



# ATHLETIC TRAINING

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NATIONAL ATHLETIC TRAINERS' ASSOCIATION  
INC.

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\* 1950



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- Ten Ways To Dodge The Malpractice Bullet
- The Distinction Between Drug Use and Abuse
- Proceedings, Mid-Winter Meeting

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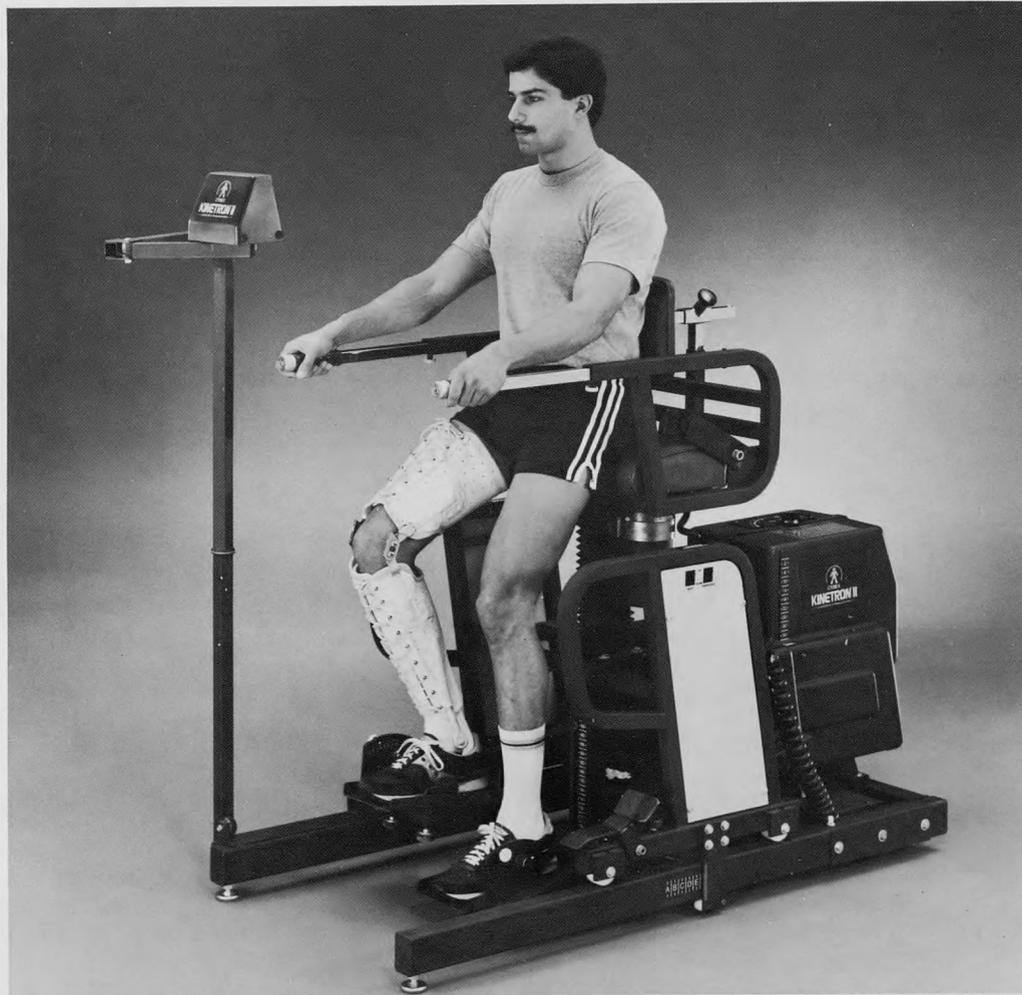
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# ATHLETIC TRAINING

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# Editor's Comments



Steve Yates, ATC, M.Ed  
Wake Forest University  
Winston-Salem, NC 27109

It is with regret that I have accepted the resignation of Mr. Clint Thompson as the Editor of the NATA Journal. Clint served the Journal committee in this capacity for fifteen years. His desire to have a quality publication of which we all can be proud has elevated the excellence of this publication over the years. Thanks, Clint for all your hard work and service to this committee.

## Welcome . . .

I would like to welcome Mike Sherman of Texas A & M to the Editorial Board of the Journal Committee. He will assist in the technical aspects of Human Performance manuscripts and articles.

## Help . . .

Please help the Journal when submitting for publication. The "Guide to Contributors" and "Journal Deadlines" are published in each issue of ATHLETIC TRAINING. (see page 159 in this issue) Each item that arrives after these dates holds up production all the way down the line in editing, typesetting, proofing, corrections and final checking. Depending upon the particular late arrival, a late submission can cause hours or even days of delay in our production schedule, which, in turn delays the mailing day for that issue. Therefore, it is very important that contributors get the material they wish to have published in early. Please try to stay within the deadlines when submitting material for publication so we will be able to get your special item in for you. I would also like to point out that *especially* in the case of a late submission you should be sure to send the material to the Editor-in-Chief — NOT TO THE NATIONAL OFFICE.

## Look . . .

The 1985 Schering Symposium will present Vision and Eye Care.

## Please Note . . .

As of January 1, 1985 the NCAA will be offered lifetime catastrophic injury coverage for athletes, cheerleaders, student coaches, managers, and trainers.

For further information contact:

Mr. Hank Giles, Coordinator, Public Information  
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## Closing . . .

I hope you had a great year on the playing field as well as in the training room.

I hope to see and talk to each of you in San Antonio concerning "your" Journal.

Again thank you for your continued contributions and support.

SY(SSSA)+

# Letters to the Editor

## Dear Editor:

Sadly it has come to my attention that Clint Thompson is resigning his post as our editor, and may be retiring from the profession. It is a great loss to all of us and we should be aware of the great service he has provided us as editor for fifteen (15) years!

I have known Clint since 1965 while I was a student at Ohio University and graduate assistant at Bowling Green State University. I had the pleasure of working with him as editor-in-chief of the Journal from 1973 to 1979. He was always supportive, organized and on-time with his work, keeping the best interest of the membership as top priority.

He is primarily responsible for the growth in quality and quantity of articles in the Journal. He maintained strict high standards for the Editorial Board, developing a sound system for submitting and reviewing the main articles we all use and enjoy in the Journal.

Clint was always there during many struggles and trying times in the development and advancement of our main publication. He donated incredible amounts of personal time in order to carry out the duties of his office.

Clint's organizational techniques, personal insight and interest and love for the profession made the many transitions in printers and editors-in-chief as smooth as possible. The Journal would not have enjoyed its growth and improvement without the efforts of this man.

I feel very privileged to have shared a labor of love with Clint. He has helped me grow professionally and as a person. I am proud to have him as a fellow trainer and friend.

Thank you Clint!

Rod Compton  
Sports Medicine Director  
East Carolina University  
Greenville, NC

## Dear Editor:

It was disappointing to learn of Clint Thompson's resignation as the long time editor of our Journal. His absence will be noticed and his experience most difficult

*Continued on page 132*

# President's Message



Dear NATA Members:

It has been brought to my attention that a surprising number of student athletic trainers have neglected to apply for NATA Grants & Scholarships in recent years. I encourage each of you to inform every student athletic trainer that you supervise or council to learn the requirements for applying for these excellent benefits. Our scholarship program is obviously dependent upon our outstanding young athletic training students. Please make certain that you are providing your students with every opportunity for such an honor.

The Board of Directors held their Mid-Year Meeting on February 10-11, 1985 in San Antonio, Texas. The Board unanimously supports a public relations program that will be finalized in the very near future. Your District Director will discuss this program with you at your next District meeting.

Mr. Fred Hoover's national convention committee has outlined a very fine upcoming program for June 7-11 during our Annual Meeting and Clinical Symposium. I believe it will be well worth your while to attend this meeting in San Antonio.

Sincerely,

A handwritten signature in cursive script that reads "Bobby".

Bobby Barton, ATC

CEU Credit Quiz

# Heat Illness in Athletics

Michael Davidson, MD

Heat illness can be defined as a spectrum of disease resulting from the physiological toll of maintaining, or attempting to maintain, normal body temperature in the face of a large environmental or internal heat load (1).

### Scope of the Problem

Historical references to heat related deaths date back more than two thousand years. A Roman army in Arabia was annihilated in 24 B.C. because of the heat. There were eleven thousand deaths in Peking, China during a heat wave in July, 1943. In modern times, heat waves occurring from 1952-55 and 1966 accounted for an average of eight hundred twenty heat stroke deaths per year with probably ten times as many heat precipitated deaths secondary to heart attacks and strokes (2).

In 1980, over twenty states suffered from a three month heat wave. Mortality data for this 1980 heat wave must still be fully analyzed, but preliminary evidence suggests more than ten thousand heat related fatalities (3).

Athletes, especially football players, undergoing rigorous conditioning and training under hot environmental conditions are particularly at risk to developing a heat illness syndrome, especially heat stroke (Table 1) (4). In the U.S., between 1961 and 1971, forty six football players died from heat stroke. Between 1973 and 1982, heat stroke claimed the lives of at least sixteen football players. In addition, heat stroke is the second leading cause of death among U.S. athletes (especially in high school), second only to head and spinal cord injuries (2,5).

### Physiologic Responses to a Heat Load

The human body responds to both endogenous (increased metabolic activity) and exogenous (environmental) heat induced stress (FIG. 1) (2). Under normal conditions, metabolic processes generate heat which is dissipated to a usually cooler environment. However, with heavy exertional activity in conjunction with environmental factors (high temperatures and humidity) heat dissipation may actually be impaired with a resultant rise in the body's core temperature. When this

occurs, the brain's thermoregulatory center in the hypothalamus is stimulated and triggers a set of responses to offset this rise in the body's temperature. These compensatory cooling mechanisms include sweating, cutaneous vasodilatation and the inhibition of shivering.

Sweating is a very efficient way of reducing the body's internal heat load since water conducts heat twenty five times more rapidly than air. However, important electrolytes such as sodium and potassium are lost in sweat and, if not repleted, significant deficits of each may result.

Vasodilation results in an augmented heat loss through radiation and convection, which involve non-contact heat transfer from the skin to the ambient air. The third compensatory mechanism, inhibition of shivering, is important in order to reduce, as much as possible, the metabolic heat generated by involuntary muscular contractions.

### Acclimatization

Acclimatization to heat and work is the process of adaptation that enables humans to tolerate heat stress. A significant level of acclimatization is achieved by brief exposure to heat stress daily for ten to twenty days, but full acclimatization may require up to two months. Several physiologic responses occur with acclimatization resulting in decreased heat production and increased heat dissipation (FIG. 2) (2).

First, metabolic efficiency is enhanced. Skeletal muscle glycogen stores increase as do the number of mitochondria in cardiac and skeletal muscles. The effect is an increase in aerobic metabolism that uses energy much more efficiently than anaerobic metabolism. As a result, more useful energy in the form of adenosine triphosphate (ATP) is made available while less heat is produced.

Second, with acclimatization, sweating is initiated at a lower elevation of the core temperature and the sweat rate is increased. The maximum sweat rate is increased from approximately 1.5 liters/hr. in unacclimatized people to 2.5 to 3 liters/hr. in acclimatized athletes. This enhances dissipation of heat from the body (FIG.3) (7). Third, myocardial efficiency is improved. There are increases in cardiac output and stroke volume, but a decrease in peak heart rate. The net result is increased cutaneous circulation and thus increased dissipation of heat to the environment.

Finally, sodium conservation by the kidneys and

*Dr. Davidson is Clinical Assistant Professor of Medicine, Department of Medicine, University of Miami School of Medicine, Miami, Florida and President of Consolidated Medical Consultants, Inc.*

**Table 1\***

**Energy Requirements for Adult Participants in Various Athletic Activities**

Activity	Caloric expenditure per hour of performance
Bicycle riding	190
Baseball (no pitching)	280
Basketball	395
Swimming (breast stroke)	490
Figure skating	570
Wrestling	790
Distance running	990
Football	1,000

\*Beyer, Carol; Heat Stress and the Young Athlete, *Postgraduate Medicine*; Vol 76: 109-112, July, 1984.

sweat glands occurs through increased secretion of aldosterone. The sodium concentration in sweat may decrease from an average of thirty to fifty meq/liter in unacclimatized individuals to as little as 2 to 5 meq/liter in fully acclimatized athletes. Sodium retention by the body and other poorly defined mechanisms lead to increased plasma and extracellular fluid volumes, augmenting cutaneous circulation and heat dissipation. With long term acclimatization, sodium conservation by the kidneys, maximum sweat rate, and body fluid volumes decline toward pre-acclimatization levels, but these effects are apparently offset by enhanced metabolic efficiency. Sodium conservation by the sweat glands, however, persists. One detrimental effect of acclimatization, that of potassium depletion, may occur during the early phases of acclimatization as a result of sweat and urinary losses, mediated by increased aldosterone secretion. An average deficit of 517 meq. of

potassium has been recorded in military recruits undergoing intense physical conditioning in hot weather. The potassium deficit, however, is corrected by poorly defined mechanisms by the end of the acclimatization period (1,2,4).

**Predisposing Factors to Heat Illness**

Predisposing factors to heat illness in athletes include the following:

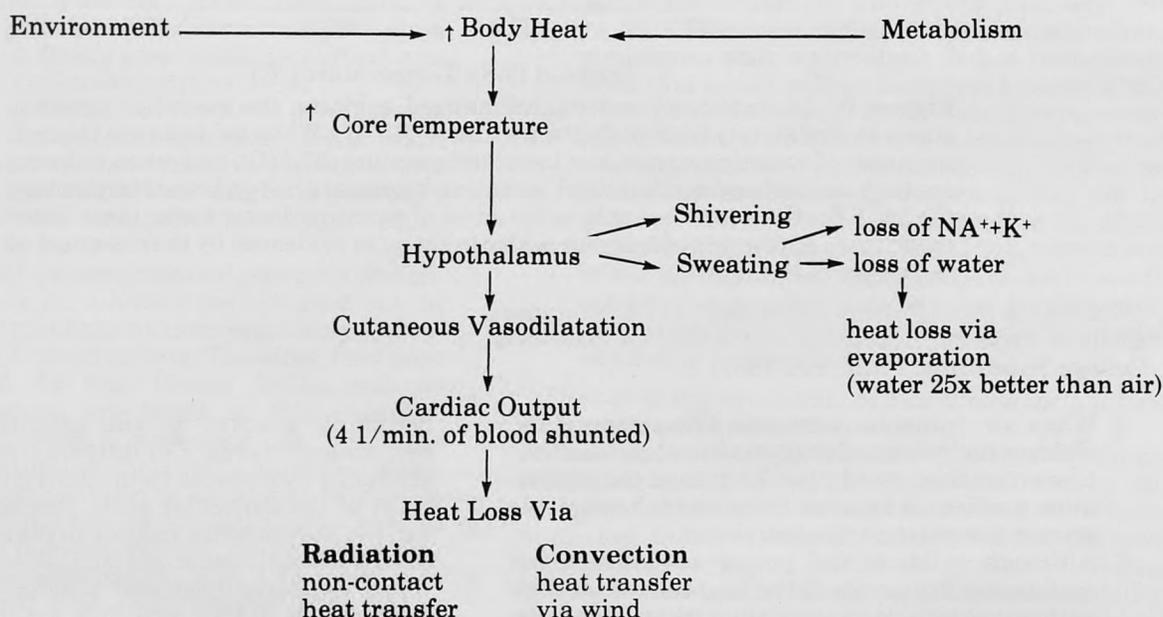
1. Lack of acclimatization.
2. Extremes of air temperature and humidity.
3. Inappropriate or excessive clothing or equipment.
4. Insufficient rest periods and water availability to allow for adequate fluid repletion of sweat losses.
5. Obesity.
6. Drugs.

In addition to the above predisposing factors relating to heat illness, children and young adolescents engaging in strenuous activity are an even greater risk since they do not adapt to extremes of temperature as effectively as adults when exposed to a high environmental heat load. This reduced heat tolerance is related to their following morphologic and functional differences when compared with adults:

1. Children and young adolescents have a greater surface area to mass ratio than adults, which induces a greater heat transfer between the environment and the body.
2. Children and young adolescents produce more metabolic heat per mass unit than adults when walking or running.
3. Sweating capacity is not as great in children and young adolescents as in adults.
4. The capacity to convey heat by blood from the body core to the skin is reduced in the exercising child and young adolescents.

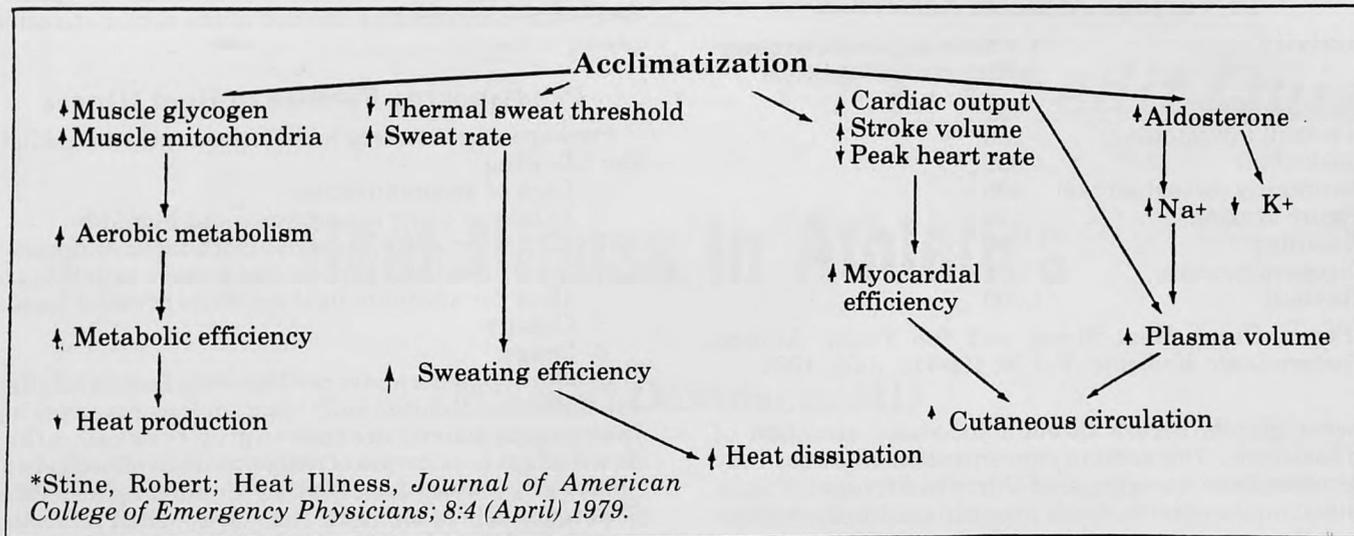
**Figure 1\***

**PHYSIOLOGICAL RESPONSE TO HEAT STRESS**

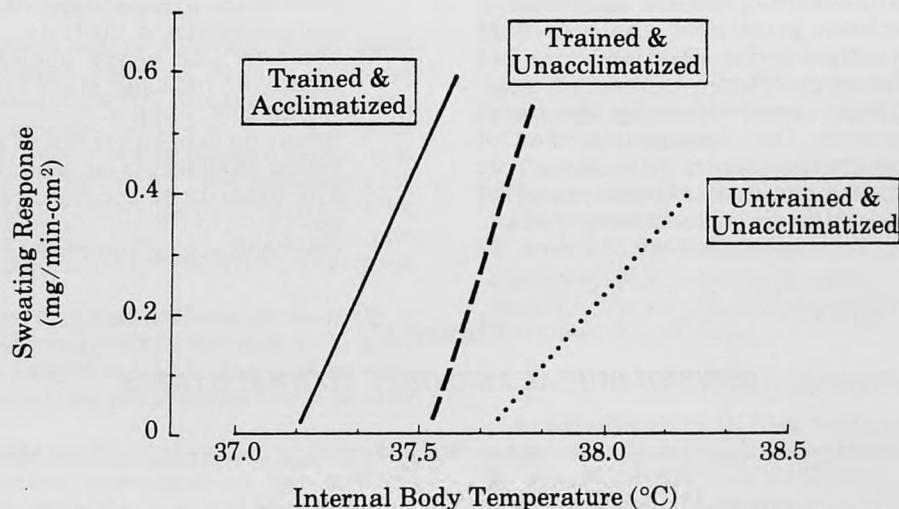


\*Stine, Robert; Heat Illness, *Journal of American College of Emergency Physicians*; 8:4 (April) 1979.

**Figure 2\***  
**Physiology of Acclimatization to Heat Stress**



**Figure 3\***



**Figure 3** In untrained and unacclimatized subjects, the sweating response starts at a relatively high body temperature (37.7°C). When subjects are trained, the onset of sweating occurs at a lower temperature (37.5°C), and when subjects are both trained and acclimatized, sweating begins at an even lower temperature (37.2°C). Furthermore, not only is the onset of sweating faster under these latter conditions, but its rate of increase is also greater (as evidenced by the steepness of the slopes of the lines).

\*Fox, Edward and Mathews, Donald; *The Physiological Basis of Physical Education and Athletics*. Saunders College Publishing. Phila. PA. 1981.

- When air temperature exceeds skin temperature, children and young adolescents have less tolerance to exercise than do adults. The greater the temperature quotient is between the air and the skin, the greater the effect on the individual.
- Although children and young adolescents can acclimatize to exercise in the heat the rate of their acclimatization is slower than that of adults. Therefore, they will need more exposure to their new environmental conditions to sufficiently acclimatize (8,9).

Regarding the need for acclimatization, initial practice sessions should be more concerned with the athletes

becoming adapted to the heat than with specific performance tasks. Conditioning exercises may then gradually be replaced by the particular practice drills or skills of the particular sport. Practices should be held early in the morning and late in the afternoon when the environmental heat stress factors are generally reduced. When excessive heat and humidity conditions exist practices should be cancelled for that particular day (Table 2) (1).

Practice uniforms should be loose and comfortable. When possible, short sleeve jerseys should be of the mesh type to speed the evaporation of sweat and enhance its cooling properties (7).

**Table 2\***

Wet-bulb globe temperature (WBGT) and recommended activity levels		
WBGT		Activity
C	F	
15.6	60	No precautions
19-21	66-70	No precautions as long as water, salt and food are easily available
22-24	71-75	Postpone sports practice, avoid hiking
24	76	Lighter practice and work with rest breaks
27	80	No hiking or sports
28	82	Only necessary heavy exertion with caution
30	85	Cancel all exertion for unacclimatized persons; avoid sun exposure even at rest
31.5	88	Limited brief activity for acclimatized, fit personnel only

\*Callahan, Michael; *Emergency Management of Heat Illness*; Emergency Physician Series, American College of Emergency Physicians. 1979.

Full football gear and contact drills should be utilized and instituted only after the athletes have had at least several days with which to acclimatize themselves to a program of gradually increasing exertional activity.

Rest periods should be of sufficient time (at least twenty minutes) to allow for the repleted fluids to have at least absorption potential. Water itself may be sufficient during practice with sodium and potassium repletion occurring during meal times as normal constituents of a well-balanced nutritional diet.

Since obesity is a risk factor in itself for predisposing an athlete to heat illness, extra caution should be taken by coaches to guard against excessive activity in any obese individual until his or her weight is gradually brought down to a more acceptable level for age, height, sex and body habitus.

Medications, both prescription and non-prescription, can affect not only an athlete's performance but, in addition, can affect the body's thermoregulatory system through a variety of mechanisms. Therefore, they pose an increased risk for heat illness. Drugs such as antihistamines which are found in cold capsules, decongestants and cough medicines can blunt the sweating response through their anticholinergic properties. Other medications having stimulant properties such as amphetamines and similar substances found in diet pills serve to increase general metabolic activity and generate an increase in body heat. This increase in the body's internal heat load, coupled with heavy exertional activity, can set the stage for any of the heat illness syndromes.

### Heat Illness Syndromes

The spectrum of heat illness includes both major and

minor syndromes. The minor syndromes (1,2) include:

1. Prickly heat - a reddish colored rash that causes a prickly sensation. It occurs chiefly in unacclimatized persons in humid regions where the skin constantly is kept wet from unevaporated sweat. The only treatment is to provide access to air conditioning to allow several hours a day of dry skin.
2. Head edema - a self-limited mild swelling and tightness of hand and feet which appears in the first few days of exposure to a hot environment especially when the hands and feet are kept in a dependent position for long periods of time. Cool soaks and elevation are usually all that is necessary for adequate treatment.
3. Heat tetany - the occurrence of spasms of the wrist and facial muscles secondary to the hyperventilation which occurs in persons under a heat load. It develops in those individuals where changes in blood pH and body temperature are the most rapid. The muscle spasms are a result of changes in blood calcium that are brought about by the changes in pH as a result of a decreased carbon dioxide level in the blood due to the hyperventilation. The process is usually self-limiting and should resolve promptly once the person is removed from the hot environment.
4. Heat syncope - postural hypotension causing a fainting spell in unacclimatized persons in the early days of heat exposure. It is probably related to the dilatation of blood vessels in the extremities, especially the legs, resulting in marked pooling of blood when a person either stands up too quickly or remains in a stationary upright position in a heat stress environment. Water and salt depletion do not contribute to it. Rest and the avoidance of sudden or prolonged standing are adequate treatment.
5. Heat cramps - cramps of most worked muscles, often involving the forearms, calves and thighs, that occur after load exertion in the heat. Interestingly, heat cramps occur most commonly in acclimatized persons who sweat profusely, but replace their water and electrolyte losses (sodium, potassium) with water alone. It has been postulated that serum sodium decreases because of the dilutional effect of hypotonic fluids thereby resulting in the cramps. Effective treatment consists of the administration of oral or intravenous electrolyte solutions. Plain salt tablets should not be given since their rapid disintegration (in about two minutes) causes gastric irritation, nausea and vomiting. Prevention of heat cramps can be easily achieved by ensuring adequate (but not excessive) salt intake in the diet or by the use of commercial electrolyte preparations.

The two major syndromes of heat illness include heat exhaustion and heat stroke.

Heat exhaustion (1,2), a more severe heat syndrome with a low mortality rate, is due to water and/or salt depletion secondary to excessive sweating. Manifestations are those of gastrointestinal upset (nausea, vomiting, loss of appetite) mild central nervous system dysfunction (headache, dizziness, faintness, irritability, weakness) and volume depletion (thirst, low blood pressure, rapid pulse and possibly fainting).

Hyperventilation frequently occurs and may contribute to the symptomatology; it apparently represents an exaggeration of the normal ventilatory response to heat stress. Muscle cramps may occur if there is

significant sodium depletion. Patients usually are sweating profusely and their body temperatures are normal or mildly elevated. It is important to note, however, that as distinct from heat stroke the heat exhaustion victim has an intact central nervous system. That is, he is awake, alert and disoriented. In addition, he still maintains the ability to regulate his body temperature since his thermoregulatory center in the brain remains intact.

Treatment consists of rest in a cool environment, rehydration and electrolyte replacement. Rehydration and electrolyte repletion are best achieved over several hours in an Emergency Department with the use of oral and/or intravenous electrolyte solutions.

The second major heat illness syndrome, heat stroke (1,2), is a true medical emergency. It is brought about by a rapid and excessive rise in body heat and characterized by markedly elevated body temperature (usually exceeding 105°F (40.6°C)), and severe central nervous system dysfunction.

In all the previously discussed types of heat illness, body heat regulation is maintained under control. In heat stroke, control is lost and body temperature rises precipitously to levels that damage cells and organs throughout the body including the brain, heart, lungs, liver, kidneys, muscles and even the normal clotting ability of the blood resulting in generalized hemorrhaging. The central nervous system (CNS), however, is the most sensitive to heat damage. Mental performance begins to decrease at a body temperature of 38°C (100.4°F) with complete disruption of neural function by 42-46.5°C (107.6-115.7°F) (10). This CNS dysfunction may be manifested initially by irritability, poor judgement and bizarre behavior, leading eventually to confusion, psychosis, seizures and coma. Diagnosis of heat stroke requires evidence of a major alteration of level of consciousness or marked confusion along with hospital documentation of a failure of the brain to thermoregulate itself through rectal probe temperature monitoring. Any change in mental status under conditions of heat stress should be considered heat stroke until proven otherwise. This level of suspicion is necessary because the probability of permanent brain or other organ system damage is directly related to the length of time the patient's temperature is elevated.

There are two types of heat stroke. Either type presents a true emergency with mortality rates of 10 to 80%:

Classic heat stroke is most common in the elderly and in infants. It tends to develop over a period of a few days, often during a heat wave, especially in those unable to obtain fluids and a cooler environment. Many of these patients are significantly dehydrated and most will present with hot dry skin since their sweat mechanisms have usually been exhausted.

Exertional heat stroke usually occurs in young, motivated persons, such as athletes, and usually when they are unacclimated. It may develop over a period of several hours or less; this rapid onset usually doesn't allow enough time for severe dehydration to occur. Therefore, at least 50% of its victims will still be sweating profusely (1).

Treatment of heat stroke must begin as soon as the disorder is recognized, as the victim's prognosis is related to how quickly the body's temperature is returned to normal or near normal levels. In the field clothing should be removed and the patient removed to a cool place while awaiting ambulance evacuation. Sheets or towels soaked in whatever cool liquids are available should be applied along with application of ice chips to

the torso and extremities. If towels or sheets are not available, then cool liquids should be splashed on the patient to maximize heat dissipation. If available, a fan may also be utilized to keep air circulating. Once in the emergency department more definitive diagnostic and therapeutic modalities will be utilized to deal with the generalized organ systems deterioration and failure which heat stroke creates.

Prognosis is related to many factors including length of time before the institution of therapy, age and general underlying condition of the patient, pre-existing disease states, length of time in coma and degree of organ system dysfunction.

Prevention of the heat illness syndromes is usually much easier than their treatment especially when we are dealing with the major ones, heat exhaustion and heatstroke.

All coaches, trainers, and team physicians should be familiar with, not only the warning signals of heat illness, but should strive to maintain as safe a practice and playing environment as possible to prevent their occurrence. This includes:

1. Holding practices in the very early and latter parts of the day when the environmental temperature and humidity factors are usually less severe.
2. Using a sling psychrometer to measure the wet-bulb globe temperature and humidity index on a given day and adjusting or cancelling practices accordingly (Table 2) (1).
3. Having adequate sources of fluids available for players at all times during practice or games to help maintain adequate hydration and providing sufficient rest periods for their adequate absorption. In addition, pre-activity fluid loading (400-500 cc approximately one hour before practice or game time) should be encouraged in those sports where heat illness is a known hazard.
4. Instituting a gradual program of acclimatization for at least the first week of practice. Exercise should occur in graduated increases of activity for one or two hours a day. Clothing should be light weight, loose fitting and preferably of mesh type material. Initial "T" shirts and shorts may gradually be replaced by additional equipment required by the particular sport as acclimatization of the athletes progresses.
5. Weight monitoring by chart, both before and after practice, should be instituted to help identify those individuals who are becoming dangerously dehydrated. Since the thirst mechanism cannot be relied upon to assure full fluid restoration, (usually requiring 6 to 8 hours) weight loss due to fluid losses must carefully be identified if heat illness syndromes are to be avoided (11). A three (3) percent weight loss necessitates an immediate increase in fluid intake; a five (5) percent weight loss should preclude any further athletic activity for that day; and a seven (7) percent weight loss probably will require intravenous as well as oral fluid replacement.
6. Adequate supplies and equipment should be available on every practice or game field and in every locker room for the timely treatment of a heat illness victim. These supplies and equipment should include, but are limited to, the following:
  - a. A ready and unlimited source of cool water through a fountain or faucet.
  - b. Towels or sheets.
  - c. Ice chips.

In addition, a telephone should be readily acces-

sible to the field and in the locker room for prompt notification and response by the rescue squad or ambulance system in the community.

7. Finally, all coaches, trainers and physicians should have sufficient education and training in the prevention, detection and treatment of the heat illness syndromes and should convey such information to their players. However, athletes should never be relied upon to volunteer heat illness symptom information as most believe it might lessen their chances of making the team.

Heat stroke, the second leading cause of death in U.S. athletes, is totally preventable. The elimination of this needless cause of death should be the primary goal of everyone connected with athletic programs in our country today.

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## The History of The National Athletic Trainers Association

by Michael O'Shea

# CEU Credit Quiz

## HEAT ILLNESS IN ATHLETES

As an organization accredited for continuing medical education, the Hahnemann Medical College and Hospital certifies that this continuing education offering meets the criteria for .3 hours of prescribed CEU credit in the program of the National Athletic Trainers' Association, Inc., provided the test is used and completed as designed.

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select by placing an X in the proper square. Then tear out the test sheet, fill in your name, address and other information, and mail with \$12 for processing to: School of Continuing Education, Hahnemann Medical College, 230 N. Broad St., Philadelphia, PA 19102.

The NATA National Office will be notified of all members with passing scores over 70%. CEU credit will be issued to each member's record at that time. Participation is confidential.

