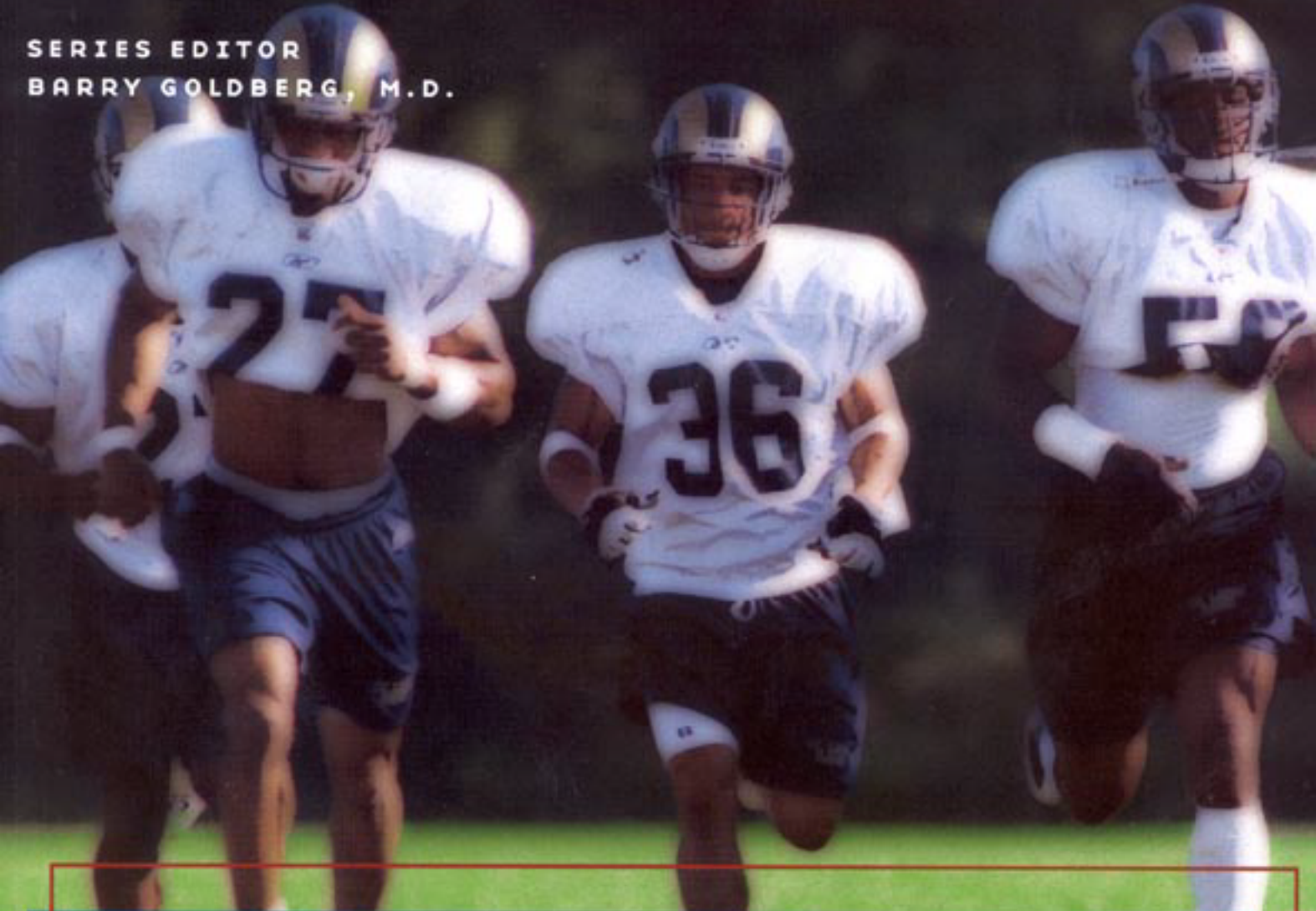


# PLAY SAFE!

THE NFL YOUTH FOOTBALL HEALTH AND SAFETY SERIES

SERIES EDITOR  
BARRY GOLDBERG, M.D.



## HEALTH CONCERNS FOR YOUNG ATHLETES



BOOK **4** FOUR

# HEALTH CONCERNS FOR YOUNG ATHLETES

BOOK **4** FOUR

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## PLAY SAFE SERIES PRODUCED IN PARTNERSHIP WITH:



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## FROM THE SERIES EDITOR

Football is America's passion, so it is not surprising that football is the number-one high school participatory sport among boys. And increasingly, girls are enjoying the game.

For youth, high school, and college players, it is a game loved for its challenge and competition. Parents watch their children play, and coaches help teach the game. But no matter the level of involvement, all agree that football must be played safely.

The NFL and the NFL Players Association have developed this Youth Football Health and Safety series to promote the awareness of health issues related to sports participation and to maximize the safety of young athletes. *Play Safe!* is a series of four books containing relevant and practical articles, along with instructional posters distributed to school programs and youth football organizations. It is designed to help parents and coaches maximize the benefits of football for young competitors while minimizing the risks.

Four subject areas are discussed in this series:

*First Aid*

*Communication and Awareness*

*Strength and Conditioning*

*Health Concerns For Young Athletes*

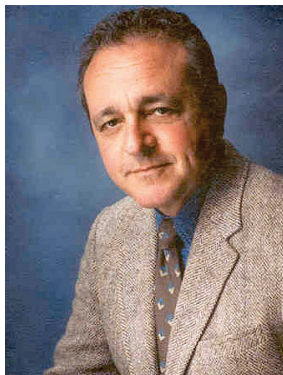
Respectively, the information for this series is provided by highly respected experts from:

- The American Red Cross,
- The Institute for the Study of Youth Sports at Michigan State University
- The National Athletic Trainers' Association, and
- The American College of Sports Medicine.

In developing this program, the National Football League and NFL Players Association are proud to have enlisted the expertise of these four leading organizations in the field of health and medicine. For the first time, these nationally renowned organizations have pooled their knowledge and informational resources to create an aggressive and exciting series to help educate young football players, coaches, and parents on the subjects of health and safety in football. The information will allow coaches and parents to advise players how to *Play Safe!* as well as optimize their enjoyment and performance.

Topics include important areas such as: immediate recognition of injury and response to emergencies, psychological management, instructional techniques, training and conditioning techniques, and pregame meal preparation and proper nutrition.

All of us involved with this worthwhile project appreciate the enthusiastic support and love of the game expressed by its fans. We are committed to working with our partners to ensure that young football players continue to *Play Safe!*



**BARRY GOLDBERG, M.D.,  
SERIES EDITOR**

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# FROM THE AMERICAN COLLEGE OF SPORTS MEDICINE

Football participation can be a rewarding and character-building experience in a young person's life. It provides opportunities for physical activity, learning new skills, understanding the fundamentals of the game, participating on a team, and working toward a common goal. Likewise, there are many rewards in nurturing young players. In short, the game is meant to be fun for coaches and athletes alike.

In addition to the many teaching and leadership responsibilities entrusted to a youth football coach, the health and safety of every player should be a priority. It is important to understand the risks of the game, how to prevent injuries, and appropriate safety responses to a variety of circumstances that can threaten the health and safety of players. Youth football coaches must be keenly aware of special issues related to growth, development, and maturation of young athletes, which can have a long-lasting impact on their well being.

The four sections in this book provide a fundamental overview of 29 critical areas of health and medicine in youth football. The key topic areas include information on nutrition, substance abuse, injuries, and specific critical player health and safety issues all youth football coaches need to know. The information in these chapters is meant to be a resource to help educate coaches on appropriate prevention strategies, action steps, and emergency reactions. It is not intended that these resources replace the skills and guidance of qualified medical personnel. It is highly recommended that the coach of a youth football team seek ongoing volunteer support from a qualified physician with expertise in sports medicine.

The American College of Sports Medicine (ACSM), founded in 1954 and located in Indianapolis, is an association of more than 20,000 international, national, and regional sports medicine professionals. Its mission is to promote and integrate scientific research, education, and practical applications of sports medicine and exercise science to maintain and enhance physical performance, fitness, health, and quality of life. ACSM members are committed to the diagnosis, treatment, and prevention of sports-related injuries and the advancement of the science of exercise.

## **ACKNOWLEDGMENTS:**

Several dedicated individuals have helped to bring this project to completion:

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# NUTRITION FOR SPORT

# NUTRITION FOR OPTIMAL PERFORMANCE

A PROPERLY BALANCED DIET OF FATS, CARBOHYDRATES, AND PROTEIN IS IMPORTANT FOR YOUNG FOOTBALL PLAYERS TO PERFORM AT OPTIMUM LEVELS.



## WHAT COACHES SHOULD KNOW

- **YOUNG ATHLETES SHOULD CONSUME A DIET CONTAINING ABOUT 60-70 PERCENT CARBOHYDRATE AND 15 PERCENT PROTEIN, WHICH EQUALS ABOUT 1-2 GRAMS OF PROTEIN PER KILOGRAM OF BODY WEIGHT.**
- **ATHLETES ALSO NEED TO CONSUME DAIRY PRODUCTS FOR STRONG BONES AS WELL AS A LIMITED AMOUNT OF FAT, WHICH MAY SERVE AS AN ADDITIONAL ENERGY SOURCE.**
- **TO BE SURE ATHLETES INGEST SUFFICIENT MICRONUTRIENTS, COACHES SHOULD ENCOURAGE A WIDELY VARIED DIET OF COMPLEX CARBOHYDRATES, FRUITS AND VEGETABLES, AND LEAN MEATS OR BEANS.**
- **WHEN IN DOUBT REGARDING A HEALTHFUL DIET, REFER TO THE USDA FOOD PYRAMID FOR GUIDELINES.**

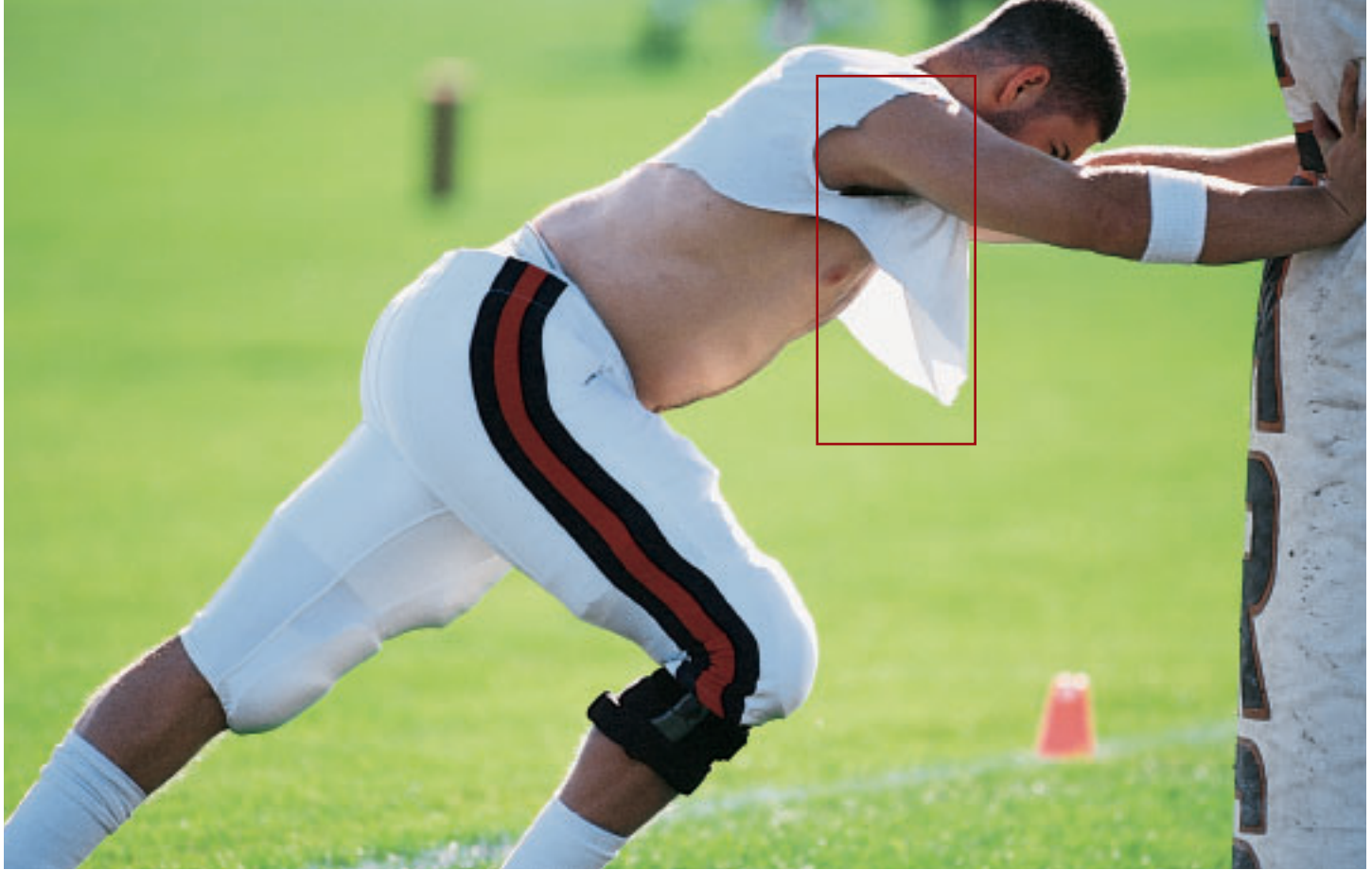
Muscle requires fuel, and the primary fuel for muscle involved in moderate to high-intensity exercise is derived from carbohydrates. When carbohydrates are ingested, they are broken down into glucose and then converted to glycogen, which is, in part, stored in muscle. During exercise, glycogen is converted back into glucose for use as fuel.

During intense training, young football players should be encouraged to maintain a carbohydrate intake of as much as 70 percent of their diet, approximately 10 grams of carbohydrate per kilogram of body weight (or 4-5 grams per pound). In practical terms, one slice of bread equates to 12 grams of carbohydrates; one cup of cooked pasta, 24 grams; one cup of dry cereal, 30 grams; and one granola bar, 22 grams. Fruits are good sources of carbohydrates, with one medium banana yielding about 27 grams; 1 medium apple, 22 grams; and 1 cup of canned fruit cocktail in heavy syrup, 44 grams.

Fat is also an important energy source for ath-

letes, but it should be consumed in limited amounts, not exceeding more than about 20 percent of total energy intake. Good sources of fat include olive, peanut, and canola oils, but most young athletes will consume adequate amounts of fat in snacks and fast-food meals.

Protein is another essential dietary component for optimal health and athletic performance. Although it is known that athletes build muscle through exercise and not extra protein, growing athletes do need a higher intake than adult athletes or sedentary individuals. Advise players to consume approximately 1-2 grams of protein per day per kilogram of body weight. Generally, one ounce of meat yields about 6-7 grams of protein. However, it may be helpful to use familiar references such as a quarter-pound burger, which is 4 ounces of meat containing about 24 grams of protein, or a 6-ounce can of tuna, which contains about 28 grams. By following these guidelines, protein should account for approximately 15 percent of a player's diet, an



amount easily attained in a balanced diet with no need for supplementation.

Athletes also need milk and other dairy products for the growth and maintenance of healthy bones. In addition, dairy products such as low-fat milk, cheese, pudding, yogurt, and frozen dairy deserts are considered both carbohydrates and proteins, contributing to the recommended portions above.

Although vitamins and minerals are needed for the chemical reactions that produce energy, it is unlikely that supplemental vitamins or minerals will enhance performance. A well-varied diet that is high in fruits, vegetables, whole grains, and lean meats will include sufficient quantities of all micronutrients.

Coaches are in a unique position to influence athletes and may want to guide players toward specific food choices such as bagels or cereal with milk and/or juice for breakfast and pasta, breads,

or rice with lean meats or beans for lunch and dinner. It may also be helpful to refer players to the USDA food guide pyramid for more specific information. The food guide pyramid provides recommendations for daily food choices. It highlights and reinforces the need for the right variety of foods necessary to help promote health, including a daily emphasis on low-fat foods and fruits and vegetables. Finally, adequate hydration should always be encouraged for young athletes before, during, and after physical activity.

A healthy diet plays an enormous role in successful athletic performance. Coaches should encourage young football players to consume a widely varied diet consisting of complex carbohydrates, vegetables, dairy products, and protein with a sampling of fats and sugars. Given such a diet, protein, vitamin, and mineral supplementation are not necessary for good health and optimal performance.

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

*ACSM'S Handbook for the Team Physician, Williams & Wilkins, 1996. pp. 442-451.*

*ACSM brochure: Nutrition and Sports Performance <http://www.acsm.org>.*

*ACSM Current Comment: Vitamin and Mineral Supplements <http://www.acsm.org>.*

*Clark N. Nancy Clark's Sports Nutrition Guidebook. Human Kinetics: 1996, 2nd Edition.*

*Coleman E. The Ultimate Sports Nutrition Handbook. Palo Alto: Bull Publishing Company, 1996.*

*United States Department of Agriculture (USDA) food guide pyramid: <http://www.nal.usda.gov:8001/py/pmap.htm>.*



# VITAMIN AND MINERAL SUPPLEMENTS

**SURVEYS OF HIGH SCHOOL ATHLETES INDICATE A GREATER-THAN-NORMAL USE OF VITAMIN AND MINERAL SUPPLEMENTS, BUT MOST SUPPLEMENTED MICRONUTRIENTS CAN BE PROVIDED WITH A BALANCED DIET.**

## WHAT COACHES SHOULD KNOW



- **VITAMINS AND MINERALS ACT AS REGULATORS OF METABOLISM.**
- **PROLONGED AND STRENUOUS EXERCISE COUPLED WITH A LOW-ENERGY DIET MAY CAUSE A MARGINAL VITAMIN AND MINERAL DEFICIENCY.**
- **ATHLETES CAN REDUCE THEIR RISK OF DEVELOPING DEFICIENCIES BY CONSUMING A BALANCED AND VARIED DIET WITH ADEQUATE CALORIES TO SUPPORT GROWTH AND ACTIVITY LEVELS.**
- **SUPPLEMENTATION IS NOT NECESSARY TO MAINTAIN ADEQUATE LEVELS OF VITAMINS AND MINERALS AND CAN BE DANGEROUS IF LARGE DOSES OF CERTAIN SUPPLEMENTS ARE TAKEN (E.G. VITAMINS C, A, AND E; AND MINERALS IRON AND ZINC).**
- **NO SCIENTIFIC EVIDENCE SUPPORTS THE BELIEF THAT VITAMIN AND MINERAL SUPPLEMENTATION ENHANCES PERFORMANCE.**
- **COACHES SHOULD PROVIDE GUIDELINES AND SERVE AS ROLE MODELS TO HELP PLAYERS MAINTAIN A BALANCED AND VARIED DIET.**

Vitamins are naturally occurring organic compounds that act as regulators of protein, carbohydrate, and fat metabolism in the body. Some vitamins, including C, E, and beta carotene, are also taken for their antioxidant properties, which are touted to include improved immune function and maintenance of skeletal muscle. Minerals are inorganic elements that act as helpers for the enzymes involved in creating energy from food.

Physical activity, especially of a prolonged and strenuous nature, may increase the body's need for certain vitamins and minerals. However, individuals who consume a low-energy diet for long periods of time risk vitamin and mineral imbalance. Even these individuals tend to exhibit only a marginal deficiency.

Many athletes choose to supplement their dietary intake with over-the-counter vitamin and mineral supplements. However, there is no scientific evidence to support the use of vitamin and mineral supplements to improve athletic performance. There may be some benefit to calcium and iron supplementation in female athletes who may not consume adequate calories or who may not have variety in their diet.

