ATHLETIC TRAINING

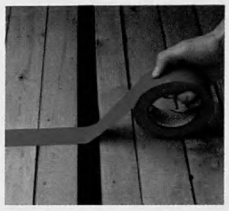
THE JOURNAL OF THE NATIONAL ATHLETIC TRAINERS ASSOCIATION

IN THIS ISSUE:

VOLUME 11
NUMBER 4
WINTER 1976

INTRODUCING
ARNO PRO-COMFORT™
THE ULTIMATE IN FOOT AND LEG PROTECTION

Arno Pro-Comfort is a specialized line of foot and leg protection products. Not the longest line, but a quality line that meets the rigorous conditions of athletic competition. The Pro-Comfort line is the result of years of research, development and testing by Arno and its Professional Trainers' Advisory Staff.




Strapping Tapes and Underwrap

Pro-Comfort strapping tapes offer superior tensile strength plus wrinkle resistance and adhesive power. Three kinds are available:

standard, standard porous, and Trainers Tape—the most economical and most widely used of all Pro-Comfort athletic tapes. All are available in Trainers Paks that offer 15-yard rolls to help eliminate waste and speed taping sessions.

Pro-Comfort Underwrap, made

of the finest quality polyurethane foam available, minimizes irritation and allows fast and painless tape removal.

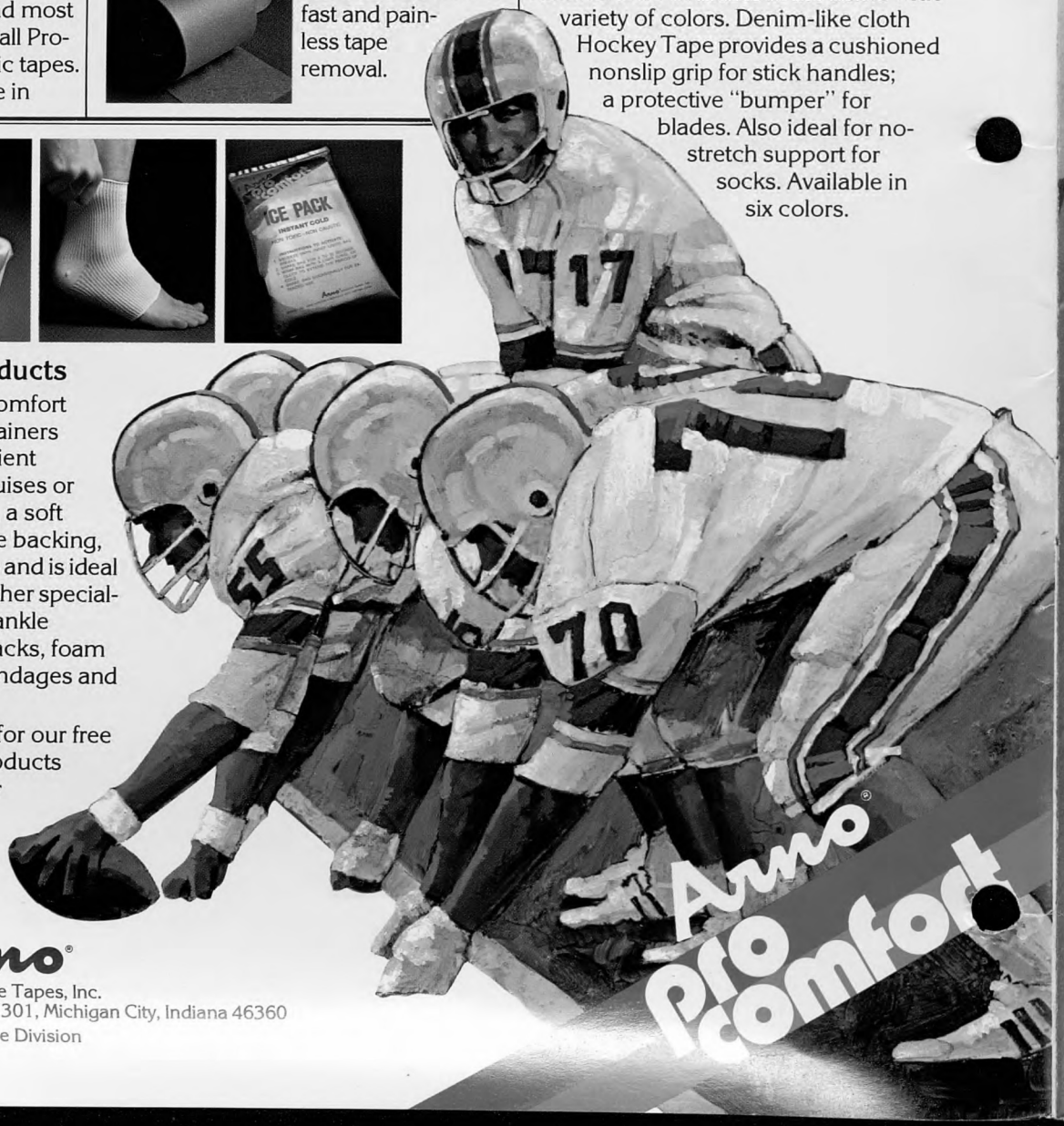
Athletic Department Supplies

Versatile Pro-Comfort vinyl tapes are available in 14 colors and transparent, for floor marking and joining gym mats. Vinyl striping tapes and numbers are available in the same wide variety of colors. Denim-like cloth Hockey Tape provides a cushioned nonslip grip for stick handles; a protective "bumper" for blades. Also ideal for no-stretch support for socks. Available in six colors.


Specialized Protection Products

For a variety of uses, Pro-Comfort Trainers Adhesive Foam and Trainers Moleskin can't be beat. The resilient foam is excellent for padding bruises or injured areas. Trainers Moleskin, a soft cushioning felt with self-adhesive backing, relieves pressure on tender spots and is ideal where thin padding is needed. Other specialized products include knee and ankle supports, instant chemical ice packs, foam rubber insoles, adhesive strip bandages and non-adhesive elastic bandages.

For more information write for our free catalog on Arno Pro-Comfort products —developed by professionals for professionals.



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Arno Adhesive Tapes, Inc.
Athletic Products Division, P.O. Box 301, Michigan City, Indiana 46360
Dr Scholl's Tape Division

THE HEAVY FAVORITE

Whether your team members need to gain weight, or just maintain their current weight, NUTRI-1000® Liquid is a delicious way to do it. It provides one calorie per cc. and balanced levels of protein, fat, carbohydrates, vitamins and minerals, blended for maximum efficiency by a company with years of experience in nutritional research and technology. Available in good-tasting chocolate or vanilla flavors, in 10-oz. ring-peel or quart cans, NUTRI-1000 will fast become your team's favorite.

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PALO ALTO, CALIFORNIA 94304

Clip and send to Bob Cook, Syntex Laboratories, Nutritional Products Division, 3401 Hill View Ave., Palo Alto, California 94304.

☐ Please send a weight chart.
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☐ vanilla ☐ individual 10-oz. cans
☐ chocolate ☐ quart cans

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City _____ State _____ Zip _____

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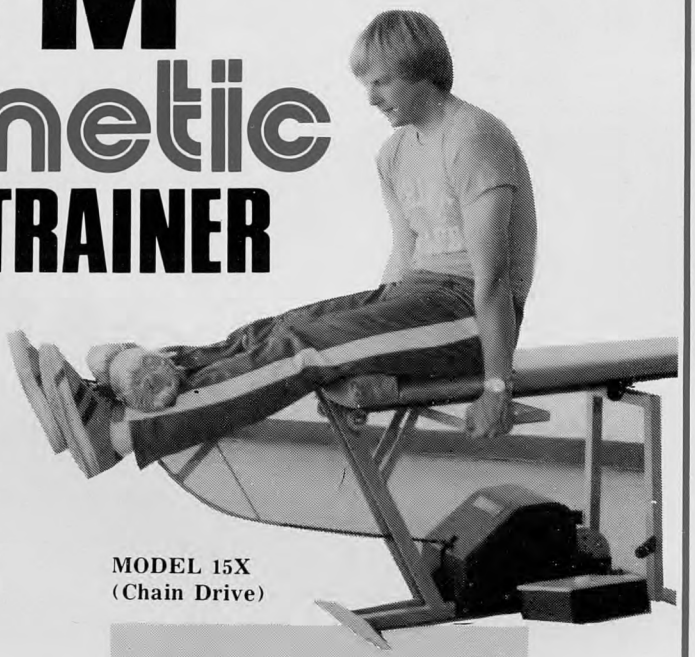
FOR THE isokinetic MINDED ATHLETIC TRAINER



MODEL 15X
(Chain Drive)

ISOKINETIC "QUAD-HAM" EXERCISER

The Mini-Gym "Quad-Ham" Knee Unit is the most versatile knee machine ever developed for the training room. Actually two machines in one, this exerciser can be converted from knee extension to hamstring flexion in seconds. (Pictured lower right.) A five position rotating quadrant allows different starting angles for all applications.

Model 15X (chain drive) incorporates new H.R.F.S. (high resistance at fast speed) exercise. Recent research has revealed this type of exercise can improve quickness and explosive strength more efficiently and in less time than other methods.

All Mini Gym exercise units offer a variety of speeds, from very fast (approximately 1 second per repetition) to very slow (approximately 3 seconds per repetition).

Available in two models, Chain Drive with HRFS - Model 15X, and Rope Drive - Model 15.

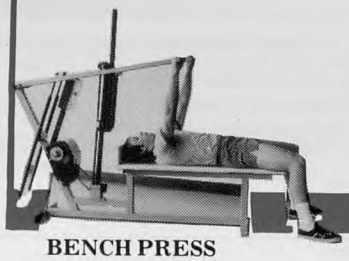
ISOKINETIC REHABILITATION UNIT MODEL 610

This unit was built with the trainer in mind, as all leg, hand and shoulder movements may be effectively exercised. Because there are no tension adjustments, exercise saves time for both the patient and therapist. The unit is equipped with wheels for portability.

MODEL 610

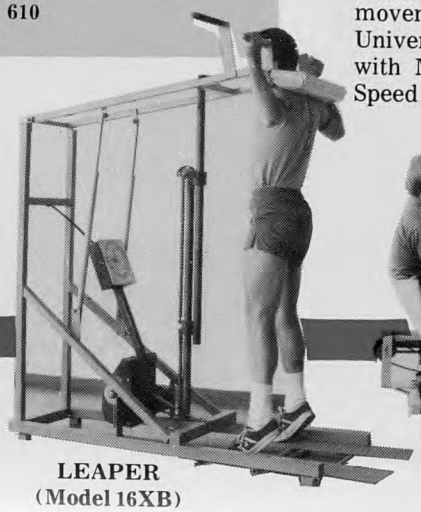
40 MODELS AVAILABLE

The exercisers shown below are a few of the 40 Isokinetic exercise stations developed for rehabilitation or conditioning programs. All units offer variable speed isokinetic resistance and allow one to three second movements. Thousands of High Schools and Universities are improving their program with Mini Gym High Resistance at Fast Speed exercise.



