team

- Find nearest phone & call 911
- Meet the Ambulance
- Call Contacts

CPR/AED Team

- Start CPR
- When AED arrives
- Turn It On and Follow Voice Prompts

AED Team

- Get the AED
- Get the Athletic Trainer

When placing call please be prepared to:

1. Give your name, location, and description of emergency.
2. Give detailed directions for EMS including location of the entrance.
3. DO NOT hang up until you are told to do so by person receiving your call.

Be certain:

1. Gates and doors for EMS access are unlocked.
2. Have a cell phone available.
3. Review current locations of AEDs on your school campus or at the venue.
4. You have keys, if needed for access to telephone or locked gates.

When transporting an athlete for emergency care:

1. A responsible adult should accompany an athlete being transported for emergency care.
2. Send emergency treatment information and permission forms.
3. Contact parents.

EMERGENCY EQUIPMENT

ITEM

LOCATION

Stretcher _____

Ice _____

AED _____

Other _____

Training room location: _____

Phone: _____

XIII. POSITION ON CONTAGIOUS DISEASES

Contagious diseases and their transmittal from one person to another are a legitimate concern in any setting in our society where there is close personal contact. Sports are no exception.

The wrestling community has for years been concerned about contagious skin conditions. There are, however, other diseases we must be aware of and take precautions against. Hepatitis and AIDS are two such diseases.

The WIAA office receives frequent questions and inquiries about HIV/AIDS and hepatitis and the possible spread of these infections. Due to present HIPAA laws and regulations, knowledge about individuals who are positive for these infections cannot be given to the WIAA, athletic directors, coaches or parents. It is expected and assumed that all medical care providers will carefully educate, inform and explain to the patient in detail the risk of spreading these infections, especially in regard to close contact sports. While the risk of spreading HIV/AIDS as a result of contact in athletics is low, all blood/fluids should be handled with appropriate care and proper procedures at all times.

On the basis of what is known today about AIDS and Hepatitis and the role blood plays in their transmission, a variety of things can easily be done to reduce or eliminate potential hazards.

1. All individuals dealing with bleeding situations should wear latex-free gloves at all times when contact with blood may occur.
2. Do not use a common towel for athletes and/or wiping up floors, mats or equipment. Clean individual towels or Kleenex should be used for each situation. To clean blood off these surfaces, use a disinfectant solution of bleach and water (1/100 mix).
3. Materials used should be properly disposed of following their use.
4. It is necessary to have an adult from the host school on hand to wipe up floors, mats or equipment properly. Officials are not obligated to do this!

The above items are basic infection control procedures that should be used by all involved in sports.

XIV. BLOOD-BORNE PATHOGENS OUTLINE OF RESPONSIBILITIES AND PROCEDURES

- A. The OSHA/DILHR/DPI guidelines all require each school to have an exposure control plan that includes:
 1. Training of total staff.
 2. Protection of staff.
 3. Protection of students.
 - a. Have trained person available.
 - b. Be prepared to handle bleeding situations.
 - c. Get student safely back into school programs.
- B. Officials determine who must leave contest by enforcement of National rule.
 1. Because of bleeding and/or open wound.
 2. Because of excessive blood on uniform.
- C. School personnel handles blood related situations in accordance with OSHA/DILHR/DPI regulations.

XV. WRESTLING 7% RULE

- A. Schools are required to follow the provisions of the weight certification program established by the Association for all wrestlers in grades 9-12.

The establishment of a minimum wrestling weight based on 7% body fat for males and 12% for females will be mandatory for all senior high school wrestlers. The WIAA does not advocate that a wrestler's established minimum weight is the athlete's best weight, but simply the minimum weight at which the athlete will be allowed to compete.

(1) Establishing Minimum Weights

- (a) Skinfold measurements will be utilized to determine each wrestler's body fat percentage.
 - 1) Each wrestler must pass a test to substantiate that they are at an acceptable level of hydration before they can have skinfold measurements taken. Details regarding the specific test to be used, the testing

protocol, etc. will be provided to each wrestling school prior to the earliest date for measurements. Once a wrestler has reported for hydration testing they may not be withdrawn.

Note: Use of IV to hydrate for skinfolds is not allowed.

- 2) Only measurements taken by health care professionals who have successfully completed the WIAA Skinfold Measurement Workshop will be accepted. Schools will receive a list of approved measurers. It is the responsibility of the school to contact a skinfold measurer from this list, and arrange a time to have the wrestling squad measured.
 - 3) Measurements may not be taken after practice, or a workout. **If the measurer has reason to believe any of the wrestlers are in a dehydrated state, they shall refuse to measure such wrestler(s).**
 - 4) No senior high wrestler may compete or participate in pre-meet activities until the athlete has had a minimum weight determined, **and the school has received a printout from the WIAA online program so indicating.**
- (b) The lowest weight class a wrestler may compete at will be determined as follows:
- 1) If the predicted weight, at 7% body fat, is exactly that of one of the weight classes that shall be the wrestler's minimum weight class.
 - 2) If the predicted weight, at 7% body fat, falls between two weight classes, they must wrestle at the higher weight class.
 - 3) With documented (see Note below) parental permission, the wrestler may wrestle at the weight class in which their 7% predicted weight, less 2% of that weight, places them. **The deadline for parental permission is February 1.**

Note: The official parental permission form provided by the WIAA office must be used. The school must have the completed form on file before the wrestler is allowed to compete at that weight.

For complete details regarding time periods for measurement, appeals process, growth allowance and hydrostatic weighing refer to WIAA Winter Season Regulations.

XVI. WRESTLING MINIMUM WEIGHT PROGRAM TEST FOR HYDRATION

Testing to determine a wrestler's hydration status as part of a minimum competitive weight certification process has been increasingly embraced by the sports medicine community, as well as sport governing bodies (NFHS, NCAA), coaches and various other athletic associations in recent years.

In part, due to the physical developmental stage of adolescent wrestlers, along with both the immediate and life-long benefits of healthful nutrition habits, hydration testing is a key component in helping wrestlers, parents, coaches and administrators determine a safe and healthy minimum weight for high school wrestlers.

Please read the Wrestling Season Regulations, included in the WIAA Winter Season Regulations booklet (pages 41-47) for more complete information on WIAA wrestling rules.

Testing Hydration Status

NOTE: Hydration testing MUST be done immediately prior to the actual taking of skinfold measurements and **at the same site where the measurements will be taken.**

Dehydration will concentrate urine and thereby increase the urine's specific gravity. Accurate determination of minimum wrestling weight from skinfolds, requires the wrestler to be properly hydrated. The specific gravity of water is 1.000. The specific gravity of a hydrated individual will be 1.020 or lower. If the wrestler is dehydrated (i.e., specific gravity of the urine is over 1.020), skinfold measurements are **NOT** to be taken. Testing must be rescheduled for a different time when the wrestler is properly hydrated. **NO SOONER THAN 48 HOURS.**

Volunteers To Do The Testing

1. **Make arrangements for extra help** to facilitate this process.
2. It is recommended this person be a nurse, medical technician, athletic trainer, or person with similar training. Your school nurse or a biology or health teacher can also do these tests.

3. Coaches are not to do these tests.
4. Skinfold measures **MAY** agree to test one or two athletes on a follow-up visit to your school or if an athlete goes to a clinic to be measured. Skinfold measurers are **NOT** to be expected to do hydration testing of your entire squad.

Obtaining A Secure Urine Sample

It is a priority to assure an appropriate urine sample has been collected the following procedures are required.

AREA – A bathroom with toilet or urinal can be used by the wrestler to provide the urine sample. The determination of specific gravity can be completed in another area, but a means of appropriate disposal of the urine must be available.

SAFETY – Use gloves when measuring the urine and appropriately dispose of the urine in toilet. Place cup in hazard collection system.

COLLECTION CONTAINER – Paper cups of sufficient size to provide a 20-30 ml urine sample can be used by the wrestler to collect the sample.

COLLECTING THE URINE SAMPLE – School personnel must insure that the wrestler has provided a sample of their own urine. **Reasonable supervision is key.** Normally one to three wrestlers can be supervised at one time in an open area. After collection of the urine by the wrestler, personnel should insure that the urine is warm by feel in the collection container. If the urine is cold, reject that sample and require the wrestler to provide another sample under close supervision.

To further insure a secure sample is collected water faucets may be shut off. Blue or red dye may be added to toilet bowls.

Testing The Sample

It is acceptable to use either Reagent Strips, a Refractometer or Hydrometer for testing purposes. Which ever instrument is chosen, carefully follow directions for its use, to insure an accurate reading.

NOTE: A Refractometer must be accurately calibrated prior to use.

Using Reagent Strips

Purchase sufficient multistix strips to conduct the specific gravity urine test.

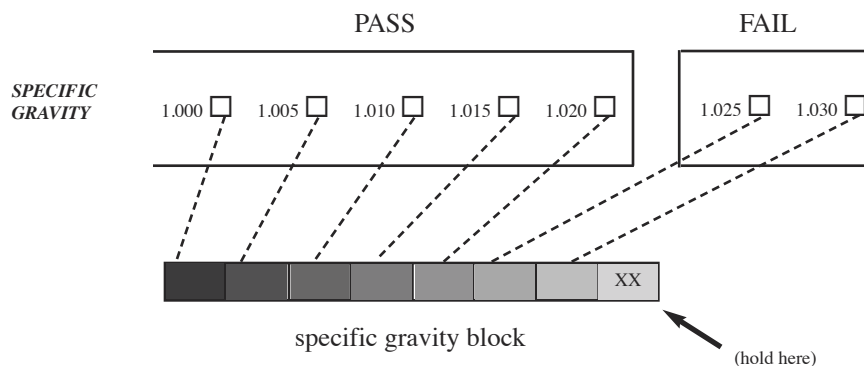
- A. The AMES, Multistix 10SG Reagent Strips for Urinalysis (2304A) is one strip that can be used. However, any urine dip stick for testing urine specific gravity may be used. Your local hospital or clinic can give you a source. One source we know you can order them from is Shoreline Sport Medicine Supply, Inc., 2615 Segwun Ave., Lowell, MI 49331, (616) 897-6505, or FAX (616) 897-5361 to FAX a purchase order. Orders may also be placed online at www.shorelinesms.com. Strips are available in bottles of 100.
- B. You may contact a local physician's office for the name of a supplier in your area. Some physicians may be willing to donate enough strips for your team.
- C. Multistix strips do have a shelf life, check the expiration date printed on the container. (If given to athletes for experimentation they must be kept in a clean, sealed container.)
- D. Order your strips early so you are certain to have them by the time you plan to have measurements done.

*Mix urine well in cup by swirling urine.

*Remove one strip from bottle and replace cap. Completely immerse Reagent areas of the strip in FRESH urine and **re-move immediately** to avoid dissolving reagent. All unused strips must remain in the original bottle. Do not remove strips from the bottle until immediately before the strip is to be used for testing. Immediately replace the bottle's cap and tighten after removing the reagent strip.

- * While removing the strip from the urine, run the edge of the strip against the rim of the container to remove excess urine. **For 45 seconds hold the strip in a horizontal position to prevent mixing of the chemicals.** (Do not leave stick in urine 45 seconds. Dip & remove immediately.)

- * Visually compare reagent area to the specific gravity color chart on the bottle's label by holding strip close to color blocks. Avoid laying strips directly on color chart as this will result in urine soiling the chart.



- * Discard urine in urinal or toilet and cup in an appropriate receptacle.

If the wrestler passes the test darken the PASS box on the scantron form (only after they have printed their name on the form and filled in the appropriate bubbles). **Sign your name on the line provided (top right corner of form)**. This will be required by the skinfold measurer before skinfold measurements will be taken.

If the wrestler fails the test, they will have to be retested at a later date. The wrestler is required to wait a minimum of 48 hours before retesting.

NOTE: Urine testing should be completed within one hour after voiding. If testing cannot be completed within one hour another sample must be taken.

XVII. WEIGHT LOSS BY WRESTLERS

This information has been prepared with the parents of wrestlers in mind. Athletic directors are encouraged to reproduce the information so it can be shared with the parents of wrestlers.

IMPORTANT INFORMATION REGARDING WEIGHT LOSS

The health hazards associated with excessive weight reduction through food deprivation and/or dehydration are well documented. These hazards include, but are not limited to, reduced regulation of body temperature, kidney failure, and acute and/or chronic fatigue. We urge you to consider the information provided below and discuss it with your wrestler in deciding at which weight they will compete.

Beginning with the 1991-92 wrestling season, the WIAA Board of Control adopted a mandatory weight control program for Wisconsin high school wrestlers. The program has two basic components: 1) a nutrition-education dimension and 2) the establishment of a healthy minimum weight for each wrestler. Skinfold measurements are used to predict (on a scientific basis) the lowest healthy weight for every wrestler. The program requires each male wrestler to maintain at least 7% body fat and females 12% body fat. The rule does not suggest or urge wrestlers to reduce to 7%, or 12% body fat, but sets a healthy limit as to how much they can safely reduce. The rule controls: 1) the rate of weight loss and 2) the amount of weight that can be lost.

It is recognized that the skinfold measurement method of estimating body fat has some inherent error. Every effort has been made to minimize this error by utilizing WIAA certified and registered skinfold measurers. The prediction of body fat and minimum weight is not an exact science, but skinfold measurement is the best available method. With that in mind, you need to consider the following facts: 1) If body weight is manipulated through dehydration prior to skinfold measurements being taken, the predicted minimum weight may be low. This would force the wrestler to repeat the rapid weight loss practices each time they must make weight. This practice would be dangerous to the health of your growing adolescent and is one of the main reasons the WIAA 7% rule was initiated. 2) The skinfolds may have overestimated, or underestimated, the body fat of your athlete. If the original skinfold prediction overestimated percent body fat for a wrestler, the margin of safety built into the program may be slightly reduced. Once again, this is a reason to encourage wrestlers to wrestle at a normal comfortable weight not one they must struggle to maintain.

We encourage you to monitor your wrestler's diet as well as weight loss efforts. Our publication, "The Wrestler's Diet" will help you in monitoring weight loss. If you do not already have a copy of this publication, contact your school's athletic director.

XVIII. WRESTLING SKIN CONDITION REPORT

See form on website <http://www.wiaawi.org/Portals/0/PDF/Sports/Wrestling/wrestrelease.pdf>

XIX. WRESTLING INJURY TIME OUT MODIFICATION

In the absence of certified medical personnel, (physician and/or certified athletic trainer) all injuries to the head and neck involving the cervical column and/or nervous system will be covered by the same time frame as other injuries.

When certified medical personnel are present, they have jurisdiction to extend the allowed time limit to a maximum of five minutes for evaluation of the injuries to the head and neck involving cervical column and/or nervous systems only, at which time the athlete would be required to prepare without delay for continuation or default the match.

A second occurrence of injury to the head and neck involving cervical column and/or central nervous system in the same match shall require the wrestler to default the match.

Note: When this provision is used, time consumed for the injury will in no way affect time used, or available, for other types of injuries.

XX. NFHS STATEMENT ON MEDICAL APPLIANCES AND/OR MEDICAL DEVICES

National Federation of State High School Associations (NFHS)

Sports Medicine Advisory Committee (SMAC)

The use of medical appliances and/or medical devices by student-athletes with health conditions has become more commonplace. With the wider use of insulin pumps, as well as other medical devices such as heart monitoring equipment and prosthetics, concerns have been raised regarding the safety of the athlete wearing the device, the safety of teammates and opponents, and the risk of damages to the device itself.

The NFHS SMAC has discussed these issues and come to the following conclusions:

When it is necessary for a student-athlete to wear a medical appliance and/or a medical device (such as an insulin pump, heart monitoring equipment, etc.) during athletic competitions, the device shall be padded and securely attached to the player's body underneath the uniform. Devices attached to the head (such as hearing aids and cochlear implants) do not need to be padded, but shall be firmly secured to the body. Prosthetics may be padded as needed. No medical appliance and/or medical device shall pose any risk of injury or hazard to the student-athlete, teammates and/or opponents. The coach shall notify the official of the presence of the medical appliance and/or medical device prior to each contest. The official has jurisdiction to disallow any medical appliance and/or medical device deemed unsafe for athletic competition. In addition, State Association approval may be required prior to a student-athlete wearing a medical appliance and/or medical device in athletic competition.

Revised and Approved November 2018

XXI. Non-REQUIRED EQUIPMENT

SPORT	CAST/SPLINT (leather, rubber, plastic, plaster, fiberglass, Alumifoam)	KNEE BRACE	PROSTHETIC DEVICE	INSULIN PUMP	ELECTRONIC MONITORING ANKLE DEVICE	PRESCRIPTION HEARING AID	#MEDICAL ALERT MEDALS/ BRACELETS
BASEBALL	Allowed*; must be padded	Allowed; if unaltered from manufacturer does not require additional padding	Allowed^	Allowed; must be covered and padded	Allowed; must be covered	Allowed+	Allowed; must be taped to body and may be visible
BASKETBALL	Not allowed on elbows, hand, finger, wrist or forearm even if padded	Allowed; may need padding, hinges must be covered	Allowed*; may need additional padding	Allowed; must be covered; may need padding	Allowed; must be covered	Allowed	Allowed; must be taped to body with data clearly visible
CROSS COUNTRY	Allowed*; referee determines if padding is necessary	Allowed	Allowed; Artificial lower limb "Blades" - Contact WIAA	Allowed; must be covered	Allowed; must be covered	Allowed	Allowed
FOOTBALL	Allowed*; must be padded	Allowed; if unaltered; must be worn under the pants	Allowed*; may need additional padding	Allowed; must be covered; may need padding	Allowed; must be padded	Allowed+	Allowed; must be taped to body; alert visible
GOLF	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
GYMNASTICS	Prohibited	Allowed; if unaltered from manufacturer does not require additional padding	Allowed	Allowed	Allowed; must be covered	Allowed	Allowed; must be taped to body, alert visible
HOCKEY	Allowed*; must be padded; must have medical release at game site	Allowed; may need padding; hinges must be covered	Allowed*; may need additional padding	Allowed; must be covered; may need padding	Allowed; must be padded	Allowed+; if no risk to wearer or opponent	Allowed; must be taped to body; alert visible
SOCCER	Allowed*; must be padded; must have medical release at game site	Allowed; any covering (sleeve) recommended by manufacturer may be worn	Allowed*; upper limb prostheses and above knee leg prostheses are discouraged	Allowed; must be covered; may need padding	Allowed; must be covered	Allowed+; if no risk to wearer or opponent	Allowed; must be taped to body; alert visible
SOFTBALL	Allowed*; must be padded; must have medical release at game site	Allowed; if unaltered from manufacturer does not require additional padding	Allowed*; may need additional padding	Allowed; must be covered; may need padding	Allowed; must be covered	Allowed+; if no risk to wearer or opponent	Allowed; must be taped to body, alert visible
SWIMMING/DIVING	Allowed; may not aid their speed or buoyancy	Allowed; may not aid speed or buoyancy	Allowed; if no advantage is gained. Written approval from WIAA must be made available to referee	Allowed; must be covered	Allowed; must be taped to body	Allowed+; may not aid speed or buoyancy	Allowed; must be taped to body
TENNIS	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
TRACK/FIELD	Allowed*; referee determines if padding is necessary	Allowed	Allowed; Artificial lower limb "Blades" - Contact WIAA	Allowed; must be covered	Allowed; must be covered	Allowed	Allowed
VOLLEYBALL	Not allowed on finger, hand, wrist or forearm even if padded	Allowed; if unaltered from manufacturer does not require additional padding	Allowed*; may need additional padding. Written approval from WIAA required	Allowed; must be covered	Allowed; must be covered	Allowed	Allowed; must be taped to body, alert visible
WRESTLING	* Special restrictions; check with WIAA	Allowed; hinges must be covered, hard surfaces must be padded; may be special restrictions	Allowed*; may need additional padding	May be allowed; must be covered and padded	Allowed; must be padded	Allowed+; if no risk to wearer or opponent	Not allowed
Footnotes:	* Standard padding is considered to be minimum of 1/2 inch dense foam/closed cell material or equivalent ^ Provided artificial limb is no more dangerous than corresponding limb - or must be padded + Prescribed by physician/note required # When taping a medical alert medal, transparent tape should be used if taping directly over the medal. If nontransparent tape is used it should be applied to the medal's chain immediately above the medal leaving the alert medal clearly exposed.						

Medical Information

I. NFHS POSITION STATEMENT – DRUGS, MEDICINE AND FOOD SUPPLEMENTS

In response to the recent focus on the use of food supplements, specifically creatine, the NFHS Sports Medicine Advisory Committee has issued a position statement on the use of drugs, medicine and food supplements in interscholastic sports. Text of the committee's statement follows:

"School personnel and coaches should not dispense any drug, medication or food supplement except with extreme caution and in accordance with policies developed in consultation with parents, health-care professionals and senior administrative personnel of the school or school district.

"Use of any drug, medication or food supplement in a way not prescribed by the manufacturer should not be authorized or encouraged by school personnel and coaches. Even natural substances in unnatural amounts may have short-term or long-term negative health effects.

"In order to minimize health and safety risks to student-athletes, maintain ethical standards and reduce liability risks, school personnel and coaches should never supply, recommend or permit the use of any drug, medication or food supplement solely for performance-enhancing purposes."

II. WIAA POSITION STATEMENT – PERFORMANCE ENHANCING SUPPLEMENTS

Note: This policy statement is related to use of dietary supplements. For information on steroid use, see the sections addressing APEDS and Drugs in Sports.

The WIAA strongly opposes the use of supplements by high school athletes for performance enhancement due to the lack of published scientific research that documents the benefits and/or risks of supplement use, particularly in adolescents. Supplements should only be used on the advice of one's health care provider for health-related reasons, not for the purpose of gaining a possible competitive advantage. School personnel and coaches should never recommend, endorse, or encourage the use of any supplement, drug, or medication for performance enhancement to a student athlete.

Products typically promoted as performance enhancing include: dietary or nutritional supplements, ergogenic aids, health supplements or sport supplements. While some mainstream supplements are made by responsible manufacturers, a growing number of products contain dangerous and hidden ingredients, including steroids and pro-hormones. In making a decision to use a supplement, several factors should be considered.

- **Evaluating Supplements for Discouraged or Banned Substances:** Supplements are not regulated like drugs, food or medication. Supplement companies do not have to follow the same "truth in labeling" regulations as for food or medication. Supplement labels are not required to list all the ingredients in the product and can omit listing ingredients that are in a bottle. A growing number of products contain dangerous and undisclosed ingredients, including steroids, stimulants and dangerous drugs. Proprietary ingredients are a "company secret" and do not have to be listed on the label. To minimize the risk of taking a supplement that contains a banned ingredient, visit the NFS Certified for Sport website <http://www.nfsport.com/> or Informed Choice <http://www.informed-choice.org/> for a listing of supplements that have been tested for purity and potency.
- **Health Consequences:** Supplement products have been known to be contaminated with banned or harmful ingredients. Taking supplements with dangerous hidden drugs such as designer steroids has been a known cause of liver injury, stroke, kidney failure, and pulmonary embolism. Supplement products with hidden stimulants can cause irregular heart rhythm, increased blood pressure, stroke, and even death.
- **Contamination:** Supplements can accidentally contain banned or discouraged ingredients due to cross-contamination when manufacturing equipment isn't cleaned properly between batches of products. In other cases manufacturers will spike a product with stimulants or pro-hormones without listing them on the label to deceive the athletes that the product will cause big gains while claiming the product is "all natural" or "legal."
- **Sources of information:** Supplement store staff or company distributors get paid by selling a product. They are well-trained to sell the most popular product with the biggest profit margin. The staff generally may not have training in nutrition, biochemistry or pharmacology. In addition, they may not know or understand WIAA rules/regulations of supplement use by athletes. A supplement/product that is "legal" for the company to sell to the athlete, however, may not be allowed for an athlete to use.
- **Testimonials from professional athletes:** Supplement companies frequently advertise their products with testimonials from professional athletes or well-known sports figures. These testimonials are not proof that a supplement works. Athletes who are paid to endorse a product are generally at the end of their career and did not use the supplement when they were young and training to become successful.
- **Pre-Workout Boosters:** These products claim to provide increased energy and endurance for a workout. Supplements

in this category generally contain several sources of stimulants – many not listed on the label – that affect the heart and blood pressure and can cause serious health consequences. In addition, this category of products has a history of containing hidden banned supplements, including illegal pro-hormones and steroids. Use of pre-workout boosters has caused many athletes to fail drug tests, be suspended from competition, and has been related to several deaths.

