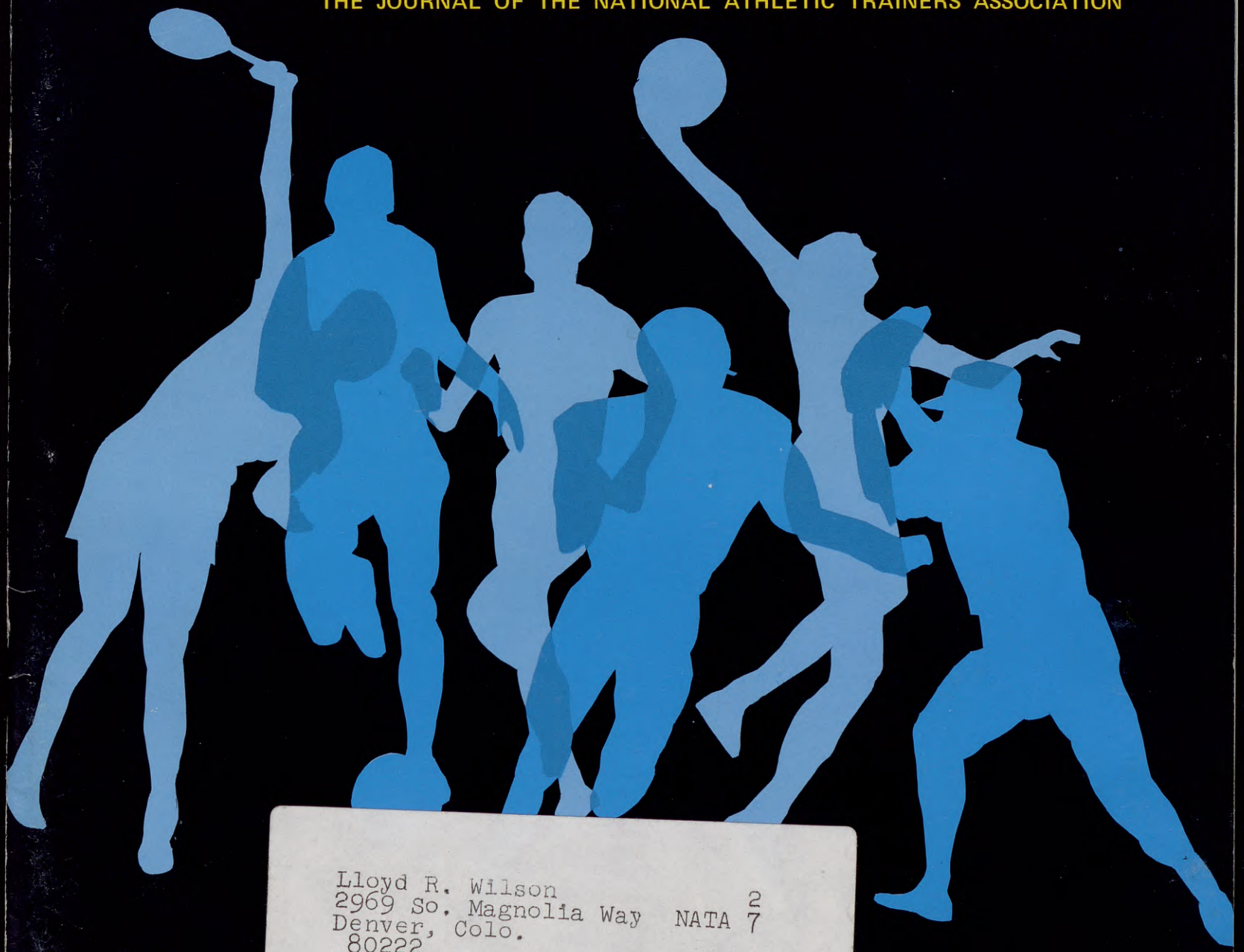
ATHLETIC TRAINING

THE JOURNAL OF THE NATIONAL ATHLETIC TRAINERS ASSOCIATION



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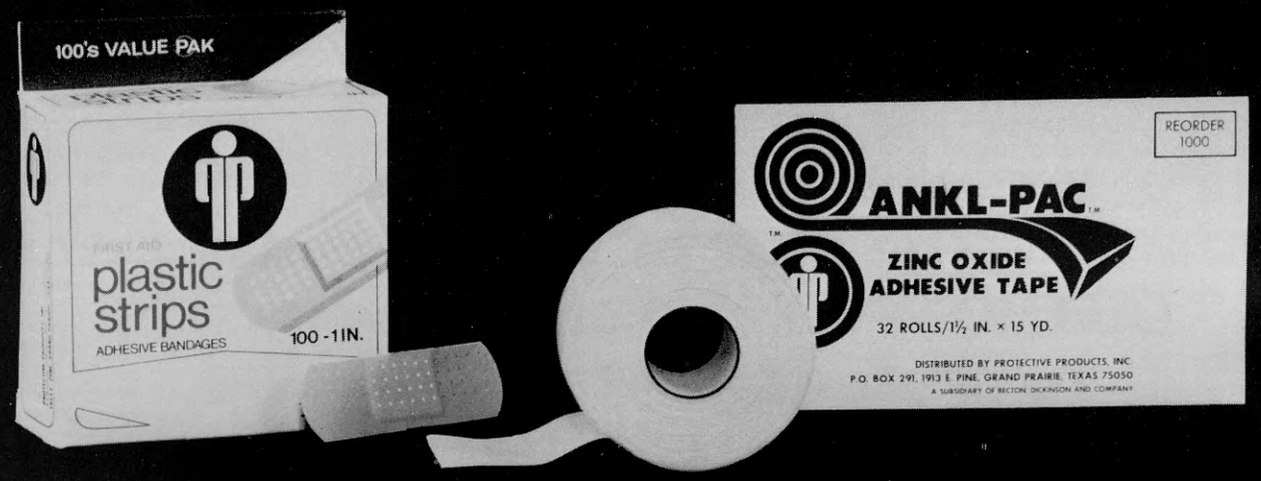

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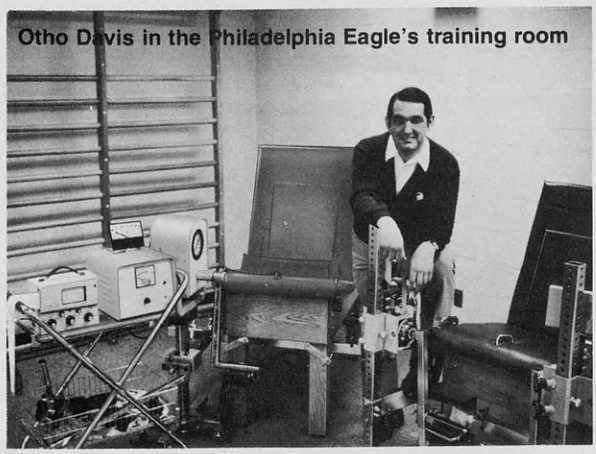

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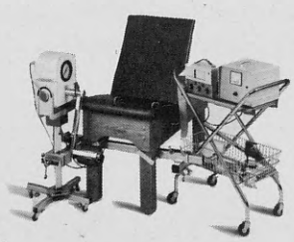

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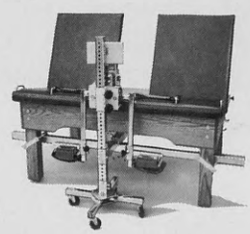

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The Journal of the National Athletic Trainers Association

Volume 9 | Number 3 | September, 1974

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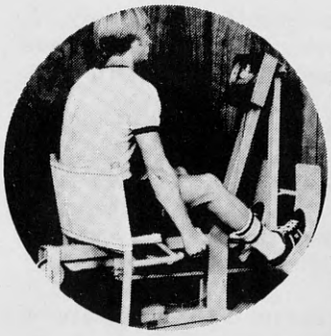

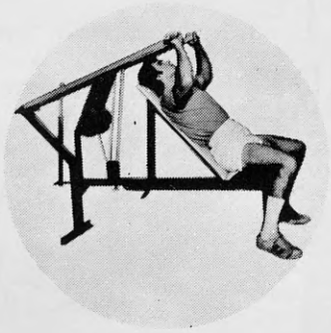

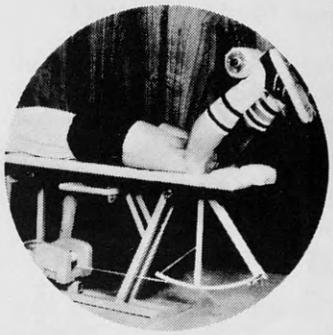
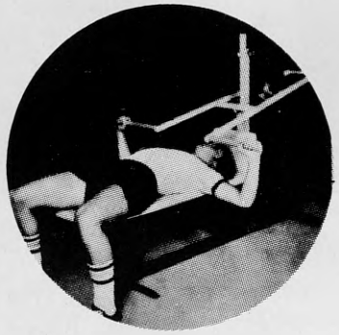
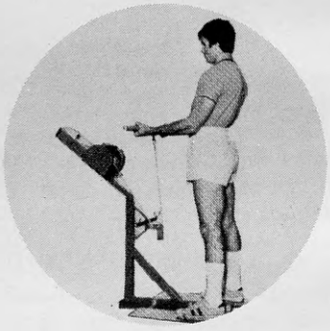


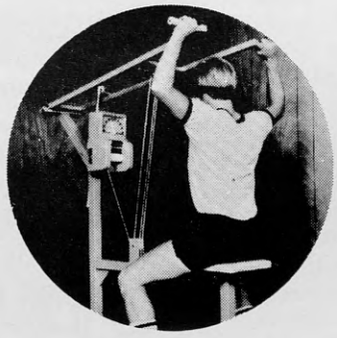


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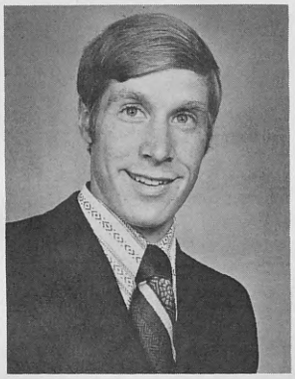

by Ed Christman
Certified Athletic Trainer

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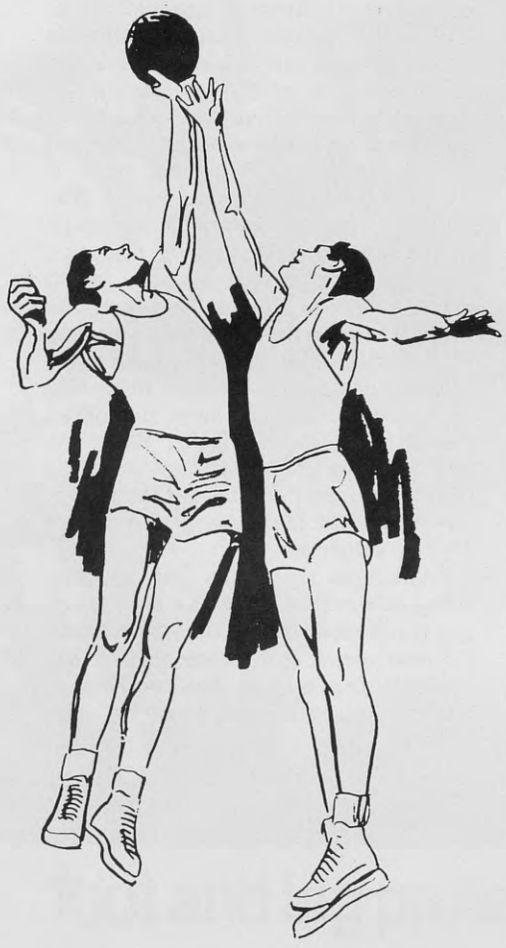

"Deterring the Muscle-Boosters," Petal, Marvin, **The Physician and Sports Medicine**, Vol. 2, No. 3: 89-90, March, 1974.

The use of anabolic steroids by shot putters, weight lifters, wrestlers, and discus and javelin throwers, as a means to building their muscle bulk, has been deplored by international sports organizations for some time. However, until now there has been little that could be done to stop it.

But Dr. Raymond V. Brooks, professor of clinical endocrinology at St. Thomas Hospital in London, has developed a new test to detect the presence of even a 100,000th part of one-millionth of a gram of anabolic steroid in a human.

Anabolic steroids are especially hard to detect since an athlete can stop taking them 2-3 weeks before he needs to compete. However, Dr. Brooks, through the use of radioimmunoassay techniques, says a single technician can run about 100 tests in three days using blood and/or urine samples. The combination of human protein and anabolic steroid injected into a rabbit to produce sufficient antibodies to run assays on 250,000 athletes. The blood is centrifuged and the clear plasma extracted leaving an extract of steroid to be measured. After blood from the rabbit is allowed to stand overnight, the athletes' samples are dispensed into each of the tubes and allowed to stand for two hours. Then anabolic steroid labeled with radioactive iodine 125 is added and again allowed to stand overnight. The liquid is taken from the tube and placed in an automatic gamma counter, which will determine the amount of steroids in the athletes' blood sample.

As the technique is used and becomes more refined, it may be possible to determine not only if the athlete is taking steroids but even what type he is using.

Larry Starr

* * *

"Reaction of the Body as a Whole to Injury," Gelin, Lars-Erik, M.D., **The Journal of Trauma**, Vol. 10, 11:932-939, 1970.

Dr. Gelin states that when an accident occurs, both a local injury and a series of reactions in the body as a whole are induced. The reactions may affect any tissue or any function of the body.

The body reacts in basically two ways. First, the neuro-endocrine responses cause stimulation to the autonomic nervous system and the pituitary-adrenal glands. The result is production of adrenalin, cortisone, aldosterone, and antidiuretic hormones which serve to regulate the shock reaction by a redistribution of blood volume and protection from water and electrolyte loss.

The second series of reactions works in opposition to those just mentioned. Biochemical mediators (hypoxia, acid material, collagen, ADP, lysozymes, polypeptides, endotoxin and potassium) are released from the injured site and are usually beneficial locally but toxic to the body as a whole. These mediators damage membranes, impair the fluidity of blood and later the distribution of blood cells. The result is to contribute to shock and cause damage to certain sensitive tissues, especially those of the kidney, liver and pituitary gland. Because these three organs are vital to the protection of the body as a whole, Dr. Gelin believes that early adequate distribution of blood flow during the shock reaction is the most important single measure to protect the patient from morbidity and mortality from injury.

Gary Lake

"The Female Knee in Athletics," James M. Glick, M.D., **The Physician and Sportsmedicine** (September, 1973)

Anatomically the female knee differs from the male knee in three ways: (1) women do not tolerate pain in the knee as well as men, (2) patellar injuries are more painful to women, but result in less swelling, and (3) women's knee joints are generally more hyperextensible than men's. Diagnosis of injuries must abe made more carefully because of the above mentioned factors.

Practice sessions should be planned with the safety of the individual athlete in mind. Particular attention should be given to the length of practice time and the individual drills that would put abnormal stress on the susceptable knee joint.

Bill Flentje

* * *

"Torg, Joseph S. and Theodore Quedenfeld. "Knee and Ankle Injuries Traced to Shoes and Cleats," **The Physician and Sports Medicine**. September, 1973.

The authors of this paper studied the incidence of knee and ankle injuries among football players in the Public High School League and the Catholic High School League in Philadelphia over a four year period. Their purpose was to determine the relationship between the incidence and severity of knee and ankle injuries and the use of conventional and soccer-type football shoes.

The authors contend that, in most instances, the cleats must firmly fix the foot to the ground in order for knee injuries to occur. Injury then occurs during violent contact or rotation of the trunk and thigh which transmits the force to the articular and periarticular structures of the knee. Torg and Quedenfeld further maintain that foot fixation depends on the number and size of the cleats. Shoes with fewer, long cleats penetrate ground surfaces more readily and cause greater foot fixation.

To test their theories, the authors studied ankle and knee injuries in over 1,200 high school football players during each playing season from 1968 to 1971. During the first year of study, players wore conventional football shoes with three-fourth inch cleats. During subsequent years, players wore molded soccer-type shoes with three-eights inch cleats. All games were played on natural turf. Injuries occurring were examined and documented by an orthopedic surgeon.

The authors concluded that a change from the conventional football shoe to the soccer-type shoe resulted in a marked decrease in both the incidence and the severity of knee injuries in both high school leagues studied. A noticeable decrease in the incidence and severity of ankle injuries was observed in the Catholic League. On the basis of their study, the authors recommended the use of synthetic molded sole shoes with a minimum of fourteen cleats. Cleats should have a minimum tip diameter of one-half inch and a maximum length three-eight inches.

Gary Delforge

* * *

"A Symposium: Exercise and the Heart," Mann, George V.; Nagle, Francis; Rose, Kenneth D.; Ryan, Allan J.; and Smodlaka, Vojin, **The Physician and Sportsmedicine** 3:35-46, March, 1974.

This symposium was an attempt to provide practical guidelines for exercise and the heart. The panel agreed that a lifetime of vigorous physical activity causes no apparent harm to the heart and may even be beneficial. Regular exercise involving a major portion of the muscle, carried out at a steady pace, seems to be best. Even those patients with organic heart disease may benefit from exercise if they are properly evaluated through functional capacity tests and carefully supervised. Sudden deaths of athletes and other young persons appear to result more often from failure to perform careful preparticipation examinations and to identify myocarditis associated with viral infections. The roles of diet, blood cholesterol, and triglycerides in the genesis of arteriosclerotic heart disease remain enigmatic. Dr. Mann believes that too much salt in the diet may be responsible for the increasing evidence of high blood pressure, even among school children. Exercise involving the greatest caloric expenditures seems to be most effective in reducing high blood triglyceride levels. Frequency of exercise should probably be at least three times weekly. No one is too old to benefit from regular exercise. The need is expressed for more longitudinal studies of healthy persons to determine the effects of physical activity on the heart and vascular system. More data is also needed to support the theory that exercise improves the collateral coronary circulation in the heart already affected by arteriosclerotic disease.

John Wells

* * *

"Anabolic Steroids in Athletics," Freed, D., Banks, A.J., and Longson, O., **British Medical Journal**, September 23, 1972.

Due to the increased use of anabolic steroids in sports, with improved performance "not doubt," Freed, Banks and Longson set out to investigate the validity of statements frequently repeated in popular media that when taken in low doses, these drugs show no side effects.

Their trial consisted of ten experienced weight lifters of age 19-25, who had either taken anabolic steroids before or were contemplating their use at the time. Five subjects were given methandienone (Dianabol) daily in 5 mg doses, while the other five received 25 mg daily (recommended dose is 2.5-15 mg/day). After 6 weeks, the dosages were reversed and continued at the new rate for another 6 weeks.

A placebo-treated control group showed no side effects. However, the lifter treated with methandienone had effects ranging from 10-15 mm Hg rise in blood pressure to urinary difficulty, acne, bio-chemical changes, decreased libido, dizziness, headache, faintness, and lethargy. Manifestation of these effects was confined to neither group, but ranged in both the low and high dosage subjects.

Although these are only preliminary observations and the data taken are insufficient for meaningful statistical analysis, it does demonstrate the imprudence of stating that low doses of anabolic steroids will bear no side effects.

Greg Vergamini

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Kendall/Hunt Publishing Company
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For an individual that is looking for a self-study type anatomy book, this reviewer has seen nothing finer. The material covered is very valuable to the trainer. This is not a text book per se, but a lab manual that covers such subjects as basic deformation, introduction to microscopic anatomy, histology, the integumentary system, the blood vascular system, joints and anatomical terms of motion, an introduction to the skeletal system, X-ray, fractures, bone disorders, hemonoiesis, muscle anatomy, intramuscular injections, kinesiology, blood pressure, heart sounds, pulse, E.K.G., the circulatory and lymphatic systems, the respiratory systems, the digestive system, the nervous system, the special senses, the urinary system, the endocrine system, the reproductive system, and many more areas of information. Between the units there are study questions for examination which in my opinion would probably be of some benefit for those studying for the N.A.T.A. certification examination.

This book is well written, easy to understand, and is extremely well illustrated as exemplified by its illustrations of types of body movements. Pictures make the movements extremely easy to understand, particularly such things as flexing, abduction, rotation, provation, and the rest of the body movements.

The lab manual has been of great value to the reviewer. I highly recommend this book for a trainer or a person studying to be a trainer.