BENCH PRESS
(Model 9X)

POWER RACK
(Model 19X)



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(Model 16X)

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ATHLETIC TRAINING

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ARTICLES

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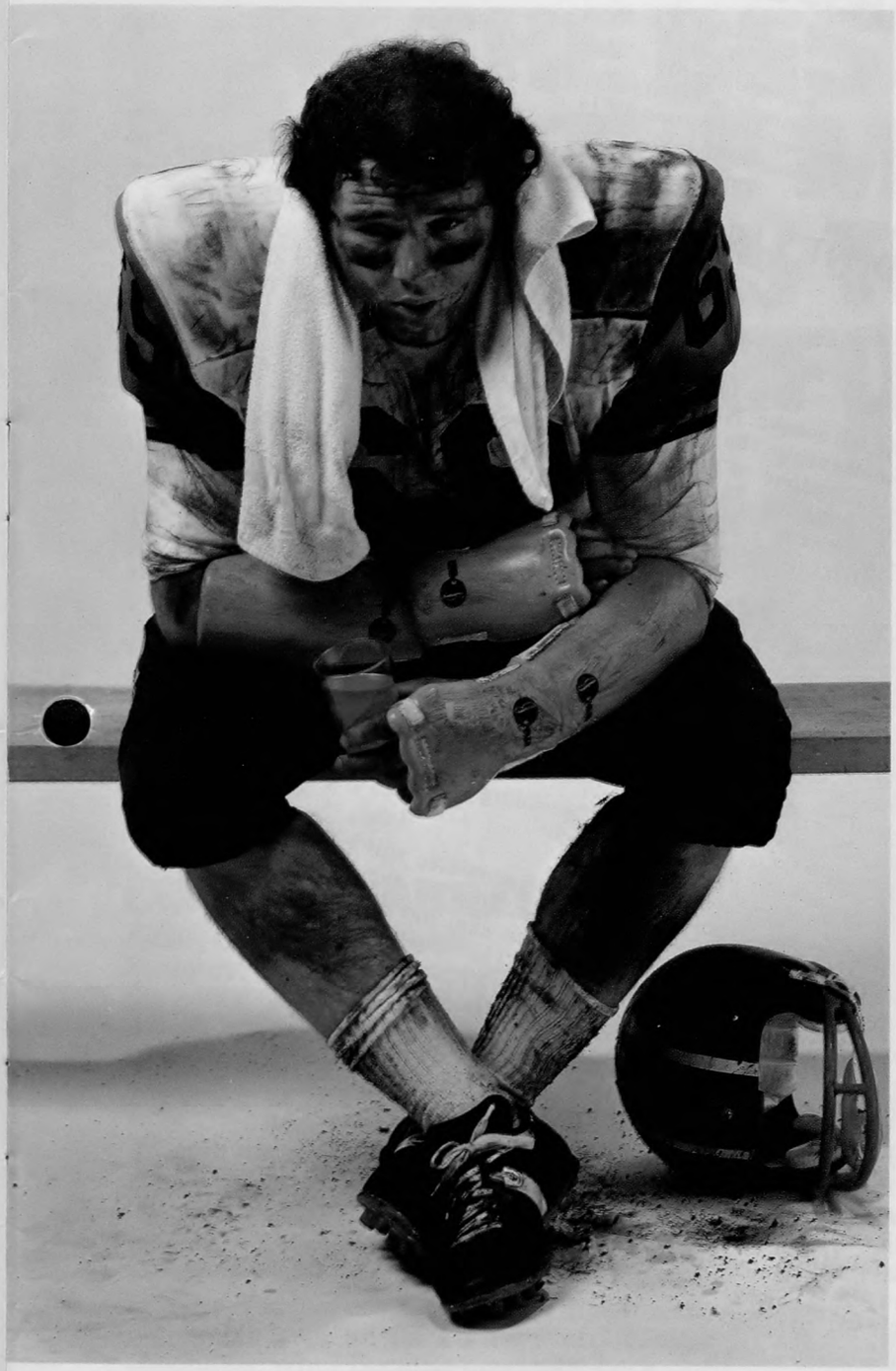
This athlete could be in danger*
...unless his body fluids are replenished!



*Excessive fluid loss and electrolyte depletion including potassium can constitute important factors in the production of heat stress complications. The best preventive is acclimatization. Intake of fluids containing adequate amounts of electrolytes, including potassium, is also recommended. BRAKE TIME is a scientifically formulated drink containing balanced quantities of important electrolytes.

BRAKE TIME is an ideally balanced, noncarbonated, electrolyte drink—deliciously flavored to provide:

- Optimized concentrations of salt electrolytes—similar to ranges found in sweat.
- A hypotonic solution with low sugar levels to facilitate faster body fluid replacement.
- A balanced replacement level of potassium to help replenish losses in body potassium during exercise.
- No fat or protein, and contains vitamin C.
- Low caloric content—only one calorie per 6 oz. serving.

BRAKE TIME should be used before, during, and after all pronounced physical activity.

BRAKE TIME™
THIRST QUENCHER

BRAKE TIME is available in three delicious flavors, Orange, Lemon-Lime and Punch, in packages that prepare one and five gallons. Punch and Lemon-Lime are also available in a new quart package.

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FROM THE PRESIDENT'S DESK

Dear NATA Member,

I hope you all have had an enjoyable fall season. As you know in my last letter and in the June letter to the membership, the importance of state licensure committees was discussed. A number of states have formed committees and are reporting favorable progress. Every NATA member should become involved with the development of these committees. If you need assistance, please contact your District Director.

Members of NATA are eligible for professional liability insurance through:
Maginnis and Associates
332 S. Michigan Ave.
Chicago, Illinois 60604
This policy is both a professional and personal liability policy. The limits of this policy are $200,000/$600,000. The cost of the policy is $53.00. Many athletic trainers believe they are covered by a blanket school or athletic department policy. Many of these school policies specifically exclude medical malpractice claims. Please be aware of your coverage and your liability protection. Many schools have been more than willing and in fact, eager to pay for this policy for their athletic trainer.

In the near future the NATA Grants and Scholarship Committee will be making its annual appeal to the membership for contributions for the endowment scholarship fund. Please, give as much as you can; our future depends on the students and our educational programs. The response this past year was excellent and we hope to improve on it in 1977.

This past October I had the opportunity to make a presentation to the National Council of Secondary School Athletic Directors. This council was very receptive to the idea of an athletic trainer on the high school level. Many members of this council expressed a desire to work closely with athletic trainers in their area in an effort to establish available positions on the high school level. If you should be contacted, please cooperate as much as you can. There are too many high school athletes who are injured and do not have available the services of a certified athletic trainer.

Sincerely,

Frank George

Frank George
President NATA

AT LAST! THE BEST TAPE ON THE MARKET COSTS LESS THAN CLOTH. CONFORM®

Because it's the only tape on the market made with rubber fiber inside fine cotton thread, CONFORM has several advantages over cloth:

PRICE

It's lower because of CONFORM's exclusive weaving process. Plus, no cotton backing is used.

CONFORMABILITY

Totally conformable to body contours. CONFORM supports the ankle. Conventional cloth adhesive tapes immobilize it.

ANKLE TAPING TIME

CONFORM molds easily to all body contours and applies smoothly at all angles. It has to be torn only once or twice while being applied. This saves tape yardage and time:

	CONFORM	Conventional
1 ankle	15-20 sec.	60-90 sec.
10 ankles	2-3 min.	10-15 min.
30 ankles	7-10 min.	23-45 min.
60 ankles	15-20 min.	1-1½ hrs.
90 ankles	17-23 min.	1½-2¼ hrs.

(Taping time may vary slightly depending on skill of person taping and the technique used. Durations indicated include only time actually spent in taping).

CONSISTENT, EASY UNWIND

through the scientific design of the back cloth and the evenly spread mass.

STRENGTH

In years of actual use, CONFORM has stayed untearable under all types of game and practice conditions. Why? Because the elastic-back cloth works together with the aggressive adhesive mass to develop a tensile strength in multiple layers far greater than the sum total strength of the individual layers. *Yet, it's designed to easily hand-tear in taping.*

METERED STRETCH

It stretches to a certain point, then stops. You control the amount of support or pressure applied to the taped area by taking the stretch out for more support, or leaving the stretch in for less support. You can't do this with conventional tape.

THE WIND-UP

CONFORM costs less, does more and does it better than conventional tape. Those who've tried it are completely sold on it. See for yourself. Contact your rep or (615) 546-4703, Box 666, Knoxville, TN. 37901

SOUTHERN ATHLETIC/BIKE®

Letters to the Editor

Dear Editor:

This is an open letter in an attempt to clear up any misunderstandings we may have had at our meeting in Boston. We are very disappointed in the action of the N.A.T.A. board. We cannot understand their position. In the formation of state units our total organization will only be strengthened.

We would like to ask you a couple of simple questions.

1. What would the strength of the democratic or republican party be if they decided, one or the other, to only have national or sectional organization and eliminate the state functions?
2. What would the strenth be of the A.M.A., A.A.H.P.E.R., A.P.T.A., N.E.A. etc, etc without their respective state organization? What effect would they have on state legislation, local education, local professional growth, membership growth and leadership?

Many of these organizations are further divided into sections within the state. This is what they call the *grass roots* of their organization. This is how they get to the little person who cannot attend all the national and sectional meetings because of either expense or time but could attend local functions. It allows for greater democratic representation, further education at a local level, conduction of clinics, symposiums, meetings with other professional organizations all at the local level. It allows the members of that particular state to meet *all* the problems of that state logically and democratically with their best foot forward and collectively. The district representative or national cannot solve the needs of each state as they arise. It also provides the ground for developing leadership within that particular state and possible future national leadership as well.

It was mentioned at the convention in Boston that licensure may not be accepted the first time it was presented. But before it is accepted shouldn't the trainees be organized, present clinics, lecture and present symposiums all over the state such as Buffalo, Rochester, Alfred, Jamestown, Syracuse, Utica, Binghamton, New York, Long Island and Plattsburg? Continue to educate the public, the senators, the doctors, the state education department, etc, as to the value of the athletic trainer in the athletic scene and particularly where it is needed the most, at the high school level. This can only be done by strong state organizations with an elected body of officers who work together with their constituents (as in any democratic organization) together locally for the improvement, dedication, strength and professional growth of all its members.

The purpose of the New York State Athletic Trainers Association is to improve the professional growth of every one of its members so that we can take our rightful place with all the other professional organizations and be recognized by our states as having the legal right to perform our professional duties. To do this, we need to have state organizations. The same as many of our other professional colleagues. You, as president of N.A.T.A., cannot from your office, handle all the challenges and obstacles of every state in the union. For this you need state structure no matter what you call it. The way N.Y.S.A.T.A. may handle the situation may be different than the way Texas, California, Ohio, Pennsylvania, Maine, Rhode Island or New Jersey handles theirs. Each state is unique.

One of the basic reasons for organizing the New York State Athletic Trainers Association is to obtain licensure. This is one of our goals. Improving our professional image through our committees on education, ethics, research publicity, convention, membership, etc. This can only *help* us become legitimate professionally at a local level before the eyes of our fellow professionals and public. We will obtain licensure. It may not happen the first time around but as we demonstrate our leadership in our specialty, our educational qualifications, our moral and ethical dedication, then we will become stronger and we will become recognized. To do this we have to have strong grass roots structure. A New York State Athletic Trainers Association. A definite strength and credit to National Association.

Another point, in numbers there is strength. If we can succeed in putting more trainers in high schools, we are increasing our strength. This again is grass root action. This is one of our goals also. If we can for the very first time have a definite athletic training room facility with a certified trainer in the western New York area (Buffalo) and have it greatly publicized, then other schools will want to have certified trainer. We will be making a personal visit to Buffalo at our own expense to do this. We are also planning to do this at a high school on Long Island and a number of other metropolitan areas. Our goal is similar to the president's stated goal of a trainer in every high school in the nation. It has to occur state by state.

We want licensure. We are going to go at it vigorously and intellegently with our organization, the N.Y.S. A.T.A.

You can be of great assistance to us by encouraging our organization. I would like you to come to our state and meet our senators, organize us, raise money for us, but we realize you do not have the time nor does our district director have the time or money to meet the challenges. Each state has to face its own challenge through its grass roots program and raise its own funds.

As members of the N.Y.S.A.T.A. we need to develop strong bonds of cooperation between other professional organizations like A.M.A. of New York State committee on Medical Aspects of Sports, the N.Y.S. Physical Therapy Association, the School District Administrators, the State Education Department, the N.Y.S.H.P.E.R., the Coaches Association, the Health Department, and many other organizations. We cannot operate alone, we need the support and cooperation of all these professional organizations in New York State. This can best be done by forming a state association and work cooperatively with everyone by opening up lines of communication.

We have already contacted one of the leading senators in the New York State Senate. We will be having lunch with him shortly to discuss licensure. I will be representing the trainers of New York State as their elected representative, the president of N.Y.S.A.T.A.

