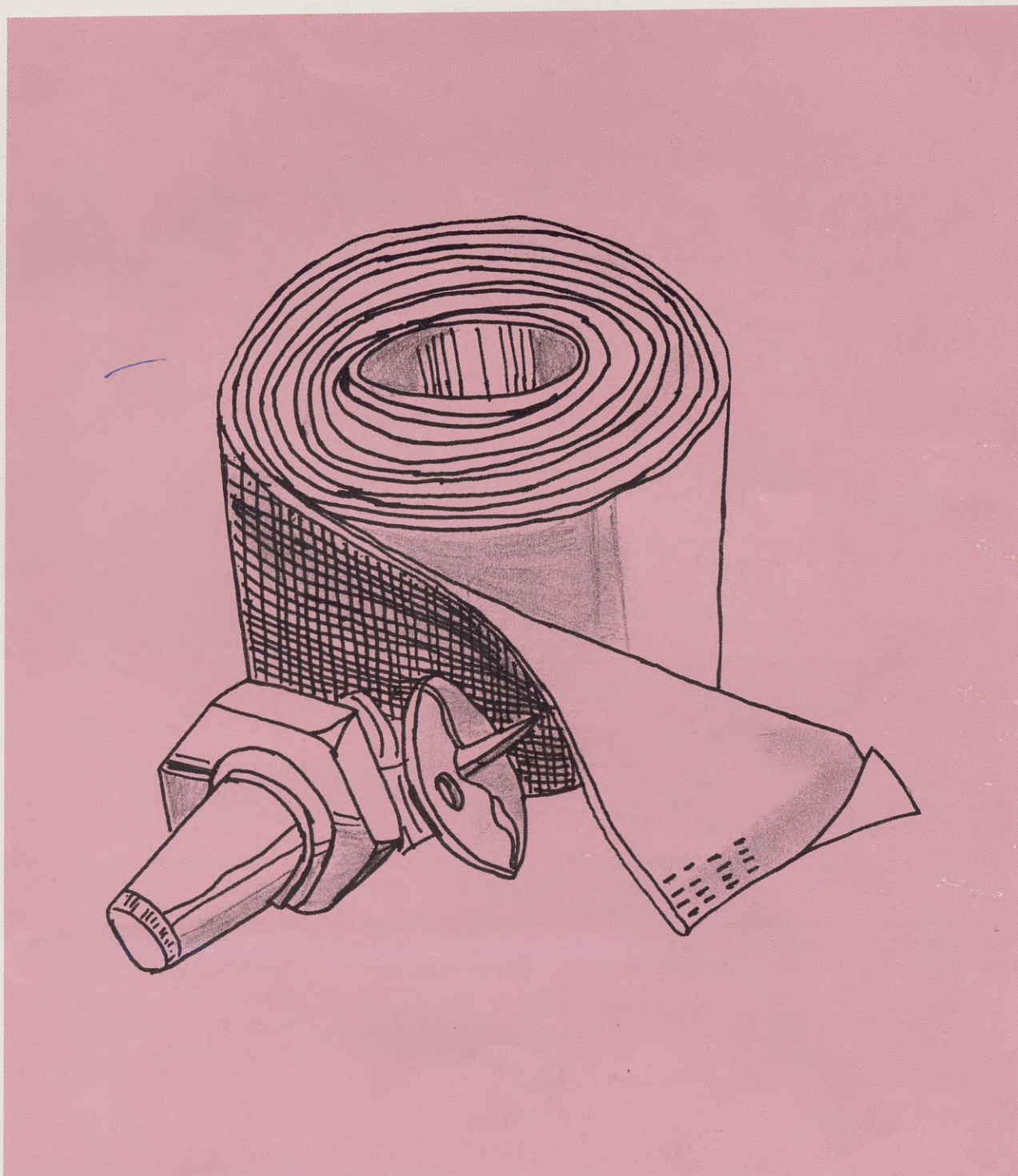


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**TRAINERS**

VOLUME 6

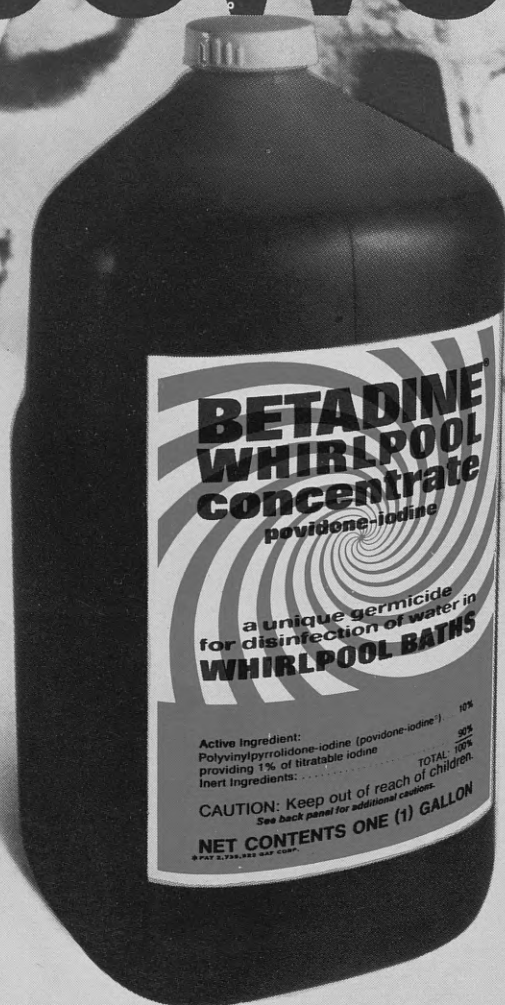
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WINTER 1971





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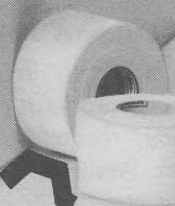
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NUMBER 4

WINTER 1971

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Cover by Robert Brent

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*The Journal of the National Athletic Trainers Association* is published quarterly by the National Athletic Trainers Association, a non-profit organization.

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Second class postage paid at Lafayette, Indiana 47904, and additional mailing offices. Address correction requested: Send Form 3579 to 3315 South Street, Lafayette, Indiana 47904.

The views and opinions expressed in *The Journal of the National Athletic Trainers Association* are those of the author and not necessarily those of the National Athletic Trainers Association.

CHANGE OF ADDRESS may be made by sending old address and new address with zip code number. Instructions should state whether change is temporary or permanent. Allow thirty days for changeover. Address changes should be sent to 3315 South Street, Lafayette, Indiana 47904.

SUBMITTING MANUSCRIPTS—Information concerning manuscripts for publication in the Journal appears under "Guide for Contributors," page 144 of Fall 1971 issue.

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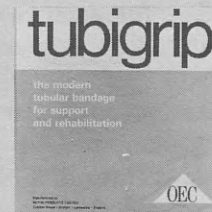


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# Reflections, and a New Year

There is a verse that appears frequently during the holiday season that causes one to pause, to reminisce, and to ponder the deeper meanings of its nostalgic words. I am referring to the following:

"Never a Christmas morning  
Never the old year ends  
But someone thinks of someone  
Old days, old times, old friends."

What better time than at the end of a memorable year to take an inventory of one's thoughts? Happy memories of former seasons and sports events and the great excitement and spirit that prevailed are among one's first reflections. Sadly, social and moral disintegration have also brought changed attitudes to the field of sports.

Do you remember the huge pep rallies, the bands playing loudly, and the large stadiums where capacity crowds, encouraged by pretty and vivacious cheerleaders, noisily cheered their teams faithfully each week?

Bigger schools, more students, and more parents—shouldn't that bring more enthusiasm, desire, morale, and dedication to the spirit of the athletic programs throughout our wonderful country?

Such has not been the case. Although schools have mushroomed and more students are now attending schools, there are only a few who make any positive contribution through active participation. This group includes the band member, the cheerleader, the pep rally planners, or the students who paint the posters for the event as well as the athletes. Whatever their special task may be, these sincere individuals perform their functions to the best of their ability. But for each one of these persons who are actively involved, how many dozens are there who don't care and who don't want to care? These apathetic persons are the ones who ridicule their fellow classmates for participating in any part of sports events, and these are the same ones who loudly criticize their faculty members or their own parents. They are the ones who rebel against authority.

The idea of keen competition has dwindled. For whatever the reason that this may have happened, the important thought is to look to the future for improvement. The youth of our time must be awakened to the desire for excellence. The standards of excellence are within each individual—there to be encouraged and aroused by someone at the proper moment. Perhaps it is within the grasp of one of us to instill through a few well-

chosen words the confidence or desire necessary to stimulate a dormant craving for excellence. Athletics, our own profession, and, indeed, all of society would surely benefit if a new eagerness of spirit could be awakened.

Boredom must be considered one of the greatest defeaters of enthusiasm. We must be alert to some of these danger signals of boredom: inattention, indifference, disrespect, despair, or sarcasm. Most importantly, when these signs appear, they must not be ignored.

We cannot afford any more delay; we must stop accepting apologies and excuses for behavior that makes the schools or society unlivable. Our present generation is screaming for discipline and attention, two things which we too often have neglected to give them. However, the youth must also share the responsibility for the present conditions in that they are looking for the easy way—looking for excuses.

Blame is insignificant. Forget the blame. What is now important is that experience teaches, and whatever we do, we know that we need the understanding, the cooperation, the enthusiasm, the competition, and the self-discipline of our fellowman to create a better situation for all. For, above all else, each one of us is only one small part of the whole unit. Unity is as vital to our daily lives as it is to our profession.

One could never forget the many friends and associates who have made priceless contributions to our daily lives through services and kindnesses so unselfishly rendered by them. There are those who have now left our number for their greater reward, yet their contributions will remain forever indelibly imprinted in our minds and our work. They shared with us the gifts of their many and wonderful talents. These invaluable friendships are just one of the many rewards of being a member of our profession.

In the true spirit of the holiday season, let us reach out to each other in order to better our profession and to continue moving forward. We need the active participation of everyone, especially our young members, for us to achieve the success we wish to attain in 1972. BECOME INVOLVED!! Will you personally make involvement your number one resolution for 1972?

A healthy, happy, and prosperous holiday season to each one of you, for you are the individuals responsible for a most pleasant 1971!!

OTHO DAVIS  
Executive Director



# Announcements for Trainers

1. Because of the new computer system being used to address each issue of *The Journal of the National Athletic Trainers Association*, it is being requested that addresses be confined to a maximum of four lines. All persons on the Journal mailing list should review the address label on the most recent issue to be sure that the address is complete and correct.

2. The office of the Executive Director of the N.A.T.A. wishes to inform all members of the Association who are currently delinquent (as of December, 1971) in their dues payment are having their names removed from the certified and active rolls. Such members may reapply for Association membership or appeal their case to the N.A.T.A. Membership Committee.

3. Starting with the March, 1972 issue, this publication will present a new look as it premier's its

new title: "*ATHLETIC TRAINING, The Journal of the National Athletic Trainers Association.*" The March issue will also introduce the first in a series of articles dealing with dermatology in athletics.

4. A reminder that all nominations for the Hall of Fame, 25 year Awards and Honorary Memberships should be submitted no later than March 1, 1972.

5. *The Journal of the National Athletic Trainers Association* will introduce a department in its next issue which will present abstracts of current literature related to the field of athletic training. Any individual with an interest in contributing to the Journal by serving as an abstractor for this department should contact: Mr. Clinton Thompson, Athletic Trainer, Department of Athletics, Colorado State University, Fort Collins, Colorado 80521.

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1. Title of publication: *The Journal of the National Athletic Trainers Association.*

2. Date of filing: October 6, 1971.

3. Frequency of issue: Quarterly at the present time (Plan to go to six issues in 1972).

4. Location of known office of publication: 3315 South Street, Lafayette, Indiana 47904.

5. Location of the headquarters or general business offices of the publishers: 3315 South Street, Lafayette, Indiana 47904.

6. Names and addresses of publisher, editor, and managing editor: National Athletic Trainers Association, 3315 South Street, Lafayette, Indiana 47904.