MODERN TECHNIQUES OF TRACK AND FIELD

by Clarence F. Robins
Clayne R. Jensen
Sherald W. James
Willard M. Hirsch
List Price $12.00
349 pages
Illustrated

Lea and Febiger
Washington Square
Philadelphia, Pa. 19106

This book on Track and Field is an enjoyable book for one that is interested in Track and Field. The Athletic Trainer would be most interested in Part I, Preparation for performance. In this area, such things as basic performance traits and factors related to conditioning and performance are covered. Under basic performance traits such things as strength, endurance, and muscular power are covered in detail. In factors relating to conditioning and performance a great deal of information is given on nutrition. The "Pregame meal" and what the body burns to produce energy are related in understandable layman's tersm. The effects of drugs on conditioning and performance is presented in a forthright manner. Warm-ups, coaching, and competitive hints are presented, and weight control is also well presented in this part.

A fine book with some areas of interest to the trainer.

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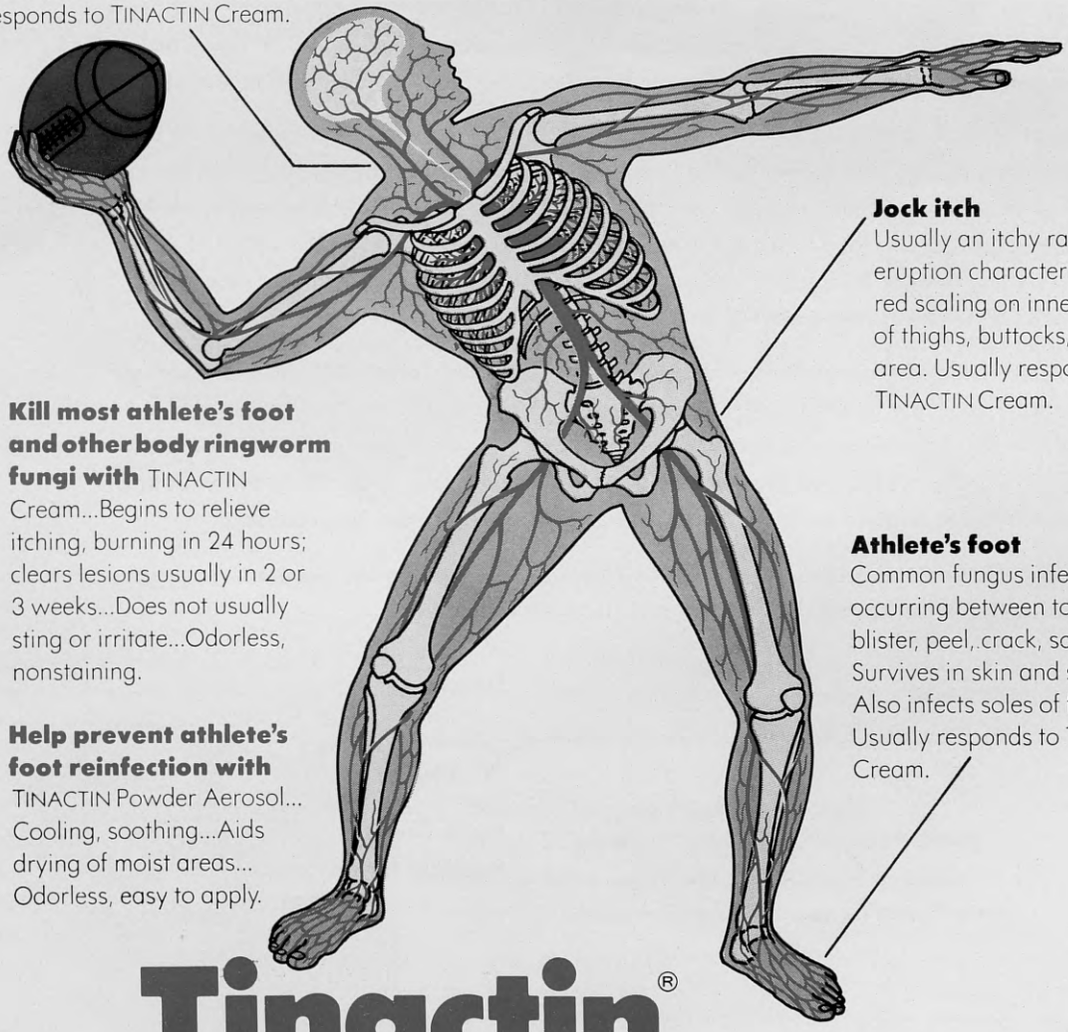
Circular-shaped, usually dry, scaly patches that ring outward, may leave center looking cleared. Most often on face, neck, hands. Usually responds to TINACTIN Cream.



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Telephone: 215/463-2500

FROM THE PRESIDENT'S DESK

Dear NATA Member,

It will be the policy of the President of NATA to have a letter in each Journal. The main purpose of this letter will be to inform the membership of issues and policies which are being presented to the NATA Board of Directors for a decision. The responsibility then lies with each member to let his director know his opinions. The more opinions we have on any issue, the more democratic the decisions of the board will be. I hope every member of this association will feel that they have something to contribute. Also, know that **your** suggestions will always be considered by the Board of Directors before a decision is made.

As spokesman for the members of NATA, we would like to express our appreciation to Bobby Gunn for the time and effort, and really the part of his life which he has given to NATA. We can never reimburse him; we only hope he realizes how much we appreciate his efforts. We would also like to thank Otho Davis, the Executive Director, the Board of Directors, the District Secretaries, and the Committee Chairman and committee members for their time and effort in behalf of NATA.

In the June board meeting the Ethics Committee made changes in the Code of Ethics. These were approved by the board. The changes involve the use of the NATA name in any advertisement, the illegal use of drugs, and a statement on sportsmanship. Be familiar with these changes and with the entire Code of Ethics. Problems which arise involving the Code of Ethics are embarassing or worse to the individual member and to the Association.

I would like to thank the members of NATA for their support in the election. A special thanks to Bud Miller for his many, many contributions to NATA.

Sincerely,

Frank George

Frank George
President NATA

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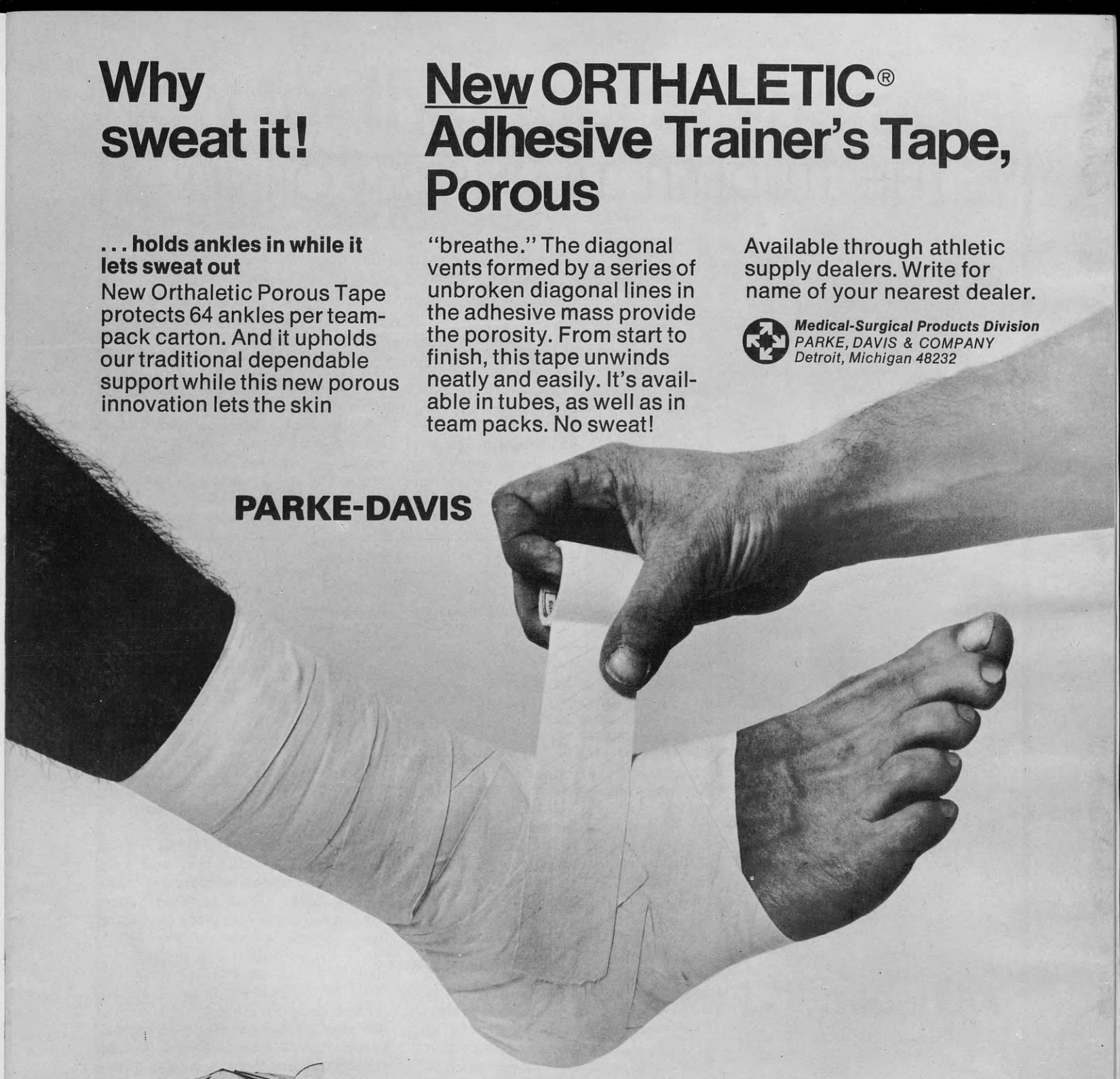

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PD-JA-06476-2-MS (1-74)

THE STUDENT TRAINER'S CORNER

Mark Gorman, Sr.
Student Trainer
MANKATO STATE COLLEGE

TRAINING ROOM OBSERVATION

As I progressed in my educational career toward a degree in English Education, it was explained to me that one of the best weapons at my disposal to fight my way past the malevolent dragon called High School Administrators to reach the Holy Grail of a teaching position was a coaching certificate. One of the courses required to attain this certificate had the imposing title of Athletic Training. My memories of the training room from my high school days brought back images of a room which could only be compared to the shops of the ancient apothecaries — a room in which student trainers and teammates could be more dangerous than any opponent on the field of combat. My fears were lessened somewhat when I learned that at least half of the class periods would be in a classroom, and the periods in the training room would be behind locked doors. Then came an edict from the classroom instructor that sent shivers of apprehension through me — "You must spend four hours of observation in the training room during periods of athletic activity." Since it is common knowledge that most "jocks" consider English majors as "fags" or at best effeminate, I had visions of myself being taped into grotesque positions, covered with elastic bandages, and tossed into the cold whirlpool with a degree of noncholance reminiscent of Odysseus' encounter with Cyclops. However, considering the pen to be mightier than the sword (or any other instrument in the training room), I took a deep breath and went forth to my ordeal.

Imagine my considerable amazement therefore, when I found a clean, well-organized, shiny facility completely void of the sinister overtones that were part of the memories of my youth. The room was divided into two distinct sections, the first section covered about one half the total area and consisted of three tables set lengthwise on the right hand side, and two tables set widthwise on the left hand side. There were also two tables containing assorted wrappings, bandages, tape, etc.; on desk, one refrigerator, one table containing materials pertinent to the care of the feet, (i.e. an electric hair cutter, lubricant, etc.) and a set of shelves neatly stacked with an impressive assortment of medical paraphernalia. The back half of the room was also divided into a right and a left side. The right side consisted of one warm whirlpool, one cold whirlpool and an ice machine (for the cold whirlpool). The left hand side consisted of three tables set widthwise, a large cabinet containing cleaning materials, a diathermy and an ultra-sound treatment machine. Directly in the center of the back wall was a weight machine designed to strengthen legs. All in all, I was impressed by the cleanliness and organization that was everywhere apparent. I was still skeptical however — the athletes had not yet appeared.

They appeared much as I had remembered them; hulking masses of oversized muscle. There was a change however. These were not the rowdies of my youth, these were not the descendents of the Mongel Hordes that I remembered so well. The trainers were in charge here, there was no doubt about that. There was something almost comical in the way these great taurine athletes willingly submitted to the ministrations of these trainers, who at best were half their size. I then realized that the reason for this atmosphere was the completely confident, competent and professional manner which the trainers displayed while pursuing their duties. I almost allowed myself the luxury of studying the peculiarities of this phenomenal behavior, but I remembered myself and switched to the observation of the training techniques. I had been told that there are five areas of athletic training: prevention, emergency preparedness and care, protective methods, treatment and rehabilitation, and the psychological area. I decided to check and see if all areas were apparent in the training room.

A good part of prevention is conditioning and the only apparent conditioning apparatus was the leg bench described earlier. Behind it was also a chart describing its proper use and the desirable goals of the program. It was used by at least three persons

New for the Sports Therapist

M lastic bandages

M lastic bandages are washable urethane foam with rayon on both sides. They are available in 2", 3", 4" and 6" widths and have many advantages over regular rubberized bandages.

- 25-40% lower in price
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- Absorbent for use on wounds
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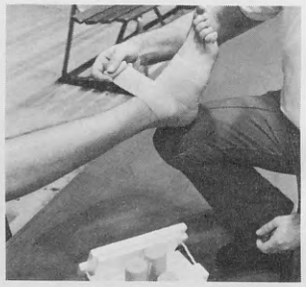
- Urethane foam will hold water, makes bandage a good cold compress

How to use M lastic bandages as the new water soaked, cold bandage.

1. Place assorted sizes of M lastic bandages on their convenient tray and soak under a cold water faucet.

2. Put water soaked M lastic bandages in the refrigerator (not in the freezing compartment).

3. Store refrigerated, water soaked M lastic bandages in a styrofoam cooler and keep at the team bench.



4. Wrap injured area with cold M lastic bandages. To hold wet bandages firm use Mueller's M underwrap. No clips or tape are necessary.

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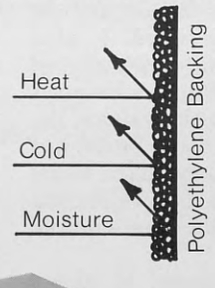
M roll is a waterproof, ointment-proof padding for hot and cold packs made from thin polyurethane foam with a non-breathing, extra tough polyethylene backing. M roll's superior thermal barrier works like a rubber jacket to keep cold packs cold and hot packs hot. And its strong backing holds the pack securely next to the skin. For hot packs apply Muellergesic to the injured area, cover with M roll, and hold in place with M lastic bandage. For a cold pack use MuellerKOLD or ice cubes. M roll comes in a handy dispenser and is 10 inches wide and 15 yards long.



For more information and price lists on M lastic bandages and M roll fill out this coupon.

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during my observation. Another aspect of prevention is taping, and the taping was done quickly and efficiently on the three lengthwise tables at the front of the room. Any athlete wishing to have his ankles taped placed one protective gauze pad on the anterior side of the ankle, one gauze pad on the posterior side, and then waited in line to be taped. The trainers applied one quick layer of underwrap and then taped the ankle with a Louisiana type wrap.

Emergency preparedness and care were everywhere apparent. Bandages and ointments were within immediate reach, as were splints and a stretcher. Well packed medical bags were also used whenever an athletic activity was in session out on the field.

The protective methods I saw most often dealt with abrasions. The abrasions were covered with a sauve and then bandaged and taped to protect them and keep them clean. Of particular interest however, was a knee that was taped. The object of the taping was to keep the knee from extending into a locked position, and to add some support to the knee joint itself — especially on the medial side. The student trainer was obviously knowledgeable and taped the knee quickly and again efficiently.

Treatment and rehabilitation was the area that took up most of my observation time. I recall seeing ice massages applied to a separated shoulder, a forearm, the hamstring area on the leg, and the quadriceps area of the leg. I saw cold immersion baths for everything from a dislocated big toe, through sprained ankles, "shin splints", to a couple of knees recovering from surgery. With the sprained ankle, pressure wraps and range of motion exercises were also included. For the knees, exercises including isometric contraction of the quadriceps muscles, leg lifters, hip flexors, and toe raisers were encouraged. I also observed heat packing—especially of lower back sprains. Warm whirlpools were used for people with strains of the muscles in the arms or legs. I even had the opportunity to observe ultra sound treatment—once used in conjunction with the warm whirlpool, once with the protective jelly.

Throughout this period of forced captivity, I attempted to stay on the lighter side of these behemoths. I found that the most effective way was to lower my normal voice three octaves and express interest in the manner in which they had been injured. This invariably endeared me to them, and they related stories that would rival any of the tales from Arthur's Court. It was then that I realized the importance of the fifth area—psychology.

Though it would seem obvious that no one would do anything to endanger their physical person, it seemed that the smell of sweat and the roar of the crowd made these gladiators uncognizant of the fact that they could further injure themselves. The role of protecting these people from themselves fell to the head trainer. I found that he was a master of athletic psychology; alternately cajoling, teasing, and threatening these individuals into following instructions that were beneficial to their health. There seemed to be two reasons for his success: the athletes respected his knowledge of athletic training, and he had an instinct for knowing which method of motivation would best influence each individual.

I was obviously impressed with my observations so far, but there was one incident left that shattered forever my stereotype of the athletic training room. In ancient Greece, athletics were considered purely male forms of recreation. It is common knowledge that any woman found at the Olympic Games was killed on the spot. However, down through the ages, women had wormed their way (and rightfully so, I think) into the world of athletics. But there was always one spot left, one sacred sanctum of the male world of athletics—the training room. Imagine my surprise therefore when it was announced that women would be entering the training room!! And in they came—boldly and proudly, as if they had every right to be there. Recovering my composure, I scanned these persons to see how they compared to the Amazons I had expected. It would be much more realistic to compare them to modern day Dianas. I especially remember one pert and perky young lady who walked up to the cold whirlpool and delicately plopped two delightful legs into the water amidst a mass of male limbs. Women in other parts of the training room were receiving prompt and proper care in all areas of treatment and rehabilitation!

The training room certainly had changed!! All of my stereotypes and misconceptions had totally been debunked, my fears had been forgotten, and I actually found myself becoming totally fascinated and involved. I knew that American literature had come a long way from the witch trial writings of Cotton Mather, now I also know that athletic training has come just as far—and you know, I kind of like that change.

✚

A valuable guide to identification, management and prevention of athletic injuries!

THE DOCTOR AND THE ATHLETE

2nd Edition

by Isao Hirata, Jr., M.D.

The problem of athletic injury in all its aspects — from diagnosis and treatment, to rehabilitation and prevention — is examined thoroughly in this new edition of a book by the former team physician for intercollegiate athletics at Yale. Updated to include the latest information on sports medicine, it covers such current subjects as heat problems and the new drinking solutions, drug problems and drug abuse, weight loss for wrestling and similar activities, artificial turf, cleat design, and "big-time" grant-in-aid athletic programs.

This helpful work on sports medicine, by a "doctor on the field," deals with major disabilities and with the daily strains, sprains and bruises that account for 95% of all athletic injuries. Of special interest to the athletic trainer and coach are such topics as rehabilitation measures, prevention of injuries through sound training and conditioning, the relation of diet and nutrition to athletic conditioning, and the physical basis for exclusion from athletics.