- **Protein Powders:** Most diets supply adequate protein. However, in cases where athletes can't eat enough food or when protein needs are higher than normal, limited supplementation may be needed. In these cases, a physician or sport dietitian consultation may be helpful. If extra protein is needed, read labels carefully. Protein powders may contain discouraged or banned ingredients not listed on the label. A 2007 study by Informed Choice Labs randomly selected 50 protein powders off the shelves of well-known supplement stores. They found that 25% of the powders contained anabolic steroids. In addition 11% of the protein powders tested positive for stimulants not listed on the label. Look for labels that list protein as the first ingredient, have few added ingredients and do not claim to be "mass builders".

The primary reason student-athletes choose to use supplements are to gain mass and weight, get stronger, reduce body fat, and have more energy. Student athletes who want to improve athletic performance should focus on good training strategies, a good diet, and proven recovery strategies that stress the 4 "R's": rest, refuel, rehydrate, and repair. In the vast majority of cases, a few changes to the student-athlete eating habits will lead to muscle growth, fat loss, improved strength and faster recovery.

For a copy of the WIAA Performance Enhancing Supplement and Banned Substances Policy visit <http://www.wiaawi.org/Portals/0/PDF/Health/performanceenhancers.pdf>

National Institutes of Health Center for Complementary and Integrative Health.
<https://nccih.nih.gov/health/supplements/wiseuse.htm>

True Sport Nutrition Guide http://www.truesport.org/library/documents/resources/nutrition_guide/NutritionGuide.pdf

NSF Certified for Sport <http://www.nsf sport.com/>

USADA Dietary Supplement and Safety Education <http://www.usada.org/substances/supplement-411>

Informed Choice <http://www.informed-choice.org/>

Drug Free Sport <http://www.drugfreesport.com/>

American College of Sport Medicine – Protein Intake for Optimal Muscle Maintenance <http://www.acsm.org/docs/default-source/files-for-resource-library/protein-intake-for-optimal-muscle-maintenance.pdf>

Taylor Hooton Foundation <http://taylorhooton.org/minimising-the-risk-of-taking-contaminated-supplements/>

National Federation of High School Sports Supplement Position Statement <http://www.nfhs.org/media/1014747/2012-nfhs-smac-supplements-position-statement.pdf>

III. NFHS POSITION STATEMENT ON APPEARANCE AND PERFORMANCE ENHANCING DRUGS AND SUBSTANCES

National Federation of State High School Associations (NFHS)

Sports Medicine Advisory Committee (SMAC)

Background

Appearance and performance enhancing drugs and substances, or APEDS, refer to products that can be either naturally or synthetically produced and used with the intention of enhancing appearance or improving athletic performance. This use of APEDS is often referred to as "doping," and has unfortunately been a part of competitive sport since ancient Roman times. In 1999, the World Anti-Doping Agency (WADA) was formed, with the mission of creating a doping-free sporting environment. In the United States, the U.S. Anti-Doping Agency (USADA) is the national anti-doping organization. WADA publishes the World Anti-Doping Code, which is followed by most sporting organizations, including the International Olympic Committee.

What are APEDS?

The spectrum of APEDS is very broad, encompassing many different substances and methods of improving physical performance. There are multiple substances and drugs that fall under the heading of APEDS, from caffeine, found in numerous beverages, to illegal and dangerous anabolic steroids. All APEDS have the potential for dangerous complications and side effects, if used improperly. However, to more reasonably discuss use and abuse, we can divide them into two broad categories:

1. Legal, not banned for competition, and may have some positive effects upon athletic performance:
 - a. Caffeine (limit set by WADA and NCAA)
 - b. Creatine
 - c. Protein powders and amino acids

An interesting distinction concerning APEDS is that except for prescription medications, none of the other products are regulated or routinely tested by the U.S. Food and Drug Administration (FDA). A dangerous side of this lack of regulation is the potential for the presence of contaminants in dietary supplements. Some studies have shown that 8-20% of tested protein supplements are contaminated with significant amounts of heavy metals, such as lead and mercury. In addition, 25% were found to be contaminated with anabolic androgenic steroids, and 11% were found to be contaminated with stimulants. Such “contamination” may be no accident as the manufacturer obviously benefits from a product that is effective, despite significant safety concerns for the consumer.

Caffeine has been shown to improve performance in endurance events. Its use is restricted, but not banned, by the NCAA and WADA. Caffeine can also have multiple side effects, some potentially dangerous, including headaches, increased blood pressure and increased heart rate. In 2011, almost 1,500 12- to 17-year-old children went to the emergency department due to caffeine toxicity. Caffeine is treated differently than other supplements by the FDA. While the FDA regulates the amount of caffeine allowed in foods and soft drinks, it does not regulate the amount allowed in energy drinks and supplements. This explains why the ingestion of multiple energy drinks can lead to dangerous levels of caffeine.

Creatine is a naturally occurring substance stored in fast-twitch muscle fibers, and serves as an energy source for muscle contraction. It works to increase strength, peak force and peak power when performing multiple sets of maximal-effort muscle contractions. Therefore, it is likely more effective for off-season weight training than for any specific sport or event. Creatine use is relatively safe, but there are risks of dehydration, muscle cramps and blood clots associated with its use.

Amino acids and protein powders are very popular and marketed as “muscle building” products. While there may be some benefits to the use of these products, amino acids and proteins are present in a variety of meats and other foods for much less cost.

2. Legal only when prescribed by a physician, illegal to possess without prescription, can have a positive effect upon athletic performance, banned for competition by NCAA, USADA and WADA.
 - a. Anabolic Androgenic Steroids (AAS)
 - b. AAS prohormones
 - c. Human Growth Hormone (hGH)
 - d. Stimulants (examples: Ritalin, Adderall)

The most commonly known category of APEDS is anabolic-androgenic steroids (AAS). The anabolic effect is what causes an increase in muscle tissue, whereas the androgenic effect leads to masculinization, the secondary sex characteristics that males experience during puberty. These steroids are very different from corticosteroids, which are used to treat inflammation in a joint, such as with a cortisone injection, or to treat illnesses like asthma. A prohormone is a precursor to the active hormone, and becomes converted to its active form once taken into the body. Prohormones are also included in the anabolic-androgenic category. AAS and AAS prohormones work by enhancing protein synthesis and decreasing the breakdown of muscle. The net result is an increase in muscle size, muscle strength and lean muscle mass along with a decrease in body fat.

Muscle-building steroids do work, but their use comes at a high cost. First, it is illegal to possess and use these drugs without a prescription. From a side effect standpoint, AAS use during adolescence can cause premature closure of the bones’ growth plates, leading to decreased final adult height. Acne, male pattern baldness, hypogonadism (shrinking of the testicles), gynecomastia (male breast overdevelopment) and violent behavior changes are all common side effects. There are also life-threatening side effects including cardiovascular disease, arrhythmias, blood clots, stroke, cancer and increased risk of suicide.

For more than a decade, the use of human growth hormone (hGH) by professional athletes has been in the spotlight. hGH promotes growth throughout childhood and adolescence, and is also involved in the regulation of multiple other hormones, such as insulin. Studies have shown that the use of hGH can decrease fat mass and increase lean body mass. However, there is limited evidence that its use improves athletic performance. Because it is normally a very important hormone in the regulation of other hormones and multiple body processes, the use of hGH can lead to multiple side effects, including altered fluid balance in the body, cardiovascular disease, diabetes and cancer.

Stimulants are a category of APEDS that have been used for centuries as a performance enhancer. We have already discussed caffeine, the most commonly used stimulant. Stimulants may enhance performance by improving reaction time and increasing alertness, decreasing fatigue, and improving concentration and memory. Side effects from the use of stimulants range from relatively mild effects to the dangerous, including inability to sleep, anxiety, tremors, panic attacks, tachycardia (a rapid heart rate > 100), hypertension, psychosis, heart attacks and stroke. Some stimulants can also predispose an athlete to heat illness and death. Ephedrine was banned by the FDA in 2004 for use as a diet aid because of the increased risk of stroke and heart attack.

Who is using APEDS?

The use of APEDS in high school students ranges from 3% admitting the use of AAS, to almost 40% reporting a history of protein supplement use. Eighteen percent of APEDS users in high school do not participate in sports, so it is considered that this group uses APEDS for appearance enhancement (weight loss or gain, body building). Girls report a higher use of nonprescription diet pills (considered stimulants) than boys, and a lower use of substances associated with gains in muscle mass and strength, such as AAS, prohormones, and creatine.

Why is the use of APEDS an issue?

The use of illegal or banned APEDS by high school students is unfair, unethical and is considered a form of cheating. In addition, many of the products used as APEDS are not tested or regulated, and have been found to contain significant contamination with heavy metals, AAS and/or stimulants. Their use undermines the values of fair play, and can be a threat to the overall health and well-being of high school students.

The use of caffeine, creatine and amino acids/protein powders should not be taken lightly, and the athlete should first discuss their proper use with a knowledgeable health-care provider and only use as directed. As discussed earlier, the true purity of the product and potential for contamination must also be a consideration when deciding to use this category of APEDS.

Preventing students from using illegal or banned APEDS

Education about APEDS and their use is the hallmark to any prevention program. Despite advances in APEDS detection, random testing does not appear to be an effective deterrent to the use of APEDS. The following are key educational points to prevent the use of APEDS:

- School personnel, coaches, parents and other family members can reduce APEDS abuse by educating students and speaking out against such use.
- Talk with your students about their concerns and frustrations related to how they look or how they are performing in their sport. Help them establish and reinforce healthy and realistic expectations of their bodies and athletic performance.
- Have your athletes focus on proper nutrition and hydration. If possible, have your athletes work with a registered dietitian to develop a plan for appropriate weight gain and/or weight loss.
- Help your athletes understand that using illegal and banned APEDS is unfair, unethical and likely dangerous.
- Emphasize to your students that they should not trust internet marketing messages about quick fixes and enticing gains in athletic appearance or performance. Explain that the photos in these sites and in muscle magazines depict unrealistic pictures of bodies.
- Discourage your athletes' access to environments where APEDS use might occur and to people who are involved with APEDS.
- Consider initiating a formal APEDS education program to educate your students and athletes and to deter APEDS use, such as the ATLAS and ATHENA programs.

References/Resources:

LaBotz M, Griesemer BA, AAP Council on Sports Medicine and Fitness. Use of Performance-Enhancing Substances. *Pediatrics*. 2016;138(1): e20161300

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Anabolic Steroid Control Acts of 1990 (Pub L No. 101-647) and 2004 (Pub L 108-358).

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ATLAS and ATHENA Health Promotion and Substance Abuse Prevention. Available at: <http://www.ohsu.edu/xd/education/schools/school-of-medicine/departments/clinical-departments/medicine/divisions/hpsm/research/atlas.cfm>

The National Center for Drug Free Sport, Inc. <http://www.drugfreesport.com>.

United States Anti-Doping Agency. 2017, <http://www.usada.org/>

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IV. DRUGS IN SPORTS

It is difficult in a short span of time and limited space to cover the topic of drugs in sports. The implications and ramifications of drugs, even in the high school setting, much less society in general, are very large and difficult. There are the risks of the drugs and their side effects such as the medical, psychological and addicting concerns. There is the effect on athletic performance, not only increasing athletic performance but also increasing the risk of injuries and decreasing performance.

Twenty-five years ago coaches had to concern themselves with alcohol and cigarettes as the two drugs of risk and danger to their athletes. Today this list has been greatly expanded with the addition of marijuana, cocaine, stimulants, anabolic steroids and many others. No coach or athletic administrator can be a master of all of these drugs with their many implications. An understanding of the background of drugs and some of the major side effects and warning signs should be understood by all. This puts an added responsibility on the coach and athletic administrators, but it is one of the responsibilities that goes with coaching today.

Basically drugs can be broken down into three groups: 1) therapeutic; 2) ergogenic; and 3) recreational.

Therapeutic

Therapeutic drugs are those that are used for a medical reason so that the individual may perform at the athlete's normal ability or level. They are not used to enhance performance or to get a false high or "feeling good" attitude.

Ergogenic

Ergogenic drugs are ones that are used to obtain improved athletic performance. They have no therapeutic value in their own right, and are used strictly to enhance athletic performance. These are all banned and should be banned in high school sports. Included in this area are stimulants and anabolic steroids.

Recreational Drugs

Recreational drugs are those that are used to relax, escape or to create a false impression of euphoria. There is no specific goal to improve performance but just to "feel better". This group would include marijuana, cocaine, cigarettes, chewing tobacco and stimulants.

Some people argue that therapeutic drugs should not be permissible and are misused to increase athletic performance. If one remembers that the goal of therapeutic drugs is to allow the athlete to compete at their normal ability and not to increase performance, this argument loses merit. An athlete who takes insulin for his diabetes, anti-inflammatory medication for tendinitis or muscle strain, or uses an albuterol inhaler for his asthma, is not trying to increase performance. They are getting back to a normal state.

Use of recreational drugs is another problem and leads to tremendous social consequences. There is great risk to the athlete who uses these drugs as well as to others. The legal, moral and ethical questions are very complicated and lead to a great amount of responsibility being placed on coaching staffs and athletic administrators in our high schools. The WIAA has taken a stand and has instituted penalties for the use of these drugs. Individual high schools have often increased the penalties for the use of these drugs over what the WIAA has recommended and this should be complemented. Every high school athlete who has a problem with these drugs should be counseled and a clear process outlined by which they can re-enter athletic competition. Sports can be a route to allow the athlete to break a drug habit that they may have acquired, but at the same time a penalty must be clearly stated and enforced so that they know the rules and the limits ahead of time. Coaches, administrators, and the WIAA working together can work for a safer environment for all athletes in the area of drug use and misuse.

A brief outline of major drugs and their risk and side effects will be listed. This is not all inclusive, but every coach should familiarize themselves with early signs and symptoms so they can be available to help the young athlete deal with their problem. It may not seem right to have drug awareness be part of our coaches' job description, but if one is to help and coach our athletes, the coach has no choice. This must be done.

Alcohol

Alcohol is the primary drug problem in sports as well as in society. This is not a problem only of the young athlete, but of all age groups throughout our society. It clearly decreases athletic performance, besides being illegal. Alcohol inhibits motor skills of most types and leads to a loss of body fluids resulting in a lower endurance rate. It induces behavioral changes and poor judgment, and is a depressant medication that prolongs reaction time as well as slowing neuromuscular responses. Alcohol is used primarily as a social drug but functions more as an escapist drug and is probably the primary health hazard in the United States.

Tobacco

Tobacco is another commonly misused drug by the athlete as well as society in general. The nicotine in tobacco, whether it be in cigarettes, chewing tobacco or electronic cigarette/vaping devices, is addictive. The carcinogens and carbon monoxide that results from smoking of tobacco are dangerous to the athlete's health and to those that are around him/her as well. Medically it causes severe medical problems and worsens many other medical conditions. Heart disease, strokes,

vascular disease, pulmonary disease, including emphysema, and cancer, as well as the risk to the unborn fetus, are well documented. Athletic performance is definitely reduced and the longer the athlete smokes the greater the adverse effect is on the athletic performance. It clearly decreases oxygen utilization, and the passive effect of the smoke can have a negative effect on the performance of those who are around them.

Marijuana

Marijuana is a drug that is illegal in most places but one that is readily available to our high school athletes. Marijuana does not lead directly to the use of cocaine, or other dangerous drugs, but certainly those who go on to cocaine and other drugs have usually tried marijuana first. CBD and synthetic cannabinoids are related substances that may be contaminated with marijuana or other unknown substances and have no known benefits for sports performance or recovery.

The effects of marijuana are many and dangerous. It impairs short-term memory, slows learning and can lead to transient confusion and anxiety. It clearly, with frequent use, leads to a nonmotivational syndrome where the athlete loses interest in many things, as well as impairing motor coordination and function. This makes driving a risk. It, too, can lead to chronic lung disease. One of its greatest risks is the euphoria and sense of false reality that it creates. Those who become addicted emotionally to this drug can find that after many months and years of use, their emotional development has been harmed, as well as their educational status. While most of the effects that have been mentioned are short term, some have extended health consequences. A good example of this is that the measurement of male sex hormones have been shown to decrease while using marijuana as well as low sperm counts. When the marijuana is stopped, both normalize, but if use is extended over long periods of time, the effect is not known at this time.

Marijuana clearly decreases athletic performance. The athlete, because of the euphoric qualities of the drugs, may believe that their athletic performance has never been better. Studies show a decrease in motor skills and performance.

Cocaine

Medically, cocaine has similar effects to amphetamines in that it is a stimulant and a powerful vasoconstrictor. It creates a great feeling of euphoria, but with it goes increased heart rate, increased blood pressure and irregular heart rates. It also leads to nervousness, insomnia, blurred vision, as well as tremors and convulsions. It can lead to cardiac arrhythmias, cardiac arrest, as well as respiratory arrest. It can kill. In the short term use, there may not be a major effect on athletic performance, but as more is used, athletic performance decreases and socially it becomes a tremendous problem. Mood swings are great and in the high school athlete, not only will athletic performance, but scholastic performance as well, will decrease. It is an extremely dangerous drug.

Stimulants

Stimulants include those drugs such as amphetamines, caffeine, ephedra, and ma huang. These drugs stimulate the central nervous system and seem to increase alertness in motor and physical activity. They decrease fatigue and create a feeling of euphoria. Unfortunately many side effects also are present. Caffeine is a diuretic and can contribute to dehydration in an athlete. Stimulants can lead to insomnia, hypertension, hyperexcitability followed by depression, as well as collapse, convulsions and coma. They can lead to irregular heart rates, increased hostility, aggression and addiction. One of the greatest dangers is that they decrease fatigue and mask mental awareness and pain. This has led to death in athletes who push themselves beyond their physical endurance. Some of these same dangers may exist if prescription stimulant medications used to treat attention-deficit/hyperactivity disorder (ADHD) are abused (for example, used in doses that are higher than prescribed).

Anabolic Steroids

Anabolic steroids are a growing problem in high schools as the young high school athlete sees it being used in the professional and college ranks. They, too, want to get the competitive edge, perform better and gain the scholarship. Basically, anabolic steroids work by stimulating protein synthesis and therefore, protein building. They may work by blocking the breakdown aspect of weight training and conditioning. Unfortunately, the protein building effect the athlete wants cannot be separated from the side effects. One cannot get the desired effects without the side effects. Many athletes try to do this by "stacking" anabolic steroids, which means they take oral and injectable steroids in set patterns. They will use these in six to ten week cycles, in doses that are 10-100 times the usual therapeutic doses for medically indicated conditions.

The use of anabolic steroids does have a positive effect on athletic performance. For too many years medical personnel tried to say that anabolic steroids did not increase athletic performance. This cost the medical community credibility among athletes, as well as coaches. To have an effect on athletic performance, the athlete must be in an intensive weight training program before the start of using anabolic steroids, and continue this intensive weight lifting program while on them. The athlete must maintain a high protein, high calorie diet at the same time.

The trouble with this "program" is that the desired effect is usually accompanied by serious side effects. The risk and dangers are too great to allow the use of anabolic steroids at any level of competition. We cannot lie to the athlete and say they don't work. We must educate the athlete to the risks and dangers as to why the use of anabolic steroids should not be used. They are banned for sound medical reasons.

The adverse effects are on many different organs of the body. They can affect the liver, leading to hepatitis as well as

benign and malignant tumors of the liver. They decrease the size of the testicles, lead to enlarged breast tissue, and decrease sperm counts in the male. In females it can lead to marked masculinization, with clitoral enlargement, increased body hair, deepening of the voice, a cessation of menstrual periods as well as a decrease in breast size.

In both sexes it can cause an increase in blood pressure, raise blood cholesterol, produce a drop in high density lipoproteins, and lead to destruction of heart muscle. They can also produce acne, baldness and an increased incidence of tendon ruptures and muscle strains.

There are two other side effects that can be dangerous to the athlete. One, they cause mood changes with increased aggressiveness, irritability, and rapid personality swings. Second, in the adolescent it can lead to early closure of the growth plate in bones and result in a shorter final height than would have been attained.

Many of these affects are permanent such as baldness, clitoral hypertrophy, growth plate closure, as well as the heart/liver damage.

The coach should be aware of how to spot the athlete who is using anabolic steroids. Some of the things to look for is the athlete who works out lifting weights away from their team and away from the coach. The coach may notice a sudden increase in strength and size in the athlete over what would be expected. There may be real mood swings with more aggressive behavior as well as increased irritability.

The coach can be of tremendous help in educating the athlete on the moral values of fair play and fairness. He can instruct them on the rules and the legal aspect in the use of anabolic steroids. The coach must make it absolutely clear that he/she is against the use of anabolic steroids. The athlete must be aware that the coach and the athletic administrators will not tolerate the use of these drugs on their athletic teams.

The information given is not meant to be all inclusive but more of a guide and background to expand the knowledge of those who deal with the high school athlete. Awareness of physicians, parents, and coaches is a big aid against the use and abuse of any drugs.

V. WIAA POSITION STATEMENT – CBD (CANNABIDIOL)

Position Statement: The WIAA has banned the use of Cannabidiol (CBD) Products and the products are only allowed and to be used with a prescription from a licensed health care professional.

Rationale and Safety:

Cannabidiol (CBD) is marketed towards athletes for recovery and pain relief among other reasons. It may be sold in many forms, including oils, protein powders, capsules, lotions, creams, gels, extracts, and gummies. The U.S. Food and Drug Administration indicates that CBD products could cause potential harm or side effects. Potential side effects include change in alertness, gastrointestinal distress, and changes in mood. At this time the FDA has approved only one prescription CBD product for two rare, severe forms of epilepsy.

The safety and purity of CBD products is unknown. Research shows that CBD products may contain varying levels of tetrahydrocannabinol (THC), which may not be clearly known or indicated on the packaging. This is concerning for our student-athletes as one cannot be certain that a product does not contain THC. THC is classified as a banned substance by WIAA. Any substance chemically related to a banned or discouraged ingredient is also banned or discouraged.

References/Resources

For a Copy of the WIAA Performance Enhancing and Banned Supplements

<https://www.wiaawi.org/Portals/0/PDF/Health/performanceenhancers.pdf>

FDA: <https://www.fda.gov/consumers/consumer-updates/what-you-need-know-and-what-were-working-find-out-about-products-containing-cannabis-or-cannabis>

NCAA-Cannabinoids are a banned substance (examples include marijuana, tetrahydrocannabinol (THC), synthetic cannabinoids. Any substance that is chemically related is also banned. <http://www.ncaa.org/sport-science-institute/topics/2019-20-ncaa-banned-substances>

Lachenmeier DW, Habel S, Fischer B, et al. Are side effects of cannabidiol (CBD) products caused by tetrahydrocannabinol (THC) contamination? F1000Res. 2019;8:1394. Published 2019 Aug 8. doi:10.12688/f1000research.19931.2 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7029751/>

VI. MENTAL HEALTH/MENTAL WELLNESS

General Information

Involvement in sports can have a very positive effect on the mental health of high school students. However, mental illnesses, such as depression, anxiety, and others, occur in athletes just like they do in everyone else. Mental illness may not be detected in athletes as easily as in others, though. This is for a number of reasons, including:

1. Athletes may have a tendency to deny signs of "weakness".
2. Athletes may be afraid of not being allowed to play.

3. Athlete behaviors may resemble symptoms of mental illness, but can be chalked up to being a normal part of being a good athlete. This might include careful attention to diet, which may actually be part of an eating disorder.