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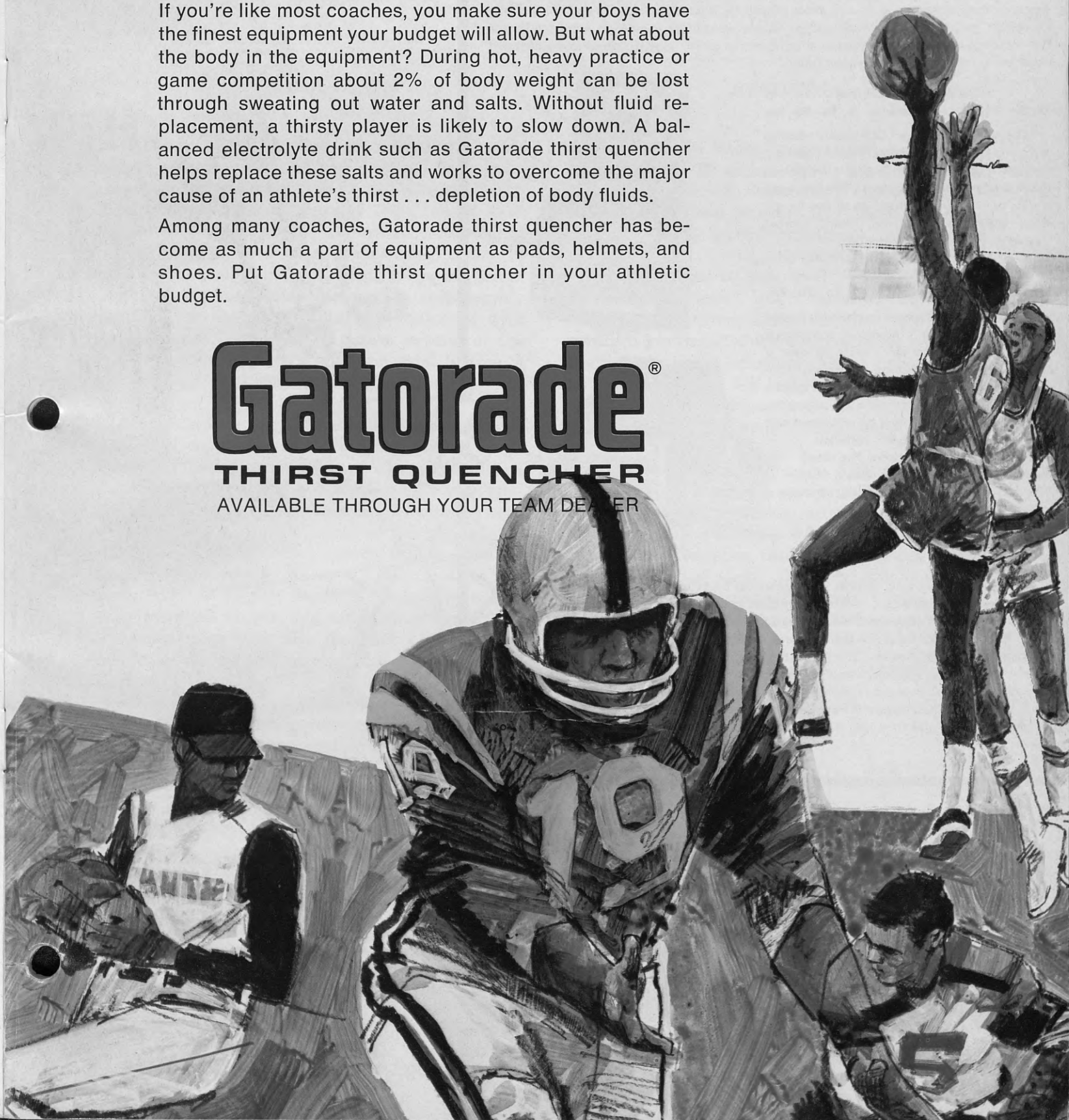
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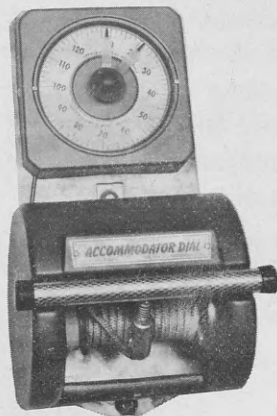
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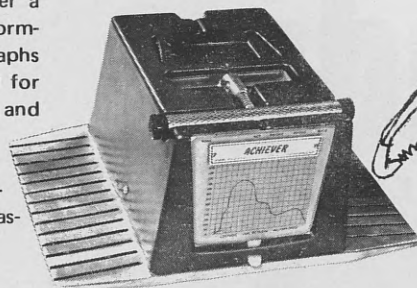
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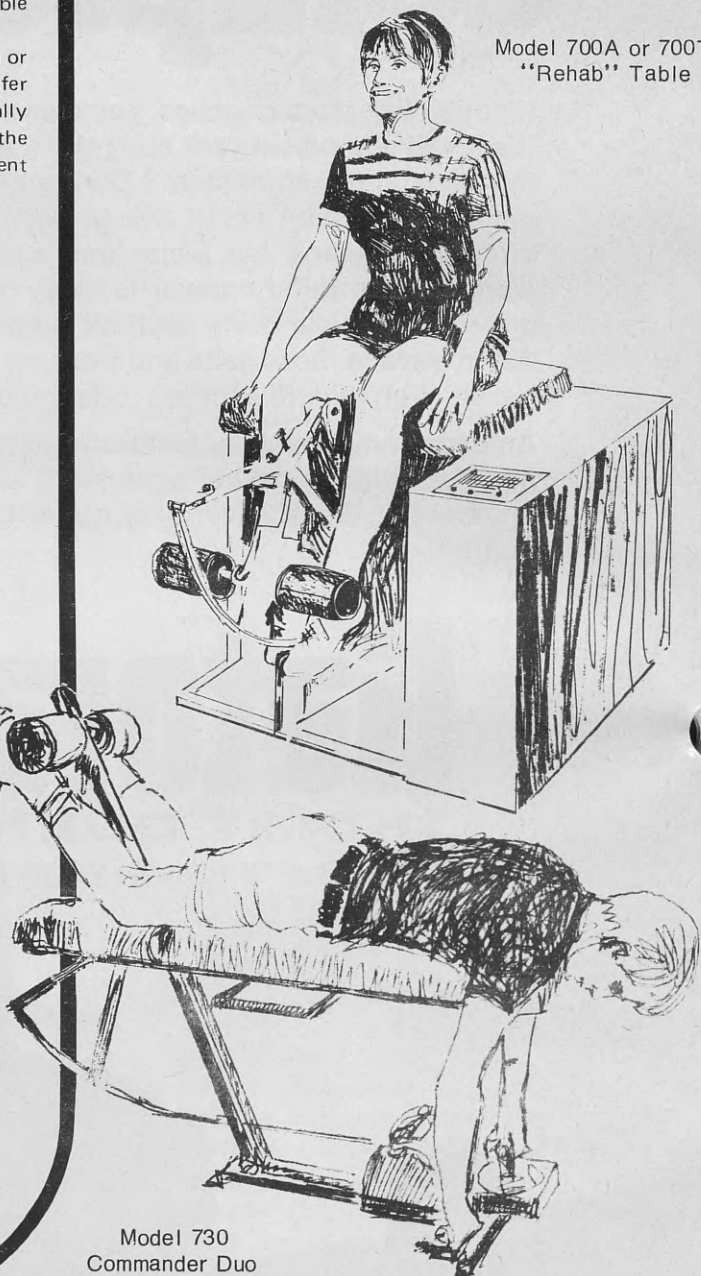
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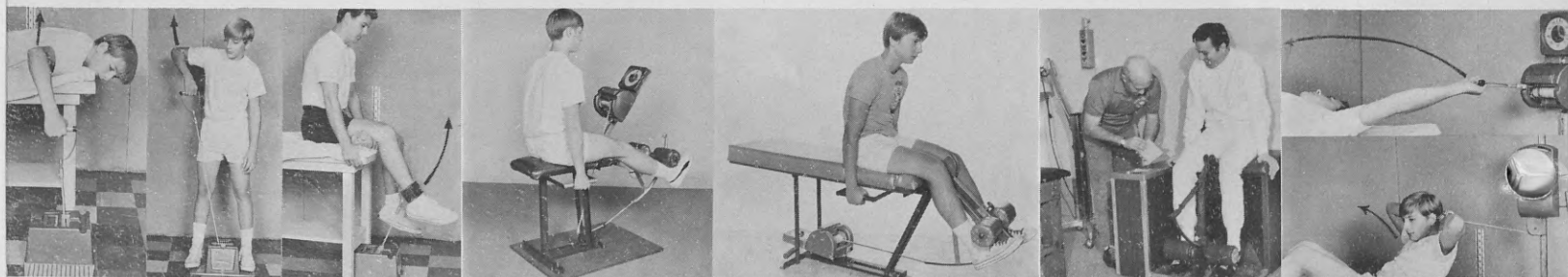
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# Effect of Artificial Turf on Player Environment

by M. K. Howard<sup>1</sup>

J. L. Koon<sup>2</sup>

and E. W. Rochester<sup>2</sup>

## INTRODUCTION

Historically a number of outdoor sporting events including football and baseball have been played on grassed fields. With the advent of artificial playing surfaces, some of these events have moved to indoor stadiums. However, a number of questions have been raised concerning safety of athletes on these surfaces. Many have suggested that the environmental factors are considerably different for the artificial turf as compared with natural grass. In order to answer several of the questions relating to the environmental factors, a series of studies were conducted at Auburn University.

An area of Astroturf was installed by the Auburn Athletic Department at the edge of a much larger area of Tifton bermudagrass. The artificial-turf installation consists of a 6-inch asphalt base covered with a ½-inch foam-rubber pad and the artificial-turf rug bonded to the pad. During installation of the artificial turf, thermocouples were installed at the surface of and 4 inches below the surface of the asphalt base. A thermocouple was then installed at the pad-artificial-turf interface. Thermocouples were also installed 1 inch and 4 inches below the soil surface of a nearby grassed field.

All temperature and radiation measurements were recorded by stripchart recorders. A non-recording infrared thermometer was used to measure surface temperature.

Nearly continuous measurements were made with the thermocouples during the period beginning August 27, 1970, and ending September 14, 1970. Surface temperatures were also recorded at various periods by use of the infrared thermometer.

<sup>1</sup>Head trainer, Athletic Department, Auburn University, Auburn, Alabama.

<sup>2</sup>Assistant Professors, Department of Agricultural Engineering, School of Agriculture and Agricultural Experiment Station, Auburn University, Auburn, Alabama.

## RESULTS

A comparison of air temperatures was made at 18 inches and 60 inches above the artificial turf and grass surfaces to determine if any temperature differences existed at the two levels. During periods of high incoming radiation, air temperatures tended to be slightly higher at the 18-inch level than at the 60-inch level. However, almost continuous breezes, which occurred during the measurement period, tended to decrease any temperature gradients which occurred with elevation. Eighteen-inch air temperatures at midday were not more than 2 to 4°F higher than the 60-inch air temperatures. Temperatures at the two levels were essentially the same during many time periods.

Air temperatures above the two surfaces were also compared as shown in Fig. 1. During periods of high incoming radiation, air temperatures were commonly 2 to 3°F higher above the synthetic surface with differences reaching 5 degrees during short periods of time. Breezes which occurred during the measurement period probably decreased maximum temperature difference between

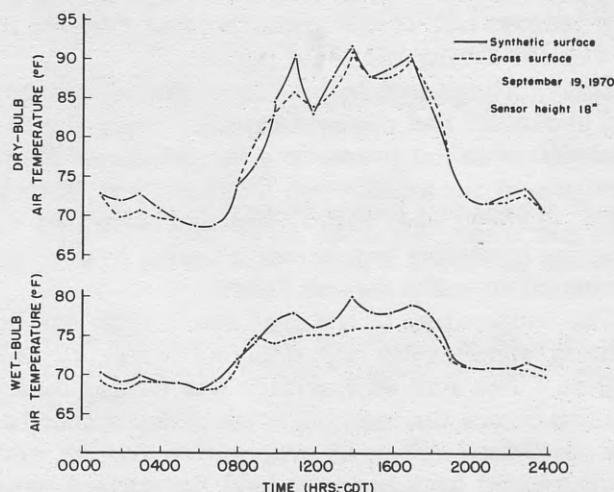


Fig. 1 The effects of surface on air temperature



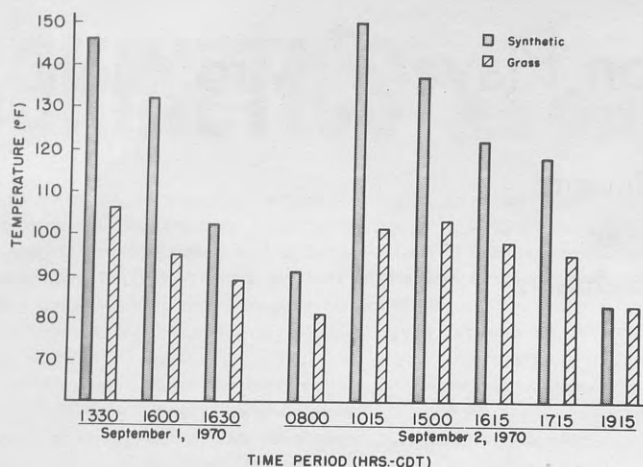


Fig. 2

the two surfaces. Temperature stratification above surfaces in an enclosed bowl type stadium might differ considerably from those observed here.

Other measurements included net and total radiation and surface temperatures of the grass and synthetic material. The surface temperatures of September 2 (Fig. 2) are typical for a period in which no rain occurred. The weather was partly cloudy with a slight intermittent breeze. Surface temperatures of the synthetic material were considerably higher than those of the grass surface with differences of at least 50 degrees. The synthetic-surface temperature at this time was higher than the maximum reading of 150 degrees obtainable with the infrared thermometer. During a heavy overcast period near the end of the day (time = 1915), the temperatures of the two surfaces were the same. Surface temperatures of the synthetic material demonstrated a rapid response to a change in incoming radiation. One example of the rapid change is demonstrated on the afternoon of September 2, when surface temperature dropped from 118 to 83 degrees in 2 hours. Surface temperature of the grass dropped from 95 to 83 degrees during the same period.

Temperatures just below the synthetic material and above the pad changed rapidly during the 24-hour period as did the surface temperature. Temperatures at the asphalt-pad interface, just ½-inch lower, changed very little. The pad served as an effective insulating barrier not allowing heat to be dissipated into the asphalt base.

The temperature of the synthetic surface can be reduced significantly by applying water to the surface. The synthetic surface was wetted by irrigation during the morning hours of September 12. The combined effect of evaporative cooling and the increased heat capacity held the surface temperatures to a low level even during periods of high incoming radiation. Effects of the wetting on

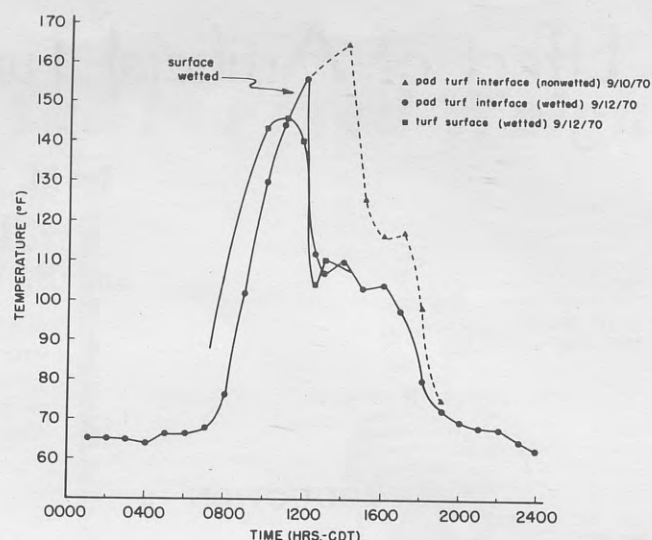


Fig. 3 Effect of wetting on temperature of synthetic material

surface and pad-turf interface temperatures is shown in Fig. 3. A previous day's temperature curve for the pad-turf interface is shown by the dashed line.

## DISCUSSION OF RESULTS

The effective temperature that affects a player is dependent upon several factors and is difficult to determine. Values taken at peak stress periods (1200–1600 hr) were used in several equations in an attempt to properly evaluate the effective temperature.

The temperature-humidity index (THI) based on air temperature and relative humidity is used as an indicator of discomfort. Bosen (2)<sup>3</sup> has proposed one effective temperature equation which is

$$THI = T_d - (0.55 - 0.55 RH) (T_d - 58) [1]$$

where

$T_d$  = dry-bulb temperature,

and

$RH$  = relative humidity (as decimal).

using equation [1], the effective temperature for 1200; 9-9-70 above the grass surface and synthetic surface would be 82.4° and 84.5°, respectively.

A method which does take solar radiation and wind into account is purposed by Minard (6) for use in the basic training of recruits for the Marine Corps.

Minard's index, wet-bulb-global temperature (WBGT) is

<sup>3</sup>Numbers in parentheses designate References at the end of the paper.

$$WBGT = 0.7T_w + 0.2T_g + 0.1T_a \quad [2]$$

where

$T_w$  = wet-bulb air temperature,

$T_g$  = black globe temperature,

and

$T_a$  = dry-bulb air temperature.

