Family Practice Grand Rounds

The Family Physician and Sports Medicine

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Baltimore, Maryland

DR. PETER HARTMANN (*Assistant Professor of Family Medicine*): Welcome to Family Medicine Grand Rounds. Today there will be a panel discussion of the role of the family physician in sports medicine.

Dr. Daniel Welliver will begin the discussion and will describe the benefits of the family physician participating in sports medicine. Dr. Welliver serves as sports physician for Western Maryland College.

Next, Dr. William Voss will discuss how to medically evaluate the athlete. Dr. Voss has a special interest in sports medicine stemming from his experiences as an All-American athlete and major college coach.

To conclude the prepared presentations I will discuss the special needs of the child athlete. I serve as the physician for the Wheaton Boys Club wrestling teams.

DR. DANIEL WELLIVER (*Clinical Assistant Professor of Family Medicine*): Sports medicine is a natural extension of the family physician's practice. The wide range of concerns of the athletes makes the broadly based family physician ideally suited to act as a team physician.

This work is gratifying because of the appreciation of the athletes, coaches, parents, and sponsoring organizations. There is much personal satisfaction in helping young athletes who later go on to other successes. If you enjoy athletics yourself, being a team physician gives you an official "excuse" to attend sporting events firsthand.

Sports medicine is an excellent opportunity to practice preventive medicine. The physician can see that measures are taken to prevent heat exhaustion. He can ensure that ill-fitting equipment is not used and that proper equipment is used correctly. He can give advice on proper conditioning, weight gain, weight loss, nutrition, and the need for adequate rest and warm-up exercises.

One example of a nutrition problem we faced

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one year at Western Maryland College concerned a problem of frequent leg cramps in our football players. Under my supervision the trainer evaluated parameters which were considered as possible causes. He found that the players were drinking as much as three quarts of milk per day. The adult requirement is only about one sixth that amount. When the players were restricted to less than one quart per day the cramps disappeared.

DR. HARTMANN: Dr. Voss will now describe how to evaluate the athlete prior to participation.

DR. WILLIAM VOSS (*Assistant Professor of Family Medicine*): Everyone who desires to engage in sports should be evaluated by a physician.

Ideally the physical examinations should be done yearly before participation and again following any significant illness. These examinations can help prevent morbidity and even mortality. They provide useful baseline data and medicolegal protection.

During the physical examination the physician has an excellent opportunity to render health education. Diet advice is especially helpful to wrestlers who tend to go on unhealthy weight-loss regimens. Athletes can be taught not to use anabolic steroids or other harmful medications.

The examination must be complete and always includes a thorough history and physical examination. The physician must be aware of the athlete who withholds information that he thinks may bar him from participation. Some special concerns in the physical examination include testing visual acuity and color vision (30 percent of children aged 9-12 years have visual problems),[1] hearing, localized muscle weakness (as from occult polio), coordination, joint laxity, and the presence of only one of a paired organ (eye, lung, kidney, and testicle).

Laboratory studies should generally include: hematocrit level (especially in menstruating females), a urinalysis, and a PPD for public health reasons. Special studies and consultations are obtained as needed. The indications for cardiac exercise stress testing are controversial.

Listed below are a group of diseases which constitute special problems for the athlete.

1. Single of paired organs (eye, lung, kidney, and testicle): Athletic participation should be a joint decision.

2. Epilepsy: Not a contraindication if well controlled.

3. Diabetes: No contraindication if well controlled and not prone to hypoglycemia.

4. Scoliosis: Secondary causes should be corrected.

5. Sickle Cell Trait: Since sickling can occur under severe stress, athletes should be aware of symptoms of early sickling (6.7 percent of blacks in the National Football League have the sickle cell trait).

6. Albuminuria: Test for orthostatic proteinuria and athlete's kidney (stress-induced hematuria and albuminuria). Underlying renal disease is usually a relative contraindication to competition.

7. Malignancy (usually Hodgkin disease or leukemia): Role of stress in exacerbations is not known but psychological benefits usually justify the risk.

8. Asthma: If exercise induced, one can use cromolyn sodium but this only lasts one hour. Ephedrine can be used, but the athlete may be disqualified in some competitions (eg, Olympics).