How and Why Mental Illness Occurs in Athletes:

Mental illness in athletes may relate directly to the athlete's sport, or it may have nothing to do with the sport. There are 3 possible relationships between the athlete's sport and their mental illness:

1. The illness is caused or worsened by the sport (for example, an athlete who develops an eating disorder directly related to wanting to be thin for their sport)
2. The athlete chooses the sport as a way to cope with the mental illness (for example, the athlete with anxiety who finds that running helps them to feel less anxious)
3. The sport and the mental illness are completely coincidental and have nothing to do with each other

Unique Risk Factors for Mental Illness in Athletes:

While athletes are probably at similar risk for most mental illnesses compared to the general population, there are several unique factors that may especially put athletes at risk for these conditions. These include:

1. Injuries (including concussion)
2. Lack of balance in life (no free time, including time with friends)
3. Pressure of competition
4. Overtraining (training too hard for too long without enough time for recovery)
5. Failure in sport
6. Harassment and discrimination related to personal characteristics such as race/ethnicity or sexual orientation
7. Coaching styles that do not match up with how the athlete performs best

Depression:

Like most other mental illnesses, depression probably occurs in athletes at the same rate as in the general population. Symptoms of depression include (and note a person does not need ALL of these symptoms in order to have depression):

- Feeling sad, down, hopeless, or tearful on most days
- Feeling irritable on most days
- Not looking forward to or enjoying things that used to make the person happy
- Feeling worthless
- Lower energy than usual
- Worse concentration than usual
- Appetite changes (either much lower or much higher than usual)
- Sleep changes (either trouble falling or staying asleep or sleeping more than usual)
- Thoughts of death or dying, including suicidal thoughts

On rare occasion, someone who has times of feeling depressed may have a condition called bipolar disorder. This is a disorder in which they not only may have times of depression, but they also have times of abnormally elevated mood (called mania or hypomania). In this condition, they have multiple days or weeks on end of feeling euphoric, not needing very much sleep and still feeling rested and very energetic (this is different than simple insomnia in which they wish they could sleep but can't), feelings of being better than everyone around them, talking much more quickly than usual, engaging in uncharacteristically risky behaviors without thinking through the consequences, engaging in much more activity than usual, seeming more sexual than usual, and reckless spending of relatively large amounts of money. Importantly, this is not just feeling better than they feel compared to when they are depressed. It is a dramatic state of elevated mood in which people around them notice they are not their usual selves, and the behaviors and symptoms create problems in their lives.

Student athletes with depression, bipolar disorder, or any number of other psychiatric disorders may be at risk for suicide. A large study that compiled the results of numerous smaller studies found no significant difference in the rates of suicide attempts between athletes and non-athletes. However, risk factors for suicide may be different for athletes compared to non-athletes. Sometimes, suicide in athletes may be related to acute, sudden events or changes that are specific to an athlete (e.g., failing to make a team or get a starting spot, or perceived rejection by a coach).

Anxiety:

Anxiety may also occur in athletes at the same rates as in the general population. Some symptoms of anxiety are similar

to those of depression. It is possible that athletes can have both depression and anxiety. Symptoms of anxiety (which may be part of something called generalized anxiety disorder) may include (and note a person does not need ALL of these symptoms in order to have anxiety):

- Worry about many things (for example, sports, school, friends, family, day to day obligations) in a way that feels difficult to control and happening on most days
- Trouble sleeping (especially falling asleep)
- Lower energy than usual
- Worse concentration than usual
- Muscle tension
- Feeling fidgety or restless
- Feeling irritable much of the time

There are also specific types of anxiety that can occur, including:

Social anxiety disorder: This is a condition in which someone has significant fear and anxiety about being negatively judged and evaluated by others. People with this condition may be viewed as extremely shy or unfriendly, but in actuality, these people would like to be able to make friends. They dislike being the center of attention and being observed while doing something, and this can make it hard for some people to participate in certain sports, especially individual sports.

Panic disorder: This is a condition in which someone has sudden, severe attacks of intense anxiety and fear lasting several minutes. They usually involve physical symptoms such as feeling short of breath, feeling one's heart beat hard in the chest, or feeling dizzy. Sometimes the symptoms can feel similar to how people feel when they exercise intensely, and that can make an athlete with panic disorder start to avoid their sport out of fear that exercise will bring on an actual panic attack.

Obsessive-compulsive disorder (OCD): This is a condition in which someone has repeated, unwanted thoughts that come into their mind that they have difficulty controlling (obsessions) and/or behaviors that they feel must be performed over and over (compulsions). Examples include intense fear of germs and associated washing of hands over and over, or ordering things "just so" or symmetrically to an extreme degree. OCD is different than superstitious rituals. Rituals are common among athletes, and examples include wearing the same pair of socks for every game or eating the same meal before each race.

Post-traumatic stress disorder: This is a condition in which someone has suffered any sort of trauma (for example, physical, verbal, or sexual abuse, assault, major accidents or illnesses). Associated with that trauma, they have symptoms that may include: nightmares or flashbacks about it, avoidance of anything that reminds them of the trauma, increased startle response, and any of a number of symptoms of depression and anxiety. Traumas unique to athletes may include "out of the ordinary" sport-specific adverse events, such as severe injuries (especially if they involve threats to physical integrity), lethal accidents, loss of a crucial game, public cheating scandal, or teammate suicide.

Treatment and Resources:

1. Athletes may reach out to any of a number of people, including coaches, athletic trainers, team physicians, parents, school nurses, school counselors, or others, with mental health concerns. In emergency situations such as when someone is suicidal, any of these contacts should ensure the athlete gets emergency treatment, such as in the emergency room. Additionally, athletes in the U.S. and those who work with them may call the National Suicide Prevention Lifeline at 1-800-273-8255 or text the national crisis line at 741741.
2. For non-emergency issues, athletes should be referred to health care providers who are familiar with mental illness if it is suspected that they might be suffering from such a condition. These providers include pediatricians, family medicine physicians, internal medicine physicians, sports medicine physicians, psychiatrists, psychologists, or other counselors/therapists. Early signs that an athlete might be suffering from mental illness include changes in personality, demeanor, interactions with peers, and general behavior.
3. Treatment may include talk therapy (psychotherapy), medications, or changes in the environment. The athlete will usually be allowed to continue to participate in the sport. However, if the sport itself is significantly contributing to the symptoms, then a break from sport may be necessary.
4. The National Federation of State High School Associations (NFHS) has developed a document entitled "Addressing Mental-health Issues in Student-Athletes" that is available here: <https://www.nfhs.org/articles/addressing-mental-health-issues-in-student-athletes/>

VII. RECOGNIZING SEXUAL ABUSE

Sexual abuse is a serious problem which is escalating in this country. It is one of the great social problems confronting the United States. It affects all strata of people more than any other social problem. Approximately 80% of sexual abuse in young students is caused by a relative, close friend of the family, or parent.

When any athlete confides that sexual abuse is occurring, that individual must be taken seriously. If it appears that there is a possibility that this student is being abused in any way, it must be reported to the proper authorities. A student who confides in a teacher is seeking help. That teacher must listen carefully to find out exactly what happened and assure the student they will be supported. The athlete should be sent to someone in command who can help.

If an athlete shows undue anxiety, depression, irritation, or is frightened in any manner who before was a happy friendly student, it is proper to ask if there is anything you can do to help.

One must also think of sexual abuse in the young female athlete who has a constant vaginal infection, pain after urination or defecation, or an odor from the genital area.

If the athlete will confide in you, she/he must be taken to the proper people. The coach can be of great help.

Our attention should be directed to adequate management for maximum safety, while permitting active participation.

References: Complete Book of Athlete Injuries, Marshall Hoffmann and William Southmayd

Mona Shangold, M.D., Personal Correspondent

American College of Obstetricians and Gynecologists Technical Bulletin 87, Women and Exercise

VIII. MEDICATION USED IN THE TREATMENT OF ASTHMA

Asthma is a disease characterized by difficulty in breathing associated with wheezing, cough, and tightness in the chest. Exercise-induced asthma (EIA) is a condition where during and following exercise the individual has difficulty with breathing. Exercise-induced asthma (EIA) causes a variety of symptoms including cough, chest tightness, shortness of breath, fatigue, slow recovery following exercise and even stomachaches and headaches. Exercise-induced asthma (EIA) can be found in individuals who are known to be asthmatic as well as in individuals who have no other symptoms of asthma and have never had an attack of asthma before. It is reported that up to one out of ten individuals may have exercise-induced asthma during their lifetime. Many children do not even know they have the symptoms but believe their shortness of breath and easy fatigability are part of the sport that they are involved in.

With advancements in therapy for asthma, every child should be able to be involved in sports to the limit of their ability. Gone is the day in which children had to be restricted in physical education, intramural sports, and interscholastic sports. It is now possible for almost every child to be involved in all manners of competitive sports if they are treated correctly with medication. The many physical, social and psychological benefits of sports are now open to the child with asthma or exercise-induced asthma.

These recent advances in therapy include Theophylline-type medications, Cromoly inhalers, and what is referred to as Beta 2 blocker medications such as Albuterol, Metaproterenol and Terbutaline. These medications may be given orally and often by inhalers. Many athletes need their medication before events and even during the event on certain occasions. These occasions are in events that involve long periods of time to complete such as football and hockey. Shorter events such as cross country or track do not need medication during the race as the pre-event dosage will carry them through the event without trouble.

Some controversy has arisen because of misconceptions on the benefit of the medication. It has been questioned if these medicines will give the individual an advantage over those who do not have asthma because of their stimulant-like effects in some cases. This is completely false. There is no evidence of any kind to support the contention that an individual receives an added advantage from his/her asthma medication. The medication is used to treat a medical condition, to bring them to normal and to the best of their own abilities. It does not enhance performance in any fashion whatsoever.

This controversy goes way back to the 1972 Olympics when a swimmer, Rick DeMott, lost an Olympic gold medal because of his use of asthma medication. Again I repeat, at no time has there been shown any evidence that asthma medication would increase performance or be of any risk or danger to the individual using it. There is no increased risk for heat stress, cardiac arrhythmias, or overstimulation. As with any medication, the abuse of therapy always has a potential of harm; but used correctly, the athlete is at no increased risk and receives no specific benefits. The athlete is only allowed to come back to his/her normal level. The United States Olympic Committee, the NCAA, and even the International Olympic Committee now okay the use of all these medications in international and national competitions. We should encourage our young athletes with asthma and exercise-induced asthma to use this medication so they can perform at their best.

Understanding the medical condition as well as the benefits and effects of therapy will help those who work with the young athlete. We will learn that it only helps them come to their normal state and has no ergogenic (or super performance) effects. These children can now be allowed to enjoy the benefits of competitive sports without the dangers of their medical condition. The use of these medications should be used by our athletes when indicated.

IX. STATEMENT ON PHYSICAL CONDITIONING

The Wisconsin Interscholastic Athletic Association (WIAA) and the Wisconsin Athletic Trainers Association (WATA) have a mutual professional interest in injury prevention programs for student athletes. One of the most effective tools in injury prevention is an effective conditioning and flexibility program. While the WIAA and WATA do not endorse any specific program, we do encourage coaches to continually re-evaluate the program they use for safety, effectiveness, and appro-

priateness for their sport and the maturity level of their student athletes. If they have any questions regarding conditioning programs they might utilize the expertise of Licensed Athletic Trainers, Physical Therapists, Strength and Conditioning Specialists, or Exercise Physiologists in their area.

X. UNPAIRED ORGANS

The question of absence, or disease of one of a paired organ, is a difficult question for sports administrators, coaches, and physicians. Because of the difficulty in coming up with an answer that meets all concerns, the courts have taken the primary decision role. While coaches and physicians have struggled to define what is best for the athlete, the athletes and the parents have fought these solutions in the courts and won.

Those organs of most consideration are the kidneys, the eye, and the testicles. The risk of injury to these organs is small in sports, but real. All safeguards must be taken if the athlete is allowed to participate. No matter what ruling the sports administrator, coach, or physician makes, the parents can go to the courts and reverse all three decisions.

Single-Organ Issues

In the past, the loss of a paired organ routinely resulted in disqualification from contact sports. However, developments in protective equipment have allowed many athletes to participate in some contact sports.

Eye. AMA guidelines suggest that athletes who have one eye avoid contact sports. However, many experts now feel that people who have one eye can participate in contact sports if they wear proper eye protection. Wearing facial protection such as a mask or cage is also helpful.

When an athlete's best corrected visual acuity is worse than 20/40 in one eye, they should be required to wear protective eyewear.

Boxing and wrestling are contraindicated for people who have one eye because protective eye devices are not available for these sports and the risk of eye injury is high.

More information can be referenced on p. 41-42

Kidney. Individual assessment is recommended for patients who have solitary kidneys, especially when the kidney is pelvic, iliac, multicystic, or anatomically abnormal. Though contact sports place the remaining kidney at very little risk, participation in contact/collision and limited contact sports should be individually assessed. People who have disabilities and have sued for the right to participate in contact sports have successfully cited the Federal Rehabilitation Act of 1973, and athletes who previously had been disqualified from participation are now able to compete. Protective equipment such as flak jackets may make limited contact/impact sports very safe.

Testicle. The absence of one testicle still keeps many athletes from engaging in certain sports; however, wearing a protective cup enables them to participate safely in all types of sports. Specifically, a cup would be required for all contact/collision sports and for most limited contact/impact sports. Because of the widespread use of protective cups, sports participation for single-testicle athletes has become less controversial.

The key is to help the athlete find other sports at a young age and to talk with parents, the athletes, and even sometimes, the lawyers to work out that which is best for the athlete.

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XI. ARTIFICIAL LIMBS/PROSTHETIC DEVICES

The wearing or use of a prosthetic device does not automatically eliminate a youngster from all athletic competition.

However, each individual sport may have specific guidelines, precautionary measures and/or restrictions governing their use. Consequently, in addition to consulting with a physician about competing while wearing a prosthetic device, student-athletes, parents, and coaches should refer to the specific rules of the sport they are interested in.

XII. STAYING HYDRATED FOR TOP PERFORMANCE (AND PASSING THE HYDRATION TEST FOR SKINFOLD MEASUREMENTS)

The purpose of the hydration test is to help assure that each wrestler's weight taken at the time of skinfold measurements is an accurate weight from which a minimum weight can be established. Below are some guidelines that can help you prepare for the hydration test. But staying hydrated means more than passing the hydration test. It is an important step in making sure you perform your best in your sport.

Water is second only to air in its importance to our survival. Our bodies are 60-70% water by weight. Much of this fluid weight comes from the muscles (70% water) and the blood – both of which are critical to optimal athletic and wrestling performance. **Dehydration compromises muscular endurance and strength.** Dehydration also decreases blood volume which can decrease athletic performance and increase the risk for heat illness (heat cramps, heat exhaustion, or heat stroke).

The key to staying well hydrated is to drink plenty of non-caffeinated beverages throughout the day, and to replace fluid loss incurred while working out. On a daily basis, this will help you feel stronger and last longer at practice and matches. It will help you pass the hydration test before your skinfold measurements are taken.

Below are some guidelines:

- Drink 8 to 10 cups (8 ounces) of water, milk, juices, sport drink, or non-caffeinated beverages each day.
- Drink another 6-12 oz. every 15-20 minutes while you work out. If you have a 2-hour football practice, that means an additional 8 cups of fluids. Individuals who sweat heavily or are in a hot environment may need to drink 6 to 8 cups of non-caffeinated beverages for each hour they work out.
- Make sure you are well hydrated the day before games, matches and your hydration test. Drink until your urine is a pale yellow and almost odorless. Dark colored urine usually means you are dehydrated. Drink 4 to 5 glasses of non-caffeinated fluids the night before, then drink as recommended above, the day of your match or hydration test.
- 2 hours before the game, match or hydration test, drink 16 to 24 ounces of water or non-caffeinated beverage. The 2-hour time frame will allow the body to clear excess fluid from the body. Being dehydrated, then drinking immediately prior to an athletic contest or the hydration test will do little to help improve performance or pass the hydration test.
- Re-hydrate after practice/exercise; Monitor weight before/after practice. Drink 24 ounces fluids for every pound lost. Aim for replacing 80% of lost water weight before the next workout.
- These tips stress avoiding caffeine, because caffeine is a diuretic. That means it increases urine production. Increased urine production means you are losing extra fluids, essential for top performance and will likely become dehydrated. Caffeine is a common ingredient in some sodas, coffee beverages and some teas. Chocolate and some pain relievers may also contain caffeine. Additionally, carbonated beverages will also contribute to the sensation of “feeling full” or bloated. This sensation may be counter-productive as it will likely diminish the thirst drive.

Carefully following these guidelines, along with the recommendations in ***The Wrestler’s Diet*** will increase your chances for a healthy, safe and successful high school wrestling season.

XIII. SUN EXPOSURE

Organizers of outside athletic events should realize that excessive sun exposure is harmful to the skin, producing acute changes of sunburn and long-term chronic changes in the skin including accelerated aging and possible skin cancers later in life. Therefore, appropriate facilities should be made available for the participants in outdoor events to be able to get out of the direct sun rays. Similarly, participants should be encouraged to use a sunscreen with a sun protective factor (SPF) of at least 15. Ideally, these products should be made available for contestants.

XIV. HERPES GLADIATORUM: POSITION STATEMENT AND GUIDELINES

In the recent years, control of skin infections has become a crucial part of high school wrestling. Herpes Gladiatorum (HG), caused by Herpes Simplex Type-1 virus (HSV-1), has received the most attention due to the speed of which it can spread and the long term consequences an athlete may have, even after finishing his/her career.

Guidelines for Herpes Gladiatorum – Treatment and Prevention

First time Outbreak:

1. Seek medical attention and oral antiviral treatment to expedite its clearance.
2. Regardless if treated, no wrestling until all lesions are healed with well-adhered scabs. No new vesicle formation and no swollen lymph nodes near area involved.
3. Consider being placed on prophylactic oral antiviral medication for remainder of season and each subsequent season.

Recurrent Outbreak:

1. Seek medical attention and oral antiviral treatment to expedite its clearance.
2. No wrestling until after 120 hours of oral antiviral medication and no swollen lymph nodes near area involved and crusted lesions.
3. If not treated with antiviral medication, no wrestling until all lesions are healed with well-adhered scabs. No new vesicle formation and no swollen lymph nodes near area involved.
4. Consider being placed on prophylactic oral antiviral medication for remainder of season and each subsequent season.
5. Examine them daily for potential HG.

Use of antiviral medication for prevention is only at the discretion of your Health Care provider who can explain the potential risks and benefits.

The spreading of this virus is strictly skin-to-skin with the preponderance of the outbreaks developing on the head, face and neck. This reflects the typical lock-up position a wrestler has facing his/her opponent. Usually a primary outbreak is seen as a raised, rash coalesced into groupings of 6-10 vesicles. Sore throat, fever, swollen, cervical lymph nodes and malaise are typical signs with a first time outbreak. Reoccurrence usually involves a smaller area with less systemic signs and or a shorter duration.

Young athletes who contract HG are destined to have a battle with life-long reoccurrences and potential spread to less suspecting individuals, such as partners or children. Differing from recurrent herpes labialis, or 'cold sores', recurrent HG can develop around the eye. This location has potential for rare but serious consequences with reoccurrences possibly affecting the visual acuity of the afflicted eye.

Previously thought to exist in 2.6% of high school age wrestlers, recent data suggests it may exist in 29.8% of these individuals. Even though this is no different than non-wrestlers in this age group, the location of the outbreaks is of concern. Since only 2-3% of these athletes are aware they have HG, a larger number are competing with the virus and unknowingly exposing it to others. Means of infection control focus on coaches, or Certified Athletic Trainers, performing daily skin checks. An athlete with a suspicious lesion must be withdrawn from practice or competition, only to return after evaluated and cleared by his/her Health Care Provider (HCP).

The usage of oral antiviral medication is beneficial in expediting the clearance of an outbreak. One paper showed that when used for a recurrent outbreak, these medications showed a 2 day reduction in the length of time it takes to clear the virus. Although controversial, the use of prophylactic dosing can help in reducing the reoccurrence of outbreaks. Data exists showing infected individuals to have a greater preponderance to outbreaks when not on the medication. These medications won't prevent 100% of the outbreaks, but can reduce their occurrence. Amongst health professionals, the concerns about using these medications in this venue center around potential risks, inconsistent benefit and possible resistance development. Documentation exists stating these issues are minimal, yet plausible and need to be mentioned. Therefore, this determination should be done at the discretion of the parents/guardian, HCP and athlete.

The NFHS will continue to promote control of HG by education and raising public awareness about the virus. Affected athletes should work closely with their HCP's to determine the best way to treat an outbreak and how to reduce its spread to other wrestlers. The coaching staff will focus on: daily skin checks, proper hygienic practices, withdrawal and treatment of individuals with an active outbreak.

Addendum: Other considerations could be given to perform blood testing to determine antibodies for HSV-1 at the beginning of each season. Anyone who is positive should be considered for daily antiviral prophylaxis throughout the season. Even if they have never had a documented outbreak of HG or cold sores. A belief held by few and supported by recent research in high school wrestlers. There is also data to support that shedding of the virus can occur before actual vesicle formation. This would be of importance since present guidelines focus on the presence of vesicles for withdrawal of competition. Prophylaxis would help prevent vesicle formation and possibly reduce viral shedding. Two important factors in controlling HG transmission.

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XV. MRSA IN SPORTS PARTICIPATION

Skin infections occasionally become a problem in all sports. Some activities are more prone to them than others. Recent outbreaks of MRSA (Methicillin-Resistant *Staphylococcal aureus*) have occurred prompting the development of new guidelines to: help identify an outbreak, means to minimize its spread and preventative measures to reduce its occurrence. First and foremost, simple hygienic measures must be used to prevent any form of infection from developing. All athletes should shower after each practice or competing event. Work-out gear or clothing needs to be washed at the end of each day or practice. Be sure to properly clean and disinfect all equipment that is in direct contact with an athlete's skin, i.e. mats, on a daily basis. Notify your parent and coach about any suspicious skin lesion and seek medical attention before practice or competing.

Simple Measures to Prevent or Minimize the Risk of MRSA

- Shower after all competition

- Wash all work-out gear after practice or competition
- Certain sports require cleaning equipment (mats) before each practice or event
- Use liquid soap, not bar soap
- Refrain from cosmetic (whole body) shaving
- Don't share towels or hygiene products
- Notify parents and coach about any skin sores and have it evaluated by health care provider before returning to competition
- Shower before using whirlpools or cold tubs
- Refrain from using whirlpools or cold tubs with any open sores, scratches or scrapes

MRSA

Staphylococcal aureus is a common bacterium that can exist on the body and under special circumstances in the nose. Rarely does it invade the skin and cause infections. When it does, it's usually in the form of impetigo or folliculitis. Methicillin-resistant *staphylococcal aureus* is a form of this bacterium that has developed resistance to certain antibiotics. One reason for concern is that this organism, previously only thought to exist in hospitals or nursing homes, has now spread into the community. Antibiotics, such as Penicillin and related medicines, which were used in the past, are now ineffective causing the problem we presently have. An aggressive form (1) that can spread quickly and usually appears as a boil or abscess (59%). Other forms, cellulitis (42%) and folliculitis (7%) can occur, but less frequent. This infection can invade deeper tissues and cause significant damage to the skin and muscles. Occasionally it can spread to the lungs and cause a serious type of pneumonia.

Risk Factors for MRSA

Several issues increase the risk for MRSA to develop. Male-to-male sexual contact, history of intravenous drug usage and known contact with individuals with this bacterium serve as the greatest risk. Children and adolescents have a greater preponderance than adults(2). Other factors are: contact sports, i.e. football, wrestling, rugby and soccer, and history of recurrent boils(3-7).

What to do with an outbreak in an athlete

As with any skin infection, treat the individual and remove them from competition and practice. All players should be screened for similar infections on a daily basis. If possible, work with one health care provider in your community. Continuity of medical care is of the utmost importance in managing these infections. If suspicious, culturing these infections will be necessary to ensure the proper antibiotics are being used. If multiple outbreaks develop on a team, i.e. clusters, contact your Public Health Department for assistance. Multiple outbreaks could indicate there are carriers for the bacteria on the team. If present, consider having nasal cultures obtained on all team members, including coaches, to determine who these carriers are. With a contact sport, consider treating all infected and carrier individuals with oral antibiotics. Once being treated, performing hexachlorophene (ex: Betacept®) body washes daily for one week will help to remove or 'decolonize' the bacterium from the body(8).

What to do to prevent an outbreak

All clothing for practice and competition needs to be cleaned daily. Equipment-intense sports, i.e. football, hockey, need to address means to properly clean these items on a routine basis*. Wrestling mats and gymnastic horse need to be disinfected (1:100 solution of household bleach and water) before each practice and several times a day throughout a tournament. Don't share any personal sporting equipment, i.e. gloves, knee pads. Don't use a whirlpool or cold tub with any open wounds, scrapes or scratches.

Individuals need to shower immediately after practice and competition, consider showering multiple times during tournaments when several events occur each day and before using whirlpools or common tubs. Use soap from liquid dispensers, not shared bar soap(8). Require the use of personal towels and hygiene products. Sharing of these is felt to be a major source of spreading the bacterium to others(8). Refrain from cosmetic shaving of the skin, i.e. chest, back and pubic regions.