Although the black globe temperature was not recorded for this experiment, a value was obtained from existing weather data (3) for days of similar temperature, radiation, and air movement. This value of 110° was used in calculating WBGT.

Using equation [2] we obtain a value for the WBGT of 85° and 87.2° above the grass and synthetic surface, respectively.

The WBGT has been adopted by some trainers and coaches as representative of the effective temperature for athletes. As a guide to exercise and conditioning the following table has been recommended (7, 5).

#### Exercise precautions based on WBGT

WBGT	Precaution
Below 80	None necessary.
80 to 85	Cancel drills in full uniform during first weeks of practice (practice in shorts and T-shirts instead). Limited drills in full uniform after heat acclimatization is complete.
85 to 90	Cancel all drills in full uniform. During first weeks of practice, use indoor sessions.
above 90	Stop all training. Use skull sessions and demonstrations.

Even though the difference between the effective temperature above the synthetic surface and the grass surface is small (less than 3° in most cases), the difference may be important when the temperature is in the critical range.

#### SUMMARY

A series of measurements were made comparing environmental factors associated with artificial turf and Tifton bermudagrass surfaces. Recording thermometers for both wet- and dry-bulb temperatures were installed at 18-inch and 60-inch heights above artificial and natural turf. Surface-

temperature measurements of both the artificial turf and natural turf were made by an infrared thermometer. Parameters were recorded during late summer and early fall.

At midday, 18-inch air temperatures were 2 to 4°F higher than the 60-inch air temperatures. Temperature differences were less during other time periods. Air temperatures above the synthetic surface were often 2 to 3°F higher than corresponding air temperatures above the grass. Surface temperatures of the synthetic material during periods of peak incoming radiation were considerably higher than those of the grass. Maximum surface temperature of the synthetic material exceeded 150°F with corresponding temperatures of the grass not exceeding 110°F, but could be cooled to a normal temperature by an application of water. Differences in net radiation above the two surfaces were slight.

Effective temperature calculations for the air above the surface indicate high values for both surfaces with the synthetic surface producing effective temperatures 2° - 3° higher than the grass surface. This small difference may be significant since both values are in a critical region.

#### ACKNOWLEDGMENT

The authors wish to acknowledge the advisory assistance of Paul Mott, Advisory Agricultural Meteorologist, National Weather Service, U. S. Department of Commerce.

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# Protective Head Covering in Contact Sports

by Charles M. Henderson, M.D.<sup>1</sup>

There has been an increased awareness in the problems of athletic injuries in recent years. Much investigation has been done, and many modifications have been made, both in regulations and in equipment used in all forms of athletics. A helmet is now required in both major baseball leagues when batting, and many players are using one when running the bases. A few have even gone the logical further step, and are using a protective helmet with a flap down over the temporal area similar to the flaps on the headgear required by the Little Leagues. It is now a law in Maryland that all motorcyclists must wear an acceptable type of protective helmet, and it now seems to be something of a status symbol to have one's helmet stylized, and even to have an extra helmet along for the buddy seat. An increasing number of professional hockey players now use a helmet of sorts, and the user is no longer viewed as any less a man for using some common sense. The Boston Bruin who sustained the depressed skull fracture last year might be regarded as a strong case in favor of making their use mandatory. The currently used lacrosse helmet would be viewed as an anachronism in other contact sports, but because of good officiating and close watching for high sticks, it seems to do the job in that sport. Even a sport ostensibly as sedate as horse showing, trotting and jumping, has come under closer scrutiny. It has been shown that the standard black dress hat is of little value in protecting the human head, and that the newer, better designed helmets are as acceptable from an aesthetic point of view, and will actually protect the rider (16).<sup>2</sup>

Since football has received the most nationwide

publicity regarding all types of injuries, and even the newer playing surfaces have been incriminated, I am going to restrict the majority of my comments to the anatomy, physiology and mechanism of football injuries; and to the protective and preventive role the helmet has played in the past. I would like to speculate a bit as to how it might be improved so as to be of greater benefit in the future.

Over the past two or three decades, the football helmet has evolved from a simple leather head covering into a hard plastic container for the calvarium, complete with a plastic or metal faceguard. It would seem, however, that in the process of evolution, the protective function of the helmet has been in some ways overlooked (14).

No team sport anywhere in the world has an incidence of injury more frequent than American football. It is estimated that the average high school boy who participates in a full season of practice and play has a 20% chance of being injured some time during the season, and an 8% chance of sustaining a serious injury (10).

The American Football Coaches Association collected data on deaths in all phases of American football from 1931 to 1965. They showed that 609 players have died as a result of injury, and 302 from conditions indirectly connected with football (heat strokes, heart attacks, rupture of blood vessels, etc.). The average incidence of direct fatalities over this period was 1.63 per 100,000 for high school players, and 2.47 per 100,000 for college level players. The majority of these injuries occurred in games, and the peak week in the football season for fatalities was the second week in October. In recent years, over 90% of the deaths have been caused by head and neck injuries (3).

At UCLA between 1959 and 1965, 6.2% of the injuries were to the head, and 5.4% of the injuries were to the neck. It was estimated that one of

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<sup>2</sup>Numbers in parentheses designate References at the end of the paper.

Table 1

Sport	Deaths	Participants	Rate of 100,000 Participants
Football—College and High School	26	660,000	3.9
Powerboating	1	6,000	16.7
Autotesting—all types	30	125,000	120.
Horsesharing	1.6	1,200	133.3
Motorcycling	5	2,800	278.6

every nine team members would suffer concussion, jammed neck, or pinched nerve of the neck, per season (2).

Alley's study of 19,413 high school players in California in 1961, showed an over-all incidence of injury of 24.87%, with 4.2% head injuries, 2.44% neck injuries, and .33% of both head and neck. Of boys who sustained significant head injuries, 4.7% had properly fitted helmets, and 19.6% had a good fitting helmet, but not properly fitting, for a total of 24.3%, of whom over  $\frac{3}{4}$  did not have a well-fitting helmet. Over 25% were struck by the knee or thigh (it is estimated that the running knee generates over 650 pounds of energy). 61% of the head injuries, and 44% of the neck injuries involved "spearing" (1).

A survey of Wisconsin High School athletes (1963-67) showed that 12% of the injuries involved the head, face or neck. 6% of the injuries were of the head, 4% of the face (excluding the nose), and 2% involved the neck (18).

The hazards of ordinary driving of an automobile are nine times greater for young men from the 15 to 22 years of age group than participation in football (4).

In sports, the head may have to be protected against low, intermediate, or high velocity impact blows. In football accidents, low velocity blows are common. Helmets must be designed specifically for conditions of each sport. All conceivable conditions in providing for design should be considered, and each variable should be taken into account. In this way, helmet design consideration can be promised to provide maximum protection for the environment of interest. In general, a helmet with a suspension system is not as good as a helmet padded with energy absorbing material. A rigid exterior is desirable. A face mask may provide extra protection for the face, but if it fits too closely, its effectiveness will be reduced. However, a close fitting face mask minimizes the hazard of neck injuries by reducing the length of the moment arm which may rotate the head due to a blow on the mask. Protection from skull fractures

requires a hard shell which will not be deformed excessively due to the impact. In this way, skull deformation may be reduced, and the load may be distributed over a large area, thus preventing localized strains, and consequently reducing the danger of skull fractures. However, it must be pointed out that the prevention of skull fractures per se is not a guarantee against brain damage which may produce severe injury or death. The human head should be able to withstand an effective acceleration of 42 G's for the relatively long period of time of 20 milliseconds, while very high accelerations can be endured for short time durations without injury (11).

If deformation of the skull is prevented by using a helmet, or use of padding on the impacted surface, an effective acceleration of 80 G's for up to 20 milliseconds will probably not result in permanent injury (11).

The extent of damage to the head and neck in football accidents is different from injuries sustained in other sports such as automobile or motorcycle racing. In football accidents, the face, scalp and neck may be contused and/or lacerated, and there may be cervical spine injuries and fractures. Damage may occur to the intracranial contents, spinal cord, and spinal nerves (11).

With injury of sufficient magnitude to cause fracture of the skull, concussion, contusion, and/or laceration of cranial contents is possible. Tearing of blood vessels and/or tearing of the covering of the brain, which results in hemorrhage in various portions of the cranial contents may occur.

If the head impact is associated with acute flexion of the neck, there may be fracture of the body of the vertebra. With acute hyperextension, there may be fracture of the pedicles, lamina or spinous processes of the vertebra (11).

With some severe lateral motions, tearing of the vertebral arteries and/or spinal nerves may occur (11).

Schneider showed in his survey of American and Canadian neurosurgeons, that of 225 players of all levels of competition with head and neck



injuries, 66 had fatal injuries, and 159 had some persistent neurologic deficit. 88% of these players were considered to be well protected with headgear and shoulder pads. 141 serious injuries were found in an estimated population of 780,000 high school players, 34 in 70,000 college players, and 14 in 5,000 professional players. 26 neck injuries occurred in sandlot players, 3 in semi-pro, 1 in elementary school, and 6 whose category of play was unknown. These serious central nervous system insults were broken down in the following order:

- (a) 11 had skull fractures, with 4 deaths.
- (b) 5 had acute extradural hematoma, with 4 deaths.
- (c) 69 had acute subdural hematoma, with 28 deaths. (24 of the 69 developed within 6 hours of the injury.)
- (d) 14 had acute intracerebral hematomas, with 8 deaths.
- (e) 17 had pontine hemorrhage, with 7 deaths.
- (f) 17 had contusion and laceration, with no deaths.
- (g) 56 had fracture-dislocation of the cervical spine, and of the 56, 30 had immediate and complete quadriplegia, with 16 deaths. 16 had no deficit, and complete recovery, 10 with some subluxation, and 8 with some deficit (19, 20, 21, 22).

In 1964, for every 25,000 varsity football players, one died from football-related causes. Each football-related fatality occurred for approximately every three million man hours of exposure. In comparison to some other sports, football seems almost sedentary. The incidence of deaths per 100,000 participants is shown in Table 1 (4).

## TYPES OF INJURIES

A basic knowledge of the anatomy of the central nervous system is essential to an understanding of the types of injuries which may be sustained. The head per se, may be viewed as a relatively solid box (the skull) with an excellent protective covering (the hair, scalp and muscles). Within this closed box is a semi-solid substance, the brain. The brain itself has three separate layers of covering: 1) the dura—the firm envelope around the brain and spinal cord which lies immediately under the skull; 2) the arachnoid—a thinner, more closely attached layer which lies almost on the surface of the brain and under the dura; 3) the pia—a fine, almost microscopically thin layer, which is extremely intimately attached to the con-

volution and valleys (gyri and sulci) of the brain. The spinal cord has these three same protective coverings, but is less tightly enclosed by the bones of the vertebra.

The brain itself receives its blood supply from the two internal carotid arteries on either side of the trachea and esophagus in the neck, and from the two vertebral arteries which come up through a canal on either side of the cervical vertebra, and into the skull through the large hole in the bottom, which allows the spinal cord itself to exit. The two vertebral arteries join to form the basilar artery. These three major vessels form the circle of Willis, and from this "circle" of arteries, the brain receives the vast majority of its oxygen, glucose and other nutrients. The dura (the outermost covering of the brain) receives its blood supply from a terminal, or end branch, of the external carotid artery, called the middle meningeal artery. The spinal cord itself gets its primary blood supply from the large anterior spinal artery, and the two much smaller posterior spinal arteries.

Injury to the central nervous system (brain or spinal cord) may be divided into a number of categories (5).

1. Concussion is a clinical syndrome characterized by immediate and transient impairment of neural function, such as alterations of consciousness, disturbance of vision, equilibrium, etc. This is due to mechanical forces.

2. Contusion is a structural alteration of the brain, usually involving the surface, characterized by extravasation of blood cells and death of tissue, with or without edema or swelling. Clinical manifestations of contusion depend on the area and the extent of the injured tissue.

### 3. Fracture:

(a) Any fracture with intact underlying scalp or mucous membrane is a simple or closed fracture, and any fracture with laceration of overlying scalp and/or mucous membrane is a compound or open fracture.

(b) Linear fracture—a fracture resembling a line when viewed directly, or when seen on x-ray.

(c) Comminuted fracture—a fracture with fragmentation of the bone.

(d) Depressed—a fracture with inward displacement of a part of the calvaria or the skull.

4. Hemorrhage—may be either spontaneous or traumatic. Spontaneous hemorrhage may be intracerebral, subarachnoid, or intraventricular. All three categories generally fall within the heading of intracranial hemorrhage. Traumatic intracranial hemorrhage is broken down more specifically into

general headings, and may be defined as escape of blood due to a loss of integrity of vascular channels, frequently leading to hematoma formation (localized accumulation of blood). The interval from injury to hematoma recognition depends on the extent and location of the hemorrhage, and on associated cerebral damage. The intervals are arbitrarily divided into acute (one day), sub-acute (2 to 10 days), and chronic (longer than 10 days), on the basis of clinical prognostic features, but the divisions do not imply any differentiation in the basic process.

(a) Extradural hematoma: an accumulation of blood between the skull and the dura.

(b) Subdural hematoma: an accumulation of blood between the dura and arachnoid membranes.

(c) Intracerebral hematoma: an accumulation of blood within the brain substance itself.

(d) Intraventricular: an accumulation of blood within the ventricular system of the brain.

Extradural hemorrhage is usually associated with a tear in the middle meningeal artery near its point of entry into the skull, and is quite frequently secondary to a linear fracture in the temporal bone which causes the artery to tear or to become avulsed. Occasionally, it may be secondary to tearing of extremely large veins, but it is usually arterial in origin. An acute extradural hematoma will usually show signs or symptoms within the first four to six hours, and is frequently noted to have a history of: injury—loss of consciousness—regaining consciousness—secondary loss of consciousness, with other signs of increasing intracranial pressure (slowing of the pulse, slowing of respiration, elevation of systolic blood pressure, dilatation of one or both pupils, weakness of the extremities on one side of the body, and later abnormal responses to stimuli, especially pain).

Subdural hematoma: may be acute, subacute or chronic, and is nearly always related to tearing of either large or small veins, either bridging between the arachnoid and the dura, or on the surface of the brain. It may or may not be associated with skull fracture, and may or may not be associated with initial loss of consciousness.

Intracerebral hemorrhage is usually related to penetration of a foreign body into the brain substance (bone, knife, missile, etc.), or spontaneously, secondary to a rupture of a blood vessel (aneurysm) or an abnormal collection of blood vessels (arterio-venous malformation). Both of these second entities are congenital, and are not associated with head trauma per se.

Intraventricular hemorrhage: may be either

spontaneous or traumatic, and is usually associated with death.