Questions		a	b	c	d	e
1. A significant level of acclimatization to heat requires brief exposure to heat stress daily, for one to two months.	a. True b. False					
2. Which of the following physiologic responses occur/s with heat acclimatization? 1. There is an increase in aerobic metabolism 2. There is an increase in cardiac output and stroke volume 3. Sodium conservation by the kidneys and sweat glands occurs through increased secretion of aldosterone 4. Sweating is initiated at a higher elevation of the core temperature	a. 1,2,3 b. 1,3 c. 2,4 d. 4 only e. 1,2,3,4					
3. Heat tolerance is reduced in children and young adolescents because they 1. have a greater heat transfer between the environment and the body than adults 2. produce more metabolic heat per mass unit than adults when walking or running 3. have a lower sweating capacity than adults 4. have a slower rate of acclimatization than adults	a. 1,2,3 b. 1,3 c. 2,4 d. 4 only e. 1,2,3,4					
4. Drugs which predispose athletes to heat illness include 1. non-steroidal anti-inflammatory agents 2. antihistamines 3. antacids 4. diet pills	a. 1,2,3 b. 1,3 c. 2,4 d. 4 only e. 1,2,3,4					
5. Cool soaks are indicated for the treatment of a. prickly heat b. heat edema c. both a and b above d. neither of the above						
6. Which of the following statements is/are true regarding heat cramps? 1. These cramps occur in unacclimatized individual in the early days of heat exposure 2. Forearms, calves and thighs are commonly affected 3. Plain salt tablets should be administered for therapy 4. A major cause of this problem is hyperventilation in persons under heat load	a. 1,2,3 b. 1,3 c. 2,4 d. 4 only e. 1,2,3,4					

		a	b	c	d	e
7. Clinical features of heat exhaustion include 1. fainting 2. nausea and vomiting 3. low blood pressure 4. rapid pulse	a. 1,2,3 b. 1,3, c. 2,4 d. 4 only e. 1,2,3,4					
8. The thermoregulatory center in the brain remains intact in the individual with heat a. exhaustion b. stroke c. both a and b above d. neither of the above						
9. A diagnosis of heat stroke can be ruled out if the individual is sweating profusely.	a. true b. false					
10. Emergency treatment of heat stroke includes the application of ice chips to the torso and extremities.	a. true b. false					
11. Which of the following statements is/are true of classic heat stroke? 1. Most commonly this occurs in unacclimatized athletes 2. There is a major alteration in the level of consciousness 3. It tends to develop over a long period of time 4. The prognosis is better than for individuals with exertional heat stroke	a. 1,2,3 b. 1,3, c. 2,4 d. 4 only e. 1,2,3,4					
12. Drugs which predispose athletes to heat illness include 1. adjustment of practice times in accordance with heat and humidity conditions 2. providing adequate rest periods following fluid intake during practice times 3. weight monitoring by chart, before and after practice 4. institute a gradual program of acclimatization	a. 1,2,3 b. 1,3, c. 2,4 d. 4 only e. 1,2,3,4					

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# Pattern of Knee Injuries Associated with College Football 1975-1982

John W. Powell, PhD, ATC

*It has been well established that participation in the sport of football is associated with specific risks of injury. The injuries that occur range from contusions to surgery and from MINOR (less than seven days lost) to SEVERE (quadriplegic and death). The current article is designed to begin to quantify the specific risk patterns for college football. Data were collected during the eight-year period for 1975-1982 with an average of 50 teams participating each year. The injury data were recorded using the surveillance model designed by the National/Illness Reporting System at Penn State University.*

*The data demonstrates a consistent injury pattern for the eight-year period. Knee injuries represent the category with the greatest impact on time-loss from participation. Within these categories nearly 50% of the injuries that occur to the knee force a participation loss greater than seven days. In addition to general knee injuries, the frequency of knee surgeries is displayed. The data presented serve to begin a discussion of knee injuries in college football. Subsequent articles will examine other patterns associated with variables such as player position and playing surfaces.*

During the academic years 1975-76 through 1982-83 the National Athletic Injury/Illness Reporting System collected injury data for a variety of high school and college sports. Since then, several articles have been written in response to timely questions posed by a variety of sport professionals. In each of those questions specific issues have been addressed. The present article is designed to develop an overview of the injury patterns that existed for injuries to the general area of the knee in the eight years of college football included in the NAIRS data sheet. The data will address the overall injury rates, injuries by specific body areas, general categories associated with the knee and specific type of injuries to the major structures of the knee. The data will compare game-related and practice-related patterns. It will look at the frequency of surgeries as they were recorded in the principal diagnosis category on the NAIRS injury recording form.

Since the 1982 seasons, NAIRS has been unable to collect data. Even though this investigation does not include the data from the 1983 season, the collected data

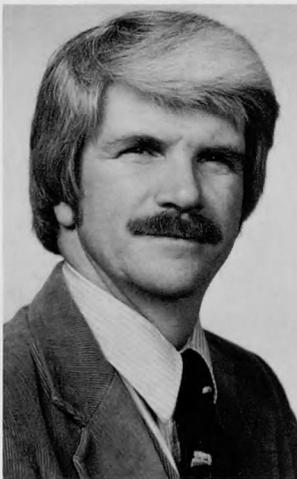
provided a valuable opportunity to describe the knee injury patterns that existed during the 1975-1982 College Football Seasons. These data will serve to establish a reference base line by which other incidence studies regarding knee injuries may be compared. Recently the use of prophylactic knee braces has become common in many college football programs. The relative impact of these braces on knee injury frequencies would seem to be a good place to compare individual college frequencies with the average college football program prior to the use of preventive devices.

This article will concentrate on the overall pattern of knee injuries as they relate to the sport of college football. To complete the full knee picture two subsequent articles will be prepared regarding the details of the surgery pattern and the patterns for playing conditions. Within these two articles the pattern will include game-related positions, situations and surfaces.

## NAIRS Definitions

The definition used as criteria are important to the understanding of the specific data set. The following definitions were used by NAIRS in order to maintain a consistency of recording and interpretation.

1. **REPORTABLE INJURY/ILLNESS:** Injuries and illnesses meeting any of the following definitions are reportable. This means that a Case Abstract must be filed. These definitions are meant to separate the nuisance injuries which warrant little attention and do not materially affect decisions from the health problems which have potential or demonstrated significance.
  - a. Any *brain concussion* causing cessation of the athlete's participation for observation before return to play is permitted is reportable.
  - b. Any *dental injury* which should receive professional attention is reportable.
  - c. Any injury/illness which causes cessation of an athlete's customary participation throughout the *participation-day following day of onset* is reportable.
  - d. Any injury/illness which requires *substantive*



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*professional attention before the athlete's return to participation is permitted is reportable (i.e., without such attention, the athlete would not have been permitted to return to participation the next participation day).*

2. **PARTICIPANT (ATHLETE):** An "athlete" is defined by the type of program in which the patient was involved when stricken. An athlete is one who maintains candidacy for varsity competition by subscribing regularly to the team's eligibility rules, procedures, and scheduled activities.
3. **PARTICIPATION (RETURN TO PARTICIPATION):** An athlete is "participating" if he/she has health supervisory clearance or coach permission to engage in activities generally expected of his/her teammates.
4. **PRACTICE (PARTICIPATION DAY):** Only those coach-directed sessions which include supervised physical activity are recordable practices.

### Severity Classifications

Beyond the reportability of injury or illness, and central to interpretation of the data, is the significance given a particular episode. In this regard, NAIRS utilizes primarily a functional orientation: time loss from effective participation in sport. Clinical information is sought concerning each episode as well. Specifically, the following degrees of severity were adopted to give optimal clarity to the epidemiological data being obtained.

**Minor:** The distinction between a MINOR and a SIGNIFICANT injury is the most pivotal of the premises adopted. A MINOR injury constitutes a reportable injury/illness which did not prevent the athlete from returning to an effective participation capability within one week from the day of onset. For routine reports regarding the incidence and prevalence of sports injuries, minor injuries will be excluded. Such problems do not reflect meaningfully on the calculated risk of sports participation. For analytic purposes, however, the reportable injury/illness proving to be of only MINOR significance remains in the data bank for ad hoc reference and for use if that injury recurs or is followed by a significant complication.

**Significant:** Injuries/illnesses which exceed the criterion of MINOR become SIGNIFICANT events. SIGNIFICANT injuries include all injuries with time loss greater than seven days. An exception is made for dental injuries which may not cause absence for a week. Any dental injury which is MINOR in terms of lost time is computer-converted to SIGNIFICANT. Within the SIGNIFICANT category, injuries that permitted the athlete to return to participation within eight to twenty-one days are termed MODERATE. Inability to return to participation within 21 days from onset is the criterion used by NAIRS for assigning MAJOR status to a health problem. This recognizes that any problem which prevents a highly motivated participant from being active in sport for at least three weeks, regardless of the mode of treatment, is a major problem.

**Severe:** To avoid over interpretation of the word MAJOR by those reviewing data reports, a fourth severity classification, SEVERE, is utilized for the type of permanently disabling injury of societal significance (e.g., death, quadriplegia, amputation, brain damage).

### Athlete-Exposure

For epidemiological purposes, it is necessary to express frequency of injury as rates. Usually, this has been expressed as the number of cases experienced per

standard population size (e.g., 5 injuries/100 athletes). This procedure represents the relative frequency of a particular injury so that one can compare that finding with other populations and/or seasons. However, a more representative relative frequency of injury includes the frequency with which the athletes are exposed to the potential of injury (i.e., athlete-exposure). An athlete-exposure is each opportunity for an athlete to get hurt (e.g., 50 athletes at 5 practices equal 250 injury opportunities or 250 athlete-exposures). More precise calculations of exposures are possible and often desirable for particular specialized investigations; but, for surveillance purposes, the athlete-exposure concept suffices as an index for epidemiological comparisons.

Along with new case reports, NAIRS Recorders forwarded weekly information on athlete exposures in games and practices, respectively; designation of playing surface is included within this information for analysis of injury patterns on different types of surfaces. The computer combines this information with that of injuries incurred, and selected associated variables to arrive at injury rates per 1000 athlete exposures.

### Subjects

For the purpose of this investigation, the data recorded for College Football from 1975-1982 will be selected from the nearly 30 different sport-related data sets available within the NAIRS structure. As with all NAIRS data sets the information was submitted from college football programs which voluntarily chose to be a part of the injury surveillance system. The injury and exposure data were reported by the athletic trainers or their agents at each of the member institutions. While the number of teams varied from year to year, coefficient of variation calculated among the years demonstrate a consistent pattern of injury distribution for each of the eight years particularly for the SIGNIFICANT severity category. During the eight years of NAIRS operation the colleges that volunteered for membership varied both in size of program and level of competition. Some schools were members for the entire eight years (the Big Ten Conference) and some schools were members for some of the years and some were members for only one season. Table 1 demonstrates the breakdown by NCAA division for the college/universities that participated in the eight years of data recording. In all, the NAIRS College Football data reflect 395 team-seasons or an average of 50 college teams per season. The total exposure accumulated by these teams includes some 36,749 players, 4,276 games, and 32,433 practice sessions. Table 2 displays a year to year breakdown of the variation in the total number of NAIRS football members for different exposure related categories.

In order to assist in gaining a perspective on the injury pattern to be discussed, the concept of the NAIRS Average College Football Team will be useful. From the data in Table 2, this hypothetical team consists of 93 players exposed to 82 practice sessions and accumulating approximately 7,608 athlete-exposure in practice. Since not all players on a college football team actually participate in a game, the average game squad size for the NAIRS average team is 51 players exposed to approximately 11 games and accumulating 548 athlete-exposure per team per season under game conditions. The total athlete-exposure to the sport of college football is approximately 8,156 per team per season and 322,659 total athlete-exposures over eight years.

### Data Recording

The data recording model used by NAIRS included

the variables that existed at the time and place of an injury. The athletic trainers at the member institutions were directly responsible for the maintenance of the injury record. The NAIRS recorder's manuals, and machine editing processes used on each incoming form, and monthly summaries distributed to schools were used to verify, with the recorders, the overall records for each member's individual data set. Each school received a Year End Summary which compared their patterns of injury experiences with those for the entire population. Since NAIRS was designed as a prospective study, recorders were provided with recording manuals prior to each academic year in order to be prepared to record each of the requested variables with each injury that would occur in the upcoming year.

### Data Display

The data in the following summary examines various aspects of injury with particular attention directed to the severity categories of MINOR, MODERATE and MAJOR. For perspective Table 3 displays overall injury severity by case rate 1,000 athletic exposure for each year's game and practice sessions. It demonstrates a fairly consistent injury rate among the eight years in each of the occasion and severity categories. If the average college football team has approximately 8,156 athlete-exposure per season, the average team should expect approximately 82-84 injuries per season, with 23 or 24 occurring in games and 49 or 50 occurring in practice. An analysis of variance for the rates that exist across the eight years produces an F value insufficient to obtain statistical significance at  $P = .05$ . This finding is consistent with other NAIRS publications. To conserve space, the remaining tables will display the combined eight year total in the various categories.

Tables 4 and 5 are designed to provide some structure to the overall injury pattern among groups of injury associated with various body categories and severity of injury. In addition to the frequency and case rate/1,000 athlete-exposures, a variable called EFTS or Expected Frequency per Team per Season is established. This variable helps provide perspective for the average program in whole numbers rather than decimal rates and is based on the concept of the Average College Football Team.

The data in Table 4 provide perspective for the rate of injury for game and practice conditions as they were examined for severity categories. While there are more injuries under practice conditions it is important to observe that when these frequencies are standardized by the amount of athlete-exposure, and the relative rate of injury is calculated, games appear to have 8 or 9 times greater rate of injury than for practice. Comparing among and within categories shows a variation from 7 to 10 times greater risk under game conditions. Intervention designed to reduce the overall risk of injury in football should probably be centered on game conditions and situations rather than on practice procedure. From the data over half of the injuries that occur for the average team are associated with the lower extremity. This finding is consistent with the nature of the sport.

Table 5 displays the data for the knee injury category from Table 4. It uses the same calculation method and exhibits 8 or 9 times greater risk for knee injuries under game conditions as opposed to practice situation. These data indicate that the majority of the knee injuries that occurred are classified as general trauma (contusions etc.) and knee sprain. The EFTS line shows that the average college football team should expect approximately five game related knee sprains and six practice

related knee sprains per season. When the total number of knee injuries are considered these numbers raise to seven and eleven respectively. It should be noted that the meniscus injury contributes very little to the overall knee injury pattern. With this in mind efforts made to prevent knee sprain should be directed at game-related ligament sprains rather than the less frequent meniscus injury.

The data in Table 6 are drawn from the knee category displayed in Table 4 and those categories of highest risk in Table 5. This table demonstrated the frequency of injury to specific ligaments associated with the knee. Of the specific ligaments injured in the knee the tibia-femoral or medial collateral (MCL) is the highest rate of injury. Not only do game conditions produce a higher risk of knee sprain but the MCL is 5 to 7 times more frequently injured than the other three major ligaments of the knee. For meniscus injuries the medial portions demonstrate a higher incidence of major injury under game conditions but not necessarily for practice conditions. Efforts to reduce the risk of knee injuries in college football should be centered around the reduction of MCL injuries.

Table 7 displays a summary of knee related surgical cases. These data were derived from the specific injury listed as the principal diagnosis by the NAIRS recorder. This diagnosis, by definition, is the injury which in the estimation of the athletic trainer, will produce the greatest limitation to the athlete's performance. It is understood that many knee surgeries involve more than one ligament and often associated with meniscus problems; the table is provided as an aid to the overall surgery question as it relates to the knee. Most importantly, it demonstrates that for surgical knee injuries, like general ligament injuries, injury reduction procedures should be directed toward the medial collateral ligament. For perspective it should be noted that the average college football team should expect from two to three knee surgeries per season. This is consistent with findings from earlier literature on knee injuries. More specific details regarding these surgical cases will be presented in future papers.

### Conclusion

During the eight years NAIRS was able to collect data regarding college football injuries a wide variety of patterns could be identified. It is important to remember that the NAIRS membership consisted predominantly of NCAA Division I schools (74.4%), with over 36,500 athletes accumulating over 3.2 million athlete-exposures (opportunities to be injured). In the sport of football the game conditions have eight or nine times greater risk of injury than do practice sessions. Of all injuries over 75% are MINOR (less than seven days lost) except for knee injuries which are nearly 50% SIGNIFICANT (more than seven days lost). For the knee category, the most frequent injuries are general trauma and knee ligament sprain with the medial collateral ligament being most often injured as well as the most frequent site for knee surgery.

The basic summary of data displayed in this material should not be considered to be all inclusive. It is only the first step in a series of investigations which will examine specific characteristics of knee injury such as player positions, situation (rushing/passing etc.), activity (block/tackle) and surface related variables. For now, data in this article can serve to establish some baseline parameters by which data be recorded by individual schools. It may be particularly important to those programs using prophylactic knee braces. Individually

**Table 1**  
**NAIRS Participation in College Football for**  
**NCAA Classifications**  
**1975-1982**

	1975	1976	1977	1978	1979	1980	1981	1982	Total
Division I	28	28	49	33	43	45	37	31	294
I-A	19	23	40	26	35	34	28	22	227
I-AA	9	5	9	7	8	11	9	9	67
Division II	9	5	9	6	5	5	6	3	48
Division III	3	2	6	6	8	5	5	3	38
Non-Member	1	1	3	1	0	0	0	0	6
Canadian	1	1	2	1	1	2	1	0	9

**Table 2**  
**Exposure to College Football Recorded by NAIRS**  
**1975-1982**

	# of Teams	# of Games	# of Practices	# of Athletes	Game Ath-Exp.	Practice Ath-Exp.	Total Ath-Exp.
1975	42	448	3,207	3,738	24,048	286,238	310,286
1976	37	397	2,860	3,330	19,544	255,958	275,502
1977	69	743	5,435	6,348	36,363	495,435	531,798
1978	47	505	3,826	4,140	24,777	343,748	368,525
1979	57	624	4,792	5,358	31,041	449,928	480,969
1980	57	620	4,858	5,415	31,449	458,319	489,768
1981	49	524	4,089	4,904	28,846	388,004	416,850
1982	37	415	3,366	3,626	20,599	327,362	347,961
Total	395	4,276	32,433	36,749	216,667	3,004,992	3,221,659

\* Ath-Exp. = Athlete-Exposure (man-season)

**Table 3**  
**Relative Frequency of Injury for NAIRS College Football**  
**by Severity and Type of Exposure per 1000 Athlete-Exposure**  
**1975-1982**

	1975	1976	1977	1978	1979	1980	1981	1982	8 yr. Average
<b>Sport Related*</b>									
MINOR	8.6	8.3	8.0	7.5	7.1	6.8	6.2	6.5	7.4
MODERATE	1.8	1.8	1.7	1.6	1.5	1.5	1.7	1.5	1.6
MAJOR	1.3	1.1	1.2	1.3	1.1	1.1	1.1	1.1	1.2
<b>Game Related</b>									
MINOR	45.4	49.2	42.9	43.7	35.6	41.5	31.5	42.0	41.5
MODERATE	10.1	10.8	10.2	9.8	9.9	10.2	8.4	9.6	9.9
MAJOR	6.7	6.8	7.7	8.1	7.1	6.5	5.6	6.5	6.9
<b>Practice Related</b>									
MINOR	5.6	4.5	5.6	5.0	5.2	4.6	4.6	4.3	4.9
MODERATE	1.1	1.2	1.2	1.0	1.0	0.9	1.3	1.0	1.1
MAJOR	0.9	0.8	0.8	0.8	0.7	0.8	0.9	0.8	0.8

\* Games and Practices combined.

**Table 4**  
**Injury Frequency for NAIRS College Football by Body Category and Severity**  
**1975-1982**

Game	Head/ Neck/Spine	Face/ Scalp	Shoulder/ Arm	Forearm/ Hand	Torso	Hip/ Leg	Knee	Ankle/ Foot	Misc.	Total
<b>MINOR N</b>	1388	206	1060	914	697	1666	1322	1579	61	8893
CR/1000 A-E	6.4	1.0	4.9	4.2	3.2	7.7	6.1	7.3	0.3	41.0
EFTS	4	1	3	2	2	4	3	4	*	23
<b>MODERATE N</b>	183	48	275	94	144	280	528	572	4	2128
CR/1000 A-E	0.8	0.2	1.3	0.4	0.7	1.3	2.4	2.6	0.0	9.8
EFTS	*	*	1	*	*	1	1	1	*	5
<b>MAJOR N</b>	76	17	164	137	45	136	729	208	5	1517
CR/1000 A-E	0.4	0.1	0.8	0.6	0.2	0.6	3.4	1.0	0.0	7.0
EFTS	*	*	*	*	*	*	2	1	*	4

**Practice**

<b>MINOR N</b>	1878	409	1572	1293	1214	3130	220	2838	438	14,972
CR/1000 A-E	0.6	0.1	0.5	0.4	0.4	1.0	0.7	0.9	0.1	5.0
EFTS	5	1	4	3	3	8	5	7	1	38
<b>MODERATE N</b>	218	106	413	183	207	621	784	726	9	3267
CR/1000 A-E	0.1	0.0	0.1	0.1	0.1	0.2	0.3	0.2	0.0	1.1
EFTS	1	*	1	1	1	2	2	2	*	8
<b>MAJOR N</b>	153	25	272	250	102	232	1073	303	10	2420
CR/1000 A-E	0.1	0.0	0.1	0.1	0.0	0.1	0.4	0.1	0.0	0.8
EFTS	1	*	1	1	*	1	3	1	*	6

CR/1000 A-E = Case Rate per 1000 Athlete-Exposures

EFTS = Expected Frequency per Team per Season

\* Less than one Injury per Team per Season

**Table 5**  
**Injury Frequency NAIRS College Football**  
**for Knee Joint Area by Severity and Game/Practice Conditions**  
**1975-1982**

Game	Meniscus	Knee Trauma	Knee Sprain	Knee Strain	Knee M-S	Knee Trauma	Other	Total
<b>MINOR N</b>	45	376	739	87	22	26	27	1322
CR/1000 A-E	0.2	1.7	3.4	0.4	0.1	0.1	0.1	6.1
EFTS	*	1	2	*	*	*	*	3
<b>MODERATE N</b>	20	66	399	23	4	4	12	528
CR/1000 A-E	0.1	0.3	1.8	0.1	0.0	0.0	0.1	2.4
EFTS	*	*	1	*	*	*	*	1
<b>MAJOR N</b>	116	8	568	9	5	2	21	729
CR/1000 A-E	0.6	0.0	2.6	0.0	0.0	0.0	0.1	3.4
EFTS	*	*	2	*	*	*	*	2

**Practice**

<b>MINOR N</b>	82	553	1126	208	75	87	69	2200
CR/1000 A-E	0.0	0.2	0.4	0.1	0.0	0.0	0.0	0.7
EFTS	*	1	3	1	*	*	*	5
<b>MODERATE N</b>	54	82	532	44	15	15	42	784
CR/1000 A-E	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.3
EFTS	*	*	2	*	*	*	*	2
<b>MAJOR N</b>	226	19	734	12	44	5	33	1073
CR/1000 A-E	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.4
EFTS	1	*	2	*	*	*	*	3

CR/1000 A-E = Case Rate per 1000 Athlete-Exposure

EFTS = Expected Frequency per Team per Season

\* Less than one Injury per Team per Season

**Table 6**  
**Injury Frequency for Selective Knee Related Injuries for**  
**Specific Knee Structure Involved**

Game	Meniscus					Knee				Meniscus	Knee
	Lateral	Medial	ACL	PCL	LCL	MCL	Hyper-extension	Other			
<b>MINOR N</b>	22	19	24	11	58	440	97	48	4	31	
CR/1000 A-E	0.1	0.1	0.1	0.1	0.4	2.0	0.5	0.2	0.0	0.1	
EFTS	*	*	*	*	*	1	*	*	*	*	
<b>MODERATE N</b>	10	10	13	1	44	280	27	22	0	12	
CR/1000 A-E	0.0	0.0	0.1	0.0	0.2	1.3	0.1	0.1	0.0	0.1	
EFTS	*	*	*	*	*	1	*	*	*	*	
<b>MAJOR N</b>	33	82	92	26	37	377	7	15	1	14	
CR/1000 A-E	0.2	0.4	0.4	0.1	0.2	1.7	0.0	0.1	0.0	0.1	
EFTS	*	*	*	*	*	1	*	*	*	*	

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Practice										
Game	Lateral	Medial	ACL	PCL	LCL	MCL	Hyper-extension	Other	Meniscus	Knee
<b>MINOR N</b>	36	40	46	9	133	671	145	55	6	67
CR/1000 A-E	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0
EFTS	*	*	*	*	1	2	*	*	*	*
<b>MODERATE N</b>	29	25	22	3	56	368	35	22	0	26
CR/1000 A-E	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
EFTS	*	*	*	*	*	1	*	*	*	*
<b>MAJOR N</b>	91	133	92	20	54	507	14	27	2	20
CR/1000 A-E	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
EFTS	*	*	*	*	*	2	*	*	*	*

CR/1000 A-E = Case Rate per 1000 Athlete-Exposures  
EFTS = Expected Frequency per Team per Season

collected data could be compared to that found in the 1975-1980 season. Such comparison should be of value for decision making in the area of football related knee injuries.

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**Table 7**  
**Frequency of Knee Surgery for**  
**College Football by the Principal Diagnosis**  
**Recorded**  
**1975-1982**

	N	CR/1,000 AE	EFTS
Lateral meniscus	109	0.3	.24
Medial meniscus	170	0.5	.41
Anterior cruciate	137	0.4	.33
Posterior cruciate	24	0.1	.08
Lateral collateral	47	0.1	.08
Medial collateral	401	1.2	1
Hyperextension injury	6	0.0	*
Hyperflexion injury	2	0.0	*
Anterior Capsule injury	3	0.0	*
Posterior Capsule injury	10	0.0	*
Other/non-specific	79	0.2	.16
<b>Total</b>	<b>988</b>	<b>3.1</b>	<b>2.5</b>

\* = Less than one per Team per Season  
CR/1000 A-E - Case Rate per 1000 Athlete-Exposure  
EFTS = Expected Frequency per Team per Season

**June 7 thru 11**  
**San Antonio**

# The Prevalence of Burnout Among Athletic Trainers

Daniel Campbell, LPT, ATC  
Michael H. Miller, PhD  
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Athletic training is a stressful profession and athletic trainers are burned out. These conclusions are the basic findings of two recent theoretical articles (1,2). How much stress do athletic trainers experience and how many are burned out? According to Gieck, Brown and Shank (1) and Gieck (2) athletic trainers would appear to be under an extraordinary amount of stress and many, if not all, members of the profession experience some burnout. Gieck, Brown and Shank (1) identify six causes of burnout among athletic trainers. First, athletic trainers as health professionals are under stress because they are required to give emotionally to others without consideration of their own emotional and physical needs. Second, the life style of the athletic trainer is "by nature stressful". Third, athletic trainers are "overworked" under conditions which are considered to be stressful. What the authors mean by overwork is not, however, explained. Fourth, athletic trainers are forced to make multiple decisions, meet difficult schedules and put up with disruptive travel. Next, female athletic trainers are burned out because frequently they are limited by their coaches in what they are permitted to do professionally. In this situation, their role may be limited to "baby sitting" for their athletes. Finally, the authors point out that athletic trainers experience conflict over the role they are permitted to play and the role they are educationally prepared to play. These articles are interesting in that they finally bring out into the open the important issues of stress and burnout among athletic trainers. However, the articles provide no real data regarding the actual extent of the problem.

The purpose of this article is to assess the actual extent of stress and burnout among athletic trainers by means of a questionnaire which was distributed at the 1984 National Association of Athletic Trainer's (NATA) Clinical Symposium which met in Nashville, Tennessee in June.

Kahn (3) defines burnout as a "syndrome of inappropriate attitudes towards clients and toward self . . ." which is usually associated with social, physical and emotional symptoms "ranging from exhaustion and insomnia to migraine and ulcer." Furthermore, he points out that burned out individuals do not perform their jobs at an optimal level.

## The Instrument

The questionnaire was divided into three parts. Parts I and II were composed of 39 and 33 questions, respectively, which were designed to assess the athletic

trainer's level of stress. Each of these questions had Likert-type answer choices ranging from "Highly Agree" and "Agree", to "Neutral", "Disagree", and "Highly Disagree". Part III, in addition to having numerous demographic questions, contained 12 medical conditions that the athletic trainer was to identify as occurring since he/she was in his/her present job.

Substantial evidence emerged supporting the validity of the responses of the respondents to the questionnaires. For example, a number of questions were repeated in similar but slightly different form in the questionnaire. Two examples are: (1) "Sometimes I feel pressured in my job." and "I am constantly under pressure." and (2) "Sometimes I feel a sense of powerlessness in this job." and "Sometimes I have a feeling of helplessness concerning my job." When the responses to each of the five sets of questions were correlated, high positive correlations were obtained. In no case was the Kendall Tau  $b$  significant at a level less than .0031. These results lead us to conclude that the respondents answered the questionnaire frankly, forthrightly and consistently.

## The Sample

Questionnaires were included in the packets of most of the 1500 athletic trainers who attended the NATA Clinical Symposium which met in Nashville, Tennessee in June, 1984. The cover letter to the questionnaire explained that researchers at Vanderbilt University were conducting a confidential study of burnout among athletic trainers. Persons agreeing to complete a questionnaire were asked to return it to the registration table (at the convention) where a box was provided. A few of the respondents mailed their completed questionnaire directly to the researchers. Respondents were also requested to sign the cover letter in order that all a follow-up study might be undertaken at a later date. The 221 usable questionnaires which were returned and evaluated constitute a usable return rate in excess of 15 percent.

Seven out of 10 of the respondents were male; 29.9% were female. Almost half of the respondents (47.5%) were between 20-29 years of age; 39.4% were 30-39 years of age; and 13.1% were 40 years of age and older. The median age of the entire sample was 35. Slightly more than one-half of the respondents (55.2%) were married; only 4.1 percent of the entire sample have been married previously. Of those respondents who were married, 3 out of 4 stated they were very happily married; less than 5 percent were unhappily married.

The vast majority of the respondents (75%) had a master's degree; 23 percent had a baccalaureate and 2.4 percent had an earned doctorate. Head trainers made up 67.9 percent of the sample; assistant trainers and graduate assistants composed 22.6 percent and 8.5 percent of the respondents, respectively. Approximately one percent of the sample was unemployed. Demographically, this sample seems to be representative of the total population of athletic trainers. The absence of recent demographics of the population makes a more complete comparison impossible.

The high employment mobility rate of the sample is evident in the mean length of time the respondents had been in their present athletic trainer positions. While 56.6 percent had been in the same position for 3.9 years or less, only 12.7 percent had been in their present position for ten or more years. The mode was 1-3.9 years (49.1%). The high transience of the respondents is seen further in the finding that 40.8 percent and 64.1 percent of the respondents have worked for their present organization for less than four years and less than seven years, respectively. Only 18.8 percent of the respondents have been with their present organization for ten or more years. (See Table 1)

A very high proportion of the respondents (66.4%) said that they had thought about changing jobs within the past six months. The major reasons given by these persons for considering a change in jobs was: 1) desire to obtain a better job, a job with more money, or a job with better advancement prospects (27.7%); 2) underpaid and overworked (17.5%), and 3) too many job restrictions (10.9%).

Most of the respondents belonged to at least one other professional organization in addition to the NATA. Only 20.8 percent of the respondents said they belonged to the NATA exclusively. All ten NATA districts were represented in the sample, although there appears to be some relationship between distance from Nashville, Tennessee (the site of the NATA Symposium) and participation. District 4, which includes Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin, and Ontario, Canada had the largest representation (21.7%) followed by District 9 (Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi and Tennessee) with 13.6 percent and District 2 (Delaware, New Jersey, New York, and Pennsylvania) with 12.2 percent. (See Table 2)

The respondents were asked to indicate whether they had incurred any on a list of twelve medical conditions in their present jobs. This list of medical conditions was included because they have been identified in the literature to be associated with burnout. In fact, physical manifestations usually accompany burnout. The 221 respondents reported a total of 439 symptoms. A total of 145, or 65.1 percent of the respondents, reported at least one medical condition; 35 respondents (15.8%) reported two medical conditions; 26 (11.8%) three medical conditions were reported by 107 (52.1%) of the 221 respondents. Thirty eight respondents (17.2%) reported one medical condition; 35 respondents (15.8%) reported two medical conditions; 26 (11.8%) three medical conditions; 16 (7.2%) reported four; 11 (5%) reported five; and 19 (8.3%) reported six or more medical conditions. (See Table 3)

The medical conditions most widely identified by the respondents was fatigue, with a total of 90 out of the 221 respondents (40.7%) reporting it. Interestingly, the literature consistently identifies fatigue as the most prevalent medical condition of burned out people; our findings concur (3,4). Less frequently reported were: irritability (67 or 30.3%), weight management problems

**Table 1**  
**Distribution of Respondents by Length of Time with Present Organization**

LENGTH OF TIME	NUMBER	PERCENT
Less than 1.0 year	12	5.8
1.0 to 3.9 years	72	35.0
4.0 to 6.9 years	48	23.3
7.0 to 9.9 years	35	17.0
10 to 14.9 years	21	10.1
15.0 years or more	18	8.7
Total	206	100.0

N equals less than 221 because of missing data.

**Table 2**  
**Distribution of Respondents by NATA District**

District	Number	Percent
1	13	5.9
2	27	12.2
3	25	11.3
4	48	21.7
5	19	8.6
6	21	9.5
7	5	2.3
8	13	5.9
9	30	13.6
10	20	9.0
TOTAL	221	100.0

(55 or 24.9%), sleeplessness (43 or 19.5%), depression (41 or 18.6%), indigestion (38 or 17.2%) nervousness (29 or 13.1%) and frequent headaches (28 or 12.7%). High blood pressure, ulcers, excessive smoking and drinking were each reported by less than seven percent of the sample. (See Table 4)

From the questions in Part I and II, which elicited specific information on stress, the Athletic Trainer Burnout Scale (ATBS) was developed. The Scale had a total of 43 questions out of a pool of 72 questions with a range of scores from a low of 58 to a high of 168. The mean was 113. A question was included in the scale only if the responses to it were distributed between the "strongly agree" and "agree" responses and the "strongly disagree" and "disagree" responses. In other words, if the vast majority of respondents answered a question overwhelmingly positively or negatively, the question was excluded from the scale because the question did not disperse the respondents along a continuum.