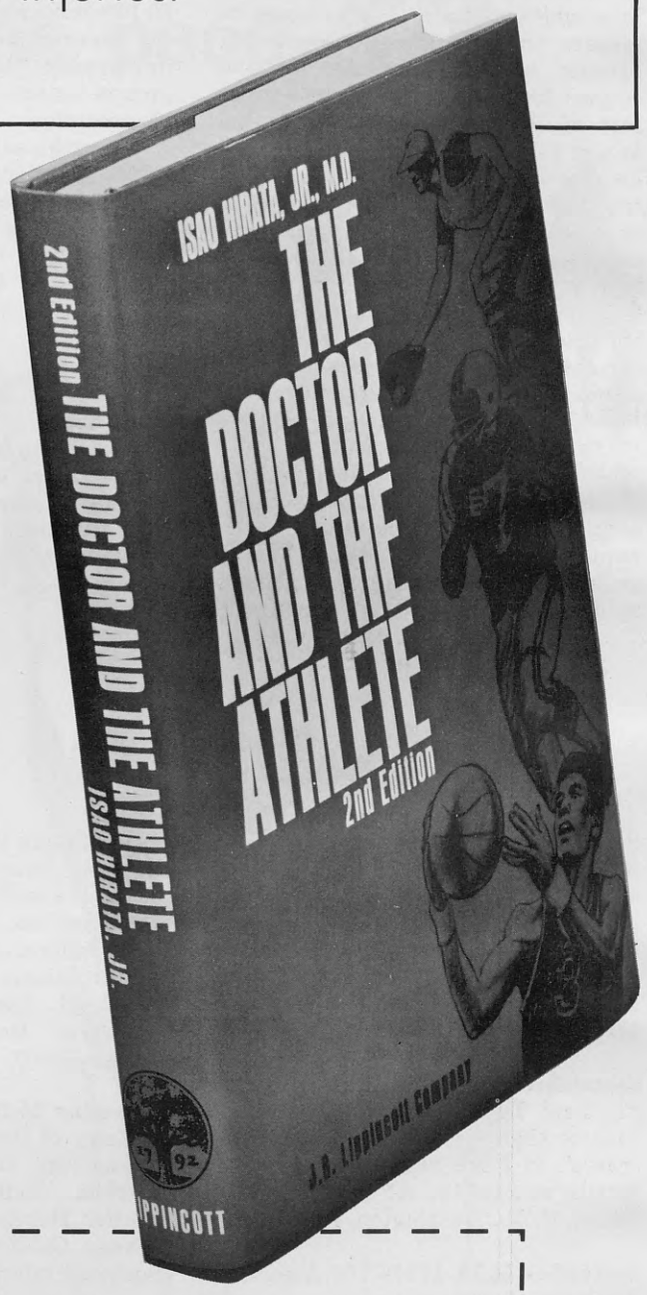
328 pages / Illustrated / 2nd Edition, 1974 / $16.00

From reviews of the 1st Edition:

". . . an excellent book for the team physician and trainer who each day are deluged with the athlete's numerous medical problems."
— *The Journal of Bone and Joint Surgery*

". . . should be a part of the library of anyone involved in the conditioning or training of athletes . . . "
— *Current Medical Digest*

". . . must reading for physicians and trainers alike."
— *Medical Opinion & Review*



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LETTERS TO THE EDITOR

Dear Editor:

As an athlete who has been treated in a whirlpool bath, I have come to respect their curative powers, but because of my knowledge of and respect for electricity, I have a great fear of them. They are a potential hazard to an occupant or to a trainer because in case of line-to-ground current leakage, as a result of a defect in or wiring of the motor, anyone in contact with the stainless steel tub would be electrocuted immediately.

Standard current breaker protection protects against overloads, when current exceeds 20 amperes, but they do not trip when line-to-ground current leakage occurs. These small amounts of current in conjunction with the water hazard can cause electrocution. Today there exists a circuit breaker, (ground fault circuit interrupter), which can detect small amounts of current leaking to ground, 5 milli-amperes (5/1000 amperes), and immediately shut off the circuit. Heart fibrillition is caused by current in the 50-100 milliampere range; therefore, the inexpensive ground fault circuit interruption (GFI) can prevent line-to-ground current leakage and possible electrocution.

Since this safety device can prevent such a disaster at a moderate price, I strongly urge that all whirlpool baths immediately be outfitted with G.F.I.'s.

Respectfully submitted,
Ben Madonia
Hamilton College
Clinton, New York

Dear Ben,

Thank you for bringing this dangerous situation to our attention. I am sure our members will look into each of their situations and take the necessary precautions.

Editor

To The Editor:

I would appreciate the opinions of Athletic Trainers regarding the value of university courses and/or workshops that would go into some depth material on the physics, effects, techniques and indications on various modality units such as microwave, short wave diathermy, ultrasound, infrared, etc.

Thank you for your help.

Ann Downer, Assoc. Professor
Physical Therapy Division
School of Allied Medical Professions
Ohio State University
1583 Perry Street
Columbus, Ohio 43210

Let's get her some answers, trainers!

Editor

CALENDAR OF COMING EVENTS

September 8-11, 1974—The American Academy of Orthopedic Surgeons will sponsor a course on "Early Care of the Injured Athlete" in Ann Arbor, Michigan. For further information, contact Gerald A. O'Connor, 326 North Ingalls Street, Ann Arbor, Michigan 48104.

September 12-14, 1974—The American Physical Therapy Association will sponsor the course "Neurological Disorders" in Louisville, Kentucky. For details, contact the APTA, 1156 15th Street, N.W., Washington, D.C. 20015.

September 12-14, 1974—The American Academy of Orthopedic Surgeons will sponsor a refresher course in emergency care in San Francisco, California. For more information, contact Michael W. Chapman, M.D., 22nd and Petrero Streets, San Francisco General Hospital, San Francisco, California 94110.

September 15-18, 1974—The American Academy of Orthopedic Surgeons is sponsoring two symposiums on Orthopedic Nursing in two cities. For information on the symposium in San Diego, contact Howell Wiggins, M.D., 2850 Sixth Avenue, San Diego, California 92103. Information on the symposium held in Atlanta can be obtained from Joseph H. Dimon, III, M.D., 1938 Peachtree Road, N.W., Atlanta, Georgia 30309.

September 26-28, 1974—The American Academy of Orthopedic Surgeons will sponsor the course "The Neck" in Anaheim, California. Dr. E.Shannon Stauffer, Rancho Los Amigos Hospital, Downey, California 90242, will provide additional information.

November 6-8, 1974—"Management of Acute Spinal Cord Injuries" will be presented by the American Academy of Orthopedic Surgeons in Phoenix, Arizona. For further information, contact John Young, M.D., 1033 East McDowell Road, Phoenix, Arizona 85006.

November 11-14, 1974—The American Academy of Orthopedic Surgeons will sponsor a symposium on "Reconstructive Surgery of the Knee" in Cleveland, Ohio. Charles M. Evarts, M.D., can be contacted for further information at the Cleveland Clinic Foundation, 9500 Euclid Avenue, Cleveland, Ohio 44106.

November 20-22, 1974—A symposium on "Upper Extremity Trauma" will be sjponsored by the American Academy of Orthopedic Surgeons in San Antonio, Texas. For further information, contact David P. Green, M.D., 7703 Floyd Curl Drive, San Antonio, Texas 78284.

Athletic Training will be happy to list events of interest to persons involved in sports medicine, providing we receive the information at least two months in advance of publication. Please include all pertinent information and the name and address of the person to contact for further information. This information should be sent to Jeff Fair, Athletic Department, Oklahoma State University, Stillwater, Oklahoma 74074.

FRONT-RUNNERS

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TRACK AND FIELD ATHLETICS

Now in an up-to-date 8th edition, this pioneering text provides students with in-depth coverage of the range of track and field events; including technique, conditioning and the physiological principles upon which each is based. Although the authors have retained those parts of previous editions which remain valid and useful, many major changes are incorporated throughout to accurately reflect current research and modern methods. New techniques such as the "Fosbury Flop" high jump style and the Triple Jump are graphically detailed. Rules and comparative records for scholastic competitors have been updated.

By FRANCIS X. CRETZMEYER; LOUIS E. ALLEY, Ph. D.; and CHARLES M. TIPTON, Ph. D. July, 1974. 8th edition, 330 pages plus FM I-X, 7" x 10", 191 illustrations. Price, $10.95

New 3rd Edition!
Wakefield-Harkins

TRACK AND FIELD FUNDAMENTALS FOR GIRLS AND WOMEN

A thorough revision of a leading text, this new edition begins with training of the novice and continues through coaching techniques for the skilled performer. The authors, coaches and a kinesiologist, present updated records, revised discussions on skill performance in various events, redrawn diagrams, new photographs and drawings, and an added section on the race walk. Dedicated to the improvement of track programs at all levels, this new edition is divided into six parts; an introductory section; and sections on running, hurdling, jumping, throwing, beginning a track and field program, and management and planning. A wealth of valuable information is included in the appendixes.

By FRANCES WAKEFIELD, M.S.; DOROTHY HARKINS, Ed. D.; with JOHN M. COOPER, Ed. D. September, 1973. 3rd edition, 296 pages plus FM I-XVI, 6¾" x 9¾", 276 illustrations. Price, $10.25

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ANNOUNCEMENTS

CERTIFICATION INFORMATION

Persons wishing to be certified as an athletic trainer by the N.A.T.A. must fully qualify under the Procedures for Certification prior to taking the certification examination.

The examination is given one day prior to the annual convention (maximum of 50 candidates) in June at the convention site and on the third Sunday of January and March on a regional basis. In certain instances other dates may be announced if determined by need on the district level by newsletter.

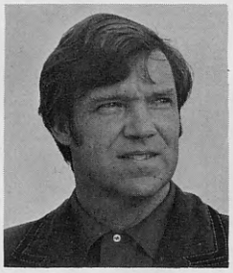
Persons desiring to take the examination may obtain application materials from N.A.T.A., 3315 South Street, Lafayette, Indiana 47904, provided the individual meets the membership requirement. The application must be requested in writing ninety (90) days prior to the date of examination. No applications will be furnished to applicants less than sixty (60) days prior to the examination date in order to assure that the application deadline of six weeks prior to the examination may be met.

If further information is required, contact Lindsy McLean, Chairman, N.A.T.A., Board of Certification, 1000 South Street, Ann Arbor, Michigan 48105.

The University of South Florida's athletic trainer, Tony Jonaitis, was voted Academic Professor of the Year.

The selection, made by 4,000 graduating seniors, was announced Sunday (June 9) at graduation ceremonies in Tampa's Curtis Hixon Convention Center.

The 44 year-old physical education professor instructs students who are focusing their studies in Elementary and Secondary Physical Education or Physical Education for the Handicapped.



Jonaitis was recently cited by the Hillsborough County School System for his work in the Olympics for the handicapped.

To the hundreds of students involved in South Florida's six intercollegiate sports and the intramural program, Jonaitis is a "healer." In his tiled, sparkling training room, he moves with lightning speed taping ankles, ice bagging bruises and sprains, giving instructions to those using the whirlpool, and overseeing ultra sonic therapy.

However, to those students will go out into school physical education systems across the country and to those who took just one of his courses, he is professor of the year.

The thing he does so well, according to fellow faculty members, is to personalize the learning experience of each student and motivate him to achieve his goals.

An outgoing personality, Jonaitis establishes rapport with the students, but maintains a firm, no-nonsense attitude. And students work very well with him.

Before coming to USF nine years ago, the University of Tampa alumnus was a teacher, trainer and coach at Hillsborough High School in Tampa. Two of those years, he found time to teach Crew at his alma mater.

Jonaitis, who was awarded his masters degree at Springfield College in physical education and rehabilitation in 1956, devotes a great deal of his extra hours to the handicapped.

The native of Keene, N.H., and his wife, Joyce, have two children.

JOURNAL DEADLINES

Any announcements, requests that you wish to be considered for publication must reach the Journal by the following deadlines:

Issue	Due Date
December	November 1
March	February 1
June	April 15
September	August 1

Materials should be sent to the following address:

Mr. Rod Compton
Sports Medicine Division
East Carolina University
Greenville, N.C. 27834

Sayers "Bud" Miller has changed positions. He is now a health education instructor and coordinator of the NAIRS (National Athletic Injury/Illness Reporting System) at Penn State University.

Bud's new addresses are:

HOME: 270 Madison Street
State College, PA 16801

OFFICE: College of Health, Physical Education and Recreation
10 White Building
Pennsylvania State University
University Park, PA

Sports Medicine Workshop

Cal State University, Hayward; Dec. 14 & 15, 1974 —

- Strength and Muscular Development
- Anatomy & Physiology of Strength Development
- Analysis of Motion
- Training Program of Bulk & Strength Development
- Relationship of Strength to Skill
- Strength Training for Specific Sports
- Featured Speakers: Ed Burke, Universal Equipment
  Ron Useldinger, Exer-Genie

Contact Don Chu for further information.

NATA APPROVED EDUCATIONAL PROGRAMS

ARIZONA

UNIVERSITY OF ARIZONA
Department of Health, Physical Education and Recreation
Tucson, Arizona 85721 (Gary Delforge or Peggy Anderson, Physical Education for Women)

CALIFORNIA

CALIFORNIA STATE UNIVERSITY, FULLERTON
Department of Health, Physical Education and Recreation
Fullerton, California 92634 (Jerry Lloyd)

CALIFORNIA STATE UNIVERSITY, LONG BEACH
Department of Health, Physical Education and Recreation
Long Beach, California 90801 (Dr. Daniel Arnheim)

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE
Department of Health, Physical Education and Recreation
Northridge, California 91324 (Chuck Wolcott)

ILLINOIS

EASTERN ILLINOIS UNIVERSITY
Department of Health, Physical Education and Recreation
Charleston, Illinois 61920 (Dennis Aten)

WESTERN ILLINOIS UNIVERSITY
College of Health, Physical Education and Recreation
Macomb, Illinois 61455 (Roland E. LaRue)

INDIANA

BALL STATE UNIVERSITY
Department of Men's Physical Education
Muncie, Indiana 47306 (Ronald Sendre)

INDIANA UNIVERSITY
School of Health, Physical Education and Recreation
Bloomington, Indiana 47401 (Robert Young or Sam Newberg)

INDIANA STATE UNIVERSITY
School of Health, Physical Education and Recreation
Terre Haute, Indiana 47809 (Mel Blickenstaff)

PURDUE UNIVERSITY
Athletic Department, Mackey Arena
West Lafayette, Indiana 47907
(William E. Newell)
(Programs offered by both the Physical Education Department and Health Education Department)

IOWA

UNIVERSITY OF IOWA
Department of Intercollegiate Athletics
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Iowa City, Iowa 52242 (Ed Crawley)

LOUISIANA

LOUISIANA STATE UNIVERSITY
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Baton Rouge, Louisiana 70803
(Marty Broussard or John Wells)

MASSACHUSETTS

NORTHEASTERN UNIVERSITY
Department of Physical Education
Boston-Bouve College
Boston, Massachusetts 02115
(Kerkor Kassabian)

MICHIGAN

CENTRAL MICHIGAN UNIVERSITY
School of Health, Physical Education and Recreation
Mount Pleasant, Michigan 48859
(Kenneth Kopke)

MINNESOTA

MANKATO STATE COLLEGE
Men's Physical Education Department
Mankato, Minnesota 56001
(Gordon Graham)

MONTANA

UNIVERSITY OF MONTANA
Department of Health, Physical Education and Recreation
Missoula, Montana 59801
(Dr. Walter C. Schwank, Chairman)

NEW MEXICO

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Department of Health, Physical Education and Recreation
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(Ron Kanoy)

EAST CAROLINA UNIVERSITY
Sports Medicine Division
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Greenville, North Carolina 27834
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(A.G. Edwards)

NORTH DAKOTA STATE UNIVERSITY
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(Richard F. Irvin)

UNIVERSITY OF OREGON
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Eugene, Oregon 97403
(Lou Osternig)

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SLIPPERY ROCK STATE COLLEGE
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Slippery Rock, Pennsylvania 16057
(Dr. James R. Pennell)

WEST CHESTER STATE COLLEGE
School of Health and Physical Education
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TEXAS CHRISTIAN UNIVERSITY
Department of Athletics
Fort Worth, Texas 76129
(Elmer Brown)

WASHINGTON

WASHINGTON STATE UNIVERSITY
Department of Physical Education for Men
Pullman, Washington 99163
(Richard Melhart)

RESULTS OF 1974 N.A.T.A. GOLF TOURNAMENT PLAYED AT SOUTHVIEW GOLF CLUB-KANSAS CITY, MO.

1st	Pete Howard Punahou School, Honolulu, Hawaii	77
2nd	Howard Epps Missouri Western	81
3rd	Dr. Don Cooper Oklahoma State University	81
	Jim Conboy	82
	Dale Everett	83
	Walter Hayes	83
	John Mooney	84
	Jim Sullenger	87
	Warren Morris	90
	Bill Semon	92
	Paul McGannon	95
	Dean Weber	98
	Bill Dascoulias	103
	William Ewald	105
	Rick Hill	128

MEMORIAL

Edward F. Rozy passed away April 4, 1974. Mr. Rozy had spent twenty-six years with the Bear organization, his last three as director of training services. He had been trainer for the Bears beginning in 1947 and continued through 1970 when he was assigned his new responsibilities in the area he was most familiar. Mr. Rozy had been the longest service active trainer in the NFL and was one of the best known and respected men in his profession. A graduate of Marquette University in 1933, he lettered in football and then became intramural director, head trainer of all major sports and coach of a half dozen minor sports teams. From 1944 through 1947, he was a lieutenant in the U.S. Navy. Mr. Rozy was a resident of Niles, Illinois, where his wife Jo and two daughters Mary and Julie still live.

POTPOURRI

Dennis Aten
Certified Athletic Trainer

LOW BACK PAIN IN FOOTBALL

A theory explaining the high incidence of low back pain among interior linemen—ends, tackles, guards, and centers—in college football was offered by three orthopaedic surgeons from the University of Pittsburgh.

An analysis of the various postures and movements in interior line play shows the players assume positions that put a large stress on the bony spiral column.

The linemen assume a three-point or four-point stance in which the low back is bent and at the same time the spine at the neck is exceedingly stretched in order that the player can look ahead. From this position, the players drive forward and upward, colliding and attempting to push each other backwards. The lower spine absorbs much of this collision force. Single or repeated blows can results in a fracture at the arches of the lower vertebral column.

The players commonly develop spondylolysis, a lack of fusion of a portion of a vertebra with another portion, or spondylolisthesis, a deformity of the spinal column caused by the gliding forward of a vertebrae in relation to the sacrum, or back wall of the pelvis.

DOWN WITH HIGH HEELED SHOES

There have been reports floating around regarding the relationship of wearing high heeled shoes and Achilles' tendon injuries. The theory is that constant use of high heeled shoes allows the gastro-soleus mechanism to shorten, thus causing a loss of flexibility in dorsiflexion. When an athlete is then forced to wear low or no heeled shoes during practices or contests, there is added stress to the Achilles' tendon.

This theory seems reasonable enough. It hasn't been too many years since a similar relationship was noticed between Achilles' tendon injuries and wearing cowboy boots.

TAPING AFTER A REHAB?

Once an ankle sprain has been rehabilitated in young athletes, nothing is to be gained by using protective taping, a study at the U.S. Military Academy, West Point, New York, has concluded.

"We are not saying protective taping does not help prevent sprain," the authors told the American Academy of Orthopaedic Surgeons. "We are saying that once rehabilitation of a sprain is adequate the chance of a re-sprain is not higher than in an untaped control group.

"Young men can return to competitive activity earlier than those in this series with taping. Muscle control of painless joint movement is the line of defense we work to achieve."

The first phase of treatment used at the U.S. Military Academy is to minimize swelling with ice or a cool whirlpool. The ankle is wrapped and elevated. Once swelling has stabilized, bending of the ankle is begun at the patient's own pace. An intermittent pressure socking also is used. Following bending ability comes walking ability, including a toe rise to support the body weight. In the next phase, strengthening exercises are given, such as toe risers against a gym apparatus and turning the ankle in and out on an ankle machine. Endurance is gained by jumping rope, stationary bicycling and running, with the injured ankle taped at the beginning of these workouts.

The final test is the ability to hop symmetrically, running a figure-8 pattern and speeding up and stopping abruptly without favoring the untaped injured ankle.

The authors also felt that plaster immobilization of a stable sprain prolongs the functional recovery approximately by the number of days in plaster. They use plaster immobilization in cadets going on leave or not under our direct supervision, and in officer or older population.

The mean disability figures for full recovery are eight days for mild sprain, 15 days for moderte sprain and 19 days for severe sprain.

The authors opposed use of enzymes, anesthetic agents or steroids, asserting they do not shorten the disability period or hasten healing.

PANTYHOSE WRAPS?

It has been reported that in an emergency one therapist used pantyhose for a pressure-supportive ankle wrap. There might be some cause for questioning the effectiveness and ability to apply even pressure; however with athletic budgets going the direction they are, it might be wise to hang on to used panty hose for emergency purposes.

MUSCULAR CONDITIONING

A report in the Physical Fitness Research Digest recently discussed the various types of muscular exercise. They reached many conclusions, several of which should be interesting to athletic trainers.