Subarachnoid hemorrhage: again, may be either spontaneous or traumatic. Spontaneous subarachnoid hemorrhage is usually secondary to an aneurysm or vascular malformation in this age group, but may be secondary to infection, tumor, or cyst. The traumatic variety of subarachnoid hemorrhage is of itself usually not fatal.

In addition, two of the linear fractures may cause difficulty. A fracture in the anterior fossa of the skull (on top of the nose) may produce rhinorrhea, with loss of cerebral spinal fluid out through the nose. In addition, a fracture through the temporal bone may produce otorrhea with loss of cerebral spinal fluid out the temporal bone and out the ear.

One word about two terms which receive a good deal of play in the press—coup and contracoup injuries. A coup injury is one directly beneath the area of impact. A contracoup injury is one beneath the skull opposite the area of impact.

Spinal canal and spinal cord injuries include:

1. Fracture.
2. Subluxation—incomplete dislocation in which normal relationship is disturbed, but articulation surfaces are partially intact.
3. Dislocation—complete and persistent displacement of adjacent articular surfaces of the vertebra.
4. Hyperextension—hyperflexion injuries: a descriptive term used to indicate violence to the body causing the unsupported head to be hyperextended and hyperflexed. The term describes a mechanism of injury, but does not imply any specific resultant pathologic changes or syndrome. In the lay and legal press, this entity is referred to as "whiplash."

Most protective helmets provide reasonable protection for the scalp from lacerations and skull fractures, but no real connection exists between scalp lacerations and skull fractures, and the extent of a concussion that one might sustain. An aggressive definition of concussion, as described by Dr. Richard Nelson, would be either acceleration or deceleration of the head, and compression of intracranial contents caused by inbending or crushing of the skull. An acceleration concussion refers to cases in which the head is either accelerated or decelerated. It is associated with an increase in intracranial pressure at the point of impact, and a decreased (negative) pressure on the opposite side of the head (17).

In 1959, the late Edward Dye, associated with the Cornell Aeronautical Laboratory, developed a



helmet with a geodetic type suspension in which supporting straps within the helmet diffused a blow on the helmet around the head. The head was held in a fixed position, and not allowed to move in association with the blow. The helmet was marketed, but never sold well because it was uncomfortable to wear (14).

Snively and his associates noted that in their opinion, current helmets proved satisfactory in protecting the wearers from effects of blows on the vertex. Blows from the front, the rear, or the sides were not well protected against. He noted that as the helmet was struck, and the unpadded inner sling suspension allowed the force of the blow to be transmitted directly to the skull ("bottoming") (23).

Dr. George Snively, testing helmets used by the Sports Car Club of America, recommended a similar type of helmet for football. This helmet consists of an extremely rigid outer shell, and a tightly fitting interior of nonresilient plastic foam. This type of helmet has two immediate drawbacks insofar as football is concerned. First, it would be quite warm; second, the foam lining is susceptible to cracking and needs to be checked frequently (14).

Schneider recommended the following changes in helmet design:

1. More resilient material for helmets to prevent more deformation and more gradual deceleration of the head.
2. Shorten the face mask so to be: (a) less accessible for the opponent to grasp. (b) decrease leverage if grasped or struck. (c) better vision, secondary to less visual field cut. (d) less over-riding surface to injure the opponent.
3. Quick release chin strap.
4. Modification of the back of the helmet (20).

In conversation regarding face masks on helmets, the positive features regarding the face masks would have to include: decreased incidence of nose fractures, knocked out teeth, fractured malar bones, fracture of the superior maxilla, fracture of the frontal bones, and multiple facial lacerations (6). On the opposite side of the fence, the face mask decreases the visual fields, and allows itself to be used as a lever to increase motion of the head and neck.

At the Cornell Aeronautical Laboratory, under the direction of Dr. Edward Dye, it was suggested that several component effects of the blow received to the helmet by the head should be considered collectively to make an accurate evaluation of the helmet:

1. Linear acceleration of the head.
2. Rate of change of linear acceleration.
3. Distribution of force received by the head.
4. Angular acceleration of the head.
5. Rate of angular acceleration.
6. Intensity of negative pressure within the cerebral spinal fluid (Note that only the first five of these can be accurately determined.) (7).

Strand made the assumptions that the following characteristics are desirable:

1. Minimum peak acceleration.
2. Maximum energy absorption by the helmet.
3. Minimum tendency to "bottom out" against the head.
4. Uniform protection over the entire head (24).

In May of 1962, a Committee on the Medical Aspects of Sports of the American Medical Association offered the following general conclusions regarding the protection of the head and neck:

1. The hard shell plastic helmet in football is superior to previously used models constructed of other substances.
2. A face guard in football provides valuable protection against injuries of the face and teeth, but it should be fitted as close to the face as possible, consistent with providing reasonable protection.
3. Proper fitting of a well constructed helmet, kept in good condition, is important in providing protection for the player.
4. Mouth and tooth guards are as important as other means of protection of the face in some head injuries.
5. Proper conditioning of the athlete, including the muscles of the neck, is an important factor in preventing head and neck injuries.
6. Additional research is needed regarding human tolerance to blows to the head. If the magnitude of maximum tolerable blows to the head were known, manufacturers of protective devices could develop equipment which would be effective in protection (11).

A prototype football helmet used in the Oklahoma High School system in 1960 through '64, involved the following features. It had a non-resilient (crushable) liner that did not have to be replaced with a fibre glass shell. The rear section was cut high to afford full range of motion, with no posterior lower sling, and was cut wide antero-laterally for increased vision. The face guard did not compress the sides of the helmet, and smooth finish of the shell allowed the helmet and head to

seek the path of least resistance, and therefore decreased the torsional effort on the cervical spine. The following recommendations were brought up out of this report from the Oklahoma Prototype Football study:

1. The leather type of helmet should definitely not be used because of its poor protective qualities.

2. The less rigid plastic shells (currently produced by many helmet manufacturers) should be eliminated because of their rebound characteristics. Examination of the work of both Snively and Miller revealed that only three of the 16 "major brand" helmets provide an adequate degree of protection. Some of them afforded only protection from abrasion, and did not offer protection from potentially lethal blows.

3. The lower edge of the rear portion of the helmet should be redesigned as to cut, and the manufacturer should consult with persons familiar with football injury before the addition of posterior pads.

4. The lower posterior sling should be completely discontinued in favor of some type of material that affords much better distribution of the blow, and provides more extended coverage over the posterior portion of the skull.

5. The use of external helmet appliances should be discouraged.

6. Equipment managers should make certain that the face bar is shortened to allow an increase in the visual field.

7. Manufacturers should design the face bar so it is not necessary to spread the yoke for attachment.

8. The usual half shell construction should be discarded because of the objectional "ridge" necessary to join the shell together. This ridge affords a more irregular surface, possibly increasing torsional injuries. It is a point of weakness, since many separations of the helmet occur along this line of junction. Rigidity of the helmet should be greatly increased, and the sale of plastic shells for small children should be completely eliminated. These helmets are used for protection not only in football, but also in soapbox derbies, go-cart racing and baseball (8).

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# Facts About "Duck-Walking"

by Bernard R. Cahill, M.D.<sup>1</sup>

**P**resent and past athletes involved in collision sports recall with most vivid clarity the most distasteful training effort they were forced to undergo, that is, the "DUCK-WALK" or "DUCK-WAD-DLE." Their distaste for this exercise was not always shared by their coaches and unfortunately the practice of exhorting athletes to perform this un-natural act has persisted in some circles. There is another group of coaches who know that there is no training value in this exercise who use it as a punishment.

The ambition of all training in athletics is to increase performance and hopefully to decrease injuries. In this case the malfeasant—the DUCK-WALK—does nothing for the athlete other than a test of his "mental toughness."

Most trainers and coaches are aware of the dangers of this practice; however, a sound physiological argument against this is not generally known. The purpose of this paper is to outline reasons to discourage further use of it. A common observation is that a person lying in bed normally has his feet externally rotated and conversely when seated with hips and knees flexed, there is a tendency for internal rotation of the feet. This visually supports the anatomic fact that from full extension when the tibia is externally rotated; that to accomplish full flexion, internal rotation must occur. The reason for this rotational motion may be explained by anatomic peculiarities of the knee joint.

## REASONS FOR ROTATION

The larger size and helical conformation of the medial femoral condyle in association with the menisci and the important restraining and coiling features of the cruciate ligaments mechanically make it impossible for the knee to act as a hinge and forces rotation to occur (6).<sup>2</sup>

<sup>1</sup>Department of Orthopedic Surgery, St. Francis Hospital, Peoria, Illinois.

<sup>2</sup>Numbers in parentheses designate References at the end of the paper.

The muscles about the knee joint are admirably situated to assist his rotation. The quadriceps muscle exerts its main influence anteromedially on the knee joint and are external rotators in extension. The hamstrings insert primarily posteromedially and, therefore, are internal rotators in flexion (5).

The popliteus muscle is ideally located on the lateral aspect of the femoral condyle to work as a flexor and internal rotator. The medial and lateral collateral ligaments are intricately designed so that they may passively participate in this rotatory movement. In some strange as yet not understood way, the various small accessory ligaments from the menisci may also participate in rotatory movements. The fact is, that for each amount of extension or flexion, a comparable amount of rotation, either internally or externally, must occur (3). The position is no longer tenable that only terminal rotation and derotation occurs.

## ARGUMENTS AGAINST THE "DUCK-WALK"

1. Blockage of Rotation: External rotation in extension and internal rotation in flexion are essential for the normal mechanics of the knee joint to be carried out. It is obvious that in full flexion, if the weight bearing leg attempts to support the body while stepping off with the opposite member, the weight bearing leg will be forced into further external rotation; which is contrary to the normal position that it would remain in, that is, internal rotation (Fig. 1).

2. "Duck-Walking" markedly increases patellofemoral pressure because of the mechanics of the stresses placed on the patellofemoral groove. This could increase the incidences of osteochondral fractures, chondromalacia and patellofemoral arthritis.

3. "Duck-Walking" will train a muscle isometrically in only one abnormal phase of complete flexion. No athletic endeavor ever involves this posture so that the exercise is practically useless.

4. "Duck-Walking" chronically sprains the



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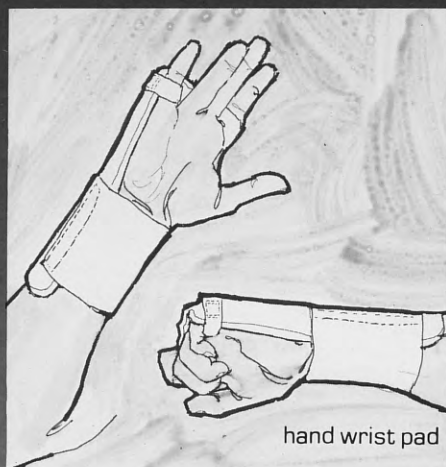


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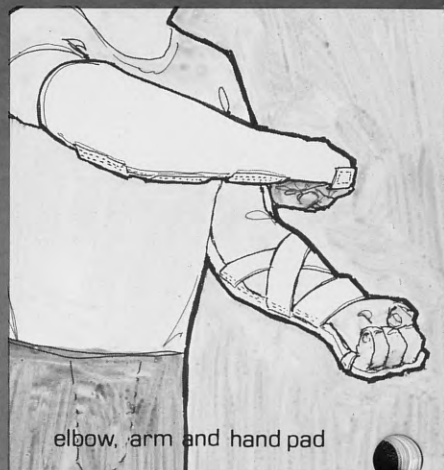
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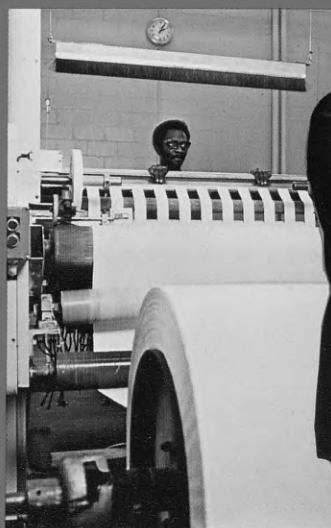
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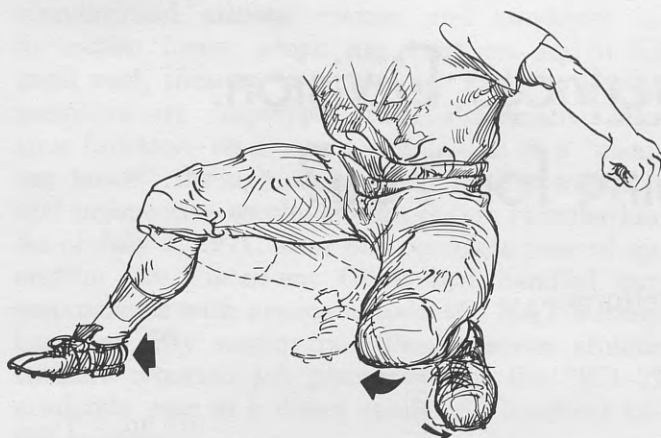
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SALES SERVICE  
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**JACK ROCKWELL**, former head athletic trainer for the St. Louis Football Cardinals and the University of Colorado, joins Johnson & Johnson as Director, Market Development. He will try to share his 22 years of experience in athletic training by answering your questions. Write Jack care of JOHNSON & JOHNSON, New Brunswick, New Jersey for help on your athletic training problems.





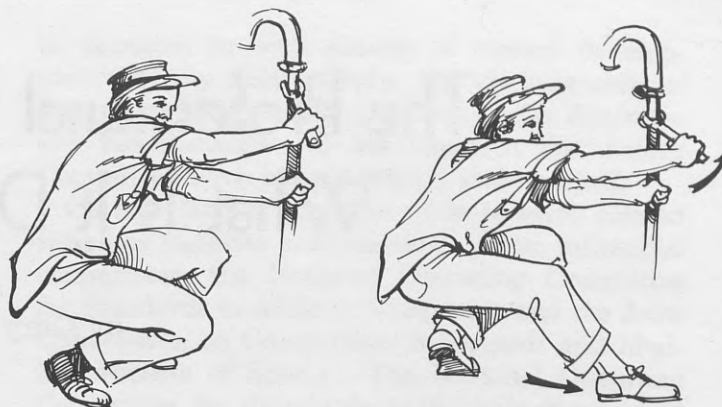
**Fig. 1** As the athlete steps forward with the right leg, the left tibia is further rotated externally. The effect of the cleats magnifies this abnormal rotation.

medial structures of the knee that are so vital in the performance of the athlete and such a concern to the trainer and physician.