Provided there aren't any outbreaks, carriers of MRSA can continue to compete in sporting events. Proper care of all skin abrasions or cuts will minimize the risk of an infection and its spread.

- * Cleaning of these equipment-intense sports can be difficult and costly. Manual disinfecting with 1:100 solution of household bleach and water is recommended. If not feasible, there are several companies that can clean larger pieces of equipment using various modalities (i.e., detergents, ozone). Consider seeking help from these companies or contact your local dry cleaners for assistance.

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XVI. CONTAGIOUS DISEASES INCLUDING HIV INFECTION ("AIDS VIRUS")

Contagious diseases and their transmission from one person to another are a legitimate concern in any setting in our society where there is close personal contact. Sports are no exception. Wrestling, because of its close personal nature, provides additional concerns about the spread of infection.

The wrestling community has for years been concerned about such things as contagious skin conditions. There are, however, other diseases we must be aware of and take precautions against. Hepatitis and AIDS are two such diseases.

On the basis of what is known today about AIDS and Hepatitis and the role blood plays in their transmittal, a variety of things can easily be done to reduce, or eliminate potential hazards.

1. All individuals dealing with bleeding situations should wear latex-free gloves at all times when contact with blood may occur.
2. Do not use a common towel for athletes and/or wiping up floors, mats or equipment. Clean individual towels or Kleenex should be used for each situation. To clean blood off these surfaces, use a disinfectant solution of bleach and water (1/100 mix).
3. Materials used should be properly disposed of following their use.
4. It is necessary to have someone from the host school on hand to wipe up floors, mats or equipment properly. Officials are not obligated to do this!
5. All athletes should handle their bleeding conditions as much as possible by themselves.

The above items are basic infection control procedures that should be used by all involved in sports.

XVII. DERMATOLOGIC CONDITIONS

Sports Related Skin Infections Position Statement and Guidelines

National Federation of State High School Association (NFHS)

Sports Medicine Advisory Committee (SMAC) (updted 4/18)

Skin-related infections in both the community setting and the sports environment have increased considerably over the past several years. While the majority of these infections are transmitted through skin-to-skin contact, a significant number are due to shared equipment, towels or poor hygiene in general. The NFHS Sports Medicine Advisory Committee (SMAC) has put forth general guidelines for the prevention of the spread of these infectious diseases (See NFHS General Guidelines for Sports Hygiene, Skin Infections and Communicable Diseases).

The NFHS SMAC recognizes that even with strict adherence to these guidelines, given the nature of certain sports, skin infections will continue to occur. For example, the risk of transmission is much higher in sports with a great deal of direct skin-to-skin contact, such as football and wrestling. Therefore, the NFHS SMAC has developed specific guidelines for the skin infections most commonly encountered in sports. The guidelines set forth follow the principles of Universal Precautions and err in favor of protecting participants in situations where skin-to-skin contact may occur. Consideration may be given to the particular sport regarding risk of transmission, but these rules must be strictly adhered to in sports such as wrestling, football and basketball where skin-to-skin contact is frequent and unavoidable.

Ringworm, Tinea Corporis

These fungal lesions are due to dermatophytes. As they are easily transmissible, the student should be treated with an oral or topical antifungal medication for a minimum of 72 hours prior to participation. Once the lesion is considered to be no longer contagious, it may be covered with a bio-occlusive dressing. For scalp involvement, the infection is more difficult to treat and requires 14 days of oral antifungal medication before return to practice and competition. With scalp involvement, shedding of fungal spores can persist well beyond 2 weeks. Consider washing scalp before practice with ketoconazole 1% shampoo to reduce transmission of spores. Continue with treatment until scalp lesions are gone.

Impetigo, Folliculitis, Carbuncle and Furuncle

While these infections may be secondary to a variety of bacteria, methicillin-resistant *Staphylococcus aureus* (MRSA) infections are of greatest concern. The athlete should be treated and removed from practice and competition. Treatment may consist of incision and drainage with or without oral antibiotics. For non-MRSA infections, return to contact practices and competition may occur after 72 hours of treatment, provided the infection is not actively draining. At this time the involved site may be covered with a bio-occlusive dressing. If there is spontaneous drainage or incision and drainage, then may return to practice and competition after 72 hours of treatment. If MRSA is present, abscess incision and drainage is recommended for return to practice and competition may be considered after 72 hours of treatment, provided there is no further drainage or new abscess formation. All lesions should be considered infectious until each one has a well-adherent scab without any drainage or weeping fluids. Once a lesion is no longer considered infectious, it should be covered with a bio-occlusive dressing until complete resolution.

During the time when a student has been identified with any of these infections, increased screening should occur. At this time, all team members should be carefully screened for similar infections on a daily basis by a knowledgeable coach or appropriate health-care professional. If multiple students are infected, consideration should be given to contacting the local or state health department for further guidance.

Shingles, Cold Sores

These are viral infections, which are transmitted by skin-to-skin contact. Lesions on exposed areas of skin that are not covered by clothing, uniform or equipment require the player to be withdrawn from any activity that may result in direct skin-to-skin contact with another participant. Covering infectious lesions with an occlusive dressing is not adequate, sufficient, or acceptable. Prior to returning to participation, primary outbreaks of shingles and cold sores require 10-14 days of oral antiviral medications, while recurrent outbreaks require 120 hours of treatment as a minimum treatment time. For a student to be considered "non-contagious," all lesions must be scabbed over with no oozing or discharge, and no new lesions should have occurred in the preceding 72 hours.

Herpes Gladiatorum

This skin infection, primarily seen among wrestlers, is caused by herpes simplex virus Type 1 (HSV-1). The spreading of this virus is strictly skin-to-skin. The majority of the outbreaks develop on the head, face and neck, reflecting the typical wrestling lock-up position. The initial outbreak is characterized by a raised rash with groupings of 6-10 vesicles (blisters). For head, face and neck involvement, symptoms include sore throat, fever, malaise and swollen cervical lymph nodes. For a primary infection (first episode of Herpes Gladiatorum), wrestlers should be treated and not allowed to practice or compete for a minimum of 10 days. If general body signs and symptoms like fever and swollen lymph nodes are present, that minimum period of treatment should be extended to 14 days. If antivirals are not used, the infected participant may return to full contact wrestling only after all lesions are well-healed with well-adhered scabs, there has been no new vesicle formation in the preceding 72 hours, and there are no swollen lymph nodes near the affected area. The infected individual must be immediately removed from contact (practices and contests) and seek appropriate care and treatment. Return to contact is permissible only after all lesions are healed with well-adherent scabs, no new vesicles have formed, and no swollen lymph nodes remain near the affected area. Oral antiviral medications should be started and can expedite the clearing of an outbreak. Careful consideration should be given to prophylactic oral antivirals for the remainder of the season and each subsequent season.

Recurrent outbreaks usually involve a smaller area of skin, milder systemic illness and a shorter duration of symptoms. Treatment should include oral antivirals. If antiviral therapy is initiated, the participant must be held from contact sports for a minimum of 120 hours. Even greater consideration should be given to prophylactic antivirals for the remainder of the season. As the herpes virus may spread prior to vesicle formation, anyone in contact with the infected individual during the three days prior to the outbreak must be isolated from any contact activity for eight days and be examined daily by a knowledgeable coach or appropriate health-care professional for suspicious skin lesions.

Miscellaneous Viral Infections

Verrucae (warts) are skin infections that are also caused by viruses but are not considered highly contagious. Therefore, these lesions require no treatment or restrictions, but should be covered if prone to bleeding when abraded. Molluscum

contagiosum is considered contagious and transmits via direct skin-to-skin contact. Treatment consists of expressing the material from each vesicle and lightly treating with a hyfrecator, usually performed by an appropriate health-care professional. Participation can ensue immediately after treatment, provided sites are covered with a bio-occlusive dressing.

XVIII. KEEPING THE MATS CLEAN

Cleaning and keeping wrestling and gymnastics mats sanitary has been a long standing concern for coaches. With the growing concern regarding mat usage and cleanliness South Milwaukee High School under the direction of Head Wrestling Coach, Dave Van Duser, has developed the following procedure for addressing this problem. This procedure has been used for a number of years and has been very successful in stopping skin problems.

First, we have our own mat washing equipment that is not used by anyone else. The mats are swept before practice and washed with Matt-Kleen, sold by Cramer. Towels are placed by the edge of the mat so that every wrestler wipes his feet before stepping on the mat. The bucket and mop is kept at hand during practice in case of bleeding that needs to be wiped up. The proper solution to use is one part bleach to 100 parts water. This solution must be prepared daily. After practice the mats are also swept and washed to prepare them for recreational use in the evening. This practice is followed each time the mats are used. Our practice mats are used for wrestling, gymnastics, physical education, and recreation. Due to the multiple use, the district has hired three wrestlers to wash the mats following wrestling practice to prepare them for later use in the day. Prior to practice the managers are responsible for the cleaning.

In addition to the above, each wrestler is given by the coach a small amount of physoderm to use when showering. The wrestlers are told to be sure to wash any acne, mat burns, or small cuts very carefully with this soap. We also try to have each wrestler bring a clean change of personal gear each day. This, of course, is the most difficult part of the cleaning task.

In following this procedure we have virtually eliminated the skin problems that so often are associated with mat related activities.

STATE ASSOCIATION REGULATIONS (Wrestling Season Regulations – updated annually)

a. With regard to contagious skin conditions:

- (1) It shall be considered unsportsmanlike to attempt to conceal a contagious skin condition. Any wrestler involved in such attempts shall not be allowed to wrestle that day. In addition, it could result in loss of eligibility of the wrestler and/or disciplinary action being taken against the coach.
- (2) The on-mat official for varsity competition shall make the final determination relative to skin condition concerns for varsity matches.

The on-mat official for sub-varsity competition shall make the final determination relative to skin condition concerns for sub-varsity matches.
- (3) Covering a communicable skin condition is not acceptable and does not make the wrestler eligible to participate. An on-site meet physician may override the diagnosis of the physician signing the physician's release form for a wrestler to participate with a particular skin condition. NF 4-3-3 and 4-3-4.

XIX. WEIGHT LOSS CAN BE DANGEROUS

The Medical Advisory Committee of the WIAA is concerned about weight loss methods used by many athletes, especially wrestlers.

Some of the methods used are dangerous to the athlete's health and detrimental to their performance.

Abusive weight loss methods, which include starvation, severe calorie restrictions, and multiple methods of dehydration, are threatening the health of those who try them. These methods may also affect the future growth potential in a maturing young athlete.

Sports physiologists and physicians have shown that severe calorie-restricted diets (like the Cambridge Diet, the Liquid Protein Diet, and others) cause medical problems. When a low number of calories are consumed daily, the body turns to its storage calories to meet its energy needs. If only fat calories were used, it wouldn't be as bad; but protein is utilized first as a calorie source. Athletes end up destroying the very tissue (muscle protein) by starving what they need in order to perform well.

It has also been shown that in a starvation diet, both cardiovascular and work load performance decrease quickly. The diet affects the central nervous system if combined with dehydration in a short period of time. Mental fatigue, physical fatigue, poor concentration, and irritability can result.

Athletes rationalize that they can eat just before competing and replace the calories that they need. This is totally false! It cannot be done! One performs on what he/she ate yesterday, not on what they ate 60 minutes ago. Only regular food intake can lead to peak performance.

Athletes also try to lose weight by dehydrating themselves. They wear rubber sweat suits (which increases sweating), spit more, and take little, if any, fluids on the day before or day of the event. Controlled studies have proven that as little as a 2% loss of body fluids (water) can cause a measurable loss in performance. Combined with poor caloric intake, this can have a devastating effect. Starvation and fluid restrictions are dangerous and, if done together, have an additive effect.

A weight loss program should include the following guidelines and goals:

1. Eat at least 2000 calories per day.
2. Plan to lose the weight over a reasonable period of time; weeks, not days.
3. Don't lose more than 2 pounds per week unless under the direct supervision of a physician.
4. Set a realistic goal on how much weight to lose based on your best performance weight and 7% body fat.
5. Lose weight by diet control and increased exercise output.
6. Eat three balanced meals per day so that there are calories constantly available for conditioning and for training.
7. Monitor your weight loss program and re-evaluate with the advice of your doctor, athletic trainer, coach, and sports dietician.

Weight loss should be and can be safe and helpful to the athlete. Poor planning and unrealistic goals can be dangerous to the health of the athlete. It should be remembered that poor performance on the athlete field, or in the classroom, can often be due to too few calories, or too little water taken in. Athletes perform on what they take in on a daily basis and, if they take in little or nothing, they will perform in the same manner.

Note: State Association Regulations Regarding the Practice of Dehydrating

STATE ASSOCIATION REGULATIONS (Wrestling Season Regulations – updated annually)

- a. With regard to the practice of dehydration:
 - (1) The use of laxatives, emetics, excessive food and fluid restriction, self-induced vomiting, hot rooms (exceeding 75 degrees), hot boxes, saunas, and steam rooms is prohibited.
 - (2) The use of diuretics at any time is prohibited.
 - (3) Regardless of purpose, the use of vapor-impermeable suits (e.g., rubber or rubberized nylon) is prohibited.

Violators shall be disqualified from the competition for which the weigh-in is intended. A second violation will result in suspension for the remainder of the season.

Reviewed 6/19

XX. MEDICAL CONDITIONS AND DISEASES EFFECTS ON SPORTS PARTICIPATION

When discussing medical illnesses or diseases in relationship to athletes, we must always look at the benefits of competing against any possible risk to the athlete. This evaluation should include the physical demands of the sport, the amount of contact and collision, and psychological factors, such as the loss of the competitive experience and loss of friendships. Obviously, the desire they have to play the sport, as well as what they can gain, is always important. Also, are there medical complications of the disease that could be worsened by the sport or cause difficulties during practice or competition to other athletes. Basically this comes down to what are the benefits versus the risks.

We should help the athlete choose the right sport and level of competition. Do they need medication and are they taking it? Will certain aspects of the sport help the medical condition such as an asthmatic being somewhat helped by swimming, and the hyperactive attention deficit child being helped by collision and contact sports. We know that the benefits of interscholastic high school sports are great. We need to encourage every athlete to be able to compete to the best of their abilities within the limitations of their medical illness. The character building aspect of sports, the personality benefits and all the lessons that can be learned from sports, are too great to deny a child the chance to compete. Our Number 1 goal, with no exception, is to always find a sport which the individual can compete in. If, because a medical condition is too severe to allow him/her to compete, there is always the avenue of allowing the athlete to become a manager, student trainer, or even an assistant coach. No child should be denied the opportunity of competition, with all its benefits, because of medical diseases except in very severe or unusual circumstances.

The parents, the athlete, and the athlete's physician have a responsibility to educate the coaches, trainers and athletic directors in the medical condition. Working together the athlete can compete and enjoy the benefits of athletic competition.

The diseases that are going to be mentioned are not all inclusive, but are some of the more common medical conditions that coaches will be asked to deal with. No general statement can cover every individual situation. We hope that this will be a starting point for further education, as well as an understanding of the athlete and his/her medical condition. These general guidelines are true and may be followed but individual situations may need further questions asked and further investigation to be carried out correctly.

Epilepsy

Epilepsy, or seizure disorder, is a medical condition that has caused great concern and even fear in sports for many years. For years the child with seizures has not been allowed to compete in sports. This is wrong! The young athlete with a seizure disorder, who is on medication and whose seizures are under control, should be allowed to compete. This competition can be at all levels and in most circumstances, in all sports. Medically, we have no evidence that patients are adversely affected by playing football, hockey or other contact/collision sports if their seizures are under control. We know that fatigue does not precipitate seizures and that vigorous exercise may actually improve the electroencephalogram and help prevent seizures. We also know that anticonvulsants rarely interfere with performance and there are no reports in the medical literature that head trauma can cause seizures in an athlete who has epilepsy.

In the past, many physicians and well-intentioned people felt that everything else being equal, we should try to encourage the athlete towards noncontact sports. This is not wrong, and no one can argue that this is best if the athlete is interested in noncontact sports. This must be done at any early age because you cannot encourage an athlete in football to age 15, and then when varsity football begins, say they no longer can play. But, we have no evidence that a seizure-free athlete on medication is harmed in anyway from athletic competition.

Therefore, the following recommendations are made:

1. If the athlete's seizures are under control with medication, he/she may participate in all sports appropriate for their age and athletic ability.
2. Don't restrict collision/contact sports, although noncontact sports can be encouraged.
3. If the first seizure the athlete had was related to a head injury, contact/collision sports may be restricted. While we have no clinical proof that it would be harmful for the athlete to compete, we have no proof that it is absolutely safe.
4. If the seizures are not under control or if there are bizarre type seizures or post seizures states, the athlete should be encouraged to compete in noncontact sports.

As coaches, administrators, parents and physicians, we must weigh the small risk of competition in comparison to the psychological factors of being told that the athlete is different, not like everybody else and they cannot do what everyone else does. With careful thought and encouragement, the child with the seizure disorder can compete like every other athlete.

Diabetes

Diabetes Mellitus is a medical condition where the young athlete does not produce enough insulin from the pancreas to metabolize the glucose in the body. This requires that the athlete take insulin on an every-day basis so that the body may function.

When the child takes care to eat correctly, take the correct amount of insulin and understand his medical condition, he/she may compete in all sports. Medically, diabetes is under better control with exercise. It is helpful to develop a regular pattern of exercise, diet, insulin and snacks.

An athlete who does not eat correctly before activity may have a fall in the blood sugars to produce some hypoglycemic symptoms. Hypoglycemia means a fall in blood sugar, which results in symptoms. These symptoms usually are ones of confusion, slurred speech, sweating, increased hunger, and possibly even coma. These symptoms often make the athlete appear drunk, and confused.

While the coach should not be expected to monitor and control the athlete's insulin, he/she should have a firm understanding of hypoglycemia, with its symptoms and how to treat it. The time at which the child takes the insulin, takes increased calories and schedules their regular meals should be carried out between the child, their parents and their physician. The coach should encourage a meeting between the parents, the athlete and the coach to discuss symptomatology, eating patterns and what to do in all-day athletic events. It is hoped that the athlete's physician will have input into this and work with the athlete before it takes place.

The coach should not be expected to understand when and how to take insulin, the diet requirements or when the child should eat. They should have an understanding of hypoglycemia (low blood sugar) and how to treat it. According to the International Diabetes Center, hypoglycemia is best treated with glucose or dextrose tablets, gels, regular soft drinks, or juice. In an emergency candy may be helpful. Candy with chocolate, nuts or caramel is not recommended because the fat content is too high.

Because what is best for each individual athlete with diabetes in calories and insulin requirements is so different, the coach should not be expected to monitor this. In general, it is better to increase calories before competition or practice. The young juvenile athlete will heal as well from injuries as nondiabetics and this should not be a concern in allowing them to compete.

One careful consideration should always be the wrestler who has diabetes. Obviously, rapid weight loss which often is

carried out by the wrestler, is of great concern in athletes with diabetes. Careful cooperation between the athlete, parents and physician should be followed, but the wrestling coach must be involved so he does not encourage the athlete to lose too much weight too fast. This is especially true the day or two before competition.

There are no sports that the athlete with diabetes cannot compete in.

Asthma

In the past the fear of asthma and respiratory distress has prevented many children with asthma from being allowed to compete in competitive sports. As recently as 1970, the American Academy of Pediatrics recommended no contact sports and limiting of endurance sports for children with asthma. Some of this false belief and myth still lingers and we must re-educate coaches, administrators, teachers, parents, and even athletes themselves that the child with asthma may compete in all sports. This is not meant to imply that every asthmatic can participate in all sports or participate every time they want to. With correct conditioning and training as well as the correct use of medication, the athlete will compete well.

The most common form of asthma is exercise-induced asthma. This is wheezing and respiratory distress, precipitated by vigorous exercise. Continuous exercise appears to be the worst, while intermittent, short bursts of activity does not appear to be a major problem. Other types of asthma which can be induced by allergy, infection, and other agents, can also be a problem.

The usual forms of medication, which are bronchodilators, can be in the inhalation or oral form and can be used to prevent as well as treat wheezing. Other medications, such as cromolyn and corticosteroid inhalators can be used to prevent the onset of asthma.

Medication is critical to allow the child with asthma to compete to the best of their ability. The asthmatics medication does not improve athletic performance but allows the athlete to compete at the best of their natural trained ability. Bronchodilator inhalers should be allowed and encouraged so the athlete may compete.

The WIAA Medical Advisory Committee has stated previously that there is no reason for the medication or inhaler to be used during cross country or track events themselves. This does not mean the medication cannot be used before and in fact, it should be encouraged in the asthmatic to be used before events. At halftime or between periods at other events, the athlete may need his medication and should be encouraged and allowed to use it.

There should be no limit to the athlete with asthma in competition in any sporting events.

Heart

Medical conditions involving the heart should be completely evaluated by physicians before the athlete is allowed to compete. Coaches should not be required to evaluate the possibility of an athlete playing or not playing who has a heart lesion. This should be done before the athlete tries out for the team.

Not only does the physician have electrocardiograms and chest X-rays to evaluate the child, but the stress electrocardiograms that are now available can give helpful and accurate information as to the child's abilities and medical readiness to compete in sports. If any question is raised in the initial evaluation, a cardiologist should be consulted and the stress electrocardiogram and other evaluation be carried out.

In general, heart lesions such as stenotic lesions will disqualify many athletes from strenuous sports, cyanosis (blueness) will also disqualify many athletes, while arterial septa defect (hole in the heart) will not disqualify many athletes. The physician's responsibility, with the parent, is to find a sport that the athlete can compete in with no risk to their health. That is not the coaches job.

Athletes with high blood pressure should be treated so that the athlete may compete. If a cause for the hypertension can be found, it should be treated, and if no cause is found, medication should be used to lower the blood pressure. It is very important that these evaluations be carried out at a young age so that the child is not allowed to compete in youth sports and then told he cannot compete later on.

There are obviously exceptions where the heart condition may be severe enough that they could not compete at the intense competitive level of high school, but could have competed at the youth level where the child would have been allowed to rest or take themselves out without much trouble. Again, common sense should be the rule and every attempt to find the right sport for the child with a heart lesion should be carried out.

Sudden Cardiac Arrest

Sudden cardiac arrest is the leading cause of death in young athletes while training or participating in sport competition. Even athletes who appear healthy and have a normal preparticipation screening may have underlying heart abnormalities that can be life threatening.

What is Sudden Cardiac Arrest?

- Occurs suddenly and often without warning.
- An electrical malfunction (short-circuit) causes the bottom chambers of the heart (ventricles) to beat dangerously fast (ventricular tachycardia or fibrillation) and disrupts the pumping ability of the heart.
- The heart cannot pump blood to the brain, lungs and other organs of the body.
- The person loses consciousness (passes out) and has no pulse.
- Death occurs within minutes if not treated immediately.

What Causes Sudden Cardiac Arrest?

- Conditions present at birth
 - Inherited (passed on from parents/relatives) conditions of the heart muscle:
 - Hypertrophic Cardiomyopathy – hypertrophy (thickening) of the left ventricle; the most common cause of sudden cardiac arrest in athletes in the U.S.
 - Arrhythmogenic Right Ventricular Cardiomyopathy – replacement of part of the right ventricle by fat and scar; the most common cause of sudden cardiac arrest in Italy.
 - Marfan Syndrome – a disorder of the structure of blood vessels that makes them prone to rupture; often associated with very long arms and unusually flexible joints.
 - Inherited conditions of the electrical system:
 - Long QT Syndrome – abnormality in the ion channels (electrical system) of the heart.
 - Catecholaminergic Polymorphic Ventricular Tachycardia and Brugada Syndrome – other types of electrical abnormalities that are rare but run in families.
 - Noninherited (not passed on from the family, but still present at birth) conditions:
 - Coronary Artery Abnormalities – abnormality of the blood vessels that supply blood to the heart muscle. The second most common cause of sudden cardiac arrest in athletes in the U.S.
 - Aortic valve abnormalities – failure of the aortic valve (the valve between the heart and the aorta) to develop properly; usually causes a loud heart murmur.
 - Non-compaction Cardiomyopathy – a condition where the heart muscle does not develop normally.
 - Wolff-Parkinson-White Syndrome – an extra conducting fiber is present in the heart's electrical system and can increase the risk of arrhythmias.
- Conditions not present at birth but acquired later in life:
 - Commotio Cordis – concussion of the heart that can occur from being hit in the chest by a ball, puck, or fist.
 - Myocarditis – infection/inflammation of the heart, usually caused by a virus.
 - Recreational/Performance-Enhancing drug use.
- Idiopathic: Sometimes the underlying cause of the Sudden Cardiac Arrest is unknown, even after autopsy.