The respondents were divided into "burned out" and "not burned out" groupings using the ATBS. Through

**Table 3**  
**Distribution of Respondents by Number of Medical Conditions Identified**

Number of Medical Conditions	Number	Percent
0	76	34.9
1	38	17.2
2	35	15.8
3	26	11.8
4	16	7.2
5	11	5.0
6	7	3.2
7	7	3.2
8	4	1.8
Total	221	100.0*

\*Does not equal 100.0% exactly because of rounding.

**Table 4**  
**Distribution of Respondents by Medical Conditions Incurred on Present Job**

Medical Condition	Number*	Percent With Condition
Fatigue	90	40.7
Irritability	67	30.3
Weight Management Problems	55	24.9
Sleeplessness	43	19.5
Depression	41	18.6
Indigestion	38	17.2
Nervousness	29	13.1
Frequent Headaches	28	12.7
High Blood Pressure	15	6.8
Ulcer	11	5.0
Excessive Smoking	11	5.0
Excessive Drinking	11	5.0
Total	439	

\*N equals more than 221 because some respondents had more than one medical condition.

empirical testing, it was determined that respondents who scored over 117 points on the ATBS, were burned out; individuals who scored 117 or less were not burned out. Various statistical procedures were employed to establish that this point differentiated the "burned out" from the "not burned out" athletic trainers. The former

**Table 5**  
**Pearson's R Correlation Coefficients Between Burnout and Selected Medical Conditions**

Correlation	Significance	
Frequent Headache	.21938	.0005
High Blood Pressure	.19911	.0015
Weight Manage. Prob.	.22238	.0004
Nervousness	.22958	.0003
Depression	.43286	.0000
Irritability	.40662	.0000
Indigestion	.26588	.0000
Fatigue	.28004	.0000
Sleeplessness	.24226	.0001

**Table 6**  
**Distribution of Respondents By How Happily Married and Burnout\***

	How Happily Married			
	Very Happily Married		Not Very Happily Married	
Burnout				
No	60	69.8%	10	38.5%
Yes	26	30.2%	16	61.5%
Total	88	100.0%	26	100.0%

Kendall's Tau  $b \times .27302$   $p > .002$

\*N does not equal 221 because many of the respondents were not married.

group had 133 or 60.3 percent of the respondents while the latter had 88 or 39.8 percent. This division of the respondents into "burned out" and "not burned out" grouping was used as the dependent variable. The dependent variable was correlated then with the questions in Part III of the questionnaire (the independent variables).

The respondents who were classified as burned out had a significantly higher incidence of medical symptoms than did the respondents who were classified as not burned out. Specifically, the burned out respondents were significantly more likely than the respondents who were not burned out to have incurred as a result of their present job: frequent headaches, high blood pressure, weight management problems, nervousness, depression, excessive drinking, irritability, indigestion, fatigue and sleeplessness. Only ulcer and excessive smoking did not show a significant difference between the burned out and the not burned out respondents. This latter finding may be explained by the fact that these medical conditions had a very low prevalence in the

**Table 7**  
**Distribution of Respondents By Whether They Considered Changing Jobs Within The Last Six Months and Burnout**

Burnout	Considered Changing Job			
	No		Yes	
No	61	84.7%	68	47.9%
Yes	11	12.9%	74	52.1%
Total	72	100.0%	142	100.0%

Kendall's Tau  $b \times .35569$   $p > .0001$

\*N equals less than 221 because of missing data.

**Table 8**  
**Distribution of Respondents By The Number of Medical Conditions They Report and Burnout**

Burnout	Number of Medical Conditions			
	0 or 1		2 or more	
No	96	84.2%	37	27.8%
Yes	18	15.8%	70	65.4%
Total	104	100.0%	107	100.0%

Kendall's Tau  $b = .50668$   $p > .0001$

\*N equals less than 221 because of missing data.

sample. (See Table 5 for a listing of the Pearson's R Correlations Coefficients between burnout and selected medical conditions.)

The literature is very limited in regard to reporting the incidence of various medical conditions among burned out individuals except that burned out individuals typically have physical manifestations and the more burned out an individual, the more manifestations he or she exhibits. Nonetheless, we conclude, based upon the number of medical conditions they identified, their youthfulness and medical expertise, that approximately 40 percent of the respondents are burned out and one-fourth of this group (i.e., those scoring the highest on the burnout scale) are extremely burned out.

The validity of the ATBS is supported by our finding that respondents with ten of the twelve medical conditions had a significantly higher burnout score than respondents who did not have these conditions. Basic to our contention is the general acceptance in the literature that burnout leads to various medical conditions,

such as those included in this study.

No significant relationships were found between the ATBS and the background and demographic variables. For instance, differences in age, sex, times married, number of children, children living with, degree, how long certified, how long with present organization, how long in present position, and the NATA district lived in did not differentiate between burned out and not burned out athletic trainers. This finding is important because it shows that 1) all athletic trainers, regardless of their educational and work background and demographic makeup, are equally at risk of becoming burned out or 2) burnout is not related to the life cycle. This point will need to be studied further.

It is interesting to note that although no significant differences were found when NATA District of respondents was correlated with ATBS score, two districts, 6 (Arkansas and Texas) and 7 (Arizona, California, New Mexico, Utah and Wyoming), had more burned out than not burned out respondents.

Only two social factors, how happily married and whether or not the respondent had considered changing jobs within the previous six months, varied by ATBS score. In the first case, 62 percent of the "Not Very Happily Married" respondents (n=16) were burned out compared to 39 percent of the "Very Happily Married" respondents (n=10). Conversely, 70 percent of the Very Happily Married respondents (n=51) were not burned out compared to 41 percent (n=35) of this same group who were burned out. (See Table 6) In the second case, respondents who did not consider changing jobs were clearly not burned out compared to respondents who considered changing jobs. More specifically, 85 percent of the respondents who did not consider changing jobs were not burned out compared to 65 percent of the respondents who did consider changing jobs and were burned out. (See Table 7)

Respondents who scored high on the ATBS were significantly more likely to have two or more medical conditions than respondents who scored low. Table 8 shows that 84 percent of the respondents who were not burned out did not have any medical conditions compared to only 16 percent of the burned out respondents. Conversely, 65 percent of the burned out respondents had one or more medical conditions compared to only 28 percent of the respondents who were not burned out. (See Table 8)

## Conclusions

The results of this study allow us to draw several conclusions regarding the relationship of burnout to athletic trainers. 1) The Burnout Scale used in this research appears to be both reliable and valid. 2) If, as we speculate, the sample of athletic trainers included in this study are representative of all athletic trainers in the United States and Canada then approximately forty percent are burned out and some are extremely burned out. 3) Athletic trainers have a large assortment of medical conditions which appear to be more prevalent than would be expected in a population of relatively young men and women.

The data also suggest that burned out athletic trainers are differentiated from athletic trainers who are not burned out according to the following characteristics: 1) A greater proportion of burned out trainers are male than female but when the ratio of females to males in the burned out and the not burned out groups are compared, female are over-represented (33% to 27%) and males are under-represented (67% to 73%) among the

*continued on page 148*

# The Distinction Between Drug Use And Abuse

Arlette Perry, PhD

*This paper focuses upon the primary problem of steroid use - lack of education. Through education the metabolic and physiological consequences of steroid use upon liver cells, plasma electrolytes, plasma lipid fractions and circulating male hormones can be thoroughly understood by potential users. Health hazards associated with prolonged steroid use include fibrosis of the liver, peliosis hepatis, cholestatic jaundice, hypertension, coronary artery disease and hypertriglyceridemia. Adverse signs and symptoms that may lead to medical complications are evaluated for the individual, coach, or trainer. Appropriate medical screening is imperative. This includes a blood pressure check and prostate examination by a physician. Appropriate blood work includes plasma lipid fractions, plasma electrolytes, blood urea nitrogen, uric acid level, and an extensive liver profile. The normal range of values for blood work is given in the text. It is felt that through proper education the steroid risk/benefit ratio will be great enough to dissuade potential users.*

In an obsessive effort to achieve the ideal body type, men and women are choosing diametrically opposed pathways. In women, this obsession can lead to anorexia nervosa, a syndrome characterized by self-imposed starvation. The male counterpart to this syndrome is a drive toward increasing size and muscularity characterized by intense weight training, protein over-consumption, and steroid abuse. It is believed that the intake of steroids, combined with daily heavy weight training, will enhance muscle protein synthesis, thereby increasing size and strength (1).

The primary problem with steroid use is simply ignorance. Too much time is spent debating the ethics of steroid use, the legalities of steroid use, and the methods of catching steroid abusers. The fact that many users know little of the possible side effects and health hazards, associated with steroid use is cause for much greater concern. One survey showed 45% of elite athletes taking steroids received them from illegal sources (2). The central focus of managing this problem should be through education. Through education the steroid risk/benefit ratio will be great enough to dissuade potential abusers.

The primary consideration is to understand what type of steroid is being used. Is it primarily anabolic or androgenic? Anabolic properties enhance the building of tissue through nitrogen-retention processes. Steroids

attach themselves to specific receptor sites on the muscle cell membrane. Once inside the muscle cell, steroids activate DNA to induce ribosomal manufacture and sequestering of amino acids. Androgenic properties on the other hand, are those associated with the enhancement of male secondary sex characteristic, i.e., increases in bodily and facial hair, deepening of the voice (due to enlargement of the larynx), increases in aggressiveness, increases and/or decreases in sex drive and increasing oiliness of the skin. The extremely androgenic steroids are thought to have more adverse side effects than the anabolic steroids (3). Users of the more androgenic steroids, i.e., testosterone derivatives, must be cautious about their use and administration.

## Steroids and Liver Dysfunction

Once the type of steroid being used is understood, it is necessary to understand the health hazards associated with prolonged usage. The organ of greatest concern is the liver. Generally, the liver metabolizes protein and breaks down what isn't used into 17 ketosteroids. Those steroids with an alkyl group on the carbon 17 atom, referred to as "17 alpha alkylation", cause the liver to work longer and harder to deactivate the steroids (3). There may be a subsequent elevation in serum glutamic oxalacetic transaminase, SGOT, and serum glutamic pyruvic transaminase, SGPT, which are involved in the conversion of different amino acids to form new protein. Prolonged use of steroids may precipitate hyperbilirubinemia which may be indicative of obstruction to bile flow and excretion. The first sign of bilirubin accumulation is a yellowish color found around the whites of the eyes and under the fingernails. If steroid use persists, permanent liver damage may occur. This may occur in the form of fibrosis, peliosis hepatis, and cholestatic jaundice all of which can be fatal.

Fibrosis of the liver is an accumulation of scar tissue resulting from the collapse and condensation of pre-existing fibers or from the synthesis of new fibers by fibroblasts. It may occur from chronic obstruction to blood or from other disturbances of the hepatic circulation (5). Peliosis hepatis is a condition characterized



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by blood-filled cysts and is usually associated with estrogens or androgens. Cholestatic jaundice results from bile flow impairment at any point from the liver cell canalculus to the Ampulla of Vater. It generally indicates bile secretory failure. Bile constituents back up into systemic circulation and fail to enter the intestines for excretion. Bilirubin, bile salts, alkaline phosphates, cholesterol, and phospholipids are most often affected. Retention of bilirubin produces jaundice; dark urine results from urinary excretion of conjugated bilirubin. Laboratory tests revealing elevated serum bilirubin, alkaline phosphates, and liver transaminases reflect possible liver dysfunction. This is an early warning sign to discontinue the use of steroids.

### **Hypertension and Effects on Blood Chemistry**

Another problem linked to prolonged steroid use is hypertension. This is probably mediated through sodium (Na<sup>+</sup>), calcium (Ca<sup>+</sup>), and fluid retention processes that occur with steroid use (3). Research has shown that high intensity cycling and weight training are associated with an increase in systolic pressure that is maintained throughout the training season (6). If weight training is combined with steroid use in an individual who already has a family history of hypertension, the problem is exacerbated. Hypertension causes extra work for the kidneys, possible damage to its functioning mechanism, the glomerulus, and may lead to renal impairment with prolonged steroid use. High blood pressure is also a primary risk factor associated with coronary artery disease (7). Blood pressure must be monitored regularly when taking steroids.

Decreased levels of high density lipoprotein cholesterol, H.D.L.-C, and increased levels of low density lipoprotein cholesterol, L.D.L.-C, are often associated with steroid use (4). H.D.L.-C. is believed to be protective against coronary artery disease and L.D.L.-C. is significantly and positively associated with coronary artery disease (8). If steroid use is combined with a high protein diet rich in saturated fat or if an individual has a family history of cardiovascular disease and/or hypertension, their own risk of having premature coronary artery disease is accelerated.

Reduced resting blood glucose, reduced glucose tolerance, and hyperinsulinism are adverse side effects reported from prolonged steroid use. Insulin increases the conversion of glucose to triglyceride precursors and finally to plasma triglycerides (3). This condition may be aggravated in individuals with Diabetes Mellitus or tendency toward diabetes. Elevated triglyceride levels have also been significantly associated with an increased risk of cardiovascular disease (9).

Because most oral anabolic steroids are chemically modified for greater potency, their risk of side effects are also greater. Injectable steroids have their share of undesirable side effects but the effects are milder and less frequent due to different modification in chemical structure (10). Individuals using injectable steroids increase their chances of getting infectious hepatitis. Due to non-sterile needles, bacteria can get into the bloodstream and cause an inflammation of liver cells. If this reaction persists, hepatocellular necrosis can occur with death as a final result.

### **Hormonal Side Effects**

Certain steroids are aromatized and converted to estrogen. Estrogen-converted steroids may cause gynecomastia (increases in breast-like tissue) as well as increased fluid retention. Most highly androgenic, tes-

tosterone derivatives are converted to estrogen. They cause the body to synthesize less of its own endogenous testosterone. Prolonged use may precipitate azoospermia (cessation of sperm production) and testicular atrophy (reduction in size of the testes). Normally low blood levels of testosterone trigger the secretion of follicle stimulating hormone, FSH, and interstitial cell stimulating hormone, ICSH. These hormones function in a negative feedback manner to increase spermatogenesis and circulating levels of testosterone. When taking steroids, in particular the more androgenic steroids, an individual secretes less FSH and ICSH which leads to a reduction in spermatogenesis and testosterone (11). Steroids such as Proviron (Mesterolone), Oxandrolone (Anavar) and Stanozolol (Winstrol) are not converted to estrogen and are safer in this respect (4).

A practice common to steroid users is "stacking". Few serious weight trainers take one type of steroid daily. One is taken to increase muscle mass, another is taken to increase the overall size or ballooning effect. There is no particular steroid that offers better results than any other steroid. There are no superior chemicals or super combinations. Generally, the more chemicals are consumed, the more likely different reactions will occur, and the greater one's chances of having unfavorable side effects occur (4).

Constant use also decreases the effectiveness of the steroid. This is due to complete saturation of muscle cell receptor sites which subsequently shut down. That is why taking steroids intermittently, a process called cycling, is most common. The shorter the cycle and the more time spent training while off the steroids, the lower one's chances of developing undesirable side effects.

Recently an increase in the number of female athletes and non-athletes alike using steroids has been reported. This includes women who exercise less frequently and/or enter the exercise arena for social or recreational pursuit. The temptation these women have to use steroids stems from the belief that steroids will help reduce excess fat and flabbiness. The strong, lean, and muscular look of a female bodybuilder is often attributed to steroid use. Many times this is not the case. That look is acquired by years of intense training and strict dieting. The indiscriminate use of steroids by women can lead to side effects that are generally irreversible. This includes hirsutism, male pattern-baldness, deepening of the voice, enlargement of the genitalia (11) and irregularities in the menstrual cycle. Unfortunately, some women are willing to risk irreversible masculinization in order to increase their feminine attractiveness.

### **Preventive Medical Screening**

A physical examination is imperative for anyone using steroids. This includes a blood pressure check and prostate examination. It is also necessary to have blood tests taken before, during, and after steroid use. Blood work should include analysis for coronary risk: H.D.L.-C., L.D.L.-C., triglycerides L.D.L./H.D.L. risk ratio and fasting glucose levels. If H.D.L.-C. falls below 40 milligrams per deciliter, mg/dl., L.D.L.-C. above 159 mg/dl., triglycerides above 200 mg/dl., and risk ratio above 6.25, a person is doubling the risk of coronary artery disease (4). In this case there may be impending internal damage.

Plasma electrolytes should be measured for calcium, sodium, potassium, and inorganic phosphate. Blood urea nitrogen (BUN) and uric acid should also be measured. Uric acid levels should fall between 2.1 and

7.8 mg/dl. and BUN should fall between 10 and 26 mg/dl.

An extensive liver profile should follow. This includes examination of transaminases, SGOT and SGPT as well as bilirubin. If SGOT is over 33 units per milliliter, SGPT over 36 units per milliliter, and bilirubin above 1.2 mg/dl., this may indicate liver dysfunction. Alkaline phosphates, creatine phosphokinase (CPK) and lactate dehydrogenase (LDH), should also be measured. If CPK is above 170 units per liter and LDH above 225 millinits per deciliter, the discontinuance of steroids is recommended.

### Detection from a Practical Standpoint

To prevent potential health problems, it is incumbent upon the trainer to look for subtle changes in his athletes who may show signs of early steroid use. If an athlete becomes irritable, displays sudden mood swings, or manifests unusually aggressive behavior toward his teammates and/or coaches this may be an early warning sign that he/she has started taking steroids. If an athlete is lifting heavier weights than usual, for a longer duration of time, this may also be a sign of early steroid use. It is imperative that body weight and blood pressure changes be monitored regularly. Sudden increases in these values may be reflective of steroid use. With subsequent increases in weight, there may be puffiness around the face, upper arms, and chest. Look for yellowish coloration under the fingernails and around the whites of the eyes. This may be indicative of liver complications and generally occurs with more prolonged usage. A perceptive trainer can detect sudden changes in his athletes and take the necessary steps to prevent potential medical problems.

### Summary and Conclusions

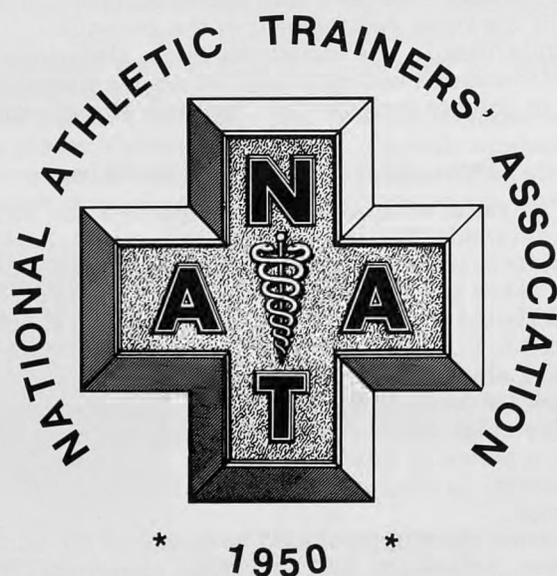
It is imperative that individuals using steroids educate themselves about these products and take the aforementioned precautionary tests to preserve their health and safety. As with all prescription drugs, steroids

should be administered under a doctor's care and not through blackmarket sources.

Some of the major problems associated with steroid use are liver toxicity and dysfunction, hypertension, undesirable lipoprotein fractions, increased coronary risk ratio, reduced glucose tolerance, gynecomastia, azoospermia, and testicular atrophy. It is the author's contention that the long term health hazards of steroid use far outweigh the short term gains in size and strength. Simply stated, steroids are no substitute for hard work.

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# Ten Ways To Dodge The Malpractice Bullet

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The silence that follows the fall of an injured athlete sometimes seems louder than the echoing roar of the crowd. Every eye is focused on the athlete and those hurrying to his aid. However in this moment of focus on a sports injury no one pauses to ask: is the trainer liable for the negligence of the other health care professionals on the field, is the trainer familiar with the types of injuries most common to the particular sport, was the athlete playing with pain or with a condition which indicates he should not play? Fears such as these surface only later when the focus shifts from the field to the courtroom. Athletic trainers and other health care professionals rarely pause to look at the exposure they have before becoming employed by a college or volunteering their time to help the local recreation department or high school. Although there are some obvious areas of exposure, there are also some booby traps lying along the path for the unwary. The four major areas of exposure are:

## Areas of Exposure

1. **NEGLIGENCE** - The most obvious claim against an athletic trainer is that of negligence. The injured party claims the trainer failed to do what a reasonable trainer would have done under the same circumstances.
2. **BATTERY** - The unlawful touching of another without permission constitutes a battery in most



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states. Whether it be a kiss on the cheek or an ultrasound on the thigh, a battery can be the basis of a law suit. Depending on the nature of the battery, the damage figure can run from one cent into millions of dollars. When a trainer uses a modality without "informed consent," he may be subject to an action in the nature of battery, a claim which is usually much easier to prove than a claim for negligence.

3. **IMPROPER RELEASE OF MEDICAL RECORDS** - The release to a college or professional team of certain information about a student athlete without permission potentially can cost the athlete a scholarship or a chance at a pro career. The dollar value placed on these losses is quite high. Trainers should be cautious when discussing an athlete's condition with third parties unless the athlete has given consent.
4. **FAILURE TO WARN** - This is the "new kid on the block" as far as theories for sports medicine claims are concerned. The injured parties through the inventive minds of their attorneys are claiming that the school district, coach and health care professionals failed to warn them of the dangers they could sustain by participating in a particular kind of sport and have therefore led them down the "primrose path" to injury. As farfetched as this theory may seem, it has proven successful.

## A New and Higher Profile

Slightly more than a decade ago, the general public accepted at face value what it was told by the sports and the medical community. Sports had always been the "sacred cow," and health care professionals enjoyed an equal degree of deference. Times have changed and changed rapidly. Acts of Congress, the state legislatures, decisions of our courts, our attorneys general and consumer activists have done two very important things: 1) They have created new rights for consumers that never existed before. 2) They increased the level of awareness of consumers. Consumers are encouraged to call toll free numbers, file law suits on their own and pressure their legislators to enact laws that would provide them with more protection.

In addition, our law schools have turned out lawyers in record numbers during the last ten years. Against

this background which comprises what lawyers call the "sue syndrome," I offer the following list of suggestions for dodging the malpractice bullet. Some of them seem ridiculously obvious, but the reader may be confident that in most cases where health care professionals have been sued, they have chosen to ignore one or more of these suggestions.

### Suggestions For "Dodging The Bullet"

1. **RAPPORT** - Maintaining proper rapport with the student athlete, the parents (where appropriate) and other health care professionals who will be on the field and acting in your absence is essential. The reason for maintaining the proper rapport with the athlete and parents is simple: people do not like to sue friends who they believe care about them or their children.

a. **The Student** - The student athlete must feel from the trainer and the other health care professionals who attend him that these people are genuinely concerned about his complaints and injuries. If the injury does not seem consistent with the degree of complaint from the athlete, he may be trying to tell you something. Perhaps he is not happy participating in the sport but because of parental or peer pressure, feels he must continue. You may have the opportunity to let this athlete leave the sport and save face at the same time.

b. **The Parents** - When the student athlete is a minor, the parents must be made aware that the athlete's health care is of good quality and the people involved care about their child. When this situation exists, the parent is not likely to rush to a lawyer or agree to hastily filing a lawsuit where it is not warranted. Trainers should also avoid unnecessary criticism of other health care professionals. Everyone acknowledges that reasonable people have different opinions or preferences in handling the same problem. Such criticism invites malpractice claims and may reduce the speed of recovery. Unless you are prepared to give sworn testimony to someone else's malpractice, the better course is to tell the athlete there is more than one acceptable method of handling a problem and you may have chosen an alternative.

c. **Subordinate Health Care Professionals** - The trainer must be very careful when allowing other health care professionals to take control in his absence. The trainer must know the limitations of the subordinate and maintain supervision on a regular basis. The temptation to "play doctor" is great for some people and this type of conduct must quickly be recognized and controlled by the trainer.

d. **The Team Physician** - Having a good relationship with the team physician is as important as maintaining any other working relationship which the trainer has. The trainer must be aware of what authority the physician is willing for him to take and what actions the physician expects him to take in given situations. Both trainer and physician are in a position to shift responsibility to the other should the opportunities arise. Regular contact between these two people is essential for the relationship to work smoothly.

Having good rapport includes keeping an open line of communication between health care professional and athlete so the athlete feels comfortable in asking the "foolish questions." The athlete should feel that reasonable questions at reasonable hours will be answered by his physician or an assistant in whom the patient has

reason to be confident. The patient should not feel he has to know a series of passwords and secret numbers to reach someone who will answer his questions.

2. **WRITTEN CONTRACT** - There should be some type of written arrangement between the trainer and the organization or school for whom he is working. This need not be a formal "lawyer prepared" contract; a written agreement in letter form between the parties is sufficient. However, much like work, which expands to fill the time allotted for its completion, the terms of a verbal contract tend to expand to fulfill the needs of the person describing the contract. The agreement should include such items as compensation, when is the trainer expected to be on the field, what sports he is to cover and whether he can send a subordinate if he is unavailable. Any written contract, no matter how informal, should be reviewed by your insurance agent. There may be language in this contract that extends the liability of the trainer considerably beyond that intended by the insurance policy. Your agent can call this to your attention so an informed decision can be made as to whether the contract is suitable.

3. **PARENTAL CONSENT** - When a student athlete is a minor the trainers should encourage the school or recreational authorities to require the parents of the athlete to give consent for the athlete to participate in a particular sport. This probably is a good opportunity for the athlete and the parent to give an informed consent that includes an awareness of the nature of the sport and its inherent dangers.

4. **PRE-PARTICIPATION PHYSICALS** - The athlete should have some form of pre-participation physical for every sport. While the student athlete may wish to wrestle following football season, there may be a medical reason, whether pre-existing or resulting from football, which causes the participation to be questionable. At a very minimum, the trainer should urge the physician working with the team to require the family physician of the athlete sign a statement that indicates no change in the health of the individual and in that doctor's opinion, the student athlete is fit for participation in the designated sport. Be sure the school keeps these forms in file. A "lost" consent form doesn't protect anyone.

5. **KNOWLEDGE OF INJURIES AND CONDITIONS WHICH ARE COMMON TO PARTICULAR SPORTS IS MANDATORY** - Most physicians who work with student athletes are not orthopedic surgeons. They may be pediatricians or family practitioners who lack specialized knowledge of high risk, life threatening type injuries such as those of the neck or brain. Conversely, orthopedic surgeons who work with student athletes may be lacking in knowledge about debilitating chronic conditions such as asthma which may equally affect participation and could even be life threatening. The trainer who works with a team or student athlete should make himself aware of the injuries or conditions which tend to be peculiar to a particular sport. A good trainer will find that the team physician will rely on him heavily as a source of information as to which injuries are most common to a particular sport.

6. **KNOW THE PHILOSOPHY OF THE COACH** - A trainer working with a group of student athletes should observe a coach in action from time to time. A coach who permits or encourages reckless play by the athletes or treats them in an intimidating manner may well be creating a situation which will breed injuries. In addition, the trainer should also have a clear understanding with the supervising authorities that the final decision as to whether an athlete will play with very few exceptions will rest with that physician and no one else.

Pro-role models, coaches, peer pressure and even parents encourage players to "play with pain." Many times the trainer and the team physician are the gatekeepers between the student athlete and the risk of trading a lifetime of recreational activities for chance of getting hurt in a playoff game.

7. **DOCUMENTATION** - The trainer should insure the proper recording of health records documentation by himself or other health care professional who may be assisting. Records of the pre-season exam, medical history and recently incurred injuries should also be kept. This documentation is not only valuable in treating the athlete, but also will refresh the memory of the trainer or physician in the event of a malpractice claim. The trainer can be certain that the athlete will not forget anything that occurred as far as the treatment is concerned and should make sure that these written records are kept carefully.

8. **TAKE AN ACTIVE ROLE TO REDUCE INJURIES** - The trainer can take an active role and take very positive steps toward the reduction of injuries in at least four ways:

First. Meet with and encourage league administration and officials to interpret rules strictly and conservatively on the side of sports safety.

Second. Work with officials and rule makers to revise rules that prevent unnecessary injuries. One example is the rule which allows a passer to take a hard blow in the vulnerable position from an oncoming lineman who claims "he could not stop." If that rule were to be changed, the passer could be protected the same way a kicker is and the number of rib injuries would be reduced significantly.

Third. Take a walk around the sports field or arena to determine if there are unsafe areas of

practice or play. If such an unsafe area exists notify the person in charge. If this person fails to take prompt action notify the school board or similar authority in writing.

Fourth. Make certain the equipment is checked on a regular basis to be sure it has not become defective. **AVOIDING INJURIES IS MUCH BETTER THAN THE PROPER TREATMENT OF INJURIES.**

9. **ATTEND SEMINARS.** Participating in continuing medical education is not only important for the obvious reasons of broadening knowledge, background and experience, it has another facet of importance. Should you be involved in a lawsuit, the plaintiff's attorney is sure to ask you how recently you have attended continuing education seminars or if a procedure, which is an improvement over the one you have been using, has been published. If you cannot respond in the affirmative, the attorney will make every effort to show that you have failed to keep yourself informed.

10. **KNOW YOUR LIMITATIONS.** Many trainers are reluctant to say, "I have no idea what is wrong with this athlete". This mind set can only lead to problems. Health care professionals at all levels must acknowledge the limits of their expertise. Any doubt should be resolved conservatively.

### Conclusion

The winners of your efforts are not the student athletes who lead the conference in a particular category or the coaches who lead a team to a championship. The winners are the athletes who learn the skills of a sport, teamwork and discipline, the feeling of winning and losing, and the rules of the game. The winners are also you the trainers who have helped insure that many a young athlete will enjoy a lifetime of sports. ☺

## ANNOUNCING RECOMMENDATIONS FOR DEVELOPMENT AND IMPLEMENTATION OF ATHLETIC TRAINING INTERNSHIP PROGRAMS

### A New Manual for Internship Program Supervisors

Developed by the NATA Professional Education Committee, this manual includes recommendations for development of learning experiences for students pursuing NATA certification through the 1800 hour internship program. Included in the manual are the **Competencies in Athletic Training**, guidelines for development of clinical experiences, and elective course work recommendations. Certified athletic trainers supervising internship students in colleges and universities, high schools, and professional sports, as well as NATA approved allied clinical settings, will find the manual helpful.

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Please send me \_\_\_\_\_ copy(ies) of the **Recommendations** (\$10.00)

Total amount enclosed is \$ \_\_\_\_\_

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1001 East Fourth Street  
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# An Orthotic Brace for the Foot

Paul Artrip, ATC, MEd

Arch, intertarsal and tarso-metatarsal sprains can be nagging injuries, especially for large athletes with high body weight. To protect such injuries and shorten loss of participation time, an orthotic brace was designed. It offers shock absorption, firm support, and can be worn inside an athletic shoe.

Step 1: A form-fitting, full-foot arch support is made from Plastozone onto a weight-bearing socked foot. The skin-contact side is covered with moleskin to improve durability and help carry off perspiration. Any improper foot posture should be corrected here. Proper foot placement is important (Photo 1).



Step 2: The arch support is secured to the socked foot by white tape or underwrap, and a rounded triangular piece of perforated Orthoplast is heated and molded over the foot and support (Photo 2). The base of the triangle is under the heel, and the apex towards the middle of the transverse arch. The sides are molded up to just below the malleoli and over the dorsum. The foot is now encased except for the achilles and its insertion, and the m-p joints. The plastic edges are approximated at mid-dorsum (Photo 3). The foot and plastic are wrapped with elastic bandage and the plastic allowed to set with the foot on the floor, bearing as much pain-free weight as possible.



Step 3: When plastic hardens, mark off areas of excess, remove splint and cut off excess (smooth edges). Glue the arch support to the splint where they originally

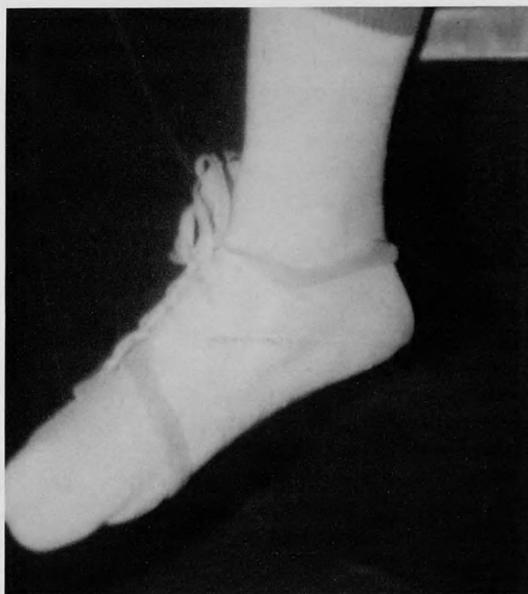
Mr. Artrip is Head Athletic Trainer at Manchester High School, Chesterfield County, Virginia.

matched. Line inside with  $\frac{1}{4}$ " adhesive foam rubber or similar soft padding. Double-line the edges to avoid chafing at the first and fifth metatarsals and below the malleoli.



Step 4: Brace can now be worn. Secure to socked foot by elastic tape or laces through holes along the dorsum (Photo 4). This brace increases width of foot by  $\frac{1}{4}$  to  $\frac{1}{2}$  of a shoe size.