5. The inability of an athlete to perform the "Duck-Walk" after a knee injury is nearly diagnostic of certain internal derangements of the knee such as posterior horn tear of the medial meniscus. This to most, is enough evidence that the exercise can primarily cause internal knee derangements (4). To this evidence add the observed fact that carpenters and plumbers who are forced into a similar posture frequently tear their medial meniscus (Fig. 2).

### SUMMARY

There are numerous anatomical and clinical reasons against the continued use of the "Duck-Walk" in athletic training. Although this practice is less common than in the past, it is the author's feeling that recent anatomic evidence, particularly



**Fig. 2** As the laborer's wrench suddenly releases he steps forward with his right leg sustaining an injury to his left knee.

the limitation or rotation that occurs with this practice, should be further emphasized.

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# The Professional Services Division: What Is It Doing for You?

by Gary Delforge<sup>1</sup>

Since reorganization became effective in June of 1970, the Division of Professional Services has been functioning as one of the four main divisions of the National Athletic Trainer's Association. To those involved with the reorganization project during the few years prior to implementation, it seemed obvious that a professional association should function to serve its membership. In addition, it seemed to be agreed that the NATA should take concrete steps to improve its ability to respond to an ever-increasing number of requests for new and improved services. Recommendations had been received regarding publication improvements, professional advancement and certification, recruitment of future athletic trainers, audio-visual services, improved public relations, procurement of funds for grants and scholarships, job placement services, and the encouragement and dissemination of research. These recommendations had considerable merit. All represented worthwhile programs or projects which no doubt would result in improved services to NATA members. Prior to 1970, however, the administrative machinery necessary to undertake such a greatly broadened scope of activities either did not exist or was burdened by inadequate lines of communication, ineffective committees, or a lack of funds. This realization, in part, led to the reorganization of NATA and to the formation of the Professional Services Division as one of its main branches.

While the primary function of the Professional Services Division is service to the membership, it by no means represents the only organ of the NATA with responsibilities in this area. Obviously, the various committees of the Professional Advancement Division, the Information Services Division, and the National Program and Business Affairs Division are engaged in activities which directly or indirectly result in benefits to the mem-

bership. Effective professional service implies the need for a comprehensive coordinated effort. The Professional Services Division thus supports and encourages the service related activities of all organs of the NATA. It wholeheartedly applauds the progress already made with regard to certification and curriculum development. The formulation of a bibliography of teaching aids by the Audio-Visual Aids Committee represents a noteworthy service to those members who are involved in instructional activities. The development of an athletic training recruitment film should provide an effective medium to assist NATA members in interpreting the role of the athletic trainer to allied organizations, lay citizens, and future athletic trainers. The Journal Committee is making great strides with regard to expansion and improvement of the Journal. While the Professional Services Division endorses and encourages these numerous and varied activities, it has been charged with specific responsibilities of its own. As originally conceived, the Professional Services Division is designated to provide services in the areas of job placement and research.

## THE PLACEMENT COMMITTEE

The creation of the Placement Committee has resulted in a service that has long been needed within the NATA. Previously, no formal provisions had been made to assist NATA members in their search for jobs. Prior to the establishment of the Placement Office the national office and its officers were continually deluged with requests for job information. Assistance was limited to sincere but relatively haphazard attempts to establish communication between prospective employers and athletic trainers.

The Placement Office began actual operation on July 1, 1970, under the direction of Al Hart, Ohio State University, Chairman of the Placement Committee. The collection of job placement information has been facilitated by the development of

<sup>1</sup>Director, Professional Services Division.

standardized athletic trainer and employer information forms which are kept on active file until such time as vacancies are filled or NATA members are employed. The Placement Office thus functions on a year around basis as a "clearing house" through which both NATA members and prospective employers can obtain information. As of July 1, 1971, after one complete year of operation the Placement Office had handled correspondence with approximately 150 NATA members and fifty employers. Twenty-seven athletic trainers reported job placement for the 1971-72 academic year as a direct result of Placement Office services.

In addition, the Placement Committee operates an information booth and an interview scheduling service at all NATA annual meetings. This practice was initiated this past June during the twenty-second annual meeting in Baltimore. A total of fifteen trainers and five employers registered with the placement booth at the meeting. Several placements resulted either directly or indirectly from this service. Consideration is being given to the possibility of operating an information booth at other national meetings including the National Association of Collegiate Directors of Athletics, the National Collegiate Athletic Association, and the National Federation of High School Athletics.

The Placement Committee is currently making a concentrated effort to publicize the existence of the Placement Office in hopes that an increased awareness of its services by athletic directors, high school principals, and other prospective employers might lead to greater employment opportunities for NATA members. It is also hoped that each NATA member will investigate his own geographical area during the year and notify the Placement Committee of available positions. The committee will then contact the prospective employer for details and request permission to publicize the job vacancy through the Placement Office. Through a cooperative effort by all NATA members the Placement Committee can and will continue to provide an invaluable service to the membership.

### THE RESEARCH AND INJURY COMMITTEE

Contrary to the newly formed Placement Committee, the Research and Injury Committee existed prior to reorganization in 1970. Its placement within the Professional Services Division was based on the premise that the encouragement of research in athletic training and sports medicine and the dissemination of research findings represents a necessary service if NATA members are to

be expected to keep abreast of current developments in the field. Under the chairmanship of Fred Hoover, Clemson University, the functions and responsibilities of the Research and Injury Committee have been redefined and clarified.

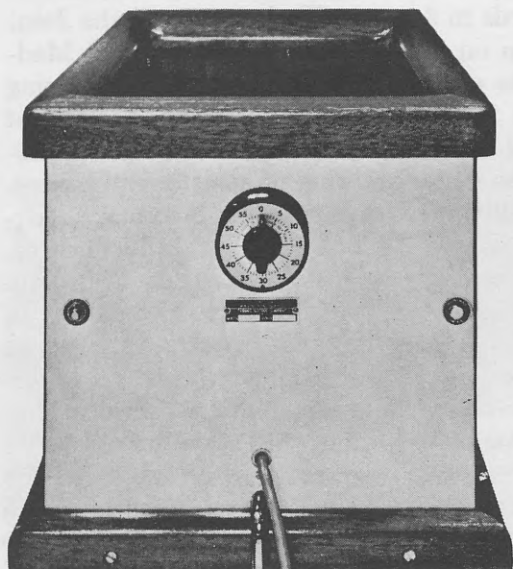
Current NATA involvement in research related activities includes participation on two influential committees, the National Operating Committee for Standards in Athletic Equipment and the Joint Commission on Competitive Safeguards and Medical Aspects of Sports. The National Operating Committee for Standards in Athletic Equipment studies and recommends minimum safety requirements in the manufacturing of athletic equipment. George Sullivan, University of Nebraska, currently represents the NATA on this committee. Also represented are the National Collegiate Athletic Association, the National Federation of High School Athletics, the American College Health Association, the Athletic Goods Manufacturers Association, and the National Junior College Athletic Association. In October of 1970, NOCSAE awarded its first research grant to the Department of Neurosurgery at Wayne State University in Detroit, Michigan, for a one year study dealing with the effects of head impacts in football.

Since 1966, the NATA had had active representation on the Joint Commission on Competitive Safeguards and Medical Aspects of Sports. This commission studies and recommends rule changes and additions deemed advisable for the health and safety of the high school and college athlete. The Joint Commission is comprised of representatives from the National Collegiate Athletic Association, the American College Health Association, the National Association of Collegiate Directors of Athletics, the American Medical Association Committee on the Medical Aspects of Sports, and the National Junior College Athletic Association. Through its representatives, William "Pinky" Newell, Purdue University, and Fred Hoover, Clemson University, the NATA has been actively involved in the Joint Commission's compilation of data for the National Tackle Football Injury Report. It is expected that the results of various studies and surveys conducted by these groups will greatly assist all NATA members in their efforts to provide better health care for the athlete.

In addition to the current involvement in research activities, several noteworthy endeavors are in the planning stages. Hopefully, an increased number of financial grants will become available to the NATA for the support of pertinent research. In this effort, the Research and Injury Committee expects to work closely with Grants and Scholarship Committee of the Profes-



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sional Advancement Division. The Grants and Scholarship Committee has been specifically designated as the organ responsible for the solicitation of financial gifts and grants from friends and associates of the NATA. At the June, 1971, Board of Directors meeting in Baltimore, the Research and Injury Committee requested and was allocated five hundred dollars from NATA funds to be used for research grants. This allocation should provide impetus to the committee's initial efforts to stimulate research in the areas of athletic training and sports medicine. To the extent that additional funds become available, plans can be made for the encouragement and support of future research projects by NATA members, schools, and other institutions. As originally conceived, the Research and Injury Committee will receive and review research proposals and make recommendations to the Board of Directors regarding projects worthy of NATA financial support and sponsorship. In anticipation of sufficient funding, guidelines for the submittance of research proposals are currently being developed.

In addition to the encouragement and support of research projects, the Research and Injury Committee is concerned with the dissemination of research results to NATA members. Plans are being made for the presentation of at least one or two research topics at all future annual meetings of the NATA. Hopefully, the number of research oriented presentations can also be increased at the various regional and district meetings. Additionally, the Research and Injury Committee is charged with the responsibility of preparation and submission of pertinent research for publication in the NATA Journal. It is hoped that research articles will appear on a more regular basis in future issues of the Journal.

### AN ADDITIONAL CHALLENGE

What services should a strong national association provide for its members? What benefits should be derived from membership in a professional organization? The Professional Services Division has committed itself to the exploration of these questions. A quick look at the progress made during recent years reveals great strides in the improvement and expansion of services to the membership. Can more be done? What additional services would you like as a student, active, or certified member of the NATA? The Professional Services Division presents itself as a sounding board for your ideas, suggestions, and recommendations.



# ATHLETIC TRAINING IN THE NEWS

## The Secretary's Report

National Athletic Trainers' Association, Twenty-Second Annual Meeting, June, 1971  
Baltimore, Maryland

### THE REPORT OF THE EXECUTIVE DIRECTOR

The first meeting of the Board of Directors was called to order at 9:10 A.M., June 6, 1971 by President Bobby Gunn. Those in attendance were:

District 1—Frank George  
District 2—Francis J. Sheridan  
District 3—Joseph Gieck  
District 4—Roland E. LaRue  
District 5—Byron J. Bird  
District 6—Tom Wilson  
District 7—Jack Aggers  
District 8—Richard Vandervoort  
District 9—Chris Patrick  
President—Bobby Gunn  
Executive Director—Otho Davis  
Parliamentarian—Bruce Melin  
Absent: District 10—Mert Prophet

I. The meeting was opened with a prayer by Mr. Gunn.

II. Mr. Warren Ariail, Exhibits Chairman, gave a report on exhibits for the convention. This report was incomplete and Mr. Ariail was requested to reappear at the Second Board of Directors Meeting.

ACTION: Tabled

III. Mr. Gary Delforge, Division Director, Professional Services presented reports on the Placement Committee and the Research and Injury Committee.

A. The Placement Committee is doing an excellent job in attempting to place persons in vacancies from the prospective employers. In the future the committee hopes to have better communication devices to let the employers know of this service and also let the students know of this service. It was suggested that secondary education counselors be informed of this service.

B. The Research Committee at the present is involved in two projects: 1. National Operating Committee for Standards in Athletic Equipment. 2. National Tackle Football Survey. At the present time there is no research actively sponsored by N.A.T.A.

As a service division the Research and Injury Committee should disseminate information. Possible sources for funds to sponsor research could possibly be from friends and associates, government funds, and N.A.T.A. funds.

ACTION: Report Accepted

IV. Mr. William Newell, Division Director, Professional Advancement, presented reports for his division.

A. Certification Committee. Report of Committee on Certification, June 6, 1971.

### *Meetings*

No full committee meetings have been held since June, 1970. The committee has been polled on pertinent matters by mail on procedural policies (March, 1971) and the sub-committee for the oral-practical exam met in New York City, May 27, 1971. Members present were Joe Altott, Ed Pillings, and Lindsay McLean.

### *Winter Certification Exam-Regional*

Four certification candidates were examined at Palo Alto, California, January 24, 1971. All four candidates were recommended for certification.

### *Summer Certification Exam-National*

Approximately 22 candidates for certification from all parts of the country were scheduled for examination June 6, 1971, in Baltimore, Maryland.



### *Financial Aspects of the Program*

It appears that the certification fee of \$35 is adequate to cover all expenses for processing applicants for certification independent from other N.A.T.A. sources. Examination revisions, when necessary, will require additional financial assistance from the N.A.T.A.

### *Recognition and Publicity*

The procedures for certification will appear in some new textbooks. *Bike Sports Trail* published them in full recently. The Michigan State Medical Society officially recognized the N.A.T.A. Procedures for Certification and suggested that Certified Athletic Trainers be employed wherever possible.

### *Areas Now Under Study*

- (1) Allowing each District their choice of dates in the administration of the regional examinations.
- (2) Minor revisions in the wording of the Procedures for Certification apparently will be necessary.

### *Recommendations*

None at this time. It is anticipated that several recommendations will be made well in advance of the winter meetings which will allow adequate time for study by the Board of Directors.

ACTION: Accepted

B. Recruitment Committee. Report of The Recruitment Committee, June 6, 1971.

### *Members*

Mel Blickenstaff, Indiana State University  
(Chairman)  
Jim Bryan, Columbia University  
Jerry Kimbrough, Michigan State University  
Jerry Rhea, Atlanta Falcons  
Jim Welsh, San Jose College  
Logan W. Wood, Houston (Resigned January 29, 1971)

### *Meetings*

Business so far has been conducted by letter and telephone. No meetings are possible except at National Convention.

### *Accomplishments*

1. Letter sent to Committee Members with ideas and asking for suggestions.
2. By way of Indiana's State Department of Public Instruction, a list of addresses were com-

piled to contact the Guidance Director of each state.

3. Each committee member was given a list of states which corresponded to N.A.T.A. Districts. Many of these states have given us directories of their guidance counselors.

4. AAHPER was contacted to include the brochure in their list of publications.

5. Phone call from Jerry Rhea requesting brochures for a clinic.

6. Darby, Pennsylvania Guidance Department, requested information.

7. Audio-Visual Aids Committee requested ideas for film. Members were contacted asking for suggestions.

8. Jim Welsh reported Mr. Ray Busch of the San Jose School District would impart information to those in his area.

9. Tom Little requested brochures for Chico State.

10. California expressed interest in publishing an article in their Newsletter for us.

11. Ed Christman requested brochures for Miami's workshop.

12. Jim Welsh reported he will be unable to attend the National meeting due to lack of finances at his school.

13. Contacted Jim Cook in regard to Cramer's mailing service.

14. Received telephone call from John Cramer with the following information: 1) Our brochure can not be inserted in the First Aider. 2) Cramer's will reprint our brochure on 11"x17" paper which will make 4-sheets 8½" x 11". This will require additional information.