We need your encouragement and

(CONTINUED on page 198)


Introducing
The OEC "custom-fit" immobilizers.
Each one of these new orthopaedic supports from OEC can be fitted more precisely to more patients. Each support, from head halter to heel protector, can be adjusted to fit the widest range of patient sizes.
The most notable advantage of these supports, however, is the custom fit you can achieve for every patient. And as swelling is reduced, or bandages are removed, the OEC "custom-fit" supports can easily be refitted.
The materials selected by OEC for these supports add an extra measure of comfort and durability. A special foam grips firmly, molds comfortably to patient contours. All supports are completely washable, and will retain their strength through long use.
The OEC series of "custom-fit" supports is clearly labeled for speedy, accurate selection and inventory. Ask your OEC representative for a demonstration soon of the complete series, and find out how OEC can help reduce your inventory cost.
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OEC products are available worldwide through OEC (Canada) and Zimmer-Great Britain.

Announcements

CERTIFICATION

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 four times yearly. It is administered one day prior to the annual convention in June at the convention site, the third Sunday of January (on a regional basis), the second Sunday of March (on a regional basis), and in early August, (applications are processed at the same time as for the annual convention).

Persons desiring to take the examination may obtain application materials from N.A.T.A. Board of Certification, Post Office Box X18, Ann Arbor, Mich. 48107 provided the individual meets the membership requirement. The application must be requested in writing ninety (90) days prior to the date of the examination. No applications will be furnished to the 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. All August applications must be processed with the same deadlines as for the June annual convention site.

If further information is required, contact Lindsy McLean, Chairman, NATA Board of Certification, 1000 S. State Street, Ann Arbor, Michigan, 48104.

NATA SCHOLARSHIP PROGRAM

The National Athletic Trainers Association is looking for exceptional young men and women interested in continuing their education in the training field who wish to compete for one of the scholarships offered by the association.

In the past, applicants for scholarships have been extremely well qualified by virture of their educational backgrounds, extracurricular activities, and demonstrated abilities and interests. We feel certain there is a large number of potential scholarship applicants of similar qualifications who would merit consideration for one of the several scholarships offered. These include:

The Eddie Wojecki Scholarship Award - for superior performance by a young man or woman on the certification examination.

The Robert H. Gunn Scholarship Award - for excellence by a person in one of the approved curriculum programs.

The President's Challenge Award - for outstanding contributions in Sports Medicine by a doctor of medicine or osteopathy.

The William E. Newell Scholarship Award

Two Undergraduate Scholarship Awards

Two Post Graduate Scholarship Awards

If you are personally acquainted with a young person you feel could qualify for any of the listed scholarships, please suggest that they write NOW for additional information. This information is available from:

NATA
Chairman, Grants &
Scholarships
3315 South Street
Lafayette, Indiana
47904

A Timely Reminder . . .

Your contributions and continuing support to the NATA Scholarship Fund are always welcome and are necessary so that the endowment goal of $500,000 can become a reality. Please remember that our program of financial assistance is a four-fold one that offers scholarships, loans, grants and part-time employment. Organizational support from the NATA to the Fund continues, but your individidual contributions are vital to the Scholarship Fund's ultimate success. All contributions are tax deductible. Won't you consider now the importance of your participation in the NATA Scholarship Fund? Make your checks payable to Scholarship Program, and mail them to this address: NATA, Chairman - Grants & Scholarship, 3315 South Street, Lafayette, Indiana, 47904. •

IN MEMORIAM

David George Moyer, M.D., died at his home in Hatfield, Pennsylvania on July 11. A family physician in that term's complete sense, since his graduation from New York University Medical College in 1941, he was also a graduate of Lafayette College where he recently served as traveling team physician. From 1961-1975 Dr. Moyer was Georgetown Academy's school physician. Working closely with the shool's athletic teams, he developed a program of sports medicine that won national recognition.

He was also team physician for North Penn High School, Lansdale, and was a member of the College of Physicians of Philadelphia, a member of the board of governors of the Institute for Women in Sports, and a member of the board of trustees of the American College of Sports Medicine and honorary member of the National Athletic Trainers Association.

THE BODY MACHINES

from General Theraphysical, Inc.

GTI ISOKINETIC EXERCISE BENCH

Well-known Mini-Gym Exerciser provides full-range, isokinetic resistance for quads and for hamstrings. Fully padded. *Special Sale Price of $295 complete; Floor Exerciser, also shown: $95.*

NEW! CUINIER OLEO-DYNE

Fully-flexible isokinetic exerciser provides automatically-variable resistance equal to your athlete's *maximum* capabilities throughout his *full* range of motion. Wall-mount (shown) or floor mount.

NEW! HANAU IR-UV LAMP

Combines broad heating capabilities of infra-red, with bactericidal properties of ultra-violet radiation for treatment of athlete's foot or other dermatological indications.

NEW! CUINIER CIRCUMDUCTOR™

The only exerciser to provide wrist circumduction and ankle circumduction. Incrementally-increasing resistance from zero to infinity. To prevent injury by building circumductive capability, and to rapidly rehabilitate injured wrists and ankles.

G5™ MASSAGE APPARATUS

Powerful! To prevent injury by toning muscles prior to exertion, and to prevent stiffness after exertion. Three speeds. Interchangable applicators additionally provide heat massage, ice massage, trigger point reduction, rapid sinus drainage.

"The Body Machines" . . . to help prevent injuries before they happen, and to help in treatment when they happen. Each of our "Body Machines" is built to take the rough usage of your treatment room—and more. Each has been designed and manufactured by the world's leading producers of physical therapy equipment. "The Body Machines" . . . tough, dependable workhorses to help you help your athletes.

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U.S.A. Telephone: (314) 231-9643

Tips from the Field

A Home Max Watering Rail

by Bud Tice, A.T.,C.
West Virginia University

It is a well established fact that athletes need water during practice. West Virginia University has uses a home max watering rail.

Each rail is 15½ feet long and ten athletes can drink from it at one time. The rail is one inch copper buting with 5/16 inch holes ever 20 inches. Each end has a one inch copper cap with a one inch "T" in the middle. The "T" runs to a plastic pipe that has a hose attachment that joins a garden hose.

The athletes are allowed to go to the rail anytime they want. They are not allowed to hang out at the rail or to put their hands on it. The athletes respect the rail and they feel it has really helped their performances. One comment was that "now I can concentrate on what I am supposed to be doing instead of when I can get a drink."

This type of fluid is be used to offset the dehydration of the athlete that takes place each fall. Last season they worked in extreme heat and experienced little problem with heat illness.

Editor's Note: Our thanks to Ray Baggett, A.T.C. at Indiana State University for gathering this tip and sending it in to the Journal.

Editor's Note: Anyone wishing to have an idea, technique, etc., considered for this section should send it to Rod Compton, Sports Medicine Division, East Carolina University, Greenville, N.C. 27834. Copy should be typewritten, brief and concise, using high quality photos and/or illustrations. •

Survival of the fittest

Even when you're winning, you take a little beating. That goes for athletes as well as equipment.

J-Pad Protective Padding takes the hard knocks out of the long, grueling season ... game after game, practice after practice ... giving your men the protection they deserve. J-Pad absorbs the shock, softens the blow and spreads the impact over a wide area. They resist abrasion and stand up to wet weather and repeated laundering better than any other protective pad on the market. And you can be sure they'll be back to protect your players the following year. That's value!

Protection, durability and the economy of long-term survival make J-Pad Protective Padding the natural selection for your team.

J PAD TRADEMARK ***Protective Padding.***

For additional details and proof of J-Pad performance, write:

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Current Literature

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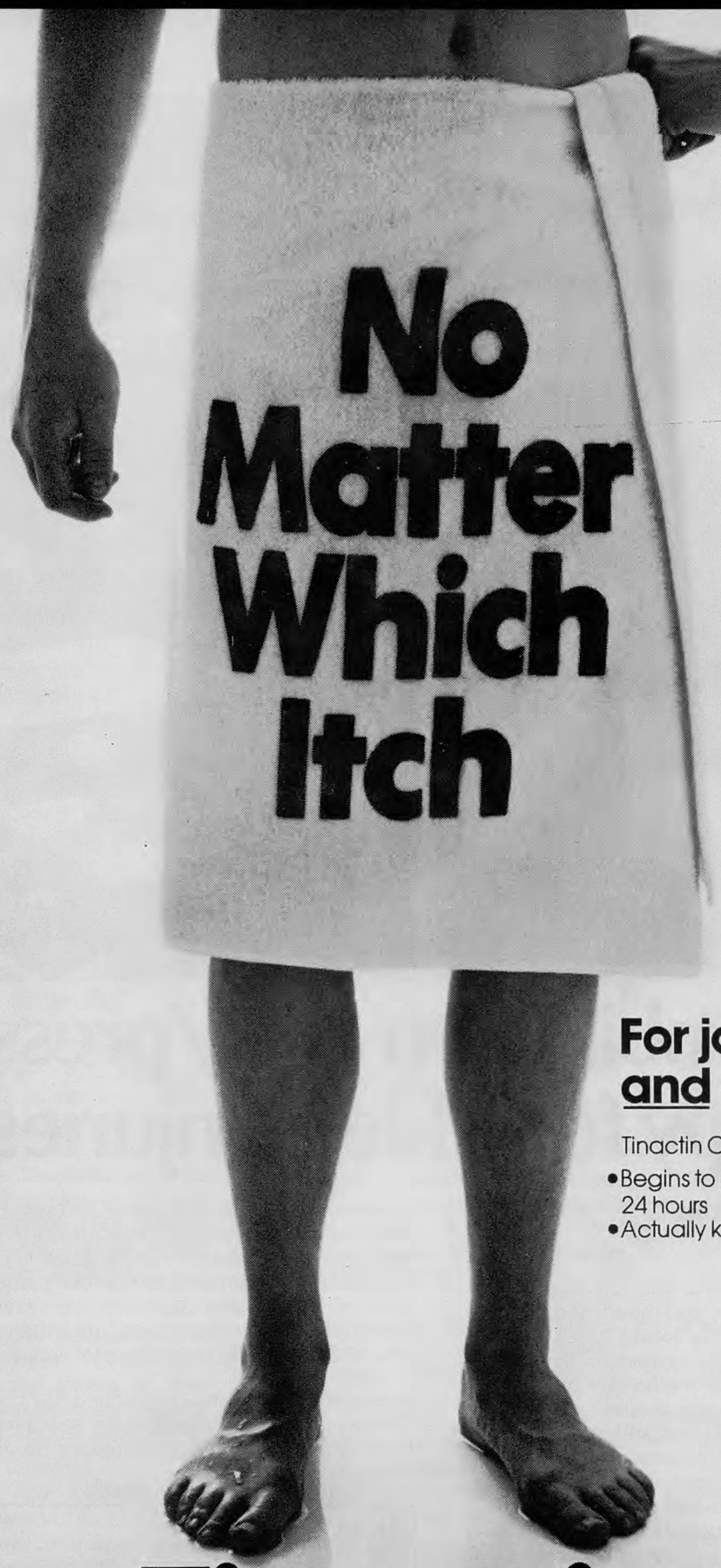

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Injuries to the Low Back and Environs

by
Vincent Distefano, M.D.

Edited by
Rod Compton, A.T.,C.
East Carolina University

Dr. Distefano is an Associate Orthopedic Surgeon at the hospital of the University of Pennsylvania and affiliated hospitals. He also serves as team physician for the Philadelphia Eagles, and physician for Villanova University. He has been the moderator for the 1975 and 1976 Schering Symposiums at the NATA Conventions.

This paper will attempt to highlight the spectrum of injuries which may be encountered in the region of the low back among athletes. The early discussion will deal with the more common injuries and will yield in graduations to the more severe, and fortunately less common, entities.

CONTUSION

Contusion, which by definition is a bruise, rates as the most frequently encountered injury to the low back. The commonest contusion to the spine is of the paravertebral muscles. The injury not infrequently causes hematoma within the involved muscle group which renders it on physical physical examination, prominent, spastic and tender. Treatment in the early stage consists of the application of cold and at times a local injection of an anesthetic agent such as Xylocaine coupled with Hyluronidase to disperse the products of the injury and optionally a Hydrocortisone derivative to effect the state of quiescence in the inflammatory process. The sequellae of an improperly treated contusion are residual stiffness with an aching pain and restricted motion. The basics of treatment at this stage are heat, painfree massage and careful exercise. Protection from re-

injury is a consideration upon the athlete's return to the playing field.