*1. The isotonic form of muscular conditioning should be utilized in preference to the isometric form. This type of exercise is prone to be superior in the development of muscular strength and is superior for the improvement of muscular endurance. Further, recovery from muscular fatigue is faster following isotonic exercise. And motivation is greater, since the participant can see what is being accomplished and explicit goals can easily be set.

*2. Isometric exercise, however, may be used effectively in the development of muscular strength and is especially useful when circumstances preclude the use of the isotonic form.

*3. From the standpoint of overall physical fitness enhancement, neither isotonic nor isometric forms of exercise are adequate, as they do not contribute appreciatively, if at all, to the improvement of circulatory-respiratory endurance.

*4. The use of progressive resistance exercise, especially training with weights, although weights are not essential, has much to commend it in the development of muscular strength and endurance. The following principles of applying PRE have been reasonably well supported: for strength, use heavy weights with few repetitions; for endurance, use light weights with many repetitions.

BIANNUAL BOARD OF DIRECTOR MEETINGS

A statement in a district four newsletter reveals some of the growth, not only in membership, but in work and programs that the NATA is experiencing.

"Since we have gone to the Board of Directors winter meetings it has meant extra sessions, but much more is needed to cover the growing facets of N.A.T.A. business. It just is too large to cover everything at the National meeting site once a year. I think the meetings twice a year help eliminate hasty decisions and gives the Directors an opportunity to go back to the members of his District for the feelings toward key subjects of importance."

NOT FOR MEN ONLY

by Holly Wilson
Certified Athletic Trainer

REPORT OF THE AD HOC COMMITTEE ON WOMEN IN ATHLETIC TRAINING – JUNE 1974

Members of the committee, as well as interested women trainers, met for the first time on June 10 in Kansas City. The purpose of the meeting was to discuss the objectives of women in athletic training and formulate recommendations on how the N.A.T.A. could better serve the needs of the woman trainer. Our objectives focus on education, an understanding of the role of the athletic trainer. We are seeking to:

1) Establish a new professional role in the field of athletics for women, that of the woman trainer.

2) Gain support and understanding of administrators and colleagues for the need for women athletic trainers.

This educational process could be enhanced by the N.A.T.A. if the organization, through its present standing committee, would:

1) Help provide more educational opportunities in the field of athletic training for women.

2) Insure more invitations to women in physical education to attend N.A.T.A. meetings on the district and national level so their interest in the field will be stimulated.

3) Circulate publications pertaining to women as professional trainers in physical education departments at junior colleges, colleges and universities.

4) Provide vocational materials to circulate in junior high and high schools that present women in the field of athletic training.

5) Make available pamphlets on qualifications and educational requirements for athletic training, stressing that the field is open to women and a desirable career opportunity,

Finally, women trainers should be available at all athletic programs for girls and women regardless of the level of competition—local, state, national or international. In international competition, the N.A.T.A. could help the women trainers gain recognition by the Olympic Committee for placement on Olympic and Pan Am training staffs.

The committee's recommendations were presented to the Board of Directors by the chairperson on June 11. All of the requests were approved except part of one. The Board was asked to:

1) Appoint women representatives to each of the existing standing committees. Action: Each committee chairperson will be asked to nominate at least one woman for membership on his committee.

2) Appoint liaisons to the Division of Girls and Womens Sports, the Association of Intercollegiate Athletics for Women, and the National Federation of High School Athletics. Action: Letters requesting liaison status with the DGWS and AIAW have been sent to officials in each organization. The N.A.T.A. already has a liaison with the NFHSA so the request was denied.

3) Continue the Ad Hoc Committee for another year.
Action: Approved.

* * *

JOB OPPORTUNITIES FOR WOMEN TRAINERS

In late February, a two page questionnaire seeking information on job opportunities for women in athletic training was sent to all junior colleges, colleges and universities that were members of the AIAW. The research was carried out by Katie Grove, a graduate student in the athletic training specialization at Indiana State University and received approval and financial support from the N.A.T.A.

Of the 381 questionnaires sent out, 57% or 218 were returned by the deadline date of April 1. Seventeen positions for women trainers were identified.*

Question 1 Do you plan to hire a woman athletic trainer in the fall of 1974?
a. Yes – 17 schools or 8%
b. No – 179 schools or 82%
c. Undecided – 21 schools or 10%

Question 2 If you answered "yes" to question number one, what other responsibilities would she have? (Respondents could check as many as applied.)

	Response	Blank
a. None, except related to Athletic Training	9	8
b. Coaching	0	17
c. Teaching	2	15
d. Both coaching and teaching	2	15

Question 3 If you answered "no" to question number one, what is your reason? (Respondents could check as many as applied.)

	Response	Blank
a. Department does not see need for it	32 or 18%	147
b. Administration does not see need for it	29 or 16%	150
c. Financial Reasons	106 or 59%	73
d. Already have a faculty athletic trainer	48 or 27%	131
e. Already have a student athletic trainer	42 or 24%	137
f. Coach does an adequate job	26 or 15%	153

Question 4 How many intercollegiate sports for women do you have?

a. ~~None~~	"Yes"	"No"	"Undecided"**
a. None	0	1 or .6%	0
b. 1-3	0	30 or 17%	0
c. 4-7	6 or 35%	97 or 54%	9 or 43%
d. 8-11	10 or 59%	43 or 24%	9 or 43%
e. 12 or more Blank	1 or 6%	3 or 2%	3 or 14%
Blank	0	5 or 3%	0

*At this time 26 positions have been identified. Some institutions have notified Indiana State that positions have been finalized since the schools returned the questionnaires and "late" questionnaires have been tallied.

**The questionnaires were analyzed by computer. They were grouped according to how question one was answered. The 17 schools that answered "yes" to the question were in one group, the 179 who answered "no" in another, and the 21 "undecided" in a third.

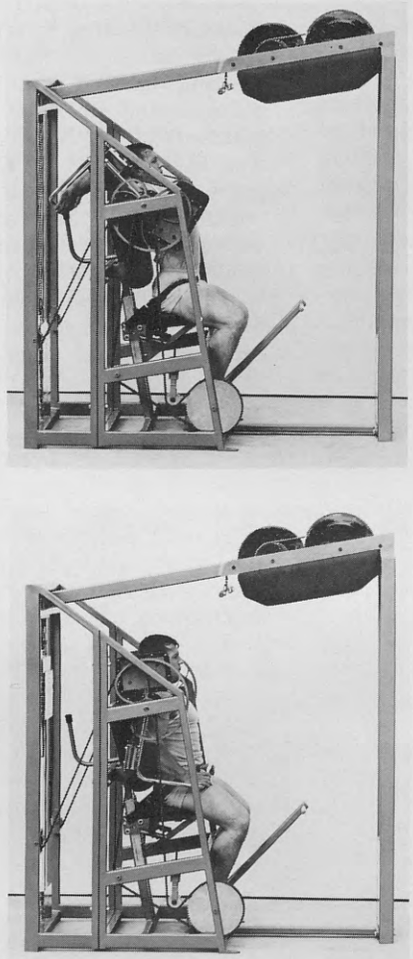
Continued on page 143

Flexi

As a Result of Exercise

Heavy exercise is a requirement for increasing the flexibility of an athlete in any sport. Yet the stereotype still exists that relates muscular development to a restricted range-of-movement; in a large part of the public mind, great strength and a lack of flexibility still go together like bread and butter.

While, in fact, the exercises that are best for increasing strength are also best for increasing flexibility. Both the potential for strength and the potential for flexibility vary on an individual basis; some men find it rather easy to build great strength or an unusual degree of flexibility, or both, and some men find it difficult or impossible. But proper exercise is capable of increasing the muscular strength of almost anybody to a marked degree, and also capable of increasing the flexibility of almost anybody to an equally marked degree; even if the final results are not equal in all cases. And while it is not reasonable to expect exactly equal results in all cases, it is both reasonable and logical to use the same type of exercise for increasing both strength and flexibility, and also reasonable and logical to use the same exercises for men with good potential and men with poor potential.



Over 240 degrees of rotary resistance is provided in the primary movement in a Nautilus Pullover/Torso-Arm Machine.

In effect, the method remains the same, regardless of the potential of the subject, and regardless of the purpose for which training is being conducted. When a few common misconceptions are cleared up, it will be obvious that heavy exercise is not only capable of increasing flexibility but is actually required for that purpose.

BUT IT SHOULD BE CLEARLY UNDERSTOOD . . . . that it is possible to perform heavy exercises without increasing flexibility. If mid-range movements against heavy resistance are practiced, the result may eventually be a marked increase in strength with no increase in flexibility. And if such training is performed in a haphazard manner, with little or no attention to the development of equal degrees of strength in antagonistic muscles, then the result may well be an asymmetrical muscular development combined with an actual reduction in flexibility.

Such limited range exercise movements and such a choice of exercises is certainly not the most productive style of training even for the purpose of increasing strength; strength increases are produced much more rapidly and to a greater degree when full-range exercises are used, and strength increases also come faster when a balanced program of exercises that provides heavy work for all of the muscular structures of the body is performed. So there is really never any excuse for a badly outlined program of exercises, and no excuse for a poor style of performance. Training properly for maximum strength increases will also provide maximum increases in flexibility.

Flexibility is a result of stretching, and increases in flexibility are produced best when the resistance is heavy in the starting position of an exercise movement; heavy enough to pull the involved body-parts into a fully extended position.

ibility

By Arthur Jones

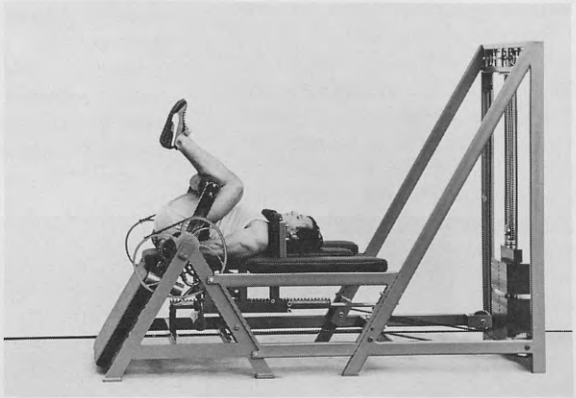
Heavy resistance is also required in the starting position of an exercise movement for the purpose of "pre-stretching" the muscles; which pre-stretching is an important requirement for the stimulation of a maximum intensity of muscular contraction.

"Intensity of muscular contraction" is certainly the most important factor for increasing strength; so it is thus obvious that a full-range exercise movement is highly advantageous for both strength and flexibility. Stretching for flexibility . . . . and pre-stretching for strength.

And it is also obvious that the resistance must be heavy enough to produce a high degree of both stretching and pre-stretching; light resistance will not provide enough force to result in either. Such "back pressure" of force that pulls against the direction of movement produced by muscular contraction is provided by all Nautilus Machines, in barbell exercises, and in conventional exercise machines such as the Universal Machine. But it is NOT provided in friction-based exercises such as the so-called "Isokinetic" or "Isonetic" devices produce.

Which is not meant to imply that all barbell exercises and the barbell-like exercises produced by the Universal Machine provide good stretching or pre-stretching. THEY DON'T . . . . because barbells and Universal Machines provide "straight line" resistance; while the movement of the body-parts caused by muscular contraction is "rotary" in nature. The result being that most barbell and Universal Machine exercises do little or nothing in the way of increasing flexibility, and likewise do not produce as high an intensity of muscular contraction as is really desirable.

A few barbell exercises do provide stretching and pre-stretching; but when these factors are involved in a barbell exercise, they are purchased at a high price . . . . the price being a total lack of resistance in the other end of the movement, the fully-contracted finishing position.



The pre-stretched starting position is shown in a Nautilus Super Hip and Back Machine. From this position, the padded resistance arm is moved through a full 150 degrees of rotation. Only Nautilus provides direct, full-range exercise for the strongest muscles in the body, the muscles of the hips and lower back.

No matter how you try to do it, YOU CAN NOT GO AROUND A CURVE WHILE MOVING IN A STRAIGHT LINE. During an exercise your body-parts move through an arc, part of a circle . . . . but the resistance provided by barbells and Universal Machines is moving in a straight line. The result being that a full-range exercise is utterly impossible with a barbell or a Universal Machine. You can have resistance during the mid-range of movement . . . . or you can have resistance at the start and during the first part of a movement . . . . or you can have resistance during the last part of a movement and at the end of a movement . . . . BUT YOU CAN HAVE ONLY ONE OF THE THREE CHOICES. And in many cases you have no real choice, you are stuck with what is available.

Most barbell and Universal Machine exercises provide only mid-range resistance, and such exercises do absolutely NOTHING for flexibility. Friction-based exercises (Isokinetics or Isonetics) are utterly useless in regard to flexibility.

Only Nautilus Machines are designed to provide the absolutely essential rotary form of movement that is required for full-range resistance, thus Nautilus Machines are the ONLY source of FULL-RANGE exercise.

VISCERAL INJURIES ON THE FIELD

Isao Hirata, Jr., M.D.

Dr. Hirata received his B.S. from Yale in 1943 and his M.D. from Yale two years later. He served as team physician at Yale from 1956-1972. Presently he is the Director of the Student Health Service at the University of South Carolina. He has authored many publications including his book THE DOCTOR AND THE ATHLETE.

by Isao Hirata, Jr., M.D.

I. Introduction

Visceral injuries, as a group and individually, comprise the most serious, life-threatening traumata encountered in athletic medicine. Their proper treatment requires, as will be seen, the attention of specialists in almost every instance, specialists who have been particularly trained to care for such injuries without regard for the specific athletic activity responsible, and, even more important, without regard for a further continuation of said activity. In short, these are injuries that must exhibit evidence of **complete** recovery before any resumption of athletic activity can be considered, regardless of the external pressures that may be exerted.

II. Discussion:

To consider this large and all-important area of athletic injuries, a regional anatomical approach will be adopted, starting at the head and passing distalward, not to place particular priority upon any one region before the other but simply to create order out of what otherwise might be chaos.

1. INTRACRANIAL INJURIES:

The most commonly encountered intracranial injury and the least significant thereof is the **cerebral concussion.** Exact definition is most difficult, since it a functional diagnosis with no specific associated pathology, despite the many conflicting opinions within the field. By definition, it is an interruption of the "stream of consciousness" that normally reflects unimpaired function of the higher brain centers, therefore, a disorganization of normal cerebral function. There are an infinite variety of degrees involved in such a definition, ranging from a split second "black-

out" with immediate total recovery to prolonged coma and stupor measured in hours. The significance of this broad range of severity remains controversial, but common to all is the one significant fact that, one way or another, impact has traversed the calvareum and penetrated sufficiently into the brain substance to cause a "disorganization". This fact, in itself, is the key to a proper follow-up of these particular problems. In short, a concussion indicated **potential** brain damage and must be respected, not ignored. Every concussion must be viewed from the possibility of brain damage and not lightly sent back into action. As soon as the diagnosis is made, all further activity must be discontinued and a period of stringent observation initiated which, according to medical feelings, should bar all contact for no less than ten days, to assure that no significant brain damage has occurred. To adopt such a policy with even the slightest "jarring" would be unreasonable, hence it should be reserved for incidents that actually involve a loss of consciousness of more than ten to thirty seconds. Arbitrary though this may be, the myriad of minimal incidents are thereby eliminated and all effort can then be concentrated on the proper observation of those significant head injuries that remain.

For it is the dire possibility of the **epidural hemmorrhage**, the **subdural hemmorrhage**, the **cerebral contusion**, and the **cerebral laceration** that must be kept uppermost in mind in all instances of head injury. Early recognition of neurological changes and/or evidence of increased intracranial pressure must be prompt and consultation sought at the earliest opportunity! Cerebral contusions and lacerations are accompanied by gross neurological changes, hence should be recognized from the first, as should even more serious associated calvereal injuries, but the subtle epidural hemmorrhage must be watched for carefully for a succession of days—in the case of the latter, for at least seven to ten days. Violation of this precept may be successful time after time, but the risk is omnipresent and, sooner or later, disaster and death will result!

2. SPINAL CORD INJURIES:

Cord injury should be obvious from the start, with neurological deficit that is unmistakable and, depending on the level, possibly lethal. Far more difficult is the prompt recognition of **potential** cord damage due to an accompanying skeletal injury for which there is, unfortunately, no x-ray on the field. It is in this area that the team physician is at his most helpless before thousands! He must always keep the possibility of such injury uppermost in his mind, whenever he examines an injured athlete, in particular when the athlete is, at the same time, unconscious. The slightest hint of cervical subluxation and/or dislocation must be aggressively sought by inquiry and examination before total paralysis and death supervene. At the same time, it must be emphasized that transportation of all such injured athletes must be undertaken with the utmost care, not only in those with obvious cord involvement, but particularly if there is the least suspicion of such a potential injury. Difficult though this may seem, a meticulous history of the injury and how it occurred and a thorough local examination will, in most cases, suffice, provided one always leans toward overtreatment of the least suspicious of these.

3. THORACIC INJURIES:

In keeping with a regional approach to visceral injuries, discussion of thoracic injuries should begin with consideration of the thoracic inlet and that portion of airway exposed to the greatest risk of injury, that is, the cervical segment. Fortunately, due to, for the most part, the excellent self-protective reflexes of the competitive athlete which draw the chin down toward the chest to avert direct injury to this area, occasionally "clothes-lining" impacts will affect the airway in one of two ways. First is the rare but unmistakable **"swallowed tongue"**, and entity **not** to be confused with the stertor of unconsciousness from posterior displacement of relaxed lingual soft tissues into the pharynx, a separate condition easily controlled by elevaton of the mandible by a simple pressure so familiar to anesthesiologists. In contrast, the true "swallowed tongue" occurs but rarely, usually after an unexpected impact, and stems from a forcible displacement of the airway and an accompanying reflex trismus which require an oral screw before the tongue displacement can be corrected. Some authorities have recommended that, in such isolated instances, loss of consciousness from anoxia will ensue sufficiently soon to obviate the necessity of such vigorous and potentially tooth-damaging action, but, when actually faced with such a situation, it will be a rare physician who will be able to sit back calmly and wait the requisite thirty to sixty seconds or more as the struggling athlete turns progressively cyanotic and loses consciousness. The second airway problem that will be encountered will result from direct blows over the larynx and the upper tracheal rings, usually resulting in contusion, very rarely if ever in actual fracture. Whether this is due to the fact that most competitive athletes are not old enough to have calcified the involved structures remains a moot point, but, suffice it to say, laryngeal fracture will always be accompanied by internal bleeding and/or edema, particularly the latter, hence must be sought for by direct examination when suspected. Without such rare findings, local ice to the area will always suffice.

Within the thoracic cage itself, external impact can penetrate to the heart and great vessels, by direct compresion between the sternum and the vertebral column; that such a mechanism can and does occur is easily demonstrated by the widely-used technique of closed cardiac massage, particularly in view of the myriad of direct sternal impacts suffered in contact sports such as football. One such episode with EKG changes has been reported, and this self-same mechanism may have had some significance in the recent death of a professional football player. Be that as it may, the overall incidence must be extremely rare, considering the prevalence of forcible impact in the area. Nevertheless careful percussion and auscultation, serial blood pressures, EKG's and X-Rays should be utilized without hesitation, should any such injury be seriously suspected.

Injuries to the pulmonary soft tissue vary from the relatively common **pulmonary contusion**, characterized by hemoptysis and an area of infiltration—which must be cleared by careful observation, good intra-broncial toilet, and prophylactic antibiotoics—to the less common **lacerations of pulmonary substance**, usually secondary to the accompanying rib fractures. These latter may be associated with varying degrees of hemothorax, hemopneumothorax, and, occassionally, a tension pneumothorax, all of which can be easily detected by careful percussion and auscultation and requiring only that the team physician **be alert** for these possibilities to afford himself an opportunity for an unhurried series of therapeutic maneuvers without panic; intra-plural aspirations for example, should neither be necessary nor undertaken in a crowded locker room, given alert diagnosis and prompt hospital referral.

4. INTRA-ABDOMINAL INJURIES:

All intra-abdominal injuries must be carefully evaluated, including all instances of "the-wind-knocked-out" since serious abdominal trauma will have an identical onset. Fortunately, the lesser condition is always shortlived, self-limiting, with full recovery within minutes, while significant intra-abdominal injury will, in all instances, persist.