Moreover, large doses of certain vitamins and minerals can cause adverse effects. Excess vitamin C has been shown to cause kidney stones, decreased blood clotting, and gastrointestinal disturbances; excess zinc may induce a secondary copper deficiency and decrease HDL, or the good cholesterol, in the blood stream; and the fat-soluble vitamins A



PETER NEWCOMB

and E are dangerous at high doses.

In order to meet their dietary needs, young football players should consume a balanced diet with a variety of foods, including lean meats, fish, beans, skim milk, and yogurt for minerals and B vitamins; and carrots, skim milk, peanuts, orange juice, green vegetables, and fruits for vitamins A, C, and E. For

more information on nutrition for young athletes, see *Strength and Conditioning*, the third book in the *Play Safe Series*.

Although physical activity may increase the need for some vitamins and minerals, the increased requirement can usually be met by consuming a balanced diet that includes a wide variety of foods.

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

ACSM Current Comment: *Vitamin and Mineral Supplements* <http://www.acsm.org>.  
Coleman, E. *Eating for Endurance*. Palo Alto, CA: Bull Publishing Company, 1988.

# VEGETARIAN AND FAD DIETS

SOME YOUNG ATHLETES MAY OPT FOR A DIET DIFFERENT FROM THE MAJORITY OF THE TEAM. A YOUTH COACH SHOULD BE PREPARED TO DEAL WITH SUCH SITUATIONS.



## WHAT COACHES SHOULD KNOW

- CERTAIN YOUNG ATHLETES MAY CHOOSE TO CONSUME A DIFFERENT OR SPECIAL DIET THAT MAY POSE HEALTH RISKS IF MINIMUM NUTRITIONAL REQUIREMENTS ARE NOT MET.
- VEGETARIAN ATHLETES MUST BE SURE TO CONSUME AN ADEQUATE AMOUNT OF PROTEIN AS WELL AS FAT, VITAMINS, AND MINERALS.
- YOUNG ATHLETES SHOULD CONSUME A DIET BASED ON ABOUT 60 TO 70 PERCENT CARBOHYDRATES AND 15 PERCENT PROTEIN.
- A GOOD RULE OF THUMB FOR GROWING ATHLETES IS TO CONSUME ABOUT 1-2 GRAMS OF PROTEIN PER KILOGRAM OF BODY WEIGHT PER DAY.

Some athletes may choose or require special diets for health, personal, or religious reasons. The most common special diets include vegetarian, high-carbohydrate, or high-protein diets. It is important that they provide a nutritional balance.

### VEGETARIAN DIET

Forms of vegetarianism include: (1) modified vegetarian, who eats fruits, vegetables, grains, milk products, eggs, and occasionally seafood or poultry, but no red meat; (2) lacto-ovo vegetarian, who excludes seafood and poultry but will consume eggs and milk products; (3) lacto-vegetarian, who consumes a similar diet but also excludes eggs; and (4) vegan, who eats only plant-based foods such as fruits, vegetables, and grains.

When discussing nutrition with vegetarian athletes, coaches can refer to professional vegetarian athletes who follow strict guidelines to ensure proper nutrition for health and athletic competition. The primary concern of vegetarian athletes is to consume an adequate amount and variety of

protein. Eating a wide variety of protein-rich foods such as beans, grains, seeds or nuts, soy, and tofu will help supply the amino acids needed to build and maintain muscle mass. Peanut butter, protein shakes, and tofu dishes can accommodate protein needs while providing a small amount of fat that may also be missing from the athlete's diet. In addition, vegetarians must be careful to consume enough calcium, iron, zinc, and B-complex vitamins.

### HIGH-CARBOHYDRATE OR HIGH-PROTEIN

Although many nutritionists and professional athletes tout the benefits of high-carbohydrate or high-protein diets, young athletes should generally consume a diet that is about 60 to 70 percent carbohydrate and about 15 percent protein, with a wide variety of vegetables and fruits and a sampling of fats. It is important to understand the potential benefits and limitations of high-carbohydrate and high-protein diets.

Many young athletes confuse foods high in milk



JONATHAN DANIEL

products and fat for carbohydrates, when in fact they are high in fat with few carbohydrates. To avoid confusion, create a list of healthy meals and snacks for athletes and their parents.

High-protein diets have the potential of supplying more building blocks for muscle growth, but consuming excessive amounts of meat and protein powders can limit the body's ability to absorb certain amino acids. Furthermore, athletes build muscle through exercise, not extra protein. Protein-heavy meals can also be difficult to absorb. A simple rule is

to advise players to consume approximately 1-2 grams of protein per day per pound of body weight.

Coaches should also be aware and considerate of other special diets, such as those based on cultural and religious requirements.

Coaches should be aware of the potential limitations of special diets that may be consumed by young players. No matter the type of diet followed, athletes should be encouraged to consume a variety of foods rich in carbohydrates and low to moderate in protein content.

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

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- Manore, M.M., & Thompson J.L. Sport Nutrition for Health and Performance. Human Kinetics Publishers, Champaign, IL, 2000.*

# HEAT AND HYDRATION

HEAT ILLNESS IS CAUSED BY DOING TOO MUCH WORK IN HOT, HUMID CONDITIONS. IT IS SOMETIMES ACCOMPANIED BY DEHYDRATION. YOUTH COACHES SHOULD KNOW HOW TO PREVENT IT—AND HOW TO RECOGNIZE WARNING SIGNS WHEN IT OCCURS.



## WHAT COACHES SHOULD KNOW

- IN ORDER FOR PLAYERS TO BE WELL HYDRATED, THEY SHOULD DRINK FLUIDS BEFORE, DURING, AND AFTER ACTIVITY.
- COOL FLUIDS CONTAINING CARBOHYDRATES AND/OR ELECTROLYTES MAY PROVIDE ADDITIONAL BENEFIT.
- IN HOT SEASONS, ALLOW FOR ACCLIMATIZATION BY GRADUALLY BUILDING EXERCISE AND PRACTICE INTENSITY AS WELL AS THE AMOUNT OF EQUIPMENT WORN (E.G. WITHOUT PADS THE FIRST THREE DAYS) THROUGHOUT A PERIOD OF 10-14 DAYS.
- WHEN EXERCISING IN THE SUN OR HEAT, PLAYERS SHOULD WEAR LIGHT-COLORED CLOTHING MADE OF FIBERS THAT ABSORB SWEAT.
- IN EXTREMELY HOT ENVIRONMENTS, PROVIDE MULTIPLE WAYS TO COOL DOWN ATHLETES, INCLUDING ICE-DOWN TUBS, SHADED AREAS, FANS, AND MIST COOLERS.
- CHILDREN SWEAT LESS THAN ADULTS AND HAVE LOWER HEAT TOLERANCE.
- WARNING SIGNS OF HEAT EXHAUSTION INCLUDE HEADACHE, DIZZINESS, CHILLS, AND EVEN FAINTING.
- PLAYERS SUSPECTED OF HEAT EXHAUSTION SHOULD BE REHYDRATED AND ALLOWED TO REST IN A COOL, SHADED AREA AND, IF POSSIBLE, EXAMINED BY A HEALTH-CARE PROFESSIONAL. IF THE PLAYER DOES NOT RESPOND TO FIRST-AID MEASURES, GET THE PLAYER TO A DOCTOR.
- WARNING SIGNS OF HEAT STROKE INCLUDE DISORIENTATION, HOT AND DRY SKIN, HIGH BODY TEMPERATURE, NAUSEA, AND SEIZURE.
- WHEN IN DOUBT ABOUT HYDRATION OR POSSIBLE HEAT ILLNESS, HOLD THE PLAYER OUT OF PRACTICE OR PLAY. AN ATHLETE WHO SUFFERS FROM SUSPECTED HEAT ILLNESS SHOULD NOT ENGAGE IN PRACTICE OR COMPETITION FOR THE REMAINDER OF THE DAY AND UNTIL THE ATHLETE IS FULLY HYDRATED.

The first step in avoiding heat illness is adjusting practice or game length and intensity to the environmental conditions. It is equally important to maintain adequate hydration before, during, and after physical activity. Temperature and humidity combine to create conditions that can produce heat illness and dehydration. For example, an air temperature of 90 degrees Fahrenheit combined with a relative humidity of only 30 percent can result in heat illness with prolonged physical activity. Temperature and humidity charts should be used (available on the Internet) to modify activity in hot conditions to protect the player. As a general rule, an air temperature of 95 degrees Fahrenheit is high risk regardless of the humidity. When the air temperature is 85 degrees, high risk is associated when the humidity reaches 60 percent. At 75 degrees, high risk is associated with 90 percent humidity.

#### **HYDRATION GUIDELINES**

Ideally, a player should be fully hydrated before beginning practice or competition. Generally, 7 to 9 cups, or 56 to 72 ounces, of fluid are required for children and adolescents every 24 hours to meet the body's daily needs. However, an additional 12-16 ounces (1 1/2 to 2 cups) should be consumed approximately two hours prior to activity. Fluids lost through sweat and breathing should be replaced by fluid consumption. Youth football players will require 3 to 4 ounces every 15 to 20 minutes during activity for players weighing less than 100 pounds; 4 to 5 ounces every 15 to 20 minutes for heavier players. Fluids should be made available between quarters and during timeouts. Following bouts of physical activity, players should drink at least 12-16 ounces of fluid per pound of body weight lost during the activity.

Thirst is not a good indicator of the need to hydrate. It takes up to 16 ounces of fluid to replace each pound of body weight lost during activity. It is a good idea, particularly in hot environments, to weigh players each day to help determine adequate fluid replacement needs.

Flavored, cold, lightly salted, and/or sweetened commercial drinks may improve voluntary fluid replacement by players, especially the younger athletes. Drinks sweetened with a carbohydrate such as glucose or sucrose (sugar) may help a player maintain energy during activities that last more than one hour. In addition, fluids containing the electrolytes sodium, potassium, and chloride can promote fluid retention.

Salt tablets are not required, but players should be encouraged to salt their food at meal times.

In hot seasons, allow for acclimatization by building exercise intensity and hydration throughout a period of about 10 to 14 days. When exercising in the sun or heat, players should wear light-colored clothing made of fibers that absorb sweat. In addition, when coaching young players, it is important to remember that prepubescent children sweat less than adults and have a much lower heat tolerance. Frequent breaks (10-15 minutes) per hour in cool or shaded areas with helmets removed, sufficient time to drink water, and removal and replacement of sweat-saturated uniforms and clothing are helpful strategies for a coach to minimize the risk of heat illness among players. Reducing the intensity and length of practices is strongly recommended on hot days.

#### **WARNING SIGNS**

The acute warning signs of exertional heat stroke, exercise heat exhaustion, and dehydration include nausea, headache, weakness, fainting, poor concentration, flushed skin, light headedness, loss of muscle coordination, fatigue, nausea, and vomiting. Prolonged dehydration can lead to loss of appetite, production of dark yellow urine, and muscle cramps.

Certain types of players may be at a higher risk for heat-related illness and should be monitored closely. These types of players include those with a prior history of heat illness, overweight or obese players, or those with a medical history of gastrointestinal, diabetic, kidney, or heart problems. These types of players require special attention by coaches and quick action if any symptom of heat illness is noticed.

Players suffering from heat exhaustion often show heat-illness symptoms. These players should be removed from activity, rehydrated in a shaded area, and monitored closely for worsening of symptoms. A player who may be experiencing heat-related illness should not be returned to play for at least the remainder of the day and should be fully rehydrated prior to return. If the player does not improve or begins to show any signs of more serious illness (including disorientation, hot and dry skin, high body temperature, nausea, and seizures), emergency medical personnel should be contacted immediately. Every attempt should be made to reduce the player's body temperature immediately using whole body cooling techniques, such as immersion in cool water or the application of wet towels with fanning of the body.

# PREGAME MEALS

**YOUTH COACHES SHOULD BE AWARE OF THE FACTS AND GUIDELINES REGARDING PREGAME MEALS FOR PLAYERS.**



## WHAT COACHES SHOULD KNOW

- **ON THE NIGHT PRECEDING COMPETITION, PLAYERS SHOULD CONSUME A FULL MEAL, WITH MORE EMPHASIS ON CARBOHYDRATES.**
- **TWO TO FOUR HOURS BEFORE COMPETITION, PLAYERS SHOULD EAT A LIGHT MEAL CONSISTING PRIMARILY OF CARBOHYDRATES.**
- **ALL PREGAME MEALS SHOULD BE FAMILIAR TO THE ATHLETE AND EASILY DIGESTED.**
- **SUGARY, FATTY, OR HEAVY FOODS ARE NOT ADVISED PRIOR TO COMPETITION.**
- **FLUIDS ARE ONE OF THE MOST IMPORTANT COMPONENTS OF PREGAME MEALS; ADEQUATE HYDRATION IS ESSENTIAL TO GOOD HEALTH AND PERFORMANCE.**
- **TO HELP REFUEL MUSCLES AFTER AN INTENSE PRACTICE OR GAME, PLAYERS SHOULD BE ENCOURAGED TO EAT CARBOHYDRATE-RICH FOODS (SUCH AS PASTA AND VEGETABLES) WITHIN THE FIRST TWO HOURS AFTER THE EVENT.**

Athletes often were advised in the past to consume large amounts of carbohydrates the night before a game and to forgo eating prior to competition. It is important to replace these half-truths with practical guidance.

A pregame meal should give nourishment that provides energy for the muscles, reduces distracting feelings of hunger, and prevents hypoglycemia, or low blood sugar, symptoms of which include fatigue, lightheadedness, and blurred vision. The foods consumed should be familiar to the athlete and should take into account the potentially high stress level experienced prior to competition. In simple words, they should eat what their family normally cooks.

Ingested carbohydrates are stored in the muscle as glycogen, which later becomes a primary fuel for exercise. Therefore, young athletes should maintain a diet rich in carbohydrates such as rice, pasta, potatoes, breads, and cereals. A wide variety of vegetables and fruits should also be consumed in addition to a moderate amount of protein and a sampling of fats and sugars.

The evening before a game, a player's meal should consist of about 60 to 70 percent carbohydrates and 10 to 15 percent proteins. Spaghetti with tomato sauce, or lean meat with rice or potatoes and vegetables, are good choices. Players also should drink plenty of fluids, including juices and water.

On game day, athletes should refrain from eating heavy meals close to game time. However, two to four hours before competition, light meals consisting primarily of carbohydrates are ideal. It takes about three to four hours for a heavy meal to be digested, two to three hours for a lighter meal, and less than an hour for most light snacks.

An ideal pregame meal: pasta with meat or tomato sauce, cooked vegetables or a salad, bread, noncaffeinated beverage, and cookies or fruit salad for dessert. Another example: baked, grilled, or broiled chicken; mashed or baked potatoes; cooked green beans; rolls; noncaffeinated beverage; cake, cookies, or fruit salad for dessert. If an athlete is hungry close to game time, try sports drinks or sports bars that are high in carbohydrates.

It is not advisable to consume high-fat or sugar-laden foods (pizza, hamburgers, and soda for example) prior to competition. These foods may provide a temporary energy burst followed by a drop in blood sugar that leads to fatigue. In addition, heavy or hard-to-digest foods (meats, nuts, beans) may cause gastrointestinal distress during a game.

Players should be advised to drink plenty of fluids before, during, and after practice and competition. Sports drinks containing carbohydrates can provide additional energy.

Finally, muscle is more receptive to refueling for the first two hours after athletic activity. Encourage players to eat healthful, carbohydrate-rich foods such as pasta, to replenish muscle glycogen stores, along with drinking plenty of fluids. Regular consumption of carbohydrates (e.g. fruit, fruit yogurt, bagels, dry cereal) will facilitate recovery from practice.

Coaches should take an active role in educating young athletes about sound nutritional principles. They should encourage athletes to consume light pregame meals that are rich in carbohydrates, moderate in protein, and low in sugars and fats. Pasta, vegetables, and salad are good examples. Hydration is equally important to athletic performance and should become a requirement for participation.



## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

*ACSM'S Handbook for the Team Physician, Williams & Wilkins, 1996. pp. 442-451.*

*ACSM brochure: Eating Smart, Even When You're Pressed for Time 1-317-637-9200.*

*ACSM brochure: Nutrition and Sports Performance, 1-317-637-9200.*

*ACSM Current Comment: Vitamin and Mineral Supplements <http://www.acsm.org/comments.htm>.*



# WEIGHT LOSS IN YOUNG ATHLETES

ALTHOUGH WEIGHT LOSS IS NOT A PRIMARY CONCERN OF MOST FOOTBALL PLAYERS, SOME YOUNG ATHLETES MAY WISH TO LOSE WEIGHT, OR FAT MASS, FOR ATHLETIC OR AESTHETIC REASONS. OTHERS MAY BE INTENTIONALLY TRYING TO MAKE WEIGHT FOR COMPETITION AND MEET DIVISIONAL WEIGHT REQUIREMENTS. YOUTH COACHES NEED TO KNOW THE DO'S AND DON'TS OF WEIGHT LOSS.



## WHAT COACHES SHOULD KNOW

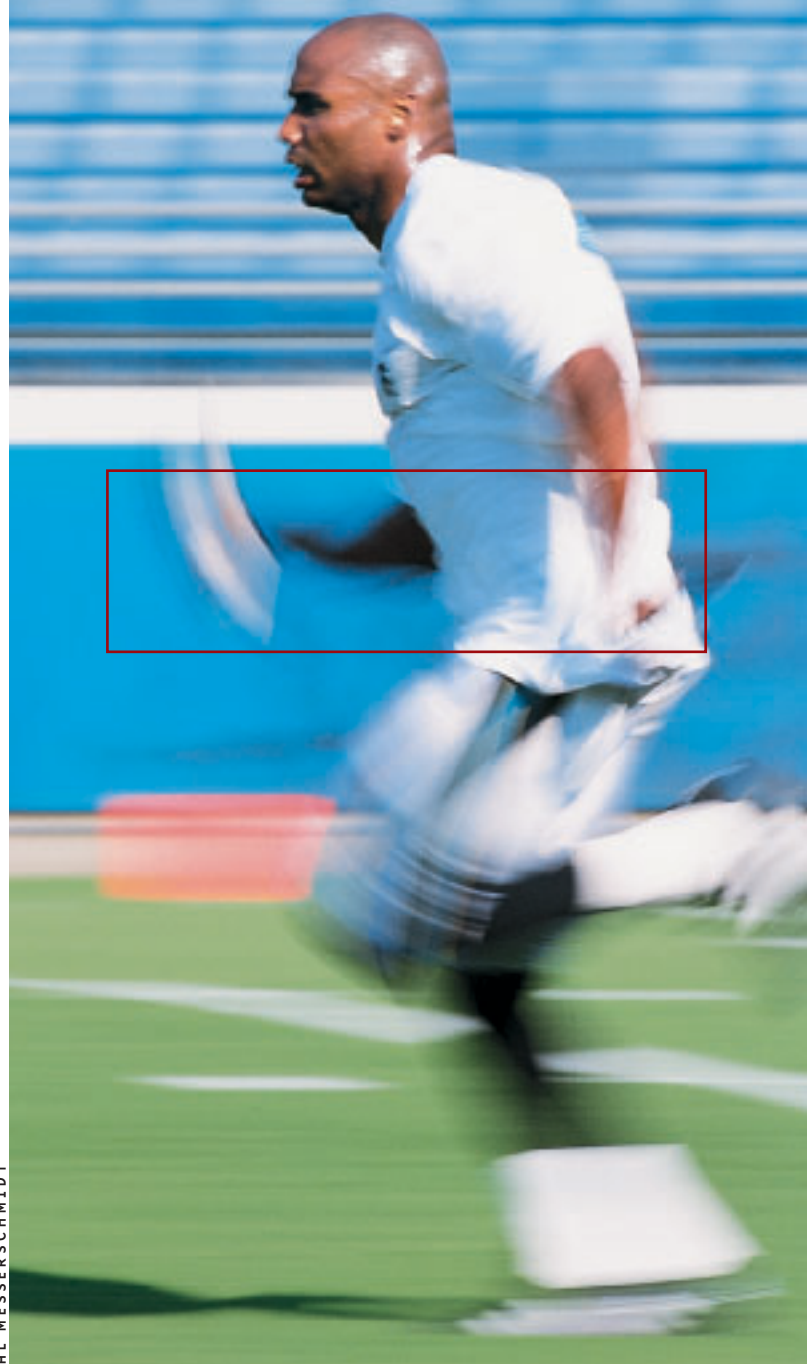
- COACHES SHOULD PROVIDE PRACTICAL GUIDANCE FOR YOUNG PLAYERS WHO WISH TO LOSE WEIGHT.
- YOUNG ATHLETES WISHING TO LOSE WEIGHT SHOULD FOCUS ON CHANGES IN BODY COMPOSITION (I.E., LOSS OF FAT MASS WITHOUT COMPROMISING LEAN MUSCLE MASS OR BONE DENSITY).
- PLAYERS CAN LOSE FAT MASS BY DECREASING THEIR CALORIC INTAKE BY 500 CALORIES PER DAY WHILE INCREASING THEIR ENERGY EXPENDITURE BY A SIMILAR AMOUNT. A CUTBACK OF 1,000 CALORIES PER DAY WILL ROUGHLY CORRESPOND TO TWO POUNDS PER WEEK.
- REGARDLESS OF DIET, PLAYERS SHOULD CONSUME AT LEAST THREE HEALTHY MEALS A DAY CONSISTING OF A VARIETY OF CARBOHYDRATES, LEAN MEATS, AND VEGETABLES.
- YOUNG ATHLETES SHOULD NOT CONSUME FEWER THAN 2,000 CALORIES PER DAY.
- PLAYERS WISHING TO LOSE WEIGHT SHOULD GRADUALLY INCREASE THE FREQUENCY OF AEROBIC EXERCISE AND LOW-INTENSITY, HIGH-REPETITION STRENGTH TRAINING.
- COACHES SHOULD BE AWARE OF YOUNG PLAYERS' ATTEMPTS TO LOSE WEIGHT AND SHOULD DISCOURAGE FAD DIETS, INTENTIONAL DEHYDRATION, AND OVERTRAINING BY RECOMMENDING A PRACTICAL DIET AND EXERCISE METHODS CENTERED ON LOSING FAT MASS WHILE RETAINING LEAN MUSCLE AND BONE DENSITY.