Ocassionally, if dispersion does not take place, encystment, or the development of a fibrous retaining sac around the hematoma may occur resulting in a semisoft, somewhat fluctuant mass marking the site of injury. The mass may wax and wane in size depending on several factors such as activity, recurrent trauma and treatment and though rarely limiting from a functional standpoint is usually of some concern to the athlete. The most effective treatment consists of aspiration with instillation of a corticosteroid, compression wrapping, protective padding and some modification in physical activity. Surgical excision of the fibrous sac is rarely necessary.

In the lumbar spine the tips of the spinous processes lie in a sulcus between the two groups of paraspinal muscles so that the muscle will usually absorb the blow that crushes the skin against the protruding bone or may damage the underlying bone. The result may be periosteal reaction or inflammatory residuals in the supraspinous ligament which will leave a painful, tender area. Again the local injection of an anesthetic agent optionally coupled with a corticosteroid, perhaps repeated, and protective padding form the mainstays of treatment.

The hip pointer is a special kind of contusion effecting the bone of the iliac crest and may also involve the aponeurotic attachments of the abdominal and hip musculature. The physical findings are those of local tenderness, usually with ecchymosis appearing later, and pain associated with activities involving contraction of the abdominal muscles and flexion of the trunk to the opposite side. The treatment is basically the same as for contusions elsewhere and protective padding and occasional strapping to prevent re-injury are to be advised.

STRAIN

A strain may be defined as damage of some part of the muscle-tendon unit.

The spine is particularly susceptible to muscular strain because of the multiplicity of the muscles involved in holding the body erect. In the early stages it may be difficult to differentiate from contusion, since the contusion may cause some hemorrhage within the muscle and may well cause pain on function of the muscle. The strain is usually caused by a violent contraction beyond the strength of the muscle against a fixed resistence or by overstretching as the muscle attempts to resist this stretch. If an attempt is being made to differentiate between a contusion and strain, it should be remembered that with the simple contusion active muscle contraction is generally not particularly painful.

Physical examination of the acutely strained back usually evokes tenderness over the involved muscles and pain caused by passive stretching or active contraction. If the condition is fairly severe and well established, there will be tenderness and spasm in the whole group of spinal muscles and the spastic muscles themselves may become painful even though not originally involved. This causes diffuse pain and a "poker" or straight spine. In attempting to differentiate between strain and sprain it should be remembered that isometric contraction against resistence is likely to be painful with a strain injury but not in the case of a sprain.

Treatment, particularly in the early stages, is similar to that of a contusion with rest and protection including at times bed rest or bracing of the injured back, ice and later heat massage and careful exercise. Ancillary forms of treatment include the use of muscle relaxants, oral anti-inflammatory agents, local injections of "trigger points" to break the reflex arc and relax the tension, and finally, local injection of Hyluronidase in cases of partial rupture of muscle fiber with hematoma. It is axiomatic that the proper rehabilitation be offered once the acute symptoms have begun to subside.

Chronic strain usually results from inadequate treatment of an acute strain. The basic principals of treatment are various modalities of physical therapy and protection which usually means prolonged rest from strenuous labors. A lumbosacral corest may be temporarily used to help support the back and protect against overstretching. Such a garment should reach approximately to the lower ribs and inferiorly to the sacrum in order to be effective.

SPRAIN

A sprain may be defined as injury to some part of a ligament.

The differentiation between strain and sprain may be very difficult and pragmatically speaking, unnecessary. In many instances the mechanisms of injury are identical and both muscles and ligaments may be injured concommitantly. Muscle spasm secondary to a ligament injury may further cloud the diagnosis.

The supraspinous ligament is the only ligament in the lumbodorsal spine whose anatomic position renders it easily palpable. This ligament is a strong, fibrous cord which connects the apices of the spinous processes. It is thicker and broader in the lumbar than in the thoracic region and intimately blended with the neighboring fascia. Between the spinous processes it is continuous with the weaker interspinal ligaments. The intralaminal ligaments or ligamenta flava are more deeply situated and more difficult to isolate on physical examination.

Injury to the supraspinous ligament can be determined by localized palpable tenderness either along the course of the ligament or at its attachment to the bone. In the latter case, fracture of the spinous process or more serious injury to the vertebra should be excluded. In cases of complete rupture of the supraspinous ligament, a defect may be palpated along its course. Extension of the spine, which relaxes the ligaments, will be pain-free but forward flexion will cause pain at the involved area.

In making the diagnosis of sprain it should be remembered that passive movements which put stress on the involved ligament will cause pain.

X-ray examination should be made to rule out serious injury. It is usually of little importance in the diagnosis of sprain except in the case of rupture of the supra and intraspinous ligaments where a forward flexion film may reveal abnormal separation of the involved spinous processes.

Injury to the deeper ligaments may be more difficult to diagnose. These ligaments are: (1) interspinous ligaments; (2) capsular ligaments about the aphophyseal joints; (3) anterior spinal ligaments; (4) ligamenta flava.

Before one can rest comfortably with the diagnosis of contusion, sprain or strain, more serious injuries should be excluded.

FRACTURE OF THE SPINOUS PROCESS

These fractures are much less common in the thoracolumbar spine than the cervical spine and may result from a hyperextension or hyperflexion force or a direct blow. The signs and symptoms may be indistinguishable from sprain of the supraspinous ligament at the bone and the diagnosis must usually be made by x-ray. For distracted fractures involving the distal one inch of the spinous process, surgical excision

of the fragment has been advocated by some as providing the fastest healing without the potential sequellum of pain on strenuous exertion.

FRACTURE OF THE TRANSVERSE PROCESS

This is a fairly common fracture in athletes occurring as a result of direct blow and/or violent muscle contraction. Non-union of the fracture fragments is the rule but the significance of the trauma rests with the accompanying muscle injury which causes local pain and tenderness with muscle spasm and a homolateral spinal list. Passive forward flexion, contralateral bending and active backward and homolateral bending against resistence are productive of pain. Obviously without x-ray this injury is indistinguishable from a severe strain or contusion. Treatment is symptomatic and accordingly is governed by the extent of the athlete's complaints ranging from strict bed rest to ambulation with or without back support. Participation within the limits of comfort is the rule with respect to return to activity. Non-union of the fractured transverse process frequently results and is generally asymptomatic Excision of the fractured fragments is recommended only in cases of prolonged symptoms and functional impairment.

Figure 1. Professional athlete with a massive "hip pointer". This individual sustained a non-fatal pulmonary embolism two weeks after his injury.

COMPRESSION FRACTURES

Generally uncommon in high school and college athletes these fractures are more likely seen among skydivers, hang gliders, skiers, stock car racers and equestrians and are the result of excessive vertical load without flexion, rotation or lateral bending. They occur most commonly in the mid-lumbar region and result from the hydraulic behavior of the nucleus pulposus which produces circumferential deformation or fracture of the cancellous bone of the adjacent vertebral body. Significant damage is limited to the anterior column of the spine resulting in a stable fracture which is rarely associated with neurologic damage. Diagnosis is made by x-ray. Opinions vary as to whether reduction or decompression should be attempted or the fracture treated symptomatically. In either event, athletic competition would be limited for many months.

SUBLUXATION-DISLOCATION

These conditions are rather rare in the lumbar spine and the diagnosis is made by x-ray. Severe neurologic damage as a consequence is not as likely as at higher spinal levels since the cord proper ends at the level of the first lumbar vetebra and theperipheral nerves in the cauda equina are considerably more resistent to trauma.

FRACTURES AND FRACTURE DISLOCATIONS ASSOCIATED WITH NEUROLOGIC DAMAGE

Time does not allow a comprehensive discussion of these injuries and the continued management is far removed from the playing field or training room. It is of paramount importance, however, to discuss the early evaluation and first aid management in order to avoid catastrophic aggravation of the neurologic injury. The doctrine of primum non nocere (above all do no harm) should be strictly followed.

The injured athlete will usually give a clear history of violent trauma followed by severe localized backache which is somewhat relieved by lying recumbent and exacerbated by moving, bearing weight or coughing. He may or may not relate nerve root symptoms or extremity weakness.

Physical Examination: If spinal injury is suspected, the patient should

be *examined and first aid rendered in the position in which he is first seen,* since if the injury is grossly unstable, displacement and added neurologic damage may occur during positioning. Clothing should be cut away if the examination would otherwise be compromised. The patient can then be draped if modesty is an issue. When indicated, determination of vital signs, assessment and establishment of an airway and evaluation of hemorrhage should be done first. Inspection is carried out for suspicious contusions, abrasions, masses or boney deformity, The spinous processes are palpated and should be vertically aligned at regular intervals with no step-off or interspinous gap.

Initial Neurologic Examination: Since the spinal cord terminates at the level of the first lumbar vertebra, neurologic injury will most often affect the peripheral nerves of the cauda equina. The neurologic picture over the first 24 to 48 hours may be of great importance in governing the course of treatment and the prognosis for recovery and stresses the significance of taking an early inventory of voluntary muscle action and grading the strength of the lower extremity and trunk muscles. A quick but meaningful examination can be performed without considerable manipulation of the injured athlete by observation of the following items:

(1) Lower Extremity Motor Function: the toes should be checked for extensor and flexor motion and strength. Normal flexion and extension of the great toes suggests that nerve roots L.4 through S.2 are intact. If circumstances allow, knee extension which is subserved by nerve roots L.2 through L.4 may be carefully checked. Thus, if great toe extension and flexion and knee extension are intact, it is unlikely that the patient has sustained significant motor injury to nerve roots L.2-S.2. Normal hip flexion indicates intact nerve roots T.12-L.3 but this action could conceivably aggravate a low spinal injury and probably should not be checked in most instances.

(2) Sensation: Familarity with the dermatomal map enables one to quickly assess sensation.

(3) Abdominal bulging when coughing is attempted suggests abdominal paralysis.

(4) Umbilicus: Upward movement of the umbilicus during attempted cough suggests lower abdominal muscle paralysis.

(5) Ribs: Elevation and separation of the ribs with deep inspiration indicates intact intercostal muscles.

(6) Urinary and/or fecal incontinence suggest pudendal nerve involvement via nerve roots S.2-4.

It is stressed that his examination is by no means complete but can be done on the playing field and provides a rapid assessment of the presence or absence of gross neurologic damage. A complete neurologic examination should be performed at the first opportunity.

Transportation From Playing Field: Transportation of the injured player with suspected spinal cord injury must be carefully planned and well organized. The player should not be moved until there are sufficiently trained people to lift him as a unit, maintaining the head, neck and thorax in the position in which he was found. He should be transported on a firm board or stretcher in the prone position or alternately in the supine position with a bolster under the small of the back and taken immediately, preferably via ambulance, to the nearest hospital.

INJURIES TO INTRA-ABDOMINAL VISCERA

It should be constantly borne in mind that serious and even life-threatening injury to vital organs can result from trauma to the athlete's back. the injuries most likely to be encountered involve the kidneys, spleen and liver.

Kidney: The spectrum of injury may range from simple contusion to combined rupture through the pelvis and capsule of the kidney with retroperitoneal bleeding and shock. It is the simple contusion whose manifestations may be quite frequently overlooked. Physical findings may include only slight flank tenderness and microscopic hematuria and underscores the importance of examining the individual's urine for occult blood with paper strip reagent in all cases in which renal damage is even remotely suspected.

Spleen: Splenic injuries are relatively common and if rupture of the spleen is kept in mind, this diagnosis is usually not difficult. the athlete with splenic involvement from infectious mononucleosis is particularly vulnerable. A peculiarity of splenic rupture is its tendency to occur at varying intervals following the episode of trauma. Delayed rupture occurs in approximately one out of six cases at any time from one to thirty or more days after injury but nearly 75% occur during the first two weeks.