Most common, will be **solid viscus injuries**, more often spleen than liver, both associated with bleeding of a greater or lesser degree, with the signs of peritoneal irritation in those anatomical areas into which said blood was drained. Thus, left upper quadrant, left colic gutter, and left shoulder pain are associated with splenic injury, while rightsided symptoms in similar areas are associated with liver injury; in both instances the bleeding can be either slow and insidious, or catastrophic in magnitude, hence diagnosis must be prompt and surgical observation and/or intervention undelayed.

Hollow viscus injuries, on the other hand, are virtually unknown within the competitive athletic framework, though not uncommon after massive abdominal impact from highway accidents. This should not be surprising under the circumstances, and more important, is most fortunate for the beleaguered team-physician. Consideration should be given to such dire possibilities at all times, but, to my knowledge, there has never been an instance of hollow viscus injury reported in competitive athletics.

In contrast, **urogenital injuries**, particularly renal, are well-recognized. **Contusion of the kidney** from a direct blow thereover must be suspected in all such instances of impact, and is reflected by gross or microscopic hematuria; the urinary bladder, on the other hand, is virtually immune from injury, as long as athletes continue to empty their bladders before practice and games; bladder injury will then require a total disruption of the pelvic ring, trauma of a magnitude far beyond what is seen in competitive athletics. Injury to the **external genitalia**, however, can and does occur, at times totally destroying the substance of one or the other testicle, with pain and disability in equal proportion thereto. Such instances are rare but have been reported, hence must enter into any consideration of competition for the monorchid athlete. As to penis and the penile-urethra, fortunately, trauma to these areas has not been reported in competitive athletics, although some injuries of the membranous urethra have been reported in motorcyclists. Such injuries, in any event, are extremely rare and easily recognized, requiring only the knowledge that they do, in fact, occur.

III. Summary

In summary, then, even the cursory glance at visceral injuries encountered in competitive athletics as has been afforded here will confirm the key characteristic of all such injuries, namely, that these injuries must be sought for aggressively and recognized at the earliest juncture. FOR THESE ARE THE INJURIES THAT KILL.

CONTINUING EDUCATION OR OBSOLESCENCE IN ATHLETIC TRAINING

Sayers "Bud" Miller
Chairman, Professional Education Committee

Down through the ages to the most current issue of almost any professional journal, the importance of continuing education has been increasingly emphasized. In athletic training, a greater variety of instructional courses and workshops, increasingly sophisticated educational tools and texts, and growing participation by athletic trainers in continuing education activities all bear testament to recognition of the urgent need to keep up with the latest developments in the field.

The danger of obsolescence is probably the primary motivator for athletic trainers' participation in continuing education activities. In fact, obsolescence, with its influence on the care of the athlete, makes continuing education a matter of necessity rather than choice. Several factors may contribute to obsolescence. The first, of course, is the well-publicized information explosion. In an age in which knowledge doubles every ten years, in which an estimated 4,500 scientific and medical journals are published annually, and in which probably a million new scientific papers are printed each year, the threat of obsolescence is very real to all health professionals and not just to athletic trainers.

The public of today, better informed about medical affairs than ever before, exercises a significant social influence on health professionals to keep abreast of changes within their fields. The press, television, and current literature all help to create a climate of opinion which not only stimulates health education but also exerts pressure to prevent injury and to improve health care.

In addition to the increase in knowledge and the expectations the public has for professional service, a third factor which may bring on obsolescence in athletic training is change within the profession itself. Many techniques and procedures learned twenty-five years ago which were adequate for that period are no longer appropriate. Additionally, the role of the athletic trainer has shifted from that of a technician carrying out specific and simple orders of physicians and coaches to that of co-worker with the physician and coach, a change which requires different skills and knowledge. This shift has compelled athletic training to define its boundaries, and athletic trainers their roles. The athletic trainer who does not keep his education current will at best, be threatened by the swiftness of change, or, at worst, be inundated by it.

In response to the critical need for professionals to review materials once learned, to increase mastery of subject matter, and to keep current, some professions support the idea of making continuing education a requisite for certain opportunities such as permission to continue licensure or certification and permission to continue membership in an organization. Persons in government have addressed themselves to the subject of continuing education to assure high minimal standards. Physicians have instituted aggressive and progressive methods to assure high quality care through continuing education; however, the thrust has been related primarily to membership renewal.

In recognition of the trend toward some form of continuing education requirement for professionals, the NATA's Board of Directors at their June 3, 1973, meeting in Atlanta charged the Professional Education Committee to define the quality and quantity of continuing education related to athletic training and to develop an accompanying program of continuing education at the national level. With this charge, the Committee has set forth a plan of action to determine the best method to guarantee to the public a certain minimal level of proficiency after initial certification of athletic trainers.

It would have been very easy for the Committee to select the procedure of reexamination every three or five years; however, it was felt that we would only have participation and no real involvement. Therefore, the Committee has accepted the challenge to develop a flexible program of continuing education and can only hope that athletic trainers will have a high need for self-fulfillment, will enjoy participating in continuing education, will enjoy upgrading their skills, and will enjoy being more secure in the job market. It was felt that for continuing education to be desirable it had to contribute to the human need for self-fulfillment and status as well as making oneself more desirable for employment and thus increasing job security. Self-fulfillment may be as simple as the satisfaction of knowing something better than it was known yesterday. Or, it may be increasing job security, increasing one's marketability as a person with competencies to offer for sale. Need for self-fulfillment added to innate intelligence and acquired skill are the personal ingredients that ensure increased competency as a result of continuing education. Without this need for self-fulfillment, the rationale for requiring continuing education is weakened.

Therefore, the Committee has developed a continuing education program and requirement that allows for a variety of activities and opportunities to be utilized by the athletic trainer in his plan of action for meeting this requirement. The individual athletic trainer has the responsibility to identify his own deficiencies and needs as they relate to his job. Once his deficiencies and needs have been identified, objectives for continuing education can be formalized and a plan of action can be developed which will be most likely to permit him to achieve his objectives.

While the identification of the different types of continuing education

activities has created very few problems for the Committee, the establishment of an uniform system of evaluating participation in the different continuing education activities and the identification of possible obstacles to continuing education caused by opportunities and availabilities that vary geographically, institutionally, and economically certainly has kept the midnight oil burning. Fortunately, a new concept has arisen on the national scene - the continuing education unit - to provide a uniform unit of measure for heretofore unmeasured activities. In 1968, a 13-member task force defined the continuing education unit (CEU) as "ten contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction." The modular structure of the CEU is readily adaptable to the existing methodology of continuing education regardless of the teaching-learning format, program duration, source of sponsorship, subject matter, level, audience, or purpose. In order to systematize our recording and reporting system for continuing education, we have incorporated the CEU to those activities where it may be applicable.

However, the uncertainties of a minimal standard of nine (9) CEU's every three (3) years and possible obstacles to the continuing education program due to the lack of opportunities or availabilities has caused the Committee to ask and receive Board approval for the study of our proposed continuing education program to work out its bugs and make revisions for two years prior to its implementation on January 1, 1976. The next two years will be the time for change and suggestions are welcomed from individual NATA members. At the same time the Professional Education Committee asks your support in reviewing the following continuing education program and participating in the program by reporting your continuing education activities and completing all questionnaires that are submitted to you concerned with continuing education. Let's work together and the NATA can develop a continuing education program that every member will enjoy participating in and at the same time upgrade their skills.

HERE IT IS!

In accordance with the approval of the NATA Board of Directors at its meeting on June 12, 1973 at Atlanta, Georgia and further revised at its mid-year meeting on January 17, 1974 at Chicago, Illinois and its meeting on June 9, 1974 at Kansas City, Missouri, the following became part of the N.A.T.A. Bylaws:

Implementation of the NATA program of continuing education will take place on January 1, 1976. The period of time prior to implementation will be used to complete a pilot study on the feasibility and the educational needs of the program and to inform the NATA membership of this program.

The continuing education requirements will become effective for the Certified Athletic Trainer three calendar years after the year NATA certification has been awarded.

A person who is once certified as an Athletic Trainer (ATC) remains certified as long as he or she meets the minimum requirement for continuing education and only as long as such requirement is met.

In addition, all associate members must meet the same minimum requirement for continuing education as that required for the Certified Athletic Trainer to be eligible for continuance of Associate membership.

Units of continuing education shall be defined and designed by the Professional Education Committee and approved by the Board of Directors. Where it is applicable, the continuing education unit (CEU) will be adopted by the NATA as the unit of measurement to meet the continuing education requirements of the Certified Athletic Trainer and the Associate members of the NATA. The continuing education unit (CEU) is defined as "ten contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction." (10 contact hours = one CEU) To maintain certification or Associate membership, the minimum number of units to be accumulated every three (3) years shall be 9 CEU's.

A Certified Athletic Trainer or NATA associate member is responsible for sending to the NATA national office proof of completion of any continuing education units (CEU's) and activities to be used in updating his record in a recommended period of 30 days after completion. Requests for acceptance of CEU's and continuing education activities one year after completion of these units or activities will not be accepted.

A Certified Athletic Trainer who does not accumulate a recorded number of 9 CEU's every three (3) calendar years shall have his certification reviewed and subjected to suspension. The suspended Certified Athletic Trainer has the right to appeal to the Sub-committee on Continuing Education.

In accordance with this action of the Board of Directors, the Professional Education Committee has developed the following definition of acceptable continuing education for Certified Athletic Trainers and Associate members of the NATA:

I. Each Certified Athletic Trainer shall complete 9 CEU's of acceptable continuing professional education every three (3) years.

II. A minimum of 5 CEU's must be obtained from the following sources:
   A. NATA ANNUAL NATIONAL MEETING: 1 CEU for every 10 contact hours will be awarded at the registration of each annual national meeting of the NATA.
   B. SCIENTIFIC WORKSHOPS OFFERED AT THE NATA's ANNUAL NATIONAL MEETING: 1 CEU for every 10 contact hours of workshop.
   C. NATA DISTRICT MEETINGS: 1 CEU for every 10 contact hours will be awarded for the scientific program content offered at the district meeting.
   D. NATA EDUCATIONAL PROGRAMS: Clinics, workshops, seminars, etc., endorsed by the Professional Educational Committee at least 30 days in advance of the date the program is held will be awarded one CEU for every 10 contact hours of scientific program content.
   E. SCIENTIFIC MEETINGS APPROVED BY THE PROFESSIONAL EDUCATION COMMITTEE: (Ex.: American Medical Association, American Academy of Orthopedic Surgeons, American College Health Association, American College of Sports Medicine, American Association of Health, Physical Education and Recreation, American Physical Therapy Association, etc.) One CEU will be awarded for every 10 contact hours of approved content.
   F. PUBLICATION OF ORIGINAL WORK: Publication of an original paper in the NATA's quarterly publication, "Athletic Training," or a state or national scientific journal or publication of a related professional organization will be awarded one CEU per original paper. Publication of abstract reviews will be awarded .5 CEU per abstract.
   G. PROGRAM PARTICIPATION: Credit units will be awarded for the presentation of an original paper or program participation at district or national level NATA meetings

or related professional meetings. One CEU will be awarded for each presentation or participation.

H. PROMOTION OF ATHLETIC TRAINING TO OTHER GROUPS: The presentation of athletic training to non-related organizations and civic groups will be awarded .5 CEU per presentation.

I. TEACHING OF ATHLETIC TRAINING SUBJECTS: .5 CEU will be awarded for each credit hour of actual teaching.

J. STUDENT TRAINER SUPERVISION: One CEU will be awarded for every student trainer program supervised a full academic year.

III. The remaining units needed may be obtained from the above sources or the following sources:

A. POSTGRADUATE STUDY: Hours spent in postgraduate study in athletic training or related fields may be submitted as units of credit for consideration by the Professional Education Committee. .5 CEU will be awarded for each credit hour accepted.

B. SPECIAL PROJECTS: All projects must be submitted to the Professional Education Committee for consideration. Projects such as the development of or participation in films, radio conferences, television programs or other audio-visual aids that may be used as a teaching aid or for public relations in the field of athletic training will be awarded .5 CEU per project.

Preparation and presentation of a scientific athletic training exhibit at the local, district or national level. Limit of .5 CEU per exhibit.

C. CORRESPONDENCE COURSES: Correspondence courses in athletic training or related fields approved by the Professional Education Committee in advance will be awarded .5 CEU for each course. Correspondence courses will be approved by the Professional Education Committee only when the school provides an examination and certifies to the satisfactory completion of the course.

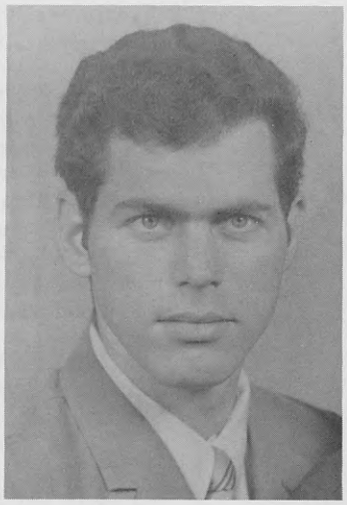
D. OTHER NATA ACTIVITIES:

1. Serving as a national or district officer in the NATA will be awarded one CEU each year.
2. Committee membership in the NATA at the national and/or district level will be awarded one CEU each year. An additional .5 CEU each year will be awarded for the chairmanship of a committee.
3. Certification testing. Those members participating in the certification examinations will be awarded .5 CEU per testing date.
4. Official liaison activity. Those members serving in the capacity of a liaison for the NATA will be awarded .5 CEU each year.

E. PERFORMANCE OF ADDITIONAL ATHLETIC TRAINING SERVICES: Participation in international events, all-star games, NCAA and AAU championship events, etc., as an athletic trainer will be awarded .5 CEU per event.

F. SPECIAL CONSIDERATIONS: The Professional Education Committee will give consideration to all educational activities submitted that are not listed above in either Section II or III.

EFFECTS OF ANKLE WRAPPING ON MOTOR PERFORMANCE



J.L. MAYHEW

Mr. Mayhew was graduated from Appalachian State University, Boone, N.C., in 1967 and received his M.S. degree from the University of Illinois in 1968. He taught exercise physiology and was assistant track coach at Appalachian State from 1968-71. At present he is completing work for his doctorate in exercise physiology at the University of Illinois.

W.F. RINER, JR.

Mr. Riner received his B.S. degree from Appalachian State University in 1966. He has coached football, wrestling, and track and field at Buford High School, Lancaster, S.C., for the past seven years, winning conference championships in all three sports. He has taught physical education, physiology, and chemistry during his tenure there.

Although adhesive taping has been widely accepted as a desirable technique for preventing injury to ankles (3, 7, 16), it can be expensive to teams with large numbers, small budgets, and/or employing multiple daily practice sessions. In addition, considerable amounts of time may be required to apply adhesive strapping to both ankles of each athlete prior to practice and games. Furthermore, constant use of adhesive tape may cause skin irritation (4) and produce a disuse atrophy in the muscles supporting the ankle (5).

If a nonelastic cloth wrap could be substituted for adhesive taping in ankle strapping, considerable time and expense would be saved. Quigley, Cox, and Murphy (18) indicated that as early as 1931 a nonelastic cotton wrap was being used to secure the ankles for protection against serious sprains. Although unnamed by them, its accepted designation is now the "Louisiana heel lock" (2, 10, 19).

	Age (yrs)	Height (ins)	Weight (lbs)
Group 1 (N = 12)	15.25 ± 1.36	66.25 ± 2.91	140.04 ± 24.31
Group 2 (N = 9)	15.44 ± 0.72	68.05 ± 2.04	150.02 ± 20.86
All Subjects (N = 21)	15.33 ± 1.14	67.02 ± 2.58	144.32 ± 22.92

Table 1. Group Physical Characteristics (mean ± SD).

The Louisiana heel lock is applied over the sock in a figure-8 manner with every complete turn passing behind and locking the heel (2, 3). See Figure 1. By passing behind the heel the Louisiana heel lock seeks to secure the calcaneous from excessive lateral deviations, a point of prime concern in injury prevention (17). While lateral mobility is restricted, flexion and extension are reported to be unhampered (17).

Since the cotton wrap is placed over the sock, it may have different effects on the ankle than adhesive tape which is usually applied directly to the skin. Adhesive taping has been shown to reduce vertical jumping (9, 13) and standing broad jumping ability (13) while not affecting sprint capacity (13) or agility (13, 14). Gualtiere (8) has shown that a simple figure-8 cotton wrap did not effect sprinting (length of a basketball court), significantly reduced vertical jumping, and significantly improved agility.

Therefore, the purpose of this study was to determine the effects of the Louisiana heel lock on motor performance of high school football players.

Procedure

Twenty-one members of a rural high school football team served as subjects for this study. They were randomly divided into two groups: Group 1 (N=12) was not wrapped for the morning practice session and was wrapped for the afternoon session. Group 2 (N=9) was wrapped for the morning practice session but not for the afternoon session. Group physical characteristics are shown in Table 1.

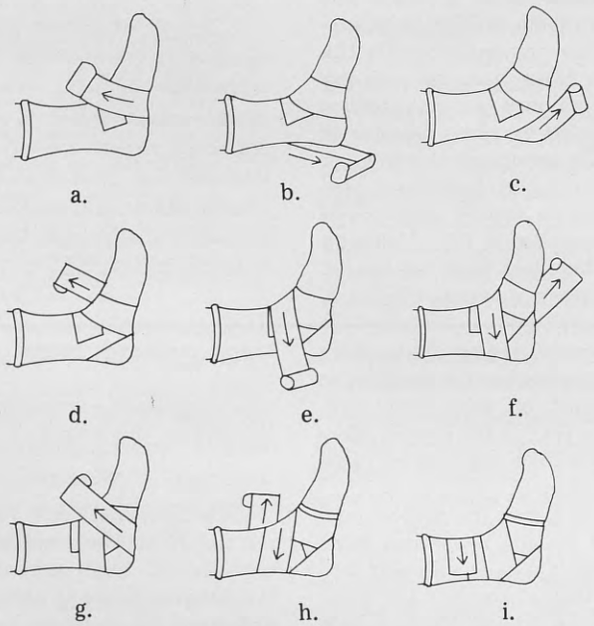


Figure 1.

Test	Units	Wrap		Unwrapped		F Ratio*
		a.m.	p.m.	a.m.	p.m.	
40-Yd. Dash	secs	5.94 ±0.70	5.74 ±0.36	5.85 ±0.52	5.72 ±0.54	0.10
Vertical Jump	ins	16.67 ±2.93	18.44 ±3.04	16.78 ±2.43	18.67 ±3.52	0.09
Standing Broad Jump	ins	77.25 ±12.28	86.11 ±10.53	77.33 ±9.60	81.08 ±11.08	0.09
Agility Run	secs	15.78 ±1.01	14.33 ±0.72	15.50 ±0.70	14.53 ±1.02	0.27**

*F ratio of 4.45 required for significance at 0.05 level.

**Only test showing significant time effect.

Table 2. Effect of Ankle Wrapping on Motor Performance Tests.

Within each group subjects were randomly assigned to one of four different sequences of motor performance tests. Motor performance tests included: (a) 40-yd. dash, (b) vertical jump, (c) standing broad jump, and (d) agility run (6). Subjects ran the 40-yd. dash in pairs and were timed to the nearest 0.1 seconds. After an initial description of the agility run, subjects "jogged" through the pattern one time to familiarize themselves with the test. Single maximum efforts in both the 40-yd. dash and the agility run were recorded. Three trials in the vertical jump and standing broad jump were given and the best score was recorded. At no time did any subject perform the motor performance items in the same sequence in the successive test sessions.

All tests were performed on a natural grass football field. Subjects were dressed in shorts, T-shirts, and regulation football cleats. Prior to testing all subjects performed a 15-minute standard warmup exercise procedure.

The wrap used was the standard Louisiana heel lock as illustrated by Cerney (2), Dayton (4), and Rawlinson (19). See Figure 1. It was secured by application of a single figure-8 piece of adhesive tape (1½" wide) as recommended by Quigley, Cox, and Murphy (18). All wrapping was performed by the same experienced individual.

Results

Means, standard deviations, and F ratios due to the wrapped and unwrapped conditions are presented in Table 2. A two-way analysis of variance was used to analyze the data. Although there appeared to be considerable difference between morning and afternoon test values (Table 2), statistical analysis revealed that time of day was a significant factor only in the agility run. Whether wrapped or unwrapped, subjects were significantly faster in the agility run in the afternoon session. This was shown by a t-ratio of t=11.67, significant at the .001 level. The Louisiana heel lock had no effect on any of the motor performance tests used in this study.