9. Arrhythmias: Wolff-Parkinson-White syndrome has risk of paroxysmal atrial tachycardia which is difficult to control, but the risk of participation is probably justified.

10. Myocarditis: Consider this possibility if the athlete has unexplained resting tachycardia. Do not dismiss it as anxiety especially if heart rate is over 140 beats per minute.

11. Other Cardiac Problems: Congestive heart failure, valvular heart disease, and cyanotic heart disease are all relative contraindications. Cardiac output is an important measurement. Remember that isometric exercise requires more cardiac output than isotonic exercises.

DR. HARTMANN: Now let us turn our attention to the special considerations of the child athlete. There are a large number of children engaged in organized sports, such as those sponsored by the various boys and girls clubs, CYO football, and Little League baseball. Unfortunately, there are relatively few scientific studies done on child athletes. Family physicians have an excellent opportunity to perform clinical studies in this area.

One special problem of the child athlete is injury to the unfused epiphysis. A study reported in *JAMA* in 1966[2] showed that six percent of the injuries in children under age 15 years were epiphyseal injuries. The elbow was the most common

site (Little League elbow). However, the vast majority of these injuries were easily corrected with excellent results. Nevertheless, injuries to the medial epicondyle of the elbow should be limited by restricting children from pitching a baseball to no more than six innings per week.

Boys who participate in wrestling encounter another risk when they attempt to lose weight to wrestle in the lowest possible weight class. Excessive dieting will tend to decrease their eventual adult height. They need to be made aware of this fact.

Children have large changes in maturity from one year to the next. For fair competition they must be matched for level of maturity (or at least age) as well as for height and weight.

Finally, the physical effects of conditioning are less evident in the young child than in teenagers and adults. A report by Taylor in 1975[3] showed that oxygen uptake and pulse rate were less affected by training in boys under 12 years than in those over 15 years of age. More such study needs to be done.

FAMILY MEDICINE RESIDENT: How do you handle pressures from coaches who want their injured star players back in the game?

DR. WELLIVER: I don't find this to be a common problem. However, when it does occur the physician must stick by his best judgment in the interest of the athlete's health.

STAFF PHYSICIAN: How difficult is it to evaluate injuries on the field away from a medical setting?

DR. WELLIVER: With experience the physician learns to assess injuries quickly and accurately on the field. Actually, it is easier to predict the nature of the injury when the mechanism of the injury is witnessed. After the initial evaluation on the field, moving the player to the sidelines allows a more detailed evaluation.

FAMILY MEDICINE RESIDENT: Do you think an orthopedist ought to be the primary sports physician?

DR. HARTMANN: As you heard this afternoon, the sports physician deals with a broad range of issues, including visual acuity, epilepsy, asthma, cardiac disease, the problem of having a single member of a paired organ, heat stroke, weight loss, nutrition, and the psychological aspect of sports. Actually, the family physician is better suited to deal with these issues. Naturally, orthopedists provide an important consultative role in serious musculoskeletal injuries.

FAMILY MEDICINE RESIDENT: Are there general guidelines that we can use for advising potential athletes on training programs?

DR. WELLIVER: That depends on the nature of the activity. For instance, training at high altitude is important if competition will be held at high altitude, as when the Olympics were held in Mexico City. Otherwise, there are many common sense guidelines to learn concerning diet, rest, and exercise, as well as the individual skills.

DR. HARTMANN: If patients seek advice for general conditioning, the format outlined in Dr. Kenneth Cooper's book *The New Aerobics* can be used.[4] If cardiac exercise stress testing is done, the number of metabolic equivalents of work done in the test can be used to determine the level of activity for that person. The American Heart Association publishes a pamphlet with specific exercise guidelines for normal patients[5] and one for those with heart disease.[6]

FAMILY MEDICINE RESIDENT: What cardiovascular problems should disqualify athletes?

DR. VOSS: To elaborate on what has already been said, I am inclined to follow the recommendations of Dr. Rose from the University of Nebraska. These are the result of extensive experience, including 2,449 consecutive electrocardiograms (three percent required investigation).[7] Generally, the electrical abnormalities of paroxysmal atrial tachycardia, atrial fibrillation, and third degree heart block are disqualifying for competitive athletics. Of congenital heart lesions, the stenotic lesions of aortic stenosis, pulmonic stenosis, and coarctation of the aorta, Ebstein anomaly, anomalous SA/AV node artery, and persistent patent ductus arteriosus all rate a *NO* recommendation for strenuous athletic activity. Inflammatory and degenerative conditions that are contraindications to competitive sports are myocarditis, active rheumatic heart disease, myocardiopathy, and significant coronary artery disease. Coagulopathy also belongs in the circulatory group rating a *NO* recommendation.