The symptoms and signs are those of blood loss into the periotoneal cavity and may be minimal or marked, gaining expression as abdominal pain and muscle spasm (general or localized to the left upper quadrant); phrenic nerve pain reference into the left shoulder (75%) and rebound tenderness. In severe cases the symptoms of shock may overshadow all others. Lingering complaints of chronic left upper quadrant pain or "heaviness" with or without shoulder reference following an injury should alert the team physician or trainer to the possibility of delayed splenic rupture. The only safe treatment for splenic rupture is splenectomy, performed without hesitation.

Liver: Fortunately, damage to the liver is not common in athletics. Most cases are the result of high-speed trauma. Generalized abdominal symptoms and shock may make this injury indistinguishable from a ruptured spleen or other viscus. Localization when it does occur may be in the right upper quadrant of the abdomen or the right sholder. The mortality rate in cases treated nonsurgically exceeds 66%. •

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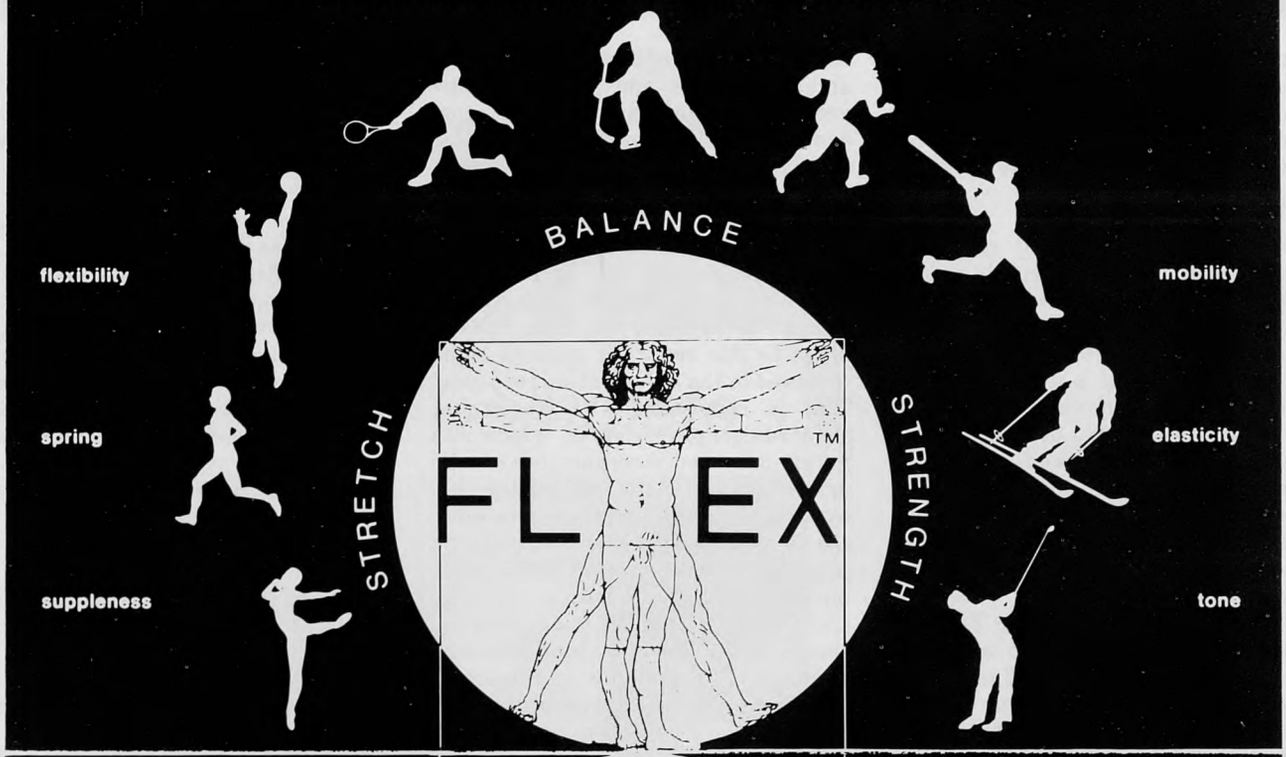

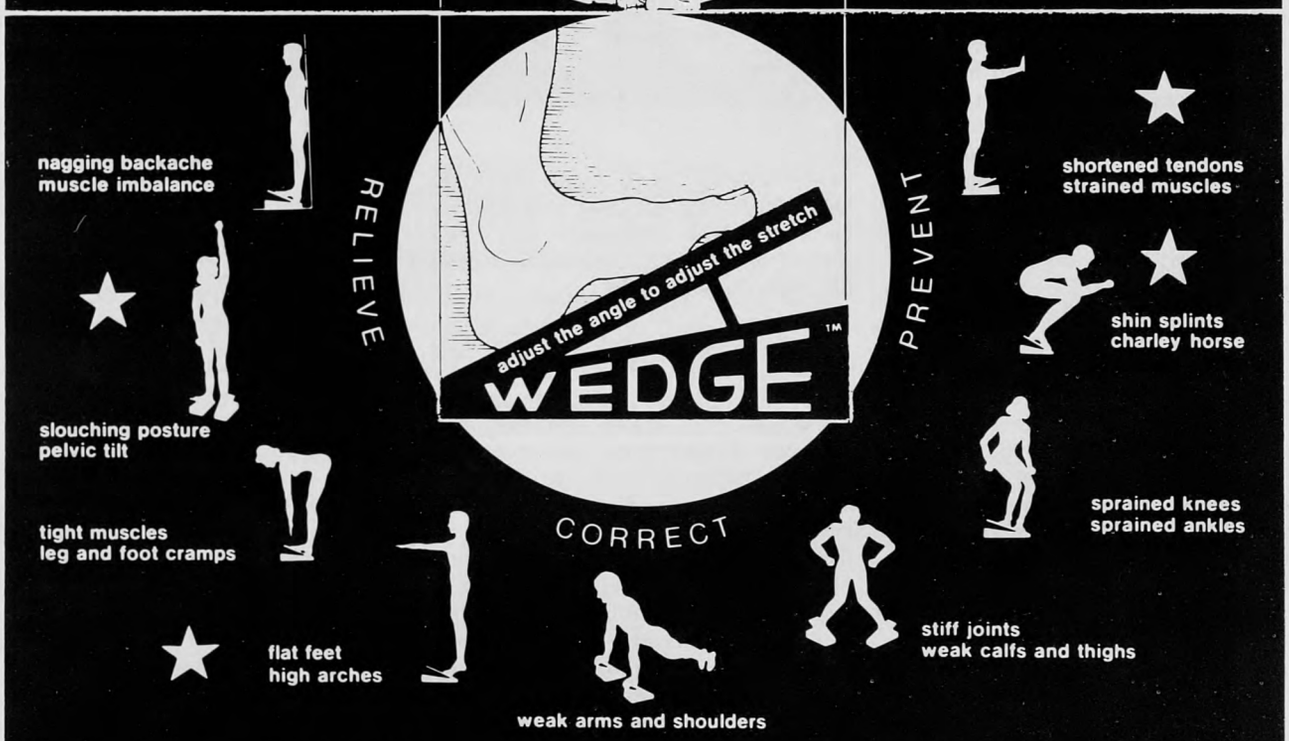

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Abstracts

"Vasopressin and Oxytocin Are Depleted from Rat Hypothalmic Nuclei After Oral Hypertonic Saline," Jack M. George, *Science* Volume 193; Number 4248, 9 July 1976, pp. 146-148

Dehydration is a potent stimulus for release of vasopressin and probably also oxytocin, as continued dehydration causes marked depletion of posterior pituitary stores of biologic activity of both hormones. Using a recently devised technique for microdissection of individual hypothalmic nuclei and radioimmunoassay, vasopression was found in six of 32 microdissected hypothalmic areas. This is a report on the effect of oral hypertonic saline on-vasopressin andoxytocin concentration in these six areas. Twelve male Wistar rats with an average weight of 261 g were divided into two groups of six rats each. One group was given 2 percent NaCl (saline group) as drinking water, while the control group drank tap water. After three days the control group had increased average body weight by 5 percent, while the saline group had lost 7 percent of initial body weight. An additional 12 rats were similarly divided in to 2 groups drinking 2 percent saline or tap water for ten days. The initial average weight of the second 12 rats was 281 g: the control group gained 22 percent of initial weight during the 10 day period while the average body weight of the saline group did not change. At the end of the 3 and 10 day periods the two saline and two control groups of rats were killed by decapitation and their brains were removed and quick frozen in dry ice. Data were analyzed by mixed model analysis of variance with repeated measures followed by t-test with Satterthwaite's approximation to combine error terms. The posterior pituitary glands were markedly depleted of vasopressin by even 3 days of oral 2 percent NaCl and more so after 10 days. There was also significant depletion of oxytocin in the posterior pituitary after 10 days of drinking 2 percent NaCl. In the hypothalmus after 3 days of oral 2 percent NaCl, there was a significantly lower concentration of vasopressin in the arcuate nucleus when compared with controls and significantly higher concentration of vasopressin in the paraventricular nucleus and retrochiasmatic area. After 10 days of oral 2 percent NaCl the arcuate nucleus and retrochiasmitic area had significantly lower concentrations of vasopressin. Also after 10 days of oral 2 percent NaCl, oxytocin concentration in supraoptic and arcuate nuclei was significantly lower. The arcuate nucleus has not been thought to be part of the neurosecretion system for vasopressin or oxytocin but from the findings in this report it appears to be involved in the dehydration response. This is consistant with an earlier autoradiography study in which was found increased incorporation of (3H) uridine into RNA in response to oral hypertonic saline in arcuate as well as the suproptic nucleus but not in suprachiasmatic or para ventricular nuclei. Evidently, in both supra optic and arcuate nuclei, dehydration causes depletion of vasopressin and oxytocin and possibly synthesis of new proteins of polypeptide hormones.

- John Wells

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Seelenfreund, M.H. and Freilich, D.B., "Rushing the Net and Retinal Detachment," *Journal of the American Medical Association* Vol. 235, #25, June 21, 1976.

A case study of ten patients who sustained significant ocular trauma after being struck by tennis balls is presented. Of these ten, all had vitreous hemorrhage, six required surgery retinally, and one required lasar photocoagulation. Apparently, the factor contributing most to damage is the high speed deformation of the cornea and sclera with rapid expansion and oscillation. A 56.0 - 57.6 gram tennis ball has been shown to travel at 8 - 136 km/hr. When passing over the net, thus placing the person playing close to the net at a higher risk than a player in the backcourt. Protection is advocated for all players, ranging from proper instruction is net technique (holding the raquet up to protect from rapid returning balls) to a handball eye protector or shatterproof safety glasses.

- Greg Vergamini

*****

Cooter, G.R. and Stull, G.A., "The Effect of Amphetamine On Endurance In Rats," *The Journal of Sports Medicine and Physical Fitness*, Vol. 14, #2, June 1974

Due to the increased use of amphetamines as erogenic aids in the last decade, the authors set out to test their effect on endurance in mammals. Under stringent testing conditions and controls, twenty-three male rats were fed various doses of dl-amphetamine sulfate (4, 8, 12, and 16mg/kg of body weight) and allowed various absorption times (30, 60, 90, and 120 minutes), then placed in a tank of water. Each specimen's tail was weighted with 5.5% of its body weight, so that the motivation to swim to exhaustion was survival. Each rat swam under all possible conditions of drug dosage and time in addition to a control swim of placebo and 30 minute absorption time. The results showed no significant increase in endurance by any drug dosage with any absorption time over the control. Since the physiologic evidence is doubtful as far as increased performance level, and health hazards are involved, the conclusion is made that use of amphetamine as an erogenic aid should be discouraged.