This brace's most recent application was to a 6' 5", 240-lb. basketball center with a talo-navicular sprain. While traditional support and taping gave slight improvement, the brace enabled the athlete to complete relatively pain-free. The brace is not a substitute for physician referral, rehabilitation, or correction of injury-causing mechanisms. ☺



## Case Report

# Quinine Sulfate: A Treatment for Recurrent Muscle Spasms

Deloss A. Brubaker, EdD, MS, ATC  
Jim Whitesel, MS, ATC  
Berle I. Barth, MD

*Muscle spasms and muscle cramps occur frequently in athletes. A spasm is the involuntary contraction of skeletal muscle. If the spasm persists it can result in a muscle cramp. This paper illustrates the effective use of oral quinine sulfate in preventing recurrent and often severe, muscle cramps in two athletes. The first is a major college basketball player, the second a professional football player.*

### Case I

Subject 1 is a 20-year-old black male basketball player who experienced severe leg cramps the last game of the 82-83 basketball season and for six consecutive games beginning the 83-84 season. He sweats more profusely than other players and has lost up to six pounds during a 40-minute game.

He was hospitalized on one occasion because of the persistence and severity of the leg cramps. These cramps lasted for several hours post-contest and he was subsequently treated with IV fluids. Tests were conducted and blood serum electrolyte levels were normal. He was not anemic and sickle cell prep was negative.

Attempts to alleviate the muscle cramping included instruction in proper hydration during contests and rehydration post contests. He was treated with supplemental electrolyte solution ingestion, plus increasing his dietary sodium, potassium and calcium intake. Increased carbohydrate intake on non-game days and decreased carbohydrates in pre-game meals was tried as was wearing a short-sleeved shirt under his jersey to decrease sweat evaporation. None of these were effective.

He was started on one oral quinine sulfate capsule (60 mg) one hour prior to game time with another 60 mg dose at half time. With the initiation of this course of treatment he experienced no further episodes of muscle cramps during or after the succeeding 16 games.

### Case II

Subject II is a 22-year-old black male football player who experienced leg cramps in college and in professional football. His leg cramps in professional football have been noted in games but were especially noticeable during training camp. On physical examination he was in superb physical condition and had normal blood and urine chemistries.

Attempts to increase serum calcium levels, prehydration, and electrolyte and other mineral replacements did not totally alleviate his muscle cramping, however he did have less periodic and less severe cramping episodes. In an attempt to create a total alleviation of cramping, quinine sulfate (60 mgs) was instituted into

his pre-game regimen. The following is his pre-game and game time regime which totally alleviated his cramping symptomology.

#### Weekdays

- |               |   |
|---------------|---|
| Pre-practice  | 1. 4 Fosfree® tablets<br>2. 2 12-ounce cups of Gatorade®<br>3. Drink enough water or Gatorade® to cause urination |
| Post-practice | 4. 2 Fosfree® tablets after practice<br>5. Drink enough water or Gatorade® to cause urination                     |

#### Saturday

After evening meeting

1. 4 Fosfree® tablets
2. 2 12-ounce cups of Gatorade®
3. Drink enough water or Gatorade® to cause urination

#### Sunday

Pregame

1. 4 Fosfree® tablets with pre-game meal
2. Drink enough water or Gatorade® to cause urination
3. 4 chewable calcium carbonate tablets prior to pre-game warm-up
4. 2 quinine sulfate capsules (60 mg) ½-hour prior to pre-game warm-up

During Game

1. Drink water or Gatorade® after each series
2. 1 quinine sulfate capsule (60 mg) at half time

Post Game

1. Drink enough water or Gatorade® to cause urination

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## Conclusion

The previous cases are examples of situations whereby two athletes experienced muscle cramps in spite of all the efforts made by their respective trainers. Only with the onset of taking oral quinine sulfate did their symptoms resolve. These cases are two examples of where oral quinine sulfate has been used as a practical and effective deterrent to muscle cramps in athletes with whom conventional treatments had failed to eliminate their cramps.

## Literature Review

Muscle cramps have been attributed to local contraction of the muscles in response to numerous physiological problems. Some of these are cold, impaired circulation, electrolyte disturbances, muscle cell membrane abnormalities, and overexercise of the muscle. Other physiological problems that could cause spasms and cramps include disturbance of calcium metabolism, disturbance in sodium and water balance in dehydration, low magnesium blood level, inappropriate antidiuretic hormone and malabsorption syndrome (3).

Muscle cramps can occur because the local irritation of a muscle elicits pain or other types of sensory impulses that are transmitted from the muscle to the spinal cord. This in turn causes a reflex muscle contraction to occur. This contraction then stimulates the sensory receptor, which causes the spinal cord to intensify the muscle contraction even more. Thus, a

positive feedback mechanism occurs so that a small amount of initial irritation can cause a full-blown muscle cramp (2). However, quinine sulfate has been shown to inhibit the occurrence of cramps.

Quinine has been shown to increase muscle tension response to a single supramaximal stimulus applied directly to muscle, or via the nerve to the muscle. Interestingly though, quinine increases the refractory period of muscle thereby reducing the response to tetanic stimulation because the muscle is not able to respond to the rapidly occurring recurrent stimuli. Quinine also decreases the sensitivity of motor end plates to stimulation via motor nerves (1). Quinine is readily absorbed in the duodenum when given orally. It is given in capsule form and is palatable when given with copious amounts of fluid. Peak plasma concentrations occur within 1 to 3 hours after a single oral dose. Toxicity and hypersensitivity are rare with the usual adult dose of 60-120 mg. A potentially lethal dosage of quinine is 8,000 mg (1).

## References

1. Goodman and Gillman: *The Pharmacological Basis of Therapeutics*. 6th Ed. MacMillan Publishing Co. Inc., New York. 1980 p. 1056.
2. Mendell JR: *The Nervous System. Sports Medicine* Edited by Strauss RH. W. B. Saunders Company 1984, pp. 149-174.
3. Kulund DN: *The Injured Athlete*. J. B. Lippincott Company, Philadelphia, 1982. ⊕

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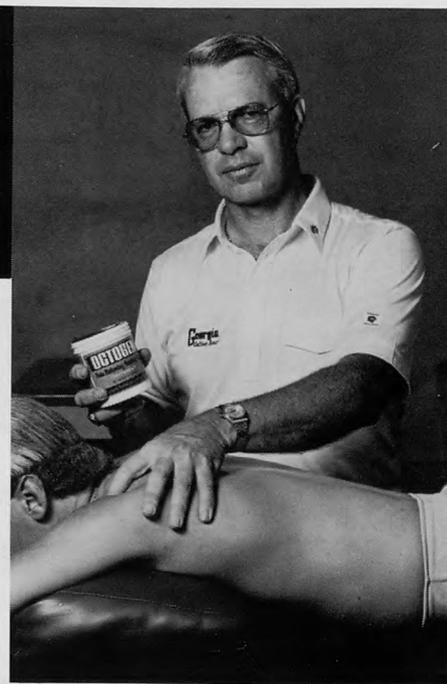
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# The Trainer's Lament

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Athletic Training - Volume 10 - Number 1 - March 1975

# Notes from the National Office

"To inform and update the membership on various subjects of interest and answer the most frequently asked questions."

## SAN ANTONIO

\*\*\*The spread on the San Antonio Convention in the Spring issue (pages 8 and 9) should have spurred even the most procrastinating into action to make travel plans. Wasn't the scenery great? This promises to be another fantastically successful meeting for members and spouses.

\*\*\*The Clinical Symposium is *The Eyes of the Athletes Are Upon You!* and will be on Saturday, June 8. The following schedule should be a must for members concerned with eye care and safety.

### Schering Symposium of the Eye

- 2:00 "Anatomy, Physiology, Pathology of Ocular Injuries" John Jeffers, M.D.  
2:30 "Eye Injuries in Racquet Sports" Michael Easterbrook, M.D.  
3:15 "Visual Enhancement Training" Arnold Sherman, O.D.  
4:00 "Immediate Care of Eye Injuries by the Athletic Trainer" David Smith, M.D.  
4:45 Questions & Discussions - All Speakers

## NEW STAFF MEMBER

\*\*\*The National Office staff welcomed Susan Piner to its ranks in March. Susan is working as assistant in the Journal Office and is the official personnel in charge of address changes. If you call the National Office for assistance in either of these areas ask for Susan Piner. Now that we have two "Susans" on staff, remember that Susan Williams is the Certification Office liaison (along with Penny Purvis) therefore it would expedite your call if you would specify either Piner or Williams when you call for a Susan.

## CERTIFICATION TESTING

\*\*\*The 1986 Test Sites and Dates will approximate the 1985 Sites and Dates schedule. The 1986 examination schedule will be published in the Fall issue. Please remember that requests for applications must be in written form.

## OLD "LAMENT"

\*\*\*Our Editor-in-Chief came across an interesting and amusing item in a 1975 issue of *ATHLETIC TRAINING*. There may be days when you feel you can relate to this reprint of *The Trainer's Lament* from a decade ago. (see page 124) While it was obviously written with tongue in cheek, it did pretty well sum up where the training profession and athletic trainers were at that time. ATCs who have entered the profession during the expansion period of the last ten years may get a kick out of this little placard as a reminder of "the way we were." We've come a long way, but as the current direction of the Association vividly attests, athletic trainers do not rest on their laurels!

## VISITORS

\*\*\*Recent visitors to the National Office were Jack Redgren of Nashville, TN; Greg Ott of Morgantown, WV; and John LeGear of Chicago, IL.

## GRAFFITTI

\*\*\*Check out the new NATA logo on the cover and throughout this issue.

\*\*\*East Carolina University is rightly proud of Joel Beam, the student trainer who performed so admirably at the scene of a tragic highway crash. See details in ASSOCIATION ACTIVITIES.

\*\*\*Can't you just see the dusty boots of the nation coming out of closets for polishing? San Antonio here we come!Ⓞ

## Brochure Requests

Requests for the brochure entitled "Careers in Athletic Training" should be sent to the National Office at 1001 East 4th Street, Greenville, N.C. 27834. Single brochures are supplied upon request at no charge. NATA officers and committees, schools having an approved athletic training curriculum, and those having an apprenticeship program are furnished multiple copies of the brochure at no charge.



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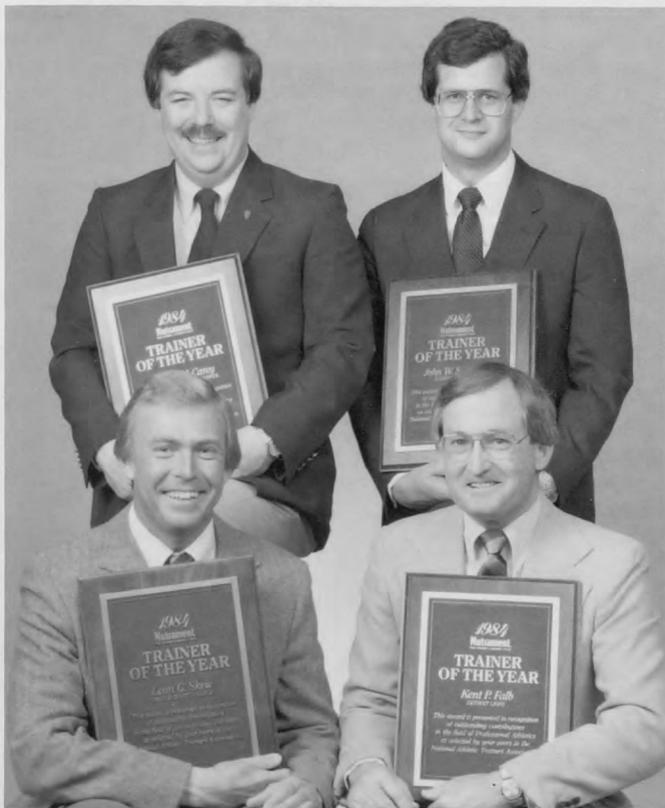
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# Association Activities



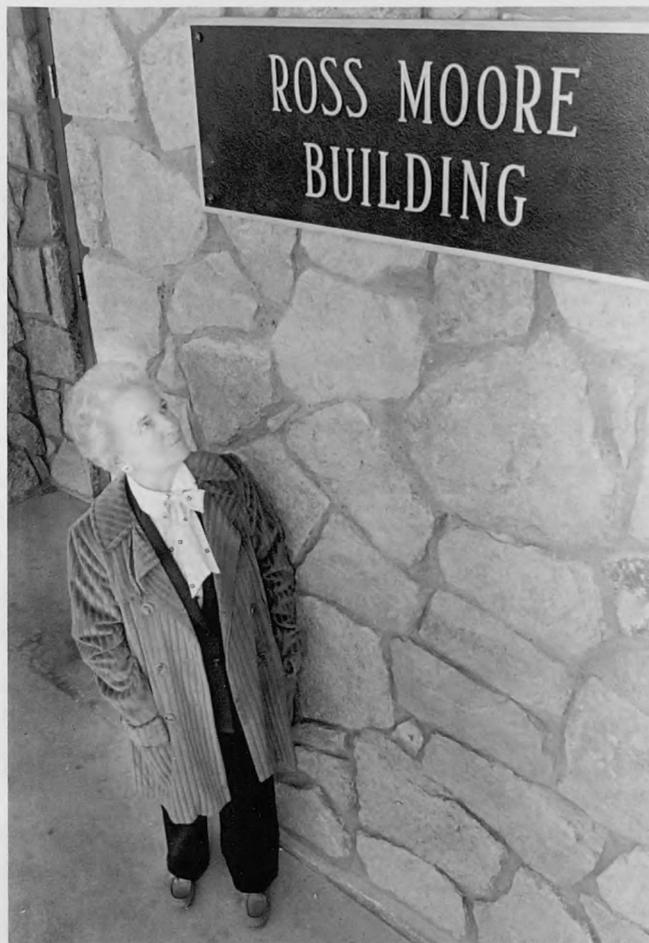
David G. Yeo, DPE, ATC  
Montgomery County  
Community College  
Blue Bell, PA 19422



Standing: Richard Carey (left) John Schrader (right).  
Seated: Leon Skeie (left) Kent Falb (right).

The recipients of the 1984 Trainer of the Year Awards were noted in the Spring 1985 issue of the *Journal*. In light of the prestige of the award, with the winners being selected by the NATA membership, it is appropriate to again identify these individuals, as well as their place of employment:

- Kent Falb - Professional Division, Detroit Lions
- John Schrader - College Division, Indiana University
- Leon Skeie - Junior College Division, Orange Coast College, Costa Mesa, California
- Richard Carey - High School Division, Lyons Township High School, La Grange, Illinois



Mrs. Kathleen Moore at building dedication.

The University of Texas, El Paso has re-named their athletic training facility "The Ross Moore Building." Associated with the University for 41 years at the time of his death in 1977, Moore served UTEP in the capacities of coach, professor, and trainer. As a trainer, "Moe" or "Doc" was recognized as one of the country's best, and was a member of the NATA Hall of Fame.

\* \* \*

Diane Rudy, West Valley College, Saratoga, CA, appeared on a local television production "It's Your Health" to promote athletic training and health care. Ed Banzol, North Park College, Illinois, recently participated in "Sports, Medicine, and Wellness" a public service radio program which was also video taped for cable broadcasting.

\* \* \*

Joel Beam, a junior at East Carolina University from Gastonia, NC, and a student member of NATA, has spent three years in the sports medicine program and is in his third year as a student trainer under Director of Sports Medicine Rod Compton and his staff.

During his previous two years Beam has been taught about the care and treatment of athletic injuries, but what he encountered when one of two vans carrying the ECU track team overturned returning from a meet in Athens, GA, was not what he had expected.

# WHAT DO THESE PRO-FOOTBALL TRAINERS HAVE IN COMMON

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The incident occurred on March 24, 1985 at approximately 2:00 a.m. when the two vans were 54 miles from the Greenville, NC, campus.

One team member was fatally injured while five others were hospitalized, but Beam's medical efforts stabilized the situation until help arrived. Beam, along with head track coach Bill Carson, determined the extent of the injuries and made the injured team members as comfortable as possible until rescue squads could be contacted.

Beam used his training and equipment to dress wounds, using sterile gauze dressings from his trainer's kit. Beam said he operated on instinct and training.

"We're trained in taking care of athletic injuries, not automobile accidents," Beam said. "But most of the injuries that could be helped were the same type you might see. Having sterile dressings to put on them was a help. And of course, I knew more than what, say, a Boy Scout might know in giving treatment. I knew the signs of injury to look for."

"He did a fantastic job," Coach Carson said. "What we had was something akin to a triage situation like you would expect in the military. But he took command. He worked with Erskine Evans, who later died of injuries sustained, and the others and kept everything going. His experience and leadership gave me and the rest of the team the confidence we needed to come through this and do the right thing. We were very fortunate to have Joel Beam to guide and direct us."

\* \* \*

Several athletic trainers have been recently honored by invitations to speak at national and regional

meetings:

Roger Kalisiak, Hoffman Estates High School, and President of the Illinois Athletic Trainers Association, Inc., recently lectured at the National College of Chiropractic in Lombard, Illinois.

Speaking at the Eastern District Association convention of AAHPERD were Gary Ball (Kean College, NJ), Pat Connors (Hamilton Hospital, NJ), Phil Hossler (Old Bridge Public Schools, NJ), Jeff Middleton, (Cedar Ridge High School, Matawan, NJ), Lisa Camillone (Mercer County Community College, NJ) and Joe Camillone (Trenton State, NJ).

Speaking at the annual meeting and clinic of the NJ Interscholastic Coaches Association were Bob Sauers and Bob Burkhardt (Rutgers), Jeff Middleton and Phil Hossler.

\* \* \*

All NATA members are invited to submit information concerning awards, honors, and special presentation, involving themselves and other, to this column.

All District Directors and Secretaries are reminded to insure that their District Newsletters are forwarded to David Yeo. ⊕

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## Cervical Strap *News Release*

A cervical strap has been designed by "Red" Romo, Head Athletic Trainer, U.S. Naval Academy, for use as protective football equipment. The use of this device is similar to the use of shoulder pads, thigh pads and face guards. Its principal use is protection against frequent recurrence of injuries such as "burners" or "pinched nerves" involving the cervical nerve roots. This strap accomplishes this by limiting excursion of the cervical spine.

The cervical strap is an elastic band attached to any type helmet and shoulder pad by an adjustable series of snaps. It is most commonly used posteriorly to limit acute neck flexion but can also be used laterally to limit lateral flexion and anteriorly to limit cervical extension. It has been used on players at every position without any adverse effect on performance.

The cervical strap has been under continued evaluation at the U.S. Naval Academy and is now being used by many other major universities. Its effectiveness in decreasing recurrence of "burners" has been suggested in one scientific study and is currently being evaluated as a prophylactic device in a controlled clinical study at the U.S. Naval Academy.

For further information contact Mr. Romo at the Naval Academy.

## Ultra Violet Radiation *Good Health Digest* *September 1984* **For a Dose of UV**

As the summer season came to a close on Labor Day, more than one bronze-colored sun worshipper prepared for the worst: the tanned-to-paleface transition. For those who can't bear to part with their tan, there's a new wrinkle in the tanning products market. Tanning beds - heralded by advertisers as the quick, convenient way to a year-round tan - are the latest tanning devices used in health spas and tanning clinics. There's no mattress on a tanning bed. Customers lie on a sheet of plastic which covers a row of sunlamps. So you can bake on both sides, a row of lamps hangs overhead.

### How Safe?

Tanning beds emit mostly ultraviolet A (UVA) radiation, supposedly less damaging than ultraviolet B

(UVB), the "old-fashioned" kind used in conventional sunlamps. While UVA may be less likely to produce sunburn than UVB, and the beds are convenient, the risks are by no means negligible. While exposure to UVA may reduce the incidence of burning, UVA penetrates deeper than UVB and may increase the risk of edema, vascular system damage, skin damage and skin cancer. If the eyes aren't protected with goggles, the risk of cataracts is increased.

### Precautions

Some people are more sensitive than others. You should not use sunlamps, either UVA or UVB, if: you rarely tan in the sun - if the real thing doesn't do the trick, a lamp won't either; if you're prone to cold sores - ultraviolet may trigger the blisters; if you're taking any photosensitizing drugs which may increase a reaction to ultraviolet - among these are high blood pressure medications, antibiotics, diuretics, tranquilizers, birth control pills, and oral diabetes medication. If you do use a tanning product, follow the instructions and wear goggles. A final note: Skin cancer and premature wrinkling, two by-products of tanning are ugly. For the body beautiful, don't overdo tanning, even if it means being a paleface.

## It's All in the Head *Good Health Digest* *August 1984*

Exercise may be good for that pain in your head. Because aerobic exercise retards blood thickening, soothes nerves and increases the muscular intake of oxygen, it may be beneficial to migraine sufferers. University of Wisconsin researchers found that in one group studied over a two-month period, migraine incidence was cut in half by three half-hour workouts weekly.

## Exercise Levels *News Release* *October 16, 1984*

American children and adolescents are not developing the exercise and fitness skills that could help maintain their good health as adults, and as many as half may not be getting enough exercise to develop healthy cardiorespiratory systems, according to a two-year nationwide study released today by Health and Human Services Secretary Margaret M. Heckler.

The study surveyed 8,800 students across the nation in grades five through twelve. The survey examined fitness and exercise habits. In addition, rigorous physical tests were administered which, for the first time in such a study, were designed to show overall health and fitness rather than athletic ability or agility.

"This study should serve as a warning. It shows that America's school children are not achieving the lifetime fitness skills required to promote good health," Secretary Heckler said. "But it can also serve us as a blueprint for achieving the exercise and fitness goals we seek for today's children and the generations to come."

Students surveyed were 10 to 17 years old. Among the findings:

A. In elementary school, only half the children take physical education classes as often as twice a week; and at the secondary level, programs tend to focus on group and team sports rather than on individual and lifetime skills for promoting good

health.

B. Only 36.3 percent of students in grades five through twelve take physical education classes daily, compared with the 1990 goal of 60 percent. PHS has set wide-ranging goals in health promotion and disease prevention to be achieved by 1990.

C. The study also found that "American young people have become fatter since the 1960's", with median skinfold sums two to three millimeters thicker than in a 1960's sample studied by PHS. However, PHS scientists cautioned that further study was needed to determine the extent to which this average higher body fat represents a health problem.

D. As measured by exercise and fitness norms that were developed as part of the study, only about half the students were achieving the minimum appropriate physical activity to maintain effectively functioning cardiorespiratory systems.

Secretary Heckler said a unique feature of the study was that it measures children's activities for both school and other community settings. It found that more than 80 percent of the physical activity of students was performed outside school physical education classes.

"This finding indicates two things: that schools may need to offer better fitness programs where guidance in lifetime exercise and fitness skills can be taught, and that community programs can be coordinated as an integral part of overall physical development," Mrs. Heckler said.

She also said HHS will work with groups like the President's Council on Physical Fitness and Sports, the American Alliance for Health, Physical Education,

Recreation and Dance, as well as school administrators to develop recommendations for school-based physical activities "that promote lifelong fitness skills for our young people."

## Sleep Strategies: Getting a Good Night's Rest

*Good Health Digest*  
January 1985

Getting a solid night's sleep isn't as easy as it sounds. Chronic sleeplessness disrupts the lives and productivity of some 300 million Americans. Doctors say that both emotional and physical problems are expressed as sleep disturbances, and insomnia is a word that covers a variety of conditions with different characteristics. One thing is clear: if sleeping problems persist for more than three weeks, you should consider consulting a physician. In the meantime, here are a few strategies for a good night's sleep.

- Stick to a regular bedtime and wakeup schedule, even on weekends and holidays.
- Keep in mind that two to four hours of lost sleep will not prevent you from functioning the next day, and don't try to make up for it by sleeping more the next night. Getting the normal amount of sleep will put you back on track without interfering with your sleep pattern.
- Avoid coffee, alcohol, cigarettes and heavy meals at bedtime.
- Be wary of napping during the day. If you fall into a deep sleep during the afternoon, it could mean trouble during the night.
- Avoid such tension-producers as late-night exercise, work, arguments or worrisome thoughts. ⊕

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to replace. Most of our members probably do not realize the unselfish effort that Clint gave to this profession during his tenure on the Journal Committee. It was my good fortune to have Clint's wisdom and constant advice as we worked together during my years as Editor-In-Chief and Chair of the Journal Committee. We will never be able to thank him enough for all he has done to improve our Journal to the level of professionalism which it has attained.

Ken Wolfert, ATC  
Head Athletic Trainer  
Providence College  
Providence, RI

## MOVING?

Please notify the National Office of your new address as well as your old address (at least 30 days in advance of publication).

# Editorial

## Sports Lawsuits Against Colleges Seen Broadening

### College Athletic Departments Seen Vulnerable to Wide Variety of Lawsuits

College and high-school athletic departments are vulnerable to lawsuits in a growing number of areas, a group of sports administrators was told here last week.

The administrators were also told, however, that they could minimize their chances of being sued by instituting thorough "risk management" procedures.

The speakers here described several recent cases in which colleges and school districts had been successfully sued for substantial amounts.

Grounds for the suits varied, they said. Many stemmed from injuries, but others involved civil rights, television-broadcast rights, and taxation of university sports facilities.

The number of sports-related lawsuits is likely to rise, said Herb Appenzeller, director of athletics and professor of sport management at Guilford College, as will the amounts of money awarded successful plaintiffs.

In some types of sports lawsuit, Mr. Appenzeller noted, awards of more than a million dollars have become the rule rather than the exception.

Future litigation involving sports may be plentiful in several areas, said C. Thomas Ross, a lawyer from Winston-Salem, N.C. Mr. Appenzeller and Mr. Ross publish a newsletter, *Sports and the Courts Quarterly*, that compiles data on such litigation.

Among Mr. Ross's predictions:

- More and more athletes will sue other athletes who attack them during competition, because courts are increasingly saying that "some rules of civilized society have to follow you onto the playing field."
- Courts will recognize more rights for college athletes: property rights, rights of due process, and the right to competent instruction, adequate supervision, and safe and properly maintained equipment.
- Universities may soon begin suing alumni whose actions lead to sanctions by the National Collegiate Athletic Association.
- Minimum academic requirements for athletes may lead them to ask courts to decide how a grade-point average should be computed. For example, should grades earned in courses such as physical education and band be counted?
- The testing of athletes for drugs may be challenged on a number of grounds.

Several conference participants said they were disconcerted to learn how many ways they could be held liable in court. Of particular concern were lawsuits resulting from serious injuries, when the threat of legal liability is compounded by grief and concern about the loss or serious impairment of athletes' lives.

Jerald Hawkins, sports-medicine coordinator at Guilford College, reported that, although litigation involving injuries had decreased in recent years, sports-medicine professionals, such as trainers and team physicians, were likely to join the list of those named in lawsuits.

### 'Risk-Assessment' Urged

College athletic departments can go a long way toward protecting themselves from litigation and their athletes from injury, Mr. Appenzeller said, by following a "risk assessment and reduction" program.

Other ways of controlling risks exist, he said, but they all have obvious disadvantages. Administrators could buy insurance, but after a succession of lawsuits the premiums would become prohibitive. They could budget huge sums each year to defend against possible lawsuits. Or they could avoid risks altogether by not fielding teams.

The best approach, Mr. Appenzeller said, is to protect an institution and its personnel against such things as ignorance of the law, or failure to act to satisfy the law by, for instance, failing to warn athletes of dangers inherent in a particular sport.

The basic element of such a program, he said, is a safety committee, which every athletic or recreational-sports department should have. In addition, he said, organizers of intercollegiate, intramural, and recreational sports should compile and use detailed safety checklists.

### Common Sources of Danger

Seemingly insignificant details can become extremely costly, Mr. Appenzeller warned, citing a lawsuit in which a school district was required to pay a large amount of money to the estate of a man who was killed when he fell from a ladder because one bolt was missing from a railing in a gymnasium.

More common sources of danger in athletic departments, he said, include whirlpool baths without proper electrical grounding, gymnasiums with glass doors, and glass walls at the ends of basketball courts.

A college's chances of winning a lawsuit are slim, Mr. Appenzeller added, if injury or death occurs during practice drills that are dubbed "suicide drill," "death run," or the like.

In addition to minimizing the risks athletes face, Mr. Appenzeller said, institutions should also:

- Require medical examinations for all athletes before they begin practicing.
- Make sure that athletes are covered by insurance and are aware of how much coverage they have.
- Keep detailed logs to show that such checks have been made.
- Inform athletes of the inherent risks of activities, and have them sign a waiver form indicating that they understand the risks. Even if such waivers were not recognized by a court, Mr. Ross said, they would indicate to the court that the institution had actively sought to maximize safety.

*Continued on page 139*

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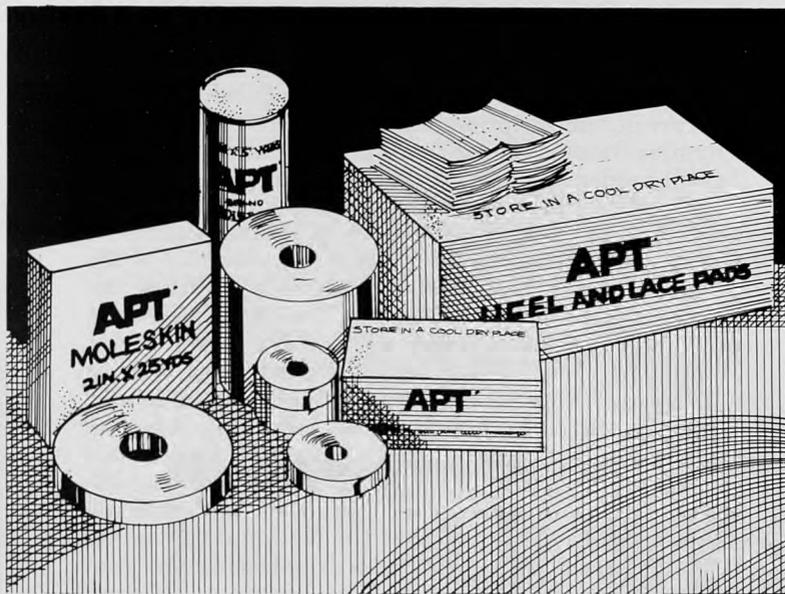
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# Editorial

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## The Athletic Trainer and Drug Education

Athletic trainers have been involved with drug education since the beginning of the profession. History indicates that there have been individuals caring for the immediate needs of athletes as long as there has been athletic competition. Special chemicals have been used for health care for thousands of years. Translations indicate that lotions, ointments, herbs, and other preparations have been used for athletic injuries since the beginning of recorded history. Undoubtedly, early athletes relied upon the advice of that individual responsible for athletes' health care throughout their years of participation in athletic competition.

The National Athletic Trainers' Association, Inc. has acknowledged at least potential drug problems since its inception in 1950. This was the first professional meeting of athletic trainers and marked the first time that trainers officially exchanged ideas on sports injuries. The use of lotions, ointments, medicines, and other such aids have been discussed at most of the national meetings. The athletic trainer's unique position affords many opportunities to be involved in both direct and indirect teaching of proper drug use and of drug education: 1) By working under the supervision of a licensed physician and dentist the trainer quite often is the individual who explains the total treatment plan to both the athlete and the athletic coach. 2) Each level of competition has problems unique to themselves; however, all athletic trainers already have been affected or soon will be affected by three historical periods of change in athletic health supervision. These periods include the original policy development, the period of state regulation, and the implementation period for drug testing. In 1969, the National Athletic Trainers' Association approved Policy Statement Number One concerning the non-therapeutic use of drugs. The Policy's main points are summarized below.

- The misuse and abuse of drugs by an athlete not only presents to (the athlete) potentially significant hazards for dubious gains - it also raises a cloud of controversy over legitimate and constructive use of medications and drugs in athletics.
- There is no place in athletics for the substitution of drugs for hard work and the healthy habits of proper rest and proper diet.
- NATA will cooperate with all agencies and organizations which are attempting, through research, to develop techniques of monitoring athletes in competition.
- NATA endorses AMA's Bill of Rights for the Athlete, which is anchored in responsible health supervision of athletics.
- NATA Committee on Ethics has the function and duty to investigate any reported violation of ethical practices by an athletic trainer, which includes provision or use of drugs other than those required for therapeutic treatment and administered by or under the supervision of a physician.

Since the time the Association adopted this policy, athletic trainers have been in agreement that it should

be encouraged at every level of competition. Undoubtedly, there have been times that the interpretation of a therapeutic drug has differed. Athletic trainers now realize that prescription medication as well as non-prescription drug products can also lead to health related problems and must be closely monitored by the entire sports medicine staff.

In 1976, President Frank George encouraged the membership of the National Athletic Trainers' Association to begin efforts to secure licensure for athletic trainers in each of the fifty states. This movement caused many team physicians, athletic trainers, and legislatures to consider the athletic trainer's role in handling prescription medications for the very first time. Certainly all athletic trainers must be aware of the pharmacy laws in their respective states. Pharmacy laws vary a great deal from state to state and the athletic trainer often has to relay this information to an athlete as well as the supervising coach. State regulations have forced athletic trainers to evaluate their role in drug education. Other historical changes have paralleled the olympic movement in the United States. The use of certain prescription items has caused considerable controversy between members of the international olympic committee. The questions raised concerning prescription items at the 1984 Los Angeles Olympic Games indicate that a great amount of research is still needed in these areas of differing opinions.

Athletic trainers have been caught in the middle of political and medical differences of opinion that have not as yet been resolved. However, a prime role of the athletic trainer has been to indirectly educate the participating athletes concerning the use and possible misuse of drugs while preparing for the highest levels of competition. In 1983 a sophisticated drug testing procedure was formalized for participants in the Winter Olympics in Sarajevo and the 1984 Los Angeles Olympics. This necessitated Olympic trainers and physicians to begin improving their knowledge concerning the use and misuse of approved and banned substances. In the fall of 1984 the National Collegiate Athletic Association instituted a drug testing program for its championship events. The beginning of drug testing has added numerous obligations, as well as responsibilities, to all of those involved in medical care of athletes.