What are the symptoms/warning signs of Sudden Cardiac Arrest?

- Fainting/blackouts (especially during exercise)
- Dizziness
- Unusual fatigue/weakness
- Chest pain
- Shortness of breath
- Nausea/vomiting
- Palpitations (heart is beating unusually fast or skipping beats)
- Family history of sudden cardiac arrest at age < 50

ANY of these symptoms/warning signs that occur while exercising may necessitate further evaluation from your physician before returning to practice or a game.

There is potential for effective secondary prevention of sudden cardiac death by having automated external defibrillators (AEDs) easily accessible and trained staff available. The presence of trained individuals and access to AEDs at sporting venues provides a potential means of early defibrillation, not only for athletes but also for spectators, coaches, officials, event staff and other attendees in the case of sudden cardiac arrest.

It is advisable to have an Emergency Action Plan in place for all sport practice and competition sites that outlines the plan of action in case of the sudden collapse of an athlete. It is advisable to review and practice the emergency action plan with respective school personnel, coaches, on site medical personnel and local EMS.

Basic actions include:

1. have a cell phone available at all venues
2. immediately activate EMS
3. immediately initiate continuous CPR (push hard, push fast, push often)

Your school's medical personnel (team physician, licensed athletic trainer, school nurse) and/or local EMS may wish to assist in the development and implementation, if not already in place, of the emergency preparedness plan for the management of the collapsed athlete. The "Inter-association task Force recommendations on emergency Preparedness and Management of sudden cardiac arrest in high school and college athletic Programs; a "consensus statement" is one source of guidance as to the development and implementation of an emergency action plan for the management of sudden cardiac arrest in an athlete.

What are ways to screen for Sudden Cardiac Arrest?

- The American Heart Association recommends a pre-participation history and physical including 12 important cardiac elements.
- The WIAA Pre-Participation Physical Evaluation – Medical History form includes ALL 12 of these important cardiac elements and is mandatory annually.
- Additional screening using an electrocardiogram and/or an echocardiogram is readily available to all athletes, but is not mandatory.

Where can one find information on additional screening?

- American Heart Association (www.heart.org)
- Anyone Can Save a Life (www.anyonecansavealife.org/)
- August Heart (www.augustheart.org)
- Championship Hearts Foundation (www.champhearts.org)
- Cypress ECG Project (www.whoweplayfor.org)
- Parent Heart Watch (www.parentheartwatch.com)
- Project Adam (www.projectadam.com)

Sickle Cell Trait

Sickle cell trait is the inheritance of one gene for sickle hemoglobin with the other gene being for normal hemoglobin. It is important to know if an athlete has sickle cell trait because acute muscle break down (rhabdomyolysis) related to sickle cell trait is the third leading cause, after cardiovascular conditions and heatstroke, of non-traumatic deaths in high school athletes.

During intense and/or extensive exercise, the sickle hemoglobin can alter the shape of red blood cells from round to "sickle", and this can be potentially dangerous as the sickle shaped cells accumulate in the bloodstream. Such accumulation can yield a "logjam" effect causing the working muscles to be depleted of an adequate blood supply.

The onset of sickling can occur within the first 2-3 minute of intense exercise. The risk for sickling is higher, even at lower exercise levels, if the athlete has asthma, is dehydrated, or is working out in a warm or high altitude environment.

The significance of sickle cell trait is under-recognized and collapse from sickling is a medical emergency! It is recommended that sickle cell trait status be discussed and confirmed during the preparticipation physical exam and screening required by all athletes. All 50 states screen for sickle cell trait at birth and thus this information should be easily available. The sickle cell gene is more common in people of African-American, Mediterranean, Middle Eastern, Indian, Caribbean and South and Central American ancestry.

Sickle cell trait does not prevent a student from participating in athletics; however, simple precautions are recommended. For the athlete with sickle cell trait, the following guidelines should be adhered to:

1. Build up slowly in training with paced progressions, allowing longer periods of rest and recovery between repetitions.
2. Encourage participation in preseason strength and conditioning programs to enhance the preparedness of athletes for performance testing which should be sports-specific. Athletes with sickle cell trait should be excluded from participation in performance tests such as mile runs, serial sprints, etc., as several deaths have occurred from participation in this setting.
3. Cessation of activity with onset of symptoms [muscle 'cramping', pain, swelling, weakness, tenderness; inability to "catch breath", fatigue].
4. If sickle-trait athletes can set their own pace, they seem to do fine.
5. All athletes should participate in a year-round, periodized strength and conditioning program that is consistent with individual needs, goals, abilities and sport-specific demands. Athletes with sickle cell trait who perform repetitive high speed sprints and/or interval training that induces high levels of lactic acid should be allowed extended recovery between repetitions since this type of conditioning poses special risk to these athletes.
6. Ambient heat stress, dehydration, asthma, illness, and altitude predispose the athlete with sickle trait to an onset of crisis in physical exertion.
 - a. Adjust work/rest cycles for environmental heat stress
 - b. Emphasize hydration
 - c. Control asthma
 - d. No workout if an athlete with sickle trait is ill
 - e. Watch closely the athlete with sickle cell trait who is new to altitude. Modify training and have supplemental oxygen available for competitions
7. Educate to create an environment that encourages athletes with sickle cell trait to report any symptoms immediately; any signs or symptoms such as fatigue, difficulty breathing, leg or low back pain, or leg or low back cramping in an athlete with sickle cell trait should be assumed to be sickling.

In the event of a sickling collapse, treat it as a medical emergency and contact your local EMS immediately! Proactively prepare by having an Emergency Action Plan and appropriate emergency equipment for all practices and competitions. Schools should educate staff, coaches, and athletes on the potentially lethal nature of this condition. Screening and simple precautions may prevent deaths, and help athletes with sickle cell trait participate in sports actively and safely!

(NATA Consensus Statement: Sickle Cell Trait and the Athlete)

Infectious Mononucleosis

Infectious Mononucleosis, or Mono as it is commonly called, is a viral infection caused by the Epstein Barr Virus which is a member of the herpes family. There are many misconceptions that it is a severe, long-lasting, terrible, disabling disease. It is not! Many cases of Mono are very mild and may go completely undiagnosed or maybe thought of as a sore throat for three to five days. Fears in athletes, coaches and parents have resulted because of the myth of the severe nature of this disease. It is true that some cases of Mono are that severe. The majority are not. While it is a contagious disease, it is not as contagious as most people believe. It is rare for teammates to get the disease from a teammate who has Mono. Many athletes have already had Mono by their teen years and are protected against it because they unknowingly had it in their younger years.

Those who get it in their later teen years are often sicker and the sickness lasts longer than the ones who get it when they were younger. It appears to be spread mostly by close direct contact and is good medical sense to keep the common use of water bottles, mouthguards, and any other oral contacts at a minimum. Close, direct, personal contact is the way the disease seems to be spread.

Symptoms include a sore throat, fever, headache and achiness as well as enlarged lymph nodes in the neck and a large spleen. The illness in the teenager may last 2-3 weeks, and in some cases there may be a feeling of tiredness and lethargy for 1-3 months afterwards.

The biggest concern in Mono is that the athlete's spleen will become enlarged and could be ruptured by physical activity. Every athlete who has Infectious Mononucleosis should be evaluated by a physician to make sure that the spleen is not enlarged. If the spleen is enlarged no athletic competition should be allowed until the physician has cleared the athlete for return to competition. Rupturing of the spleen is not common, but because it is such a life-threatening condition, it must be monitored very closely.

If there is fever, persistent physical symptoms, or an enlarged spleen, there should be no competition in practice or games. These are general rules and the athlete with Infectious Mono should be cleared by a physician to be allowed to return to competition. Many physicians are very conservative in their restriction of athletic competition in an athlete with Mono. There is no fixed rule when an athlete can return but they must receive medical clearance before returning.

One of the biggest concerns with Mono is over treatment. Studies show that with limited activity, and this does not mean athletic competition, the recovery is faster. This is light activity and not competition. The athlete should not be put to bed or be kept home from school for two weeks under most circumstances. The athlete may require more sleep after they come back to practice as well as after they start athletic competition again. The feeling of tiredness is not a reason that the athlete cannot come back to competition. They just require more rest afterwards. There are a few athletes who may feel very tired for months afterwards, but this is the exception and not the rule.

Colds

Colds or upper respiratory infections are the most common illness that athletes will have. Colds probably cause more disability in athletes than all other diseases combined. There are well over 200 viruses that can produce cold symptoms and some athletes feel like they get every one of them. It is best to try and limit exposure to sick individuals before big events, but this is probably impossible. There is no medical evidence that exposure to cold or taking a shower will cause an upper respiratory infection/cold. It does make sense to avoid these things but they are not causes of colds. Colds seems to affect endurance more than it does skill. Unfortunately, every coach knows that as endurance falls, the skill level falls with it. This does lead the athlete to a greater risk of injury and must be monitored very closely. It is also obvious that a cold has a greater affect in a practice than in a game. Once the adrenaline starts to flow in competition, he/she can override many of the symptoms the athlete has.

If the athlete has fever, over 101, they should not be allowed to participate and should be evaluated by their physician before being allowed to practice or compete. The higher the temperature the more strictly this should be enforced.

Treatment includes symptomatic therapy with rest, ibuprofen, Tylenol and forms of decongestants and cough medicines. Antibiotics do not work against viruses and will not help the athlete. Vitamin C has not been shown to prevent or cure colds, but many athletes will take it because of the myth surrounding that medication. Taken in its usual dosage it cannot be harmful.

Viral Infections

Herpes Simplex Virus Types 1 and 2 are the ones that cause the most concern to coaches and athletes. This is especially true in wrestling. In wrestling Herpes Type 1 or the common, "cold sore" virus, is of greatest concern. Herpes (Gladiatorial) is of concern because of the spread among wrestling team members. Wrestlers who get the herpes infection of the skin should be isolated and not allowed to compete until the lesion has cleared.

Herpes Type 1, the "cold sore" virus, is of no major risk to most athletes, except wrestlers.

Herpes Type 2, is the genital or sexually transmitted form of herpes. This one is not a concern of the coach as far as competition or practice is concerned, but is of great concern to all of us socially. This enters the field of sex education, and every opportunity a coach has should be used to explain the risk and dangers of genital herpes to the athlete. Herpes Simplex Type 2 or genital herpes can cause symptomatology but no danger to the athlete. The virus can be of great risk in their future life.

Acne

Acne is not a concern to the athlete in competition. It is a concern to them socially and emotionally and the coach should be aware of this. There are excellent methods of treatment with Benzoperoxide, locally applied antibiotics, and oral medications. The coach who feels the athlete is bothered by severe acne should encourage the athlete to seek medical attention.

Warts

Warts are caused by a virus. People have worried for years about a spread of warts from one athlete to another. It is interesting that in the past planters warts have caused great concern in gym classes and on swim teams because of the wart being on the bottom of the foot. They could have ten warts on their hand and no one would say a word. The best advice to the coach is to ignore any concern about warts.

Eye Problems

There is one medical condition that is important to be aware of. This is eye injury. Fortunately, eye injuries are not common in high school sports. Although this is not a medical illness, it is of great concern because of the seriousness of the loss of any visular acuity or loss of an eye. All steps must be taken to protect the athlete's eyes. Eye injuries are more common in ice hockey, racquet sports, baseball and possibly field hockey. There are tens of thousands of school-age eye injuries

every year; most occurring in unsupervised sports. The tragedy is the eye cannot be replaced or rehabilitated. Therefore, care should be taken in all racquet sports, ice hockey, and all sports in general to protect the eye.

Certain areas of prevention and protection can be carried out easily. Face masks can be used in those sports where the risk is the greatest such as ice hockey. Trying to prevent small objects from getting into the eye such as tennis balls is very important as well as elbows in basketball. There are athletic glasses that should be worn by all athletes who wear glasses, during competition. These are protective and safe and should be encouraged in every athlete. Contacts may be used but do not provide any protection. Safety glasses are best and since many professional athletes now use them, it is much easier to convince the high school athlete to use them as well.

It must be remembered that protective devices can help reduce injuries but cannot prevent all injuries. In specific sports, the following recommendations are made: ice hockey and field hockey should always wear eye protection; skiing - inexpensive goggles can break into many pieces and good goggles should be used; basketball and soccer - fingers and elbows should be kept low and strict enforcement of rules should be enforced; tennis, badminton, racquetball, handball, and squash - because of the small ball and high speeds, care must be used. The opponents racquet, as well as the small balls, must be monitored. It would be best if these athletes wore eye protection, but there are not rules for this.

It is best that coaches keep a high awareness of the risk of eye injury and monitor sports so these risks are kept at a minimum.

XXI. HIGH SCHOOL ATHLETES WITH TYPE I DIABETES - SIDELINE MANAGEMENT OF BLOOD SUGAR

Provided for educational purposes and awareness by WIAA Medical Advisory Committee.

In order for high school athletes with diabetes to participate safely and competitively in their sport of choice it's essential to maintain appropriate blood sugar levels, be well hydrated, and prevent insulin reactions. It is recommended that the student-athlete with diabetes provides the school's coach, nurse and, athletic trainer with a "sideline management plan" prescribed by the student-athlete's medical care team. Helpful information includes: "safe to participate" range of blood sugar levels, recommended testing times for practice and competition, and a treatment plan for low/high blood sugar.

In absence of the above information the following guidelines may be useful.

Sideline Management

- **Monitoring blood sugars:** Practices and competition can become very hectic and it's easy for student-athletes with diabetes to forget to test blood sugar levels. While testing is the responsibility of the student-athlete it can be helpful to have someone such as a student volunteer assist in reminding the student-athlete of testing times or prepare the glucometer/lancet device as needed.
- **Sideline Medical Kit:** spare glucometer with test strips and lancets, rescue food (i.e. sport gels, glucose tablets, high carbohydrate drinks) extra insulin, syringe. While it is the responsibility of the student-athlete with diabetes to provide testing equipment etc supplies may be available at a discount or complimentary by contacting the diabetes education department of a local medical center.
- **Blood Testing Times:**
 - Pre-practice/competition. Test prior to start of practice or events.
 - During Practice: Test mid-way or hourly for extended practices
 - During Competition: Varies by sport.
 - Baseball-Softball: between innings as needed
 - Football, Basketball: Quarterly
 - Soccer: at the half
 - Track, Gymnastics, Swimming – hourly
 - VB, Wrestling, Hockey, Tennis: between matches, periods
 - Post-practice/competition: Test after cool-down or shower.

- **Blood Sugar Guidelines (ACSM, American Diabetic Association and GSSI)**

The following are general guidelines for managing blood sugars during practice/competition.

<90 mg/dl - eat extra carbohydrate

90-270 mg/dl - extra carbohydrate i.e. sport drink, during activity may not be needed

270 mg/dl - Maximum Blood Sugar (check urine ketones)

- Take insulin per athletes individualized treatment
 - Re-Test in 15 min
 - If blood sugar remains high take insulin per athlete's individualized treatment plan
- Ketones negative – may exercise
- Ketones positive – take insulin; delay exercise until ketones negative
- plan
- Miscellaneous:
 - Most glucometers test accurately in a temperature range of 40-104 degrees. When temperatures become extreme (i.e. outdoor sports or hockey) store machines in an insulated bag.
 - Needle Disposal. If on-site disposal of needles or lancets is necessary they can be put into a used disposable water bottle for temporary storage until there is access to a sharps container.
 - References "The Diabetic Athlete," by Sheri Colberg-Ochs, PhD Human Kinetics; GSSI Diabetes, Exercise, and Competitive Sport; WIAA Sport Medicine Handbook
- Blood Testing Times:
 - Before Exercise: Test at least once. Twice recommended ("going up or going down").
 - During Practice: Test at least hourly for extended workouts
 - During Competition: Quarterly or as necessary..
 - Post-practice/competition: After Shower. Continue hourly as needed.
 - Report abnormal readings to Head LAT or Head Coach

XXII. NFHS GUIDELINES ON HANDLING PRACTICES AND CONTESTS DURING LIGHTNING OR THUNDER DISTURBANCES

These guidelines provide a default policy to those responsible or sharing duties for making decisions concerning the suspension and restarting of practices and contests based on the presence of lightning or thunder. The preferred sources from which to request such a policy for your facility would include your state high school activities association and the nearest office of the National Weather Service.

Proactive Planning

1. Assign staff to monitor local weather conditions before and during practices and contests.
 2. Develop an evacuation plan, including identification of appropriate nearby safe areas and determine the amount of time needed to get everyone to a designated safer area:
 - a. A designated safer place is a substantial building with plumbing and wiring where people live or work, such as a school, gymnasium or library. An alternate safer place from the threat of lightning is a fully enclosed (not convertible or soft top) metal car or school bus.
 3. Develop criteria for suspension and resumption of play:
 - a. When thunder is heard or a cloud-to-ground lightning bolt is seen, the leading edge of the thunderstorm is close enough to strike your location with lightning. Suspend play for thirty minutes and take shelter immediately.
 - b. 30-minute rule. Once play has been suspended, wait at least 30 minutes after the last thunder is heard or lightning is witnessed* prior to resuming play.
 - c. Any subsequent thunder or lightning* after the beginning of the 30-minute count will reset the clock and another 30-minute count should begin.
 - d. When lightning-detection devices or mobile phone apps are available, this technology could be used to assist in making a decision to suspend play if a lightning strike is noted to be within 10 miles of the event location. However, you should never depend on the reliability of these devices and, thus, hearing thunder or seeing lightning* should always take precedence over information from a mobile app or lightning-detection device.
- * – At night, under certain atmospheric conditions, lightning flashes may be seen from distant storms. In these cases, it may be safe to continue an event. If no thunder can be heard and the flashes are low on the horizon, the storm may not pose a threat. Independently verified lightning detection information would help eliminate any uncertainty.

4. Review the lightning safety policy annually with all administrators, coaches and game personnel and train all personnel.
5. Inform student-athletes and their parents of the lightning policy at start of the season.

Significance

Lightning is one of the most consistent causes of weather-related deaths in the U.S. According to the National Severe Storms Laboratory, there are approximately 100 lightning-related deaths and over 1000 injuries yearly.

Background

Lightning-related injuries mainly occur between May and September. Most lightning casualties happen between 10 a.m. and 7 p.m. with the majority of those occurring between 2 p.m. and 6 p.m. Therefore, the risk of lightning-related injury appears to be highest during some of the most active periods for outdoor athletic activities. The average distance between successive lightning flashes is two to three miles which means that risk is present **WHENEVER** lightning can be seen or thunder can be heard.

Game administrators, officials and the sports medicine staff can be aware of adverse weather by following local forecasts and by monitoring the National Weather Service (NWS). The NWS issues storm watches and warnings during times of severe weather. A watch means that the conditions are favorable for severe weather to develop, while a warning indicates severe weather has been reported and appropriate precautions should be taken. It must be remembered that any thunderstorm poses a risk of injury, even if not deemed "severe" by the NWS.

Management

As soon as lightning is seen or thunder is heard, practice and competition should be suspended immediately. A Lightning Safety Plan should be a component of the Emergency Action Plan and should be in place for every sport and facility. This plan should contain instructions for participants and spectators, designation of safe shelters, and designation of warning and all clear signals. This plan must be disseminated to the proper personnel and reviewed and practiced on a routine basis.

There should also be a systematic plan for monitoring weather. The weather forecast should be closely followed throughout the day prior to any practice or competition. A weather radio is helpful in providing current information. Weather can also be monitored over the Internet or through the use of lightning strike monitors. However, such technology should never be a substitute for directly hearing or seeing dangerous weather. There should also be one person designated to monitor threatening weather and make decisions regarding participation. However, if anyone hears thunder or sees a lightning strike, appropriate action should begin.

If lightning is imminent or a thunderstorm is approaching, all personnel, athletes, and spectators should be evacuated to safe structures. A list of the closest safe structures should be announced and displayed on placards at all venues. The ideal safe structure is a fully enclosed building with plumbing, telephone and electrical service, which aid in grounding the structure. A fully enclosed automobile or school bus with all the windows rolled up is a reasonable shelter, although care must be taken to avoid contact with any metal inside the vehicle. The hard metal frame and roof, not the rubber tires, dissipate the current around the vehicle. Golf carts and convertible cars are not safe shelters. Dugouts and golf shelters are not safe shelters and are not grounded for the effects of lightning.

Avoid the use of shower facilities and do not use showers or plumbing during a thunderstorm as the electrical current from lightning can enter the building through plumbing connections. It is also unsafe to stand near utilities or use a landline telephone during a thunderstorm because of the risk of the current traveling through the lines. Cellular and cordless telephones are considered to be safe.

If a suitable safe shelter is not available, it is best to avoid tall objects (trees, light poles, etc.) that allow lightning an easy path to the ground. It is important to avoid being the tallest object. In an open field, people should crouch with their legs together, the weight on the balls of their feet, arms wrapped around their knees, and head down with their ears covered. The person should minimize contact with the ground and should **NOT** lie flat.

People who have been struck by lightning do not carry an electric charge. Therefore, it is safe to perform CPR, if needed. Ideally, injured persons are moved into a safe shelter. Lightning-strike victims showing signs of cardiac or respiratory arrest need emergency help.

Prevention

In order to prevent lightning-related injuries, it is important to formulate and implement a Lightning Safety Plan and provide adequate education for all athletes and personnel. The plan needs to be reviewed and practiced periodically. The plan also must include a systematic approach for monitoring local weather activity and recognizing signs of nearby danger (thunder and lightning strikes). Criteria for suspension and resumption of activity should be clear. Appropriate safe shelters for each athletic venue should be clearly identified.

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Material from the NFHS Sports Medicine Handbook (4th ed): 37-39

XXIII. PREVENTION OF HYPERTHERMIA

1. Weight charts should be kept on each athlete. Athlete should be weighed before and after each practice, and for every pound of weight loss during practice should be replaced by 24 oz. fluids. Water replacement should not be the responsibility only of the athlete, but should be the responsibility of the coaching staff to monitor this important point. It has been shown in many studies that dehydration is the major cause of decreased athletic performance.
2. Allow 7-10 days for the athlete to acclimate to hot temperatures.
3. Make sure there is adequate evaporation of sweat from the skin. Since evaporation of sweat is the most important source of heat loss that occurs during strenuous exercise careful attention must be made to this area. During early practices, athletes should wear light colored shorts and T-shirts and avoid heavy padding. Remember that the head is a major source of heat loss and should not be covered initially. When the humidity and temperature are very high. High intensity must be kept at short intervals.
4. Adequate fluid replacement must be encouraged and allowed during practice sessions.
5. Salt and potassium should be replaced by a regular diet. Salt tablets should never be used.

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XXIV. HEAT ACCLIMATIZATION AND HEAT ILLNESS PREVENTION POSITION STATEMENT

National Federation of State High School Associations (NFHS)

Sports Medicine Advisory Committee (SMAC)

Exertional Heatstroke (EHS) is the leading cause of preventable death in high school athletics. Students participating in high-intensity, long-duration or repeated same-day sports practices and training activities during the summer months or other hot-weather days are at greatest risk. Football has received the most attention because of the number and severity of exertional heat illnesses. Notably, the National Center for Catastrophic Sport Injury Research (NCCSIR) reports that **28 high school football players died of EHS from 2008 through 2017**. EHS also results in thousands of emergency room visits and hospitalizations throughout the nation each year.

This NFHS Sports Medicine Advisory Committee (SMAC) position statement is the companion piece to the NFHSLearn.com online course "Heat Illness Prevention." **This position statement provides an outline of "Fundamentals" and should be used as a guiding document by member state associations.** Further and more detailed information can be found within the NFHSLearn.com online course, the NFHS Sports Medicine Handbook, the NFHS SMAC "Position Statement and Recommendations for Maintaining Hydration to Optimize Performance and Minimize the Risk for Exertional Heat Illness" and the resources listed below.