If a player desires to lose weight, a coach should attempt to refocus the athlete's attention on changes in body composition versus loss of scale weight. In particular, players should strive for decreases in fat mass without compromising lean muscle or bone density. In addition, coaches should emphasize that gradual changes are healthier and, more often, longer lasting. Weight loss programs should begin well before the competitive season begins.

Based on calculations that 3,500 calories corresponds to one pound of body weight, players can lose about two pounds per week by creating a deficit of 1,000 calories per day. More practically, a player can decrease his caloric intake by about 500 calories per day and burn off another 500 calories through aerobic exercise and low intensity circuit training.

A simple approach to calorie reduction that will help with weight loss and is also heart healthy is to limit **saturated fat** to less than 30 grams per day. If that is not a successful strategy, limit it to less than 20 grams per day. In addition, athletes can decrease serving sizes; however, it is important to maintain a diet consisting of at least three healthy meals per day to provide adequate energy for growth and exercise. A variety of carbohydrates, lean meats, and vegetables will ensure adequate nutrition and eliminate the need for dietary supplements. In addition, no young athlete should consume fewer than 2,000 calories per day, and coaches should watch for signs that players are experimenting with fad diets or have developed an eating disorder.

In order to lose fat, players should gradually increase the frequency and intensity of aerobic exercise along with low-intensity, high-repetition strength training. For example, running or jogging 2 to 3 miles can burn up to 500 calories in some athletes. Coaches should monitor a dieting player's activity level to avoid overtraining injuries and burn out. Finally, if at all possible, weight loss programs should be undertaken as a team effort between a player, his family, the coach, and a physician or nutritionist.



Intentional dehydration (losing water weight by sweating, spitting, or other methods) in order to make weight is extremely dangerous and should be discouraged at all times.

Coaches should be able and prepared to provide practical guidance for young football players desiring to lose weight. Specifically, coaches should promote long-term reductions of fat mass without a simultaneous loss of lean muscle or bone density.

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

Dyment, Jr., P.G. (Ed.). *Sports Medicine: Health Care for the Young Athlete, 2nd Ed.*, American Academy of Pediatrics 1991, pp. 99, 137.

Coleman, E. *Eating for Endurance*. Palo Alto, CA: Bull Publishing Company, 1988.

# YOUNG ATHLETES AND WEIGHT GAIN

YOUNG FOOTBALL PLAYERS MAY WISH TO GAIN WEIGHT OR BULK UP TO IMPROVE ATHLETIC PERFORMANCE AND CREATE A MORE IMPOSING FIGURE ON THE FOOTBALL FIELD. COACHES SHOULD KNOW THE BODY MECHANICS OF WEIGHT GAIN.



## WHAT COACHES SHOULD KNOW

- COACHES SHOULD PROVIDE PRACTICAL GUIDANCE FOR YOUNG PLAYERS WHO WISH TO GAIN WEIGHT.
- ADVISE PLAYERS TO EAT LARGER SERVING SIZES OF HEALTHY FOODS AT LEAST THREE TIMES A DAY AND TO SUPPLEMENT MEALS WITH SNACKS, MILK, AND JUICE THROUGHOUT THE DAY.
- BASED ON CALCULATIONS THAT 3,500 CALORIES EQUALS APPROXIMATELY ONE POUND OF WEIGHT, PLAYERS MUST CONSUME AN EXTRA 1,000 CALORIES PER DAY TO GAIN 1 TO 2 POUNDS PER WEEK.
- STRENGTH TRAINING EXERCISES ALSO WILL HELP A PLAYER GAIN WEIGHT. HOWEVER, INCREASES IN THE FREQUENCY, DURATION, AND INTENSITY OF TRAINING SHOULD BE UNDERTAKEN GRADUALLY AND WITH THE PLAYER'S SAFETY IN MIND. ALTHOUGH THERE IS NO MAGIC AGE WHEN CHILDREN CAN BEGIN WEIGHT TRAINING SAFELY, RESISTANCE EXERCISE IN YOUNGER CHILDREN SHOULD CONSIST PRIMARILY OF PUSHUPS, SITUPS, AND PULLUPS.
- PROPER NUTRITION AND EXERCISE HABITS ARE PREFERABLE TO POTENTIALLY DANGEROUS ERGOGENIC AIDS.

Although it is difficult for a coach to control a player's eating habits, several important guidelines can and should be discussed with players who are attempting to gain weight. Doubling up on meal servings, selecting higher-calorie foods (such as multigrain breads, low-fat dairy products, beans,

baked chicken, dried fruits, and nuts), and drinking milk or juice with meals will increase a player's overall caloric intake.

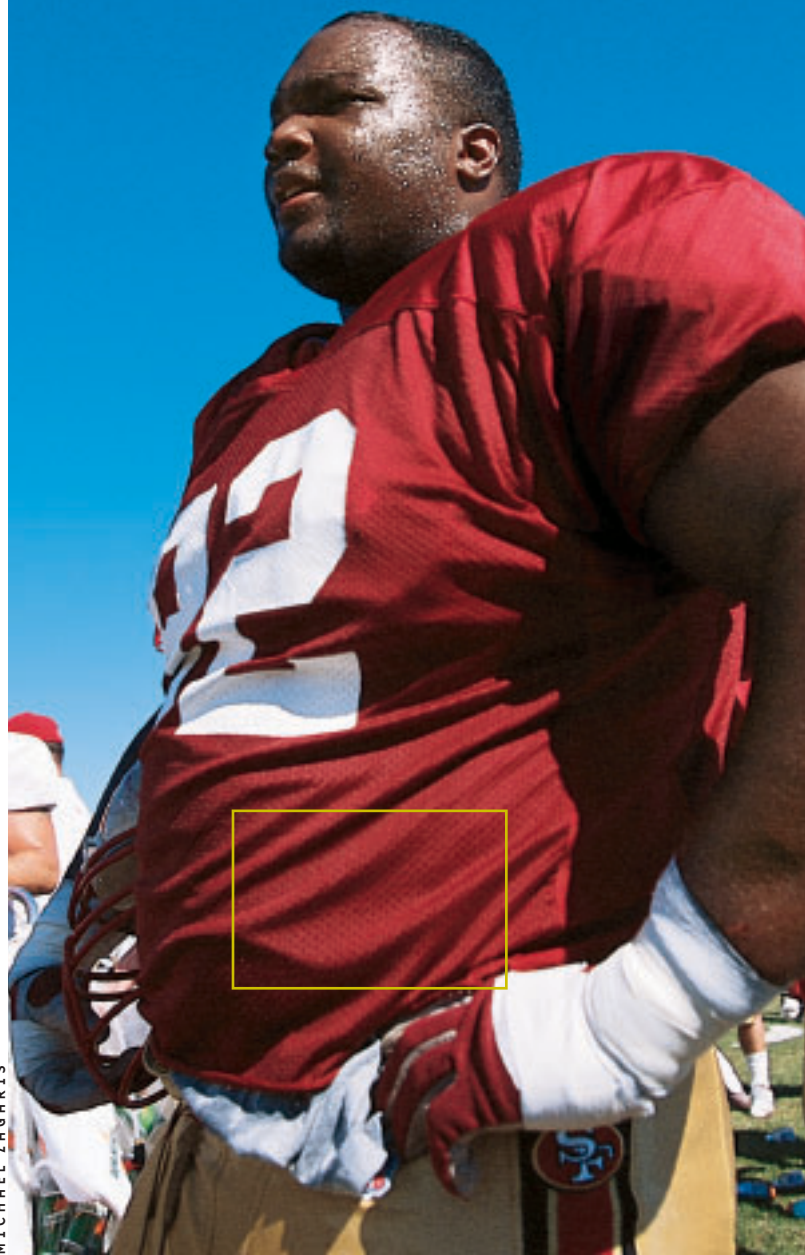
Based on calculations that 3,500 calories equals approximately one pound of body weight, meals and snacks should provide an extra 1,000 calories

per day in order for a player to gain from 1 to 2 pounds per week. Coaches must caution players, that it is not advisable to consume great amounts of fat-laden foods (such as fried foods, fatty meats, or full-fat dairy products) to gain weight; larger and more frequent servings of healthy foods are a better choice for optimal athletic performance.

Exercise is the second component of healthy weight gain; athletes with this goal should be advised to increase the frequency, duration, and intensity of strength training, or resistance exercise. Resistance exercises can involve traditional weightlifting equipment (appropriately sized and supervised) for older children or simple exercises that rely on body weight (pushups, pullups, situps) for younger children.

Players desiring to gain weight sometimes try protein powders, amino acid supplements, creatine, and even hormones such as androstenedione. All these types of products are available on the Internet and elsewhere. Counsel athletes that even the safest supplement carries possible risks that may outweigh the advertised benefits. Promote sound nutrition and exercise over the doping mentality by opposing the use of ergogenic aids by young athletes.

All children develop and mature at different rates. It is a coach's responsibility to provide practical guidelines for safe, healthy weight gain, which includes increased caloric consumption and strength exercise training.

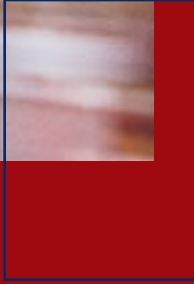
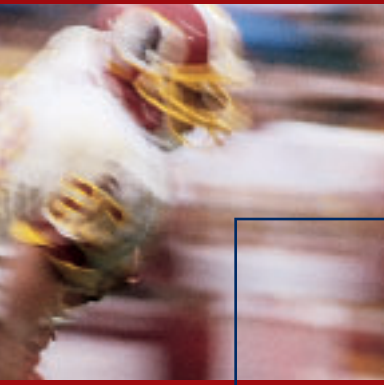


MICHAEL ZAGARIS

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

*Coleman, E. Eating for Endurance. Palo Alto, CA: Bull Publishing Company, 1988.*  
*ACSM Current Comment Youth Strength Training: <http://www.acsm.org>.*



SUBSTANCE ABUSE

# SUBSTANCE ABUSE

MANY COACHES ARE TRAINED TO RECOGNIZE A PLAYER'S USE OF ERGOGENIC DRUGS, SUCH AS ANABOLIC STEROIDS, THAT ARE USED TO ENHANCE A PLAYER'S STRENGTH AND ENDURANCE. HOWEVER, YOUNG ATHLETES ARE MUCH MORE LIKELY TO ABUSE ALCOHOL, MARIJUANA, COCAINE, ECSTASY, AND OTHER RECREATIONAL DRUGS. YOUTH COACHES NEED TO KNOW THE SYMPTOMS OF SUBSTANCE ABUSE AND HOW TO ASSIST IN SECURING TREATMENT.

## WHAT COACHES SHOULD KNOW



- **YOUNG FOOTBALL PLAYERS ARE AT RISK OF USING AND ABUSING ALCOHOL AND ILLICIT DRUGS.**
- **COACHES SHOULD EDUCATE PLAYERS ABOUT THE DANGERS OF DRUG ABUSE AND SHOULD ALWAYS BE CONSCIOUS OF BEING A POSITIVE ROLE MODEL.**
- **PREVENTING YOUNG PLAYERS FROM ABUSING DRUGS INCREASES THEIR CHANCES OF BECOMING HEALTHIER ATHLETES AND ADULTS.**
- **EFFECTIVE APPROACHES INCLUDE:**
  - **SPEAK TO ATHLETES ABOUT DRUG ABUSE AND ASK THEM QUESTIONS IN A PERSONAL AND DIRECT MANNER.**
  - **FIND AND BE PREPARED TO RECOMMEND A LOCAL PROGRAM THAT IS EXPERIENCED IN ASSISTING YOUNG PEOPLE WITH DRUG ADDICTION.**
  - **WORK WITH THE TEAM HEALTH-CARE PROFESSIONAL(S) TO DISCOURAGE DRUG USE BY DISCUSSING THE CONSEQUENCES OF USE, EFFECTIVE METHODS TO OVERCOME COMMON BARRIERS TO QUITTING, AND TECHNIQUES TO PREVENT RELAPSE.**
  - **PROHIBIT ALCOHOL USE BY PARENTS AT TEAM EVENTS.**

Even episodic drug use can affect performance in young players. A change in performance and motivation may be the only clue a coach will have that a player is using drugs.

The most widely abused drug by both youths and

adults is alcohol. In children, even very small amounts of alcohol can cause impaired motor performance, which includes reduced hand-eye coordination, grip strength, and jumping ability. In addition, players who have consumed alcohol may tire



more quickly during high-intensity exercise. Coaches should watch for slurred speech, tremors, and decreased physical performance.

Experimentation with marijuana also is prevalent among young athletes. The signs of marijuana use include red eyes, dry mouth, excessive giddiness, and the inability to concentrate. Reaction times can be slowed, reducing a player's level of performance.

Cocaine abuse, in contrast, is characterized by increased rates of speech, hyperactivity, and agitation. Physiologically, the player may experience shortness of breath, heart palpitations, and high blood pressure. The sudden deaths of nationally-known athletes can be cited when discussing cocaine abuse with players.

All players should be informed of the risks associated with drug and alcohol abuse, especially as

it relates to physical activity. Any athlete who has recently used drugs—or is suspected of chronic abuse—should be removed from play and referred for counseling. However, the most effective deterrent a coach can provide is to act as a role model for positive behavior. Coaches should not consume alcohol in the presence of players, and alcohol use among parents at team hotels or parties should be prohibited.

All youth coaches should be aware of the warning signs of alcohol and drug abuse. Coaches and health-care professionals should speak to players about drug abuse and ask questions in a personal and direct manner. Coaches should also remember that they and the athletes' parents act as role models for young players and should refrain from such negative behaviors as alcohol, tobacco, and drug use.

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

*ACSM Current Comment: Alcohol and Athletic Performance* <http://www.acsm.org>.

*ACSM Current Comment: Cocaine Abuse in Sports* <http://www.acsm.org>.

*ACSM'S Handbook for the Team Physician, Williams & Wilkins, 1996. pp. 470-482.*

*NCAA Minimum Guidelines for Institutional Alcohol, Tobacco and Other Drug Education Programs*  
[http://www.ncaa.org/sports\\_sciences/education/minimum\\_guidelines.html](http://www.ncaa.org/sports_sciences/education/minimum_guidelines.html).

*The National Center for Drug Free Sport* <http://www.drugfreesport.com/home.htm>.

# SUSPECTING DRUG ABUSE

**DRUGS USED BY YOUNG ATHLETES MAY BE LEGAL OR ILLICIT, RECREATIONAL OR PERFORMANCE ENHANCING, OR THEY MAY BE THERAPEUTIC AND NECESSARY. IT IS IMPORTANT THAT THE YOUTH COACH CAN RECOGNIZE DRUG ABUSE.**



## WHAT COACHES SHOULD KNOW

- **BE KNOWLEDGEABLE ABOUT THE DANGER SIGNALS THAT MAY INDICATE SIGNS OF DRUGS ABUSE.**
- **IF AN ATHLETE IS SUSPECTED OF DRUG USE, TALK TO HIM WHERE PRIVACY AND CONFIDENTIALITY ARE ASSURED.**
- **CONSIDER INITIALLY DISCUSSING COMMONLY USED SUBSTANCES SUCH AS OVER-THE-COUNTER MEDICATIONS AND THEIR EFFECTS ON PERFORMANCE AS AN ICEBREAKER.**
- **BE INFORMED ABOUT MATERIAL ON THE TOPIC AVAILABLE FROM COMMUNITY RESOURCES.**
- **STAY INFORMED ABOUT NEW DRUGS THAT ARE KNOWN TO BE ABUSED.**
- **WHEN POSSIBLE, A COACH MAY WANT TO SHARE HIS SUSPICIONS WITH A TEAM PHYSICIAN WHO CAN DECIDE WHETHER TO DISCUSS THE SUBJECT WITH THE ATHLETE AND/OR HIS PARENTS, IN THE CASE OF A MINOR.**

From a child's first participation in sport until the end of his/her athletic career, many individuals, teams, and organizations are in a position to act as agents of drug-abuse prevention, recognition, and early intervention. The coach is central to the sports experience and should be aware of possible substance abuse by athletes.

The symptoms of drug abuse can be subtle, particularly in fit and accomplished athletes. Coaches often are in the best position to detect drug abuse because they constantly observe the athletes' appearance and behavior. Unexplained changes in physical appearance, behavior, mood, performance, or concentration may be symptoms of drug abuse.

Arguments with teammates, inappropriate challenges to authority figures, lying, routinely showing up late to practice, increased injury rate, and/or excessive reliance on medications for the treatment of minor injuries should raise suspicions of drug abuse.

The attitude and behavior of the coach can influence the attitudes and actions of athletes. The coach should be able to discuss openly the ethics and dangers of drug abuse, provide appropriate guidance, and stress proper training methods to avoid injury. The coach should help the athlete set goals that are achievable through hard work and developed talent *and* without the use of drugs.