All of the remainder, ie, septal defects (intra-atrial and intraventricular), first and second degree heart block, Wolff-Parkinson-White syndrome, premature ventricular contractions, hypertension, stable rheumatic valvulitis, and endocrine imbalances are relative contraindications—in other

Appendix 1. Some Guidelines of Duties of the Athletic Team Physician

1. Have a general understanding with the athletic department of the school, including 'contract' of responsibility, liability, and remuneration.
2. Evaluate history and physical evaluation forms.
3. Specifically note abnormalities and recommendations of individual histories and physical examinations.
4. Act in an advisory capacity for:
   A. Types of equipment utilized.
   B. Condition of equipment.
   C. Conditioning and training:
      1. Exercises
      2. Weight lifting training
      3. Weight gain and loss
      4. General hygiene and nutrition
      5. Fluid loss and heat exhaustion prevention
      6. Precautions on utilizing injured players
5. Assist in establishment of liaison between physician-trainer-coach.
6. Assist training, in a mutually beneficial way, the 'student trainer.'
7. Note whether team is wearing equipment properly, pregame.
8. Assist in evaluating player injury and player status during game.
9. Assist in evaluating common injuries:
   A. Head injury
   B. Achromioclavicular
   C. 'Winded'
   D. Hip pointer
   E. Knee injury
   F. Ankle injury
10. Summarily, evaluate medical problems during half-time and after-game and report to coaching staff.

Over and Above 'Call of Duty'

1. Offer as 'home team' physician to assist 'visiting team' and their medical problems. Report to game officials and visiting coaching staff.
2. Research equipment, conditioning, training in terms of injury prevention.
3. Assist coaching staff in objective analysis of 'psychology of coaching.'
   A. Sportmanship
   B. Hard work
   C. Leadership
   D. Encouragement of scholarship
   E. Athlete as 'peer model'
   F. Development of physical and emotional maturity

words, a judgment recommendation.

Of vital importance, however, is the athlete's "stress" response to sports and the type of sport itself. This is why the physician who has the knowledge of both can make the best assessment.

FAMILY MEDICINE RESIDENT: Are there any universal guidelines for competitive athletes?

DR. VOSS: The answer is no. Most organizations with athletic programs and sports administrating bodies have their own set of rules. I find my best source material currently is the College of Sports Medicine (their publication is *The Physician and Sports Medicine*) and the American Academy of Pediatrics Policy Statements on specific recreations and sports.[8]

STAFF PHYSICIAN: What do you think about doing arthrocentesis on injured joints?

DR. WELLIVER: I am from the school of thought which worries about introducing infection. Also, if the joint is wrapped tightly right away, the bleeding will internally splint the joint on its own. So I don't routinely tap those joints.

DR. HARTMANN: There is some controversy about that because blood in the joint can damage the synovium, delays resolution, and is painful. There are some orthopedists who frequently tap hemarthrosis.

STAFF PHYSICIAN: What do you do in the case of the athlete who has the absence of one of his paired organs?

DR. VOSS: This makes the physician very uncomfortable. However, there is a trend now to allow participation with adequate protection. The decision must be individualized.

DR. HARTMANN: Part of the physician's role is counseling. I think we should try to guide these individuals into noncontact sports if possible.

STAFF PHYSICIAN: What role should a team physician have in aiding the coaches and others in determining the role of penalties for different injuries?

DR. WELLIVER: The physician can and should play a major role. Most referees welcome the physician's help. Also, we can help study the mechanisms of injuries and advise on rule changes and equipment changes to cut down on injuries. For that reason, the sports physician should become familiar with the equipment used in the sport(s) that he deals with.

DR. HARTMANN: This concludes Grand Rounds for today. Dr. Welliver has provided a handout which outlines duties of the athletic team physician (Appendix 1). Thank you for your participation.

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