Following the recommended guidelines in this position statement and "Heat Illness Prevention" can reduce the risk and incidence of EHS and the resulting deaths and injuries in high school athletics. The NFHS recognizes that various states and regions of the country have unique climates and variable resources, and that there is no "one-size-fits-all" optimal acclimatization plan. However, the NFHS and the NFHS SMAC strongly encourage member state associations to incorporate all of the "Fundamentals" into any heat acclimatization plan to improve athlete safety. In addition, the online course **"Heat Illness Prevention" should be required viewing for all coaches.**

Heat Acclimatization and Safety Priorities:

- Recognize that EHS is the leading preventable cause of death among high school athletes.
- Know the importance of a formal pre-season heat acclimatization plan.
- Know the importance of having and implementing a specific hydration plan, keeping your athletes well-hydrated, and encouraging and providing ample opportunities for regular fluid replacement.
- Know the importance of appropriately modifying activities in relation to the environmental heat stress and contributing individual risk factors (e.g., illness, obesity) to keep your athletes safe and performing well.
- Know the importance for all members of the coaching staff to closely monitor all athletes during practice and training

in the heat, and recognize the signs and symptoms of developing heat illnesses.

- Know the importance of, and resources for, establishing an emergency action plan and promptly implementing it in case of suspected EHS or other medical emergency.
- Energy drinks are NOT appropriate hydration fluids. Refer to NFHS SMAC "Position Statement and Recommendations for the Use of Energy Drinks by Young Athletes".

Fundamentals of a Heat Acclimatization Program:

1. Physical exertion and training activities should begin slowly and continue progressively. An athlete cannot be "conditioned" in a period of only two to three weeks.
 - A. Begin with shorter, less intense practices and training activities, with longer recovery intervals between bouts of activity.
 - B. Minimize protective gear (such as helmets and pads) during first several practices, and introduce additional uniform and protective gear progressively over successive days.
 - C. Emphasize instruction over conditioning during the first several practices.

Rationale: The majority of heat-related deaths happen during the first few days of practice, usually prompted by doing too much, too soon, and in some cases with too much protective gear on too early in the season (wearing helmet, shoulder pads, pants and other protective gear). Players must be allowed the time to adapt safely to the environment, intensity, duration, and uniform/equipment.

2. Keep each athlete's individual level of conditioning and medical status in mind and adjust activity accordingly. These factors directly affect exertional heat illness risk.

Rationale: Athletes begin each season's practices and training activities at varying levels of physical fitness and varying levels of risk for exertional heat illness. For example, there is an increased risk if the athlete is obese, unfit, has been recently ill, has a previous history of exertional heat illness, or has Sick Cell Trait.

3. Adjust intensity (lower) and rest breaks (increase frequency/duration), and consider reducing uniform and protective equipment, while being sure to monitor all players more closely as conditions are increasingly warm/humid, especially if there is a change in weather from the previous few days.

Rationale: Coaches must be prepared to immediately adjust for changing weather conditions, while recognizing that tolerance to physical activity decreases and exertional heat illness risk increases, as the heat and/or humidity rise. Accordingly, it is imperative to adjust practices and/or competitions to maintain safety and performance. Coaches can monitor the athletes' weights pre and post practice to ensure adequate fluid replacement, and can follow guidelines for hot and humid weather including using Wet Bulb Globe Temperature (WBGT) readings.

4. Athletes must begin practices and training activities adequately hydrated.

Rationale: While proper hydration alone will not necessarily prevent exertional heat illness, it will decrease risk. Athletes can observe the color of their urine, which should be straw yellow or the color of lemonade, when adequately hydrated. A Urine Color Chart can be accessed at:

<http://www.urinecolors.com/themes/uctheme/assets/dehydration-chart.pdf>

5. Recognize early signs of distress and developing exertional heat illness, and promptly adjust activity and treat appropriately. First aid should not be delayed!

Rationale: An athlete will often show early signs and/or symptoms of developing exertional heat illness. If these signs and symptoms are promptly recognized and the athlete is appropriately treated, serious injury can be averted and the athlete can often be treated, rested and returned to activity when the signs and symptoms have resolved.

6. Recognize more serious signs of exertional heat illness (clumsiness, stumbling, collapse, obvious behavioral changes and/or other central nervous system problems), immediately stop activity and promptly seek medical attention by activating the Emergency Medical System (or Call 9-1-1). On-site rapid cooling should begin immediately.

Rationale: Immediate medical treatment and prompt rapid cooling can prevent death or minimize further injury in the athlete with EHS. Ideally, pools or tubs of ice water to be used for rapid cooling of athletes should be available on-site and personnel should be trained and practiced in using these facilities for rapid cooling. Ice water baths are the preferred method for rapid cooling, however, if ice water pools or tubs are not available, then applying ice packs to the neck, axillae, and groin and rotating ice-water soaked towels to all other areas of the body can be effective in cooling an affected athlete. Remember, cool first, transport later.

7. An Emergency Action Plan (EAP) with clearly defined written and practiced protocols should be developed and in place ahead of time.

Rationale: An EAP should be in place in case of any emergency, as a prompt and appropriate response in any emer-

gency situation can save a life. The EAP should be designed and practiced to address all teams (freshman, junior varsity, and varsity) and all practice and game sites. For heat illness emergencies, emphasis must be placed on full body cooling prior to transport.

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Revised and Approved April 2018

XXV. WIAA MODEL POLICY FOR MANAGING HEAT & HUMIDITY

1. Thirty minutes prior to the start of an activity, and again 60 minutes after the start of that activity, take temperature and humidity readings at the site of the activity. Using a digital sling psychrometer is recommended. Record the readings in writing and maintain the information in files of school administration. Each school is to designate whose duties these are: generally the athletic director, head coach or certified athletic trainer.
2. Factor the temperature and humidity into the Heat Index Calculator and Chart to determine the Heat Index. If a digital sling psychrometer is being used, the calculation is automatic.

3. **If the Heat Index is below 95 degrees:**

- All Sports
 - o Provide ample amounts of water. This means that water should always be available and athletes should be able to take in as much water as they desire.
 - o Optional water breaks every 30 minutes for 10 minutes in duration.
 - o Ice-down towels for cooling.
 - o Watch/monitor athletes carefully for necessary action.

If the Heat Index is 95 degrees to 99 degrees:

- All Sports
 - o Provide ample amounts of water. This means that water should always be available and athletes should be able to take in as much water as they desire.
 - o Optional water breaks every 30 minutes for 10 minutes in duration.
 - o Ice-down towels for cooling.
 - o Watch/monitor athletes carefully for necessary action.
- Contact sports and activities with additional equipment:
 - o Helmets and other possible equipment removed while not involved in contact.
- Reduce time of outside activity. Consider postponing practice to later in the day.
- Recheck temperature and humidity every 30 minutes to monitor for increased Heat Index.

If the Heat Index is above 99 degrees to 104 degrees:

- All Sports
 - o Provide ample amounts of water. This means that water should always be available and athletes should be able to take in as much water as they desire.
 - o Mandatory water breaks every 30 minutes for 10 minutes in duration.
 - o Ice-down towels for cooling.
 - o Watch/monitor athletes carefully for necessary action.
 - o Alter uniform by removing items if possible.
 - o Allow for changes to dry t-shirts and shorts.

- o Reduce time of outside activity as well as indoor activity if air conditioning is unavailable.
- o Postpone practice to later in the day.
- Contact sports and activities with additional equipment
 - o Helmets and other possible equipment removed if not involved in contact or necessary for safety. If necessary for safety, suspend activity.
- Recheck temperature and humidity every 30 minutes to monitor for increased Heat Index.

If the Heat Index is above 104 degrees:

- All sports
 - o Stop all outside activity in practice and/or play, and stop all inside activity if air conditioning is unavailable.

Note: When the temperature is below 80 degrees there is no combination of heat and humidity that will result in need to curtail activity.

Source: Michigan High School Athletic Association

Heat-Humidity Index Table

An alternative method for assessing heat and humidity is the weather guide or heat index. The chart below is an example of a heat-humidity index table that defines low, moderate, high, and extreme risk zones.

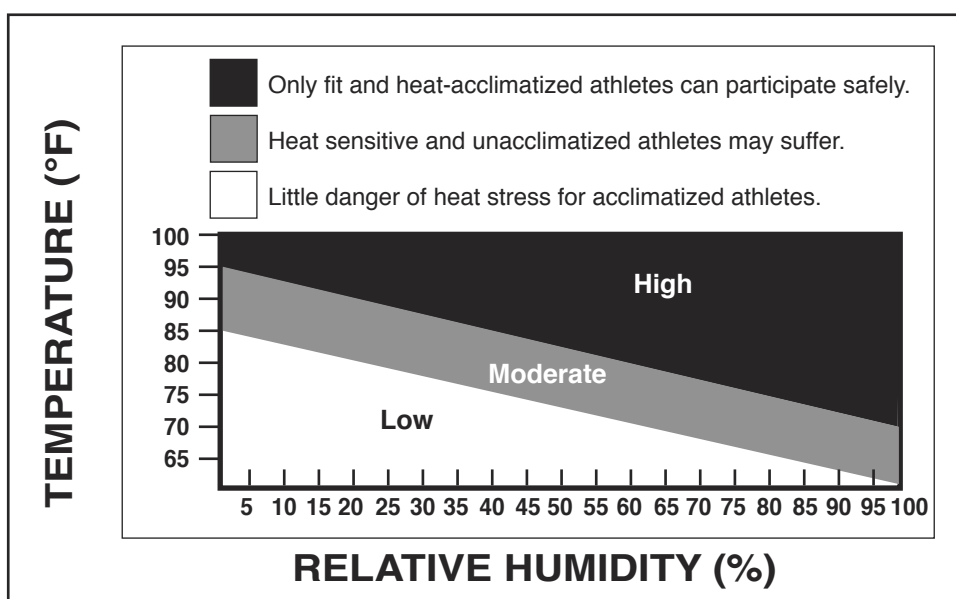


Figure I

XXVI. HEAT STRESS IN TRACK AND CROSS COUNTRY

A statement by the WIAA Medical Advisory Committee.

The purpose of this article is to alert coaches, runners, parents, and physicians to the potential health hazards of heat stress. It is important to constantly re-emphasize the importance of water, temperature, and humidity in the prevention and treatment of heat related hazards. We are all aware that Wisconsin's weather in the spring and fall is totally unpredictable. Athletes sometimes train in weather that could precipitate hyperthermia and then again one week later be in a danger of hypothermia. This requires that all involved in working with athletes understand the potential stress of temperature related illnesses. This article will emphasize increased body temperature or hyperthermia.

Water is performance. Anything that leads to body water being lost, or not being taken in, can lead to a decrease in performance. Studies have shown that a 2 to 3% loss of body water can cause a decrease in performance by the athlete. It is also known that young athletes are more susceptible to these risks because of their lower heat tolerance. While this may vary from one athlete to another, it cannot be overlooked that the young athlete is more susceptible than the mature adult athlete to changes in the regulatory mechanisms of body temperature (heat stress).

It is true that in the WIAA track and cross country seasons, there are no exceptionally long races. There are no marathons and

paces of ten to twenty kilometers. That decreases one of the major risks, which is the long distance running. Wisconsin's weather, however, is totally unpredictable. Changing conditions and the unpredictable nature of the athletes themselves dictate preparation for potential problems. What are these factors which can affect the athlete and the potential for heat stress hazards?

The first is temperature and humidity. As the temperature and humidity rise, there is increased risk for heat stress injury. Increase in wind also plays a role in that it can contribute to the loss of fluid from the body in an unsuspecting athlete. As the temperature and humidity go up with a strong wind, the risk of problems increases. Second, we know that many of our high school athletes will sit at the track all afternoon watching their friends run. Their desire to cheer for their teammates is understood, but as they sit for two to three hours on a hot afternoon, even if it is in the shade, this increases the sensible and insensible loss of fluids from the body. It is easy for the athlete to see the urine and sweat that is lost. It is much more difficult to see the water that is lost from the lungs. Again, as one is sweating on a windy day, it is easier for that fluid to be removed without the athlete being aware of it. Third, the athlete does not frequently drink before a race because he/she is afraid it will interfere with performance. This has been shown repeatedly not to be true as it does not cause cramps or decreased performance, yet that myth has been ingrained in mythology for years. Fourth, many athletes, because of nervousness before the race, feel somewhat nauseated and do not want to take fluids. Those athletes from the northern part of our state have another risk. They often train in a cooler climate and haven't acclimatized to warm weather as much as their southern counterparts. These factors must all be considered in the prevention of heat problems.

In the WIAA, the shorter races, compared to marathons and ten kilometer races, lead to heat fatigue and fainting or leg cramps rather than heat stroke or exhaustion which are the high risk problems. This is not to slight heat fatigue, fainting, or muscle cramps. There must always be awareness to the possibility of the heat exhaustion or stroke because of the serious consequence of these illnesses.

Many people tend to think of races and meets as the source of problems. It cannot be forgotten that practice and training are also a time for potential heat stress illness. It is during the training time where the real risk can be seen. In Wisconsin, we can have a hot streak in the late spring or early fall where there may be very hot, humid weather for three to five days in a row. It has been well established that water loss by exercise is difficult to replace by thirst alone. A conscious effort must be made to have our athletes drink, even when they are not thirsty; thirst alone would not replenish water lost by exercise.

Fluids are necessary after all workouts and athletes should get into the habit of weighing daily to see if there is a consistent weight loss pattern. This should be done every day and done in a private setting so the athlete can be weighed nude. Salt does not have to be a concern because a normal diet will replace all the salt that is lost. **There is no place for salt tablets in today's sports medicine. They are never to be used.**

The athlete must be encouraged to drink during practice, and this includes not only prehydrating before but also time out for fluids during the workouts. Four to six ounces of cold water at 45 to 55 degrees will be rapidly absorbed from the stomach and will not cause cramping or interference with performance. This can go a long way in preventing heat stress illness in our athletes.

The hydration solution needs only to be water. However, multiple research studies indicate the following about water: Water is a good "thirst quencher," but not a very good "rehydrator". Water turns thirst off before rehydration is complete. Water "turns on" the kidneys to increase fluid loss through urine production. Sodium allows the body to hold on to the fluids. Sport drinks are often more effective than water to replace fluids/electrolytes lost in sweat. If one has sugar, it should not be more than a 4-6% solution. While salt is not important, if it is added it should not be more than 110-mg sodium/8 oz. fluids.

It is important to remember that heat disorders are secondary to deficits or decreases in body water. Either a decrease in intake or an increase in losses is going to cause problems. It is easy to understand this in an athlete who is running a marathon and producing great amounts of body heat and loss of water by sweating. It is harder to realize this can occur in a young athlete sitting out watching a State Track Meet, on a warm, sunny day while doing nothing. It can happen in both circumstances. Remember, as the temperature and humidity goes up, the risk increases.

What can be done on a long term basis to correct this problem? Coaches and athletes must be educated to the importance of fluids. Water prevents problems. Athletes must prehydrate before practices and meets as well as drink regularly during practices. Athletes must be conditioned wisely and helped to acclimatize to the warm weather. This is difficult in Wisconsin because of the rapidly changing conditions, but when the warm period hits athletes must be in condition and they must be hydrated to prevent problems. In Wisconsin, there always will be unexpected hot, humid days.

By educating all those concerned with the young high school athletes, they will be given the best treatment, which is prevention, and they will learn that the best prevention is fluid.

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XXVII. RECOGNITION, MANAGEMENT AND PREVENTION OF COLD EXPOSURE

Significance: Although excessive and prolonged exposure to cold may be an infrequent problem in high school athletics, the prevention, recognition and management of cold-related conditions are still an important consideration for coaches, administrators and athletic trainers.

The human body's mechanisms of heat retention are significantly less efficient than our ability to dissipate heat. Epidemiological research suggests that even in otherwise innocuous environmental conditions, hypothermia can occur. During the day, the temperature may be moderate and the sun shining, but as the sun sets and the temperature begins to fall, when coupled with conditions of exhaustion, dehydration and wet clothing associated with physical activity, the risk of cold-related pathology can increase.

Understanding the mechanisms of heat retention and productions are essential to the prevention and management of cold-related illnesses and injuries:

- **Vasoconstriction** – Decreases blood flow to the periphery to prevent loss of body heat.
- **Shivering** – While involuntary shivering generates heat through increased muscle activity, it may also hinder an athlete's sport performance and ability to perform behavioral tasks to aid in heat retention.
- **Activity increase** – Increases heat production through a general increase in metabolic activity. Quick bouts of intense activity can generate incredible amounts of heat.
- **Behavioral responses** – Adjusting the number and type of clothing layers will result in heat regulation by controlling the amount of heat lost by the body.

There are two cold-related pathologies that coaches, administrators and athletes should be aware of: hypothermia and frostbite.

Hypothermia is defined as a decrease in the core body temperature to at least 95°F. It occurs when the heat loss is greater than the metabolic heat production. Hypothermia can be categorized in three stages: mild, moderate and severe, based on core body temperature.

Frostbite is a thermal injury to the skin, which can result from prolonged exposure to moderate cold or brief exposure to extreme cold. The body areas most prone to frostbite are the hands, feet, nose, ears and cheeks. Frostbite can be classified into three basic categories: frostnip, superficial frostbite and deep frostbite.

RECOGNITION OF COLD-RELATED ISSUES

There are several factors influencing one's susceptibility or risk of cold related injury or illness. These factors can be additive. Thus, it is essential to appreciate each of these factors, along with the associated signs and symptoms of hypothermia and frostbite. For example, exposure to 30-50° temperatures under wet and windy conditions can be equivalent to sub-zero temperatures with no wind or moisture.

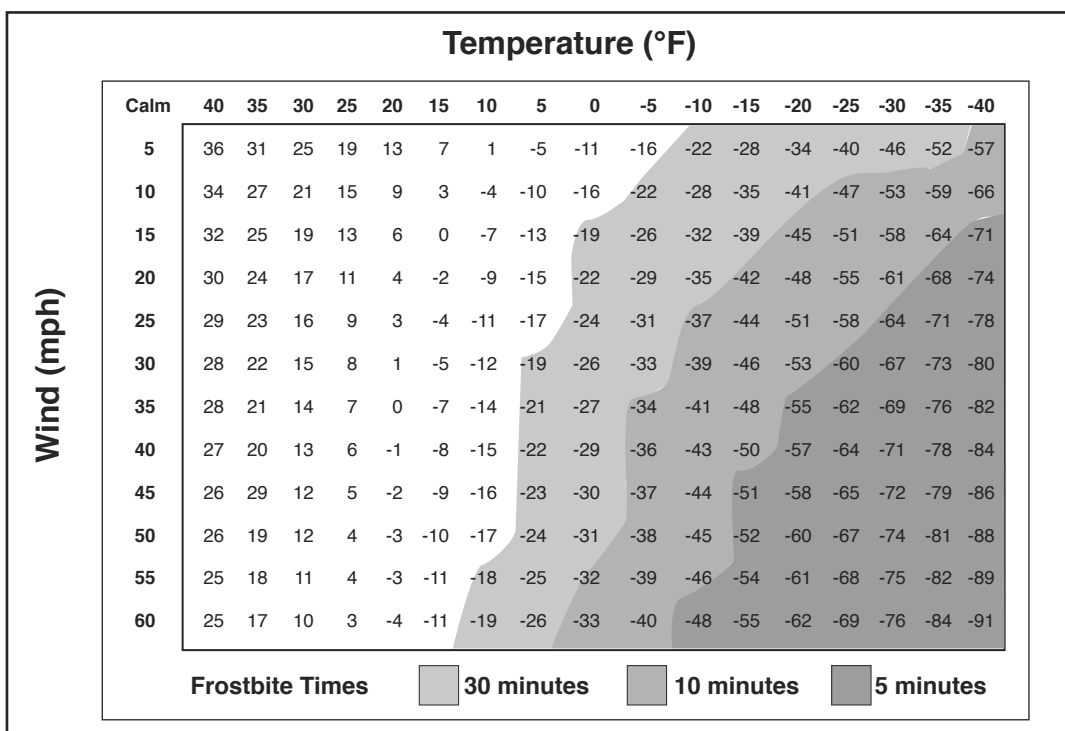
Risk Factors:

- **Low air temperature** – When cold exposure exceeds or overwhelms the body's ability to compensate for heat loss due to the external environment.
- **Wind chill** – Figure 1 provides a wind-chill index chart that identifies the risks associated with the interaction of the wind speed and air temperatures.
- **Moisture** – Wet skin freezes at a higher temperature than dry skin.
- **Exposed skin** – Heat loss occurs primarily through convection and radiation to the external environment, but may also include evaporation if the skin is moist. This is a concern for those exercising and sweating in cold environments.
- **Insulation** – The amount of insulation from cold and moisture significantly affects thermoregulation.
- **Dehydration** – Negatively influences metabolism and thermoregulation.
- **Alcohol** – Increases peripheral blood flow and heat loss; can also disrupt the shivering mechanism.
- **Caffeine** – Acts as a diuretic, causing water loss and dehydration.
- **Tobacco** – Acts as a vasoconstrictor; increasing the risk of frostbite.

Prevention: The best method of management is prevention

- Dress in layers.
- Cover the head to prevent excessive heat loss from the head and neck.
- Stay dry by wearing a wicking fabric next to the body and a breathable, water repellent outer layer.
- Stay adequately hydrated.
- Eat regular meals.
- Avoid alcohol, caffeine and nicotine.
- Educate participants, coaches, officials and administrators in recognition of cold-related illnesses.
- Consider cancellation of athletic events if weather conditions warrant.
- If unsure whether an athlete is hypothermic, err on the side of caution and treat accordingly.

Figure I. Wind Chill Index



For more detailed information and a complete list of references, please see: Zinder, S.M. and Shultz, S.J. Cold Related Issues. National Federation of State High School Associations Resource Document. <http://www.nfhs.org>

Recognition:

Coaches, athletes, officials and administrators should also be aware of the continuum of signs and symptoms associated with various classifications of cold-related pathologies:

Table I. Signs And Symptoms of Hypothermia

STAGE	CORE TEMPERATURE	SIGNS AND SYMPTOMS
Mild Hypothermia	99° – 97° F	Normal, shivering may begin
	97° – 95° F	Cold sensation, goose bumps, unable to perform complex tasks with hands, shiver can be mild to severe, hands numb
Moderate Hypothermia	95° – 93° F	Intense shivering, muscle in coordination becomes apparent, movements slow and labored, stumbling pace, mild confusion, may appear alert. Use sobriety test, if unable to walk a 30 foot straight line, the person is hypothermic.
	93° – 90° F	Violent shivering persists, difficulty speaking, sluggish thinking, amnesia starts to appear, gross muscle movements sluggish, unable to use hands, stumbles frequently, difficulty speaking, signs of depression, withdrawn.
Severe Hypothermia	90° – 86° F	Shivering stops, exposed skin blue or puffy, muscle coordination very poor, inability to walk, confusion, incoherent/irrational behavior, but may be able to maintain posture and appearance of awareness.
	86° – 82° F	Muscle rigidity, semiconscious, stupor, loss of awareness of others, pulse and respiration rate decrease, possible heart fibrillation.
	82° – 78° F	Unconscious, heart beat and respiration erratic, pulse may not be palpable.
	78° – 75° F	Pulmonary edema, cardiac and respiratory failure, death. Death may occur before this temperature is reached.

Curtis, R. Outdoor Action Guide to Hypothermia And Cold Weather Injuries. Outdoor Action Program, Princeton University. www.princeton.edu/~oa/safety/hypocold.shtml. (Use and distribution of material for nonprofit educational use permitted by author. However, if included in publications, written or electronic, attributions must be made to the author. Commercial use of this material is prohibited without express written permission from the author.)

Table 2. Signs And Symptoms of Frostbite

STAGE	SIGNS AND SYMPTOMS
Frostnip	Only the outer layer of skin is frozen. Skin appears white and waxy or possibly gray or mottled. It may have sensation or may be numb. May be painful.
Superficial Frostbite	Skin appears white, mottled or gray. It feels hard or rubbery on the surface, but deeper tissue is still soft. Skin is insensitive to touch.
Deep Frostbite	Includes all the layers of the skin. Skin is white and has a "wooden" feel all the way through. There is numbness and possible anesthesia. Can include the muscle and bone.