Athletic trainers at all levels can make significant contributions to drug education programs. Most authorities now believe that grade school is not too soon to openly and frankly present drug education material. Although few grade schools employ athletic trainers, many scholastic athletic trainers are making presentations to elementary age children regarding drug education topics. In the future athletic trainers can make great contributions to the youth of America by better relating to thousands of youngsters in youth sports programs.

The athletic trainers employed on the high school level are in a strategic position to help combat the drug problem in our country. They are often the first

individuals that a young high school athlete encounters. This initial contact can obviously have monumental effects. Many high school athletes receive prescription orders for the first time due to athletic injuries. The athletic trainer quite often is closer to these athletes than is the school nurse or prescribing physician. This enables the athletic trainer to give the young athlete a wholesome outlook toward the use of pharmacological products. The young athlete is bombarded by *television, magazines, and the press with reasons for using legal drugs*. Unfortunately, young Americans have been taught that "pills" and ointments are the cure for all discomforts on earth. Hopefully, the athletic trainer can put this multimedia exposure in its proper perspective for the young inquisitive athlete. Many high school trainers teach courses in health, the biological sciences, and first aid. Each of these classes provide an opportunity for relaying a positive attitude toward responsible drug use.

College trainers have unique access to a student athlete due to the majority of college athletes living away from home in dormitories or apartments. For many athletes this is the first time they have been away from home. This freedom is obviously a true dilemma for many young adults. The athletic trainer serves as the parent figure in many circumstances on college campuses. A college freshman that is injured away from home is often totally dependent on the athletic trainer regarding health related subjects. Many college trainers are also involved in teaching health related subjects and undoubtedly will have increased responsibilities with the implementation of drug testing implemented in 1984. There are many gray areas regarding drug use that need further attention from both the medical and athletic community. The National Collegiate Athletic Association has placed drug education as a high priority for the '84-'85 school year.

The 1984 olympic trials pointed out the difference of opinion expressed by all those concerned about athletic performances. Athletic trainers employed by professional sports teams have faced dilemmas related to pain altering products for a number of years. The athletic trainer works extremely close with the medical community at this level and certainly is less affected by

financial restraints than the college and scholastic trainer. Unfortunately, professional athletes have received a great deal of media attention when drug problems have surfaced. Athletic trainers are now going to great length to stay abreast of the new tendencies toward drug abuse. Athletic trainers from the professional leagues are meeting regularly with their physicians to discuss current problems and possible means of improvement. Drug education has become a high priority with both the athletic trainers and the leadership of their professional sports associations. Athletic trainers have been instrumental in developing the current programs that are assistance to professional athletes. The National Football League and the National Football League Players Association have given their time and financial resources to help various programs related to drug education. Athletic trainers of all levels have access to the confidence of the participating athlete. Slowly but surely athletes are facing the realities of all types of substance abuse and are seeking new avenues of assistance.

The athletic trainers are the direct link between the medical community and the administrative establishment of all athletic programs; therefore, they are in a position to greatly influence positive peer opinion regarding these subjects. Statistics have shown that alcohol is the present problem of the day. Obviously, this is a substance sold legally in the majority of our cities. Similar negative effects have been demonstrated by the abuse of tobacco, certain vitamins, and even caffeine products and sugar products. The athletic trainer deals daily with athletes' diets, work habits, play habits, rest habits, as well as recuperative activities. There are few if any other individuals that interact with athletes on such a continuous and carried basis. For this reason athletic trainers will play an increasingly significant role in helping the athlete in our programs to overcome the threats associated with the current epidemic.

Bobby Barton, ATC  
President, NATA, Inc.  
Head Athletic Trainer,  
Eastern Kentucky University

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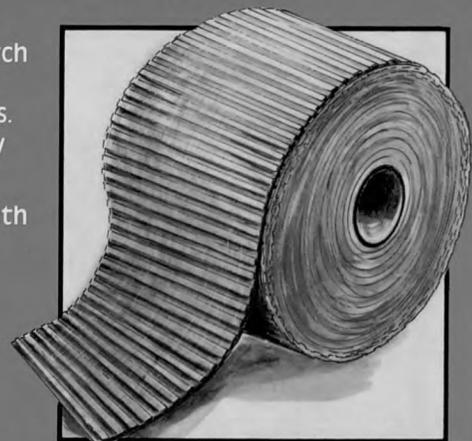
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**EDITORIAL-SPORTS LAWSUITS** from page 133

With the rise of sports litigation, the medical personnel whom athletic administrators hire are becoming more important, said Mary N. Broos, a certified athletic trainer who has worked at the high-school, college, and Olympic levels. She recommended that athletic administrators employ trainers who have satisfied the certification standards of the National Athletic Trainers Association: a required course of university studies, an apprenticeship with a certified trainer, and a rigorous examination.

Also, she said, universities should decide what role they wish their team physicians to fill, and set out these guidelines in a contract that protects both the institution and the physician.

Similarly, Mr. Ross said, administrators should not be embarrassed to ask their institution's lawyers if they know the law as it pertains to athletics.

Avoiding lawsuits in other areas — the rights of handicapped students, employee rights, and crowd control, for example — entails becoming familiar with the law in order to eliminate possible sources of litigation, participants were told.

In connection with transportation, for instance, that

means checking with the Federal Aviation Administration to be sure that charter companies are properly equipped to do the things they say they will do, or making sure that student drivers carry sufficient insurance, Mr. Appenzeller said.

Once those checks are made, administrators can be more confident of avoiding lawsuits or of successfully defending them when they do occur.

Administrators were encouraged to try to dissuade their institutions from settling lawsuits out of court if the institution is not at fault. Institutions are not responsible for accidents, Mr. Ross said, and they should not "run scared" and settle, just to avoid going to court.

"So many people are panicky about a lawsuit," Mr. Appenzeller said, "that they do things they shouldn't do."

**Peter Monaghan**  
Greensboro, N.C.

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**EDITOR'S NOTE:** This editorial from the February 20, 1985 issue of *The Chronicle of Higher Education* is reprinted by permission.

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\*Journal of Orthotics & Prothetics, March 1984.

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# Calendar of Events



**Jeff Fair, ATC, MS**  
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Stillwater, OK 74074

## June

**7-8** Fourth Annual Sports Dentistry Symposium/Annual Meeting of the Academy of Sports Dentistry, San Antonio, TX. Contact Robert M. Morrow, DDS, University of Texas Science Center, 7703 Floyd Curl Dr., San Antonio, TX 78284.

**7-8** How to Implement and Manage a Sports Medicine Program, New York, NY. Contact Faye Paris, Sports Medicine Education Institute Inc., 993 Johnson Ferry Rd., NE-130-F, Atlanta, GA 30342.

**7-11** Annual NATA Convention, San Antonio, TX. Contact NATA, 1001 E. Fourth Street, Greenville, NC 27834.

**16-21** Annual Athletic Training Workshop for High School Students, Pittsburgh, PA. Contact Rex Call, Athletic Training Education Program, Suite 140 Trees Hall, University of Pittsburgh, Pittsburgh, PA 15261.

**21-22** How to Implement and Manage a Sports Medicine Program, Dallas, TX. Contact Faye Paris, Sports Medicine Education Institute, Inc. 993 Johnson

Ferry Road, NE-130-F Atlanta, GA 30342.

**28-July 3** The International Society of Biomechanics in Sports, Greeley, CO. Contact Dr. Jerry N. Barham, Department of Physical Education, University of Northern Colorado, Greeley, CO 80639.

## July

**13-18** The American Corrective Therapy Association's 38th Annual Clinical Conference, Penta Hotel, Manhattan, NY. Contact Ed McCormack, Brooklyn VAMC, 800 Poly Place, RMS-117, Brooklyn, NY 11209.

**24-27** The University of Toledo Sportsmedicine Clinic, Toledo, OH. Contact the Department of Continuing Education, University of Toledo, Toledo, OH 43606.

**25-27** 31st Annual Meeting of the Southwest Athletic Trainers Association, Waco, TX. Contact T. C. Cox, Baylor University, P.O. Box 6427, Waco, TX 76700.

## August

**6-9** 1985 Sports Medicine Congress/Exposition, Indianapolis, IN. Contact Thomas Miller, Sports Medicine Congress, P.O. Box 55095, Madison, WI 53705-8895.

**8-10** Masters Games Sports Medicine Symposium, Toronto, Canada. Contact Robert M. Brock, MD, Masters Games Sports Medicine Symposium, P.O. Box 1985, Station P, Toronto, Ontario, M552Y7 CANADA. ©

### Remaining 1985 DISTRICT MEETINGS

District 6 (SWATA)	July 25-27, Waco, TX
District 8 (PCATA)	June 21-23, San Diego, CA
District 9 (SEATA)	June 27-29, Suwanee, GA

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## Pathophysiological Manifestations And Etiology Of The Hallux Sesamoids

**Mark Aldridge**

The hallux sesamoids are one area of the human anatomy that has not been covered well in Sports Medicine literature. A main reason is that problems of the sesamoids are overlooked due to a lack of knowledge of these two small bones. With today's increasingly ever-popular long distance and jogging society, we in the profession should be aware of the problems that arise in this area.

The word sesamoid is derived from the Greek word "sesamoides" meaning a small oval seed from the sesamum indicum and was first named by the ancient Greek anatomist Galen in 180 A.D. An understanding of the anatomy and physiology of these two small bones is needed to comprehend the etiology of hallux valgus disorders.

Normal development occurs 84% of the time with two whole sesamoids found in the tendons of the flexor hallucis brevis (5,6,7,10,11,12,14,15,16). This tendon inserts into the base of the proximal phalanx of the great toe. Proximally, the sesamoids are attached to the neck of the first metatarsal by the plantar portion of the metatarsalphalangeal capsule. Distally, they are attached to the proximal phalanx of the great toe by their respective tendons (13). The medial sesamoid is attached to the adductor hallucis and the medial joint capsule, respectively. The lateral sesamoid receives the oblique and transverse tendon of the adductor hallucis under the cover of the intrametatarsal ligament, which attaches it to the second metatarsal. The sesamoids are attached to each other by a very strong and thick intermetatarsal ligament. Lying between each of the sesamoids and between the tendons of the flexor hallucis brevis is the tendon of the flexor hallucis longus. To palpate for the two sesamoids press firmly under the head of the first

metatarsal; one should be able to feel the sesamoids in their respectable tendons.

The sesamoids function biomechanically to elevate the first metatarsal head to a point where it is level or slightly higher than the other metatarsal heads. This is important in weight-bearing, since the head of the first metatarsal bears much of the body's weight, and the sesamoids distribute that weight-bearing pressure. They also serve as a fulcrum to provide a mechanical advantage that will alter the direction and increase the power of the flexor hallucis brevis, especially during toe off.

Fractures to the sesamoids are the most common disorder to be found in this bone. The etiology stems from a forceful or repeated stress applied to the foot which causes a crushing of the sesamoid between the head of the metatarsal and the ground, or to tensile forces of toe off during gait. The medial sesamoid is more accessible to fracture because of its anatomy. During walking, the lateral sesamoid lies in the intermetatarsal space, and the medial sesamoid is trapped under the head of the first metatarsal.

Evaluating a possible sesamoid fracture is not difficult if one knows what to look for. The manifestations are very distinct: pain during and/or after athletic activity, point tenderness especially on hyperdorsiflexion of the great toe due to the sesamoid being right up against the head of the first metatarsal. Also edema and ecchymosis to the local area will be present. Plain hyperdorsiflexion will also illicit pain due to the crushing of the medial sesamoid. The gait of the athlete will be altered as they will walk on the lateral border of the foot, trying to avoid weight-bearing on the sesamoids. The onset of these symptoms can be insidious or sudden, depending on the severity. The best way to detect if the sesamoid is fractured is to have radiographs taken. It is recommended to obtain weight-bearing antero-posterior, lateral, and axial radiographs at three week intervals to avoid any non-union of the sesamoids, and possible

*Mark Aldridge is a senior at Bowling Green University, majoring in Educational Biology. This paper was a runner-up in the 1984 Student Writing Contest.*

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excision, which may lead to deformities of the great toe.

Treatment of fracture sesamoids vary from conservative treatments to short leg casts, from steroid injections to sesamoidectomies (1,2,3,4,5,6,10,15,16). Conservative treatments consist of: 1) rest 2) lowering the heels of the shoes to lessen weight-bearing 3) making the sole of the shoe a thick medium-firm rubber to decrease vertical forces 4) decreasing weight-bearing in one place and increasing it in others not normally used to bearing weight by adding a sesamoid pad into the shoe's inner sole 5) directly decreasing the weight-bearing by gouging out a smoothed cupped depression in the arch support. Immobilization in a cast for six weeks with conservative treatment follow-up and steroid injections both have shown to be of little success, with injection even increasing the pain (1,3,5,6,10). The best way to alleviate the pain is through a sesamoidectomy. The sesamoids are excised from the flexor hallucis brevis tendon, through an incision on the plantar aspect near the sesamoids or on the medial side near the head of the first metatarsal.

Dislocations and subluxations are also pathological entities that occur to the sesamoids. Subluxation is defined as a lateral displacement with both sesamoids still touching the medial articular surface. Dislocation is defined as a medial sesamoid articulating with the lateral metatarsal facet and the lateral sesamoid displaced into the intermetatarsal space (10). The mechanism of injury for this pathological entity is a forceful hyperextension of the great toe. The injury occurs with the knee flexed, patella touching the ground, the lower leg running parallel with the ground and the ankle in anatomical position in respect to the lower leg and the toes in hyperextension. A forceful blow to the heel with the athlete in this position will cause the great toe to go into forceful hyperextension, thus causing one or both of the sesamoids to be displaced (11).

Manifestations of this pathological entity are practically identical to those of a fractured sesamoid, with only a few minor differences. With displacement of a medial sesamoid, one will find, upon observation, a dimple present at the point where that sesamoid used to be present. The athlete will also be unable to actively move his great toe at the metatarsalphalangeal joint and the interphalangeal joint due to the displacement of the flexor hallucis brevis and the flexor hallucis longus. Passive movement will also produce pain (4,5,8,9,10,16).

Reduction of the displacement seems to be most successful on the operating table. Recovery takes approximately two weeks if the sesamoids are just displaced without an accompanying fracture (8). Displacement with a fracture will take longer due to the probable removal of the fractured sesamoid.

The sesamoids are also subject to other anomalies which include sesamoiditis (osteochondritis), chondromalacia, and traumatic neuritis of the medial plantar digital nerve (5,10,11,15,16). Sesamoiditis and osteochondritis are closely related; osteochondritis is defined as sesamoiditis not cured by conservative treatment (16). Sesamoiditis is defined as repetitive chronic stress to the sesamoids.

Sesamoids also undergo a degenerative change much like the patella known as chondromalacia. It is manifested by pain, most likely at the medial sesamoid, occurring only locally during weight-bearing.

Traumatic neuritis of the medial plantar digital nerve is mentioned here because of its anatomical position and the mechanism of injury to the sesamoids. The nerve lies under the lateral sesamoid and crosses over the flexor hallucis longus to the lateral border of the

hallux.

As an athletic trainer, one must be able to recognize the manifestations of sesamoid disorder when dealing with problems of the feet. The most common sesamoid disorders are fractures, followed by dislocations and degenerative processes. All of the disorders have basic and set manifestations, such as pain, tenderness, and obvious deformities. Treatments of these disorders range from conservative to sesamoidectomies.

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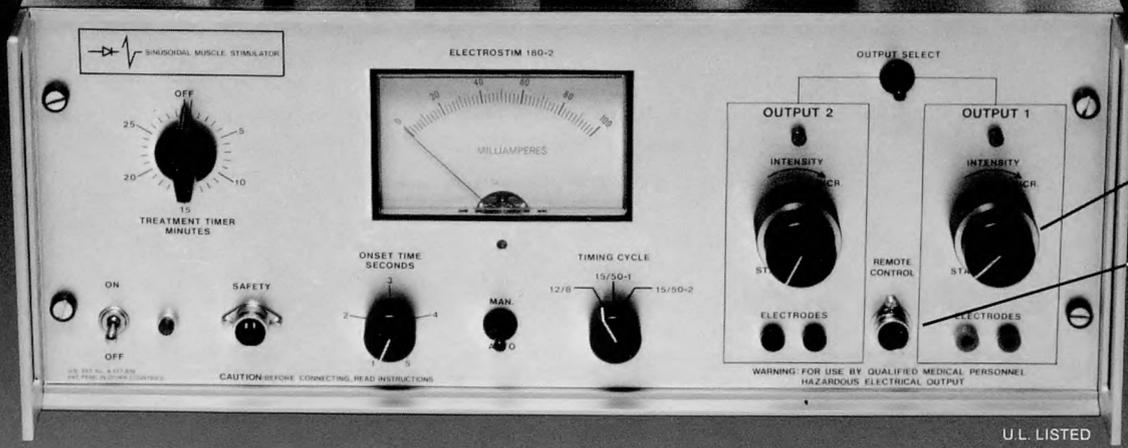
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### BOOK REVIEW from page 157

Three of the most interesting chapters deal with The Female Athlete, Drugs and Athletic Performance; and The Younger and Older Athlete.

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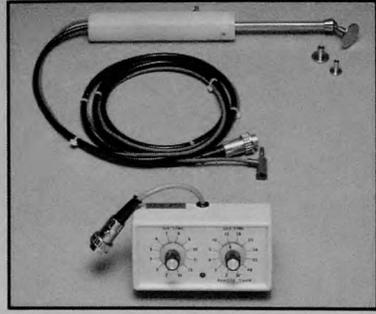
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# Abstracts



John Wells, ATC, PT, PhD  
UNC-Asheville  
Asheville, NC 28804

"The effect of a patella brace on performance in a knee extension strength test in patients with patellar pain," Lynsholm, Jack, M.D., PhD, et al., *The American Journal of Sports Medicine*, 12: 110-112, March-April 1984.

Twenty-four patients were studied, 18 women and 6 males. Their mean age was  $22.3 \pm 6.8$  years (range 14 to 38). All patients had pain in the anterior part of the knee around or over the patella. On physical examination, all patients experienced pain in the patellafemoral joint on extension against forced resistance. The patella brace consisted of an elastic sleeve with a patellar cut out and a crescent-shaped lateral pad. All patients had a two-week adaptation period to the brace before they were examined. The isokinetic strength test was done with a Cybex II Dynamometer. In each test three attempts were made and the maximal (peak) value was recorded. The patient's injured leg was examined with and without a brace, and the normal leg was examined as control on the same occasion. Twenty-one patients (88%) improved their performance in the strength test with bracing by a mean of  $13.7 \pm 9.1\%$  of their result without the brace. Fourteen patients (58%) performed at 95% of their control leg or more with the brace on compared to six (25%) without the brace. The results in the present investigation support the assumption that the major pathology in patients with patellafemoral pain is a slipping of the patella laterally causing either patella dislocations, subluxations, or an increased pressure between the lateral facet of the patella and the lateral trochlea. A brace with a lateral pad prevents such lateral slipping which explains that our patients performed much better with their braces compared to without them.

Dave England

\* \* \*

"Decreasing the Incidence of Recurrence of First Time Anterior Shoulder Dislocation with Rehabilitation," Aronen, John G. and Regan, Kevin, *The American Journal of Sports Medicine* 4: 283-291, 1984.

The prognosis for first time anterior shoulder dislocations for adolescents and young adult males has been considered poor due to the high incidence of recurrence reported by various authors. During a 3½ year period, 20 midshipmen at the United States Naval

Academy sustained primary anterior shoulder dislocations. All participated in an identical treatment regimen which included a restrengthening program emphasizing the muscles of internal rotation and adduction, plus rigid restrictions of activities until the goals of their rehabilitation were satisfied. A success rate of 75% in a group followed for an average of 35.8 months would suggest that adherence to a specific, aggressive post dislocation rehabilitation program, plus rigid restrictions of activities until the goals of the program are satisfied, can substantially improve the likelihood of a full return to activity without recurrent shoulder dislocation.

David E. Knoeppel

"An Evaluation of Football Helmets Under Impact Conditions," Patrick J. Bishop, PhD, et al. *The American Journal of Sports Medicine* 12: 233-236, 1984.

The NOCSAE has developed a standard for football helmets which has led to a substantial reduction in serious head injuries. One problem is that of aging football helmets and their systematic replacement in competitive programs. This problem became very acute for three school boards of education. It was decided that an examination of the impact attenuating capabilities be undertaken. Those helmets which passed visual inspection for shell cracks, broken drops on the test rig were made within one minute. The data from the second drop in each instance was analyzed. Two criteria with GSI (Gadd Severity Index) of 1200 and 1500 were used; the GSI is representative of a concussive threshold. The padded and padded suspension helmets each maintained the GSI well below 1200; but the suspension helmets, over a long period, appeared to have stretched the webbing materials used in those helmets, thereby reducing the "standoff distance" between the headform and shell. If padded helmets break down or become reduced in thickness due to excessive use, they likewise can be expected to fail.

Mae L. Yahara

\* \* \*

**EDITORS NOTE: The following abstracts were presented at the 1984 NATA Annual Meeting as a part of the Free Communications Section sponsored by the Research and Injury Committee.**

The Comparative Effect of Combining Two Types of Training Theories and Training Apparati on Strength, Girth and Range of Motion Development of Cervical Spine and Shoulder Elevator Musculature

The purpose of this study was to compare effects of combining two types of training theories and training apparati on strength, girth and range of motion development of cervical spine and shoulder elevator musculature. Based on initial strength levels, fifty-four subjects were placed into one of four training groups. The subjects trained three times per week for ten weeks. The training apparati were the Pulley System and Nautilus, while the theories were the DeLorme and Nautilus. Following completion on the training regimen, the subjects were post-tested and the results analyzed as follows. The SPSS computer program for the covariate analysis with a covariate of pre-training strength and a 2x2 two-way ANOVA was also used to analyze the data



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for statistical significance between means. Finally, a 3x4 two-way ANOVA to determine the training effects on different strength levels was utilized. All groups improved in muscular strength, girth, and range of motion. When initial strength was considered, there was no difference between theory and apparatus on strength development. There was no interaction. All theories and apparatus examined here produced increases in strength, girth and flexibility in the cervical region. Strength levels increased more rapidly on individuals that had lower strength levels prior to training. Strength level did not interact with either girth or flexibility.

Dr. Burton L. Rogers, Jr., et al.

\* \* \*

#### A Review of the Peak Ham./Quad. Torque Ratio as a Tool in Assessing Knee and Hip Function

This discussion will center on the use of the Peak Ham./Quad/ Torque Ratio as a tool for assessing progress in the rehabilitation process and as a tool in predicting insufficiency of the hamstrings at the knee and hip. The discussion will begin with the historical background into the use of the Ham/Quad Ratio, beginning with Lombard's research on the torque of the hamstring and quadriceps in frogs, Beasley's strength ratios in aiding patients with poliomyelitis, and Klein and Allman's discussion on isotonic loading of the quadriceps and hamstrings in the rehabilitative process. The discussion will continue with a review of present-day literature pertaining to this ratio. Finally, the discussion will center on the Peak Ham/Quad Torque Ratio as an appropriate tool in assessing the rehabilitative process and possible alternatives to the use of the Peak Ham/Quad Torque Ratio.

James R. Roush

\* \* \*

#### A Conservative Treatment Program for Chondromalacia Patella

The present study examined a conservative strengthening approach for the treatment of CMP. Twenty-eight high school athletes (13 male, 15 female, mean age = 15.8 years) with clinically diagnosed CMP participated as subjects. Patients were categorized by symptom severity using the Blazina classification system. Of the twenty-eight subjects nine athletes were initially classified as Class V, three as Class IV, seven as Class III, eight as Class II and one as Class I. The treatment program consisted of limiting activity to those activities that could be performed without pain and an exercise regimen of quadriceps setting, straight leg raises, and terminal knee extension. Patients were re-evaluated and reclassified on a monthly basis until they were pain free. Of the nine Class V patients, one patient did not return after her initial evaluation and one patient had treatment for two months without success and underwent surgical intervention. Of the seven remaining Class V patients six were able to return to a pain free situation (average time = 3.6 months) and the remaining patient was reclassified as Class III. Of the three Class IV patients, one patient did not return after her initial visit and the remaining two patients were pain free within 3.5 months ( $\bar{x}$  = 2.25 months). All seven Class III patients were able to return to a pain free setting ( $\bar{x}$  time = 3.0 months). Of the eight Class II patients four patients returned to a pain free setting ( $\bar{x}$  time = 7.25 months), two patients were reclassified as Class I without further improvement ( $\bar{x}$  time = 3.5 months) and two patients did not improve ( $\bar{x}$  time = 10 months). The Class I patient returned to a pain free setting in 5.0 months. It was concluded that a conservative treatment program for CMP can be effective. It is further suggested that a conservative approach be utilized prior to the consideration of surgical intervention.

Tim Madden, MS, ATC, et al. ⊕

#### THE PREVALENCE OF BURNOUT from page 113

burned out athletic trainers. 2) The burned out athletic trainer is slightly younger than the athletic trainer who is not burned out (28 year to 31 years). 3) More of the burned out trainers do not have children than the trainers who are not burned out (71% to 65%). 4) The burned out athletic trainer is likely to be a head trainer and the athletic trainer who is not burned out is likely to be an associate or assistant athletic trainer. 5) Burned out athletic trainers, as compared to athletic trainers who are not burned out, are more likely to work with at least one other certified trainer.

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#### PRE-CLINICAL SYMPOSIUM from page 153

##### 4:00 P.M. — IMMEDIATE CARE OF EYE INJURIES BY THE ATHLETIC TRAINER

David Smith, MD, Assistant Surgeon of the General Ophthalmology Service, Willis Eye Hospital, Philadelphia, Pennsylvania

##### 4:45 P.M. — QUESTIONS & DISCUSSION All Speakers

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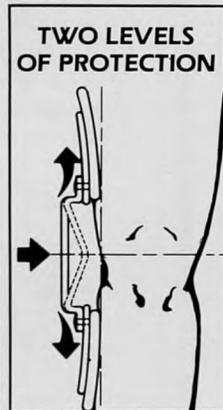
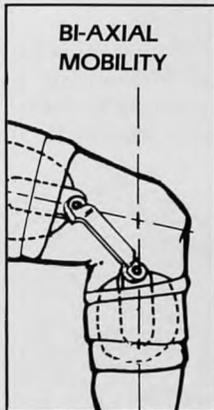
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# Announcements

## TENTATIVE SCHEDULE 1985 NATA, INC. CLINICAL SYMPOSIUM & WORKSHOP MARRIOTT HOTEL, SAN ANTONIO, TEXAS JUNE 8-11, 1985

### Saturday, June 8

9:00-12:00 Noon Pre-Convention Workshops  
2:00- 5:00 P.M. Schering Symposium  
3:00- 6:00 P.M. Visit Exhibits

### Sunday, June 9

	Banquet Hall #1	Mission Room	Room #31
8:30- 8:45 A.M.	Welcome B. Barton, President, NATA Mayor of San Antonio Paul Zeek, District Director Bernie LaReau, Host Trainer		
8:45- 9:30 A.M.	Jean Edwards Holt, MD "Athletic Injuries of the Eye and Orbit"	John Richards, MD Knee Braces: Their Function "Support or Prevention"	Jerry Julian, MD "Overuse Syndromes in Women"
9:30-10:00 A.M.	Visit Exhibits		
10:00-11:00 A.M.	Billy Pickard, ATC Keynote Address		
11:00- 1:00 P.M.	National Business Meeting		
1:00- 2:00 P.M.	Lunch		
2:00- 2:30 P.M.		Ty Goletz, MD "Anterior Cruciate Ligament Repair/Reconstruction"	
2:00- 3:00 P.M.			Ron Carroll, ATC "Athletic Improvement Through Body Composition, Evaluation and Anlysis"
2:30- 3:00 P.M.		Philip D. Manfredi, MD "Injuries to the Head, Chest and Abdomen"	
2:00-3:30 P.M.	Dental Group Panel "Update on Mouthguards" Robert Morrow, DDS Richard Seals, DDS William Kuebker, DDS		
3:00- 3:30 P.M.		Jesse Delee, MD "Elbow Injuries in Sports"	Dean Weber, ATC "You Can Do More For the Injured Athlete Than You Think You Can"
3:30- 4:00 P.M.	Visit Exhibits		
4:00- 4:30 P.M.	Jack Henry, MD "Myositis Ossificans"	George Young, ATC "Implementing a Computerized Injury Reporting System"	Kenwyn "Peanuts" Boyer, ATC "Anaphylactic Reactions in Athletics"
4:30 P.M.	District Meetings		

### Monday, June 10th

8:30- 9:00 A.M.		Ted Edwards, MD "An Overview of Fluid Replacment and Fluid Balance for Athletes"	
8:30-10:00 A.M.	Bill Nemeth, MD John Faggard, MD Tim Kirschner, ATC "Update on Knee Treatment Rehabilitation"		
9:00- 9:30 A.M.		Ron Scott, ATC "Thigh Contusions and Their Treatment"	
9:30-10:00 A.M.		Greg Rauer, ATC "The Trainer's Role in Evaluation, Treatment and Rehabilitation of an Acutely Sprained Ankle"	
10:00-10:30 A.M.	Visit Exhibits		
10:30-11:00 A.M.	Warren Morris, ATC "Drug Testing at the University of Georgia"	Kaye Wilkins, MD "Current Controversies in Youth Sports"	Susan Leeper, ATC "Treatment of the Female Athlete"
11:00-11:45 A.M.	Kenneth Blum, PhD "Natural vs. Drug Induced Healing in Sports Medicine"	Maurice Johnson, PhD "The Role of the Abdominal Muscles in Injury Prevention"	Gilbert Tamez, ATC "Management of Student Trainers in High School"
11:45- 1:30 P.M.	Lunch		
1:30- 2:30 P.M.		David Green, MD "It's Just a Sprain" and Judy McGee, Hand Therapist	Bill Nemeth, MD "Drug Abuse in Athletics"
2:30- 3:00 P.M.		John Krusenklau, RPT "Rehabilitation Modalities"	Jill Gass, ATC "Use of Eccentric Muscle Contraction in the Treatment of Chronic Tendonitis"
3:00- 3:30 P.M.	Visit Exhibits		
3:30- 4:00 P.M.		Keith Markey, MD "The Use of Orthotics in Athletics"	Robert Donnelly, DDS "Mouth and Face Injuries in Athletics"
4:00- 4:30 P.M.		Lawrence Czelusta, RPT and Podiatrist "Resistive Aerobic Plyometers"	Steve Birkhardt, MD "The San Antonio Gunslingers - The First Year"

### Tuesday, June 11

	Banquet Hall #1
9:00- 9:30 A.M.	Melvin Thornton, MD — "Thermoregularity Problems in the Athlete"
9:30-10:00 A.M.	Joe Tippett, MD — "Arthroscopic Evaluation and Treatment of the Acute Knee"
10:00-10:15 A.M.	Break — No Exhibits
10:15-10:45 A.M.	Skip Cox, ATC — "Cybex Evaluation for Prevention"
10:45-11:15 A.M.	Fred Curley, MD — "Brachial Plexus Injuries"
11:15-11:45 A.M.	1986 Site Presentation

## Schedule of Future Sites and Dates NATA Certification Examination

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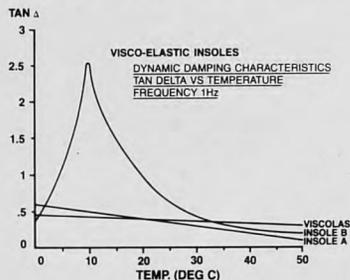
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CODE	BOYS'/MEN'S			WOMEN'S		
A	2	3	4	4	5	6
B	5	6	7	7	8	9
C	8	9	10	10	11	12
D	11	12	13	-	-	-

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**Saturday, June 8, 1985**  
**NATA, Inc. Pre-Clinical Symposium**  
**Workshops**

Members may register to attend one of the three 3-hour workshop sessions. The workshop intensive study sessions are as follows:

- SESSION 1 — 8:00 A.M. - 12:00 Noon - North Banquet Hall**  
**2nd Annual American Orthopaedic Society for Sports Medicine Symposium**  
**KNEE INJURIES**
- 8:00 A.M. — **BIOMECHANICS**  
 William D. McLeon, PhD, Columbus, Georgia
- 8:15 A.M. — **KNEE EXAMINATION**  
 Joseph O'Connor, MD, West Orange, New Jersey
- 8:30 A.M. — **DISORDERS OF THE PATELLOFEMORAL JOINT**  
 Jack H. Henry, MD, San Antonio, Texas
- 8:45 A.M. — **NONOPERATIVE MANAGEMENT OF LIGAMENOUS INJURIES**  
 John A. Bergfeld, MD, Cleveland, Ohio
- 9:00 A.M. — **ARTHROSCOPY OF THE KNEE**  
 James R. Andrews, MD, Columbus, Georgia
- 9:15 A.M. — **REVIEW OF KNEE LIGAMENT RECONSTRUCTION**  
 Bernhard R. Cahill, MD, Peoria, Illinois
- 9:30 A.M. — **KNEE REHABILITATION**  
 James P. Evans, MD, Dallas, Texas
- 9:45 A.M. — **DISCUSSION**
- 10:05 A.M. — **ANATOMY AND INTRODUCTION TO LAB**  
 Stephen C. Hunter, MD, Columbus Georgia  
 Joe Gieck, EdD, ATC, RPT, Charlottesville, VA  
 Al Green, MEd, ATC, EMT, Lexington, Kentucky

**SESSION 2 — 9:00 A.M. - 12:00 Noon - Mission Room**  
**SCREENING FOR DRUGS IN ATHLETICS**

John H. Hebb, PhD, Director, International Clinical Laboratories, Inc., Nashville, Tennessee  
 Steve Faynor, PhD, International Clinical Laboratories, Inc., Nashville, Tennessee

**SESSION 3 — 9:00 A.M. - 12:00 Noon - Room #31**  
**THE CLINICAL TRAINER**

Bob Mangine, RPT, ATC, MEd, Administration Director, Cincinnati Sports Medicine & Orthopaedic Clinic, Cincinnati, Ohio  
 Bob Gray, ATC, Head Athletic Trainer, Sports Medicine Clinic, Lorain, Ohio

**LUNCH - 12:00 Noon - 2:00 P.M.**

**SCHERING SYMPOSIUM - 2:00 P.M. - 5:00 P.M. - North Banquet Hall**  
**THE EYES OF ATHLETES ARE UPON YOU**

2:00 P.M. — **ANATOMY, PHYSIOLOGY, PATHOLOGY OF OCULAR INJURIES**

John Jeffers, MD, Director of Resident Education and Assistant Director of Emergency Services, Willis Eye Hospital, Philadelphia, Pennsylvania; Team Ophthalmologist, Philadelphia Eagles (NFL), Philadelphia 76'ers (NBA), and Baltimore Stars (USFL)

2:30 P.M. — **EYE INJURIES IN RACQUET SPORTS**

Michael Easterbrook, N.D., F.R.C.S.(C), Assistant Professor of Ophthalmology, University of Toronto, Toronto, Canada

3:15 P.M. — **VISUAL ENHANCEMENT TRAINING**

Arnold Sherman, OD, Professor, State University of New York; Vision Consultant to the New York Jets, New York Rangers, New York Knickerbockers and St. John's University

*Continued on page 148*

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**ENTERTAINMENT SCHEDULE**  
**(Tentative)**  
**SAN ANTONIO, TEXAS - JUNE 1985**

**Friday, June 7**

Evening  
 (time unknown at press time) Denver Broncos Party - Marriott  
 Golf Tournament

**Saturday, June 8**

7:00 - 11:00 P.M. Mission Pharmaceutical Company Party - Lone Star Brewery

**Sunday, June 9**

7:00 - 8:30 P.M. NFL Cocktail Party - Hyatt  
 (time unknown at press time) "Fun Run"

**Monday, June 10**

6:30 - 7:30 P.M. J&J Cocktail Party - Marriott  
 7:30 - 9:00 P.M. Annual Awards Banquet - Convention Center  
 Country & Western Apparel  
 9:00 - 12:00 Midnight Dance - Convention Center

**TENTATIVE SPOUSES' PROGRAM**

- Sunday morning - Aerobics - Marriott
- Monday Morning - Aerobics - Marriott
- Monday (time unknown) - Home Emergencies: "What To Do When The Trainer's Not Home"
- Tuesday morning - Aerobics - Marriott

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# Current Literature



Paul Concialdi, ATC, MA  
Bolles School  
Jacksonville, FL 32217

"Decreasing the Incidence of Recurrence of First Time Anterior Shoulder Dislocations with Rehabilitation", Aronen, J. G., *American Journal of Sports Medicine*, July-August 1984, 12(4): 283-91.