**SMOKING AND THE USE OF SMOKELESS TOBACCO ARE COMMON EVEN IN YOUNG ATHLETES. YOUTH COACHES NEED TO KNOW THE DANGERS OF TOBACCO USE AND ITS EFFECT ON ATHLETIC PERFORMANCE.**

## WHAT COACHES SHOULD KNOW



- **YOUNG ATHLETES ARE AT HIGH RISK FOR DEVELOPING A SMOKING OR SMOKELESS TOBACCO HABIT.**
- **TOBACCO USE IMPAIRS ATHLETIC PERFORMANCE, MAY INCREASE THE RISK OF INJURY, AND SLOWS THE RATE AT WHICH INJURIES HEAL.**
- **NICOTINE IS A HIGHLY ADDICTIVE AND DANGEROUS DRUG IN ANY FORM.**
- **SMOKING AND SMOKELESS TOBACCO ARE RESPONSIBLE FOR RESPIRATORY AND ORAL CANCERS, INCREASES IN BLOOD PRESSURE, VASCULAR DAMAGE, HEART ATTACK, AND RECEDING GUMS.**
- **COACHES SHOULD EDUCATE PLAYERS ABOUT THE DANGERS OF TOBACCO AND SHOULD SERVE AS POSITIVE ROLE MODELS BY REFRAINING FROM TOBACCO USE.**
- **PREVENTING YOUNG PLAYERS FROM USING TOBACCO INCREASES THEIR CHANCES OF BECOMING HEALTHIER ATHLETES AND ADULTS.**
- **EFFECTIVE APPROACHES INCLUDE:**
  - **TREAT THE ABSENCE OF TOBACCO USE AS A HEALTHY VITAL SIGN AND A KEY TO ENHANCED PERFORMANCE.**
  - **ASK ATHLETES NOT TO START, OR TO QUIT, USING TOBACCO IN A DIRECT AND PERSONAL MANNER.**
  - **FIND AND BE PREPARED TO RECOMMEND LOCAL TREATMENT PROGRAMS EXPERIENCED IN YOUTH TOBACCO ADDICTION.**
  - **WORK WITH THE TEAM HEALTH-CARE PROFESSIONAL(S) TO DISCOURAGE TOBACCO USE BY DISCUSSING THE CONSEQUENCES, RECOMMENDING EFFECTIVE METHODS TO OVERCOME COMMON BARRIERS TO QUITTING, AND USING TECHNIQUES TO PREVENT RELAPSE.**
- **BE A ROLE MODEL FOR ATHLETES. DO NOT USE TOBACCO.**

Smoking and smokeless tobacco use still are considered socially acceptable, despite nicotine being identified as a highly addictive and dangerous drug. While smoking rates have decreased in the past two decades, smokeless tobacco use in young males and females is on the rise. This trend may be even more prevalent in young male athletes, who often use chewing tobacco during practice and sporting events.

The dangers of smoking tobacco have been widely reported in the media. Tobacco smoke contains more than 4,000 chemicals, including carbon monoxide and nicotine, which cause cardiorespiratory toxicity and addiction. Smoking can impair athletic performance by reducing the ability of the lungs to deliver oxygen to the blood, causing diminished muscular performance. Nicotine causes a narrowing of blood vessels, and puts an additional strain on an athlete's heart, making it work harder to achieve optimum performance.

The addictive and adverse effects of smokeless tobacco are well documented. Oral tobacco use causes a significant increase in oral lesions and gum recession, and can cause elevations in heart rate and blood pressure. The primary causes of oral cancer are smoking and smokeless tobacco use. The nicotine in smokeless tobacco, like in that of cigarettes, puts added strain on the heart and blood vessels, significantly reducing optimal performance. In addition, tobacco users take a significantly longer time to heal after a musculoskeletal injury.

The NCAA Guidelines for institutional alcohol, tobacco, and other drug education programs suggest that each player should sign a form consenting to a drug test, and each athletic department should conduct a drug and alcohol education program once a semester. This message, translated for youth and high school football, suggests that coaches take an active role in preventing players from smoking and using smokeless tobacco through education and disciplinary action.

Adolescence is a critical time for learning these



M. REIBEL

life lessons, and the youth coach can be a respected role model for avoiding nicotine addiction and subsequent health concerns.

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

*ACSM Current Comment: The Use of Smokeless Tobacco Products by Athletes* <http://www.acsm.org>.

*NCAA Minimum Guidelines for Institutional Alcohol, Tobacco and Other Drug Education Programs*

[http://www.ncaa.org/sports\\_sciences/education/minimum\\_guidelines.html](http://www.ncaa.org/sports_sciences/education/minimum_guidelines.html).

*The National Center for Drug Free Sport* <http://www.drugfreesport.com/home.htm>.

*National Center for Chronic Disease Prevention and Health Promotion—Oral Cancer Resource*

<http://www.cdc.gov/nccdphp/oh/oc-home.htm>.

*American Dental Hygienists Association—Oral Health Online* <http://www.adha.org/oralhealth/oralcancer.htm>.

# DIETARY AND SUPPLEMENT PERFORMANCE ENHANCEMENT

YOUNG ATHLETES OFTEN FEEL PRESSURE TO IMPROVE THEIR ATHLETIC PERFORMANCE, AND MAY ATTEMPT TO DO SO THROUGH THE USE OF ERGOGENIC AIDS AND DIETARY SUPPLEMENTS. YOUTH FOOTBALL COACHES NEED TO BE AWARE OF VARIOUS NUTRITIONAL ERGOGENIC AIDS, RISKS AND BENEFITS OF USE, AND SIGNS OF USE AND ABUSE. YOUTH AND HIGH SCHOOL FOOTBALL COACHES SHOULD PROMOTE PROPER TRAINING AND NUTRITIONAL HABITS TO IMPROVE THE ATHLETIC PERFORMANCE OF YOUNG PLAYERS.



## WHAT COACHES SHOULD KNOW

- **ALTHOUGH CAFFEINE IS A LEGAL AND SOCIALLY ACCEPTABLE DRUG THAT CAN INCREASE ENDURANCE AND SHORT-TERM PERFORMANCE IN SMALL DOSES, IT CAN ALSO PRODUCE MANY NEGATIVE SIDE EFFECTS. ALTHOUGH COACHES CANNOT RESTRICT NORMAL CONSUMPTION, THE USE OF CAFFEINE AS AN ERGOGENIC AID SHOULD BE STRONGLY DISCOURAGED.**
- **OTHER STIMULANTS, SUCH AS EPHEDRINE (EPHEDRA), HAVE BEEN BANNED BY BODIES THAT GOVERN ATHLETIC ACTIVITY BECAUSE OF THEIR LINK TO SUDDEN DEATH IN ATHLETES. YOUNG FOOTBALL PLAYERS SHOULD BE MONITORED FOR STIMULANT ABUSE, AND STIMULANT USERS SHOULD BE REMOVED FROM PLAY AND REFERRED TO COUNSELING.**
- **NUTRITIONAL ERGOGENIC AIDS ARE SUBSTANCES THAT ARE INGESTED TO IMPROVE ATHLETIC PERFORMANCE.**
- **THE DIETARY SUPPLEMENT INDUSTRY IS UNREGULATED AND, THUS, NO STANDARDS FOR PRODUCTION AND PACKAGING HAVE BEEN ESTABLISHED. PRODUCT SAFETY IS NOT GUARANTEED, AND FALSE AND MISLEADING CLAIMS ABOUND.**
- **CLAIMS MADE BY THE MANUFACTURERS OF PROTEIN AND AMINO ACID SUPPLEMENTS HAVE NOT BEEN CONFIRMED IN SCIENTIFIC STUDIES. INGESTION OF LARGE QUANTITIES OF SUPPLEMENTAL AMINO ACIDS MAY AFFECT THE NATURAL ABSORPTION OF AMINO ACIDS.**
- **ALTHOUGH CREATINE AND ANDROSTENEDIONE ARE NATURALLY PRODUCED IN THE BODY, THE SAFETY AND EFFICACY OF THESE SUPPLEMENTS HAS NOT YET BEEN PROVEN SCIENTIFICALLY. COACHES SHOULD PROHIBIT THEIR USE AND THE USE OF ALL ERGOGENIC AIDS BY YOUNG PLAYERS.**

It has been estimated that 1 million Americans ages 12-17 take one or more sports supplements. The supplements most widely used by teens include: creatine for increasing muscle mass; over-the-counter decongestants such as ephedrine or phenylpropanolamine for energy, weight loss, and increased strength (particularly if taken with caffeine); and steroid precursors such as androstenedione (andro) to increase testosterone levels. The effects of dietary supplements, as with regular drugs, are a function of dose, frequency, and duration of use.

Sports supplements are cleverly marketed to appeal to adolescents. They are featured in many magazines and are widely advertised on the Internet. Alluring nonscientific and nonmedical claims are featured in advertisements for these supplements such as: "more energy" or "increased strength." No prescriptions are required to purchase these products because they are classified as dietary supplements.

**NUTRITIONAL ERGOGENIC AIDS** are substances that are ingested to improve athletic performance. Some are claimed to enhance endurance, while others supposedly increase strength. For example:

**CAFFEINE** is a legal drug that is widely used in society and can act as an ergogenic aid, although it has no nutritional value. Moderate doses (1-3 cups of coffee, equaling three to nine mg/kg) taken one hour before exercise can enhance endurance and short-term athletic performance. The benefit may be exerted through the release of adrenalin into the blood stream, which in turn stimulates free fatty acid release from both fat and skeletal muscle tissues, sparing muscle carbohydrate (glycogen). However, caffeine is a controlled or restricted substance as defined by the International Olympic Committee (IOC) and the NCAA. It is unlikely that an athlete will reach the illegal limits as defined by these organizations through normal caffeine consumption. However, even low levels of caffeine in the body, especially a child's body, can cause anxiety, jitters, inability to focus, gastrointestinal unrest, insomnia, and irritability. Higher doses can cause heart arrhythmias and mild hallucinations. Given these considerations, coaches should discourage the use of caffeine as an ergogenic aid. However, it is not necessary at this time for players to abstain from normal consumption.

**EPHEDRINE (EPHEDRA)** and its herbal counter-

part, *ma huang*, are dangerous stimulants that are sold over the counter as cold medications. These stimulants cause an increase in metabolic rate and heart rate, much like adrenalin, and share many adverse side effects with caffeine, such as dizziness, dryness of the mouth, elevated blood pressure, and possibly blurred vision. However, unlike caffeine, ephedrine has been banned at any level by the NFL, NCAA, and the IOC. Reports link ephedrine with sudden death in athletes using the substance.

**PROTEIN AND AMINO ACID SUPPLEMENTS** are popular with young football players even though a healthy diet contains a sufficient amount of protein (at least 1 gram per pound of body weight for football activity). Although manufacturers advertise that certain amino acid supplements increase growth hormones, scientific studies have not confirmed these claims. In contrast to improving athletic performance, ingesting large amounts of certain amino acids can affect the natural absorption of other amino acids, producing gastrointestinal distress that reduces athletic performance.

**CREATINE** is naturally produced by the kidneys, liver, and pancreas, and is also present in meats and fish that should be a part of an athlete's normal diet. A synthetic version can be taken as a tool for building muscle mass because of its effect on postexercise muscle regeneration and energy stores. A dosage of 3-5 mg a day is adequate for maintaining muscle creatine, and ingestion of 20-25 mg for 5-7 days decreases the normal decline in force or power produced during **short** duration maximal bouts of exercise, though increases are small. However, this supplement has not been shown to improve **longer** duration, aerobic exercise. The side effects of creatine use can include: gastrointestinal distress, muscle cramping, strains and sprains caused by overexertion, and a reduction in the body's natural ability to produce creatine. Over time, creatine use may place an extra load on the kidneys and other organs, and in skeletally immature players, creatine may affect musculoskeletal junctions. There is no research that supports the safety of creatine use in child and adolescent athletes.

**ANDRO (ANDROSTENEDIONE)** is a naturally occurring adrenal hormone that is a precursor for both testosterone and estrogen in the body. Structurally, it is similar to anabolic steroids and is promoted to produce the same effects on the body.



However, scientific evidence does not support the anecdotal reports of enhanced performance or body composition. Furthermore, andro does have steroid-like side effects, including liver damage, heart disease, shrunken testes, low sperm count, and violent mood swings.

Other supplements that are marketed as being able to boost energy and increase muscle include: herbs and herbal extracts (ginseng, ginkgo biloba), bee pollen and derivatives (royal jelly), and amino acid-like compounds (l-carnitine). It is extremely difficult to keep up with each of these types of supplements, and there is little scientific evidence supporting their effectiveness. A coach is advised to counsel his athletes to avoid such products at all times.

Here's a suggested check list for making nutrition and substance recommendations to high school and youth athletes:

- Research scientific evidence to support the use of the substance or diet modification.
- Establish safety profiles for athletes at the youth and high school level.
- Address gender-specific risks.
- Inform the administration of your recommendations.
- Ensure that school board policies permit your recommendation.
- Encourage your assistant coaches to use the same guidelines.
- Ensure that parents are informed before the minor athlete is presented the material.
- Ensure that informed consent is documented and signed by parents and athlete.

The use of any ergogenic aid, regardless of its potential risks and benefits, fosters the doping mentality that can lead to abuse and safety issues. Youth and high school football coaches should promote proper training and nutritional habits to improve the athletic performance of young players without the use of ergogenic aids.

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

*ACSM Current Comment: Caffeine and Exercise Performance* <http://www.acsm.org>.

*ACSM Current Comment: Creatine Supplementation* <http://www.acsm.org>.

*The physiological and health effects of creatine supplementation, ACSM Roundtable* © 2000  
<http://www.acsm.org>.

*United States' National Institutes of Health (NIH) Office of Dietary Supplements* <http://ods.od.nih.gov/>.

# ANABOLIC-ANDROGENIC STEROIDS

THE USE OF ANABOLIC-ANDROGENIC STEROIDS HAS PLAGUED SPORTS FOR MORE THAN A HALF CENTURY. THERE SHOULD NOT BE A CONTROVERSY ABOUT STEROID USE IN SPORTS; NONMEDICAL USE IS ILLEGAL AND BANNED BY MOST, IF NOT ALL, MAJOR SPORTS ORGANIZATIONS.



## WHAT COACHES SHOULD KNOW

- ANABOLIC-ANDROGENIC STEROIDS ARE SYNTHETIC DERIVATIVES OF THE NATURALLY OCCURRING MALE HORMONE TESTOSTERONE.
- ANABOLIC MEANS TO BUILD, AND REFERS TO THE MUSCLE-BUILDING EFFECTS OF THESE HORMONES.
- ANDROGENIC REFERS TO THEIR MASCULINIZING EFFECTS SUCH AS TRIGGERING THE MATURING OF THE MALE REPRODUCTIVE SYSTEM IN PUBERTY, INCLUDING THE GROWTH OF BODY HAIR AND THE DEEPENING OF THE VOICE.
- NO ANABOLIC-ANDROGENIC STEROID IS 100 PERCENT ANABOLIC OR 100 PERCENT ANDROGENIC; ALL POSSESS A COMBINATION OF THE TWO.
- THE USE OF ANABOLIC-ANDROGENIC STEROIDS TO ENHANCE PERFORMANCE IS NOT ONLY ILLEGAL, IT IS DANGEROUS.
- USING STEROIDS OFTEN RESULTS IN DANGEROUS PERSONALITY CHANGES INCLUDING EXAGGERATED AGGRESSION AND DEPRESSION.
- ANABOLIC-ANDROGENIC STEROIDS CAN RETARD GROWTH AND MATURATION.
- ABUSED STEROIDS ARE OFTEN OBTAINED FROM CLANDESTINE LABORATORIES OR ARE SMUGGLED INTO THE UNITED STATES, AND ALSO INCLUDE VETERINARY STEROIDS.
- THE ABUSE OF THESE SUBSTANCES IS READILY DETERMINED BY URINE DRUG TESTS.



J. P. RIDLEY

increase muscle size/strength and to reduce body fat. Some have used steroids to reduce recovery time after workouts, others to increase aggressiveness. It is not surprising that they have been especially popular in competitive sports in which strength is a factor, or in sports such as weightlifting. Some adolescents abuse steroids as part of a pattern of high-risk behavior such as drinking and driving, not wearing seatbelts, and abusing other illicit drugs.

Anabolic-androgenic steroids can be taken orally, injected, or applied to the skin in the form of patches, gels, or creams. Typically, they are taken in doses markedly in excess of the amounts prescribed for legitimate medical purposes. Frequently they are stacked, which means that a variety of steroids are taken at once. They also are pyramided and cycled over 6-12 weeks. In such a regimen, the steroids are started at a low dose, gradually increased to a peak in the middle of the cycle, then gradually reduced to low doses at the end of a cycle. Typically, the abuser will not use steroids for many weeks in an effort to have the body return to normal.

There are numerous side effects associated with anabolic-androgenic steroid abuse, including major personality changes, heart attacks, strokes, and sudden death. Some of the side effects are obvious, such as males developing a high-pitched voice, enlarged breasts, severe acne, and shrunken testicles. Some of the side effects depend on how the drug was taken. For example, oral forms can result in liver disease, while the use of needles for injections can result in infections such as HIV and hepatitis.

Steroid use in adolescents can retard growth and development. It is particularly important to remember that unlike most other drugs, the negative effects of steroids may not be apparent for months or years.

Nonmedical use of steroids is dangerous and illegal. The negative effects of anabolic-androgenic steroids are not just physical. Abusers can be depressed, irritable, and very aggressive (roid rage). There also is evidence that they can be addictive.

Recent evidence suggests that steroid use among adolescents is on the rise. The 1999 Monitoring the Future survey (conducted by the National Institute of Drug Abuse) of drug abuse among adolescents in middle schools and high schools across the United States estimated that 2.7 percent of eighth and tenth graders and 2.9 percent of twelfth graders had taken anabolic-androgenic steroids at least once in their lives. This represented a significant increase since 1991. Although the abuse is higher among boys, the rate of increase among girls is rising.

Athletes primarily abuse steroids in an attempt to

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

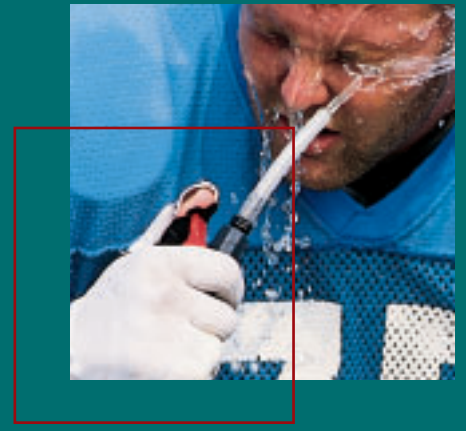
Wadler, G.I. & Hainline B. *Drugs and the Athlete*. F.A. Davis, Phila. 1989.

[www.steroidabuse.org](http://www.steroidabuse.org) Information on Anabolic Steroids. A service of the National Institute of Drug Abuse.

[www.drugabuse.gov](http://www.drugabuse.gov) Website of the National Institute of Drug Abuse.

ACSM'S Handbook for the Team Physician, Williams and Wilkins, Baltimore, 1996.

Yesalis, C.E. (Ed.). *Anabolic Steroids and Sports and Exercise*, Human Kinetics, Champaign, 1993.



# MEDICAL ISSUES



# PREPARTICIPATION EXAMINATIONS

**PRIOR TO PARTICIPATION IN YOUTH AND HIGH SCHOOL FOOTBALL, ALL PLAYERS SHOULD BE REQUIRED TO UNDERGO A MEDICAL EXAMINATION BY A PHYSICIAN. THE PURPOSE OF THIS EXAMINATION IS TO DETECT PRE-EXISTING CONDITIONS TO BETTER INSURE SAFE PARTICIPATION DURING TRAINING AND COMPETITION.**



## WHAT COACHES SHOULD KNOW

- **PRIOR TO INITIAL PARTICIPATION IN YOUTH OR HIGH SCHOOL FOOTBALL, EACH PLAYER SHOULD BE EXAMINED BY A QUALIFIED PHYSICIAN AT LEAST EVERY TWO YEARS.**
- **THE EXAMINATION SHOULD BE PERFORMED TO DETECT CONDITIONS THAT PREDISPOSE A PLAYER TO SUDDEN DEATH, INJURY, OR ILLNESS.**
- **IF CLEARANCE FOR PARTICIPATION IS DENIED BY A PHYSICIAN, THE PHYSICIAN SHOULD RECOMMEND ALTERNATE ACTIVITIES AS THE ATHLETE'S CONDITION PERMITS.**

There are several objectives in requiring a preparticipation examination for all youth and high school athletes. The examining health-care professional seeks to detect conditions that may predispose the athlete to sudden death, illness, or injury. An examination should be performed by a physician prior to a player's initial football season, and repeated at least at two year intervals.