- Greg Vergamini

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R.J. Barnard, "The Heart Needs Warmup Time," *The Physician and Sportsmedicine;* Vol 4, #1, January 1976, p. 40

Recent evidence shows an important function of warmup before physical exertion may be to prevent complications far more serious than damaged muscles and tendons: ischemia leading to cardiac damage. To test this theory, 44 men, aged 21-52 and all without signs of coronary artery disease in a near-maximal ECG stress test were selected. Each ran a treadmill at 9mph/30% grade for 10 minutes without prior warmup. 68% (30) of these showed an abnormal ECG immediately after completing the run. When 2 minutes of easy jogging preceded the treadmill, the abnormal ECG's were either eliminated or reduced in all cases. In a second study, arterial blood pressure was measured in 10 men,

(CONTINUED on page 196)

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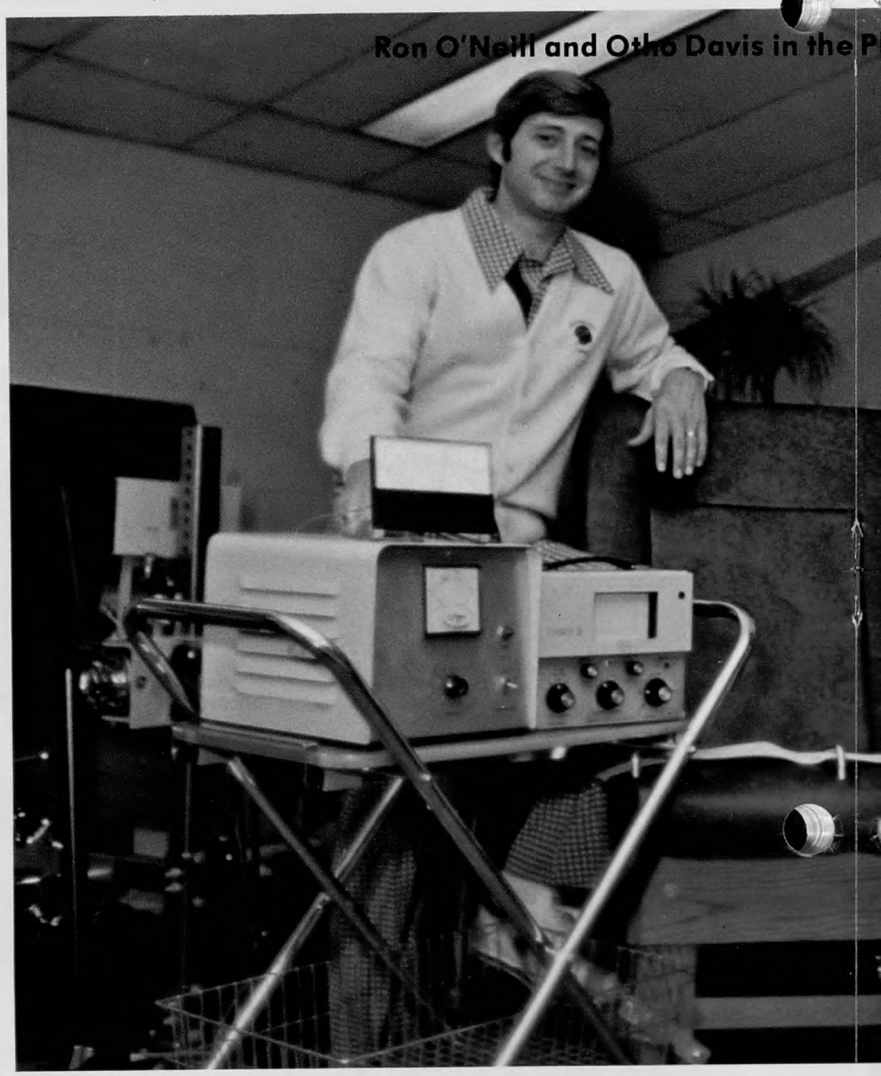

Ron O'Neill and Otho Davis in the P

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re-injuries, and, in some cases, actually improving player performance and preventing injuries from occurring."

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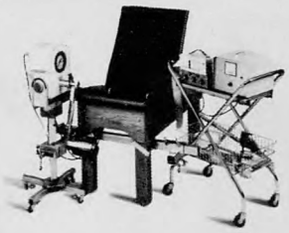

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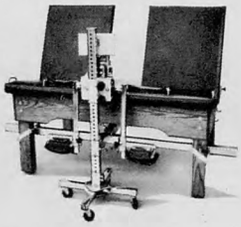

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Guide to Contributors

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1. Eight copies of the manuscript should be forwarded to the editor and each page typewritten on one side of 8 ½ x 11 inch plain paper, triple spaced with one inch margins.
2. Good quality color photography is acceptable for accompanying graphics as well as glossy black and white prints. Graphs, charts, or figures should be of good quality and clearly presented on white paper with black ink, in a form which will be legible if reduced for publication.
3. The list of references and citations should be in the following form: a) books: author, title, publisher with city and state of publication, year; b) articles: family names, initials and titles of all authors, title of article, journal title, with abbreviations accepted as per Index Medicus, volume, page year. Citations in the text of the manuscript will take the form of a number in parenthesis, (7), directly after the reference or name of author being cited, indicating the number assigned to the citation in the bibliography.
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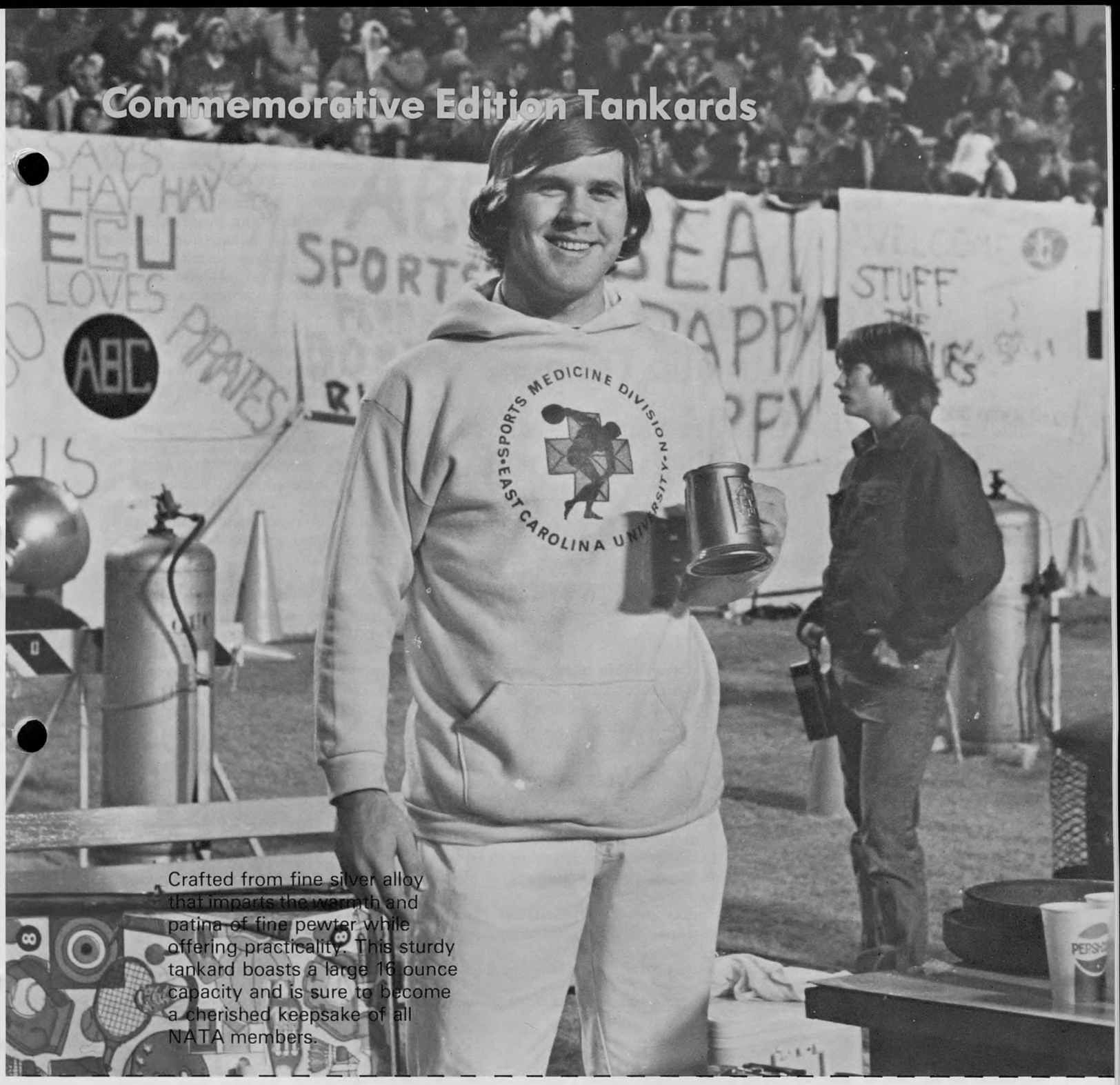

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The Need For A Certified Athletic Trainer in the Junior-Senior High Schools

by
E. James Kelley, Ed.D.
and
Sayers J. Miller, Jr., A.T.,C.

Athletic trainers, like other professionals in today's society, live in an environment which is undergoing constant change. New treatment information is being generated so rapidly that it has become extremely difficult for one to keep abreast of new developments in the field. Therefore, since present skills and knowledge will not enable individuals to operate effectively in tomorrow's world, those in specialized fields are constantly faced with the danger of becoming obsolete.

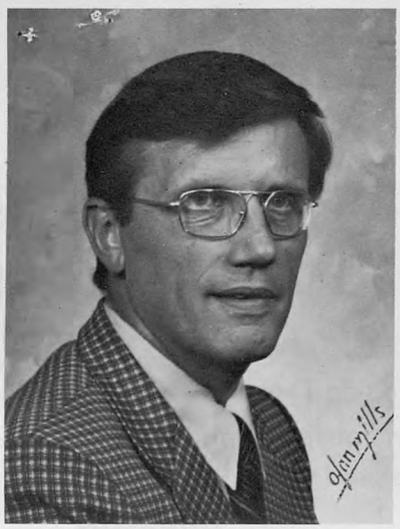
It was within this context of change that a recent study was conducted at The Pennsylvania State University to determine the extent of knowledge obsolescence among non-certified junior-senior high school athletic trainers.* The study was designed to assess the extent the sample population (N = 128) understood current knowledge in the area of athletic training and conditioning. The subjects teachers employed in Pennsylvania public schools completed an instrument composed of twenty multiple choice items developed by nationally recognized athletic training and conditioning experts. The items dealt with such topics as the care and treatment of athletic injuries - conditioning programs, diet, drugs and heat exhaustion, each of which was deemed essential to the implementation of athletic training and conditioning programs and care of athletic injuries. Based on the established standard of competency used in previous studies (70% correct answers), the results indicated that 85% of the respondents could be considered obsolete in their understanding of current knowledge.

Earlier studies on training and conditioning conducted by Kelley involving male physical educators (1) and coaches (2,3) produced similar findings. A comparison of the results of the three groups on be seen in Table 1.

As shown in Table 85% of the athletic trainers sampled would be considered obsolete in their understanding of current knowledge. The performance of the athletic trainers was somewhat lower than that achieved in an earlier study (1) involving male physical educators which estimated that 77% of this group were not aware of current information. The study involving coaches (2,3) found 86% of this group falling below the established criteria. The fact that the athletic trainers did not score highest among the three groups completing the instrument is cause for concern. Since the items contained in the instrument pertained exclusively to athletic training

*Persons serving in the role of the athletic trainer who have not been certified by the N.A.T.A. or by any educational institution.

SAYERS J. MILLER, JR.
Mr. Miller is currently the coordinator for the Area of Emphasis in Athletic Training within the College of Health, Physical Education and Recreation. He also serves as coordinator for the National Athletic Injury Illness Reporting System housed at the Pennsylvania State University. In addition, Mr. Miller is currently an active member in numerous professional organizations in the area of sports medicine and serves as the Chairman of the Professional Education Committee for the National Athletic Trainers Association.



E. JAMES KELLEY
Dr. E. James Kelley is the Assistant Dean for Continuing Education for the College of Health, Physical Education and Recreation at the Pennsylvania State University. Before Dr. Kelley's affiliation with Penn State, he was employed by the Franklin Regional School District in Murraysville. During his tenure at Franklin, he taught Health and Physical Education at the senior high school. In addition to his teaching responsibilities, he was the head coach of the varsity basketball and baseball team.