"Heat Stress and the Young Athlete. Recognizing and Reducing the Risks", Beyer, C. B., *Postgraduate Medicine*, July 1984, 76(1): 109-12.

"Musculoskeletal Profile and Incidence of Musculoskeletal Injuries in Lightweight Women Rowers", Blackburn, T., *American Journal of Sports Medicine*, July-August 1984, 12(4): 281-2.

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"Long-term Followup of Posterior Cruciate Ligament Rupture: A Study of 116 Cases", Cross, M. J., *American Journal of Sports Medicine*, July-August 1984, 12(4): 292-7.

"Use of a Sports Medicine Clinic in a Family Practice Residency", Davenport, M. P., *Journal of Family Practice*, August 1984, 19(2): 225-8.

"Measurement of Short Term Power Output: Comparison Between Cycling and Jumping", Davies, C. T., *Ergonomics*, March 1984, 27(3): 305-20.

"Patello-Femoral Arthralgia in Athletes Attending a Sports Injury Clinic", Devereaux, M.D., et al., *British Journal of Sports Medicine*, March 1984, 18(1): 18-21.

"Ankle Joint Load and Leg Muscle Activity During Lifting", Ekholm, J., et al., *Foot and Ankle*, May-June 1984, 4(6): 292-300.

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"Ventricular Arrhythmias and Sudden Death in Athletes", Furlanello, F., et al., *Annals of the New York Academy of Science*, 1984, 427: 253-79.

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"The Muscle Fiber Composition of Skeletal Muscle as a Predictor of Athletic Success: An Overview", Gollnic, P. D., *American Journal of Sports Medicine*, May-June 1984, 12(3): 212-7.

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"Current Status and Treatment of Tennis Elbow", Kohn, H. S., *Wisconsin Medical Journal*, March 1984, 83(3): 18-9.

"Morality and Morbidity from Injuries in Sports and Recreation", Kraus, J. F., et al., *Annual Review of Public Health*, 1984, 5: 163-92.

"Orbital Rim Trauma Causing a Blowout Fracture", Kulwin, D. R., et al., *Plastic Reconstruction Surgery*, June 1984, 73(6): 969-71.

"Frequent Sports Injuries of Children: Etiology, Treatment and Prevention", Latinis, B., *Issues of Comparative Pediatric Nursing*, May-June 1983, 6(3): 167-78.

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"Spontaneous Rupture of Both Flexor Tendons in a Single Digit", Matthews, R. N., et al., *Journal of Hand Surgery*, June 1984, 9(2): 134-6.

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*College Health*, June 1984, 32(6): 247-51.

"Developing Physical Fitness for the Elderly Through Sport and Exercise", Meusel, H., *British Journal of Sports Medicine*, March 1984, 18(1): 4-12.

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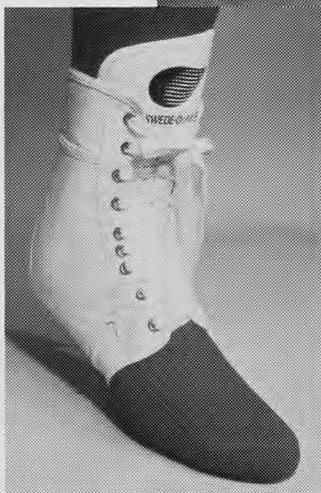
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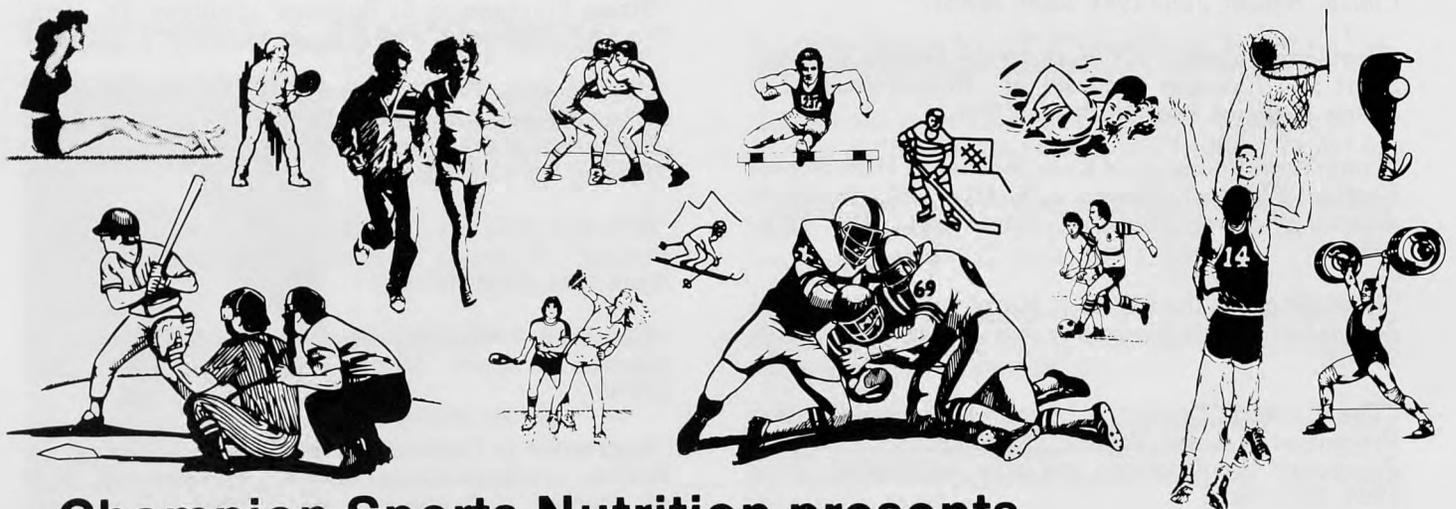
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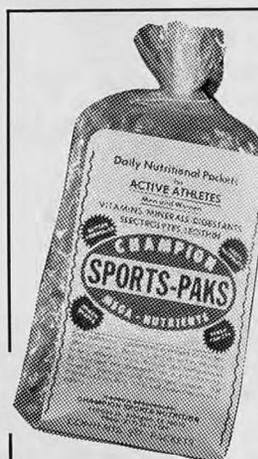


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# Book Reviews



Phil Callicutt, ATC, EdD  
Federal Law Enforcement  
Training Center  
Glynco, Georgia 31524

## Acupressure for Athletes

David J. Nickel, Doctor of Oriental Medicine  
Health -Acu- Press, 2215 A Main Street, Santa Monica,  
California 90405

1984  
318 pp., illustrated  
\$25.00

Acupressure is a field of medicine which is surrounded by much controversy. To say the least it is usually a topic which is surely to arise when a group of Athletic Trainers and other sports professionals come together. The text by Dr. Nickel should be carefully studied by

both the believer and non-believer as well. This 318 page lavishly illustrated text does an excellent job covering a very complex and interesting area. The author covers the most common injuries in each of the twenty-five most popular sports including running, swimming, and football. Then he "hits" the reader with acupressure techniques to prevent and treat these injuries or conditions. He is a convincing salesman, and the reader is enlightened.

I strongly recommend this text for everyone with an interest in this new and controversial area of the prevention and care of sports related injuries. I guarantee that once you start this book you will find it most difficult to put it down. It is filled with interesting pictures and information, and it does not matter if you are a believer or non-believer you will still derive pleasure from this well written text by Dr. Nickel.

## Sports Medicine: Prevention of Athletic Injuries

Alfred E. Morris

William C. Brown Publishers, P.O. Box 539, Dubuque,  
Iowa 52004-0539

1984  
377 pp., illustrated  
Price under \$20.00

*Sports Medicine* is an extremely comprehensive and contemporary work which will be of great interest to coaches, student trainers, and sports enthusiasts in general. There are nineteen chapters on a wide variety of subjects such as: Training Principles and Over-training, Endurance Conditioning and the Athlete's Heart, Flexibility, Common Athletic Injuries and Their Treatments, Nutrition, Drugs and Athletic Performance.

*continued on page 144*

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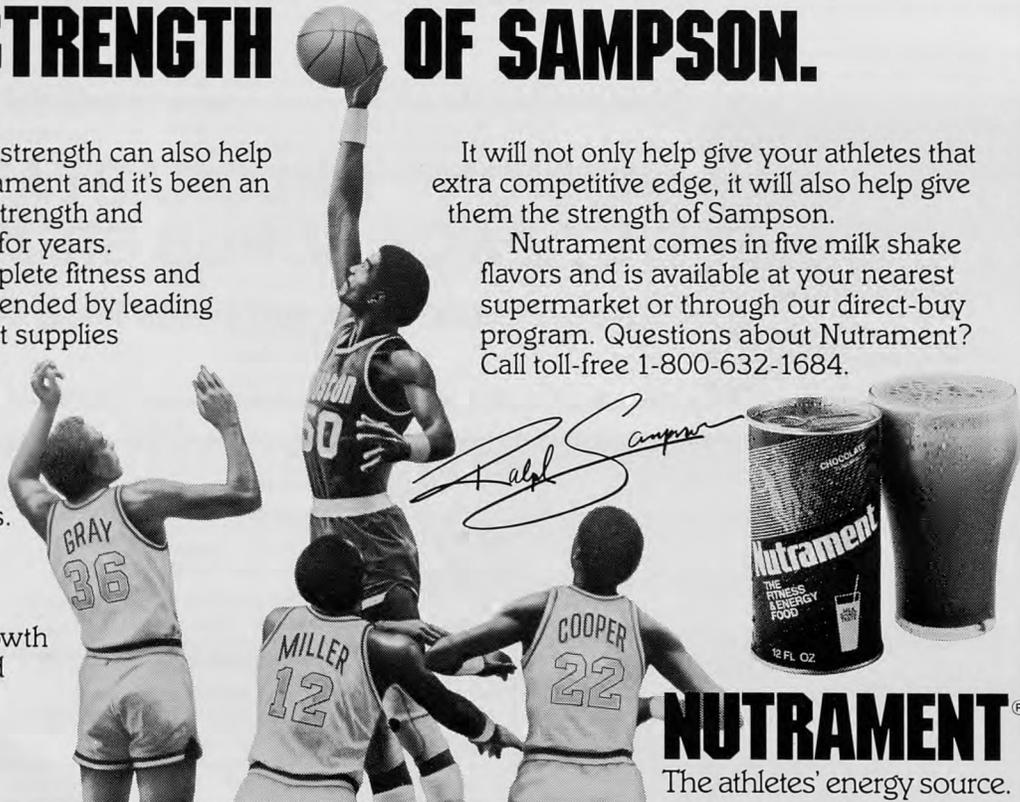
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# Guide to Contributors

*Athletic Training*, The Journal of the National Athletic Trainers Association, Inc. welcomes the submission of manuscripts which may be of interest to persons engaged in or concerned with the progress of the athletic training profession.

The following recommendations are offered to those submitting MANUSCRIPTS:

1. Four copies of the manuscript should be forwarded to the editor and each page typewritten on one side of 8½ x 11 inch plain paper, triple spaced with one inch margins.
2. Good quality color photography is acceptable for accompanying graphics but glossy black and white prints are preferred. Graphs, charts, or figures should be of good quality and clearly presented on white paper with black ink in a form which will be legible if reduced for publication. Tables must be typed, not hand written. Personal photographs are encouraged; however photographs cannot be returned if the manuscript is published.

All artwork to be reproduced should be submitted as black and white line art (either drawn with a Rapidograph [technical fountain pen] or a velox stat or PMT process) with NO tonal values, shading, washes, Zip-a-tone — type screen effects, etc. used.

All artwork to be reproduced in black plus a second (or more colors) should be submitted as black and white line art (see above paragraph), with an Amberlith® or similar-type overlay employed for each area of additional color(s). Also, all areas of tonal value, shading, "washes", etc. should be supplied on a separate clear or frosted acetate or Amberlith® overlay. In addition, all areas to be screened (a percent or tint of black or color) should be supplied on an Amberlith® overlay. Artwork cannot be returned if the manuscript is published.

3. The list of references and citations should be in the following form: a) books: author, title, publisher with city and state of publication, year; b) articles: family names, initials and titles of all authors, title of article, journal title, with abbreviations accepted as per Index Medicus, volume, page, year. Citations in the text of the manuscript will take the form of a number in parentheses, (7), directly after the reference or name of author being cited, indicating the number assigned to the citation. Example of references to a journal, book, chapter in an edited book, and presentation at a meeting are illustrated below. Reference page accompanying manuscript should list authors in alphabetical order numerically.
  - a. Knight K: Preparation of manuscripts for publication. *Athletic Training* 11 (3):127-129, 1976.
  - b. Klafs CE, Arnheim DD: *Modern Principles of Athletic Training*. 4th edition. St. Louis, CV Mosby Co. 1977 p. 61.
  - c. Albohm M: Common injuries in womens

volleyball. *Relevant Topics in Athletic Training*. Edited by Scriber K, Burke EJ, Ithaca NY: Monument Publications, 1978, pp. 79-81.

- d. Behnke R: Licensure for athletic trainers: problems and solutions. Presented at the 29th Annual Meeting and Clinical Symposium of the National Athletic Trainers Association. Las Vegas, Nev, June 15, 1978.
4. In view of *The Copyright Revision Act of 1976*, effective January 1, 1978, all transmittal letters to the editor must contain the following language before manuscripts can be reviewed for possible publication: "In consideration of the NATA taking action in reviewing and editing my submission, the author(s) undersigned hereby transfers, assigns or otherwise conveys all copyright ownership to the NATA, in the event that such work is published by the NATA." We regret that transmittal letters not containing the foregoing language signed by all authors of the manuscript will necessitate return of the manuscript.  
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Accepted manuscripts become the property of the Journal. For permission to reproduce an article published in *Athletic Training*, send request to the Editor-in-Chief.

5. Manuscripts are reviewed and edited to improve the effectiveness of communication between the author and the readers and to assist the author in a presentation compatible with the accepted style of *Athletic Training*. The initial review process takes from six to eight weeks. The time required to process a manuscript through all phases of review, revision, and editing, to final publication is usually six to eight months depending on the timeliness of the subject. The author accepts responsibility for any major corrections of the manuscript as suggested by the editor.
6. It is requested that submitting authors include a comprehensive abstract, a brief biographical sketch and acceptable black and white glossy photograph of themselves. **Please refrain from putting paper clips on any photograph.**
7. Published manuscripts and accompanying artwork cannot be returned. Unused manuscripts will be returned when submitted with a stamped, self-addressed envelope.

Address all manuscripts to:  
Clint Thompson  
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The following recommendations are offered to those submitting CASE HISTORIES:

1. The above recommendations for submitting manuscripts apply to case studies as well but only two copies of the report need be sent to the Editor-in-Chief.
2. All titles should be brief within descriptive limits. The name of the disability treated should be included in the title if it is the relevant factor; if the technique or kind of treatment used is the principal reason for the report, this should be in the title. Often both should appear. Use of subtitles is recommended. Headings and Subheadings are required in the involved report but they are unnecessary in the very short report. Names of patients are not to be used, only first or third person pronouns.
3. An outline of the report should include the following components:
  - a. Personal data (age, sex, race, marital status, and occupation when relevant)
  - b. Chief complaint
  - c. History of present complaint (including symptoms)
  - d. Results of physical examination (Example: "Physical findings relevant to the physical therapy program were...")
  - e. Medical history — surgery, laboratory, exam, etc.
  - f. Diagnosis
  - g. Treatment and clinical course (rehabilitation until and after return to competition) use charts, graphs when possible
  - h. Criteria for return to competition
  - i. Deviation from the expected
  - j. Results — days missed
4. **Release Form**  
It is mandatory that *Athletic Training* receive, along with the submitted case, a signed release form by the individual being discussed in the case study injury situation. Case studies will be returned if the release is not included.

The following recommendations are offered to those submitting material to be considered for TIPS FROM THE FIELD:

1. The above recommendations for submitting manuscripts apply to Tips From the Field but only two copies of the paper need be submitted.
2. Copy should be typewritten, brief, concise, in the first or third person, and using high quality illustrations and/or black and white glossy prints.

The following guidelines must be met for submission of papers or material to the "STUDENT TRAINER CORNER."

1. Author must be an undergraduate student member of NATA.
2. Topics must relate to athletic training. (case reports, experimental reports, suggestions, new ideas, tips and/or specifics for a given problem)
3. Articles should be no more than 2 to 3 pages in length, double spaced.

## Journal Deadlines

In order to avoid confusion and delays on contributions to the Journal the deadlines for various sections are provided below.

The Editorial Board will review papers submitted on an individual basis, work with the authors and prepare the papers for publication.

The deadlines are:

Journal	Deadline
Spring Issue	December 15
Summer Issue	March 1
Fall Issue	June 15
Winter Issue	September 15

Send material for "Announcements", "Case Histories", "Letters to the Editor", "New Products" and miscellaneous items to:

Steve Yates, Editor-in-Chief  
P.O. Box 7265-Sports Medicine Unit  
Wake Forest University  
Winston-Salem, NC 27109

Send manuscripts to:

Clint Thompson  
Jenison Gym  
Michigan State University  
East Lansing, MI 48824  
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Information on upcoming events for the "Calendar of Events" section should be sent to:

Jeff Fair, ATC  
Athletic Department  
Oklahoma State University  
Stillwater, OK 74074

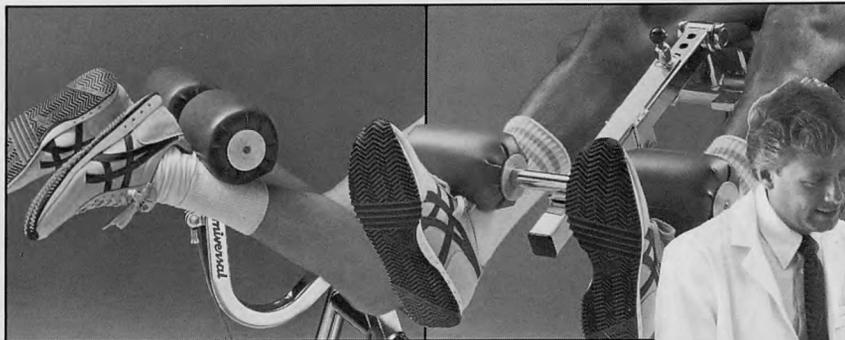
"Tips From the Field" should be sent to:

Dave Burton  
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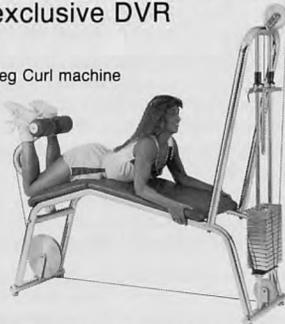
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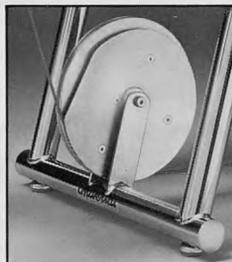
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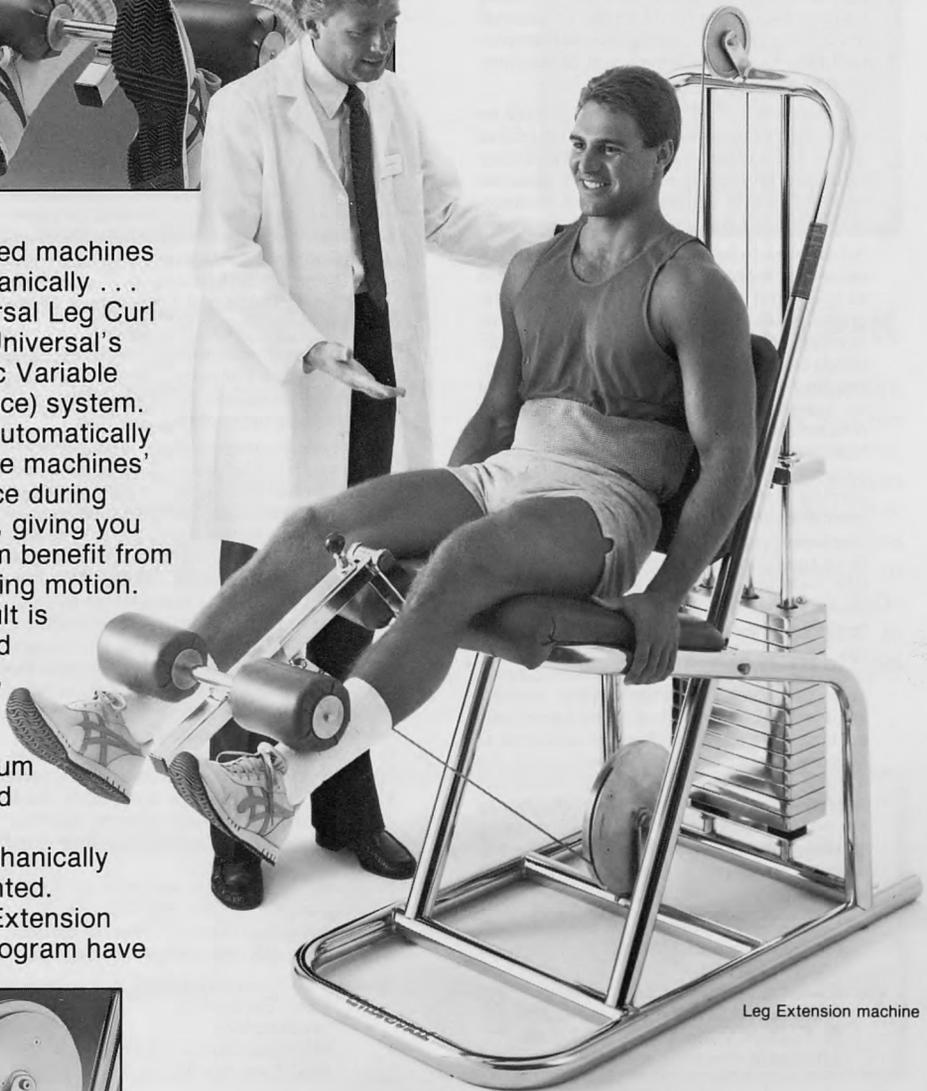
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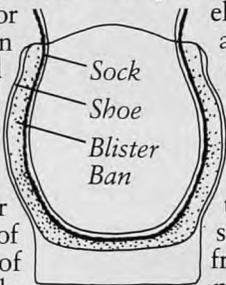
Actually it's not a miracle, it only works like one. Blister Ban is a patented controlled dry lubricant that is natural and safe, even for the most sensitive feet. It's been used by pros and seasoned athletes to get them through the season without the pain and worry of blisters. It's great for anyone who is concerned about blisters. Blister Ban is applied to the *outside* of socks, especially on parts of feet prone to blistering. Simple, clean, extremely effective.

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Director of Sports Medicine and  
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# PROCEEDINGS of the BOARD OF DIRECTORS NATIONAL ATHLETIC TRAINERS' ASSOCIATION, INC.

February 10-11, 1985  
Mid-Winter Meeting  
San Antonio Marriott Hotel  
San Antonio, Texas

## SUMMARY OF ACTIONS NATA BOARD OF DIRECTORS

The following agenda items were considered and actions taken by the NATA Board of Directors at its meeting held in Salon F of the San Antonio Marriott Hotel, San Antonio, Texas, commencing at eight-twenty-five o'clock a.m., on Sunday, February 10, 1985 and terminating at eleven-thirty o'clock a.m., on Monday, February 11, with Mr. Bobby Barton, President, presiding and with the following present:

Mr. Bobby Barton, President  
Mr. Otho Davis, Executive Director  
Mr. Jack Baynes, District 1  
Mr. E. Hal Biggs, District 2  
Mr. Andy Clawson, District 3  
Mr. Gordon Graham, District 4  
Mr. Denis Isrow, District 5  
Mr. Paul Zeek, District 6  
Mr. Dan Libera, District 7  
Ms. Janice Daniels, District 8  
Mr. Jerry Rhea, District 9  
Mr. Mark Smaha, District 10

### I. REAPPROVAL OF MAIL ITEMS:

Moved, by District 1, seconded by District 3, and carried 10-0 to approve all mail items previously approved, as follows:

1. Endorsement of *Nutrition for Sport Success* publication by AAHPER&D.
2. Accept termination of Undergraduate Educational Program at Arizona State University in Tempe.
3. Phillip A. Callicutt (District 9) to the Journal Committee.
4. Edward T. Crowley, University of Iowa (District 5) as Chairman of Licensure Committee.
5. Resignation of Ken Murray, Texas Tech University (District 6), from the Memorial Resolutions Committee.
6. James Gassett, Columbia University (District 2) to the Certification Committee.
7. James Michael (Mike) Rollo, University of Tennessee (District 9) to the Certification Committee.
8. Use of NATA Logo for audio visual production by Don Chu.
9. Pat Forbis, Grand Prairie High School, Grand Prairie, Texas (District 6), to the Ethics Committee.
10. Jerry Hoemburg, Eastwood High School, El Paso, Texas (District 6), to the Memorial Resolutions Committee.
11. Jan Tappan, University of Wisconsin (District 4) to the Memorial Resolutions Committee.
12. Glenn J. Meidel, Tulsa Sports Medicine Clinic, Tulsa, Oklahoma (District 5), to the Audio-Visual Aids Committee.
13. Re-appointment of Terry O'Brien, Towson State University (District 3), to the Audio-Visual Aids Committee.
14. Frederick G. "Rick" Zapalla, Hofstra University (District 2) to the Placement Committee.

15. Don Lowe, Syracuse University (District 2) to the Licensure Committee.

16. William D. Kauth, Illinois State University (District 1), to the Licensure Committee.

17. Gary Lang, Sacramento City Junior College, Sacramento, California (District 8), to the Licensure Committee.

18. Bradley Sherman, University of Wisconsin (District 4) to the Certification Committee.

19. Charles Moss, Boston Red Sox Baseball Club (District 1), to the Grants and Scholarships Committee.

20. Robert Reese, New York Jets Football Club (District 2), to the Grants and Scholarships Committee.

21. Ron Sendre, Central Michigan University (District 4), to the Grants and Scholarships Committee.

22. Robert Gunn, Lamar High School, Rosenberg, Texas (District 6), to the Grants and Scholarships Committee.

23. Bobby Barton, Eastern Kentucky University (District 9), to the Grants and Scholarships Committee.

24. J. Lindsay McLean, San Francisco Forty-Niners Football Club (District 8), to the Grants and Scholarships Committee.

25. Mike Sherman, Texas A&M University (District 6), to the Journal Editorial Board.

26. Jerry Rhea, Atlanta Falcons Football Club (District 9), to the Grants and Scholarships Committee.

### II. ACCEPTANCE OF INFORMATIONAL ITEMS:

There being no actions or recommendations indicated, it was moved by District 6, seconded by District 1, and carried 10-0, that the following reports be accepted as information:

History and Archives  
Publications  
American Academy of Family Physicians  
ACHA  
American College of Sports Medicine  
ACTA  
NACDA  
Vice-President  
Legal Counsel  
USOC  
President's Council on Physical Fitness and Sports  
American Public Health Association  
American School Health Association  
WBA Athletic Foundation  
Athletic Training Services, Inc.

### III. EXHIBITION OF NATA EXHIBIT:

Moved by District 2, seconded by District 9 and carried 10-0 that the NATA exhibit not be sent to the AAHPERD meeting.

### IV. NATA LOGO DESIGN:

Moved by District 5, seconded by District 4 and carried

10-0 that the revised logo as presented, namely modifying the present logo to include the words "National Athletic Trainers Association" and the founding date inscribed in a circle therein be used until the public relations firm could come up with something more acceptable.

### V. AUDIO-VISUAL AIDS:

Moved by District 2, seconded by District 10 and carried 10-0 to add Mr. Tab Blackburn and Mr. Dale Baker of the Hughston Sports Medicine Foundation, Columbus, Georgia (District 9), as advisory members to this committee.

Moved by District 2, seconded by District 3 and carried 10-0 to approve a total budget in the amount of \$2,285.00 for this committee.

### VI. CAREER INFORMATION AND SERVICES:

Moved by District 8, seconded by District 1 and carried 10-0, that the budget for this committee be increased to a total of \$6,000 for expenditures.

Moved by District 6, seconded by District 7 and carried 10-0, to approve the mid-year report of this committee as presented.

### VII. PROFESSIONAL EDUCATION COMMITTEE:

Moved by District 10, seconded by District 4, and carried 9-0-1 with District 1 abstaining, that:

- (a) The probationary status of the undergraduate program (curriculum) at Northeastern University, Boston, Massachusetts, be removed effective February 10, 1985, due to demonstrated compliance with NATA Guidelines.
- (b) To accept the request from Mars Hill College to discontinue their NATA approved undergraduate athletic training education program (curriculum) effective February 10, 1985.

Moved by District 4, seconded by District 1, and carried 10-0, that the February, 1985 edition of the manual, "Guidelines for Development and Implementation of Athletic Training Internship Programs" together with the appropriate changes, be presented to the President and Executive Director before publication.

Moved by District 4, seconded by District 5 and carried 10-0, that the request for \$4,000 to purchase a Xerox 640 Memorywriter be approved.

### VIII. CERTIFICATION COMMITTEE:

Moved by District 1, seconded by District 10, and carried 10-0, to approve the recommended changes to Article XXX, as modified.

Article XXX, Section 1, of the NATA By-Laws is as follows:

ARTICLE XXX  
Membership Provisions and Dues  
Section 1 Membership Classes

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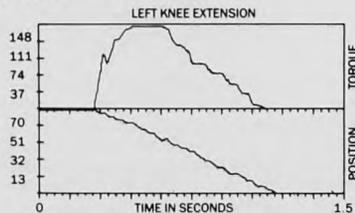
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**REPETITIONS AND MAXIMUM TORQUE.** Isoscan's Repetitions routine

Isoscan's comprehensive analysis includes graphs, summary reports and comparisons



NAME: JOHN STEVENS TEST DATE: 10/16/83  
 WEIGHT: 173 INJURY DATE: 10/1/83  
 HEIGHT: 72 SURGERY DATE:  
 MOVEMENT: LEFT KNEE EXTENSION  
 LEVER ARM: 1.2  
 MAXIMUM TORQUE = 185.43 LBS-FT  
 AVERAGE TORQUE = 117 LBS-FT  
 MAX TORQUE/BODY WT = 1.07  
 POSITION OF MAX TORQUE = 74.98 DEGREES  
 RANGE OF MOTION = 97.5 DEGREES  
 MAXIMUM FORCE = 154.52 LBS  
 AVERAGE FORCE = 97.5 LBS  
 ANGULAR WORK = 237.27 FT-LBS  
 ANGULAR IMPULSE = 92.6 LBS-FT-SEC

collects data for any number of repetitive movements. It is used as a first step in testing. When abnormalities appear, you'll move on to Comprehensive Analysis.

With our Maximum Torque routine, you can investigate your patients' motivation as well as past performance. Real-time feedback and patient incentive are provided.