The preparticipation examination should include a complete medical history detailing past injuries, illnesses, and surgeries; use of supplements and medications; drug and other allergies; and signs or symptoms of problems that can be affected by exertion. The physical exam should measure height,

weight, visual acuity, and vital signs, and examine all systems affected by exercise. The final disposition determines clearance for participation and considers the following questions: Does participation place the athlete or another participant at risk for injury? Can the athlete safely participate with treatment (medication, rehabilitation, braces, or padding)? Can limited participation be allowed while evaluation and treatment is conducted? Are there other activities in which the athlete can safely participate?

If clearance for participation is denied, the physician should make recommendations for treatment or alternative participation based on the athlete's health and safety.

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

*ACSM Current Comment: Pre-participation Examinations* <http://www.acsm.org>.

*Pre-participation Physical Evaluation (Second Edition):* AAFP, AAP, AMSSM, AOSSM, AOASM; McGraw-Hill, 1996.

# GROWTH AND DEVELOPMENT

PHYSIOLOGICAL AND PSYCHOLOGICAL CHANGES CAN GREATLY AFFECT ATHLETES IN YOUTH OR HIGH SCHOOL FOOTBALL. YOUTH COACHES NEED TO KNOW HOW TO DEAL WITH KEY GROWTH AND DEVELOPMENT MILESTONES THAT MAY AFFECT PARTICIPATION.

## WHAT COACHES SHOULD KNOW



- **ADOLESCENCE IS CHARACTERIZED BY MANY PHYSIOLOGICAL AND PSYCHOLOGICAL CHANGES THAT MAY AFFECT A PLAYER'S HEALTH AND PERFORMANCE.**
- **A YOUTH OR HIGH SCHOOL FOOTBALL COACH MUST BE AWARE OF EACH PLAYER'S DEVELOPMENTAL STATUS AND ANY POTENTIAL INJURIES OR HEALTH ISSUES THAT MIGHT OCCUR BECAUSE OF SKELETAL OR MUSCLE GROWTH, INCREASES IN ENDURANCE, AND EMOTIONAL TURMOIL.**
- **ENGAGING IN RIGOROUS SPORTING ACTIVITIES DURING ADOLESCENT SKELETAL GROWTH MAY RESULT IN DANGEROUS GROWTH PLATE INJURIES. PREVENTIVE MEASURES INCLUDE USE OF PROPER PROTECTIVE GEAR AND WARM-UP AND STRETCHING INSTRUCTION.**
- **INCREASES IN ENDURANCE AND DURATION OF TIME IN PRACTICE MAY PREDISPOSE A PLAYER TO OVERUSE INJURIES.**
- **IN ADDITION TO MONITORING A PLAYER'S PHYSICAL DEVELOPMENT, A COACH'S RESPONSIBILITIES INCLUDE BEING A POSITIVE ROLE MODEL FOR HEALTHY EMOTIONAL AND INTELLECTUAL MATURATION.**
- **THE YOUTH COACH MUST RECOGNIZE THE DIFFERENCE IN MATURATION RATES AMONG ATHLETES AND BE MINDFUL OF SIZE, COORDINATION, AND STRENGTH DIFFERENCES AMONG ATHLETES.**

As a child grows, the heart becomes stronger and the lungs larger. A young athlete also experiences an increase in stamina, or endurance, during adolescence. It is important that coaches be mindful that as some players' heart and lungs become more physically fit, they may unknowingly push a less-developed skeletal or muscular system to the point of injury. The consequences of overuse include stress fractures and muscle strains. Psychologically, a rapid increase in endurance leading to more time spent in sport and exercise may also result in player burnout.

Around age 12, most boys undergo what is commonly called a growth spurt, lasting 2-4 years. As the skeleton elongates and a player grows stronger and faster, the growth plates become a weak link in the skeletal system, and are susceptible to injury. Left untreated, growth plate injuries can arrest bone growth and cause long-term orthopedic difficulties. In addition, the muscles and other soft tissue of a rapidly growing child do not keep up with the bone growth. This can result in a lowered flexibility or muscle tightness in these athletes. Coaches should



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develop a stretching and flexibility regimen in which all players participate regularly.

Physical characteristics of a male adolescent's growth spurt include a large increase in muscle mass and some body fat (up to 40 pounds) and growth in height of up to 12 inches. An adolescent's growth spurt is more closely tied to the skeletal age or maturation than it is to the chronological age. Facial hair, pubic hair, and underarm hair—as well as the possible appearance of acne—are all physical indicators of the onset of puberty.

Puberty can also be an emotional roller coaster fueled by the pressures of school and fluctuating social status. Puberty can interfere with a player's ability to maintain attention on the field, thus increasing the chance of injury. A good coach serves as a liaison between the adult and adolescent worlds, bridging the communication gap by becoming a positive role model.

Because athletes mature at different rates, some players on a youth football team will be developmentally behind others. Body size, coordination, and muscular strength are three key physical factors that will differ. These differences can result in an increased risk of injury in the less-developed child, particularly in a contact sport. Coaches should be aware of these developmental differences when matching players in one-on-one drills.

A coach must be aware of the overall and individual development status of all players on the team. Considerations should be given to the risk of growth plate and overuse injuries. A muscle stretching program, consistently used, can help alleviate muscle tightness associated with periods of rapid skeletal growth and development. Open communication coupled with positive role modeling will help coaches guide players through their psychological and emotional maturation.

## WORKING WITH A TEAM PHYSICIAN

A GOOD WORKING RELATIONSHIP BETWEEN A COACH AND TEAM PHYSICIAN WILL IMPROVE THE HEALTH AND SAFETY OF THE FOOTBALL TEAM.



### WHAT COACHES SHOULD KNOW

- A COACH AND TEAM PHYSICIAN SHOULD FORM A PARTNERSHIP FOR THE MEDICAL CARE OF YOUNG ATHLETES.
- THE DUTIES OF A TEAM PHYSICIAN INCLUDE MANAGING INJURIES, ILLNESSES, AND MEDICAL EMERGENCIES; MAKING RETURN-TO-PLAY DECISIONS; PERFORMING PREPARTICIPATION EXAMINATIONS; AND KNOWING PLAYERS' MEDICAL RECORDS.
- COACHES SHOULD DEFER TO THE JUDGEMENT AND EXPERIENCE OF TEAM PHYSICIANS WHEN DISCUSSING A PLAYER'S REHABILITATION AND RETURN TO PLAY. HOWEVER, BECAUSE THE COACH AND PHYSICIAN EACH HAS A DIFFERENT RELATIONSHIP WITH AND ROLE IN A PLAYER'S HEALTH AND SAFETY, THE TWO SHOULD CONSULT EACH OTHER WHEN MAKING RECOMMENDATIONS TO THE ATHLETE AND FAMILY.

Team physicians must be qualified medical doctors (M.D.) or doctors of osteopathy (D.O.) who possess an extensive knowledge of emergency care as it relates to sports injury and illness. The physician should be trained in basic cardiopulmonary resuscitation and be knowledgeable about childhood illnesses and conditions related to sport and exercise.

When dealing with prepubescent and teenage athletes, it is also important that the physician and coach maintain open communication with players regarding other health issues, including nutrition, substance abuse, and sexual matters.

The team physician should be responsible for managing injuries that occur on the field and illnesses that arise during the playing season. He or she should also be used as a consultant, and should maintain communication with each athlete's primary care physician. In the case of injury or illness, the physician should counsel the coach, the player, and the parents regarding rehabilitation and make the final determination regarding return to play.

In addition, a physician and coach should work together to coordinate preparticipation examinations.

### MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

*The ACSM Team Physician Consensus Statement, 1999* <http://www.acsm.org>.

*Dyment, P.G. (Ed.). Sports Medicine: Health Care for the Young Athlete. American Academy of Pediatrics 1991, p. 188.*

## WORKING WITH AN ATHLETIC TRAINER

AN ATHLETIC TRAINER IS OFTEN THE FIRST, AND PERHAPS THE ONLY, HEALTH-CARE PROFESSIONAL WITH REGULAR ACCESS TO YOUTH ATHLETES. A COACH SHOULD KNOW HOW TO WORK WITH AN ATHLETIC TRAINER TO PROVIDE THE BEST ON-SITE PREVENTIVE CARE AND PRACTICAL FIRST AID FOR YOUNG FOOTBALL PLAYERS.



### WHAT COACHES SHOULD KNOW

- A YOUTH OR HIGH SCHOOL FOOTBALL TEAM SHOULD TAKE FULL ADVANTAGE OF THE SKILLED PROFESSIONAL SERVICES AFFORDED BY AN ATHLETIC TRAINER.
- A COACH OF YOUNG ATHLETES SHOULD LOOK TO AN ATHLETIC TRAINER TO PROVIDE ON-SITE PREVENTIVE CARE, EVALUATION, AND MANAGEMENT OF SPORTS-RELATED INJURIES.
- ATHLETIC TRAINERS CAN SERVE AS LIAISONS BETWEEN THE COACH AND THE PHYSICIAN BY PROVIDING INFORMATION ON THE CAUSE AND TYPE OF INJURY INCURRED, AND BY ASSISTING WITH ON-SITE REHABILITATION.
- ATHLETIC TRAINERS CAN TAKE ON ADMINISTRATIVE RESPONSIBILITIES SUCH AS MEDICAL RECORD KEEPING AS WELL AS ENSURING A CONSTANT SUPPLY OF MEDICAL AND FIRST-AID EQUIPMENT.

Athletic trainers should be nationally certified with instruction in the prevention, recognition, evaluation, management, and treatment of sports-related injuries. Specifically, an athletic trainer should prepare athletes for practice and competition through taping, bandaging, and bracing; monitoring the field of play for safety concerns; and ensuring that fluids are available for the athletes. When an injury occurs, an athletic trainer can provide immediate first aid and evaluate the need for further medical treatment. Trainers work under state laws and may be required to have a physician supervise their

activities and approve evaluation and treatment protocols. In addition to sports injuries, an athletic trainer should be certified in basic cardiopulmonary resuscitation (CPR) and be prepared to handle administrative duties such as medical record keeping.

Athletic trainers can be extremely helpful in advising a coach on appropriate muscular strength, conditioning, and stretching programs for youth football players. A trainer also ensures that first-aid supplies, tools kits, and emergency supply kits are constantly well stocked.

### MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

*National Athletic Trainer's Association website, <http://www.nata.org>.*

*National Council of Athletic Training website, <http://www.ncat.org>.*

*The Conditioning of Athletes for Sport: A Consensus Statement, 2001, <http://www.acsm.org>.*

*Dyment, P.G. (Ed.). Sports Medicine: Health Care for the Young Athlete, American Academy of Pediatrics 1991, p. 201.*

## COLDS AND FLU IN ATHLETIC COMPETITION

VIRAL ILLNESSES SUCH AS THE COMMON COLD OR FLU CAN GREATLY AFFECT A PLAYER'S HEALTH AND PERFORMANCE. ATHLETES SPEND A GOOD DEAL OF TIME IN CLOSE CONTACT WITH ONE ANOTHER, SO IT IS IMPORTANT TO REDUCE THE RISK OF VIRAL TRANSMISSION.

### WHAT COACHES SHOULD KNOW



- PLAYERS AND TEAM PERSONNEL INVOLVED IN YOUTH OR HIGH SCHOOL FOOTBALL SHOULD MAINTAIN GOOD HYGIENIC PRACTICES, SUCH AS FREQUENT HAND WASHING, AND SHOULD AVOID SHARING WATER BOTTLES, CUPS, MOUTH GUARDS, OR OTHER PERSONAL ITEMS.
- EXERCISING IN THE COLD OR DAMP DOES NOT INCREASE THE RISK OF VIRAL INFECTION.
- REGULAR EXERCISE IS ONE OF THE BEST WAYS TO REDUCE A YOUTH'S RISK OF DEVELOPING VIRAL INFECTIONS AND OTHER ILLNESSES.
- IF SYMPTOMS OF A COMMON COLD (RUNNY NOSE OR SORE THROAT WITHOUT FEVER OR BODY ACHES) ARE PRESENT ABOVE THE LEVEL OF THE NECK ONLY, MODERATE INTENSITY PARTICIPATION MAY BE ALLOWED. IF SYMPTOMS, INCLUDING FEVER, ARE PRESENT BELOW THE NECK, OR ARE ASSOCIATED WITH MUSCLE CRAMPING, PARTICIPATION SHOULD NOT BE ALLOWED UNTIL THE SYMPTOMS HAVE ENDED.
- PLAYERS EXHIBITING SYMPTOMS OF A VIRAL INFECTION SHOULD TAKE CARE TO LIMIT THE AMOUNT OF INFECTED PARTICLES TRANSMITTED INTO THE AIR VIA COUGHING AND SNEEZING.
- IF A COACH IS IN DOUBT ABOUT THE TYPE OF INFECTION A PLAYER IS CARRYING, IF A PLAYER DOES NOT APPEAR TO BE IMPROVING FROM AN INFECTION, OR IF SYMPTOMS LAST LONGER THAN FIVE DAYS, A PHYSICIAN SHOULD EXAMINE THE PLAYER TO DETERMINE THE TYPE OF INFECTION AND MAKE RETURN-TO-PLAY SUGGESTIONS.



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Basic hygiene practices can greatly reduce the risk of viral transmission on a team. Players and team personnel should adopt frequent hand washing, maintain cleanliness of equipment and locker rooms, and never share personal items such as toothbrushes, mouthguards, cups, water bottles, utensils, eye drops, towels, combs, or brushes.

Players experiencing symptoms of a serious infection—fever, coughing, sneezing, extreme tiredness, body aches, or swollen glands—should be removed from activity at least until the symptoms subside. Viruses are generally transmitted from person to person by the inhalation of airborne particles or direct contact with saliva or body fluids. Athletes with cold and flu symptoms should be careful to cough or sneeze into clean, disposable tissues and to wash their hands often.

If symptoms of a common cold (runny nose or sore throat without fever or body aches) are present above the level of the neck only, the player should be removed from play until the major symptoms subside, and care should be taken to limit exposure

to other players. Moderate intensity participation may be allowed once the symptoms have lessened. A return to full intensity can be allowed two or three days after the symptoms have ended. If symptoms including fever are present below the neck or are associated with muscle cramping, participation should not be allowed until the symptoms have ended. Athletes should gradually be allowed to participate up to full speed. If cold-like symptoms last for more than five days, particularly if there is no noticeable improvement, the athlete should see a physician to determine the type of infection present. Viral infections other than colds and flu (mononucleosis, for example) are possible and must be treated by a physician.

If allowed to participate during or shortly after a serious viral infection, a player may experience reduced lung function and general muscular weakness, which may lead to injury or further health issues.

A physician should evaluate an ailing athlete to determine the type of infection and the length of time until return to play is advised. Athletes experiencing colds or flu should rest often and drink plenty of fluids. Over-the-counter medications such as antihistamines, decongestants, cough medicines, and analgesics may provide some relief for cold or flu symptoms while the body is fighting the viral invaders. Although colds and flu often occur during the fall and winter months, damp, cold, or drafty weather does not increase the risk of infection. Furthermore, regular moderate exercise can reduce the risk for viral infections and other illnesses, while intense training may increase the risk. Judicious quarantine of ill players will be most effective in decreasing the risk of illness among team members.

It is a coach's responsibility to recognize the signs and symptoms of viral infection and suggest evaluation by a health-care professional. Return to play should be resumed only after resolution of symptoms. The coach must also insist that players and personnel maintain proper hygiene, and avoid sharing water containers and personal equipment, to reduce the overall risk of further team infection.

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

*ACSM Current Comment: Exercise and the Common Cold* <http://www.acsm.org>.

Nieman, D. *Effect of a rhinovirus-caused upper respiratory illness on pulmonary function test and exercise response. Medicine & Science in Sports and Exercise, vol. 29 No. 5, 1997.*

# BLOOD-BORNE PATHOGENS

ALTHOUGH THE RISK OF DISEASE TRANSMISSION THROUGH CONTACT WITH BLOOD DURING ATHLETIC COMPETITIONS IS EXTREMELY LOW, COACHES SHOULD BE AWARE OF SEVERAL GENERAL GUIDELINES FOR BLOOD EXPOSURE DURING ATHLETIC ACTIVITY.

## WHAT COACHES SHOULD KNOW



- **EXISTING WOUNDS, CUTS, OR ABRASIONS SHOULD BE CLEANED AND PREPARED WITH A DRESSING OR OTHER PROTECTION THAT WILL WITHSTAND THE DEMANDS OF PRACTICE OR COMPETITION.**
- **COACHES, TRAINERS, AND PROGRAM VOLUNTEERS SHOULD BE TRAINED IN APPROPRIATE FIRST-AID TECHNIQUES.**
- **WOUNDS THAT BLEED DURING PLAY SHOULD BE IMMEDIATELY TREATED, AND CONTAMINATED UNIFORMS, TOWELS, DRESSINGS, AND OTHER ITEMS SHOULD BE PROPERLY CLEANED, DISINFECTED, OR DISPOSED OF IN A SEPARATE, SEALABLE CONTAINER. BLEEDING SHOULD BE STOPPED USING PRESSURE APPLIED TO THE SOURCE AND THE WOUND SHOULD BE RINSED WITH WATER OR A DISINFECTANT.**
- **DISPOSABLE VINYL OR LATEX GLOVES SHOULD BE USED WHEN HANDLING BLOODY EQUIPMENT OR TREATING ATHLETES WHO ARE BLEEDING. IF GLOVES ARE NOT AVAILABLE FOR USE, A TOWEL OR OTHER SUITABLE BARRIER CAN BE USED.**

Some common viruses are transmitted through blood exposure, and coaches should be aware of precautions to minimize risk. For example, hepatitis B virus and Human Immunodeficiency Virus (HIV) are the two diseases that can be transmitted through blood.

Transmission of HIV in sports has not been reported; for the virus to be transmitted, it is believed that prolonged exposure to large quantities of blood through an open wound is necessary. Hepatitis B is transmitted more easily than HIV but is still quite rare. An effective vaccine exists to prevent hepatitis B transmission.

Despite the low risk, coaches, players, and their families should be made aware of the small potential of blood-borne pathogen transmission during athletic activities. However, confidentiality regarding an athlete's infection with a blood-borne disease is critical for maintaining the privacy of the athlete and the athlete's family. Each program should have a well-defined and communicated policy outlining precautions to be taken when working with blood. Coaches, players, trainers, and volunteers should be trained in proper first aid and techniques to minimize the potential of blood-borne disease transmission in the event of blood exposure.