Conclusions

Within the limits of this study it was concluded that the Louisiana heel lock did not positively or negatively affect motor performance. This is contradictory to the findings of Gualtiere (8) who suggested that the reduction in lateral ankle mobility by a cloth wrap allowed more force to be exerted in change-of-direction (agility) activities while not affecting flexion-

extension activities; it should be noted that Gualtiere (8) used a simple figure-8 wrap that does not lock the calcaneous. In the present study the cotton ankle wrap appeared to neither retard flexion-extension nor prevent lateral mobility of the joint. Therefore, while the wrap does not hinder straight-ahead sprint speed or jumping ability, neither does it increase the agility of young football players.

However, the significantly faster times in the agility run in the afternoon by every subject whether wrapped or unwrapped indicated the possibility of a learning effect in the agility test used in this study (6). This phenomenon is supported by McCorkle (14) who found a significant learning effect in an agility test of similar design. If an improved physiologic state was thought to be evident later in the day, it is unlikely that agility would be the only motor performance item improved in the afternoon practice session. Thus, the results of the agility test must be viewed skeptically since the learning effect may have masked any effect by the ankle wrap. Further investigation of the effect of the Louisiana heel lock on agility is warranted.

Discussion

The findings of the present study indirectly support the observations of Libera (11) and Malina, Plagenz, and Rarick (12). These authors noted that following exercise the support quality of the Louisiana heel lock may be reduced substantially. After wrapping subjects in the present study performed a brief, standard, warmup. The effect of this warmup may have been to substantially reduce the support offered by the Louisiana heel lock wrap. However, no direct measurement of the support quality was made in this study.

It is interesting to note that Simon (20) found no difference in injury prevention between the closed Gibney taping and the Louisiana heel lock among college football players. This prompted him to conclude that there was no difference between the two methods for protection of the ankle joint. This seems unlikely since the cloth wrap loses from 34-77% of its support quality following exercise (11, 12).

The concensus opinion among coaches and trainers is that ankles must be protected by some manner of external support in contact sports (1, 3, 15, 18, 19). Both the Louisiana heel lock and adhesive taping have been used for this purpose (3, 15). Although the Louisiana heel lock does not hinder motor performance (present study), it may not have the same support potential as adhesive tape. Needless to say, more work needs to be done in this area before firm conclusions can be drawn.

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(Use of Drugs, cont. from page 144)

ant factor. Community and parental attitudes and habits may also be important factors.

It is of interest that three football coaches reported that more than 50% of their players imbibed, and one coach reported that 45 out of 50 squad members seemed to enjoy their beers! One basketball coach (same school) reported 15 out of 20 athletes drank. Did they dismiss any of these players? One coach who reported 25 out of 40 drank, dismissed 4; another who reported 20 out of 40 drank, dismissed 9. The coach reporting 45 out of 50 drinking football players did not dismiss a single players, while another coach who reported 18 out of 25 players drinking, **dismissed all 18 players!**

Smoking

The question asked, "Is cigarette smoking done by any of your athletes during the **in-training** season?" Subquestions asked for the number of athletes smoking during the season; have you dismissed athletes from the squad for smoking; do you think smoking impairs athletic performance; and the last question asked for an estimate of what percentage of athletes do you think smoke cigarettes during the off-training season.

Table 2 reports the percentage of athletes who smoke during the training season. It is impossible for coaches to accurately report on how many athletes smoke, so that these figures have less significance than the ones in Table 1.

The first line shows the number and percentage of squads reporting some smoking among athletes as compared with all the squads answering the questionnaire. It is likely that a few athletes smoke on almost every squad. The range was from a low of 32.5% for basketball, to 58.8% for track. The percentages for baseball, wrestling, and football were comparable. There was only one really significant difference in 2A and 3A schools as regards smoking, and that was in football, where 66% of 2A squads reporting stated some athletes smoked, while only 38% of 3A football coaches reported smoking.

The second line reports on the number of coaches dismissing players for smoking. In football, wrestling, and basketball, the 3A coaches just won't tolerate smoking, whereas in baseball and track, the 2A coaches were bearing down the most on the smoking problem. Football and basketball coaches in the 2A schools seemed to be the most lenient.

An attempt was made to correlate the size of the town or city with any trend toward more drinking or was significant correlation which was obvious in this study.

Summary

It is apparent from this study that the use of amphetamines and anabolic steroids in high school athletes in Washington State is almost negligible, and poses no problems to the coaches.

Marijuana is certainly used by high school athletes, but probably not as extensively as it is used by the non-athletic high school population. Certainly, it is not used immediately prior to practice or games, and thus would not have an acute effect on the athlete's performance.

Some alcohol, mainly in the form of beer, is used by about 7% of all high school athletes. How much, and how often, are questions that could possible be answered only be extensive personal interviews.

Smoking among athletes during the training season is quite prevalent. In most sports, 40% or more of the squads reported smoking. Basketball players smoke the least.

Permissiveness and acceptance among coaches varied a great deal, from those who dismissed all athletes who drank or smoked, to those who dismissed none whatsoever.

CARDIOVASCULAR RESPONSES TO THERAPEUTIC EXERCISES IN WATER

by Dennis Aten
Certified Athletic Trainer

Dennis Aten was born in 1937 in south central Nebraska and grew up in the great plains area of Nebraska, South Dakota, and Minnesota. He received his bachelor's degree from the University of Nebraska, his master's degree from Eastern Illinois University, and his physical therapy certification from the Hermann School of Physical Therapy in Houston, Texas.

He has been employed as an assistant trainer at the Air Force Academy, trainer in minor league baseball, trainer at Luther College, physical therapist at Winneshick County County Physical Therapy Center in Decorah, Iowa, and presently as trainer-therapist at Eastern Illinois University.

The utilization of exercise in water to accomplish cardiovascular conditioning in conjunction with therapeutic benefits has recently gained interest in athletic rehabilitation. Injuries that limit athletes to partial weight bearing pose the problem of maintaining cardiorespiratory conditioning during rehabilitation.

Underwater exercise involving non-ballistic movements has been utilized more recently in athletics to limber up tight or strained musculature. Since a portion of an individual's weight is buoyed by the water, activity such as running in water at chest level is not a total weight bearing activity. A program of running in water at chest level might allow an injured athlete to resume competitive activity sooner.

In the early 1960's, the Air Force Academy used swimming pool activity as part of the two practice sessions per day in the early fall football program. It was initially used as a refreshing activity after a workout in hot weather but it was observed that athletes who employed continuous gentle activity in the water for 15 or 20 minutes seemed to complain less of stiffness and soreness. This phenomena was not too surprising since it is recorded throughout history that injured warriors and athletes have sought streams and pools to soothe their aching muscles. Few athletic programs, however, have included exercise in water as a therapeutic agent for the initial soreness of early season workouts.

Since therapeutic pools are widely used in physical therapy with handicapped children, a relationship between physical therapy and athletic rehabilitation was observed. Exercise in water is used for those with neurological and muscular disorders in physical therapy to take advantage of buoyancy in the water to achieve relaxed motion. Water can be used to aid movement by modifying the effect of gravity or, in varying degrees, used as a resistance to movement by requiring forceful motion through water. Muscle soreness caused by minute tears in muscle tissues can often be alleviated through non-ballistic movement in water which can aid circulation and exercise the area without danger of irritating or further traumatizing the area. Underwater exercise has a sound theoretical basis for use in rehabilitation and has gained acceptance as an adjunct to other physical therapy techniques.

An added benefit of exercise in water becomes evident as individuals with injuries too painful for weight-bearing safely achieve activity because of the increased buoyancy. Running in water at chest level allows patients with ankle sprains to get relatively pain-free normal muscular activity around the ankle joint, without the dangers imposed by full weightbearing. Questions arose concerning the work load placed on the athlete during the water exercise. Was the work sufficient to stress the heart and lungs to gain any cardiovascular conditioning effects? Would this activity stop or retard the deconditioning that normally takes place during convalescence from an athletic injury?

With these questions in mind, some athletic trainers have developed underwater activity programs that include repetitive resisted movements, (i.e., running certain distance in water at chest level), as a work load.

Related Literature

A review of the literature indicated that little research has been reported related to the problems of running in water. Karpovich and Sinning (8) stated several reasons for the lack of research concerning energy costs during aquatic activities. They felt this type of study had no practical military value, required special equipment, and could not be performed in a laboratory. Only recently has there been an interest in the energy cost of certain competitive swimming strokes. In addition, the aspects of running in water have a more limited range of interest than most aquatic activities.

Written material is available concerning the relationship of the physical properties of water and their effect on movement through that medium. Archimedes' principle (12) states that a body floating or submerged in liquid is buoyed up by a force equal to the weight of the liquid displaced. The same medium that buoys up a body gives resistance to movement through it. White (12) states that friction or

resistance is directly proportional to the velocity at low speeds. There is more involved to the work load in water exercise than water resistance, however. Lowman and Roen (9) state that, in water, there seems to be greater relative activity of the muscles of joint stabilization than in other muscle training work. It appears that the buoyancy of the water prevents the body from stabilizing itself to fixed surfaces.

Heart Rates

To learn more about the physiological cost of work in water, heart rates might be investigated. Before considering exercise and recovery heart rates, some background concerning resting heart rates, appears necessary. Astrand (1) claims that it has been established that individuals with physical endurance have lower resting heart rates when compared to the general population. Karpovich (8) warns that care must be taken however, in evaluating resting heart rates near the time of competition. In place of a resting pulse there might be a "start" pulse accelerated by the excitement of anticipation. In a group of weight lifters whose normal resting heart rate averaged 72 beats per minute (B.P.M.), a range of 135 to 160 B.P.M. was reported just prior to a contest.

The American Heart Association (11) suggests that the normal resting heart range be considered between 50 to 100 with a tendency for the rate to be lower in trained athletes than non-trained athletes. There was no significant correlation between heart rates and physical fitness when the exceptionally low rates that belonged to the highly trained athletes were eliminated.

The heart rate is one parameter that can provide information relating to the effect of activities or work on the human organism. According to Mathews and Fox (10) there is a linear relationship between work load and increased heart rate over the resting value. Heart rates may level out as they approach maximum. Morehouse and Miller (7) found a more curvilinear relationship.

Maximum heart rates have been found to be well over 200 B.P.M., however, Balke (4) proposes that heart rates of 180 be used to measure cardio-respiratory capacity. At rates above 180 B.P.M. the heart can neither fill or empty completely.

Astrand, (1) for purposes of predicting maximal oxygen uptakes, gave average maximum heart rates according to age. His studies indicated that maximum heart rates for 15 year olds averaged about 210, 25 year olds averaged about 200, and 35 year olds about 190. In one study 15-17 year old girls have been able to elevate heart rates to an average of 250 after a 5 kilometer ski run. One girl attained a maximum heart rate of 270.

McArdle and others found that heart rates elevate rather quickly. In their study, trained heart rates reached 180 B.P.M. in a 2 mile race within 28 seconds, and within 10 seconds for a 220 yard race. They noted there were higher peak heart rates in longer races.

Morehouse and Miller (11) found that speed work in track elevated heart rates faster and higher than other forms of work. Weight lifting was the lowest in heart rate elevation.

Training Effects Heart Rates

It would appear, in order to improve the exercise tolerance of the heart, the intensity of the training has to be above a rather high threshold value (5). According to Carlsten and Grimby (2) half hour work outs four times a week that raise heart rates to 115-125 B.P.M. are considered of moderate intensity and sufficient to lead to maximal activity, but not enough to effect maximum 0_2 uptake or heart volume. Heart rates of 170 to 180 B.P.M. are considered a very heavy work load. Five weeks of training with work loads of that intensity showed increases in both maximum O_2 uptake and heart volume.

Karvonen (7) has a simple but classic method for determining the heart rate necessary to improve cardiovascular function. He has developed a formula which equates 70 percent of the maximum working heart rate as sufficient for cardiovascular condition ... Conditioning Heart Rate = .70 (maximum heart rate - resting heart rate) + resting heart rate.

Cooper (3) states that 60 percent of an individuals maximum heart rate is a good energy level for producing a training effect. He feels that approximately 150 B.P.M. well represents that level for healthy people under 30. He adds, however, that the duration of activity is also related to the training effect. The more time spent in daily workouts, the less intense the workouts have to be to produce a training effect. For most persons, a heart rate of 150 B.P.M. represents about 60 percent of working capacity and need be performed only 10 minutes per day for a training effect.

Graham (5) agrees that for a training effect the heart rate should reach a peak equal to 60 per cent of the maximum range. He states that this rate should be sustained for several

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minutes during a 30 minute workout. He feels that work sufficient to burn 400 to 450 calories in 30 minutes is almost certain to be sufficient to achieve a cardiovascular training effect.

Testing Athletes

A test was designed to record heart rates on in-season athletes during various phases of running in water. Electrocardiograph recordings were telemetered at the end of each of 16 laps of running in water, at the end of recovery periods, and several times prior to the test.

The subjects ran laps in water at chest level, using high knee action. The knee action kept the legs in front of the subject which helped prevent slipping and required more total leg activity. They were requested to run as fast as possible and still be able to complete the phase.

The 16 laps, approximately 480 yards, of running in water was divided into two phases. One phase was a two lap sprint phase while the other was the 14 lap endurance phase of the test, seven laps were completed without using the arms and hands to help propel the subject through the water and seven laps were completed using the arms and hands for assistance.

The order in which the two phases of the test were completely varied. Some subjects ran the sprint phase first and others ran the endurance phase first thus causing fatigue to occur with the same probability in the latter stages of both phases.

The actual format of water exercise for the two groups were as follows:

Sprint Group
(Group S)

2 minute warm-up
2 lap sprint, hands in water
2 minute recover
7 laps endurance, hands out of water
7 laps endurance, hands in water
2 minute recovery

Endurance Group
(Group E)

2 minute warm-up
7 lap endurance, hands in water
7 lap endurance, hands out of water
2 minute recovery
2 lap sprint, hands in water
2 minute recovery

Subjects were placed in these two groups to attempt to study the heart rate response to different methods and intensities of running in water at chest level.

Heart Rates

To determine the amount of stress placed on the cardiovascular system by running in water at chest level, heart rates were taken on 25 college athletes. Heights, weights, and body surfaces of the subjects were recorded to determine if differences in these anthropometric measures would be a factor in elevating heart rates during water exercise.

A seated E.C.G. tracing was obtained to test the equipment and to establish the resting heart rate. The subject then stood at the edge of the pool and a large-faced clock with a sweep second hand was set at zero. As the subject entered the water the clock was started and a second E.C.G. tracing was taken to record the effect the entry into 26°C. (+—1°C.) water had on the heart rate. The subject warmed up running slowly in the water, incorporating total body movement, for two minutes. A third E.C.G. was taken to record the effects of the warm-up and at exactly two minutes after entry into the water, the active exercise began. E.C.G. tracings were then taken at the end of each lap and at the end of each recovery period.

Statistical Treatment

Data were collected for 16 variables on each of the 25 subjects and punched into I.B.M. cards. These variables included height, weight, body surface, heart rates at various stages of the test, and times for the sprint and endurance phases of the running in water exercise.

The subjects were grouped according to the order in which they completed the test and according to the sport in which they participated. The subjects who ran the sprint phase of the test first were placed in Group S. Subjects who ran the endurance phase of the test first were placed in Group E. For the purpose of additional analysis football players were placed in Group FB and baseball players were placed in Group BB.

Mean Heart Rates

Figure 1 describes the pattern of mean heart rates during the course of the test. Heart rates were elevated in all active phases of the test to levels considered in the literature to have a cardiorespiratory training effect.

Group S. vs. Group E. Comparisons

Peak and mean sprint heart rates, endurance recovery heart rates, and mean endurance heart rates without using the arms were significantly higher in Group E.

Correlations

Only four of the 17 intercorrelations studied were statistically significant at the .01 level of confidence. The .706 coefficient between the elapsed time for the endurance portion and the mean endurance heart rate was expected. The three other significant correlations indicated similar heart rates were achieved regardless of arm involvement, that mean sprint and mean endurance heart rates were similar, and the peak sprint heart rates and peak endurance heart rates were significantly related.

Correlations significant at the .05 level seemed to indicate a relationship between the speed in the water and the body weight and surface area. The heavier persons, and those with more body surface, seemed to move through the water faster than subjects weighing less and with smaller body surface areas.

Discussion of Findings

One of the more interesting sidelines of the study pertains to the comparisons of the size and speed in water between the football and baseball players. Football players were larger and also completed the test in a much faster time. Possibly the heavier football players were able to get more traction on the bottom of the pool and therefore could move more rapidly through the water. Speculation would cause one to wonder if anything inherent in either sport, other than size, would be a factor affecting the running speed. This investigator observed that the football players, as a group, seemed to be more motivated toward higher levels of effort, however this impression could have been due to facial expressions or other intangible facets of the test.

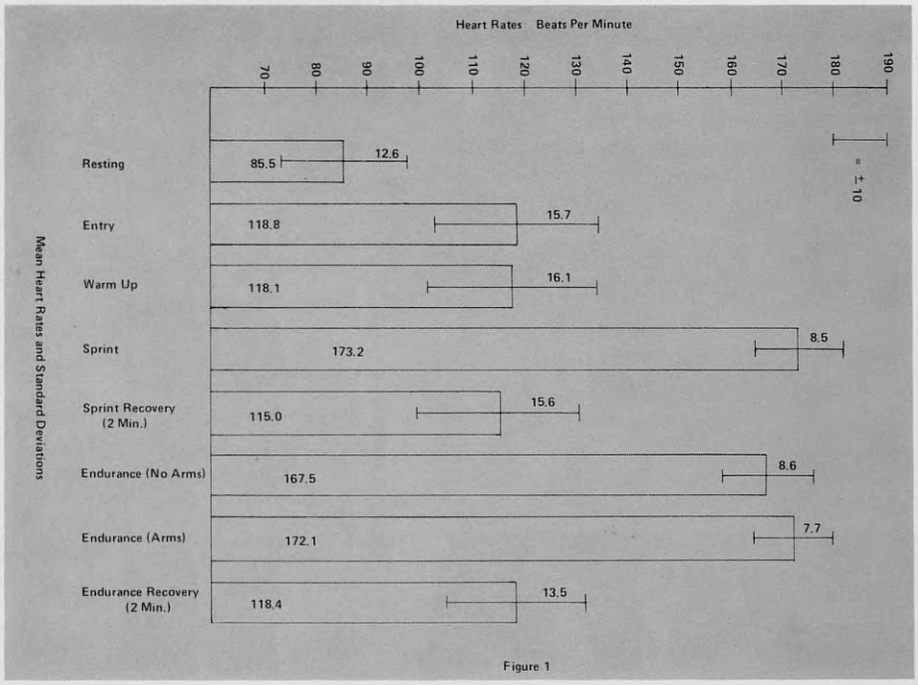

Figure 1

Conclusions

The data gathered in this investigation would indicate a basis for the following conclusions:

1. Heart rates increase sufficiently during running in water at chest level to have value in cardiovascular conditioning.
2. Sprint and endurance running in water produce similar heart rates.
3. In water, heavier subjects run faster than lighter subjects.
4. There is a high relationship between the speed of activity in water and heart rate elevation.
5. Therapeutic exercise in water programs can be developed for athletes to aid in cardiovascular conditioning where weight bearing activities are contraindicated.

Summary

It was the purpose of this study to determine, within the limits and scope of the investigation, the cardiovascular effects of running in water at chest level. Exercise and recovery heart rates were studied as they related to the size of the subject and the speed and method of running in water.

The subjects were twelve baseball players and thirteen football players from Eastern Illinois University. Each subject was given a test that consisted of sprint and endurance running through water at chest level for a total of 16 laps in a swimming pool 43 feet wide. Subjects used their arms and hands for assistance during none of the laps. Heart rates were determined at the completion of each lap throughout the test by means of a radio-telemetered electrocardiogram.