TABLE 1
COMPARISON OF STUDIES INVOLVING
MALE PHYSICAL EDUCATORS, COACHES AND TRAINERS

Population Sample	Number of Respondents	% of Sample Who Did Not Meet Established Criteria
Male Physical Educators	1024	77%
Coaches	292	86%
Athletic Trainers	128	85%

*Answer 70% of the items correctly.

and conditioning, one would expect that those individuals working in this specific area would be the most knowledgeable. Since this was not the case, one might assume that many individuals assigned the responsibility of the athletic trainer in public schools have not had the needed professional preparation in athletic training and physical education or the opportunity for updating. The very similar obsolescence rates for coaches and athletic trainers would lend support to the belief that many high school athletic trainers are primarily coaches, appointed to carry out this role. The study indicates a definite need for persons involved in athletic training to have more information relating to anatomy, physiology, care and treatment of athletic injuries and related subject matter.

An examination of the items contained in the instrument indicated obsolescence in understanding questions related to diet. For example, an item pertaining to the type of diet which would favor the most efficient performance on the part of the athlete revealed that 85% of the group were unaware that a pre-game meal should be high in carbohydrate, moderate in protein and low in fat. This type of response indicates that many persons serving in the role of athletic trainer at the junior-senior high school level do not have sufficient knowledge concerning proper nutrition. This is one of the contributing factors for fads and fallacies in the diet of of athletes.

The sampled population was asked to respond to an item identifying numerous athletic catastrophies and select the one which could be prevented. Possible choices included: (1) cerebral concussion, (2) blisters, (3) shin splints, (4) heat stroke, and (5) hamstring pulls. The fact that only 53% of the respondents correctly identified heat stroke as a preventable catastrophy reflects a lack of knowledge regarding specific injuries and illnesses. Unfortunately, results such as this further support the feeling that many individuals assigned the role of "the athletic trainer" have not been selected on the basis of their professional preparation.

Items relating to heat stroke prevention and the use of modalities were answered correctly by nearly 70% of the respondents. However, it is expected that information such as this would be understood by all persons involved in athletic training. Those individuals identifying themselves as athletic trainers in this study were also asked to identify a variety of injuries. For example, if a player complains that his arm has no feeling and he cannot move it, or has little or no strength in it, what are the possible dangers? Only slightly more than half of the responding group answered this correctly by indicating that he may have fractured a cervical vertabrae. This incorrect response on the part of so many further reflects a poor anatomical background of the respondents. In addition, they have indicated a lack of ability in recognizing signs and symptoms of particular injuries. Anatomy and clinical signs (symptoms) are the two weakest points in the professional preparation of these athletic trainers.

Further evidence of many of the athletic trainers in this study needing more education is revealed in their response to items related to recurring straining of the groin muscles. Less than 50% of the group realized that this type of injury is frequently associated with tight hamstring muscles. The natural response of the untrained individual to a question such as this would be to associate the groin with the nearest anatomical landmark.

One of the greatest dangers to an athlete who has an unsuspected case of mononucleosis and is still engaging in sports practices or competition is the rupture of the spleen. Only 24% of the responding group answered this correctly. The uninformed athletic trainer would naturally relate the symptom, excessive fatigue, to nononucleosis rather than the complication of a rupture of the spleen. Unfortunately, many individuals involved in athletic training are not familiar with the pathology and complications which may develop if the athlete continues to engage in sports activity.

Items related to heat exhaustion were answered correctly by a significant portion of the population. A fundamental precept in preventing heat exhaustion is to provide liquids without restriction. Seventy percent agreed that players should be permitted free access to water at all times during practice and games. Off the field, heat adaptation can best be maintained by generously salted food and maintaining fluid intake of about two quarts daily. Less than 30% responded correctly to this item.

Discussion

An analysis of the examination indicates that a large proportion of those individuals assigned to the role of athletic trainer are in need of updating. While the degree of obsolescence varied according to the areas of knowledge, the general performance of the group was low.

Based on the results of the study, it was concluded that the individuals assigned to the role of athletic trainer have to be made aware of the many changes that have occurred in the field during the past several years. These are the people who have many responsibilities which include making decisions on the purchase and selection of athletic equipment and the development and implementation of conditioning programs.

Another important aspect that should be noted is that in the absence of an attending physician, athletic trainers are frequently the first to attend injured athletes, to render a judgment of the severity of the injury, and to administer appropriate primary care. In addition, it's not uncommon for athletic trainers to make suggestions on the athlete's diet and to establish policies on the use of water and salt while engaging in sports activity.

This poses a very important question: Are the individuals making such decisions competent and familiar with current knowledge? The results of this study indicate that a large majority are not aware of the most current information.

Terminology vs. Practice

It should be pointed out, however, that it's possible for a person to be obsolete in terms of recent developments and still fulfill his responsibilities. To illustrate: An athletic trainer may know that he should apply ice to a person who has just suffered an ankle sprain, but may not be able to answer a question on the use of "cryotherapy." Since cryotherapy is the use of ice, a person unfamiliar with the term could be considered obsolete in terms of current terminology, yet be up to date from the practical or functional standpoint. Nevertheless, a lack of knowledge as extensive as that indicated appears to justify concern.

Implications

The study has professional implications. It implies that daily, hundreds of decisions, ranging from the planning and implementation of training and conditioning programs to the care and treatment of injuries, are being made by individuals without adequate preparation and training.

A Possible Solution

The results of this study have provided a basis for the development of a program of studies designed to update non-certified athletic trainers assigned to this role by their high school administration. Dr. E. James Kelley, Assistant Dean for Continuing Education and Mr. Sayers Miller, Assistant Professor of Health Education at The Pennsylvania State University, have developed a program of instruction which, upon successful completion, will provide certification as a trainer for interscholastic sports. The program was designed to improve competency in the area of training and conditioning techniques for those responsible for the care and prevention of injuries related to sports activities. This certification program offered by Penn State and submitted for endorsement by the N.A.T.A. consists of studies in first aid, recognition of injuries, athletic training techniques, injury management, rehabilitation of athletic injuries, injury prevention, and administration of athletic training programs. Upon satisfactory completion of the 24 credits, a certificate stating that a person has met the requirements and is qualified to serve as an athletic trainer for interscholastic sports is awarded. In addition, this program would also assist the student to meet Section III of the N.A.T.A. procedures.

Conclusion

In this era of knowledge explosion, stagnant practitioners pose a major challenge to professional educators. Fortunately, in today's society, opportunities for updating are extensive. It is imperative professionals be aware that these opportunities exist and realize it is not necessary for them to experience a decline in competency. Firstly, if athletic trainers, as other professionals, are to function at a high level of efficiency, it is essential that they continue their education, for learning is a lifelong process.

Secondly, school and athletic administrators must not condone the practice of assigning a coach or staff member to the role of athletic trainer who lacks the professional preparation or is obsolete in his or her knowledge in the field. The appointment of an unprepared individual to care for the health of athletes will only breed many more legal and medical problems in the future. Consequently, the wise administrator would be the one that hirs a teacher on his faculty that is also qualified to carry out the duties and responsibilities of an athletic trainer or requires the individual assigned this position to become professionally prepared to carry out his or her role of athletic trainer. In other words, make sure that your athletic trainer *is* or *becomes* a certified athletic trainer. •

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Potpourri

By Dennis Aten, A.T.,C.
Eastern Illinois University

Knowledge Obsolescence

A study by Kelly and Kalenak reported in the November/December issue of the Journal of Sports Medicine indicates that many physical education professionals are lacking in related areas of competency. This study listed 5 areas related to physical education and set criteria for determining competency.

Ninety-nine per cent of the examinees failed to meet the criteria established for up-to-date competency in the area of curriculum. Ninety-four percent failed teaching methodology. Exercise physiology had an 89% failure. Adaptive physical education and athletic training and conditioning tied for the best results with a 77% failure rate.

The validity of this study may be open to question, but it would certainly indicate the need for field specialists such as the teacher-trainer who could keep themselves up dated in current practices and technique in an area of smaller scope.

Rigid Cast Alternative

Check with your orthopedist regarding a new material for "soft" casting. According to a case report by Dr. Ritter, et al, discribed in an article in the January-February, 1976 issue of the American Journal of Sports Medicine, they were able to use a material called plastazote to adequately cast a fracture and still legally allow an athlete to compete. The authors are quick to state that although they feel this material an excellent adjunct to sports medicine care that it has limited use.

Tibio-Fibular Ankle Sprains

Dr. Guise discusses the difference in a normal supination ankle sprains and rotational type sprains. It is his contention that rotational sprains cause damage to the tibio-fibular ligament and interosseous membrane. Although these sprains are less frequent than talo-fibular sprains they appear to be more disabling. Many trainers have experienced this same phenomonen when athletes don't respond as rapidly to treatment and taping procedures do not stablize the joint to allow function as soon. It always bears repeating and remembering that each sprain is different according to both its severity and its location. There are many structural entities in the ankle that may be damaged. Further information regarding Dr. Guise's study can be found in the January-February, 1976 issue of the *American Journal of Sports Medicine.*

NATA Growth

The NATA is changing. Its growth may mean a full time national staff some day. Already attempts are being made to computerize national records. Growth means more

trainers, higher standards, varied programs, greater acceptance and expanded potential. Of course, it also means that we have outgrown our free entertainment at our national convention. No longer will one company be able to underwrite elaborate get togethers, trips, meals, and other free entertainment which we have come to take for granted. Such is the price of growth.

AHES

Area Health Systems have their origin from a federal grant and one of their tasks is to assure the availability of courses in continuing education for health professionals. There appears to be a great interest in sports medicine courses. This gives athletic training an opportunity to not only educate and up date our own but also to inform other health professionals of the goals of sports medicine and the standards of athletic training. This could lead to greater cooperation in the health care of athletes. Anyone wishing to contribute their time and talent to projects like this should contact and AHES office at an area medical school.

Health Practices

The April, 1976 issue of Physical Fitness Research Digest indicates that there are several health practices that definitely relate to fitness and mortality. These practices can also relate to athletic performances. According to the research in the digest the following practices were most conducive to fitness and mortality.

a) Seven to eight hours of sleep per day
b) eating regular meals - no snacking
c) body weight maintained between 10% underweight and 20% overweight (no real discussion existed on how proper weight was determined)
d) consistent and often participation in sports activities.
e) abstinence or only moderate consumption of alcoholic beverage
f) abstinence from smoking

The more practices that are inherent in an individual's daily regimen the greater chance of predicting good physical and emotional fitness and longevity. Although these statistics are taken from one longitudinal study with specific definitions, the results still appear to give credence to many of the same health practices that we believe aids in development of athletic excellence.

Weights and Aerobics

It was concluded by one study that circuit weight training had a significant aerobic component. This study was reported at the annual meeting in Anaheim of American College of Sports Medicine.

Polls

According to the April, 1976 Newsletter of the American Acadamy of Orthopaedic Surgeons some recent polls revealed several interesting opinions.

The results of a recent *Roper Poll* indicate that four out of 10 persons believe "almost all" charges of malpractice against physicians are justified. Three out of 10 believe that "very few" malpractice charges are justified.