Management:

Hypothermia – The basic principles of rewarming victims of hypothermia are to conserve the heat they have, and replace the heat that they have already lost. The best method to determine the extent of core temperature loss is measurement of rectal temperature. Unfortunately, obtaining a rectal temperature reading on a moderately or severely hypothermic patient can be difficult, and may expose the athlete to further cooling. The following describes the management regimes for hypothermia relative to severity:

- **Mild hypothermia** – Seek dry shelter, replace wet clothing, insulate whole body and head, avoid sweating, use external warmth (bath, fire) only if core above 95° F, give warm sweet drinks and food
- **Moderate hypothermia** – Avoid exercise and external warmth, gently rest, give warm sweet drinks and calories, internal warming via warm moist air, monitor pulse and breathing
- **Severe hypothermia – Medical emergency**, give nothing by mouth, wrap in an insulated blanket, avoid rapid rewarming, transfer to hospital immediately

Frostbite – It is very important to note that refreezing newly thawed frostbitten tissue can cause extensive tissue damage. If it is not absolutely certain that the tissue will stay warm after rewarming, **do not rewarm it**. Once the tissue is frozen, the major harm has been done. Keeping it frozen for a longer period of time will not cause significant additional damage. The following describes the management of frostbite relative to severity:

- **Frostnip** – Rewarm the area gently by blowing warm air onto the area or placing it against a warm body part or place in a warm (101°-108° F) water bath for several minutes. **Never rub the area**. This can damage the affected tissue by increasing the friction on the ice crystals in the cell, causing tearing of the tissue.
- **Superficial frostbite** – If a small area is involved, it can be treated the same as indicated for frostnip; if it is a larger area, follow the management for deep frostbite.
- **Deep frostbite** – Rewarm by removing restrictive clothing and immersing the affected body part in a warm bath of 105°-110° F for 25-40 minutes. Refer deeply frostbitten athletes to the emergency room. Do not rewarm the tissue unless absolutely certain that it will stay warm after rewarming.

References:

- NOLS.NOLS Wilderness First Aid. Lander,WY:National Outdoor Leadership School; 1991.
- Bangs C, Boswich J, Hamlet M, et al. When your patient suffers frostbite. Patient Care 1977;12:132-57.
- Lloyd E.ABC of Sports Medicine Temperature and Performance I: Cold. British Medical Journal. 1994;309:531-34.
- Frey C. Frostbitten feet: steps to treatment and prevention. The Physician and Sportsmedicine 1992;20:67-76.
- Search and Rescue Society of British Columbia Hypothermia.
- <http://www.sarbc.org/resqair/thermom.html>

For more detailed information and a complete list of references, please see:

Zinder, S.M. and Shultz, S.J. Cold Related Issues. National Federation of State High School Associations Resource Document. <http://www.nfhs.org>

XXVIII. PHYSICAL MATURATION

From birth every child is undergoing growth and maturation. The time at which adolescent maturation, or “puberty”, takes place is of great interest to coaches, parents and especially the athlete themselves. This is a time of rapid growth and maturing of the body. Growth means the increase in height and weight, while maturation means the maturing of sexual as well as physical factors.

The most important thing for coaches to learn and remember is that this maturation occurs at different ages and at different speeds. The two most critical concerns are the early maturer and the late maturer.

The early maturer is the individual who starts maturation in fifth or sixth grade and by eighth grade has reached a final height and size. They enter high school at 5’9” and graduate at 5’9 1/2”. These young athletes can improve their skills, techniques and experience but do not increase in size.

The late maturer may be more of a concern in some respects when it comes to athletic participation. Psychologically it is tough to not show signs of sexual maturation and be of small stature as you enter high school or tenth grade. Many of these young athletes will be 5’3” on the first day of high school and 6’2” at graduation. Yet, because the maturation takes place during their sophomore and junior years, they’re often lost in the athletic arena. They are felt to be too small and fragile when they try out for the high school teams as freshmen, and then many times are discouraged by their parents, or even coaches, from playing because they are so small. The coach must always keep in mind that the immature freshman may be his/her best athlete as a senior.

The age of onset of adolescent maturation as well as the speed at which they go through it will vary greatly from one individual to another. This variation must be remembered by all coaches so they can encourage the late maturer to stay active in sports and work on their skills and wait for their body to grow. Many a fine athlete has not competed in high school sports because of their discouragement in the first year or two due to late maturation. The early maturer also has trouble as they are the best athlete in seventh and eighth grade and are stars as freshmen. But because they are so physically mature, they do not improve to the same extent as the late maturer does and may reach their peak at a much younger age period. This is not to say that they cannot become outstanding high school athletes and have great joy and thrills in competition. It is important for all coaches to understand this difference in age of onset as well as speeds of maturation.

Maturation is best judged in the male by axillary and pubic hair, as well as testicular size. When the athlete starts to shave is another easy way of judging maturation. In females, menarche or when the menstrual periods first start is the easiest judge of maturation. The chart on maturation by Tanner gives guidelines as to level of maturation.

It should be remembered that athletes at different levels of maturation have trouble competing against one another. Injuries are increased when a mature athlete competes against an immature athlete. It is best to allow the immature athletes to compete with those at the same level of maturation whenever possible. This cannot always be done but should be encouraged. This can help the athlete compete to the best of their abilities and it will help the coach have a better team because of their understanding.

XXIX. TANNER RATINGS TO ASSESS GROWTH

Boys - Genital Development

- | | |
|----------------|--|
| Stage 1 | pre-adolescent
testes, scrotum, and penis are about same size proportion as in early childhood |
| Stage 2 | enlargement of scrotum and testes, skin over scrotum reddens and changes in texture; little or no enlargement of penis at this stage |
| Stage 3 | enlargement of penis which occurs at first mainly in length, further growth testes and scrotum |
| Stage 4 | increased size of penis with growth in breadth, and development glands, enlargement of testes and scrotum, increased darkening of scrotal skin |
| Stage 5 | genital adult in size and shape; no further enlargement takes shape |

Breast Development Stages for Girls

- | | |
|----------------|---|
| Stage 1 | pre-adolescent
elevation of papilla only |
| Stage 2 | breast development, breast bud stage, elevation of breast and papilla a small mound; enlargement of areola diameter |
| Stage 3 | further enlargement and elevation of breast and areola with no separation of their contours |
| Stage 4 | projection of the areola and papilla to form a secondary mound above the level of the breast |
| Stage 5 | mature stage, projection of papilla only due to recession of areola to the general contour of the breast |

Pubic Hair Stages for Boys and Girls

- Stage 1** pre-adolescent
no pubic hair
- Stage 2** sparse growth of long, slightly pigmented downy hair, straight, only slightly curved, appearing chiefly at the base of the penis or along the labia
- Stage 3** considerable darkening, coarser and more curly; the hair spreads sparsely over the junction of the pubis. At this stage it can usually be seen on a black and white photograph
- Stage 4** hair now resembles adult in type but the area covered by it is still considerably smaller than adult; no spread to thighs
- Stage 5** adult in quality and type with distribution horizontally and spreading to the thighs in female and extending toward the umbilicus in the male

Axillary hair usually appears at stage 4. Facial hair in boys usually appears at stage 4, first on the lips and then on the cheeks and midline on the chin. Full facial hair develops at stage 5.

In competitive athletics stage 1 and 2 development should not compete against stage 4 or 5 development because of the maturity of the body with increase in muscle mass, strength, speed, agility, and psychological confidence. This is especially true if it is to be a strenuous contact sport.

XXX. MEDICAL GUIDE FOR INTERSCHOLASTIC SPORTS ATHLETICS FOR GIRLS IN JUNIOR AND SENIOR HIGH

Maturity in female athletes: The level of maturity is best judged on secondary sexual characteristics. These include breast budding, anterior pubic hair, velvety pubic hair, full breast and nipple development, and menarche. Full maturity relative to these factors are reached by 14 to 16 years of age in most females.

Below find a more detailed graph by Marshall-Tanner.

Breast Development		Pubic Hair Development	
Stage:	Mean Age (years)	Stage:	Mean Age (years)
1. <i>Preadolescent:</i> elevation of papilla		1. <i>Preadolescent:</i> no pubic hair	
2. <i>Breast bud stage:</i> elevation of breast and papilla, enlargement of areolar diameter	11.15	2. <i>Sparse growth:</i> downy hair appearing along the labia	11.69
3. <i>Further enlargement:</i> developing breast and areola, no separation of contour	12.15	3. <i>Darker, coarser hair:</i> spreading sparsely over the junction of the pubes	12.36
4. <i>Projection:</i> areola and papilla form secondary mound above breast level	13.11	4. <i>Adult-type hair:</i> no spread to medial thighs	12.95
5. <i>Mature stage:</i> projection of papilla only, due to recession of the areola to general contour of the breast	15.33	5. <i>Adult hair:</i> distributed in classic feminine triangle	14.41

Girl Athletes and Exercise - The average maximum heart beat for the girl athlete between 14 and 18 years is 200 beats per minute.

Rules for Fitness - With children after the menarche, the rules for fitness are probably the same as an adult. Prepuberty should be limited in lifting weights, but some weight lifting is desirable. At the post menarche level, the amount of weight lifting for fitness is the same as girls in high school.

Causes of Exercise Related Injuries:

- Improper training
- Muscle imbalance
- Structural abnormality
- Lack of flexibility
- Stress fractures may occur in the long bones and the pelvis
- Eating disorder

Lack of Flexibility - The short tight muscles and tendons are more susceptible to tearing.

Reproductive Hazards - Reproductive hazards most associated with regular exercise are oligomenorrhea (skipped or light menses), to amenorrhea (no menses), or menarche delay. These are most common among girls who exercise strenuously especially runners, swimmers, cyclists. Individual variety is great, and is associated with a decrease of progesterone (female hormone) during the menstrual cycle. If secondary amenorrhea occurs for a long period of time the female athlete should be checked by her physician.

References: Complete Book of Athlete Injuries, Marshall Hoffmann and William Southmayd

Mona Shangold, M.D., Personal Correspondent

American College of Obstetricians and Gynecologists Technical Bulletin 87, Women and Exercise

8/95

XXXI. IRON DEFICIENCY ANEMIA IN ADOLESCENT GIRLS

"Sports Anemia" is a condition in which endurance athletes develop lower hemoglobin concentration than found in the general population. Concern on the part of coaches and medical personnel centers on studies that show that anemia can affect performance, especially if these are female athletes still in adolescence. This statement will differentiate sports anemia from true anemia and suggest an appropriate protocol for evaluation.

Sports anemia is a physiological response of increased blood plasma that dilutes the hemoglobin concentration. The increase in plasma is a beneficial response to exercise (1). Plasma increases are correlated to the amount of exercise and can occur within a few days of initiating endurance programs. Levels can return to baseline as quickly when exercise is stopped.

"True Anemia" can also be found in athletes. However, before anemia occurs there is a loss of iron stores; in which the most common form is iron depletion. Following iron depletion is iron deficiency erythropoiesis and, finally, the most serious condition, iron deficiency anemia (2). The percentage of athletes with iron deficiency parallels that found among nonathletes in the general population. Athletes on a reduced calorie diet, such as those in weight class sports or those with disordered eating or eating disorders, are at risk for not including enough iron in their diets. Athletes who consume a majority of their calories from low nutrient foods, such as soda pop or candy, are also at risk of developing iron depleted states. Significantly decreased hemoglobin levels may indicate iron deficiency anemia (under 13.5 g/dl in a male or 11.5 g/dl in a female). Assessments of free erythrocyte protoporphyrin (FEP) levels or serum ferritin levels can lead to an earlier diagnosis of anemia as FEP and serum ferritin are more sensitive indicators of iron loss. Early symptoms of iron deficiency are: sensations of heavy or burning muscles; nausea; need to eat ice or cold, raw, crisp vegetables; all combined with decreased ability to perform at previous training levels.

Loss of iron is not significant from sweat or heelstrike/march hemolysis. Occult GI bleeding in races, blood loss in menses, or low iron absorption (especially from vegetarian diets) can be pointed to as contributing to an iron depleted or deficient state (4). Increasing iron intake can be accomplished through eating lean red meat, dark poultry, fortified breakfast cereals, dried beans/peas, and dried fruit. Clinically, a two month trial of iron supplementation (ferrous sulfate or ferrous gluconate, 325 mg, TID) can be tried in athletes suspected of iron deficiency. In an anemic state, hemoglobin should rise to normal levels by the end of two months.

(1) Eichner, E.R., The Anemias of Athletes. Phys. Sportmed., 14(9): 122-130, 1986

(2) Clarkson, P.M., Tired Blood: Iron Deficiency in Athletes and Effects of Iron Supplementation. SportsScience Exchange, 3(28), September 1990

(3) Eichner, E.R., Sports Anemia: Poor Terminology For a Real Phenomenon. SportsScience Exchange, 1(6), August 1988

(4) Clarkson, P.M., *ibid.*

Acknowledgment: We thank Greg Landry, M.D., (UW Hospital, Department of Pediatrics) for his assistance in the preparation of this statement.

8/95

XXXII. NUTRITION FOR ATHLETES

There is probably no area in sports medicine where there is more misinformation, quackery, and unproven testimonials than in the area of nutrition for athletes. Understanding, knowledge, and application of nutrition principles can not only make the athlete healthier, but also enhance his/her performance. It is not within the scope of this manual to give the details of all areas of sports nutrition, access specific diets, or give caloric recommendations for specific athletes. However, we can give some general observations and information. A very good source for the details of specific caloric needs and sample diets for specific sports and athletes are from registered dietitians.

The essential body nutrients are: (1) fluid, (2) carbohydrates, (3) protein, (4) fat, (5) vitamins, and (6) minerals. Proper

nutrition and optimal athletic performance is dependent upon an understanding and proper use of all of these nutrients. Water makes up 60-70% of the body composition. Dehydration has been shown to be the biggest cause of decreased athletic performance. Despite this, dehydration from inadequate replacement of water losses during practices and competition and use of water deprivation to lose weight are very common practices. The consequences of dehydration can be severe and certainly affect athletic performance. The main consequences of dehydration are depression, loss of muscle strength, decreased blood flow to the kidneys, potassium loss, decreased heart output, decreased blood volume, increased heart rate, decreased learning capacity, and often emotional instability. The signs of weight loss, rapid pulse, small volume of dark colored urine, muscle or stomach cramps, loss of appetite, and fatigue may be symptoms coaches/parents/athletes are more likely to notice before dehydration becomes so severe as to cause depression. To properly rehydrate after a significant water loss, it takes up to 48 hours for the body to totally get back in balance. The simplest way to avoid problems with dehydration and water loss is to monitor the weight before and after practice and replace the weight loss with 24 oz. of fluids for every pound lost. Also, liberal use of water during practices and competition should be encouraged. Current research indicates that non-caffeinated fluids with 4-6% glucose and 110 mg sodium per 8 oz. water is a more effective rehydrator than water alone; especially after exercising for as little as 30 minutes.

The second important body nutrient is carbohydrates. These make up the main energy source for most high school athletic activities. The American diet has been low in carbohydrate consumption and should be approximately 55-60% of the total calorie intake. An emphasis should be on consuming complex carbohydrates, which are the starches, versus the simple carbohydrates, which are the sugars. The complex carbohydrates, or starches, have more minerals and vitamins and provide energy for a long period of time for the athlete.

The third essential body nutrient is protein. Protein is very important to optimal nutrition. However, protein does not make protein. The old adage that you had to eat meat to make protein is certainly a fallacy. Protein is used for growth and repair of the human body and is an essential source of energy, but not the immediate source of energy in exercise. It should be approximately 10-20% of the athlete's diet. Use of excess protein can lead to dehydration through excessive loss of water through the kidneys. Meat, fish and poultry, bean, nuts, and dairy products are good sources of protein.

Fat is the fourth essential nutrient needed for good nutrition. Fat is one of the energy sources, but not one for immediate energy source. It should be about 20-25% of the calories in the athlete's diet. Fat is essential also for some vitamins and are needed for proper nutrition. It should be noted that there are twice as many calories in fat than in carbohydrates, or protein. The athlete should also avoid too heavy a consumption of saturated fats.

The fifth essential body nutrient is vitamins. Vitamins are broken down to the water soluble vitamins, which are the C and B complex vitamins. The fat soluble vitamins A, D, E, and K, which are stored in fat and are essential to proper nutrition, but taking more than the required amounts of these vitamins can lead to toxicity and significant health problems. Taking more of the water soluble vitamins, which are not stored in body, only leads to a very healthy urine and sewage system. Eating a well-balanced American diet allows you to get all the vitamins that you need. Athletes who are at the greatest risk of poor vitamin/mineral status are those who restrict calories, use severe weight-loss practices, eliminate a food group (i.e. fats or meat), or eat from a single food group (carbohydrates). These athletes may benefit from a multi-vitamin/mineral supplement.

The sixth nutrient is minerals. There are essential minerals needed in the body, such as magnesium, zinc, and selenium. But, with proper nutrition and eating a well-balanced diet, these essential minerals are met very easily.

A statement on the athlete and nutrition would be incomplete without mention of the pregame meal. The traditional pregame meal of steak and eggs, which contained large amount of fats, had certainly proven to be a detriment to the athlete. The fats decrease the stomach emptying and cannot provide a ready source of energy. Each athlete has their own ability to eat prior to competition. Some become so nervous that intake of solid foods make them nauseated and decrease their athletic performance. Other athletes like a high number of calories prior to an athletic performance. It becomes evident that the meal needs to be tapered to the athlete and their digestive system.

There are a few helpful hints that can make the diet more palatable and productive. It has been shown that a pregame meal high in carbohydrates will enhance performance in the majority of athletes. The content of protein and fat should be kept low in the pregame meal. There has been growing interest in using prepared liquid supplement calories such as Ensure-Plus, Sport Shake, Boost, Gator-Pro, Slim-Fast, for example, for the pregame meal. These products are high in carbohydrates, are liquids so they are easily digested and do not stay in the stomach very long. The timing of the pregame meal should be anywhere from 3 to 5 hours prior to competition depending on the athlete. It is important for the athlete and the coach to determine what is best tolerated by the athlete and the timing because there can be no set rule as to what the exact composition of the meal should be. Also prehydrating with generous amounts of fluids at this time will help peak performance.

XXXIII. CALCIUM

Recommended: 1500 mg of elemental calcium & 400 units of Vitamin D every day

CALCIUM COUNTER

ESTIMATING YOUR DAILY CALCIUM INTAKE

Glasses of Milk (8 oz.) _____ x 300mg _____
Servings of Yogurt (8 oz.) _____ x 300mg _____
Ounces of Cheese (8 oz.) _____ x 200mg _____
Orange Juice with Calcium (8 oz.) _____ x 300mg _____

General Diet, excluding sources above = 250

Additional Calcium Supplements _____

Your Daily Elemental Calcium Intake = _____ mg

CALCIUM SUPPLEMENTS	
Type/Brand Name	Elemental Calcium (mg)
<u>Calcium Carbonate</u>	
Tums/Tums EX	200 or 300
Tums Ultra/Tums 500	400 or 500
Alka Mints	340
Caltrate 600	600
Caltrate 600+D	600 mg/400IU Vit D
Os-Cal 500	500
Os-Cal D	500 mg/200IU Vit D
Viactiv	500 mg/100IU Vit D
<u>Calcium Citrate</u>	
Citracal	200
Citracal Liquitab	500
Citracal	315mg/200IU Vit D

US Dept of Agriculture Top 25 Major Food Sources of Calcium		
Serving Size	Food	Amount of Calcium
1 Cup	Yogurt Plain, low fat	415
1 Cup	Yogurt, Fruit, low fat	314
1 Cup	Skim Milk	302
1 Cup	2% Milk	291
1 oz	Swiss Cheese	272
1 oz	Cheddar Cheese	204
1 oz	Colby Cheese	194
1 oz	American Cheese	174
1 Cup	Cottage Cheese	155
1	English Muffin	103
1 Cup	Sardines, in oil, drained	351
3 oz	Perch cooked	117
1 Cup	Tofu	260
1 1/2 Cup	Chef Salad	235
1	Taco	221
1 Large	Plain Hamburger w/bun	74
1 Cup	Almonds	332
1 Cup	Collards, Cooked	357
1 Cup	Broccoli, Cooked	94
1 Cup	Kidney Beans, canned	69
10 fl. oz	Vanilla Shake	344
1 Cup	Vanilla Ice Cream	170
5 oz	Tapioca Pudding	119

Also see the Oregon Dairy Council Link provided on the WIAA website under WIAA Info – Health for more information about calcium intake.

XXXIV. DISORDERED EATING/RELATIVE ENERGY DEFICIENCY IN SPORT

Disordered Eating in Student-Athletes: The Basics:

Disordered eating in student-athletes includes a wide range of eating concerns. These range from the athlete who inadvertently is not eating enough to fuel their body for sport simply out of not realizing how high their caloric needs are, all the way to the extreme of a full blown eating disorder and associated complications. Eating disorders include anorexia nervosa (being significantly underweight with distorted body image and intense fear of gaining weight) and bulimia nervosa (recurrent episodes of bingeing and purging; purging may involve use of excessive exercise beyond that recommended by coaches in order to compensate for food eaten). Athletes may underfuel because of wanting to try to achieve a competitive advantage in sport, meet appearance standards for sport or for society, or for other reasons. Ultimately, under-fueling is not a sustainable way to achieve success in sport, and athletic performance will suffer if disordered eating continues. Young athletes may find themselves on a slippery slope in which a desire to “eat healthy” turns into food restriction and rigid dieting in the hopes of improving athletic performance.

INFORMATION

Risk Factors

Risk factors for disordered eating in sport include the following:

- Participation in sports in which lean body physique is felt by some to be advantageous (e.g., cross country, track)

- Participation in sports in which artistic quality, in addition to technical skill, is felt to be important (e.g., gymnastics)
- Anxiety or depression
- Family members with disordered eating
- Perfectionism

Complications

Complications that may result from disordered eating in sport include:

- Changes in menstrual cycles (either not starting menstruation at all by the expected age, no longer getting menstrual cycles, or getting menstrual cycles less often, lighter, or for a shorter duration than usual)
- Low bone mineral density, which can result in stress fractures and eventual osteoporosis
- Abnormal levels of electrolytes such as potassium
- Dehydration
- Problems with the cardiovascular system (heart and blood vessels)
- Mental health conditions and suicide
- Weakened immune system
- Changes in metabolism

Note that some people reference the term “Female Athlete Triad”, which is becoming outdated. However, the idea still applies that the three elements of the Triad, disordered eating, menstrual cycle changes, and lowered bone mineral density, can occur in athletes who are not eating enough calories to fuel their activity levels.

A newer term being used is RED-S (Relative Energy Deficiency in Sport). The International Olympic Committee has used the “RED-S” terminology since 2014. This term is preferred over Female Athlete Triad in recognition of the fact that male athletes can suffer from disordered eating as well (though it is a more common problem in females). Additionally, the RED-S term conveys that there are more than just three issues when it comes to underfueling in sport.

Treatment

The ultimate treatment for disordered eating in sport is increased caloric intake. Any athlete suffering from signs and symptoms of disordered eating should be referred for professional help to a sports medicine physician, pediatrician, family medicine physician, internal medicine physician, psychiatrist, psychologist/therapist/counselor, and/or registered dietician. Disordered eating is a serious concern that can have life-threatening consequences if unaddressed.

In the meantime, parents and coaches can be helpful via the following:

- Educate athletes on the energy demands of their sport.
- Create an environment that supports eating at least three meals and one to two snacks daily. Talk about having a regular breakfast, full lunch at school, and a pre-practice snack to provide energy for training.

DISORDERED EATING SCENARIOS

Athlete Losing Weight

Question: One of our top athlete looks like she lost quite a bit of weight. She’s not having any problems with the training but I think she might be having a problem with food. She rarely eats at our team functions and I hear from some of her teammates that she skips school lunch. How should I approach this?

Answer: Have a private meeting with the athlete and discuss your observations and concern for the athlete’s health. Discuss how under-fueling (i.e., dieting) can lead to drops in performance, injury, and health problems such as irregular menstruation, anemia, and low bone density. Ask the athlete what she typically eats on a training day. Many athletes will report eating a “healthy diet” by avoiding “junk food”, soda, and drinking “lots of water” but do not know how much food/fuel their bodies need to support their training. Sometimes this can result in eating very small portions or skipping meals because there is nothing “healthy to eat”. This is a frequent excuse for avoiding school lunch or fast food meals. Also, drinking water to excess can be a concern. Excessive water intake can result in eating small portions causing low calorie intake, can mask hunger, or can cover up food avoidance. Share a sample training day menu based on the athlete’s weight and point out areas for improvement.