**YOUTH COACHES NEED TO BE FAMILIAR WITH EXERCISE-INDUCED ASTHMA (EIA), AN ILLNESS THAT RESTRICTS AN ATHLETE'S ABILITY TO BREATHE.**

## WHAT COACHES SHOULD KNOW



- **EXERCISE-INDUCED ASTHMA IS OFTEN CHARACTERIZED BY AN ACUTE NARROWING OF THE LUNG AIRWAYS, WHICH MAY BE BROUGHT ON BY BREATHING LARGE QUANTITIES OF COLD, DRY AIR.**
- **DURING AN EIA ATTACK, A PLAYER CAN EXPERIENCE SHORTNESS OF BREATH, TIGHTNESS IN THE CHEST, PAIN, COUGHING, AND WHEEZING DURING AND FOR UP TO 30-60 MINUTES AFTER EXERCISE.**
- **TECHNIQUES FOR PREVENTING AN EIA EPISODE INCLUDE WEARING A FACEMASK OR SCARF DURING EXERCISE IN COLD WEATHER AND PARTICIPATING IN ADEQUATE WARM UPS.**
- **PLAYERS WITH EIA AND THEIR COACHES SHOULD BECOME FAMILIAR WITH THE INDICATIONS, TIMING, AND POTENTIAL SIDE EFFECTS OF THEIR MEDICATION.**
- **ATHLETES WITH PERSISTENT ASTHMA MAY EXPERIENCE EIA, AND EXERCISE CAN TRIGGER A FATAL ASTHMA ATTACK.**
- **A PLAYER WHO IS WHEEZING AND DOES NOT RESPOND TO MEDICATION SHOULD RECEIVE IMMEDIATE MEDICAL ATTENTION.**

Exercise-induced asthma (EIA) is often characterized by sudden narrowing of the lung airways, which can be brought on by breathing large quantities of cold, dry air. Changes in airway temperature, along with the drying effect of increased ventilation, result in contraction of the smooth muscle and increased mucus formation along the upper airways. The underlying cause may be related to the relationship between bronchial blood flow and heat exchange. It occurs in 90 percent of asthmatics and 10-15 percent of nonasthmatics.

The relationship to heavy breathing and cold temperatures can make playing football a high-risk activity for those with EIA. Players with EIA should be carefully monitored for signs of breathing distress; coaches should be trained to recognize the warning signs in undiagnosed players as well. However, EIA should not prevent a player from participating, and improved fitness will reduce the symptoms over time.

During an EIA attack, a player will experience shortness of breath, tightness in the chest, pain,

coughing, and wheezing during or after exercise. The symptoms sometimes become worse when activity is stopped, and may last for up to 30-60 minutes after exercise, which distinguishes the disease from poor fitness.

Techniques for preventing an EIA episode include breathing through a facemask or scarf during exercise in cold weather, and participating in a good warm-up—20 to 60 minutes—before starting practice or play. This will decrease the likelihood of an attack during the second bout of exercise or play.

Players who have been diagnosed with EIA may use an inhaler or other medication to manage their disease. However, the different types of inhalers and medications that should be taken at specific times can elicit side effects; get to know the player's regimen. Players with persistent asthma should be managed with appropriate medications to control both the asthma and EIA. A player who is wheezing and does not respond to medication should receive immediate medical attention.

EIA is a common disease affecting youth football players. However, with proper prevention and management techniques it should not restrict a player's activity. A youth football coach should be aware of the signs and symptoms of EIA to ensure players' health and safety during practice and competition.



ALLEN KEE

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

*ACSM Current Comment: Exercise-Induced Asthma* <http://www.acsm.org>.

*ACSM brochure: What You Need to Know about Exercise-Induced Asthma (EIA)* 1-317-637-9200 x 132.

*Baker, Jr., C.L. (Ed.). The Hughston Clinic Sports Medicine Field Manual, Baltimore: Williams and Wilkins, 1996, p. 59.*

# DIABETIC ATHLETES

YOUTH FOOTBALL PLAYERS WITH DIABETES AND THEIR COACHES SHOULD BE ACUTELY AWARE OF THE POTENTIAL HEALTH RISKS ASSOCIATED WITH THE DISEASE AS WELL AS PREVENTION GUIDELINES AND PRACTICAL HEALTH MAINTENANCE ISSUES.

## WHAT COACHES SHOULD KNOW



- **TYPE 1 DIABETES SHOULD NOT PREVENT A PLAYER FROM COMPETING IN YOUTH FOOTBALL.**
- **TO MINIMIZE POSSIBLE COMPLICATIONS, DIABETIC ATHLETES SHOULD BE UNDER THE CARE OF A PHYSICIAN.**
- **DIABETIC ATHLETES SHOULD EAT A SNACK OR MEAL BEFORE PARTICIPATING IN FOOTBALL PRACTICE, SCRIMMAGE, OR GAMES. THIS WILL MINIMIZE THE RISK OF LOW BLOOD SUGAR THAT CAN RESULT IN FAINTING.**
- **SNACKS OR MEALS BEFORE PRACTICE OR GAMES SHOULD BE MOSTLY CARBOHYDRATES (BREAD, CEREALS, PASTA), WHICH CAN BE QUICKLY DIGESTED.**
- **IF AN ATHLETE IS TO PARTICIPATE IN EXTENDED PRACTICE OR SCRIMMAGE SESSIONS, HE SHOULD CONSUME A MODEST SNACK AFTER EVERY 30 MINUTES OF EXERCISE.**
- **SYMPTOMS OF HYPOGLYCEMIA (LOW BLOOD SUGAR) CAN INCLUDE MUSCLE WEAKNESS, LETHARGY, TREMLING, AND EXCESSIVE SWEATING.**
- **SUGAR CUBES, SODA, OR JUICE SHOULD BE KEPT ON HAND IN CASE OF A HYPOGLYCEMIC EMERGENCY. IN THE CASE OF MILD HYPOGLYCEMIA (WHICH THE ATHLETE CAN OFTEN RECOGNIZE), ATHLETES CAN RE-ENTER THE PRACTICE, SCRIMMAGE, OR GAME ONCE THEY FEEL WELL AND HAVE CONSUMED 100-200 CALORIES OF CARBOHYDRATES (A CAN OF APPLE JUICE, SEVERAL SMALL HARD CANDIES, A BANANA, OR SEVERAL GRAHAM CRACKERS FOR EXAMPLE). IN THE CASE OF MORE SERIOUS EPISODES, MEDICAL PERSONNEL (A DOCTOR, OR OTHER QUALIFIED HEALTH-CARE PROFESSIONAL) SHOULD BE CONSULTED.**
- **COMMUNICATE WITH PARENTS OF ATHLETES AND APPROPRIATE MEDICAL PERSONNEL FOR EMERGENCY PROCEDURES IN CASE OF HYPOGLYCEMIA.**
- **IN CASE OF FAINTING OR OTHER EPISODE INVOLVING A DIABETIC ATHLETE, MEDICAL PERSONNEL SHOULD BE CONTACTED IMMEDIATELY.**



Diabetes is a metabolic disorder in which the body's ability to regulate blood sugar is impaired. Maintaining adequate blood sugar is critical to good health, and inadequately controlled diabetes can result in various long-term circulatory and nervous system disorders that impair vision, kidney function, cardiac function, and blood flow to the feet, fingers, and toes. Although there are two main types of diabetes (Type 1 and Type 2), it is the Type 1 diabetes that youth football coaches are most likely to encounter among players.

Type 1 diabetes typically has a sudden onset during childhood or young adulthood. Athletes with Type 1 diabetes must use insulin for the remainder of their lives, because the body, unable to produce insulin independently, is unable to reg-

ulate blood sugar. If an athlete eats too little prior to exercise or uses too much insulin to control blood sugar, it can result in a condition known as hypoglycemia (low blood sugar). There are different kinds of insulin (short-acting/long-acting), so the time of day that an athlete needs to inject insulin medication will depend on the individual, previous food intake, and the intensity of anticipated exercise.

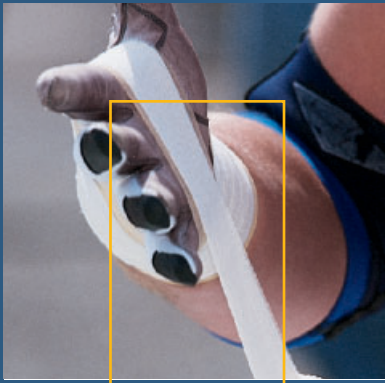
Although Type 1 diabetes should not prevent participation in sports, youth and high school football coaches should identify diabetic athletes and be aware of their potential health risks. The player, coach, and available health-care professionals should act as a team to ensure the safety of the diabetic athlete.

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

*ACSM'S Handbook for the Team Physician, Williams & Wilkins, 1996. pp. 89-97.*

*Baker, Jr., C.L., (Ed.) The Hughston Clinic Sports Medicine Field Manual, Baltimore: Williams & Wilkins, 1996. p. 59.*



# UNDERSTANDING AND RESPONDING TO INJURIES

# HEAD INJURIES

HEAD INJURIES ARE AMONG THE MOST DANGEROUS IN YOUTH FOOTBALL.

A YOUTH COACH SHOULD BE ABLE TO RECOGNIZE AND RESPOND TO THESE OCCURRENCES.



## WHAT COACHES SHOULD KNOW

- **HEAD INJURIES CAN BE EXTREMELY SERIOUS. BRUISING (CEREBRAL CONTUSIONS) AND BLOOD CLOTS (CEREBRAL HEMATOMAS) CAN THREATEN LIFE AND LONG-TERM HEALTH.**
- **APPROPRIATE EQUIPMENT, INCLUDING HEADGEAR WITH BUCKLED CHIN STRAPS AND MOUTH GUARDS, SHOULD BE WORN DURING ALL PRACTICES, SCRIMMAGES, AND GAMES.**
- **PLAYERS SHOULD BE TAUGHT THE RULES AGAINST SPEARING (I.E., INITIATING CONTACT WITH THE HEAD AND HELMET).**
- **A PLAYER WHO IS UNCONSCIOUS, EVEN FOR A BRIEF PERIOD, REQUIRES IMMEDIATE MEDICAL ATTENTION. IF A HEALTH-CARE PROFESSIONAL IS PRESENT, DIRECT HIM OR HER TO THE ATHLETE. IF NOT, IMMOBILIZE THE ATHLETE'S HEAD, ENSURE THAT THE ATHLETE'S BREATHING IS REGULAR, AND CALL FOR EMS. SMELLING SALTS SHOULD NEVER BE USED ON AN UNCONSCIOUS ATHLETE.**

Complications of head injuries include skull fracture, spinal injuries, concussion, post concussive syndrome, and seizures. The youth football coach is the first line of defense to reduce the potential for these serious and life-threatening injuries. If head injury does occur, the athlete should be examined by a physician.

**A COMMON CLASSIFICATION SYSTEM FOR CEREBRAL CONCUSSION IS AS FOLLOWS:**

**MILD:** No loss of consciousness, or loss of memory or fogginess lasting for less than 30 minutes.

**MODERATE:** Loss of consciousness for less than one minute, or loss of memory or fogginess between 30 minutes and 24 hours.

**SEVERE:** Loss of consciousness for more than one minute, or loss of memory or fogginess for more than 24 hours.

An athlete who has suffered even a minor concussion is at a much higher risk for suffering a second one, particularly in the 3-9 months after the first one. A rare, but potentially fatal, second-impact injury is most commonly seen in younger players. Acute brain swelling occurs and requires immediate medical attention.

### COACH'S RESPONSE

A player who loses consciousness, even for a brief period, requires immediate medical attention. If no medical personnel are on site, immobilize the athlete's head, ensure that their breathing is regular, and call for an ambulance. Smelling salts should never be used on an unconscious athlete.

Care should be taken to stabilize a player's head



GREG CRISP

in the case of a serious head injury. Unnecessary movement can further injure the player because a neck injury could be present. If the player is down, his helmet, chin strap, and pads should not be removed unless he is having difficulty breathing.

If the player is having difficulty breathing, the facemask should be removed with appropriate tools, emergency medical personnel immediately contacted, and CPR administered if needed. The helmet and shoulder pads should only be removed if advised by medical personnel or if CPR cannot be appropriately administered (see *Play Safe*, Book 1). This latter aggressive intervention is rarely required.

If a concussion or head injury is suspected, consult a health-care professional. Common symptoms of concussion include headache, nausea, vomiting, dizziness, irritability, unsteadiness, or other changes in awareness or mental state. Loss of consciousness can occur with concussions, but it is not the only indicator of a concussion.

If an athlete receives a noticeable blow to the head but remains conscious, remove the player from the practice or game for evaluation and observation. If the athlete has symptoms of concussion continuing after 30 minutes, seek immediate medical advice and care. The athlete should not be returned to play and should receive medical clearance prior to returning to play.

If symptoms last less than 30 minutes after an athlete receives a noticeable blow to the head but he remains conscious, the athlete still should be referred for evaluation by a physician and should receive medical clearance prior to returning to play.

#### RETURN TO PLAY

All head injuries in youth football should be treated as serious. Coaches, working with a physician, must carefully manage a player with a head injury and not allow the player to return to play without medical clearance. When a coach is in doubt about this serious problem, medical personnel should be consulted. It is important to have the attending physician talk directly with the injured player's parents to explain the injury and any current or future risks.

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

ACSM Current Comment: Football Helmet Removal <http://www.acsm.org>.

ACSM's Handbook for the Team Physician, Williams & Wilkins, 1996. pp. 188-195.

Cantu, R.C. Return to play guidelines after a head injury. *Clinical Journal of Sports Medicine* 1998, 17(1): 45-60.

# NECK AND SPINE INJURIES

**TRAUMA TO THE NECK AND SPINE ARE POTENTIALLY THE MOST SERIOUS FOOTBALL INJURIES. A YOUTH COACH SHOULD BE ABLE TO RECOGNIZE AND RESPOND TO THEM.**

## WHAT COACHES SHOULD KNOW



- **INJURY PREVENTION INCLUDES PROPER ATHLETIC CONDITIONING, STRETCHING, WARM UP, ATTENTION TO TECHNIQUE, AND ENFORCEMENT OF SAFETY RULES, INCLUDING WEARING PROPER GEAR.**
- **A STINGER OR BURNER IS CAUSED BY A RAPID LATERAL MOVEMENT OR TURN OF THE HEAD THAT STRETCHES THE CERVICAL NERVES AND CAUSES TEMPORARY BURNING PAIN OR PARALYSIS THAT MAY RADIATE DOWN AN ARM.**
- **ATHLETES WHO SUFFER A BURNER SHOULD BE EVALUATED BY MEDICAL PERSONNEL AND RECEIVE CLEARANCE PRIOR TO RETURNING TO PLAY.**
- **NECK AND BACK STRAINS ARE INJURIES THAT DAMAGE OR TEAR MUSCLE FIBERS OR THE TENDONS THAT ATTACH MUSCLE TO BONE. THESE INJURIES SHOULD BE ICED AND THE EXTENT OF DAMAGE SHOULD BE EVALUATED BASED ON THE COMMON GUIDELINES FOR SEVERITY OF MUSCLE STRAINS.**
- **FRACTURES, DISLOCATIONS, AND SUBLUXATION INJURIES ARE SERIOUS MEDICAL CONDITIONS THAT MAY PRODUCE TRAUMA TO THE SPINAL CORD. INJURED PLAYERS SHOULD BE IMMOBILIZED, ASSESSED FOR SENSORY AND MOTOR DEFICITS, AND ATTENDED TO BY A PHYSICIAN IMMEDIATELY.**
- **AN ATHLETE WHO SUFFERS A HERNIATED OR RUPTURED DISK SHOULD BE EVALUATED BY A PHYSICIAN.**
- **IF AN ATHLETE IS SUSPECTED OF HAVING A NECK OR UPPER SPINE INJURY, PREVENTION OF FURTHER DAMAGE OR INJURY SHOULD BE THE FIRST AND IMMEDIATE PRIORITY. THE NECK SHOULD BE STABILIZED AND ADEQUATE BREATHING ENSURED.**
- **IMMEDIATE MEDICAL ATTENTION IS USUALLY REQUIRED FOR NECK AND SPINE INJURIES.**





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Coaches are responsible for closely supervising both practice and competition, and enforcing proper technique and safety rules, including insistence on wearing the proper protective gear. It is critical that athletes understand that the neck can be fractured at walking speed if the head is angled down so that the cervical spine is straight. Explain that the no-spearing rule is designed to protect athletes from neck fracture.

During tackling maneuvers or falls, the neck is often snapped laterally, with or without rotation, causing what is known as a stinger or burner. This type of trauma stretches or pinches the nerves emanating from the neck and causes a temporary burning pain and or paralysis that may radiate down the arm for a few seconds. Muscle weakness and numbness may last for weeks, and evaluation by a medical professional is required. Appropriately fitted shoulder pads, a neck roll, and a strength and conditioning program that focuses on neck muscles can help prevent these types of injuries

The muscles of the neck and spine are highly susceptible to strain. Muscle strains, or tears, may cause inflammation, local pain, and limitation of movement. Strains should be treated by removing the player from activity and applying ice to the affected area.

After a period of rest, a progressive strengthening and stretching program will help prevent further injury. Athletes do not have full neck protection unless all the muscles of the neck are functioning normally.

The vertebrae of the cervical spine can also be subjected to fractures, dislocations, or subluxation injuries caused by compression-flexion or hyperextension. Compression-flexion occurs when force is applied to the top of the head while it is in a forward position. Hyperextension refers to a greater-than-normal backward bend of the neck. The severity of these injuries is widely variable and difficult to assess, as the onset of persistent symptoms can take minutes or days. All suspected fractures, dislocations, and subluxations should be immobilized prior to movement, and players should only be moved in this situation by emergency medical personnel.

Football players sometimes experience injuries to the jelly-filled disks between the vertebrae of the middle or lower back. Because of acute trauma or overuse injury, these disks can herniate, or

protrude, from between the vertebrae and compress a nearby nerve. More seriously, the intervertebral disk can rupture. Athletes with a herniated or ruptured disk will likely experience extreme pain and stiffness in the neck or back, along with radiating pain down one arm or leg.

### **COACH'S RESPONSE**

Any athlete suspected of suffering a burner should be removed from play and referred for medical care and assessment. The injured area can be treated with ice for up to 72 hours, followed by the application of heat packs.

If an athlete is suspected of having a neck or upper spine injury, prevention of further damage or injury should be the first priority. If the player is down, the helmet, chin strap, and pads should not be removed. If it is possible that a downed athlete has incurred cervical spine trauma, an adult should immediately stabilize the player's neck using hands and forearms while checking for airway closure and responsiveness.

If the athlete is not breathing, cardiopulmonary resuscitation (CPR) should begin immediately. The facemask should be removed with a special tool, but the helmet and shoulder pads should remain unless careful removal is advised by medical personnel or if the equipment interferes with performing appropriate CPR. Emergency medical personnel should be called immediately. It should be assumed that an unconscious athlete has a serious neck injury and should be examined on the field by a medical professional. Smelling salts should never be used on an unconscious athlete.

If the athlete has sustained an injury and has walked off the playing field, the player should be immediately examined for sensory or motor deficits. The coach should ask about how the injury happened, whether any pain is present, whether any tingling or loss of feeling in either arms or hands is present, and whether the athlete has had a previous neck injury. If any symptoms are present, the neck should be immobilized and the player transported to an emergency room.

If a spinal disk-related injury is suspected, the athlete should be immediately evaluated by a physician. In the absence of a physician or athletic trainer, it is the coach's responsibility to administer first aid, immobilize the player, and call for immediate assistance.

### **RETURN TO PLAY**

In order for an athlete to return to play after a neck or spine injury, there must be a physical examination with normal results, and no injury symptoms or limitations. A field-skills drill (no contact) to evaluate the player's skills may be of assistance. A release from a physician is required and should help the coach decide on the appropriateness of returning to play.

It is the responsibility of the youth or high school football coach to teach athletes the techniques to prevent neck and spine injuries, including strict adherence to safety rules and proper athletic gear. Coaches should recognize the types of injuries that may cause serious orthopedic or neurological damage, and should be capable of on-field evaluation and first aid.

## **MORE READING**

**GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)**

*ACSM brochure: Sprains & Strains: What They Are & What to Do about Them* <http://www.acsm.org>.