*Cramer's will provide the following service for us:*

- 1) Do all of the art work.
- 2) Print 4-sheets of material.
- 3) Address each piece to be mailed.
- 4) Include cost of mailing which is now 4.8¢
- 5) Cramer's name will not be listed on the material.
- 6) Can be sent to 21,123 high schools and Jr. colleges at a cost of 10 cents each.
- 7) Provide a routing list for each school, such as: coach, trainer, guidance director, etc.
- 8) Can be sent to any fractional part of the country we desire.
- 9) Cost will be slightly more than 10 cents if we send less than the 21,123.
- 10) Will run a digested story for us in the First Aider.

### *Recommendations*

1. Have Cramer's produce the number of brochures we can afford each year until we cover the United States.

**ACTION:** Approved by the Board with orders to work within established budget and subject to investigation of most economic way.

2. Have each approved school's curriculum written up with facts about the school, costs, program, etc; to fill up the extra space we will have.

**ACTION:** Not Approved

3. Contact all trainer clinics, workshops, and comps to distribute the brochures.

**ACTION:** This recommendation was rewritten to read as follows: "Distribute brochures to all N.A.T.A. approved trainer clinics, workshops, and camps upon request of course sponsor."

Approved as rewritten.

4. Supply articles for publication to each State's Guidance Newsletters and to Cramer's First Aider.

**ACTION:** Not approved

5. Answer all correspondence from those requesting information about "How to become an athletic trainer" or to forward to Mel Blickenstaff for answer.

**ACTION:** Approved

#### C. Professional Education Committee

**ACTION:** Tabled for Second Board Meeting

D. The Division of Professional Advancement presented a resolution to amend the by-laws of the association as follows: WHEREAS the association denies the right of an individual to vote on association business unless he is certified. WHEREAS an individual may actively be engaged and support association activities but still not meet the criteria for certification. NOW, THEREFORE, Be it resolved by the National Athletic Trainers Association as follows:

1. That the classes of membership be revised to include a new classification for those members actively engaged in association affairs but cannot meet the criteria for certification.

2. That this classification grants voting privileges after a determined probationary period and the individuals supplying evidence of graduation from an accredited college or university.

**ACTION:** Not Approved

#### V. Mr. Clyde Stretch, Division Director, In-

formation Services, presented reports for his division.

#### A. Audio-Visual Aids Committee

Discussion was presented by Mr. Dick Hoover, Chairman, Audio-Visual Aids Committee in reference to a film production for the purpose of athletic training as a career by Lord & King Associates and financed by Bike/Kendall Company. It is understood that there will be no commercialism. Only mention of Bike will be a five-second source of procurement at the end of the film. This mention will not be included on film used in conjunction with any type of scientific exhibit.

#### *The Project*

Creation of a sound-and-color motion picture designed to inspire and motivate young men at the age of career-selection to decide to become athletic trainers.

As we see the project, the planned thrust of the film should be altogether in the direction of recruitment. Even so, the film may perform a significant secondary function, that of informing the general public as to the high professional qualifications required of the athletic trainer and the recognition by the profession of its responsibility in the development of youth.

#### *Exposure*

Most showings will probably be conventional 16-mm. projection before groups of high school students, especially those in their junior and senior years.

If the film is of suitable length, it may also be printed on Super-8 and loaded into cartridges for showing to small groups on portable projectors.

There is a real possibility of TV exposure. Some stations will find the complete film suitable for broadcast. For some others we may be justified in using footage from the film to create a "five minute capsule" version, to be used as a feature of station sports reviews.

#### *The Hurdles*

Young men making career decisions want to find a role in life that they can respect, and so respect themselves. In today's climate, two questions *must* be answered.

1. Are professional standards high enough to merit my respect and the respect of others?
2. Will I, as an athletic trainer, be making a really meaningful contribution?

#### *Our Response*

We will answer the first question very effectively



by allowing the film to state the standards for educational preparation and experience that have been established by the National Athletic Trainers Association.

A satisfactory answer to the second question can best be provided by showing the athletic trainer at work. The preliminary working outline for the film lists thirteen aspects of "The Trainer in Action," fourteen if we add Physical Therapy. Many of these are technical; for example, treatment, injury recognition, preventative taping, record keeping, first aid, and equipment fitting. These are all meaningful in terms of the well-being of the athlete, and should be shown. It is fully as important that the film show those trainer-functions that are less tangible. Among these we include his responsibilities as a counsellor and exemplar, and his opportunities to encourage sound attitudes toward health and sports.

#### *Other Considerations*

Prestige factors are important. The trainer should be shown in a favorable light in his relationships with the community, with coaches, and with the team physician with whom he is allied.

#### *The Motion Picture*

We are considering developing as a vehicle for the things we need to say and show a very simple story-line built around a young man who is a high school team-manager. His school is one which does not employ a professional athletic trainer. Thus, at least a few of the duties of a trainer fall on his shoulders. He recognizes his limited qualifications and calls on a professional trainer for advice. This trainer may be shown to be employed by a college athletic department or, alternatively, by a professional team. We favor the college connection because it permits us to see the trainer in relation to a number of different sports.

We are present as this trainer allows the young man to watch him at work and as he explains the nature of his profession. This device allows for cutaways to on-camera statements by prominent athletes in which they express their appreciation of the importance of the trainer and the trainer-physician team. These men can testify to circumstances in which their health and continued effectiveness in sports have been protected by the trainer.

Since the trainer in the film is telling of actual situations that he and other trainers have encountered, we have ample opportunity to cut away to game-footage. This will help to hold the interest of the viewer while working functionally to

show the circumstances under which injuries have occurred. Our feeling at this time is that we would like to leave the young man as he makes the decision to prepare for a career as an athletic trainer ...and possibly as he expresses the idea that he would really like to return to his own high school to practice his profession there.

#### *Promotion*

The Division of Information Services should find that the film is well received by many organizations, among them the President's Council on Physical Fitness.

#### *Funding*

It has been suggested that funding of the film be provided by the Bike Athletic Products Division of the Kendall Company. We are informed that the arrangement will be such that the integrity of the Association will not be impaired. Control of the contents of the film will remain with the Association. Bike asks only that when products of the sort they produce are shown, these products not be those of their competitors. We are assured that there will not be any pressure to pointedly photograph Bike packages and labels.

There is considerable precedent for this type of funding arrangement. One of the earliest was an arrangement between a major steel company and the Department of Agriculture's Soil Conservation Service. The film was for showing to farmers and Vo-Ag students. The subject was good soil conservation practices. The steel company was not mentioned in the sound-track. The only provision for identification was that when such things as fences, metal roofs or metal shed-siding were seen they be products produced by the steel company. Great restraint was exercised in photographing such products. Only a very sharp-eyed person, and one very familiar with products of this type, would have recognized the manufacturer.

Other than this, the only identification of the steel company was a line of lettering in the title footage.

The integrity of the Department was not compromised, and the film enjoyed many years of effective use.

We expect to be able to do fully as well for the Association.

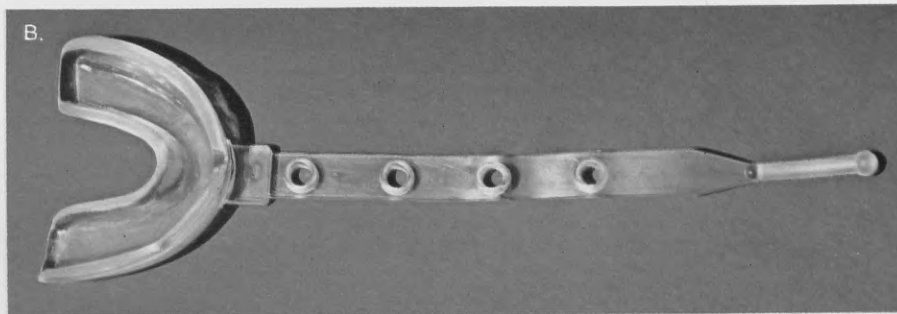
#### *Production Ground Rules*

We propose that shooting, whether in the studio or on location, will not identify any particular schools.

Identification of professional sports organiza-

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Pete Rose, Oscar Robertson, Phil Esposito.**



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**(B) New! Bike No. 25 Mint-Flavored Mouthguard.** Permanent, pleasant-tasting mint flavor helps keep mouth from getting dry. Heavy gauge dental vinyl. Heats for custom impression fit in only 20 seconds. Safety strap fastens to helmet. Includes \$100 per tooth dental insurance policy.

**(C) Bike Cold Pack.** Gives you 25-degree cold in only 3 seconds. Just squeeze pack and apply to reduce swelling and relieve pain fast.

**(D) Conform® Tear Tape.** Tears easily — handles smoothly. Yet it stretches and conforms like elastic tape. Speeds off exclusive, crushproof plastic cores. In 12" x 5 yard rolls.

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Assures players freedom of action.

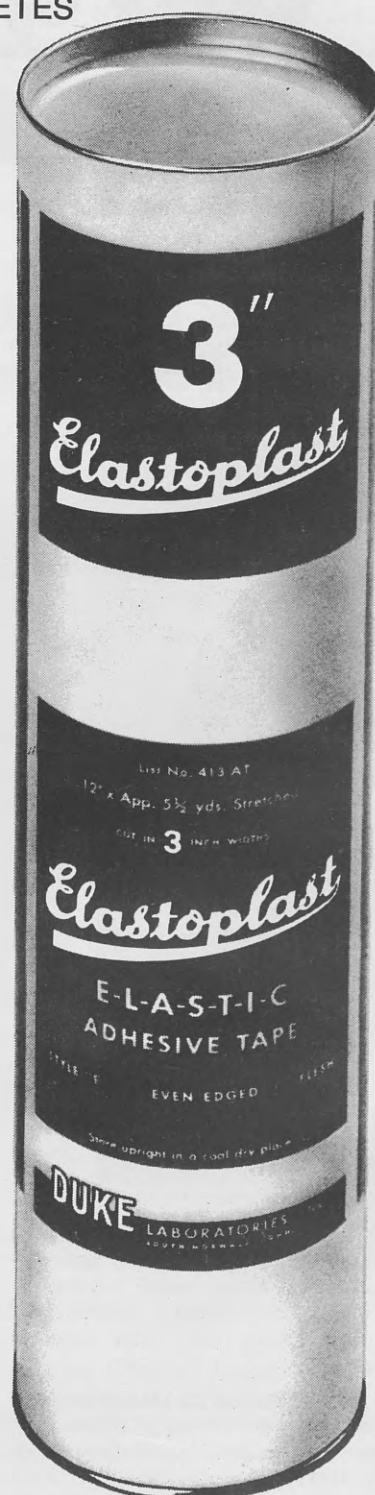
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tions will be limited to that which inevitably goes with on-camera appearance of athletes who may be associated in the public mind with certain organizations.

Trainers, coaches and team physicians who may be involved will be played by professional actors.

A motion was made by Mr. Gieck and seconded by Mr. Wilson that the N.A.T.A. accept the film proposal from Bike/Kendall.

ACTION: Approved 10-0

B. Journal Committee

Mr. Stretch made a proposal that the name of the Journal be changed to *ATHLETIC TRAINING, The Journal of the National Athletic Trainers' Association*.

A motion was made by Mr. Wilson and seconded by Mr. Gieck to accept this proposal.

ACTION: Approved 10-0

VI. Mr. George Sullivan, Chairman United Savings-Helms Foundation hall of Fame Committee, presented his report. The following men were nominated for the award and approved by the Committee and the Helms Hall of Fame:

District 2—Charles Medlar

District 5—Dean Nesmith

District 9—Edward Byrne

District 9—Roland "Kickapoo" Logan

District 9—William B. Robertson

Motion was made by Mr. Sheridan and seconded by Mr. LaRue that the nominees be approved.

ACTION: Approved 10-0

VII. Mr. George Sullivan, Chairman of the Honors Awards Committee presented the following persons for:

A. Twenty-five Year Awards:

1. Warren Ariail
2. August Bonanne
3. Eddie Froelich
4. Chester Grant
5. Ken Hawks
6. Leonard McNeal
7. Charles Medlar
8. Leo Murphy
9. William Newell
10. Robert Shelton
11. Bruce Vogelsong
12. Robert Weingardt
13. Lewis Williams

B. Honorary Membership Awards:

1. Dr. W. D. "Shorty" Paul
2. Ed Ruetegar
3. Dr. William Smith
4. Del C. Humphrey

Motion was made by Mr. Sheridan and seconded by Mr. Gieck that the nominees be approved.

VIII. The Executive Director made the following report pertaining to Areas of Representation.

A. The Association was represented at the following meetings and conferences during 1970-1971:

1. American Academy of Pediatrics—Jack Rockwell
2. American Association for Health, Physical Education and Recreation—Sayers "Bud" Miller
3. American College Health Association—Gary Delforge
4. American Corrective Therapy Association—Frank Randall
5. American Medical Association Committee on Medical Aspects of Sports—Bobby Gunn
6. American Physical Therapy Association—William Newell
7. Joint Commission on Competitive Safeguards and Medical Aspects of Sports—William Newell, Bobby Gunn, Fred Hoover
8. N.C.A.A. Rules Committee—Tom Healion
9. National Federation of State High School Athletic Association—Fred Hoover
10. National Operating Committee for Standards in Athletic Equipment—George Sullivan
11. U.S. Olympic Committee—Chuck Medlar.

All representatives presented reports of their meetings which are on file in the Association office.

B. The following persons were appointed and approved to represent the Association at the meetings designated for the year 1971-72:

1. American Academy of Pediatrics—None
2. American Association for Health, Physical Education and Recreation—Sayers "Bud" Miller
3. American College Health Association—Jim Dodson
4. American Corrective Therapy Association—Frank Randall
5. American Medical Association Committee on Medical Aspects of Sports—Tom Healion



6. American Physical Therapy Association—Frank George
7. Joint Commission on Competitive Safeguards and Medical Aspects of Sports—William Newell, Bobby Gunn, Fred Hoover
8. N.C.A.A. Rules Committee—Chris Patrick
9. National Federation of State High School Athletic Association—Fred Hoover
10. National Operating Committee for Standards in Athletic Equipment—George Sullivan
11. U.S. Olympic Committee—Chuck Medlar

A motion was made by Mr. Gieck and seconded by Mr. Bird to accept the appointees.

**ACTION:** Approved 10-0

IX. The Executive Council made a recommendation to the Board for a change in "Function and Responsibilities," Number 1, Executive Council. The request was to omit "The actions and reports of the Executive Council are subject to the approval of the Board of Directors."

A motion was made by Mr. Wilson and seconded by Mr. Patrick to deny the request and to leave the "Functions and Responsibilities," Number 1 of the Executive Council as originally stated.