Discussing Menstrual Cycles

Question: Last season we had several girls injured with stress fractures. This year at our team meeting we talked about

preventing stress fractures and how not having a period can be a warning sign. Today one of my athletes told she has not had a period for a few months. In addition to suggesting she see her physician, is there anything else I can do?

Answer: One of the risk factors for irregular periods is not eating enough calories to meet the demands of training. You can discuss with her what and how much she normally eats on a training day. Key fueling times are the 3 meals and a pre/post workout snack. Some athletes eat healthy, but not enough. Share the sample training day menu posted on the WIAA website for an example of what, when, and how much she needs to eat to fuel her training.

Referring Athletes for Help

Question: I am concerned about one of my athletes, who has lost quite a bit of weight and has stopped getting her period. I sent her to a doctor, but the doctor was not concerned and said the athlete could continue competing. Is there anything else I should do?

Answer: Some professionals are not sufficiently educated about disordered eating to fully understand the seriousness of its long-term consequences. You should have your athlete see a different provider who is knowledgeable about disordered eating. Types of professionals to whom you should consider sending your athlete include: physicians (family medicine, internal medicine, pediatrics, sports medicine, or psychiatry), registered dietitians, psychologists or other therapists, school counselors, and athletic trainers. Additionally, the coach is the one who determines the athlete's workouts. Thus, the coach can cut back on the amount of training the athlete does, even if she is officially 'cleared' to return to sport.

Unconcerned Athlete/Parents

Question: I am concerned about an athlete that I coach, but she and her parents refuse to get help. How can I convince them, and what else should I do?

Answer: Talk about the potential negative consequences of disordered eating with the athlete and her parents. Explain that the athlete could develop life-long struggles with eating disorders and other mental health problems. The sooner disordered eating is addressed, the more likely it is to permanently resolve. Also, explain that irreversible bone loss and osteoporosis are more likely to occur the longer insufficient calorie intake goes on. Additionally, you should insist that she see a professional prior to her continuing to participate on the team.

Further video examples of athletes who have struggled with disordered eating are available on the International Olympic Committee website here: <http://www.olympic.org/hbi>. Feel free to share these with your athletes and their parents.

Common Myths about Disordered Eating in Sport

MYTH: Runners are the only athletes who develop eating disorders.

FACT: It is true that athletes in sports in which leanness is emphasized (e.g., cross country, track and field, gymnastics, figure skating, diving, swimming) are more likely to develop eating disorders. However, we see athletes in any and all sports develop eating disorders.

MYTH: Only girls develop eating disorders.

FACT: Studies are showing that more and more boys are developing eating disorders too. This often happens in sports such as wrestling, cross country, and track and field, but it can happen to athletes of any gender in any sport.

MYTH: If an athlete's performance has not started suffering, then they must not have a problem.

FACT: Even if an athlete's performance has not started to suffer yet, it eventually will. Not taking in enough calories to match activity level is not sustainable in the long-run.

MYTH: It is normal for female athletes to stop menstruating.

FACT: It is never normal for a female athlete to stop menstruating, and it often means that she is not taking in enough calories to match her activity level. There are serious health risks, especially bone loss, to not menstruating. Research shows that after three years of not menstruating, bone loss is likely to be permanent. Loss of future reproductive function could also occur. Any athlete who has been without a menstrual period for three months should be referred to a physician for an evaluation.

MYTH: It is normal for female athletes to have changes in their menstrual patterns when exercising heavily.

FACT: It is NOT normal for athletes to stop menstruating or to have lighter menstruation or lighter flow, even during heavy training.

MYTH: If athletes are not losing weight, they are probably eating enough.

FACT: Weight loss does not always happen when an athlete under-eats. The body can compensate by slowing down metabolism. Fifty percent of the time when an athlete restricts calories, menstrual cycle changes are the first symptoms to appear. Thus, discussions with athletes about the menstrual cycle are extremely important.

MYTH: If an athlete who loses her period goes on the birth control pill to start menstruating, her bones will be protected.

FACT: An athlete is likely to start menstruating again by going on the birth control pill, but if she has not started eating more, then this is just treating the symptoms and not the underlying problem. No medication, including birth control, has been shown to restore bone loss.

MYTH: If an athlete is not eating enough to match activity level, they are aware of what they are doing.

FACT: Denial is powerful. Athletes will very often feel that they are being as healthy as possible, and that meticulous attention to diet is a sign of dedication to sport. Coaches, parents, and professionals will need to help the athlete see the problems with the behaviors. It will probably take time, education, and convincing for the athlete to see there is a problem.

MYTH: An athlete who eats “healthy,” is a top performer on the team, and excels in class is unlikely to have an eating disorder.

FACT: Traits that are desirable in an athlete can make them more at risk of developing an eating disorder. Mental toughness, pursuit of excellence, performance despite pain, commitment to training, and being a team player are very similar to excessive exercise, perfectionism, denial of discomfort, asceticism, over-compliance, and being self-less. What looks like a “good athlete” may also be a person with a serious eating problem.

Signs and Symptoms of Disordered Eating in Student-Athletes:

- Significant or sudden weight loss, gain, or fluctuations (or failure to gain expected weight in a child/adolescent who is still growing)
- Fatigue
- Cold intolerance
- Unexpected athletic performance decline
- Bowel changes (constipation or diarrhea)
- Trouble concentrating (e.g., on school work or coaches’ instructions)
- Dizziness
- Chest pain or heart palpitations

Resources:

- 1) Sample Training Day Menu <https://www.wiaawi.org/Portals/0/PDF/MenusFemaleTriad.pdf>
- 2) NCAA Resources Related to Disordered Eating <http://www.ncaa.org/sport-science-institute/disordered-eating>

XXXV. SUGGESTED GUIDELINES FOR IDENTIFICATION AND MANAGEMENT OF CONCUSSION & HEAD TRAUMA IN SPORTS

A concussion is a type of traumatic brain injury that interferes with normal function of the brain. All concussions are brain injuries. The WIAA recommends avoiding the use of nicknames like “ding” or “bell ringer” to describe concussion because those terms minimize the seriousness of concussion.

A concussion is most commonly caused by a direct blow to the head, but can also be caused by a blow to the body. Even what appears to be a mild blow to the head or body can result in a concussion. It is important to know that loss of consciousness is not required to have a concussion. In fact, less than 10% of athletes lose consciousness.

A concussion is a complex physiologic event that causes problems with brain functioning (energy use and communication between nerves), but does not cause swelling or bleeding that affects brain structure. Therefore, CT/CAT scan and MRI are usually normal in athletes with concussion. Imaging studies are not indicated for most concussions, but may be needed in some instances to rule out more severe injuries, like brain bleeds.

Research has shown that adolescent concussions take longer than previously thought to heal, with 20% of high school athletes taking over 4 weeks to fully recover. Athletes must be fully recovered before considering medical clearance to return to full participation.

There are unique concerns surrounding concussion in high school sports:

1. Adolescents get concussions more often than collegiate and professional athletes
2. Adolescents take longer than adults to heal from concussion, unlike musculoskeletal injuries
3. Most high schools may not have access to a team physician or an athletic trainer for all of their teams & activities, thus the responsibility for identifying a possible concussion falls on athletes, coaches and parents
4. High school players may try to hide symptoms or be reluctant to admit their symptoms due to fear of removal from play

High school injury surveillance research based on injury rates in practice and games has shown that the following sports have higher risk of concussion: Football, Boys & Girls Soccer, Boys & Girls Ice Hockey, Boys & Girls Lacrosse, Wrestling, Girls Field Hockey, Competitive Cheer, and Boys & Girls Basketball.

Noticeable in this data is that the risk for girls is higher than boys in the same sports; in fact, soccer & basketball carry twice the risk for concussion in girls than boys. It is unclear why girls appear to have a higher risk of concussion.

Most importantly, concussion can happen to anyone in any sport. Concussions also occur away from organized sports in physical education class, on the playground, while skiing or snowboarding, and when involved in a motor vehicle collision.

Everyone involved with high school athletics must be alert for potential injuries on the field and be able to recognize signs and symptoms of concussion. While coaches are not expected to make a diagnosis of concussion, coaches are expected to be aware of possible injuries and understand that their athletes may have a concussion. Any athlete with a suspected concussion should be held out of all activity until medically cleared by a healthcare provider. It is important for athletes and coaches to communicate possible injuries to the athletic trainer, parents, and teachers.

Schools should educate their athletes, coaches and parents in the preseason about the seriousness of concussion and the importance of athletes honestly reporting their symptoms and injuries.

SIGNS AND SYMPTOMS

Signs are what can be seen by others, like clumsiness / stumbling off the field. Symptoms are what the injured player feels, like a headache. Remember, athletes should report their symptoms, but they may not unless they are directly asked about how they feel. Even then, it is important to consider that athletes may not be telling the truth.

These are some SIGNS of concussion (what others can see in an injured athlete):

- Dazed or stunned appearance
- Change in the level of consciousness or awareness
- Confused about assignment
- Forgets plays
- Unsure of score, game, opponent
- Clumsy
- Answers more slowly than usual
- Shows behavior changes
- Loss of consciousness
- Asks repetitive questions or memory concerns

Concussion SYMPTOMS are often categorized into four main areas:

1. Physical – This describes how they feel: headache, nausea, vomiting, dizziness, tired and loss of consciousness (which is uncommon in concussion). Vision and balance problems are also recognized as potential signs and symptoms of a concussion.
2. Thinking – Poor memory and concentration, responds to questions more slowly and asks repetitive questions. Concussion can cause an altered state of awareness and thinking.
3. Emotions – A concussion can make a person more irritable or sad and cause mood swings.
4. Sleep – Concussions frequently cause trouble falling asleep and may wake athletes up overnight, which can make them more fatigued throughout the day.

Injured athletes can exhibit many or just a few of the signs and/or symptoms of concussion. However, if a player exhibits any signs or symptoms of concussion, the responsibility is simple: remove them from participation. An athlete should never return to play on the same day. **"When in doubt sit them out."**

It is important to notify a parent or guardian of any athlete with a suspected concussion. All athletes with a concussion must be evaluated and receive written medical clearance by an appropriate health care provider before returning to practice (including conditioning and weight lifting) or competition.

Some injured athletes may require emergency care & necessitate the activation of the Emergency Medical System (911). If you are uncomfortable with the athlete on the sideline or unable to ensure they are going home to a safe environment, it is reasonable to activate EMS/911. The following are other examples to activate EMS:

1. Loss of consciousness, as this may indicate more severe head injury
2. Concern for cervical spine injury
3. Worsening symptoms
4. Decreasing level of alertness
5. Unusually drowsy
6. Severe or worsening headaches
7. Seizures

8. Vomiting
9. Difficulty breathing

MANAGEMENT

If you **suspect** a player may have a concussion, that athlete should be immediately removed from play. The injured athlete should be kept out of play until they are cleared to return by an appropriate health care provider. If the athlete has a concussion, that athlete should never be allowed to return to activity (conditioning, practice or competition) that day. Athletes with a concussion should never be allowed to return to activity while they still have symptoms.

A player with a concussion must be carefully observed throughout the practice or competition to be sure they are not feeling worse. Even though the athlete is not playing, never send a concussed athlete to the locker room alone, as the athlete might not have the wherewithal to understand and report worsening symptoms. Never allow the injured athlete to drive himself/herself home.

Most concussions are temporary and completely resolve without causing residual or long-term problems. About 20% of high school athletes will take longer than a month to recover. This prolonged recovery is commonly known as Post-Concussion Syndrome (PCS). Common PCS symptoms include headache, difficulty concentrating, poor memory, mood changes and sleep disturbances. This prolonged recovery often leads to academic troubles, family and social difficulties.

Allowing an injured athlete to return too quickly increases the risk for repeat concussion. Repeat head injury while still recovering from a concussion may cause Second Impact Syndrome. This is a rare phenomenon occurring in young athletes that leads to rapid brain swelling, brain damage and potentially death.

Repeat concussions may increase the chance of long-term problems, such as decreased brain function, persistent symptoms and potentially chronic traumatic encephalopathy (a disorder that cause early degeneration of the brain). It is felt that these long-term complications are very rare in high school athletes, and the risk can be minimized greatly by proper reporting and care of every concussion.

Return to Learn

A major concern in high school students is that concussion can negatively affect school performance and grades. Symptoms (headache, nausea, etc.), poor short-term memory, poor concentration and organization may temporarily turn a good student into a problem student. The best way to address this is to decrease the academic workload, and potentially taking time off from school or going partial days (although time missed should nearly always be less than 5 days). Injured athletes should be allowed extra time to complete homework and tests, and they should be given written instructions for homework. New information should be presented slowly and repeated. Injured athletes will need time to catch up and may benefit from tutoring. If an athlete develops worsening symptoms at school, he/she should be allowed to visit the school nurse or take a rest break in a quiet area. The school and coaches should maintain regular contact with the injured athlete's teachers and parents to update progress.

All injured students should be removed from PE class until medically cleared.

Athletes with a concussion must return to full speed academics without accommodations before returning to sports (practice and competition).

Other Treatment Strategies

Relative rest remains an essential component of concussion treatment. It is helpful for parents to decrease stimulation at home by limiting video games, but a reduction in computer time, phone time, and TV/movies may also be helpful. "Cocoon therapy," or avoiding all brain stimulation, has been shown to negatively impact recovery and is no longer a recommended treatment style.

Physical activity may be beneficial for recovery of injured athletes. However, high-level activity (weight lifting, practice level training and conditioning) should still be avoided. Simple physical exertion, like walking or stationary biking, that does not worsen symptoms may be done for short periods of time. Any post-injury exercise plan should be authorized and overseen by an appropriate health care provider.

An athlete's concussion can interfere with work and social events (movies, dances, attending games, etc.). Good hydration and dietary habits and good sleep habits (8-10 hours per night) are important parts of the recovery process. There are no medications or supplements that help speed the recovery process.

Neuropsychological Testing

Neuropsychological testing has become more commonplace in concussion evaluation as a means to provide an objective measure of brain function. Testing is currently done using computerized neuropsychological testing (example: ImPACT, Cognigram) or through a more detailed pen and paper test administered by a neuropsychologist. It is only a tool to help ensure safe return to activity and not as the only piece of the decision making process.

If neuropsychological testing is available, ideally a baseline or pre-injury test is completed prior to the season. This baseline should be done in a quiet environment when the athlete is well rested. It is felt that baseline testing should be repeated every one to two years for the developing adolescent brain. Multi-modal baseline evaluation assessing baseline symptoms, cognitive

functioning, visual tracking, reaction time, and balance are ideal.

If there is no baseline available, the injured athlete's computerized test scores can be compared to age established norms. This requires a provider experienced in the use and interpretation of computerized testing. The WIAA feels that neuropsychological testing can be a very useful tool with regard to concussion management.

RETURN TO PLAY

In order to resume activity, the athlete must be **symptom free** and off any pain control or headache medications that they were not taking prior to the concussion. The athlete should be carrying a full academic load without any significant accommodations for 1-2 days. Finally, the athlete must have written medical clearance from an appropriate health care provider.

The program described below is a guideline for returning concussed athletes when they are symptom free. Athletes with multiple concussions and athletes with prolonged symptoms often require a prolonged or different return to activity program and should be managed by a physician that has experience in treating concussion.

The following program allows for one step per 24 hours. The program allows for a gradual increase in heart rate/physical exertion, coordination, and then allows contact. If symptoms return, the athlete should stop activity and notify their healthcare provider before progressing to the next level.

STAGE ONE: Daily activities that do not increase symptoms (gradual reintroduction of school, work and walking).

STAGE TWO: Light aerobic exercise: slow to medium pace jogging, stationary cycling. No resistance training. This allows for increased heart rate.

STAGE THREE: Sport-specific exercise: moderate to higher intensity running or skating drills, but no activities with risk of head impact. This allows for increased heart rate and agility/movement.

STAGE FOUR: Non-contact training: Higher intensity aerobic fitness, and non-contact/non-collision team training drills (e.g., passing drills). May begin progressive resistance training. This increases coordination and thinking during sport.

STAGE FIVE: Full contact practice. Following medical clearance, participate fully in normal training activities. This restores confidence and allows coaches to assess functional skills.

STAGE SIX: Full clearance / Normal game play.

PREVENTION/RISK REDUCTION

There is nothing that truly prevents concussion. Education and recognition of concussion are the keys in reducing the risk of problems with concussion.

Wisconsin State Concussion Law (Act 172) was passed in 2011. This law mandates distribution of preseason educational information sheets to be signed by coaches, athletes and parents. It also recommends immediate removal of any athlete with a suspected concussion and no same day return to play. Finally, all injured athletes require written medical clearance from an appropriate health care professional. Research has indicated that the state law has helped improve education and awareness of concussion.

Proper equipment fit and use may reduce the risk of concussion.

- Mouthguards have been shown to decrease dental injuries, but have not been shown to reduce risk of concussion.
- Soccer headgear has been shown not to reduce the risk of concussion.
- Helmets are useful in preventing facial injuries and skull fractures; however, helmets have not been reliably shown to decrease concussion rates.
- No third party "add-on" equipment for helmets (external padding or strips applied to the outside of the helmet) have never shown a decrease in concussion risk, and any add-on will void the helmet warranty.

Proper technique for hitting/initiating contact is vital. For example, athletes that lower their head while making a football tackle have a significantly higher risk for concussion and neck injuries. Athletes should never lead with their head or helmet.

Rule changes and proper enforcement of rules have been shown to reduce concussion rates. WIAA limitations in contact football practices have reduced concussion rates since implementation.

All schools should have an Emergency Action Plan for each team and practice / competition area. This plan can be used for any medical emergency from a concussion to a neck injury to anaphylaxis (severe allergic reaction). Ideally, these plans are reviewed annually.

The WIAA encourages every member school to promote concussion education and bring about a positive change in culture by discussing concussion with all teachers, coaches, athletes and parents. We recommend a preseason discussion with athletes and families to set expectations for what will happen if a student has a suspected concussion, including the steps the student

must go through to return to play. Coaches should use in-season concussions as “teachable moments” to remind teammates about the importance of reporting their injuries and supporting their injured teammate through the recovery process.

Further reading and additional materials can be obtained at no charge through these resources:

www.nfhslearn.com (Concussion in Sports Course)

www.cdc.gov (Heads Up Tool Kit)

www.healthykidslearnmore.com (Concussion Return to Learn Course)

XXXVI. SECOND IMPACT SYNDROME

Second Impact Syndrome is a rare condition that may occur in young athletes with concussion that continue to play despite symptoms and sustain a second head injury. This results in rapid brain swelling and brainstem herniation leading to brain damage or death (50% of cases).

Sports medicine and emergency response personnel that cover sporting events must understand the symptoms of this syndrome and be prepared to initiate appropriate emergency treatment, including CPR. Any athlete with a suspected concussion should be immediately removed from play and not allowed to return without medical clearance. No concussed athlete should ever return on the same day or return while still symptomatic.

XXXVII. REDUCING BRAIN & SPINAL INJURIES IN FOOTBALL

Brain and spinal injuries in football have dramatically decreased since the rules were changed in 1976 to prohibit butt blocking, face tackling, spearing, and any other technique in which the helmet and facemask purposely received the brunt of the initial impact. There are still a small number of football players (and fewer in other sports) that become paralyzed, but the lesson to keep the head and face out of blocking and tackling remains.

The most common brain injury in sport is a concussion. All athletes with suspected concussion should be immediately removed from play to undergo a medical evaluation. An athlete sustaining a concussion should not be allowed to return to play (game or practice) that day. Athletes should be symptom free and back to full academics without limitation before considering returning to sport. All athletes with a concussion need written medical clearance from an appropriate health care provider. Returning to play too soon may be associated with poor outcomes (second impact syndrome, prolonged recovery, etc.) for the injured athlete.

Several suggestions for reducing brain and spinal injuries:

1. Preseason preparticipation evaluation for all participants.
 - a. Identify athletes with a history of previous head injury, concussion, and spinal injury. If the physician has questions regarding the athlete’s readiness to participate, the athlete should not be allowed to play.
2. If it is not possible to have sports medicine personnel (athletic trainer or physician) at all games or practices, then emergency measures must be provided. The entire coaching staff should be organized with an emergency action plan, and each person should know what they should do in case of a brain or spinal injury during a game and practice. Prevention of further injury is the main objective.
3. The WIAA Medical Advisory Committee recommends that, ideally, a health care provider should be present at games and a Licensed Athletic Trainer be present at all games and practices. If it is not possible for a physician and/or trainer to be present at all games and practice sessions, then emergency measure must be provided, and the Emergency Action Plan should be well rehearsed.
 - a. The emergency action plan should be reviewed and rehearsed at least on a yearly basis.
 - b. **A cell phone should be readily available at all times.**
4. Athletes should have appropriate conditioning and training, including exercises to strengthen then neck. Stronger neck muscles may decrease injury risk.
5. Coaches should teach appropriate contact techniques and demonstrate proper execution of the fundamental football skills, particularly blocking and tackling.
 - a. Keep the head out of football - coaches should discourage leading with the head / helmet.
6. Special care should be taken to ensure that all players have properly fitted equipment that is properly worn for every practice and game.
7. Coaches and officials strictly enforce the rules of the game at every practice and competition to reduce injury risk.
8. Coaches should educate athletes and families about concussion and the importance of immediate reporting of any suspected injury.

- a. Coaches should create a culture that encourages injury reporting and is not punitive or demeaning to the injured athlete.
9. Coaches should not be hired if they do not have the training or experience needed to teach the skills of the sport, including proper training and development of athletes for competition.

Based on original article by Mueller, FO and Cantu, RC.

XXXVIII. FOOTBALL HELMET INSPECTION LIST

1. Weekly Football Helmet Inspection Checklist

Coaches, Trainer or Faculty Equipment Manager (Compare this checklist to the manufacturer's guidelines)

Players don helmet and buckle chinstrap

Trained Professional(s) Check:

- a. Chinstrap cup centered on the chin, anchoring straps flat and taut, passing under the facemask. Chinstrap buckles with teeth facing up. Straps not loose, stretched or broken. Replace as needed. Snaps in good repair.
- b. Bottom of forehead padding – one inch above the eyebrow. Adjust padding or air in the bladder.
- c. Helmet ear openings aligned approximately with ear canals. Adjust padding or air in the bladder.
- d. Facemask three widths from tip of nose. Check facemask for chipped paint, loose attachments, movement, denting or flattening. Repair attachments, replace dented or chipped masks as needed.
- e. Rear padding covers the bony prominence of the skull. Adjust padding or air in bladder.
- f. Front to back torsion – forehead skin should wrinkle. Helmet should NOT slide forward and down on the nose or backwards on to the neck. Adjust chinstrap, padding or air in bladder.
- g. Side torsion – grasp face mask with both hands and attempt to rotate sideways. Forehead and skin near jaw pads should wrinkle. Player's nose should remain between the anchoring screws that hold the facemask in place on the forehead. Adjust padding, chinstrap or air in bladder.
- h. Examine shell for cracks; examine mounting rivets, screws, velcro and snaps for breakage, distortion or looseness. Replace as needed.
- i. Replace damaged or worn forehead, rear skull and jaw pads.

2. Daily Football Helmet Inspection Checklist

Players

Check Your Helmet Before Each Usage As Follows:

- a. Check foam padding for proper placement and any deterioration.
- b. Check for cracks in vinyl/rubber covering of air, foam, liquid padded helmets.
- c. Check that protective system or foam padding has not been altered or removed.
- d. Check for proper inflation of air helmets. Follow manufacturer guidelines. Air pressure adjustments are to be made by coaches, trainer or faculty equipment manager.
- e. Check all rivets, screws, Velcro and snaps to assure they are properly fastened and holding protective parts.

IF ANY OF THE ABOVE INSPECTIONS INDICATE NEED FOR REPAIR AND/OR REPLACEMENT, NOTIFY A COACH OR FACULTY EQUIPMENT MANAGER.

AS A PLAYER, THIS IS YOUR RESPONSIBILITY!!!!

NEVER WEAR A DAMAGED HELMET

Guidelines of the National Operating Committee on Safety of Athletic Equipment and American Equipment Managers Association

CAUTION: Only paints, waxes, decals, or cleaning agents approved by the manufacturer are to be used on any helmet. It is possible to get a severe or delayed reaction by using unauthorized materials, which could permanently damage the helmet shell and affect its safety performance.