*National Institute of Arthritis and Musculoskeletal and Skin Diseases, Childhood Sports Injuries and their Prevention:*

*A Guide for Parents with Ideas for Kids* <http://www.niams.nih.gov>

*Dymant, P.G. (Ed.). Sports Medicine: Health Care for Young Athletes, 2nd Ed. American Academy of Pediatrics: 1991. p. 236.*

DENTAL INJURIES CAN OCCUR IN CONTACT SPORTS SUCH AS YOUTH FOOTBALL.

## WHAT COACHES SHOULD KNOW

- 
- **DENTAL INJURIES CAN BE PREVENTED WITH APPROPRIATE EDUCATION AND EQUIPMENT.**
  - **IT IS A COACH'S RESPONSIBILITY TO ENSURE THAT ALL PLAYERS WEAR PROPERLY FITTED MOUTH GUARDS IN PRACTICE, SCRIMMAGES, AND GAMES.**
  - **COACHES, TRAINERS, AND APPROPRIATE PROGRAM VOLUNTEERS SHOULD BE TRAINED IN FIRST-AID FOR DENTAL INJURIES.**

There are three basic types of tooth injury—fractures, luxations, and avulsions. Tooth fractures are characterized by a split tooth with one fragment still attached to the base of the tooth and the other fragment dislodged. A luxated tooth is one that has been loosened or shifted in position but remains in the socket. A tooth avulsion is the most serious and occurs when the entire tooth is removed from the socket. An important way to reduce the risk of these types of injuries is to ensure that mouth guards are available and worn by all players during all practices, scrimmages, and games.

By absorbing energy from a blow to the chin or head, a properly fitted mouth guard reduces the risk not only of dental trauma but of brain concussion injury as well. Mouth-formed boil and bite mouth guards—the pliable mouth guard material is heated to soften it temporarily, then is placed in the mouth for adaptation to the player's bite—are the most popular variety for prevention of dental injuries in this age group. Such mouth guards are readily available and relatively inexpensive. Custom mouth guards have a better fit, thinner profile, and a longer life span, but are more expensive. Custom mouth guards should be considered for the quarterback and other players who must speak during play.

### COACH'S RESPONSE

Dental injuries often occur simultaneously with other trauma, so an examination of the mouth should be conducted each time an injury occurs to the head or face. If a dental injury causes bleeding, have the athlete gently bite on a towel or gauze pad to help control the flow of blood.

If a tooth is fractured, the fragment should be carefully handled and sent with the athlete to a dental office or emergency facility. If a tooth is shifted or displaced, the athlete requires immediate attention by a dentist or health-care professional.

In the case of a completely removed tooth, time is of the essence. If the tooth remains out of the socket for more than two hours, it is unlikely that the tooth can be saved. The lost tooth should be placed in a container of protective solution (such as clean water or saline) and sent with the athlete immediately to an oral surgeon.

### RETURN TO PLAY

Any athlete with a serious dental injury should be referred for a dental evaluation and returned to play only after such an evaluation and release by a physician. For less serious injuries, a coach should consult with medical personnel if there are any questions, and should restrict participation of a player if there is any doubt.

# SPRAINS AND STRAINS

SPRAINS AND STRAINS ARE COMMON INJURIES IN YOUTH AND HIGH SCHOOL FOOTBALL, BUT THEY OFTEN ARE CONFUSED. A YOUTH COACH SHOULD KNOW HOW TO RECOGNIZE THE DISTINCTION BETWEEN THEM.



## WHAT COACHES SHOULD KNOW

- A STRAIN DESCRIBES DAMAGE TO MUSCLE FIBERS OR THE TENDONS THAT ATTACH MUSCLE TO BONE.
- A SPRAIN DESCRIBES DAMAGE TO LIGAMENTS, THE STRONG BANDS OF TISSUE THAT CONNECT BONE TO BONE AT JOINTS.
- SUSPECTED SPRAINS AND STRAINS SHOULD BE PROTECTED FROM FURTHER INJURY BY REMOVING THE PLAYER FROM ACTIVITY. THE INJURED AREA SHOULD THEN BE ELEVATED AND TREATED WITH ICE AND COMPRESSION.
- DEFORMITIES OR SIGNIFICANT PAIN AND SWELLING INDICATE THE POSSIBILITY OF A THIRD-DEGREE INJURY OR FRACTURE. THE INJURY SHOULD BE IMMOBILIZED, AND THE PLAYER SHOULD RECEIVE MEDICAL ATTENTION.

A muscle *strain* describes damage to muscle fibers or the tendons that attach muscle to bone. Common synonyms include torn muscle, pulled muscle, or ruptured tendon. These types of injuries are classified from least to most severe. If little tissue is torn, only mild tenderness and pain is felt, and the player retains a full range of motion in the affected limb, the injury is likely a first-degree strain. A third-degree strain—the most serious—generally refers to a major tearing resulting in painful and limited motion.

A *sprain*, on the other hand, refers to a ligament injury. Ligaments are the strong bands of tissue that

connect bone to bone at the site of a joint. Again, the severity of the injury is classified by the amount of tearing and pain, and, in this case, joint stability and degree of swelling. A first-degree sprain involves little tearing, pain, or swelling, and the joint remains stable. Second-degree sprains are slightly more serious. A third-degree sprain indicates complete rupture of the involved ligament accompanied by a large amount of swelling. Interestingly, although there can be intense pain at the onset of a third-degree sprain, it can be relatively pain free compared to first- and second-degree sprains that often become more painful in the 2-5 days following the injury.



GEORGE ROSE

### COACH'S RESPONSE

If a strain or sprain occurs, protect the athlete from further injury, remove the athlete from practice or play, and splint the affected area to limit abnormal planes of motion.

Management of strains and sprains then should follow the principles outlined below:

- R**– **Rest** the injured area: Limit use of the injured area until pain free and cleared by a physician.
- I**– **Apply Ice**: Apply an ice pack to the area for 20 minutes four to eight times a day.
- C**– **Apply Compression**: Elastic wraps, air casts and splints may help reduce swelling.
- E**– **Elevate** the injured area: Keep the injured area above the level of the heart, if possible.

Compression should not be too tight. More swelling can occur if a wrap is too tight around an injury. Numbness, tingling, increased pain, and swelling of the limb below the wrap are all indicators that the compression is too tight and should be loosened. This is a particular hazard if ice is used with compression.

If an ice pack is used, care should be taken not to leave the ice directly on skin or not to apply the ice for an extended period of time (particularly to bony areas without much fat). A maximum of 20 minutes is recommended.

In the absence of a physician or athletic trainer, it is the coach's responsibility to remove the player from the activity to prevent further injury. Deformities, significant pain, or swelling indicate that the injury should be immobilized and the player should seek immediate medical attention.

### RETURN TO PLAY

Because it may not be easy to differentiate a strain or sprain from a fracture, all injuries should be examined by an athletic trainer or physician before a player can return to practice or competition.

Strains and sprains are common injuries in youth and high school football. Coaches should recognize the symptoms and signs of these two types of injuries and be aware of the RICE principles for rendering first aid. If possible, an athletic trainer or physician should examine the injury and recommend a return-to-play program. Immediate medical attention is required if deformities, suspected fracture, significant pain, or swelling are present.

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

ACSM brochure: *Sprains & Strains: What They Are & What to Do About Them* <http://www.acsm.org>.

National Institute of Arthritis and Musculoskeletal and Skin Diseases: *Childhood Sports Injuries and Their Prevention:*

*A Guide For Parents With Ideas For Kids:* <http://www.niams.nih.gov>.

# COMMON KNEE INJURIES

A YOUTH COACH SHOULD BE FAMILIAR WITH THE EVENTS THAT CAUSE THE MOST COMMON KNEE INJURIES AND THE APPROPRIATE TREATMENT.



## WHAT COACHES SHOULD KNOW

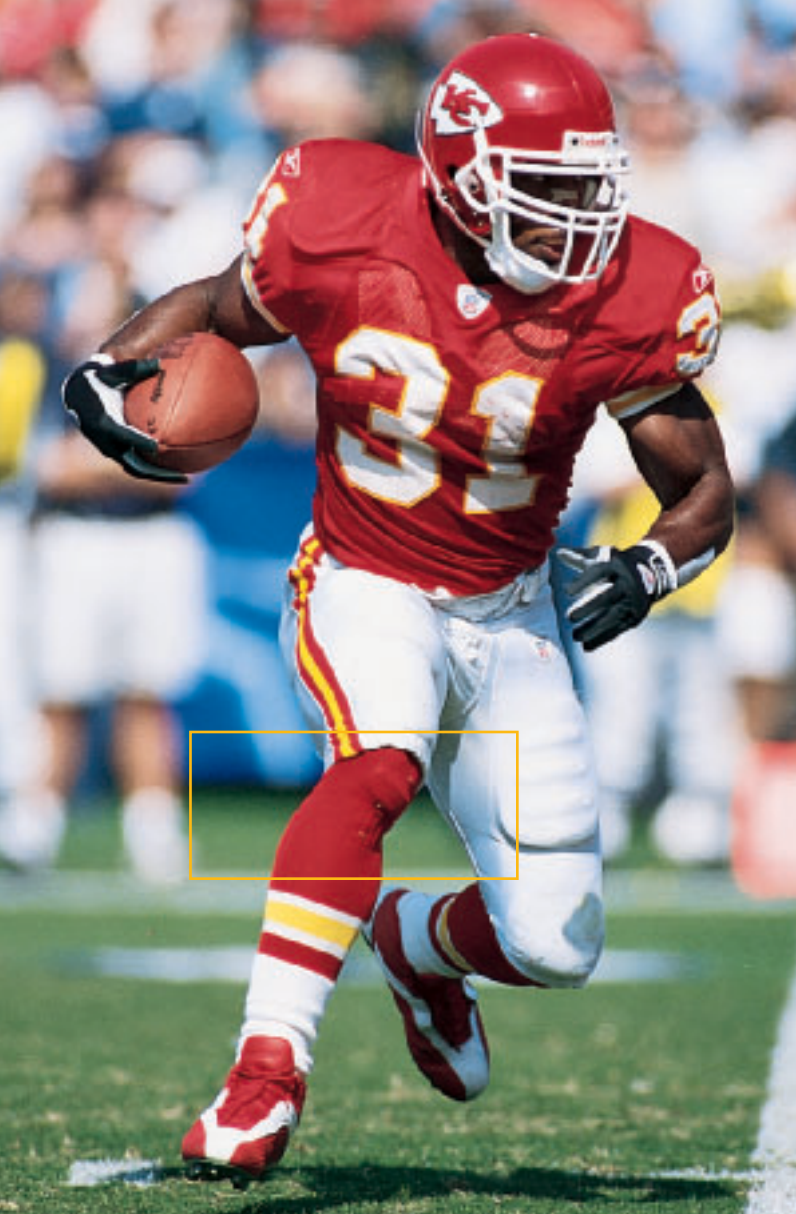
- **TO HELP UNDERSTAND THE SEVERITY OF A KNEE INJURY, IT IS IMPORTANT FOR THE COACH TO KNOW HOW IT OCCURRED.**
- **SYMPTOMS OF SEVERE INJURY INCLUDE A POPPING SOUND UPON IMPACT, IMMEDIATE SWELLING, WEAKNESS, LOCKING, GIVING-WAY, POINT TENDERNESS IN A SPECIFIC AREA, AND PROBLEMS WITH STABILITY WHEN RUNNING OR TURNING. MEDICAL PERSONNEL SHOULD BE CONTACTED IMMEDIATELY IF ANY OF THESE SYMPTOMS EXIST.**
- **IF THE KNEE INJURY IS SERIOUS, IT IS CRITICAL TO CONSULT A PHYSICIAN TO DETERMINE DIAGNOSIS, TREATMENT OPTIONS, AND RETURN-TO-PLAY RECOMMENDATIONS.**
- **ALL YOUTH FOOTBALL PLAYERS SHOULD PARTICIPATE IN STRETCHING AND STRENGTHENING EXERCISES BOTH BEFORE AND AFTER ATHLETIC ACTIVITY TO REDUCE THE POSSIBILITY OF KNEE INJURY.**
- **ATHLETES WHO HAVE UNDERGONE A KNEE INJURY THAT HAS REQUIRED A MEDICAL ASSESSMENT SHOULD BE REQUIRED TO HAVE CLEARANCE (FROM A PHYSICIAN) PRIOR TO RETURNING TO PLAY.**
- **IT IS IMPERATIVE THAT AN ATHLETE SEE A PHYSICIAN IF THE KNEE IS SWOLLEN OR IF PAIN PERSISTS FOR MORE THAN FIVE DAYS.**
- **PAIN UNDER THE KNEECAP WITHOUT IMPACT IS COMMON IN YOUNG ATHLETES, AND SHOULD BE EVALUATED TO IMPROVE MECHANICS.**

Knee injuries account for more than one-third of all youth football injuries. The knee joint routinely sustains forces of six to seven times an athlete's body weight, and is capable of bending, twisting, and withstanding tremendous impact. Because football involves collisions and requires running, rapid changes of direction, and jumping, knee injuries are sure to occur.

The mechanism of injury is the best indicator for determining the degree of severity. Many ligament and cartilage injuries result from the athlete's twist-

ing his body above a planted foot, rather than from hard physical contact with another player. This frequently is marked by immediate pain, a popping sound, and noticeable swelling within an hour. This type of injury often results in instability and an inability of the knee to function normally. If the anterior cruciate ligament or a meniscus cartilage are torn, surgery often is required followed by an extended recovery with formal rehabilitation.

If the athlete experiences pain from a force striking the knee from the inside or outside, the injury



PETER BROUILLET

weeks. The most effective prevention strategy for patellar contusions is using protective kneepads, which are hard in front and soft in back.

Even in the absence of contact or force injury to the knee, young athletes commonly complain of pain when bending the knees, or walking up and down stairs. Often the cause of pain is abnormal movement of the kneecap. A physician should evaluate the athlete for interventions that will reduce the pain and improve performance. Flexibility and strength training are important. A well-designed leg muscle stretching and strengthening program, integrated into the season conditioning program, will improve patella tracking and decrease pain.

### COACH'S RESPONSE

If an athlete injures a knee, the coach or medical personnel (if available) should examine the player on the field. The athlete should be questioned about how the injury occurred, if this type of injury has happened previously, and the location of the pain. The skin and joint should be examined for obvious swelling or joint deformities. Other indicators of seriousness include pain when attempting to bear weight, the knee giving way, locking, or tenderness in a specific area of the knee. If any of these symptoms are present, medical attention is immediately required for the athlete. The athlete should be removed from the field, with assistance, and qualified medical personnel (trainer, physician, etc.) should conduct additional comprehensive tests on the knee to determine the site and severity of the injury. Ice should be applied if swelling is noticed.

### RETURN TO PLAY

Any athlete with a serious knee injury should be referred for a medical evaluation and returned to play only after such an evaluation and release by a physician. For less serious injuries, a coach should consult with medical personnel if there are any questions, and should restrict participation of a player if there is any doubt.

will most likely be a ligament sprain, but if not entirely torn usually will heal within three to six weeks. Another possible knee injury in young football athletes is a physal (growth plate) fracture in the area at the end of a bone. This can resemble a ligament injury.

Should the athlete fall or be hit directly on the patella, or kneecap, the pain is usually from a patellar contusion, or bruise on the kneecap. Patellar contusions are rarely associated with serious or long-term damage, and usually heal within two

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

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Palluska, S.A., & McKeag, D.B. *Progressive Knee Pain in a Young Football Player*.  
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# FOOT AND ANKLE INJURIES

**FOOT AND ANKLE INJURIES ARE COMMON IN YOUTH AND HIGH SCHOOL FOOTBALL. A YOUTH COACH SHOULD BE VERSED IN HOW TO PREVENT AND TREAT THEM.**

## WHAT COACHES SHOULD KNOW



- **INJURY PREVENTION INCLUDES PROPER STRENGTHENING, STRETCHING, WARM UP, AND ATTENTION TO TECHNIQUE, AS WELL AS CLOSE SUPERVISION OF PRACTICE AND COMPETITION, WITH ENFORCEMENT OF SAFETY RULES.**
- **AN ANKLE SPRAIN REFERS TO AN INJURY TO AN ANKLE LIGAMENT, THE STRONG BANDS OF TISSUE THAT CONNECT LOWER LEG, ANKLE, AND FOOT BONES. A STRAIN DESCRIBES DAMAGE TO MUSCLE FIBERS OR THE TENDONS THAT ATTACH MUSCLE TO BONE.**
- **FOOT INJURIES COMMONLY AFFECT THE TENDONS OF THE TOES, BALLS OF THE FEET, OR HEELS. FRACTURES ARE ALSO FREQUENTLY SUSTAINED TO THE SMALL BONES OF THE FEET.**
- **FOOT AND ANKLE INJURIES SHOULD BE PROTECTED BY RESTRICTING THE PLAYER FROM ACTIVITY. THE INJURED AREA SHOULD THEN BE ELEVATED AND TREATED WITH ICE AND COMPRESSION.**
- **DEFORMITIES AND/OR SIGNIFICANT PAIN AND SWELLING INDICATE THE POSSIBILITY OF A THIRD-DEGREE INJURY OR A FRACTURE. IN THIS CASE, THE INJURY SHOULD BE IMMOBILIZED AND THE PLAYER SHOULD RECEIVE IMMEDIATE MEDICAL ATTENTION.**

Prevention of foot and ankle injuries begins with proper strengthening, stretching, warm up, and attention to technique. In addition, coaches should closely supervise both practice and competition, enforcing safety rules.

One of the most common injuries in sports is an ankle sprain, which is an injury to one of the ligaments, or strong bands of tissue, that connect the foot and leg bones of the ankle. The direction of the force will determine if the inside, outside, or central ligament of the ankle is torn. A strain refers

to tearing of muscle or tendon fibers. Sprains and strains can be mild, with little swelling or pain and good range of movement; moderate, with more swelling or pain and limited movement; or severe, with marked swelling, pain, instability, and little movement or weight-bearing ability. A sprain to the middle ankle ligament, called a high sprain, often has little swelling, but significant pain.

Foot injuries commonly involve the toes. For example, turf toe is caused by jamming the big toe against a hard playing surface. This ligament sprain





GEORGE ROSE

will cause pain and swelling of the toe joint that increases over 24 hours and can restrict a player's movement or weight-bearing ability, and keep him from participation for 3 to 6 weeks.

Besides the toe, the balls of the feet or heels may be bruised because of overuse or poor playing surfaces. Heel pain can also be caused by Achilles tendinitis or tendon tears as well as plantar fasciitis, a microtear or inflammation of the fascia that runs from the heel underneath the foot to the toes. In youth football players, the calcaneal apophysis (growth plate at the heel) can become inflamed and cause pain that will disappear when the growth plate fuses. Fractures are also frequently sustained to one or more of the many relatively small bones of the foot.

### COACH'S RESPONSE

In the absence of a medical professional or athletic trainer, the coach must perform an initial assessment of the severity of a foot or ankle injury and provide practical first aid. First, all foot injuries and ankle strains or sprains should be treated using the **RICE** principles below:

First, protect the player from further injury: Remove the athlete from activity and immobilize the area.

**R - Restrict activity:** Limit use of the injured area for 48 hours.

**I - Apply Ice:** Apply an ice pack to the area for no more than 20 minutes, four to eight times per day.

**C - Apply Compression:** Elastic wraps, air casts, and splints may help reduce swelling.

**E - Elevate the injured area:** Keep the injured area above the level of the heart, if possible.

Compression should not be too tight. More swelling can occur if a wrap is fixed too tightly around an injury. Numbness, tingling, increased pain, and swelling of the limb below the wrap are all indicators that the compression is too tight. This is a particular hazard if ice is used with compression.

Care also should be taken not to leave the ice directly on skin for more than 20 minutes.