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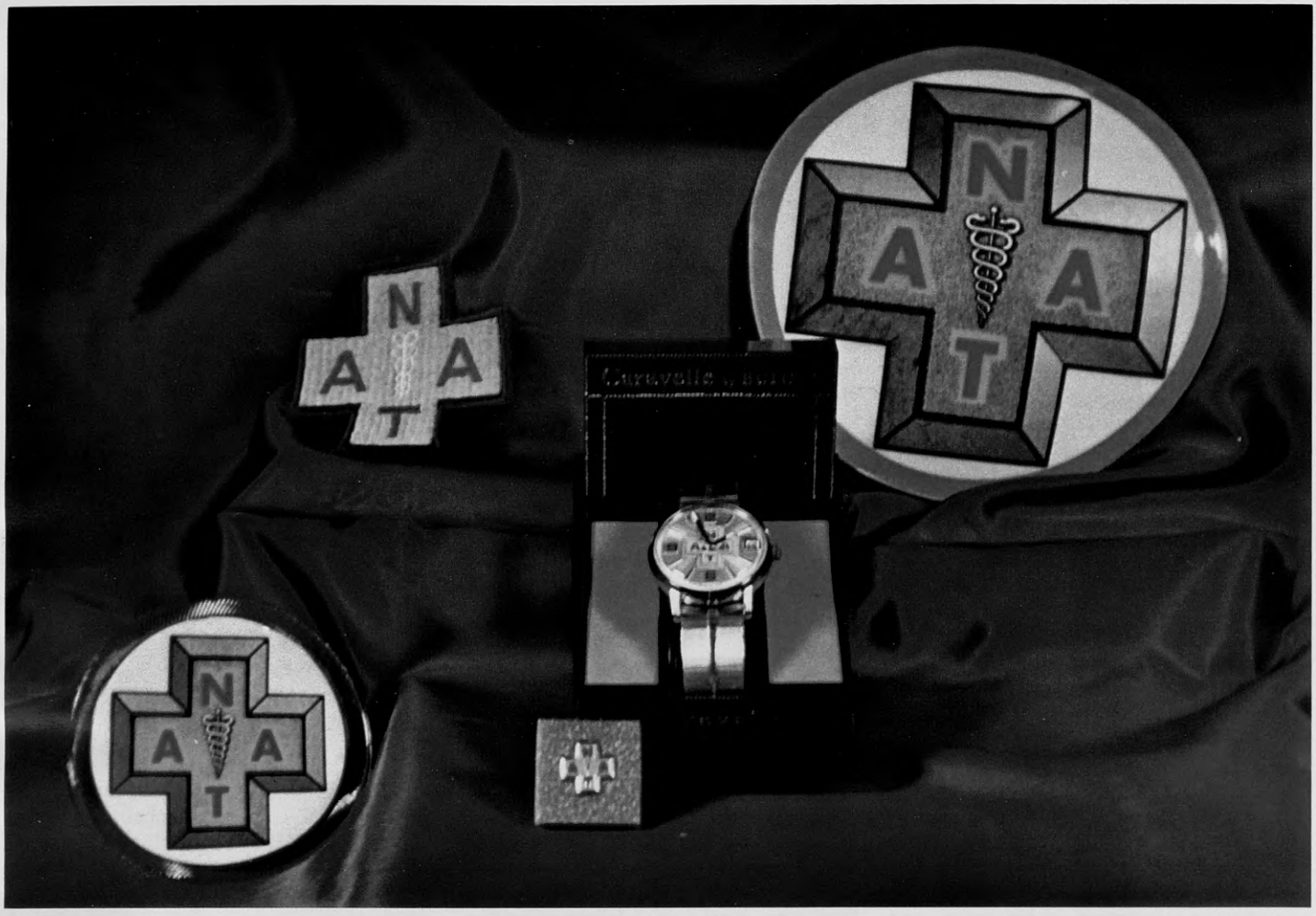

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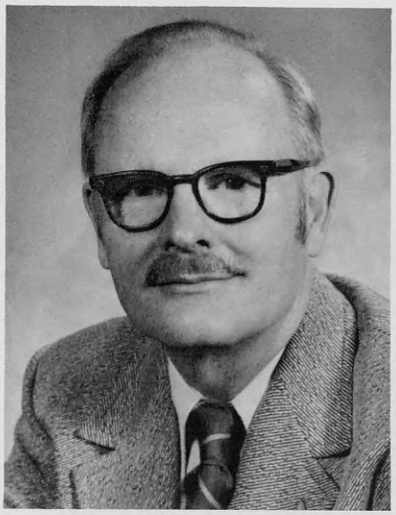
THE USE OF DRUGS, ALCOHOL, AND TOBACCO BY HIGH SCHOOL ATHLETES IN WASHINGTON STATE



By O. Charles Olson, M.D.

This report is based on answers to questionnaires sent to 154 AA (2A) and AAA (3A) high school athletic directors and/or coaches in the State of Washington. Five sports were included—football, track, wrestling, basketball, and baseball. The survey covered both varsity and B team athletes, and asked for answers for one season only primarily in 1972.

A total of 770 questionnaires were sent out, and 210 (27%) were returned. 64% of those returned were from 3A schools, and 36% were from 2A schools. In Washington State a 3A school is one with a student population exceeding 1000, while a 2A school is one between 400 and 1000 students. The 210 reports that were returned encompassed a total of 9,500 athletes. For total number of boys per sport, see line 4, Table 1.

The questionnaire began with this question: "Do you **positively** know of any boys on your squad who have taken any of the following drugs in an effort to improve performance? The categories included "pep pills" (amphetamines); muscle building steroids (androgenic-anabolic steroids); marijuana; and any other drugs. The next questions pertained to the use of alcoholic beverages, and last question asked about cigarette smoking, mainly as pertained to their use during the in-training season. No questions were asked regarding the use of any of the above substances in the off-training season, except for one general question about smoking. The other questions were for statistical purposes—the number of boys on each squad; the total enrollment of the high school; the size of the town or city. No identification was on the questionnaire.

The validity of statistics derived from questionnaires has been questioned many times, and no claim is made in this report that the conclusions are by any means exact as to numbers of individuals involved, particularly as related to the questions on drinking and smoking. However, there is no doubt that a study such as this contributes valuable information of a general nature relating to the information requested.

Approximately 5% of all replys were discarded as useless because the coach gave completely negative answers to all questions, and it was obvious that either (1) the coach really had very little insight into what his athletes were doing in this regard, or (2) he really didn't care to take a few minutes to try to give some appraisal of the overall picture. On the other hand, many coaches took extra time and effort to add explanatory notes, which were helpful.

continued on page 144

Table 1.
INCIDENTS OF DRINKING

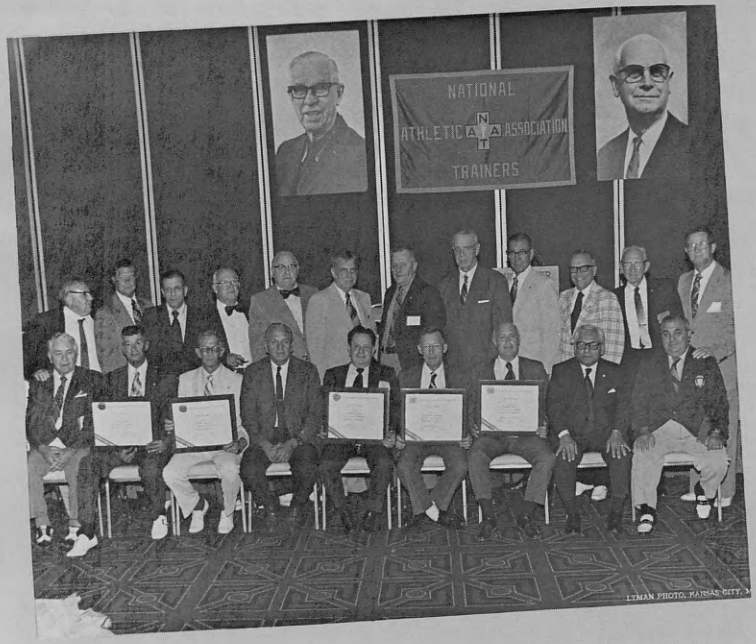
No. & Percentage of Squads Giving Positive Reply of all Squads	Football	Track	Wrestling	Basketball	Baseball
2A	8/18=44%	7/14=50%	9/15=60%	5/15=33%	8/14=57%
3A	16/29=55	17/27=63	10/21=48	14/31=45	11/26=42
Total	24/47=49%	24/41=58.5%	19/36=53%	19/46=41%	19/40=47.5%
No. & Percentage of Players Drinking on Squads Giving Affirmative Reply					
2A	100/385=26%	33/294=11%	36/235=15%	53/143=37%	43/224=19%
3A	210/1275=16%	100/969=10.3	65/293=22	70/429=17	46/385=12
Total	310/1660=19%	133/1263=10.5%	101/528=19%	123/572=21%	89/609=15%
Total Percentage of Players Drinking of Squads Reporting	8.2%	6.2%	6.5%	8.9%	6.8%
	47 (Squads)	41	36	46	40
	3131 (Boys)	2140	1535	1382	1299
How Many Coaches Dismissed Players for Drinking					
2A	2/8=25%	5/7=71%	3/9=33%	1/5=20%	6/8=75%
3A	9/16=56	5/17=30	3/10=30	7/14=50	5/11=45

SCENES FROM

1974

One-half of the students taking the written portion of the Certification Examination.

One of the general sessions at the 25th Annual Meeting of the NATA.



Some of the men who attended the 1st Annual Meeting of the NATA.
Front Row (L to R): Spike Dixon, Ross Moore, Wayne Rideout, Tony Dougal, Eddie Block, "Porky" Morgan Wayne Rudy, Frank Medina, Joe Abraham.
Back Row (L to R): Henry Schmidt, "Pinky" Newell, "Whitey" Gwynne, Llbyd Stein, Al Duer Joe Blankowitsch, Chuck Medlar, Howard Waite Ken Rawlinson, Walter Bakke, Elmer Brown.

KANSAS CITY

CONVENTION

Incoming president Frank George, Brown University recieves gavel from Bobby Gunn, outgoing President.

Joanne Dolcemaschio demonstrating her technique in applying an adhesive strapping to the ankle during a phase of the practical portion of the Certification Examination.

The conventioneers gathered at the cocktail party sponsored by the Athletic Division of Johnson & Johnson.

1973 NATA MEMBERSHIP SURVEY

1973 PROFESSIONAL EDUCATION COMMITTEE

N.A.T.A. MEMBERSHIP SURVEY
Phillip B. Donley, A.T.C.

It is with a great deal of pleasure the Professional Education Committee presents the results of the 1973 Membership Survey. As you will note from the charted results, there was a 55.8% return. At the time of the survey there were 1308 members, 792 of which are certified and 516 active. Next year's membership will be larger and it is our hope all of the members will respond to the 1974 survey. At the completion of the 1974 survey some trends should emerge and we will have a good insight into the growth and nature of our profession.

As most of us already know the area of most critical shortage for athletic trainers is the secondary school. We are, therefore, looking closely at the survey results of those working in this area. There may be 342 N.A.T.A. members in secondary schools, if we calculate 191 represents 55.8% of the total. The National Federation of State High School Athletic Associations reported in 1971 there were 13,959 schools with 11 man football. The number of N.A.T.A. members servicing the health needs of the 853,537 participants in these secondary schools is greatly lacking. There needs to be a concerted effort to get more qualified trainers in these schools and to get those already providing some degree of athletic injury management to join our association and seek certification.

High school trainers from thirty-three (33) states answered the questionnaire. There were 191 high school trainers who responded with the following states having 10 or more responding.

High school trainers response by state (10 or more)

Texas	43
New Jersey	17
Pennsylvania	15
Ohio	12
Massachusetts	11
Illinois	11
Indiana	10

High school student trainers reported by their high school trainers numbered 271 with the following states listing 20 or more.

High school student trainers by state (20 or more)

Texas	75
Pennsylvania	25
Ohio	24
California	21
Illinois	20

At the college level two hundred seventy-three (273) colleges reported they had between 1 and 9 student trainers. Twenty-four (24) colleges have between 10 and 19 student trainers.

If we keep in mind the question from the questionnaire was to indicate how many student trainers each school had who were preparing to become athletic trainers then the number 1633 becomes a very significant figure. The questionnaire generated a 55.8% return by the total membership. There were 1633 student trainers reported to be preparing to become athletic trainers with 1293 of these at the college level. The actual number of student trainers at the college level preparing to become athletic trainers could well be 2317 and this figure only represents colleges with N.A.T.A. members. If one fourth of these graduate each year, 579 new trainers a year would be available for jobs. At the present rate, in eight years there would be 4632 new trainers prepared for the field from one source—college student trainers. This figure is bound to increase above the present rate. Colleges with curriculums all report an interest by increasing numbers for the freshman classes and there is an increasing number of undergraduates and graduate students seeking experience and course work in athletic training. The results of the next 2-3 years surveys will be more indicative of the interest of students and the possible productivity of the colleges to provide athletic trainers for the field.

Membership—Certified 792
Active 516
TOTAL 1308

730 return 55.8% | 59.2% return | 48.0% return

Questions		Total N	Total %	Certified N	Certified %	Active N	Active %	High School N	High School %	College N	College %	Pro N	Pro %
1.	Certified	467	64.0	467	100	0	0	96	50.3	299	69.4	41	69.5
	Active	249	34.1	0	0	249	100	91	47.6	125	29.0	16	27.1
	No response	14	1.9	0	0	0	0	4	2.1	7	1.6	2	3.4
2.	Cert. by Grandfather	374	51.2	345	73.7	0	0	77	40.3	245	56.8	32	54.2
	Certified by Sec I	60	8.2	48	10.3	0	0	16	8.4	35	8.1	5	8.5
	Certified by Sec II	13	1.8	11	2.4	0	0	7	3.7	5	1.2	1	1.7
	Certified by Sec III	24	3.3	19	4.1	0	0	3	1.6	15	3.5	4	6.8
	Certified by Sec IV	36	4.9	33	7.1	0	0	10	5.2	20	4.6	2	3.4
	No response	223	30.5	12	2.6	249	100	78	40.8	111	25.8	15	25.4
3.	Male	721	98.8	463	98.9	246	98.4	189	99.0	425	98.6	59	100
	Female	8	1.1	4	1.1	4	1.6	2	1.0	6	1.4	0	0
4.	High School	191	26.2	96	20.5	92	36.8	191	100	0	0	0	0
	College	431	59.0	301	64.3	125	50.0	0	0	431	100	0	0
	Pro	59	8.1	41	8.8	16	6.4	0	0	0	0	59	100
	Private	15	2.1	9	1.9	5	2.0	0	0	0	0	0	0
	Combination	31	4.2	19	4.1	12	4.8	0	0	0	0	0	0
	No response	3	0.4	2	0.4	0	0	0	0	0	0	0	0
5.	Head Trainer	594	81.4	382	81.6	203	81.2	182	95.3	334	77.5	44	74.6
	Not head trainer	126	17.2	80	17.1	43	17.2	6	3.1	96	22.3	15	25.4
	No response	10	1.4	5	1.3	4	1.6	3	1.6	1	0.2	0	0
6.	9 mo. employment	145	19.9	87	18.6	55	22.0	41	21.5	91	21.1	8	13.6
	10 mo. employment	200	27.4	116	24.8	81	32.4	90	47.1	102	23.7	2	3.4
	12 mo. employment	304	41.6	220	47.0	80	32.0	38	19.9	214	49.7	37	62.7
	Other	81	11.1	45	9.6	34	13.6	18	9.4	19	4.4	12	20.3
7.	Salary—Less than 8500	108	14.8	43	9.2	64	25.6	39	20.4	50	11.6	7	11.9
	Sal.—8500-10,000	139	19.0	64	13.7	75	30.0	44	23.0	78	18.1	11	18.6
	Sal.—10,000-13,000	246	33.7	175	37.4	65	26.0	54	28.3	174	40.4	8	13.6
	Sal.—13,000-16,000	140	19.2	113	24.1	24	9.6	31	16.2	87	20.2	14	23.7
	Salary—over 16,000	71	9.7	60	12.8	10	4.0	11	5.8	34	7.9	18	30.5
	No response	26	3.6	13	2.8	12	4.8	12	6.3	8	1.9	1	1.7

N.A.T.A. MEMBERSHIP SURVEY continued

Questions		Total		Certified		Active		High School		College		Pro	
		N	%	N	%	N	%	N	%	N	%	N	%
8.	Income—less 10,000	140	19.2	61	13.0	78	31.2	37	19.4	83	19.3	10	16.9
	Inc.—10,000-13,000	226	31.0	136	29.1	86	34.4	73	38.2	135	31.3	9	15.3
	Inc.—13,000-16,000	168	23.0	121	25.9	45	18.0	40	20.9	114	26.5	7	11.9
	Inc.—16,000-18,000	66	9.0	59	12.6	6	2.4	14	7.3	39	9.0	6	10.2
	Income—over 18,000	99	13.6	73	15.6	23	9.2	23	12.0	45	10.4	18	30.5
	No response	31	4.2	18	3.8	12	4.8	4	2.1	15	3.5	9	15.3
9.	Less 2 yrs. full time	59	8.1	20	4.3	39	15.6	20	10.5	33	7.7	2	3.4
	2 - 5 years	192	26.3	74	15.8	116	46.4	59	30.9	112	26.0	11	18.6
	5 - 10 years	195	26.7	138	29.5	53	21.2	41	21.5	123	28.5	15	25.4
	10 - 15 yars	246	33.7	215	45.9	34	13.6	63	33.0	139	32.3	28	47.5
	No response	38	4.3	21	4.5	8	3.2	8	4.2	24	5.6	3	5.1
10.	Highest degree—None	61	8.4	37	7.9	24	9.6	13	6.8	31	7.2	13	22.0
	B.S. or B.A.	229	31.4	121	25.9	104	41.6	71	37.2	122	28.3	18	30.5
	M.S. or M.A.	348	47.7	251	53.6	92	36.8	95	49.7	224	52.0	13	22.0
	Certificate	67	9.2	40	8.5	24	9.6	7	3.7	36	8.4	14	23.7
	PhD or EdD	16	2.2	14	3.0	2	0.8	3	1.6	12	2.8	1	1.7
	No response	9	1.2	5	1.1	4	1.6	2	1.0	6	1.4	0	0
11.	2 or less yrs. S.T.	199	27.3	111	23.7	83	33.2	51	26.7	120	27.8	13	22.0
	3 yrs. student tra.	116	15.9	80	17.1	36	14.4	24	12.6	70	16.2	13	22.0
	4 yrs. student tra.	103	14.1	69	14.7	31	12.4	26	13.6	66	15.3	8	13.6
	5 or more yrs. S.T.	220	30.1	142	30.3	75	30.0	64	33.5	123	28.5	19	32.2
	No response	92	12.6	66	14.1	25	10.0	26	13.6	52	12.1	6	10.2
12.	Phys. therapist-Yes	143	19.6	102	21.8	37	14.8	20	10.5	86	20.0	16	27.1
	Phys. therapist-No	571	78.2	355	75.8	208	83.2	165	86.4	339	78.6	42	71.2
	No response	16	2.2	11	2.4	5	0.2	6	3.1	6	1.4	1	1.7
13.	Undergrad. H & PE	454	62.2	297	63.5	151	60.4	117	61.3	276	64.0	32	54.2
	' ' Major Science	52	7.1	30	6.4	22	8.8	13	6.8	34	7.9	1	1.7
	' ' Major Education	40	5.5	21	4.5	18	7.2	22	11.5	12	2.8	4	6.8
	Other	77	10.5	46	9.8	28	11.2	15	7.9	87	20.1	11	18.7
	No response	107	14.6	74	15.8	31	12.4	24	12.6	22	5.1	11	18.6
14.	Required to teach	399	54.7	256	54.7	135	54.0	141	73.8	243	56.4	2	3.4
	Not req. to teach	307	42.1	198	42.3	106	42.4	49	25.7	184	42.7	43	72.9
	No response	24	3.2	14	3.0	8	3.2	1	0.5	4	0.9	14	23.7
15.	Extra $ for teach.	184	25.2	107	22.9	73	29.2	82	42.9	87	20.2	4	6.8
	No extra $ for teach.	415	56.8	277	59.2	134	53 6	77	40.3	278	64.5	33	55.9
	No response	131	17.9	84	17.9	43	17.2	32	16.8	66	15.3	22	37.3
16.	Extra $ for A.T.	190	26.0	99	21.2	88	35.2	137	71.7	47	10.9	0	0
	No. ex. $ for A.T.	467	64.0	325	69.4	137	54.8	44	23.0	355	82.4	32	54.2
	No response	73	10.0	44	9.4	25	10.0	10	5.2	29	6.7	27	45.8
17.	Less 500 for A.T.	35	4.8	13	2.8	21	8.4	27	14.1	8	1.9	0	0
	500-1000 for A.T.	34	4.7	15	3.2	19	7.6	26	13.6	8	1.9	0	0
	1000-1500 for A.T.	35	4.8	17	3.6	18	7.2	29	15.2	4	0.9	0	0
	1500-2000 for A.T.	42	5.8	17	3.6	23	9.2	36	18.8	5	1.2	0	0
	Over 2000 for A.T.	38	5.2	31	6.6	7	2.8	20	10.5	17	3.9	0	0
	No response	546	74.8	375	80.1	162	64.8	53	27.7	389	90.3	59	100
18.	Ath. Dept. separate fin.	127	17.4	87	18.6	38	15.2	31	16.2	91	21.1	3	5.1
	Financed-school budg.	289	39.6	175	37.4	111	44.4	89	46.6	179	41.5	2	3.4
	Combination financing	246	33.7	157	33.5	84	33.6	68	35.6	156	36.2	1	1.7
	No response	68	9.3	49	10.5	17	6.8	3	1.6	5	1.2	53	89.8
19.	AD-immed. supervisor	398	54.5	249	53.2	142	56.8	121	63.4	260	60.3	1	1.7
	Coach, immed. super.	46	6.3	30	6.4	15	6.0	15	7.9	12	2.8	16	27.1
	Phys. or He. Ser. D.	99	13.6	67	14.3	31	12.4	20	10.5	49	11.4	20	33.9
	Dean or Chair. H & PE	48	6.6	29	6.2	18	7.2	6	3.1	37	8.6	0	0
	Combination 2 or more	98	13.4	64	13.7	32	12.8	22	11.5	61	14.2	8	13.6
	No response	41	5.6	29	6.2	12	4.8	7	3.7	12	2.8	14	23.7
20.	Req. treat non-ath.	190	26.0	122	26.1	67	26.8	37	19.4	125	29.0	5	8.5
	Not requ. treat N.A.	500	68.4	322	69.0	170	68.0	149	78.0	299	69.3	31	52.5
	No response	40	5.5	24	5.1	13	5.2	5	2.6	7	1.6	23	39.0
21.	Team Phys.-Inter. Med.	42	5.8	28	6.0	12	4.8	8	4.2	26	6.0	4	6.8
	GP	262	35.9	167	35.7	92	36.8	92	48.2	154	35.7	3	5.1
	Orthopedist	192	26.3	124	26.5	68	27.2	33	17.3	125	29.0	22	37.3
	General Surgeon	63	8.6	39	8.3	24	9.6	20	10.5	34	7.9	7	11.9
	Other	146	20.0	97	20.7	43	17.2	34	17.8	82	19.0	18	30.5
	No response	25	3.4	13	2.8	11	4.4	4	2.1	10	2.3	5	8.5
22.	Interest in hiring	76	10.4	55	11.8	20	8.0	21	11.0	53	12.3	0	0
	Not interested	577	79.1	359	76.7	210	84.0	164	85.8	349	81.0	27	45.8
	No response	77	10.5	54	11.5	20	8.0	6	3.1	29	6.7	32	54.2
23.	$ to hire add. A.T.	27	3.7	18	3.8	9	3.6	12	6.3	14	3.2	0	0
	No funds available	121	16.6	84	17.9	36	14.4	33	17.3	77	17.9	4	6.8
	No response	582	79.7	366	78.2	205	82.0	146	76.4	340	78.9	55	93.2
27.	1-3 student tr./yr.	293	40.1	166	35.5	121	48.4	118	61.8	152	35.3	6	10.2
	4-6 student Tr./yr.	170	23.3	119	25.4	49	19.6	35	18.3	124	28.8	1	1.7
	7-10 student tr./yr.	81	11.1	60	12.8	21	8.4	12	6.3	66	15.3	0	0
	11-13 student tr./yr.	20	2.7	17	3.6	3	1.2	3	1.6	17	3.9	0	0
	14 or more	29	4.0	23	4.9	5	2.0	5	2.6	22	5.1	0	0
	No response	137	18.8	83	17.7	51	20.4	18	9.4	50	11.6	52	88.1
28.	Student trainers preparing to be A.T.	1633						271		1293		7	