**ACTION:** Request denied 10-0

X. Mr. Dick Vandervoort presented a report by his committee to study the realignment of Districts. Further action on this report was tabled until January, 1972.

XI. Mr. Joe Gieck presented a report by his committee to study the authorization or approval of clinics, camps, seminars, etc., by the N.A.T.A. A motion was made by Mr. Sheridan and seconded by Mr. George that this report be accepted by the Professional Education Committee.

**ACTION:** Approved—10-0

XII. All budget requests and discussions were tabled until the Second Board meeting.

XIII. All travel expense discussions were tabled until the Second Board meeting.

XIV. Liability Insurance and life insurance plan discussions were tabled until the Second Board meeting.

XV. Mr. LaRue presented a proposal to de-

velop a layout of the needs within a training room . . . square feet, etc., to be approved by the Board. An aid to people planning new facilities, not only in space planning, but an important tool to show administration the N.A.T.A. recommendations. This proposal was tabled for further study by Mr. LaRue.

XIV. Mr. LaRue presented a proposal to lay-out on staff needs for service in athletic training, to be approved by the N.A.T.A. Board so as to give something with teeth to show administration staff needs. This proposal was tabled for further study by Mr. LaRue.

XVII. Discussions in reference to the Scientific Exhibit were tabled until the Second Board meeting.

XIV. Mr. Bruce Melin, Program Chairman for the 1972 (St. Louis) Convention presented a preliminary report of plans in progress.

XV. Mr. Tom Healion, Division Director, National Convention gave a brief report on the Baltimore meeting and clarified explanations on the Denver (1970) meeting. Mr. Healion is to have a budget request prepared for the January, 1972 meeting.

XVI. The Executive Council made a request to form a History and Archives Committee to benefit the Organization with past, present and future needs and accomplishments of N.A.T.A.

A motion was made by Mr. Vandervoort and seconded by Mr. LaRue that permission be granted to form an Ad Hoc Committee.

**ACTION:** Approved 10-0

The Board recessed at 6:00 PM with instructions to reconvene at 1:00 PM Tuesday, June 8, 1971.

#### *Monday, June 7, 1971, Business Meeting*

The Twenty-Second Annual Business Meeting of the National Athletic Trainers' Association was held in the Civic Center in Baltimore, Maryland. The meeting was called to order by President Bobby Gunn at 11:05 A.M., June 7, 1971.

The roll call was dispensed with.

The Minutes of the 1970 meeting were approved without reading.

#### *Report Of Officers*

The Treasurer's Report was read, discussed and approved.

The Executive Director presented a report to

the Membership pertaining to the actions of the Board of Directors as listed above.

Memorial resolutions were presented for: George Robert "Bob" Hosey, West Virginia Institute of Technology, District 3; Frank J. Cramer, Cramer Chemical Company, District 5; James H. "Doc" Johnston, Oklahoma State University (Retired) District 5; Thomas A. Reeves, Wichita State University, District 5; Charles E. "Smoky" Harper University of Alabama, (Retired) District 9; and Fred A. "Pete" Peterson, Ottawa Roughriders Football Club, District 10.

A standing ovation was given the Program Chairman, Entertainment Chairman, and Registration Chairman.

President Gunn presented the members of the Board of Directors to the Membership.

Eugene Castroville, Alfred University, presented a student-trainer exchange program to the Membership and requested interested individuals to correspond with him.

Clyde Stretch, Executive Editor of the Journal, discussed future plans and distributed a questionnaire to the Membership for gathering of information.

President Gunn asked for new business; there was none.

A motion was made to adjourn, seconded, and approved by vote.

Tuesday, June 8, 1971, the Board reconvened at 1:15 P.M. Those in attendance were:

District 1 - Frank George  
District 2 - Francis J. Sheridan  
District 3 - Joseph Gieck  
District 4 - Roland E. LaRue  
District 5 - Byron J. Bird  
District 6 - Tom Wilson  
District 7 - Jack Aggers  
District 8 - Lou Crowl  
District 9 - Warren Morris  
District 10 - Mert Prophet  
President - Bobby Gunn  
Executive Director - Otho Davis  
Parliamentarian - Bruce Melin

XVII. Mr. Ariail, Exhibits Chairman, presented a financial report covering the 1970 convention in Denver, Colorado.

A motion was made by Mr. Bird and seconded by Mr. Gieck to accept the 1970 financial report of Mr. Ariail, Exhibits Chairman.

ACTION: Approved 10-0

XVIII. Mr. Ariail requested approval to retain

the George E. Fern Company, Cincinnati, Ohio, for one (1) year with a written contract, to aid in the management of exhibits at the National Convention.

A motion was made by Mr. Sheridan and seconded by Mr. Bird to approve the George E. Fern Company, with a one (1) year contract.

ACTION: Approved 10-0

XIX. A motion was made by Mr. Wilson and seconded by Mr. Morris that all business pertaining to finances go through the Executive Director and there be one central bank account and one set of books.

ACTION: Approved 10-0

XX. A motion was made by Mr. Sheridan and seconded by Mr. George that the Executive Director develop a set of guidelines to be used for financial matters.

ACTION: Approved 10-0

XXI. Mr. Robert Curran, Vice President and Senior Consultant with Pension Planners of Baltimore, spoke to the Board on the problems of obtaining malpractice or liability insurance for trainers. He presented several ideas to alleviate these problems. He suggested that the following ideas be considered: (1) N.A.T.A. establish a Legal Aid Fund (possibly a Trust Fund) for use if a court case arises involving a member; (2) Group Life Insurance combined with malpractice insurance; (3) A combination of the two above (possibly a deductible liability where N.A.T.A. pays the first \$1,000.00 and the insurance company pays the balance).

XXII. Mr. Clyde Stretch presented the financial statement from the Information Services for publishing costs of the *Journal*. Mr. Stretch was questioned by the Board on various costs and then the Board informed Mr. Stretch that all division budgets had to be received before any money could be allocated to any one division.

XXIII. The importance of all Division Directors and committees to submit their respective reports to the Executive Director by May 1 for submission to the Board was stressed. This early submission of reports is to insure expediency of action by the Board. Any report submitted late will not go on the Board of Directors' Agenda and thus the budget of that respective committee will not be approved.



XXIV. Mr. Sayers "Bud" Miller, Chairman Professional Education Committee, presented his report for his committee. Discussion followed and approval was made by the Board.

ACTION: Accepted; 8 ayes, no noes, 2 abstains

XXV. Mr. Bruce Melin, reporting on the N.A.T.A. Constitution and By-Laws, clarified the method to amend the constitution and by-laws. A proposed constitutional matter must be submitted six (6) weeks in advance of the annual meeting to the Executive Director. The Executive Director will publish this and distribute it to the membership at least three (3) weeks prior to the annual meeting. Then the proposed amendment that has been properly submitted shall be read at the annual meeting and a two-thirds majority vote of the membership shall be necessary for its adoption.

A motion was made by Mr. Sheridan and seconded by Mr. Bird that the report by Mr. Melin be accepted.

ACTION: Accepted 10-0

XXVI. A motion was made by Mr. Gieck and seconded by Mr. Bird to give the Executive Director, Otho Davis, a vote of confidence in preparation, distribution and final approval of all budget matters.

ACTION: Approved 10-0

XXVII. There was a discussion as to the practical value of the Scientific Exhibit as opposed to its monetary costs.

A motion was made by Mr. Gieck and seconded by Mr. Bird that the N.A.T.A. maintain the exhibit for one (1) more year and send it to the guidance counselors' conference and to the athletic directors' conference. Also, the host District where the exhibit is shown will maintain it.

ACTION: 8 ayes; 1 no; 1 abstention

XXVIII. The possibility of N.A.T.A. being accredited as an allied health profession with the American Medical Association was discussed. It was recommended that each District Director be sent as much information on this subject as is available and that the Directors discuss this matter with their respective Districts. The subject will be brought up for consideration in January at the Board of Directors meeting.

XXIX. The Board of Directors believe that two

years is not enough time to serve in that it takes about one full year to learn the job of a director. For the good of the organization and for the director to be effective, a three-year term would be best.

A motion was made by Mr. Sheridan and seconded by Mr. Morris to propose to change the by-laws in respect to changing the term of office of the Directors from two to three years.

ACTION: Approved 10-0

XXX. Mr. Tom Healion requested at the Executive Council Meeting that it be presented to the Board for official action his request to step down as Assistant Executive Director. He would remain Division Director of National Program and Business Affairs. Following discussion, a motion was made by Mr. Gieck and seconded by Mr. Crowl for the deletion of the words, "will also serve as the Assistant Executive Director" from the title of Division Director of National Program and Business Affairs.

ACTION: 8 ayes, 0 noes, 2 abstentions

XXXI. Further study will be made in reference to the "Assistant Executive Director" position in January.

XXXII. The term of office for the Division Director, National Program and Business Affairs was up for yearly review as outlined in the By-Laws of the N.A.T.A. Following discussion, a vote was taken to retain Tom Healion as the Division Director, National Program and Business Affairs for 1971-72, June to June 1972.

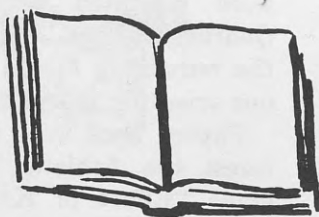
A motion was made by Mr. LaRue and seconded by Mr. Gieck to accept Mr. Healion's appointment.

ACTION: Approved 7-3

XXXIII. The William E. Newell scholarship from the Cramer Chemical Company was discussed and tabled until the January meeting.

XXXIV. A discussion of trainer selection procedures of the Olympic Selection Committee was brought up and was tabled until the January meeting.

XXXV. A motion was made by Mr. Wilson and seconded by Mr. Crowl to adjourn the Board meeting. This motion was approved and the Board adjourned at 5:25 PM, Tuesday, June 8, 1971.



## ATHLETIC TRAINING IN THE LITERATURE

The size of **The Encyclopedia of Sport Sciences and Medicine** is but an indication of the magnitude of the volume published by the MacMillan Company of New York and Collier-MacMillan Limited of London. The encyclopedic characteristics of the volume make using it easy as each of ten content areas are indexed according to subjects within each area.

The areas are structured in such a way that together they encompass the scientific study of the human organism in four broad categories:

- 1) Within the context of physical activity:
    - I Physical Activity: General
    - II Physical Activity: Sports, Games and Exercise
  - 2) As the organism (in physical activity) is influenced by or related to:
    - III Environment
    - IV Emotions and Intellect
    - V Growth, Development, and Aging
    - VI Drugs
  - 3) As physical activity is applied in:
    - VII Prevention of Disease and Injury
    - VIII Special Application of Physical Activity to the Handicapped Individual
    - IX Rehabilitation
  - 4) As the organism is regulated (in physical activity) by:
    - X Safety and Protection
- The fact that eleven years

were spent to bring the final product to the reader is another indication of the immensity of the task. Completion of the conceptual structure alone required a three-year search of the scientific and medical literature. Over 500 writers contributed to the content of the encyclopedia. It is interesting to note that originally 1,495 topics were selected but 414 topics were not included in the text because of lack of data or lack of an acceptable theoretical rationale, although these topics are included in the index in hopes of stimulating research in these particular topics. The very noticeable difference in content between subjects apparently lies in the amount of actual research available on any given subject.

A computer programmed cross index has enhanced the volume with a very extensive and detailed index as well as providing for great ease in updating revised editions of the encyclopedia.

It almost goes without saying this 1700-page volume can be greatly utilized as a book of reference and should be available to those who are in need of reference material dealing with sports medicine. The \$39.95 price is perhaps prohibitive for individuals but the library would be lacking if this book was not in the reference shelves.

An article concerning "Swelling of the Upper Extremity During Whirlpool Baths" by J. L. Magness, T. R. Garrett, and D. J. Erickson and published in **Archives of Physical Medicine and Rehabilitation**, May, 1970 reveals that emersion of an upper extremity into a whirlpool bath for 30 minutes with a temperature from 92° to 112°F resulted in a volumetric increase of the arm. Only physical volumetric changes were noted with the authors not investigating the process of volume increase. Using normal arms (45) as well as arms with a history of upper extremity disorders (20), more of an increase in volume was found in those with a history of upper arm disorders. It is interesting to note that statistical analysis of this data showed a linear regression line with a slope of 5.34 ml increase of volume per degree F or rise in temperature.

While the mode of volume increase was not investigated the authors cited other studies indicating an increase in blood volume was due to an increase of capillary permeability and also edema due to transudation of plasma.

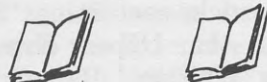


The third edition of **A Manual of Electrotherapy** by Arthur L. Watkins, published by Lea & Febiger, 1968, remains essentially the same as the preceding two





editions but for some new information concerning ultrasound and infrared. The author briefly discusses diasonic ultrasound indicating that it is a method of choice over conventional applications of ultrasound. The basics in the fields of electrotherapy have not changed and the majority of content of the **Manual of Electrotherapy** has not changed.



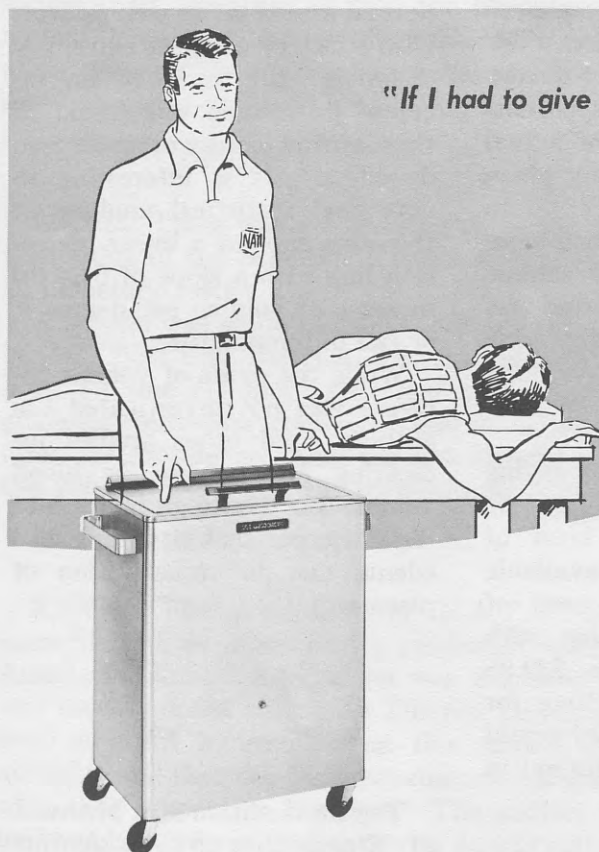
Compilations of articles and contributions encompassing a topic or one part of a large subject published in one volume are becoming more numerous. Many educators, doctors, coaches, etc. are having more than just a passing interest in sport psychology as witnessed by the advent of the International Society of Sport Psychology (1965) and the North American Society of

Sport Psychology (1966). An outgrowth of such interest is a compilation of articles concerning sport psychology called **Contemporary Readings in Sport Psychology**. Published by Charles C Thomas and edited by William P. Morgan of the University of Missouri it enlists the contributions of some 52 authors primarily from physical education but also including works of anthropologists, neurophysiologists, physiologists, clinical and social psychologists.