Significant pain, swelling, and apparent deformities sometimes indicate a fracture. In this case, the ankle should be securely immobilized and emergency medical personnel should be contacted immediately. During rehabilitation, toes, feet, and ankles can be wrapped, taped, or braced to limit movement and control swelling.

### RETURN TO PLAY

Any athlete with a serious foot or ankle injury should be referred for a medical evaluation and returned to play only after such an evaluation and release by a physician. For less serious injuries, a coach should consult with medical personnel if there are any questions. The coach should restrict participation of a player if there is any doubt.

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

*ACSM brochure: Sprains & Strains: What They Are & What to Do About Them* <http://www.acsm.org>.

*National Institute of Arthritis and Musculoskeletal and Skin Diseases, Childhood Sports Injuries and Their Prevention: A Guide For Parents With Ideas for Kids.* <http://www.niams.nih.gov>.

*Baker, Jr., C.L. (Ed.). Hughston Clinic Sports Medicine Field Manual, Baltimore: Williams & Wilkins, 1996, p. 259.*

# COMMON SHOULDER INJURIES

SHOULDER INJURIES OCCUR IN SPORTS THAT INVOLVE OVERHEAD MOTION, SUCH AS THROWING A FOOTBALL. A YOUTH COACH SHOULD KNOW THE GUIDELINES FOR THE PREVENTION OF SHOULDER INJURIES, AS WELL AS FOR PROPER TREATMENT AND REHABILITATION.



## WHAT COACHES SHOULD KNOW

- **SHOULDER INJURIES ARE PREVENTABLE WITH PROPER STRENGTHENING AND ENDURANCE PROGRAMS. AN ATHLETE CAN BENEFIT GREATLY FROM PHYSICAL THERAPY FOR A SHOULDER INJURY.**
- **SHOULDER INJURIES CAN INCLUDE TENDINITIS, OR SWELLING OF THE TENDON CONNECTING THE MUSCLE TO THE BONE, RESULTING FROM A FALL OR OVERUSE; SHOULDER INSTABILITY FROM A FALL ONTO AN OUTSTRETCHED ARM; A SEPARATED SHOULDER FROM FALLING ON THE SIDE OF A SHOULDER JOINT; A NERVE OR BLOOD-VESSEL INJURY OR A GROWTH-PLATE INJURY CAUSED BY A FALL OR OVERUSE.**
- **IF THERE ARE SIGNS OF BLEEDING ASSOCIATED WITH A SHOULDER INJURY, EMERGENCY PERSONNEL SHOULD BE CONTACTED IMMEDIATELY.**
- **ATHLETES WHO HAVE UNDERGONE A SHOULDER INJURY THAT HAS REQUIRED A MEDICAL ASSESSMENT SHOULD BE REQUIRED TO HAVE CLEARANCE (FROM A PHYSICIAN) PRIOR TO RETURNING TO PLAY.**

The shoulder joint has the greatest range of motion of any joint in the body. Because of this enormous mobility, the shoulder is prone to injury. The ball-and-socket shoulder joint is surrounded by four small but important muscles, which make up the rotator cuff. These muscles and their adjoining ligaments provide stability when the shoulder is in motion. Thus, it is important for the athlete to maintain a rotator cuff strength and endurance program for prevention of shoulder injuries. Rotator cuff problems in athletes are typically seen in overhead-

throwing athletes, such as quarterbacks. The repeated throwing may result in rotator cuff tendinitis, which is painful but preventable.

The keys to recognizing rotator cuff tendinitis are pain that increases with activity and shoulder pain when lifting the arm overhead. When the athlete puts too much pressure on the rotator cuff, the demands on the muscle are greater than that of the force muscles are able to produce. Thus, the tendons can become irritated and inflamed over time from absorbing the work load not controlled by the muscle.

An athlete suffering from shoulder injury may also experience shoulder instability. This is usually caused by landing forcefully on an arm or hand. Landing on an outstretched hand transmits force to the shoulder joint, causing tissue damage, and leads to a sensation of the shoulder slipping out of joint. Without treatment, the athlete can experience repeated episodes, and risks dislocation of the shoulder joint.

Another type of shoulder problem, specific to the growing athlete, is stress fractures of the growth plates at the top of the upper arm bone (humerus). This is typically an overuse injury (from too much throwing, for example) and is difficult for a coach to evaluate.

### COACH'S RESPONSE

Shoulder instability may be present when the athlete feels a slipping sensation in the shoulder or feels pain associated with tingling in the hands and fingers. The athlete should be removed from practice or competition immediately and referred to a health-care professional.

A shoulder dislocation can be identified on the field by feeling the area around the top of the arm. If the player is unable to put the hand of the affected side on the opposite shoulder, the joint is likely dislocated. If a bulge from the upper arm bone can be felt (out of place), the shoulder is dislocated. It is important that the dislocation be stabilized (the player removed from play and voluntarily relaxed) and fixed as soon as possible. The player should be examined by a physician as soon as possible after the injury. If there are signs of bleeding, dislocation, or fracture, emergency personnel should be called immediately.

If an athlete experiences sharp pain when sustaining force directly on the outside of the shoulder joint, the coach or health-care professional should rule out a clavicle or collarbone fracture by determining the presence of tenderness over the clavicle. If the clavicle is not tender, the injury may be to the

acromioclavicular (AC) joint (between the clavicle and the scapula). If the athlete complains of pain or an inability to move the arm across the body, an AC sprain, or separated shoulder, is possible and the athlete should be evaluated by a physician as soon as possible.

Trauma to the shoulder area can also result in fractures of the bones in the shoulder and damage to nerves passing through the shoulder girdle. Any loss of function or immediate persistent pain should be evaluated by a physician immediately.

Any athlete (particularly a throwing athlete) who complains of shoulder pain without any signs of acute injury should be referred to a physician for evaluation as he may have an impingement or overuse injury of the shoulder. This type of injury effects the muscles, tendons, and bursae of the shoulder.

Should an acute shoulder injury occur, the arm should be immobilized and ice should be applied to the painful area. Medical care personnel should be contacted immediately. If an ice pack is used, care should be taken to not leave the ice directly on skin or apply the ice for an extended period of time (particularly to bony areas without much fat). A maximum of 20 minutes is recommended.

### RETURN TO PLAY

Any athlete with shoulder pain as described here should be referred for a medical evaluation and returned to play only after an evaluation and release by a physician. For less serious injuries, a coach should consult with medical personnel if there are any questions, and should restrict participation of a player if there is any doubt.

Young athletes are especially prone to shoulder injuries. It is the responsibility of the coach to incorporate preventive strengthening exercises into the season training schedule and to determine the severity of shoulder injuries based on the event. Following such an injury, the athlete should undergo rehabilitation and strengthening to prevent repeated injuries.

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

*American Academy of Orthopaedic Surgeons: AAOS Online Service Patient Education Brochures. Play it Safe Sports. <http://orthoinfo.aaos.org/>.*

*Baker, Jr., C.L. (Ed.). The Hughston Clinic Sports Medicine Field Manual. Baltimore: Williams & Wilkins, 1996. pp. 85, 97, 109 et seq.*

*Garrett, W.E., Kirkendall, D.T., & Squire D.L. Principles & Practice of Primary Care Sports Medicine, eds. Philadelphia: 2001. pp. 477-491.*

*Dymont, P.G. (Ed.). Sports Medicine: Health Care for Young Athletes, 2nd Ed. American Academy of Pediatrics: 1991, p. 220.*

## COMMON ELBOW AND HAND INJURIES

**HAND AND ELBOW INJURIES ARE FREQUENTLY RELATED TO COLLISIONS OR OVERUSE IN CONTACT SPORTS SUCH AS FOOTBALL. A YOUTH COACH NEEDS TO IDENTIFY THE CAUSE OF THE INJURY TO ASSIST IN ITS SUBSEQUENT CARE.**

### WHAT COACHES SHOULD KNOW



- **HAND AND ELBOW INJURIES FREQUENTLY RESULT FROM OVERUSE, BUT CAN ALSO OCCUR AS A RESULT OF A FORCEFUL IMPACT FROM COLLISIONS OR FALLS.**
- **PREVENTION MEASURES INCLUDE USING PROPER MECHANICS, WARM-UPS, AND STRETCHING, AS WELL AS LIMITING THE AMOUNT OF TIME SPENT THROWING EACH WEEK.**
- **A YOUTH COACH SHOULD BE AWARE OF SWELLING, BRUISING, AND PERSISTENT PAIN AS INDICATORS OF THE NEED FOR MEDICAL ATTENTION. IN SUCH CASES, THE ATHLETE SHOULD BE REMOVED FROM PARTICIPATION, ICE SHOULD BE APPLIED TO THE AFFECTED AREA IMMEDIATELY, AND THE ATHLETE SHOULD BE TRANSPORTED TO A MEDICAL CARE FACILITY.**
- **A FALL OR COLLISION THAT RESULTS IN PAIN FOR THE ATHLETE REQUIRES IMMEDIATE MEDICAL ATTENTION.**
- **INJURIES TO THE HAND AND ELBOW SHOULD BE TREATED BY A HEALTH-CARE PROFESSIONAL IF THE ATHLETE EXPERIENCES INCREASED PAIN WITH THROWING, PERSISTENT PAIN FOR MORE THAN FIVE DAYS, OR SWELLING AND BRUISING AT THE JOINT.**

The most common elbow ailment involves chronic pain resulting from overuse. This often weakens the ligaments, and inflames muscles, tendons, and the growth plates. To avoid an overuse injury, a coach should limit the number of throws an athlete makes in a day. It might be wise to use throw counts, as used in baseball for pitchers, to avoid overuse injuries to the football passer. Specific recommendations are difficult to make, but 30-50 throws with 1-2 days of rest between outings may be a good rule of thumb. Proper throwing mechanics also help prevent injury.

Elbow pain can also develop from a single event or

an injury to tissue already vulnerable from overuse. Because the elbow is a joint involving three arm bones and associated ligaments and tendons, it is common for an athlete to suffer trauma from a collision, which may result in a sprain to the inside or outside ligaments, strain to the muscles surrounding the elbow, or a fracture.

Hand injuries most often result from a forceful impact, such as collision with the ground or another player. These should be assessed immediately for swelling and bruising to identify a dislocation, fracture, or a torn ligament or tendon.



WILLIAM SALLAZ

### COACH'S RESPONSE

If an athlete experiences increasing pain with throwing, or if the pain lasts longer than five days, the elbow should be examined by a physician. Pain as a result of a fall, combined with swelling in the elbow, may indicate a more serious injury. In this case, ice should be applied to the affected area quickly, the elbow should be immobilized, and the athlete transported to a medical care facility.

If an ice pack is used, do not leave the ice directly on skin and do not apply the ice for more than 20 minutes.

Swelling or bruising in the hand can indicate a possible bone fracture or torn ligament or tendon

and should be treated by a physician. In the absence of a physician or athletic trainer, the player should be removed from activity and ice applied to the affected area. The injured area should be immobilized and the athlete should be transported to a medical care facility as soon as possible.

### RETURN TO PLAY

Any athlete with a serious hand or elbow injury should be referred for a medical evaluation and returned to play only after such an evaluation and release by a physician. For less serious injuries, a coach should consult with medical personnel if there are any questions, and should restrict participation of a player if there is any doubt.

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

Nirschl R.P., & Kraushaar B.S. (Eds.). *The Physician and Sports Medicine Assessment and Treatment Guidelines For Elbow Injuries*, [http://www.physsportsmed.com/issues/may\\_96/nirschl.htm](http://www.physsportsmed.com/issues/may_96/nirschl.htm).

Baker, Jr., C.L. (Ed.). *Hughston Clinic Sports Medicine Field Manual*, Baltimore: Williams & Wilkins, 1996. p. 117, 131.

Dyment, P.G. (Ed.). *Sports Medicine: Health Care For Young Athletes*, 2nd Ed. American Academy of Pediatrics: 1991, p. 220.

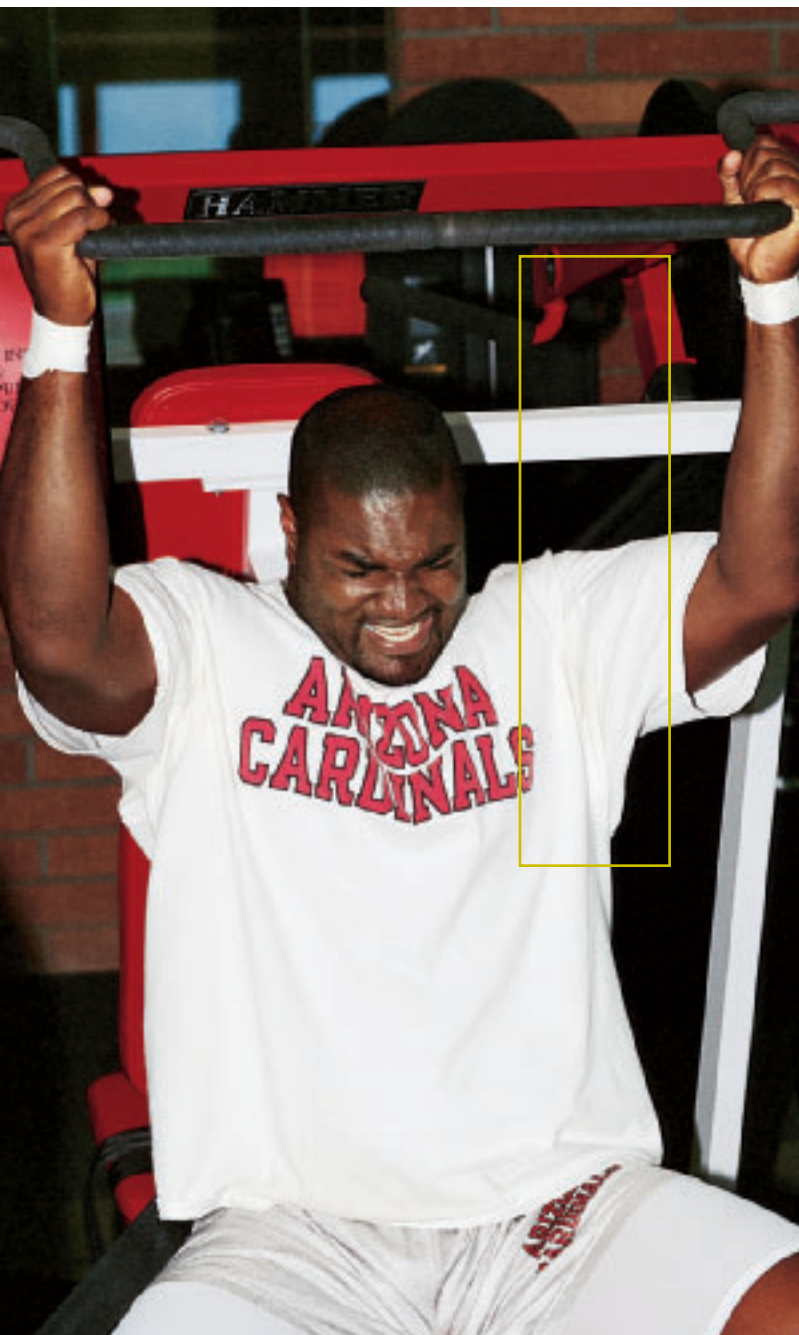
# OVERTRAINING

OVERTRAINING SYNDROME IS THE CONDITION THAT RESULTS WHEN AN ATHLETE EXTENDS HIMSELF BEYOND THE PHYSICAL LIMITATIONS OF HIS BODY. COACHES NEED TO RECOGNIZE AND CORRECT THIS SITUATION.



## WHAT COACHES SHOULD KNOW

- **OVERTRAINING CAN OCCUR IN SINGLE-SPORT ATHLETES WHO TRAIN INTENSELY OR MULTIPLE-SPORT ATHLETES WHO PLAY TWO OR MORE SPORTS AT THE SAME TIME OR PARTICIPATE IN BACK-TO-BACK SEASONS.**
- **SYMPTOMS OF OVERTRAINING WILL VARY FROM PLAYER TO PLAYER BUT ARE FREQUENTLY CHARACTERIZED BY A DECREASE IN PERFORMANCE LEVEL WITHOUT DECREASING TRAINING INTENSITY. PERSONALITY CHANGES CAN ALSO OCCUR.**
- **LACK OF MOTIVATION, IRRITABILITY, FATIGUE, AND SYMPTOMS OF DEPRESSION FREQUENTLY ARE PART OF THE OVERTRAINING SYNDROME.**
- **COACHES, ATHLETIC TRAINERS, HEALTH-CARE PROFESSIONALS, AND APPROPRIATE PROGRAM VOLUNTEERS SHOULD BE TRAINED TO RECOGNIZE THE SIGNS AND SYMPTOMS OF OVERTRAINING SYNDROME. VARIOUS PREVENTIVE STRATEGIES, SUCH AS VARYING THE INTENSITY OF WORKOUTS AND HAVING OFF-DAYS MAY HELP.**
- **WHEN OVERTRAINING IS SUSPECTED, A COACH SHOULD WORK WITH THE ATHLETE AND THE ATHLETE'S PARENTS TO DETERMINE IF REDUCTIONS IN TRAINING VOLUME—POSSIBLY ELIMINATING MULTIPLE SPORTS OR MULTIPLE WORKOUTS—COULD BE MADE.**
- **IN MILD CASES, TIME OFF FROM TRAINING, VARIATIONS IN TRAINING VOLUME, AND/OR AN INCREASE IN REST BREAKS AND REST DAYS SHOULD BE USED TO ALLOW THE SYNDROME TO RESOLVE. IN SEVERE CASES, ALL SPORTS PARTICIPATION MAY NEED TO BE STOPPED.**
- **IF MUSCULOSKELETAL INJURIES OCCUR WITH OVERTRAINING, CARE SHOULD BE TAKEN NOT TO RUSH THE ATHLETE BACK TO PARTICIPATION UNTIL ALL INJURIES HEAL.**



NFLP/PAUL SPINELLI

Overtraining syndrome can be evident among youth football players who also play several other sports either simultaneously or in succession. Such an athlete is particularly at risk because of the constant demands placed on his body.

An athlete who is overtrained will exhibit lower performance levels, possible personality changes, and an increased risk of injury to muscles, joints, ligaments, tendons, or bones. The overtrained athlete, faced with an inability to see improvement in his performance, may try to compensate by increasing the intensity of training. This creates a vicious cycle, because it results in further decreases in performance and can increase the risk of injury.

Overtraining also can occur in poorly conditioned athletes who attempt to get into shape too quickly. Summer football camp two-a-day workouts sometimes lead to this condition.

A coach can reduce the risk for overtraining syndrome by changing the intensity of workouts from day to day, having recovery days, and not using training as punishment (extra laps for missing a tackle, for example). Coaches should also be aware of the conditioning level of athletes. Athletes who begin a season highly conditioned may be more susceptible to overtraining syndrome.

#### COACH'S RESPONSE

If a coach suspects that an athlete may be overtrained, he should lower the training regimen—reducing training volume or stopping multiple sports participation—to allow the athlete to focus on fewer goals. The athlete's parents should be consulted to assist in this process. In some cases, it may be necessary to stop all sports participation.

Youth and high school coaches must be aware of the warning signs and risks of overtraining in youth athletes. Because musculoskeletal injuries and psychological problems can occur with overtraining, it is important to vary training schedules and reduce the workout load of athletes at risk for overtraining.

## MORE READING

GO ONLINE AT [WWW.NFLHS.COM/HEALTH](http://WWW.NFLHS.COM/HEALTH)

*ACSM'S Handbook For the Team Physician, Williams & Wilkins, 1996. pp. 416-419.*

*ACSM Current Comment: Overtraining With Resistance Exercise <http://www.acsm.org>*