GUIDE TO CONTRIBUTORS

The editor of **Athletic Training**, the Journal of the National Athletic Trainers Association, welcomes the submission of articles which may be of interest to persons engaged in or concerned with the progress of the athletic training profession. The following recommendations are offered to those submitting articles:

1. All manuscripts should be typewritten on one side of 8½ x 11 inch typing paper, triple-spaced with one inch margins.

2. Photographs should be glossy black and white prints. Graphs, charts, or figures should be clearly drawn on white paper with black ink, in a form which will be legible when reduced for publication.

3. The list of references should be as follows: a) books: author, title, publisher with city and state of publication, year; b) articles: family names and initials of all authors, title of authors, title of article, journal title (abbreviations accepted as per Index Medicus), volume, page, year.

4. It is the understanding of the editor of **Athletic Training** that manuscripts submitted will not have been published previously; and that the author accepts no responsibility for any major corrections or alterations of the manuscript.

5. It is requested that each submitting author include with the manuscript a brief biographical sketch and photograph of himself in coat and tie.

6. For reprints, authors are authorized to reproduce their material for their own use or reprints can be reproduced at time of initial printing if the desired number of reprints is known.

Unused manuscripts will be returned, when accompanied by a stamped, self-addressed envelope.

Address all manuscripts to:

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East Lansing, Michigan 48823

Question 5 Approximately how many women students participate in your intercollegiate program yearly?

	"Yes"	"No"	"Undecided"
a. Less than 50	0	34 or 19%	0
b. 50-100	3 or 18%	71 or 40%	6 or 29%
c. 100-150	5 or 29%	35 or 20%	6 or 29%
d. 150-200	6 or 35%	18 or 10%	5 or 24%
e. Over 200	3 or 18%	15 or 8%	4 or 19%
Blank	0	6 or 3%	0

Question 6 Do you have a Graduate Assistantship available for a woman who has a background in Athletic Training?

	"Yes"	"No"	"Undecided"
a. Yes	8	14	8
b. No	9	159	11
Blank	0	6	2

Question 7 If you plan to hire a woman trainer in the future, what would be your prospective date of employment?

	"Yes"	"No"	"Undecided"
a. Fall 1975	8	9	7
b. Fall 1976	0	8	2
c. Later date or undecided	0	87	6
Blank	9	75	6

Question 8 What is or would be your educational requirements for an athletic trainer. (Respondents could check as many as applied.)

	"Yes"	– Blank	"No"	– Blank	"Undecided"	– Blank
a. Master's Degree in Physical Education	8	9	46	133	7	14
b. Specialization in Athletic Training	8	9	85	94	11	10
c. N.A.T.A. Certification in Athletic Training	12	5	88	91	10	11
d. Certified Physical Therapist	7	10	19	160	2	19

Question 9 If possible, please check the starting salary range for a woman trainer.

	"Yes"	"No"	"Undecided"
a. Less than $8,500	3	19	5
b. $8,600 - $10,000	7	45	6
c. $10,000 - $12,500	4	19	2
d. $12,600 - $15,000	0	5	0
e. Over $15,000	0	0	0
Blank	3	91	8

Question 10 Are you presently accepting applications for a woman trainer?

	"Yes"	"No"	"Undecided"
a. Yes	7	4	1
b. No	9	172	3
Blank	1	13	1

The data analyzed in questions 11-19 were supplied by the athletic directors at institutions where a faculty and/or student trainer were working.

Question 11 Who presently works on your Athletic Training staff for your women's intercollegiate program? (Check appropriate blanks)

Head Trainer: The individual, male or female, who is responsible for the Athletic Training program

Faculty	92
Student	29
Male	82
Female	34

Combining No. 2, No. 3, and No. 4 trainer

Faculty	19
Student	126
Male	66
Female	84

Question 12 What is the name of your head trainer? The names of the head trainers were collected upon request of the N.A.T.A.

Question 13 How many years of experience has your head trainer had as a full time athletic trainer?

	"Yes"	"No"	"Undecided"
a. Less than 1 year	4	14	3
b. 1 or 2 years	0	15	1
c. 3 or 4 years	2	20	2
d. 5 or 6 years	3	9	1
e. Over 6 years	5	42	8
Blank	3	79	6

Question 14 How many years of experience has your head trainer had as a student trainer? (including high school and college)

	"Yes"	"No"	"Undecided"
a. Less than 1 year	1	19	2
b. 1 year	1	7	1
c. 2 years	2	11	1
d. 3 years	1	7	0
e. More than 3 years	6	34	4
Blank	6	101	13

Question 15 How did your head trainer gain his/her background in Athletic Training? (Respondents could check as many as applied.)

	"Yes"	– Blank	"No"	– Blank	"Undecided"	– Blank
a. 1 training class	1	16	17	162	2	19
b. 2 or more training classes	2	15	35	144	1	20
c. Apprenticeship	4	13	44	135	2	19
d. Workshops or clinics	8	9	56	123	4	17
e. Athletic Training Curriculum	7	10	36	143	6	15
f. Physical Therapy School	2	15	26	153	3	18

Question 16 Approximately what percentage of the head trainer's time is spent in Athletic Training in the women's program?

	"Yes"	"No"	"Undecided"
a. Full time	1	3	1
b. 75%	0	4	0
c. 50%	2	7	0
d. 25%	7	65	5
Blank	7	100	15

Question 17 Do you have separate training facilities for men and women?

	"Yes"	"No"	"Undecided"
a. Yes	6	26	5
b. No	8	92	12
Blank	3	61	4

Question 18 Who is the administrator of your women's intercollegiate program?

	"Yes"	– Blank	"No"	– Blank	"Undecided"	–Blank
a. Men's Athletic Director	4	13	25	154	1	20
b. Women's Athletic Director (under men's and women's program	4	13	37	142	5	16
c. Women's Athletic Director (apart from men's program)	8	9	42	137	8	13
d. Department Chairperson (Women's physical Education)	2	15	25	154	4	17
e. Department Chairperson (Men's Physical Education)	1	16	6	173	0	21
f. Dean of School of Health, Physical Education and Recreation	1	16	2	177	1	20

Question 19 Why did you hire a woman athletic trainer? (Representative Responses)

a. A very important aspect of any competitive program (prevention rather than treatment, if possible).
b. To provide conditioning, treatment of injuries and rehabilitation programs for students involved in the intercollegiate program, and to supervise laboratory experiences in Athletic Training for graduate students specializing in Athletic Training.
c. We have student women trainers because of the growing number of female participants and the sometimes conflicting schedules of the men's and women's programs.
d. We wish to expand our programs to have an N.A.T.A. approved athletic training curriculum.
e. Concern for the welfare of the student.
f. A trainer can greatly improve a sports program.
g. Need.

Schools that did plan to hire a woman trainer in the fal of 1974 and were accepting applications included:

1. Arizona State (filled)
2. University of Delaware
3. University of Florida
4. Cal State University–Fullerton
5. University of Minnesota
6. Rutgers University, New Jersey
7. Eastern Michigan
8. University of Kentucky
9. University of Iowa

Schools that were undecided about hiring a woman trainer in the fall of 1974, but did accept applications included:

1. San Jose State, California
2. West Chester State, California
3. Stanford University, California
4. University of Oregon (Probably Fall 1975)
5. Texas Women's University
6. UCLA (Probably Fall 1975)
7. University of New Mexico (Probably Fall 1974)
8. Colby College, Maine

Schools that did plan to hire a woman trainer, but were not accepting applications at the time of the questionnaire included:

1. Western Michigan
2. University of California–Berkeley
3. Indiana University (filled)
4. Santa Rosa Junior College–California
5. Yale University
6. Cal State University–Hayward (Physical Therapist)
7. University of Arizona
8. University of North Carolina
9. Wichita State

Editors Note: This is the most current list available as of the writing of this column in mid-July. The list includes changes in "status" that were received by Indiana State and information from those questionnaires that were received beyond the deadline.

If you would like a list of the schools that have graduate assistantships available for women with backgrounds in athletic training, please contact me as soon as possible.

(Not for Men Only, cont. from page 119)

(Use of Drugs, cont. from page 137)

In a rather exhaustive study of the published literature, we were able to turn up only one questionnaire study of high school athletes and drug usage. This was an article entitled "An Administrators View of Use and Misuse of Drugs Among Athletes" by James C. Smith, M.A., Assistant Superintendent of Schools in Kanawha County, Charleston, West Virginia. He sent questionnaires to his coaches in 1970-71, and again in 1971-72, asking these four questions:

1. Have any of the athletes in your program taken drugs?
2. If so, what action was taken?
3. Do you know of a coach who may have encouraged the use of drugs?
4. What is your opinion of drugs and athletes?

In addition to directing the above questions to the coaches, a group of high school guidance counsellors was asked the same questions, and a sampling of students was asked a variation of the same questions.

The author, Smith, states, "Significantly, only two cases were located where drugs were being misused. Two young men had taken amphetamines as a stimulant. In both cases, the source of the medicine was a mother's medicine cabinet".

The present study was somewhat more detailed, and revealed the following:

Amphetamines

There was **one** affirmative reply in 210 returns. Two wrestlers used amphetamines both during practice and before matches. It was concluded that among the high school athletes included in these reports, the use of amphetamines is extremely rare.

Androgenic-Anabolic Steroids

There was one positive reply. A wrestler was given a steroid by mouth for one week, under the supervision of his family physician, in an attempt to accelerate the healing of a contused muscle.

It would appear that the use of these substances in high school athletes is also very rare.

Marijuana

The question concerning marijuana asked specifically as to whether or not the athletes used this drug during the season while they were actively in training, and made no reference to off-season usage.

33 of 210 replies (16%) reported the use of marijuana. By sports, there were positive replies from 8 football squads; 8 basketball squads; 7 track squads; 7 wrestling squads; and 3 baseball squads.

It was impossible to accurately determine the number of athletes involved, since coaches really did not know. Where specific numbers were reported, the average was 3 per squad.

One football coach reported 10 out of 50 players using marijuana, and one track coach reported 10 out of 50 using it. It is of some significance that of the 33 squads reporting the use use of marijuana, 17 were 3A schools, and 16 were 2A schools, which meant that 12.7% of 3A schools reporting had positive reports, and 21% of 2A schools did!

Alcohol

The question asked, "Do any of your athletes use alcoholic beverages during the in-training season? Subquestions were asked what beverages, i.e. beer, wine, or hard liquors; the number of athletes using alcohol; and were any boys dismissed from the squad for drinking. Beer was the favorite drink by far; wine rarely; and hard liquor almost never.

In Table 1, the statistics on drinking are summarized for ease of comparison. The first line denotes the number and percentage of squads answering the questionnaire. The range is between 41% and 58.5%. Track squads led the list, while basketball squads came in last (41%).

The second line denotes the total number of players reported doing some drinking. The validity of numbers is open to some question, since not all coaches gave an estimate. From the statistics given, however, it would appear that basketball (21%) and football (19%) players led the list, while track athletes were the least thirsty. While more **track** squads reported drinking than in other sports, it is apparent that the total number of **individual** track athletes drinking was the least (10.5%).

The third line denotes the total percentage of players drinking in each sport compared to the total number of players included on all squads answering the questionnaire. This is an interesting comparison, since the range is narrow—6.2 for track, to 8.9 for basketball. This gives an average of 7.3% of all athletes in all sports who do some drinking during the training season.

The results were broken down for school size, in an effort to determine whether there is any significant difference. No consistent pattern evolved from this observation, i.e., there was not a trend toward more drinking in the smaller schools (2A) versus the larger schools (3A), that followed through in each sport. In football, basketball, and baseball, a significantly higher percentage of athletes drank in the 2A schools than in the 3A schools. In track, there was very little difference, while in wrestling, there was a significantly higher percentage of drinkers in the 3A schools.

The last line reports the number of coaches who dismissed players for drinking. In football and basketball, the coaches of 3A schools were less permissive than the 2A coaches by very significant amounts, while in baseball and track, it was the 2A schools that cracked down the hardest.

It would appear from these figures that drinking in high school athletes (included in this report) is a problem in about 50% of the schools reporting. Perhaps the attitude of the coaching staff concerning drinking is an import-

continued on page 130

Table 2.
SMOKING IN HIGH SCHOOL ATHLETES

No. & Percentage of Squads Giving Affirmative Reply	Football	Track	Wrestling	Basketball	Baseball
2A	12/18=66%	8/14=57%	9/15=60%	5/15=33%	7/14=50%
3A	11/29=38	16/27=59	11/21=52	10/31=32	11/26=42
Total	23/47=49%	24/41=58.5%	20/36=55%	15/46=32.5%	18/40=46%
How Many Coaches Dismissed Players for Smoking					
2A	6/12=50%	6/8=75%	6/9=66.6%	2/5=40%	5/7=71%
3A	10/11=91	11/16=69	9/11=82	8/10=80	7/11=64

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TWO GOOD REASONS TO WEAR YOUR MOUTHGUARD

PHOTO A

PHOTO CREDIT: DR. GROVER W. SMITH

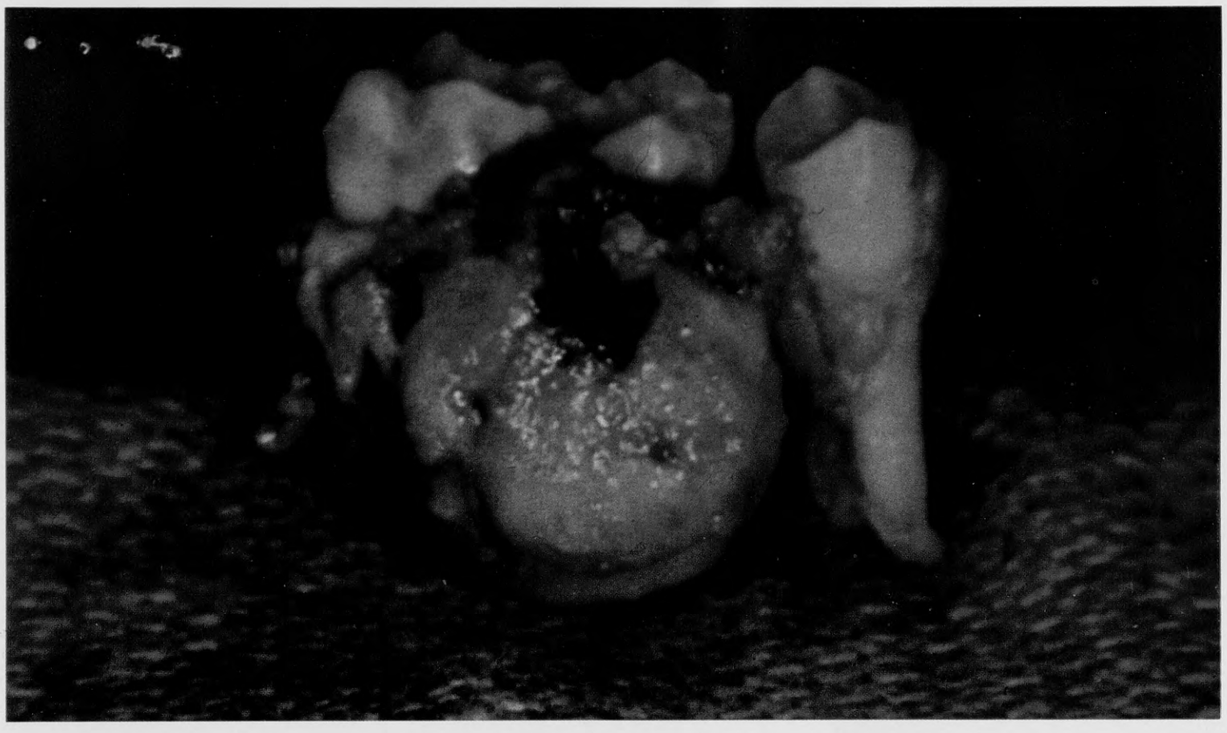

PHOTO B

HISTORY:

1. WAS NOT WEARING MOUTHGUARD
2. HIT BY ELBOW WHILE PLAYING HIGH SCHOOL FOOTBALL

INJURY DESCRIPTION:

- AVULSED LATERAL WALL AND FLOOR OF THE LEFT MAXILLARY SINUS (PHOTO A)
- LUXATED 3 TEETH (2 BICUSPIDS, 1 MOLAR) AND ATTACHED ALVEOLAR BONE (PHOTO B)

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