**NO LOST FILES.** Isoscan stores your files on a 5¼ inch floppy disk. To retrieve information, you just need to know the file number. A Directory is automatically created and updated as you add files through the Comprehensive Analysis and Repetitions routines.

**MONEY SAVER.** As you see on the accompanying graph, the cost of a retrofitted Orthotron—including the cost of a computer—is about half that of a Cybex system. Independent research indicates that with this combination you'll be able to gather data comparable to that from a Cybex.

If you have a Cybex, you can use Isoscan to expand it tremendously as a measurement tool. No other software program offers you more for the money than Isoscan.

Isoscan is designed to run on the Apple IIe, IBM PC and several other leading personal computers. Besides expanding your Orthotron or Cybex, these computers let you add time saving software for word processing, financial management, inventory control and many other functions.

Another money-saving plus: an experienced Cybex or Orthotron user—with no computer knowledge—can learn Isoscan in just a few hours.

**GUARANTEED ACCURACY.**

With Isoscan's System Utilities Functions you can count on guaranteed

accuracy of measurement values. *Speed Setting* allows you to establish degrees per second with the Orthotron for reliable and valid data. *Calibration* means your computer can calculate accurate position and torque values on your Cybex or Orthotron. And the *Diagnostics* function tells you if recalibration is necessary.

**SUPER SUPPORT.** You'll be glad to know, too, that you can count on the specialists at Isotechnologies, the developers of Isoscan, for dependable, on-going support. We'll assist you with installation, any technical difficulties and everyday use. Periodic updates to the Isoscan program will be available to you at no cost.

**PLUS.** Isoscan is not the only Isotechnologies product you should know about.

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- 1.0.0 CERTIFIED Code 1
- 1.1.0 Qualifications for Membership:  
Must be NATA CERTIFIED ATHLETIC TRAINER (ATC, CAT)
- 1.2.0 Dues:  
National: \$75.00 per year plus District Dues
- 1.3.0 CERTIFIED and RETIRED-CERTIFIED members only are entitled to vote on NATA affairs and to hold NATA office.
- 1.4.0 Provisions for maintaining CERTIFIED membership in the National Athletic Trainers' Association, Inc.:
- 1.4.1 A person who is CERTIFIED by the Board of Certification of the NATA, is eligible for CERTIFIED membership as long as he/she meets the Continuing Education requirements and pays the annual membership dues.
- 1.4.2 The NATA CERTIFIED Athletic Trainer who does not maintain the required Continuing Education Units in the designated time-period will have his/her Certification placed on probation by the Board of Certification.
- The CERTIFIED member has the right to appeal this action within thirty (30) days of receipt of this notice.
- If the member fails to correct the deficient requirements within the stated time-period of probation the member, therefore, will be assessed non-member fees for service.
- 1.4.3 A CERTIFIED member who is on probation as a result of his/her failure to correct the deficient Continuing Education Units requirements cannot while on probation:
- Represent the NATA in any capacity.
  - Have hours spent supervising students credited for fulfillment of the Certification Requirements by those standards; (\*)
  - Endorse candidates for NATA Certification.
- (\*) Hours earned by students prior to the CERTIFIED members probation period will be credited toward fulfillment of the NATA Certification Requirements by that student.
- 1.4.4 Continuing Education Units (CEUs) earned in excess of the minimum for a specific three (3) calendar year period cannot be counted for or applied to any subsequent three (3) calendar year period.
- 1.4.5 An NATA CERTIFIED Athletic Trainer member is responsible for sending to the NATA National Office an approved statement of any Continuing Education Units (CEUs) to be entered on his/her record. Such a statement must be sent to the National Office within thirty (30) days after the date of acquiring such units.
- 1.4.6 A CERTIFIED member who fails to pay their annual dues during the prescribed period will have their membership suspended until their dues are paid. A suspended CERTIFIED member will be assessed non-member fees for NATA services.

Moved by District 6, seconded by District 7, and carried 10-0, to accept and approve the committee report for informational purposes.

#### IX. CONTINUING EDUCATION COMMITTEE:

Moved by District 6, seconded by District 8 and carried 10-0, that items one through five of the committee report by Jim Gallaspy, chairman, be approved for informational purposes, as follows:

- The 1982-84 Continuing Education reporting period will end December 31, 1984. Those members deficient in their continuing education requirement will be notified by March 1, 1985 that they have been put on probation.
- Associate members will be notified by December 15, 1984 that they must comply with the Continuing Education Program beginning January 1, 1985.
- Members will be notified when they have accumulated the necessary 6 CEUs for any one reporting period that they have fulfilled their Continuing Education requirement for that reporting period and do not need to submit any further CEUs.
- The Continuing Education office will send to the membership in April of each year the number of

CEUs they have accumulated. This will be in addition to the yearly dues. We feel this will provide better communication with the membership.

- I have discussed with Paul Grace the appeal process for deficient members and we feel the appeal process being written for certification will be sufficient for Continuing Education.

Moved by District 3, seconded by District 6, and carried 9-1, with District 8 in opposition, that the request for the administrative assistant to come to San Antonio in June be denied.

Moved by District 4, seconded by District 1 and carried 10-0, to deny the request that the Board of Directors consider an inactive membership category for those individuals who cannot comply with the requirements of the Association.

Moved by District 4, seconded by District 1 and carried, 8-2-0, with Districts 6 and 3 in opposition, that members will be notified when they have accumulated the necessary 6 CEUs for any one reporting period that they have fulfilled their Continuing Education requirement for that reporting period.

Moved by District 8, seconded by District 10 and carried 10-0, to accept the budget request in the amount of \$3,650 for Continuing Education.

#### X. PROFESSIONAL EDUCATION COMMITTEE:

Moved by District 2, seconded by District 7 and carried 9-0-1, with District 6 abstaining, to approve a total budget in the amount of \$31,150.

Moved by District 4, seconded by District 5 and carried 10-0, to approve the allocation of \$4,000 to the Professional Education Committee for the purchase of a memory typewriter.

#### XI. PUBLIC RELATIONS:

Following a presentation of a proposed public relations program for the Association, it was moved by District 6, seconded by District 8 and carried 10-0, that the President and Executive Director be authorized to execute a public relations agreement at the appropriate time.

#### XII. PROPOSED STANDARDS OF PRACTICE:

Moved by District 1, seconded by District 2 and carried 10-0, that the Board accept the proposed Standards of Practice as submitted by District 1 at the last meeting of the Board.

The Standards of Practice are as follows:

#### STANDARDS FOR ATHLETIC TRAINING SERVICE PROGRAMS

The following are minimal standards. Each one is essential to the practice of athletic training.

It is intended that these standards be used by administrators as well as by athletic training personnel in the development of their service programs and to assess their effectiveness.

##### Standard 1: OBJECTIVES

Basic to the development of any program are its intended purposes. Objectives and applicable policies should be clearly outlined for each activity, such as: athletic treatment, education of personnel, supervision and interdisciplinary relations. The objectives of the service program should implement those of the institution itself.

##### Standard 2: PLANNING

Each objective should be supported by detailed plans for its implementation.

##### Standard 3: EVALUATION

Objective methods of data collection and analysis should be used in relation to each component of the program to determine the need for service, assess its effectiveness and indicate a need for change.

##### Standard 4: TYPES OF SERVICES OFFERED

Athletic training is appropriately a health service offered under the direction of a physician or dentist for the prevention, immediate care, management/disposition and reconditioning of athletic injuries.

##### Standard 5: PERSONNEL

The service program should be directed by an NATA certified athletic trainer who has met the qualifications established by the Board of Certification of the National Athletic Trainers Association, Inc. Education, qualifications, and experience of all other personnel should meet existing standards and should be appropriate to their duties.

##### Standard 6: FACILITIES AND BUDGET

Space, equipment, supplies, and a continuing budget should be provided by the institution and should be adequate in amount, variety and quality to facilitate the implementation of the service program.

##### Standard 7: RECORDS

Objective, permanent records of each aspect of the service program should (1) indicate date, name of physician

or dentist referral; (2) initial evaluation and assessment; (3) treatment or services rendered, with date; (4) dates of subsequent follow up care.

#### Standard 8: REPORTS

Written reports on each aspect of the service program should be made annually.

#### STANDARDS FOR ATHLETIC TRAINERS DIRECT SERVICE

##### Standard 1: DIRECTION

The athletic trainer renders service or treatment under the direction of a physician or dentist.

##### Standard 2: REFERRAL

All referrals should be documented in writing by the athletic trainer and shall become part of the athlete's permanent record.

##### Standard 3: DOCUMENTATION

The athletic trainer shall accept responsibility for recording details of the athlete's health status. Documentation shall include:

- Athlete's name and any other identifying information
- Referral source (doctor, dentist)
- Date, initial assessment results, and data base
- Program plan and estimated length
- Program methods, results and revisions
- Date of discontinuation and summary
- Athletic trainer's signature

##### Standard 4: COMMUNICATION

The athletic trainer shall maintain confidentiality as determined by law and shall accept responsibility for communicating assessment results, program plans, and progress with other persons involved in the athlete's program.

##### Standard 5: INITIAL ASSESSMENT

Prior to program planning, the athletic trainer shall assess the athlete's level of functioning. The athlete's input shall be considered an integral part of the initial assessment.

##### Standard 6: PROGRAM PLANNING

The athletic training program objectives shall include long and short term goals and an appraisal of those which the athlete can realistically be expected to achieve from the program. Assessment measures to determine effectiveness of the program shall be incorporated into the plan.

##### Standard 7: PROGRAM DISCONTINUATION

The athletic trainer alone, with collaboration of the physician or dentist, shall recommend discontinuation of the athletic training service when the athlete has received optimal benefit of the program. The athletic trainer, at the time of discontinuation, shall make a final assessment of the athlete's status.

#### XIII. DIRECTORS LIABILITY INSURANCE:

Moved by District 1, seconded by District 9 and carried 10-0, to continue investigating insurance possibilities in relation to legal liability insurance for the Board of Directors.

#### XIV. ETHICS COMMITTEE:

After considering the discussion of the Ethics Committee and Legal Counsel concerning an Association member acting in a consultant capacity involving an ethics matter concerning another Association member and the laws concerning this matter, it was moved by District 2, seconded by District 8 and carried 10-0, to accept the legal recommendation of the adoption of a hands-off policy regarding the ethical concerns of any member serving as a consultant.

#### XV. GRANTS AND SCHOLARSHIPS:

Following a discussion concerning the difficulty of the Association receiving scholarship grant applications within the time structure provided as to the one year requirement, a motion was made by District 2 to suspend the present requirement for one year, which motion died for the lack of a second, following which, after further brief discussion, it was the consensus that this matter be mentioned by the Board members at their district meetings and that the President would also mention it in his comments in the forthcoming Journal.

#### XVI. HONOR AWARDS:

Moved by District 6, seconded by District 2, and carried 10-0, to send the evaluation worksheet of candidates for the Hall of Fame to the Chairman and request his committee to use this form in the evaluation of candidates.

#### XVII. NATA JOURNAL:

Moved by District 9, seconded by District 6 and carried 10-0, that the request of the Journal Committee concerning a computer terminal for the Journal office NOT be accepted.

# The Probe 100

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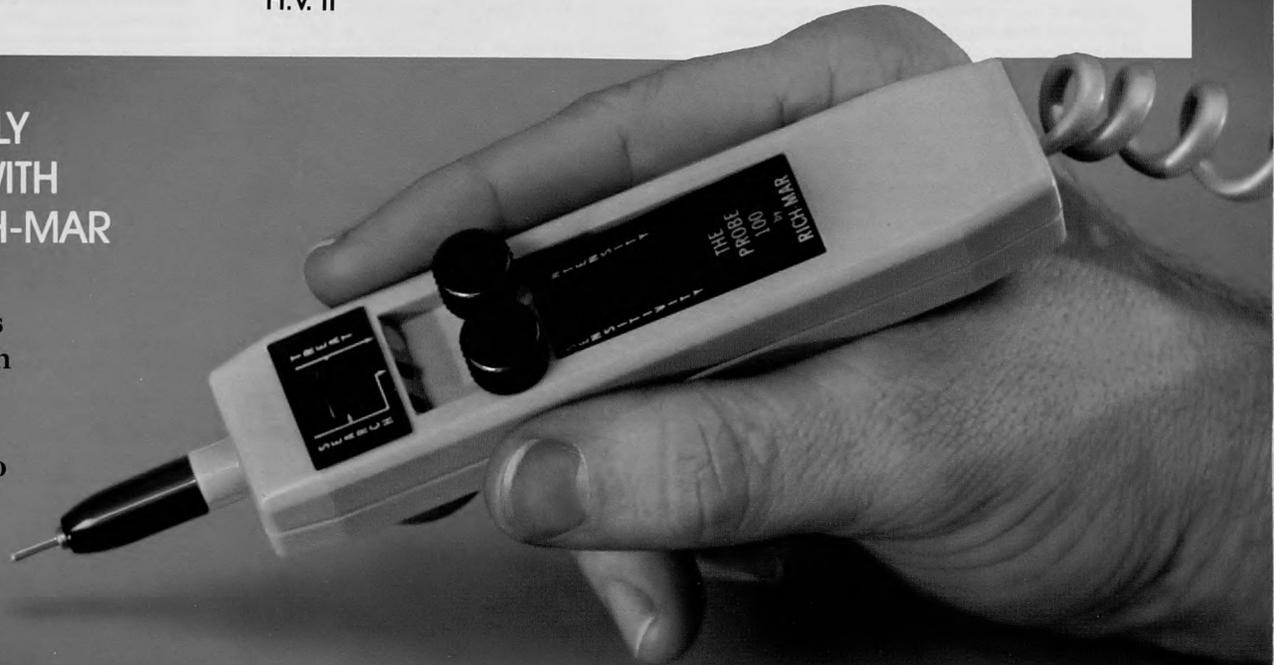
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Moved by District 4, seconded by District 9 and carried 10-0, that the recommendation to compensate employees on a per hour basis to update the Index to the Journal on computer be denied and that this task be performed during normal working hours.

#### **XVIII. LICENSURE:**

Moved by District 2, seconded by District 9 and carried 10-0, that Mr. Crowley be requested to continue the committee's previous charge of rewording the Model Act with special attention to not limiting the scope of employment.

Moved by District 7, seconded by District 8 and carried 10-0, that the report be accepted for informational purposes.

#### **XIX. JAPANESE ATHLETIC TRAINERS ASSOCIATION:**

Mr. Barton called attention to a communication directed to him from the Japanese Athletic Trainers Association regarding some official association with the NATA. Following brief discussion it was the consensus that Mr. Davis reply to them and indicate that the NATA would cooperate with them toward their becoming Affiliate International Members.

#### **XX. ARTICLE XXX (Associate Code 2):**

Following a brief review of the proposed changes as submitted and with some minor modifications, it was moved by District 8, seconded by District 1 and carried 10-0, that the proposed changes, additions and deletions be accepted for printing.

#### **XXI. PLACEMENT:**

Moved by District 6, seconded by District 8 and carried 10-0, that this report be accepted for informational purposes.

#### **XXII. RESEARCH AND INJURY:**

Moved by District 1, seconded by District 8 and carried 10-0, that the Research and Injury Committee report back to the Board in June of 1985 with a budget for a proposed longitudinal study regarding injury rates to high school athletes.

#### **XXIII. BUDGET APPROVALS:**

Moved by District 1, seconded by District 2 and carried 10-0, that \$3,000 be added to the budget concerning the NATA Exhibit Booth for upgrading purposes.

Moved by District 4, seconded by District 9 and carried 10-0, to increase Liaison Expenses by \$3,000.

Moved by District 6, seconded by District 7 and carried 10-0, that the NATA Budget as presented and as amended be accepted.

#### **XXIV. NATIONAL CONVENTION:**

Moved by District 3, seconded by District 5 and carried 10-0, that the report as presented by Mr. Fred Hoover be approved.

#### **XXV. AMERICAN ACADEMY OF PEDIATRICS:**

Moved by District 6, seconded by District 3 and carried 10-0, that the report be accepted as information.

The report is as follows:

TO: Dr. Robert Barton, President  
FROM: Richard F. Malacrea  
RE: NATA liaison with the Committee on Sports Medicine of the American Academy of Pediatrics

#### **MID-YEAR REPORT February 1985**

The Committee on Sports Medicine of the American Academy of Pediatrics met in their newly constructed national headquarters building at Elk Grove, Illinois, on November 13-14, 1984. (agenda attached)

The new AAP staff member assigned to the Committee, Jim HARRISIADIS, reported on the new headquarters building (its rather different architectural style, costs of construction, effectiveness of the layout of the workplace, and the effect of the move on operations and staff) and a recap of the process of formulating an AAP statement.

Dr. David ORENSTEIN, liaison from the Section on Diseases of the Chest, reported that a new Board Certification is going into effect for this newly recognized specialty. He reported that there will be no "grandfathering" and that all candidates will be required to take the examination.

Dr. Arthur PAPPAS again raised the question of concern over the selection of individuals presenting at the national meeting on the topical areas of athletic medicine. The Committee has strongly recommended that these individuals chosen should be on the recommendation of the Committee on Sports Medicine. Dr. Pappas and others gave several examples of the apparent oversight with a final recommendation that the Program Committee be made aware of this situation and make the necessary internal adjustments.

Your liaison representative reported on the progress of state licensure about which, as you know from previous reporting, the Committee is quite interested. The latest actions to report were the legislative actions in the states of New Jersey and Pennsylvania. The concern of

the Board regarding some of the language in the Self Appraisal Checklist was presented and supported by the presentation of communications between President Barton and Dr. Thomas Shaffer. (At the time of those communications Dr. Shaffer was Chairman of the Committee.) The appropriate changes were, indeed, made in the text along with several other editorial changes. Nancy Witty, former staff representative to the Committee, has secured the necessary funding to have the printing of the Checklist done at the print room in the national headquarters offices. The present plan for distribution is to have the local Chapters of the AAP cooperate with the local units of the AAHPERD. It was also resolved that data feedback (return on individual scores) was not a primary objective of the Checklist. The intention of the document is to be truly self-appraisal with the Chapters ready to guide and assist as resource agencies for requests for program improvement and implementation. The proposal to have the Committee take a stronger stand on the use of NATA certified athletic trainers at the secondary level was presented. After significant discussion the Committee ruled that mandates are not in its areas of responsibility, however, it desires to reinforce its recommendations in the *School Health Guide*, the position statement of the Executive Council on state licensure for athletic trainers, and its obvious support through the various references in the *Checklist*. In other liaison activity the Committee dropped liaison with the Canadian Pediatric Society and the American College of Sports Medicine.

A new member of the Committee, Dr. Michael Nelson of Corrales, New Mexico, reported on the program at the secondary schools of Albuquerque, New Mexico. It seems that Dr. Nelson and one of our members, Tow Diehm, approached the school board and offered that if they would create a position for an NATA certified athletic trainer at each of the secondary schools he, Dr. Nelson, would guarantee physician cooperation and coverage. Dr. Nelson stated that the positions were, in fact, created and that over fifty (50) physicians became involved in the project. Based on Garrick's Seattle model, each athletic trainer was given a computer terminal so that not only school and individual athletic injury data could be entered, but District wide as well as coach/injury data could be retrieved. Dr. Nelson stated that the program has become so successful that the school District is in the process of seeking assistants for each of the athletic trainers already employed. He presented examples of the data sheets and the yearly summaries.

It was previously reported that the Committee and the Academy would take a strong stand (as has the AMA) on the issue of boxing as a sport. That, indeed, has occurred and copies of the position statement and resolution are attached.

The Committee ruled that there would be an informal liaison with the President's Council on Physical Fitness. There was significant discussion about the fact that there had been no change in the level of fitness of school age children despite the effort extended. There was also concern over the validity of the test parameters as a measure of physical fitness. The Committee Chairman will maintain this liaison.

A rotation in sports medicine as part of the residency training in pediatrics is still a goal of the Committee. Copies of a recent program in Pediatric Emergency Medicine are attached to accent the ongoing interest on the part of those involved in educational programs. It is also interesting to note that another Chapter of the Academy, New Jersey, has formalized a Committee on Sports Medicine. Dr. Alan Cabasso of the Jersey Shore Medical Center will chair this committee.

The Committee has been requested to proceed with the 2nd edition of *SportsMedicine: Health Care For The Young Athlete*. An editor will be named to coordinate the project. You will recall that there is a short chapter describing the value of an NATA certified athletic trainer associated with the athletic programs.

The current Directive to the Committee was distributed to the members present. (copy attached)

Moved by District 3, seconded by District 1 and carried 10-0, to appropriate \$500 for the attendance of Mr. Malacrea at the next two meetings of the American Academy of Pediatrics.

#### **XXVI. AAHPERD:**

Moved by District 2, seconded by District 1 and carried 10-0, that the sum of \$500 be appropriated for a representative to be appointed by the President to attend the AAHPERD Convention to be held at Anaheim, California.

Moved by District 2, seconded by District 9 and carried 10-0, that the report as submitted be approved.

#### **XXVII. AMERICAN ORTHOPAEDIC SOCIETY FOR SPORTS MEDICINE:**

Moved by District 2, seconded by District 9 and carried 10-0, to approve the figure of \$680.00 as requested for the attendance of a representative at the next meeting of this group to be held at Las Vegas.

#### **XXVIII. AMERICAN PHYSICAL THERAPY**

#### **ASSOCIATION:**

Moved by District 8, seconded by District 1 and carried 10-0, that the report as presented be accepted for informational purposes.

#### **XXIX. JOINT COMMISSION ON COMPETITIVE SAFEGUARDS AND MEDICAL ASPECTS OF SPORTS:**

Moved by District 4, seconded by District 1 and carried 10-0, that the report be accepted for informational purposes. It was also left to Mr. Barton to name a replacement for Mr. Newell to this group.

The report is as follows:

#### **JOINT COMMISSION ON COMPETITIVE SAFEGUARDS AND MEDICAL ASPECTS OF SPORTS**

##### **Members Present:**

John Miller, MD, ACHA, Chairman  
Donald L. Cooper, MD, ACHA  
Al Ortolani, NAIA  
Wally Schwartz, NAIA  
Kermit Smith, NJCAA  
Dick Schindler, NFSHSA  
Glen Snow, NATA  
Pinky Newell, NATA

##### **Associate Members Present:**

W.D. Heintz, MD, ADA  
Tom Shaffer, MD, AAP  
Judson Hair, AOSSM

##### **Guests Present:**

H. Hugh Gardy, New York Football Giants

The meeting was held in the Polk Room, Opryland Hotel, Nashville, Tennessee, June 9-10, 1984.

Chairman John Miller opened the meeting and called to order at 8:30 a.m. with an introduction of members and guests.

The minutes of the previous meeting which was held in Denver, Colorado, were discussed and approved as published.

##### **Reports from Member Organizations**

Dr. Cooper, reporting for ACHA, announced a testing service that started in 1981, whose purpose is to begin a standard which can safely and fairly judge athletic ability scientifically. The idea is to help youngsters in their quest for athletic scholarships. The name and address of the service is as follows:

Collegiate Athletic Testing Service  
Box 298, Haddonfield, New Jersey 08033

He also stated that ACHA has reviewed the status of the Joint Commission and wishes to support to continued involvement.

Wally Schwartz, reporting for NAIA, announced that NAIA has doubled the number of certified athletic trainers in their association over the past four years. The NAIA is now involved in drug testing champion events in wrestling, basketball, and track and field. They will have a 1½ day seminar for the education of athletic directors and college presidents. He concluded his report by announcing that NAIA will now require certified athletic trainers at all championship events.

Dick Schindler, reporting for the NFSHSA, announced that NFSHSA is working with Hazelton, Minnesota, on a drug rehabilitation program. Casey Clark will have a drug testing program in Virginia over July 4th. Following are the impact of various rule changes:

Baseball: The non-metal cleats being accepted but are controversial. A 1983 ruling: all warm-up catchers fully protected. One fatality: player hit by baseball pitching machine. Cast splints will be permitted. On-deck hitter must wear batting helmet.

Basketball: Rules for player control - reduced flagrant fouls. Mouthguards; no overwhelming evidence of injury. Padded bras; no reason to mandate. Backboards - more padding.

Football: Rules concerning chains - working well. Hip Pads; must also have tail bone protection. Shoes; back to where they were, 5/32nd on platform. Serious knee injuries in the clipping zone. New Rule: 6 x 8 rectangle, limited to offensive linemen; try to cut down on time frame, blocking below waist.

Ice Hockey: Outlawed plastic face masks 1984-85.

Dick then discussed briefly the decreasing enrollments. High school football enrollments are now at 935 to 940 thousand. He stated National Federation is studying a cup for softball.

Volleyball: Padding one inch soft.

Wrestling: More than one meet - one hour between. Match stopped - all bleeding.

He announced a drop in fatalities with increase in catastrophic injury - many things have not as yet been studied.

Pinky Newell, reporting for NATA, announced the 1985 annual meeting will be held June 8 to 11, 1985, in San Antonio, Texas. There are now over twenty-one states with some form of state regulation with many more where such regulation may not be needed. The NATA has mandated that by 1986, all curriculum programs will be a major in athletic training for Association approval. There are now more than 70 national curriculum programs of either undergraduate or post-graduate.

Kermit Smith, NJCAA, presented a comprehensive written report (See Attachment 1), then spoke briefly on the progress in the catastrophic insurance program. He mentioned that there was one fatality in a pick-up touch football game. He also stated that the catastrophic insurance program can now be written for an individual sport.

#### Reports of the Associate Member Organizations

Tom Shaffer reported for the American Academy of Pediatrics. He spoke of a current project, A Self Appraisal Checklist - Health Supervision in Scholastic Athletic Programs. They now have a pilot study with 300 athletic directors who scored their own schools. It has been helpful in determining who is below par and helpful for education. The AAP is revising their policy on trampolines. There was one catastrophe in gymnastics last year; injuries have dropped off remarkably. Dr. Shaffer then spoke of the endorsement of guidelines presented by the YMCA and their swimming programs and water intoxication. He then discussed the urgent need for work with Down Syndrome and the Special Olympics (See Attachment 2). Much of the stress is on head and neck. There should be stress x-rays for qualifications to check for ligament laxity. He stated there had been no injuries in fifteen years.

Dr. Heintz reported for the American Dental Association. He stated that there has been two forums on Sports Medicine by the Academy of Sports Dentistry - one in San Antonio and the other in Michigan. He then spoke of the latest summary report of interocclusal splints (See Attachment 3). It was reported little scientific evidence exists to support claims of increased strength related to use of the splints. He stated the World Boxing Council has spoken out against the use of mouthpieces. He offered that there were two different types of mouthpieces on the market. A discussion of Pedadonics and ice hockey followed. Dr. Heintz stated that the Costa Rican championship team had 18 mouth injuries in three years and of the 44 injuries in the recent Olympics, 36 were to the mouth.

Dr. Cooper, reporting for the American Medical Association, reported the AMA is negative on boxing and has issued a position statement. The AMA is maintaining efforts for contact meetings.

It was announced that Dustin Cole has taken Don Boshore's place with the Athletic Institute.

#### Reports from Non-Member Associations

The NOCSAE reports there is still a lot of work to be done.

President's Council on Physical Fitness and Sports: G. Carson Conrad has left the Council and is now heading the U.S. Fitness Academy to be in Indianapolis or California. June 8-9 Youth and Fitness Conference in Washington, DC: school systems are reducing time for fitness and there has been a decrease in the fitness of youths in grade school and junior high. Thirty-three states now have Governor's Councils.

The following items were then discussed:

1. Drug Education, Testing, Etc. - Kerr has stated publicly that anabolic steroids do have some benefit to athletes and should be prescribed and controlled, with better dose monitoring. Side effects produce arteriosclerosis and behavioral changes. Scientific evidence suggests a properly combined program with a good weight lifting program. Physiological, moral, and ethical issues need to be discussed.
2. Participation in Sports by Individuals With Health Problems and Disabilities: There were discussions of chronic health problems: diabetes, musculoskeletal, mental retardation, cystic fibrosis - in both the adolescent and the young adult. It was suggested that there should be constant clinical evaluations and counseling to bring down the barriers and encourage attitude changes. Epilepsy seems better controlled. Diabetes patients need exercise and to lose weight. Negative aspects - may be sensitive to insulin shock. Musculoskeletal - Osgood Schlatters, tendinitis. Spondylolysis, stress fractures - if back doesn't hurt, play. Legg-Perthes disease - gentle exercise seems to help. No change on paired organs. It was felt there is a need for public responsibility in medical qualification. Asthma can be helped with bronchial dilators. It was further suggested that specific sports be named that an athlete should not participate in, then let the

doctor make up his own mind about the others (See Attachment 4).

3. Catastrophic Injury Insurance Program: NFSHSA effort has been made, is in place in all states, and is considered an excellent concept.
4. Rules Changes for Safety: penalty box in football for flagrant fouls similar to that in hockey was discussed.
5. Sport Specific Injuries:
  - a. Head and Neck Injuries in Polevaulting - none reported this year. Coaching techniques remain the worst problem.
  - b. Head Injuries in Baseball - one depressed skull fracture reported; helmet came off and opponent's knee hit head. Helmets require NOCSAE approval.
  - c. Soccer Ball Eye Injuries - 24 contusions reported, fewer serious injuries.
6. Knee Brace in Prevention of Football Injuries: Experiences anecdotal but positive. Indiana University reported one second degree injury. Iowa continues with modified NAIRS system of reporting - had shakedown last year - has been approved for another year. It was suggested that McDavid knee brace may be the best. It was also suggested that the knee brace be used on offensive and defensive linemen and linebackers.
7. Spring football was briefly discussed.
8. Cheerleaders: there has been no valid data collected on the numbers of injury - a reduction of gymnastic injuries was reported.

#### The Future of the Joint Commission

In the discussion of this topic, it was noted that there are more than 20 million children who are not under any regulatory body. The Joint Commission represents the largest group of organizations speaking for sports medicine, and it is a corp group. Most were vitally interested in a return to the original concept of doing everything to help; e.g., special olympics. It was hoped that the Joint Commission would become more assertive and aggressive in doing things. Press coverage was discussed and it was decided that a press conference should be set up after the Joint Commission meeting each year. It was also decided to identify a representative to express problems of the women athletic trainers and women's athletics, to establish a closer relationship with the Athletic Institute.

#### Election of Officers

William Newell was re-elected Secretary. John Miller was re-elected Chairman.

Chairman Miller announced that all business of this meeting was concluded with the concern that the Joint Commission should continue to address the problems as presented.

The next meeting is scheduled June 9-10, 1985, at San Antonio, Texas.

The meeting was adjourned by a motion duly made and carried with a unanimous vote, at approximately 10:30 a.m.

Submitted by William E. Newell, Secretary

#### AMERICAN ACADEMY OF PEDIATRICS COMMITTEE ON SPORTS MEDICINE

##### Atlantoaxial Instability in Down Syndrome\*

Some issues related to participation in certain sports by persons with Down syndrome require clarification.

Since 1965 there have been occasional reports about a condition described at various times as instability, subluxation, or dislocation of the articulation of the first and second cervical vertebrae (atlantoaxial joint) among persons with Down syndrome (1-15). This condition has also been found in patients with rheumatoid arthritis (16,17), abnormalities of the odontoid process of the second cervical vertebra (4,5,12,13,15), and various forms of dwarfism (18). Atlantoaxial (C-1, C-2) instability has not attracted general attention because clinical manifestations are rare and the condition is limited to a small portion of the population. The incidence of atlantoaxial instability among persons with Down syndrome has been reported by various observers to be 10% to 20% (2,9,15). When atlantoaxial instability results in subluxation or dislocation of C-1 and C-2, the spinal cord also may be injured. This is a rare but serious complication.

In March 1983, the Special Olympics, Inc., sponsors of a nationwide competitive athletic program for developmentally disabled persons, without prior announcement mandated for participants with Down syndrome special precautions to prevent serious neurologic consequences from stress on the head and neck in sports competition (19). Although thousands of persons with Down syndrome have taken part in sports events during the 15-year history of the Special Olympics without a known occurrence of neurologic complications due to participation, the new directive requires all persons with Down syndrome who wish to participate in certain sports that might involve

stress on the head and neck\*\* to have a medical examination, lateral-view roentgenograms of the upper cervical region in full flexion and extension, and certification by a physician that the examination did not reveal atlantoaxial instability or neurologic disorder. Failure either to comply or to have medical certification would result in exclusion from the specified sports.\*\*

Parents, physicians, and sports authorities were understandably surprised by the immediacy of the edict. Many parents were resentful because of the short time for screening, the cost of the examinations, and discovery that most physicians did not know about the directive or were not aware of the atlantoaxial syndrome. Some radiologists were not familiar with exact procedures for screening. In general, physicians were perplexed by the sudden concern about a condition that had never been a problem among the largest group of disabled participants during 15 seasons of the Special Olympics.

There are no national statistics to confirm the extent of screening in 1983, but valiant efforts were made to comply with the directive during the 6-week interval allowed for the procedures. It has been stated that there were no reported casualties due to atlantoaxial instability in the Special Olympics last year. However, some participants were barred from the specified events.

Atlantoaxial (C-1, C-2) instability is a manifestation of the generalized poor muscle tone and joint laxity commonly found in persons with Down syndrome. The instability is due to 1) laxity of the transverse ligament that holds the odontoid process of the axis (C-2) in place against the inner aspect of the anterior arch of the atlas (C-1), maintaining integrity of the C-1, C-2 articulation or 2) abnormalities of the odontoid, such as hypoplasia, malformation, or complete absence (4,5,9,13,15). These conditions allow some leeway between the odontoid and the atlas, especially during flexion and extension of the neck. This results in a "loose joint." In extreme cases, the first cervical vertebra slips forward and the spinal cord is vulnerable to compression by the odontoid process of C-2 anteriorly or by the arch of C-1 posteriorly.