The multidiscipline approach to the content of **Contemporary Readings in Sport Psychology** is deemed necessary because of the vast number of sources available concerning sport psychology. These sources include comparative and physiological psychology, engineering psychology, learning theory, measurement, mental health, motor learning, motivation, perception, personality dynamics, psychophys-

iology and social psychology. Twenty-six of the articles (63%) were reprinted from *Research Quarterly of the AAHPER* and the remaining fifteen from various scientific journals.

Papers that may directly interest the Athletic Trainer include "Effect of Knowledge of Results on Isometric Strength Scores" by Pierson and Rasch indicating that knowledge of scores increases the scores; "Use of the Harvard Psychiatric Service by Athletes and Non-athletes" by Carmen, Zerman and Blaine showing that sophomore athletes were exposed to greater pressures creating more mental stresses than sophomore nonathletes and upper classmen athletes; "Athletic Participation and Perceptual Augmentation and Reduction" by Ryan and Foster dealing, in part, with pain tolerance differences between contact and non-contact athletes and non-athletes.



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## THE JOURNAL TEN YEARS AGO

### WINTER 1961

**T**he Pathology of Trauma: Healing Factors as They Apply to Injuries in Sports," by Richard Patton, M.D. and William Patterson of the Ohio State University, quickly dispels the myth that miracles are worked to restore injured athletes to participation. "His quick recovery is due to good physical condition and training rather than any miraculous form of treatment. This rapid recovery may also be due to participation in spite of pain rather than because of rapid healing."

Repair of soft tissue injury is divided into six steps by the authors:

1. Destruction of tissue
2. Effusion of blood and plasma
3. Coagulation and formation of a fibrin network
4. Vascular and fibroblastic proliferation
5. Fibrous reaction leading to firm scar
6. Reaction to use.

While these six steps cannot be hastened they can be retarded, consequently prolonging the time of healing and repair. Patterson and Patton discuss seven problems in wound repair:

1. Hemorrhage
2. Edema
3. Separation of tissue
4. Infection
5. Muscle spasm
6. Corticosteroids
7. Disuse atrophy

To properly treat a contusion cold and pressure are recommended immediately and after 24 to 36 hours heat and massage and motion are used. Active motion is advocated to increase local circulation and to improve fibrous tensile strength.

Active motion is even more important in a simple ligamentous strain but accurate apposition of ligament components must be present if proper healing is to occur.

The healing process of strained muscle (approximately three weeks' duration) depends upon whether or not a tear is present that forms a gap or whether hemorrhage has occurred at the injury site. The gap is filled by granulation tissue and repaired by scar whereas an incised wound or tear without hemorrhage will heal by actual proliferation of the cells in the muscle. Myositis ossificans can occur with recurrent hemorrhage from repeated trauma and can be stimulated by ill advised therapy.

Repair of tendon is slower than repair of fibrous tissue. It has been shown that the process of repair following a tendon injury continues from four to six weeks.

Joint structure repair is highly modified by an amount of blood in the joint cavity. Blood is slowly absorbed from the joint cavity. Joint motion hastens absorption from the joint. Aspiration of blood from the joint

cavity is recommended to lessen joint irritation by extracellular blood and hasten recovery.

A bursa can be inflamed if subjected to repeated trauma. This can lead to chronic bursitis which may produce pieces of fibrous nodules within the bursa sac. Corticosteroids injected into the sac will decrease fibrosis and lessen irritation.



Harold H. Bean, Athletic Trainer, United States Coast Guard Academy, shows a "Wire Mesh Splint Proves Its Worth" with a piece of wire mesh, 5 in. by 36 in., padded with 1/4 in. felt 5 in. wide. Ease of contouring to the injured part and giving extra support by doubling the mesh make the idea inviting.



"Baseball Training," by Don Fauls, Florida State University, breaks down pre-practice work into four categories: Running, Stretching, Throwing and Weight Work.

Don states that the good legs make good ball players and that running is the only way to get into shape. "Remember, it is possible to play with a sore arm, but practically impossible to play with a sore leg."

Arm stretching is important



and can be done by hanging with the arms and hands grasping something overhead for a minute or so. Two or three stretches of a minute will suffice. Make it a daily habit.

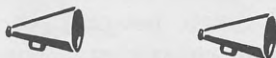
Throwing should be done every day, not throwing hard until the arm is warmed up. Spin curves the first day, not breaking them off, just spinning the ball.

Weight work is designed to develop muscle tone, not build bulging muscles. A fifteen pound weight is used in flexing and extending the elbow. Flexion, extension and rotation of the wrist are also done. Ten repetitions, three times a week are performed with each exercise adding one repetition to each exercise per week until twenty repetitions per exercise per day is reached. For players other than pitchers, twice the number of repetitions per day is recommended.

Pitchers should run at the end of practice and then shower. After a hard workout an alcohol rub is used to close skin pores and prevent sore arms.

Blisters of the thumb side of the middle finger of the pitching hand can be prevented by filing, not cutting, down the fingernail which may be pointed and creating the blister.

Strawberries can be treated by applying zinc oxide and a gauze pad to the injured area. Extra pads plus some combine provides extra padding and the wound will heal from the inside out eliminating a scab.



"The Dislocated Shoulder and Its After Care" by James Balantine, RPT, Cody, Wyoming Public Schools deals with a commonly seen sport injury. The anterior dislocation will heal properly only if given complete external rotation for the first twenty

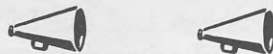
one days following injury. The day after reduction and examination by a physician, two thirty-minute treatment periods daily with twenty minutes of infrared and ten minutes of exercise are begun. The exercises adhere to the following aims of treatment:

1. To maintain the muscle of the shoulder joint
2. To maintain the muscle and mobility of the shoulder girdle
3. To maintain the muscle and mobility of the elbow, radio-ulnar, wrist and finger joints

Exercises for the first seven days following reduction include beltoid and pectoral contractions, elbow flexion and extension, wrist flexion and extension, and forearm supination and pronation.

From the eighth to the twenty-first day supported arm raising, forward, backward, sideways and arm turning (internal rotation only) are added to the regimen. Massage can be advantageous prior to this second phase of exercises.

"If the patient and PT have both done their best and been conscientious, then the results obtained from this procedure are good."



Don Bennett, Athletic Trainer, Houston Public Schools, presents "Water at 67° to 69° Fahrenheit to Control Hemorrhage and Swelling Encountered in Athletic Injuries."

How cold should cold be to prevent and control swelling and how long should it be maintained? Don Bennett maintains that wa-

ter at a temperature of 67° to 69° F will produce minimal blood flow through an injured area without producing the unwanted reflex vasodilation in that same area due to body reaction to extreme cold temperatures. He mentions that general cooling of the entire body will facilitate the rapid cooling of the injured part.



"Knee and Ankle Injuries," by Stephen Reid, M.D. and Tom Healion of Evanston, Illinois, discusses the rapidity with which an athlete with a soft tissue injury can be returned to participation. Some factors that determine this are:

1. The seriousness of the injury
2. The desire of the athlete to get back to the squad
3. The condition of the athlete before the injury
4. Cooperation of the player, the coach, the trainer and the physician

Rapid active motion is advocated after an ankle injury with pain tolerance being the guide to the progression of activity from walking through running with lateral motion. The authors warn of diastasis of the ankle joint and resulting injury to the interosius membrane.

The knee injury is the most common and greatest problem injury. Once a knee is injured it is nearly always subject to re-injury. Strong quad muscle groups can maintain stability even in an injured knee joint.

The four main ligaments in the knee can be protected and enhanced by flexion and extension exercises to the quad and hamstring muscle groups, lifting up to 100 pounds ten times in extension.

# Recent Athletic Training Literature

*This list is generally restricted to those areas of specific interest to the athletic trainer. Topics belonging to the broad areas of athletics, physical education and physical therapy will usually be omitted.*

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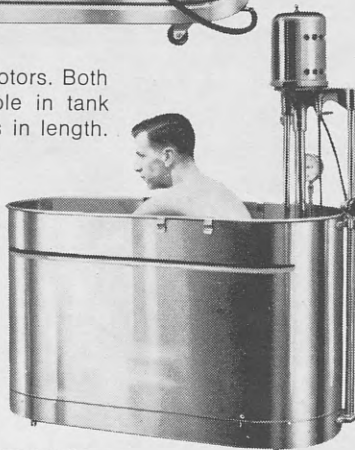
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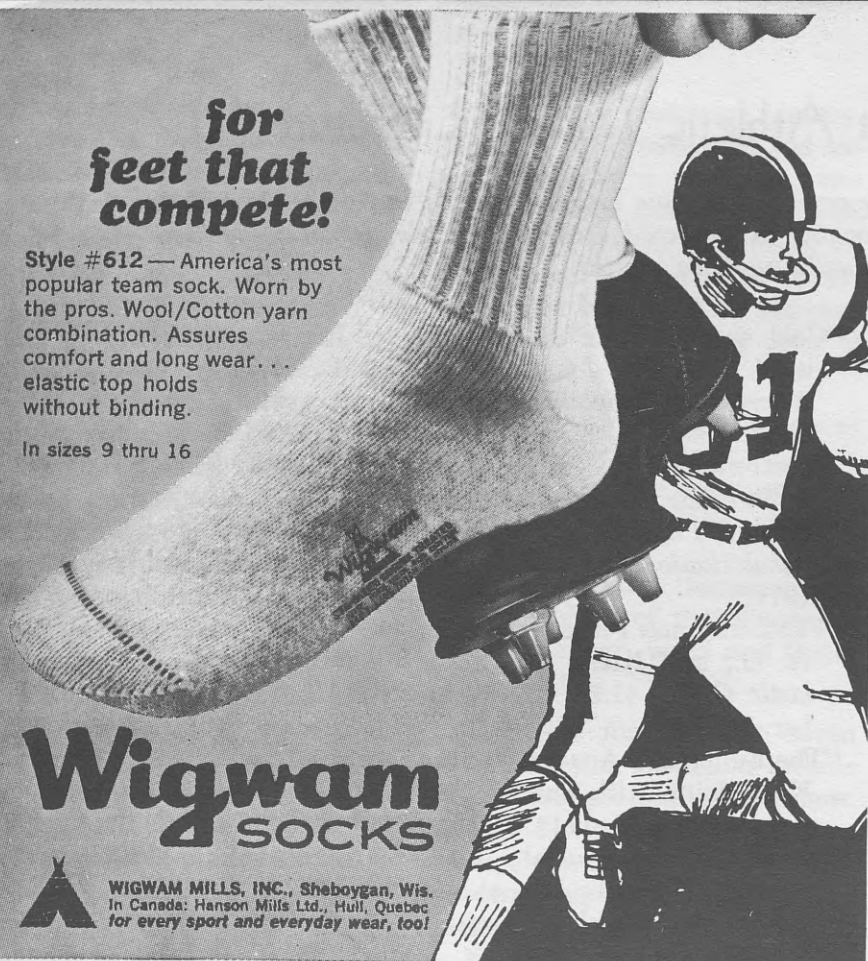
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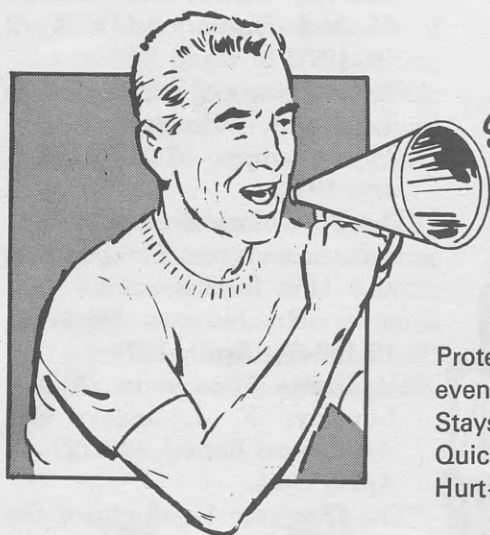
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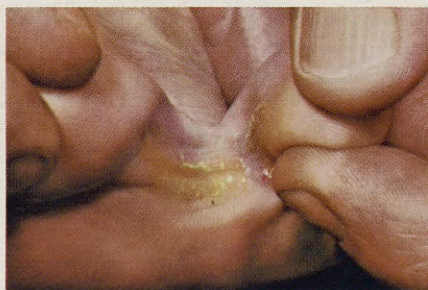
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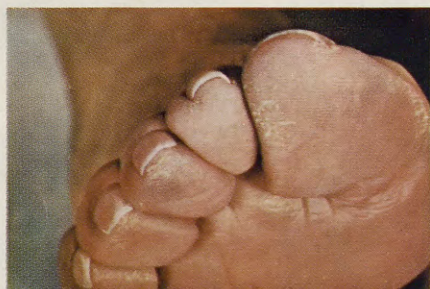
# Clinical results like these explain why doctors prefer Tinactin<sup>®</sup> for athlete's foot



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Case histories and photographs courtesy of J. Bleiberg, M.D., and R. H. Brodtkin, M.D., Irvington, New Jersey.

Ability to clear most athlete's foot—often in as little as two weeks. That alone would probably account for the fact that among physicians TINACTIN is by far the most widely prescribed athlete's foot preparation.

## Why are athletes especially susceptible?

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## Why treat athlete's foot seriously?

Because, if neglected, it can become disabling—for a man and possibly for a team. Whether it is called athlete's foot or tinea pedis or foot ringworm (the terms physicians use), this is a highly infectious disease demanding prompt and proper treatment.

Athlete's foot starts in a small way as the familiar cracking and peeling between the toes—often with itching, burning, stinging. Untreated, it may spread to the soles and toenails. But infecting fungi may not stop there. They may spread to other parts of the body—to the groin (jock itch) or the hands. They may lead secondarily to serious bacterial infections. And finally, the infection spreads to others—to whole teams and to their families at home.

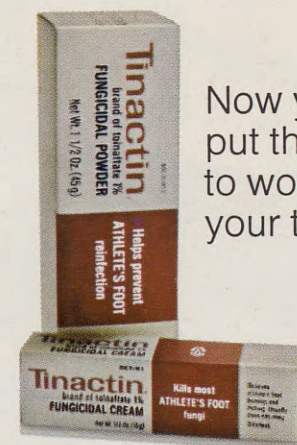
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