Measurement of the distance between the odontoid process and the anterior arch of the atlas on lateral roentgenograms in the neutral, flexion, and extension positions is the only way to detect atlantoaxial instability (9,14,20).

Although simple laxity and instability seldom lead to subluxation or dislocation, it has become apparent, as physicians learn more about atlantoaxial instability, that the latent condition must be viewed as a factor predisposing to neurologic complications. Detection of an abnormal space between the odontoid and the anterior arch of the atlas is a signal for precautionary measures to avoid hyperflexion or hyperextension of the neck and extreme rotation of the head.

The neurologic manifestations of spinal compression from the above causes include fatigue in walking, gait disturbance, progressive clumsiness and incoordination, spasticity, hyperreflexia, clonus, toe-extensor reflex, and other upper motor neuron and posterior column signs and symptoms from compression of the spinal cord. Onset of neck pain, head tilt, and torticollis in Down syndrome are indicative of malposition of the odontoid. Development and, particularly, progression of these neurologic signs or symptoms in a person with Down syndrome suggest atlantoaxial subluxation. Strenuous activity should be curtailed and diagnosis and management undertaken promptly.

It is very likely that many schools, recreation, and rehabilitation programs, and camps in which developmentally disabled persons are enrolled will follow the example of the Special Olympics in requiring careful screening of all persons with Down syndrome before participation in activities that could result in flexion and hyperextension is permitted. Undoubtedly, pediatricians, other primary care physicians, and radiologists will be called up to screen and authorize participation.

#### Recommendations

The Committee on Sports Medicine, after consultation with the Sections on Neurology, Orthopaedics, and Radiology, recommends the following guidelines:

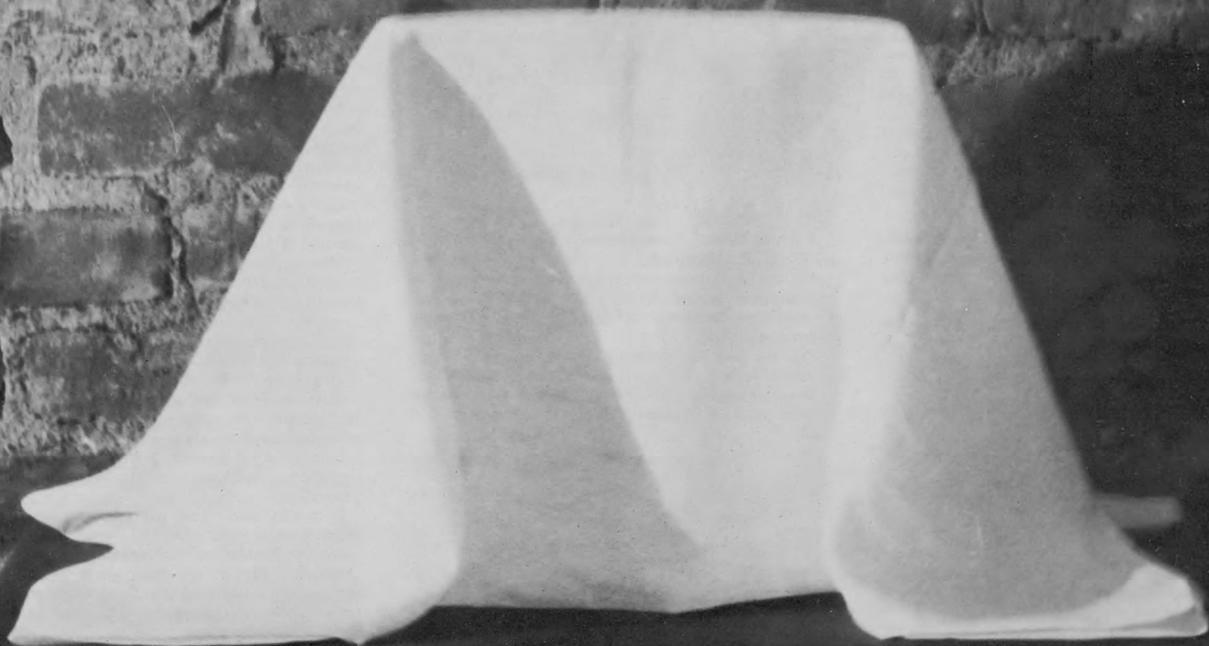
1. All children with Down syndrome who wish to participate in sports that involve possible trauma to the head and neck should have lateral-view roentgenograms of the cervical region in neutral, flexion, and extension positions within the patient's tolerance before beginning training or competition. This recommendation applies to all participants in the high-risk sports who have not previously had normal findings on cervical roentgenograms.

Some physicians may prefer to screen all patients with Down syndrome routinely at 5 to 6 years of age to rule out atlantoaxial instability.

2. When the distance between the odontoid process of the axis and the anterior arch of the atlas exceeds 4.5 mm or the odontoid is abnormal, there should be restrictions on sports that involve trauma to the head and neck, and the patient should be followed up at regular intervals.

3. At the present time, repeated roentgenograms are not indicated for those who have had previous normal findings. Indications for repeated roentgenograms will be defined by research.

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4. Persons with atlantoaxial subluxation or dislocation and neurologic signs or symptoms should be restricted in all strenuous activities, and operative stabilization of the cervical spine should be considered (21-23).

5. Persons with Down syndrome who have no evidence of atlantoaxial instability may participate in all sports. Follow-up is not required unless musculoskeletal or neurologic signs or symptoms develop.

\* This statement has been approved by the Council on Child and Adolescent Health.

\*\* Gymnastics, diving, pentathlon, butterfly stroke in swimming, diving start in swimming, high jump, soccer, and warm-up exercises that place undue stress on the head and neck muscles.

Committee on Sports Medicine:

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Paul G. Dymont, MD  
Eugene F. Luckstead, MD  
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Liaison representatives:

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Frederick W. Baker, MD, Canadian Pediatric Society  
Richard Malacrea, National Athletic Trainers Association

Consultants:

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Bruce R. Parker, MD, Chairman, Section on Radiology  
Albert C. Fremont, MD, Chairman, Committee on Children with Disabilities

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#### American Academy of Pediatrics

Committee on Children with Disabilities  
Committee on Sports Medicine

The Asthmatic Child's Participation in Sports and Physical Education\*

Asthma is a chronic pulmonary disorder, frequently allergic in nature, and characterized by paroxysms of dyspnea, wheezing, tightness in the chest, and bronchospasm. Asthmatic attacks may be minor and short in duration with little discomfort, or very severe and of long duration, producing the characteristic picture of intractability. During symptomatic periods, it is usually possible to demonstrate change in certain aspects of pulmonary function, notably expiratory flow rate and forced expiratory volume. With mild symptoms or between the episodes of severe asthma, the individual may be at little or no disadvantage in most activities. Continuous exercise for 5-8 minutes in cold air often causes dyspnea, wheezing and bronchospasm (exercise-induced asthma) in an asymptomatic individual who may or may not have a history of having had asthma or hay fever. When symptoms of pulmonary distress become severe or prolonged, they may lead to interruption of the child's daily routine, including school attendance. Occasionally, such children may become home or hospital bound for periods of time.

Between the two extremes of no symptoms and severe asthma, there is a spectrum of respiratory or pulmonary disability—the nature and severity of which require that each child receive individual consideration and evaluation in the matter of his daily activity. Control of asthma in children has significantly improved during the past decade. However, asthma may contribute to inefficient schoolwork because of associated chronic fatigue, irritability, decreased attention span, and emotional factors.

Physical activities are useful to asthmatic children. The majority of asthmatic children can participate in physical activities at school and in sports with minimal difficulty, provided the asthma is under satisfactory control. All sports and physical education should be encouraged but should be evaluated on an individual basis for each asthmatic child, depending on tolerance for duration and intensity of effort. Fatigue and emotional upheaval in competitive athletic contests appear to be predisposing factors in precipitating asthmatic attacks in some instances. This may depend to some extent on the duration and severity of the disease. Exercise-induced asthma can be identified by history of dyspnea and bronchospasm following continuous exercise in cold air, previous asthma or hay fever or by response to simple pulmonary function tests following exercise.\*\* Appropriate prophylactic treatment by beta-adrenergic agents administered by aerosol or orally prior to exercise will usually permit full participation in strenuous exertion. As a general rule, every effort should be made to minimize restrictions and to invoke them only when the condition of the child makes it necessary.

Periodic review of the health status of the asthmatic child should be made. Written records of annual and other periodic health evaluations by the pediatrician managing the asthma should be on file in the office of the school nurse or physician and, for athletes, with the team physician or athletic trainer. Physicians who assume the responsibility for the medical care of asthmatic children can be of greater usefulness to their patients if they become familiar with the character of the physical education and athletic programs in the schools.

In children with asthma, and many other chronic conditions, it is important that the patient and his family recognize early during the course of the disease that certain adjustments may be necessary in the daily routine. However, one must attain a balance between the needs of the child to participate in activities with as little restriction and distress as possible and the necessary limitations

to living a full life.

The Committees therefore recommend that any decision to modify a school's physical education or athletic program for a child with asthma must be the joint responsibility of physician, child, parent, and school principal and/or advisor. Recommendations should be individualized. Efforts should be made to improve the child's self-worth and avoid feelings of being different from other children.

\* This statement has been approved by the Council on Child and Adolescent Health.

\*\* Measurement of peak expiratory flow rate by flow meter or forced expiratory volume by spirometer.

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Richard Malacrea, National Athletic Trainers Association

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TO: Representatives of Member Organizations, Joint Commission on Competitive Safeguards and Medical Aspects of Sports

FROM: John M. Miller, MD

DATE: September 10, 1984

There are a number of items I would like to call to your attention:

(1) I'm enclosing a copy of the last letter I received from Tom Miller concerning the 1985 Sports Medicine Congress. While what little reaction I've had from you all has been lukewarm, it seems to me we have nothing to lose and perhaps something to gain by becoming an endorsing organization. I'd like to give Tom a positive response, so let me know soon if you disagree.

(2) Also enclosed for your information are copies of correspondence between me and the NCAA.

(3) I got a second inquiry from Karin Bonicoro of the University Interscholastic League concerning their questionnaire about coeducational football. Since I've only heard from one of you on this, I wrote her back that we aren't in a position to respond.

(4) I note in the Summer 1984 issue of *Athletic Training* that fellow member Al Ortolani was the first athletic trainer ever inducted into the NAIA Hall of Fame. I don't recall that being announced at our June meeting, or did I miss something? The article says: "The highest NAIA tribute was conferred last March and recognizes athletic achievement, longtime service, and the highest ideals of intercollegiate athletics." I know we all couldn't agree more. Congratulations Al!!

(5) In case you missed them, I thought I'd enclose a copy

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of the articles in the NCAA news on drug testing and on injury surveillance.

(6) I also noted in the NCAA News that a former cheerleader at Syracuse has sued that institution for \$1 million, claiming that the stunt, a human pyramid, in which he sustained head injuries was never practiced before it was tried the night of a January 17, 1982 basketball game with Georgetown University.

(7) I had a telephone call from a gentleman at Audio-States offering to tape our meetings for free, with the expectation of selling copies to others. I told him I didn't feel our situation lent itself to that sort of thing, but if you disagree, let me know.

June 19, 1984

Mr. Eric Zemper  
National Collegiate Athletic Association  
P.O. Box 1906  
Shawnee Mission, Kansas 66222

Dear Eric:

The Joint Commission on Competitive Safeguards and Medical Aspects of Sports recently had an excellent meeting in conjunction with the annual meeting of the National Athletic Trainers Association. The membership continues to feel that the Joint Commission should be active, particularly with an emphasis on improving communication among those associations and organizations involved with Sports Medicine in educational institutions. Clearly, the absence of the NCAA at the Joint Commission meetings makes this more difficult, and while we all would like to see the NCAA return, if this is not possible, I wondered if it would be possible for me, as Chairman of the Joint Commission, to sit in as an observer on the meetings of the NCAA's Committee on Competitive Safeguards and Medical Aspects of Sports.

Sincerely,

John M. Miller, MD  
Chairman  
Joint Commission on Competitive Safeguards  
and Medical Aspects of Sports

August 1, 1984

Dr. John Miller  
Department of Athletics - Assembly Hall  
Indiana University  
Bloomington, Indiana 47405

Dear John:

Eric Zemper has given me a copy of your recent letter concerning the Joint Commission on Competitive Safeguards and Medical Aspects of Sports. The NCAA Committee on Medical Aspects of Sports discussed your proposal during their summer meeting in July 1984. The committee voted unanimously to keep the status quo and not resume membership in the Joint Commission.

It is an established policy of the NCAA Committee on Competitive Safeguards and Medical Aspects of Sports to not have non-members participate or observe during our meetings. If an outside group or individual wishes to make a formal presentation to the committee, the proposal must first be voted on by the full committee. Due to this policy it would not be possible for you to sit in as an observer during our meetings.

Thank you for your interest in our committee and best of luck as Chairman of the Joint Commission.

Sincerely,

Frederick O. Mueller  
Chair  
NCAA Committee on Medical Aspects of Sports

cc: Eric Zemper  
NCAA Committee on Medical Aspects of Sports

### XXX. NATIONAL ASSOCIATION FOR GIRLS AND WOMEN IN SPORTS:

Moved by District 6, seconded by District 7 and carried 10-0, that this report be accepted for informational purposes.

### XXXI. NATIONAL ASSOCIATION OF INTERCOLLEGIATE ATHLETICS:

Moved by District 10, seconded by District 6, and carried 10-0, that the report be accepted for informational purposes.

The report is as follows:

TO: Otho Davis, NATA Executive Director  
FROM: A.F. Ortolani, NAIA Liaison Officer  
DATE: October 29, 1984  
SUBJECT: NAIA Trainers Corner

1. The NAIA will now have a certified trainer on duty for all National events. There are times when NAIA schools cannot afford an NATA certified trainer on their staff, so we of NAIA are loaning them one from another school, so that an NATA certified trainer can assist the student trainer from whatever school we're

talking about which is participating without the services of a qualified ATC. NAIA isn't certifying athletic trainers, but is supplying schools without trainers with someone (NATA-ATC) who could help bolster the medical services that a young athlete might need during competition.

2. NAIA will not give out free passes to a student trainer who wants admission to an NAIA national event. You must be NATA certified or you buy your own ticket!

### XXXII. NCAA RULES COMMITTEE:

Moved by District 6, seconded by District 8 and carried 10-0, that the report be accepted for informational purposes.

The report is as follows:

November 16, 1984

Mr. Otho Davis  
Executive Director, NATA  
Philadelphia Eagles  
Veterans Stadium  
Philadelphia, PA 19148

Dear Otho:

Enclosed is the NCAA Rule on cast padding. The 1985 NCAA Rules Meeting will be in Point Clear, Alabama, January 20 to January 23, 1985. The Injury and Equipment Committee will meet January 20, 1985. I will send a report for the June Meeting.

#### Rule 1-4-5-B-C. Casts and Protective Braces

Hand and arm protectors (casts or splints) are permitted only to protect a fracture or dislocation. Casts and splints must be covered with closed-cell, slow-recovery foam padding no less than 1/2" thick or an alternate material of the same minimum thickness and similar physical properties.

Therapeutic or preventive knee braces are legal if covered from direct external exposure. Any hard or unyielding substance must be covered on both sides and all of its edges overlapped with closed-cell slow-recovery foam padding no less than 1/2" thick or an alternate material of the same minimum thickness having similar physical properties.

Sincerely,

Warren Morris  
Representative to NCAA Football Rules Committee

MEMO TO: OTHO DAVIS  
Executive Director, NATA

FROM: WARREN MORRIS  
Representative to NCAA Football Rules  
Committee

SUBJECT: Justification Report

The NCAA Football Rules Committee is a group of dedicated hard working people that sincerely want the best rules for the game of football.

The principles that govern all rule changes are:

1. It must be safe for all playing the game.
2. It must be applicable to all institutions.
3. It must be a coachable rule.
4. It must be administrable by officials.
5. It must maintain the balance between offense and defense.
6. It must be interesting for spectators.

The trainer is invited by the chairman of the committee to report to the committee on anything that the NATA and its members have to report for the past year, concerning injuries or equipment.

There is one doctor from the AMA Medical Aspects also invited to the committee. The doctor and trainer are the conscience of the committee from time to time for safety reasons. The trainer is also on the equipment and injury subcommittee which meets prior to the committee meeting and makes a report to the rules committee concerning any equipment or injuries that should be covered by the rules.

The trainer has been well received by the committee and with accurate data, the NATA can continue to help make rules like: No downfield blocking below the waist on kicks, no crack back blocks, 1/2" cleats, mandatory mouthpiece, NOCSAE approved helmets for head safety, etc., to report accurately to the NCAA Football Rules Committee and the NATA Board.

I believe that the NATA should continue to have an NCAA Football Rules Representative, and I believe that with close communication with the NATA Board, the NOCSAE Representative, the Injury and Research Committee of NATA, and the NAIRS Report, along with the doctor from AMA Medical Aspects of Sports, that progress will be continued for the NCAA Football Rules and National Athletic Trainers Association.

Mr. Biggs, in behalf of District 2, presented for consideration a motion that the NATA formally recommend to the NCAA that no consideration be given to the passage of

a rule that would make lateral knee braces mandatory equipment until three recommended procedures had been completed and reported upon and that all monies for these projects be made available from funds not associated with any individual, corporation, or organization associated with the design, manufacturing, or marketing of these devices. This motion was seconded by District 4.

Following brief comments pro and con concerning this issue, the motion was then voted upon with the vote indicating Districts 2, 4, 10, 5, 7 and 8 voting in the affirmative and Districts 3, 8 and 9 voting in opposition.

### XXXIII. NATIONAL FEDERATION OF STATE HIGH SCHOOL ASSOCIATIONS:

Moved by District 6, seconded by District 9 and carried 10-0, that this report be accepted for informational purposes.

### XXXIV. NATIONAL ATHLETIC HEAD AND NECK INJURY REGISTRY:

Moved by District 2, seconded by District 3 and carried 10-0, that this report be approved for informational purposes.

The report is as follows:

October 25, 1984

Mr. Otho Davis  
Executive Director  
National Athletic Trainers Association  
Philadelphia Eagles  
Veterans Stadium  
Philadelphia, PA 19148

RE: Liaison Report - National Athletic Head and Neck Injury Registry

Dear Otho:

The National Athletic Head and Neck Injury Registry completed its thirteenth survey year at the conclusion of the 1983-1984 football season. The support from the members of the NATA is essential and membership is to be congratulated on their efforts to help the Registry.

The Registry is currently compiling a thirteen year report for publication. We hope to share this material with the members at our upcoming meeting in San Antonio. I will speak with Tim Kerin regarding this possibility.

The continued support of the NATA membership is essential to the maintenance of the Registry. We look forward to this continued support.

Sincerely yours,

Joseph J. Vegso, ATC

### XXXV. NOCSAE:

Moved by District 4, seconded by District 9 and carried 10-0, that this report be accepted for informational purposes.

Moved by District 4, seconded by District 1 and carried 10-0, that \$500 be appropriated for the attendance of Mr. Bob White at the forthcoming meeting of this group.

### XXXVI. NATIONAL STRENGTH AND CONDITIONING ASSOCIATION:

Moved by District 6, seconded by District 2 and carried 10-0, that the report be accepted for informational purposes.

The report is as follows:

July 11, 1984

Mr. Otho Davis  
Philadelphia Eagles  
Veterans Stadium  
Philadelphia, PA 19148

Dear Otho:

The National Strength and Conditioning Association held their 1984 Convention on June 26-28 at the Pittsburgh, PA Hilton, and had some excellent clinical presentations. One of the best was given by Dr. Don Chu, Past Director of NATA District 8.

At the convention I spoke at length with both Ken Kontar and Dr. Tom Baechle, who are the Executive Director and President of the NSCA, respectively. I presented them with a number of concerns and areas in which the NATA is interested. They were both very positive with respect to supporting state licensure for athletic trainers and in promoting the profession of athletic training. I have attached a few excerpts from the latest NSCA Journal which I think demonstrate that Association's positive approach toward the NATA. The executive director of the NSCA is going to direct each state director to contact the NATA state representative to offer support and aid in licensure efforts.

After the convention I attended the NSCA Certification Committee meeting to finalize the written portion of the forthcoming certification exam. Karim Hayez is working in the same capacity for PES with the NSCA as he does with the NATA. As a member of the NSCA Certification Committee, I think any of the NATA members who take the exam in its inaugural offering at the 1985 NSCA National Convention will find the material to be almost

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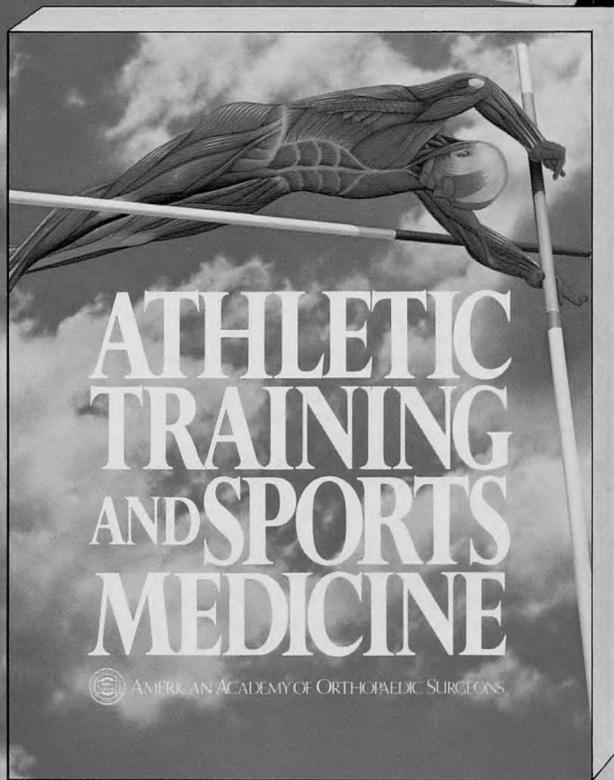
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exclusively devoid of items that might appear on the NATA certification exam, both written and practical. The only areas pertaining to athletic injuries on the exam are in the areas of injury prevention through conditioning, and that only amounts to a few questions out of over 100. I will be in contact with Paul Grace, at the direction of Otho Davis, to see if there are any areas in which the NATA might assist the NSCA in the certification of strength and conditioning coaches.

I am very pleased with the initial efforts that we have had in establishing a liaison between the two organizations. It is my feeling that these two organizations will be most instrumental in the athlete's future well-being.

I wish I had been able to meet with all of you in Nashville, but will, hopefully, be able to do so in the not too distant future.

Yours sincerely,

Dan Wathen, ATC  
NATA/NSCA Liaison

#### XXXVII. NCHCA:

Moved by District 4, seconded by District 2 and carried 10-0, that the report be accepted for informational purposes.

#### XXXVIII. REPORT OF PRESIDENT:

Mr. Barton indicated that he had no specific report to make but did call attention to the qualifications required of any candidates subsequently deciding to run for this office.

#### XXXIX. REPORT OF VICE PRESIDENT:

Mr. Baynes indicated that he had no specific report to make at this time.

#### XL. EXECUTIVE DIRECTOR:

Mr. Barton briefly commented on the comments received from his travels concerning a job description for any individual serving as Executive Director of the NATA. It was further indicated that the Ad Hoc Committee previously appointed to look into this had not actually been functioning concerning this matter, the committee members believing that the establishment of a public relations program for the Association being of paramount importance at this juncture. Following indication and general consensus that the establishment of a job descrip-

tion was of paramount importance before the screening of individuals for this position, it was moved by District 4, seconded by District 8 and carried 10-0, that the Ad Hoc Committee present to the Board at its June meeting a proposed job description concerning this matter for its consideration.

#### XLI. SCHERING SYMPOSIUM:

Mr. Davis briefly commented that the subject of "vision" had been selected for the forthcoming symposium.

#### XLII. "WHO SPEAKS FOR SPORTS MEDICINE?":

Moved by District 6, seconded by District 7 and carried 10-0, that this report be accepted for informational purposes.

#### XLIII. 1985 SPORTS MEDICINE CONGRESS AND EXHIBITION:

Moved by District 6, seconded by District 7 and carried 10-0, that this report be accepted for informational purposes.

#### XLIV. WORKSHOPS:

Attention was directed to difficulties encountered concerning various scheduled workshops and after it being indicated that this would perhaps require more time for in depth study and the making of other decisions by the Board, it was moved by District 4, seconded by District 3 and carried 10-0, that any further discussion concerning this issue be tabled until the June meeting of the Board.

#### XLV. CREATION OF A PUBLIC SPEAKERS' BUREAU:

Discussion indicating that this issue was closely allied to public relations, by general consent further discussion of this issue was postponed until the presentation of a public relations package and its ultimate tie-in therewith.

#### XLVI. MICROFICHE:

Moved by District 6, seconded by District 5 and carried 10-0, to approve the use of microfiche for membership records.

#### XLVII. NATIONAL ACADEMY OF SPORTS VISION:

Moved by District 4, seconded by District 10 and carried 10-0, that any discussion concerning liaison being estab-

lished with this organization be tabled until the June meeting of the Board.

#### XLVIII. SPORTS MEDICINE CLINIC TRAINERS AND THERAPISTS:

Moved by District 10, seconded by District 1 and carried 10-0, that the report concerning the activities of this group be accepted as informational.

#### XLIX. AMERICAN MEDICAL ASSOCIATION:

Moved by District 10, seconded by District 9 and carried 10-0, that this report be accepted for informational purposes.

#### L. DISTRICT CONCERNS:

Moved by District 6, seconded by District 4 and carried 10-0, to table until the June meeting of the Board concerning the issue of athletic trainer involvement with disabled athletes.

Moved by District 1, seconded by District 9 and carried 10-0 that the Licensure Committee be asked to investigate the background and present activities of the National Conference of State Legislatures toward the intention of the NATA sending representation to their future meetings.

Moved by District 2 that the Board of Directors of the NATA, Inc. commission an ad hoc committee to study the present apportionment of representation by districts and, in view of present demographic data, file a report suggesting a fairer method of representation. The motion was seconded by District 8. A hand vote then indicated District 2 voting in the affirmative, Districts 1, 3, 5, 6, 7, 8, 9 and 10 voting in the negative and District 4 abstaining, with the motion then being declared as lost. District 2 then presented the same motion for consideration but with the deletion of the words "suggesting a fairer method of representation" from the previous action. This motion was then voted on with Districts 1, 2, 4, 5 and 8 voting in the affirmative and Districts 3, 6, 7, 9, and 10 voting in the negative. President Barton not desiring to cast a deciding vote in either direction, the motion was then left to stand as recorded.

#### LI. ADJOURNMENT:

There being no further items of business to be considered, the meeting was adjourned sine die at eleven-thirty o'clock, a.m., on Monday, February 11, 1985.



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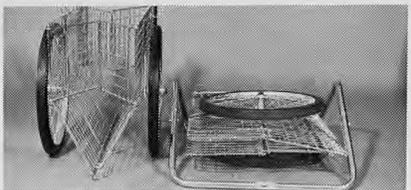
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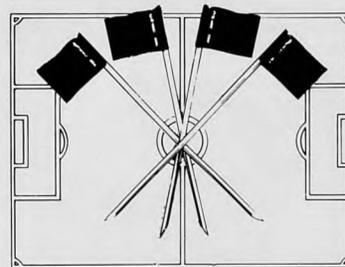
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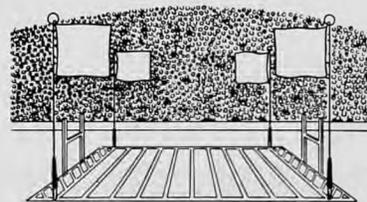
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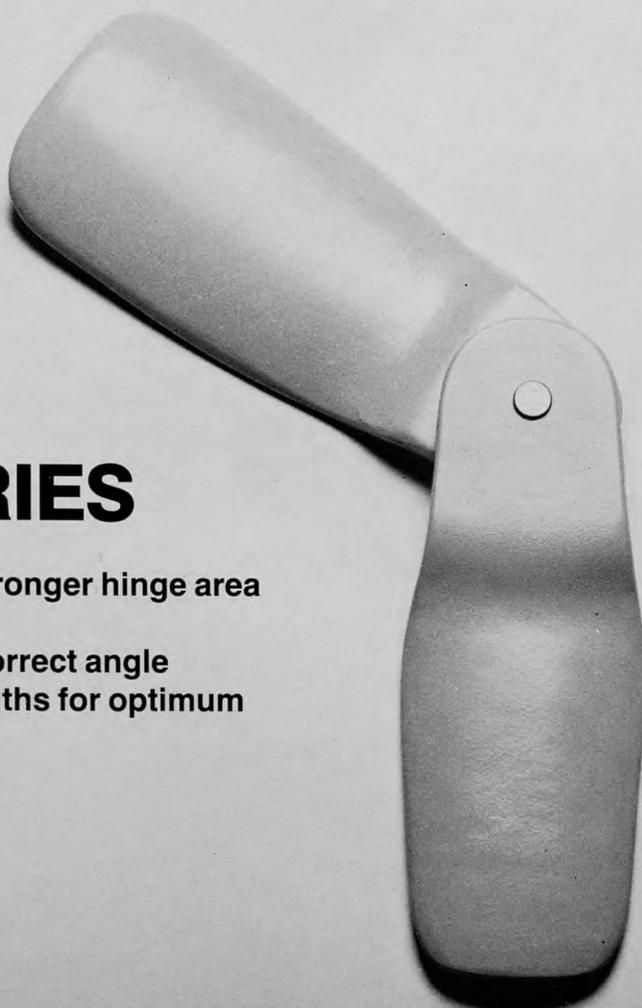
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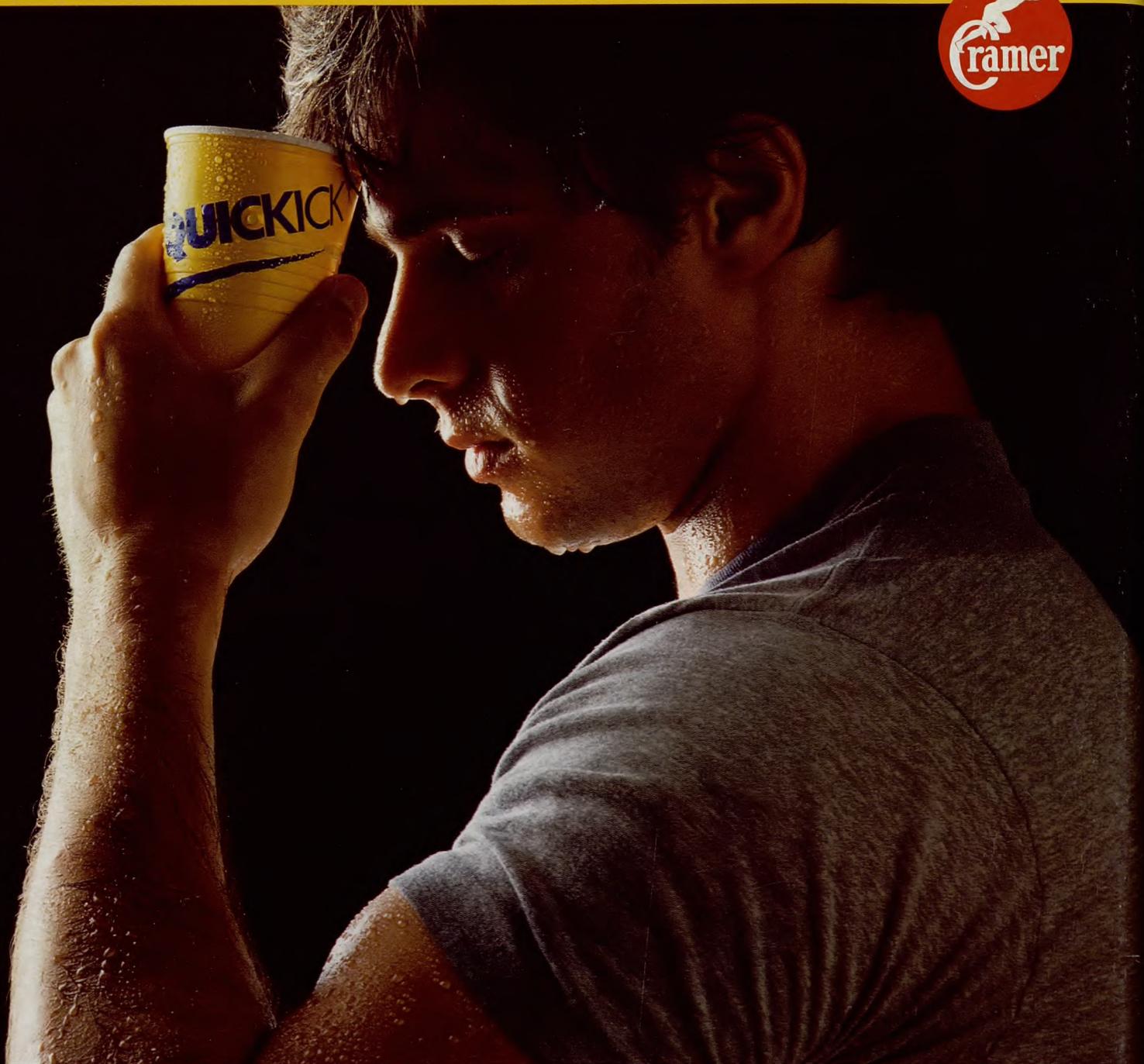


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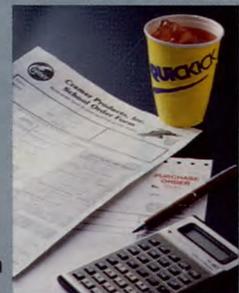
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