Recent government and private *polls cited by the AMA* shows that eight out of 10 Americans believe the medical care they receive is satisfactory. The polls also show that 60 percent of the US population has seen a doctor in the past year. Physicians should be glad to know that complaints about medical care ranked low, 20th place, in a 1974 survey.•

Injuries in High Jumping Due to Faulty Technique

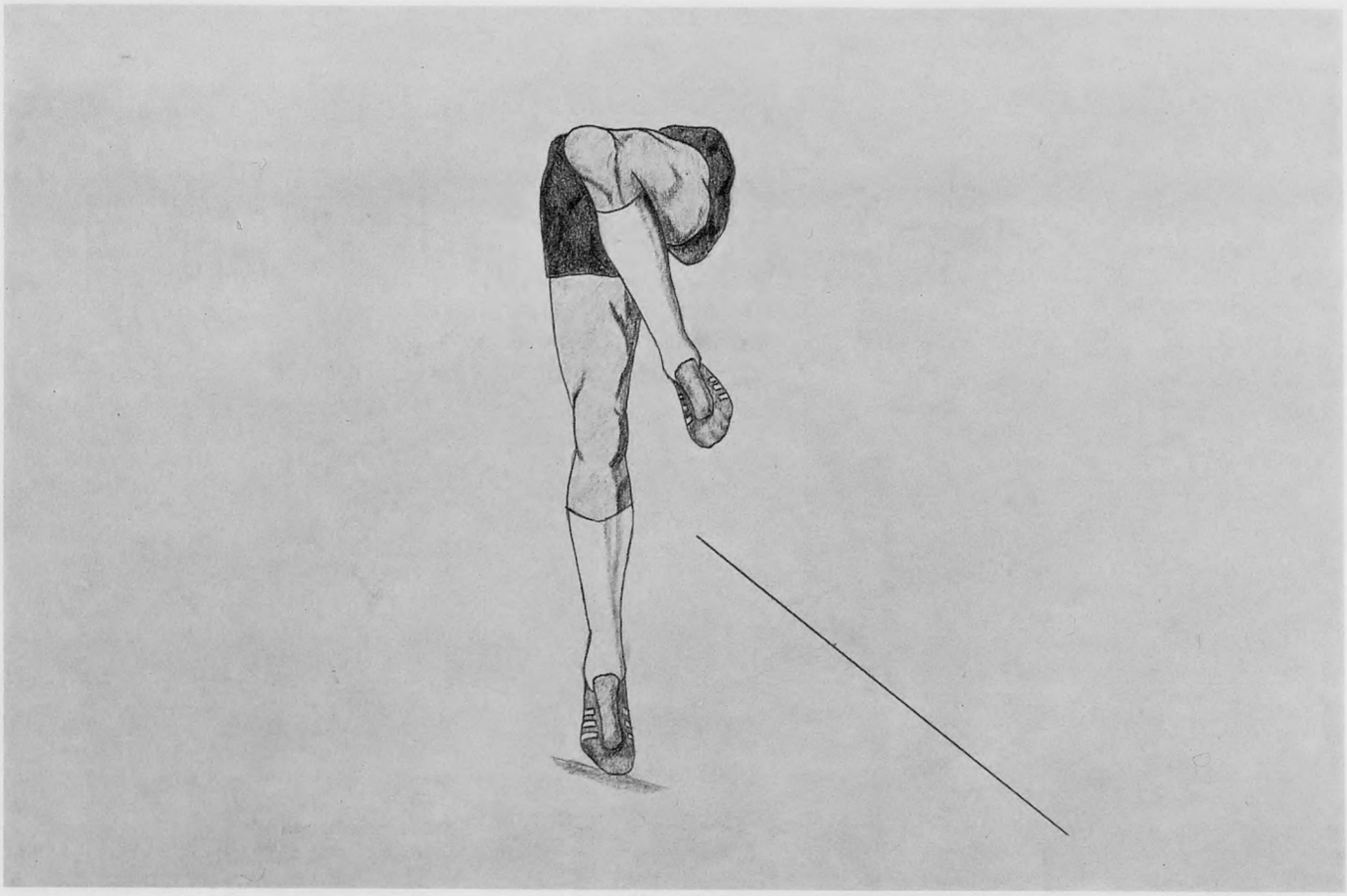
by Donald A. Chu, Ph.D., A.T.,C.
Department of Kinesiology and Physical Education
California State University, Hayward

With the development of the Fosbury Flop technique (Figure 1) in the high jumping event came a flurry of concern among medical personnel that there would be a significant increase in the number of upper cervical and thoracic spine injuries seen in the event. This initial reaction has been reduced by a low incidence of reportable injuries to these anatomical areas. However, a myriad of other problems can be associated with the event. As in most sporting activities, faulty technique can prove to be a chief contributor to injury.

Proper Foot Plant

Injury records at California State University Hayward for the past five years indicate that the majority of injuries in the high jump occur at that stage of the jump known as the foot plant [2]. The proper plant may be described in the following way: The outside foot should be placed or planted as in Figure 2 [1]. As demonstrated the foot will be almost parallel, within ten to fifteen degrees to the cross-bar. This will allow the inside knee to be driven up and across the body until that knee is eventually in the same plane as the opposite hip (Figure 3). This action in turn causes

FIGURE 1



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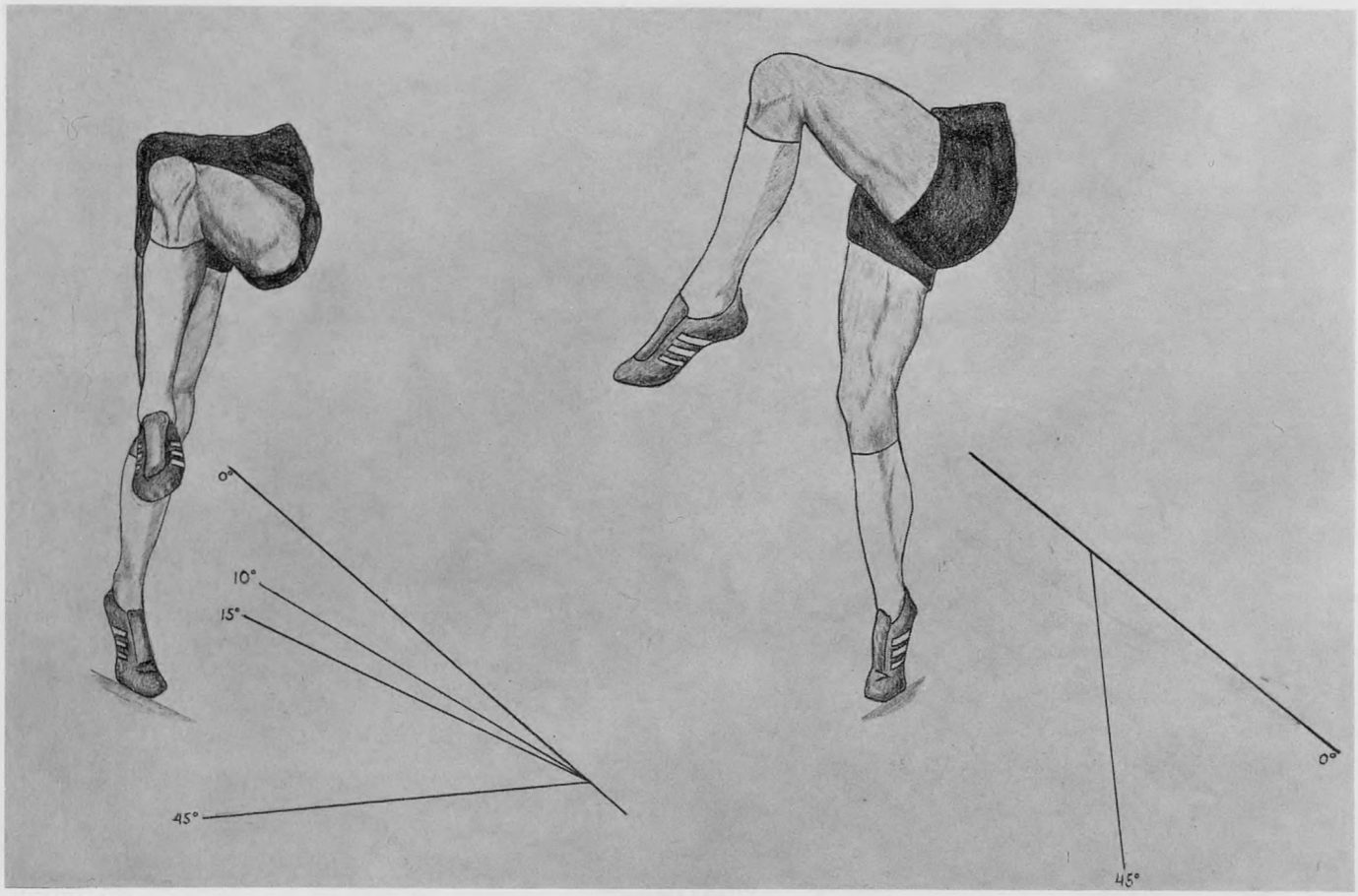
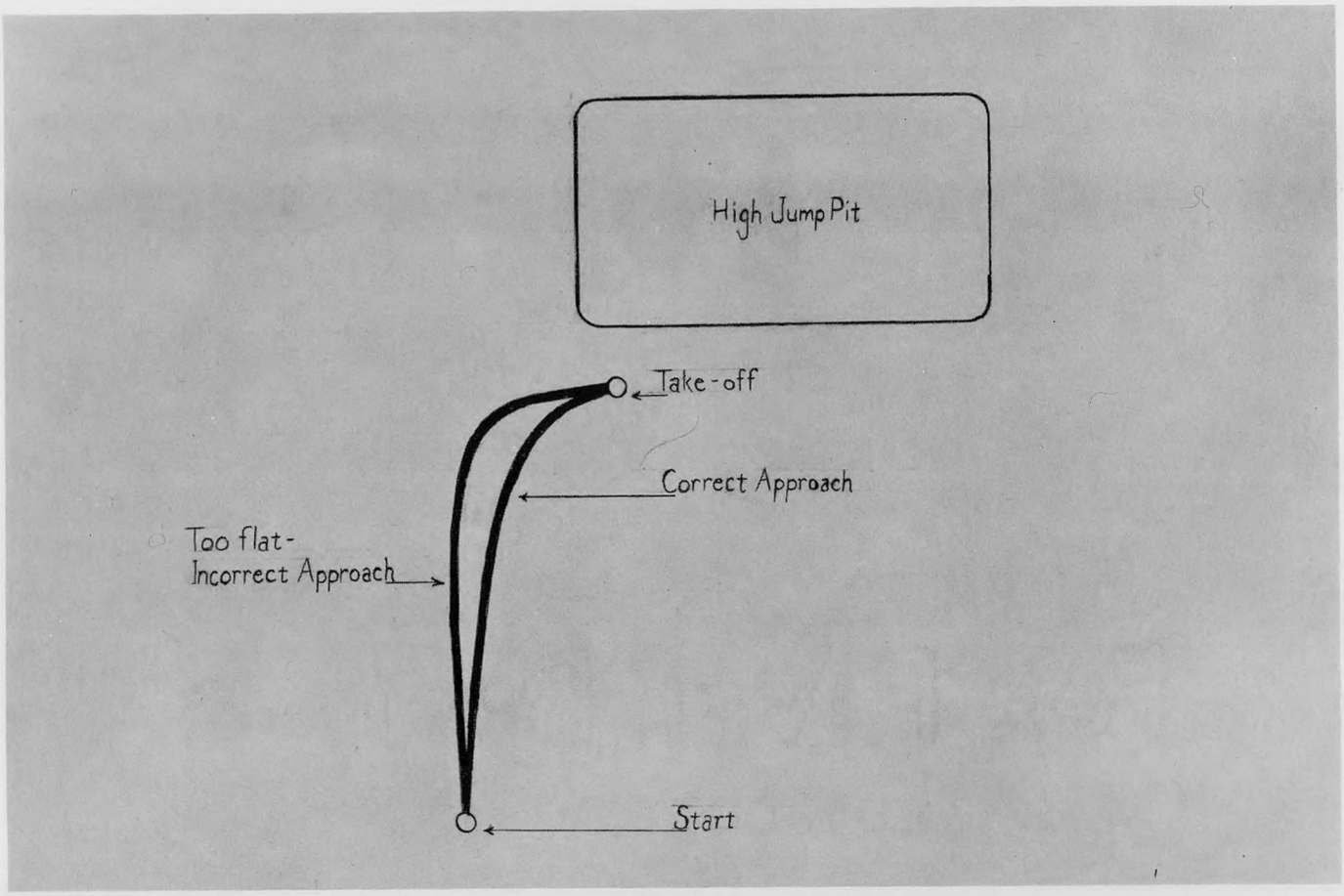


FIGURE 3 **FIGURE 4**



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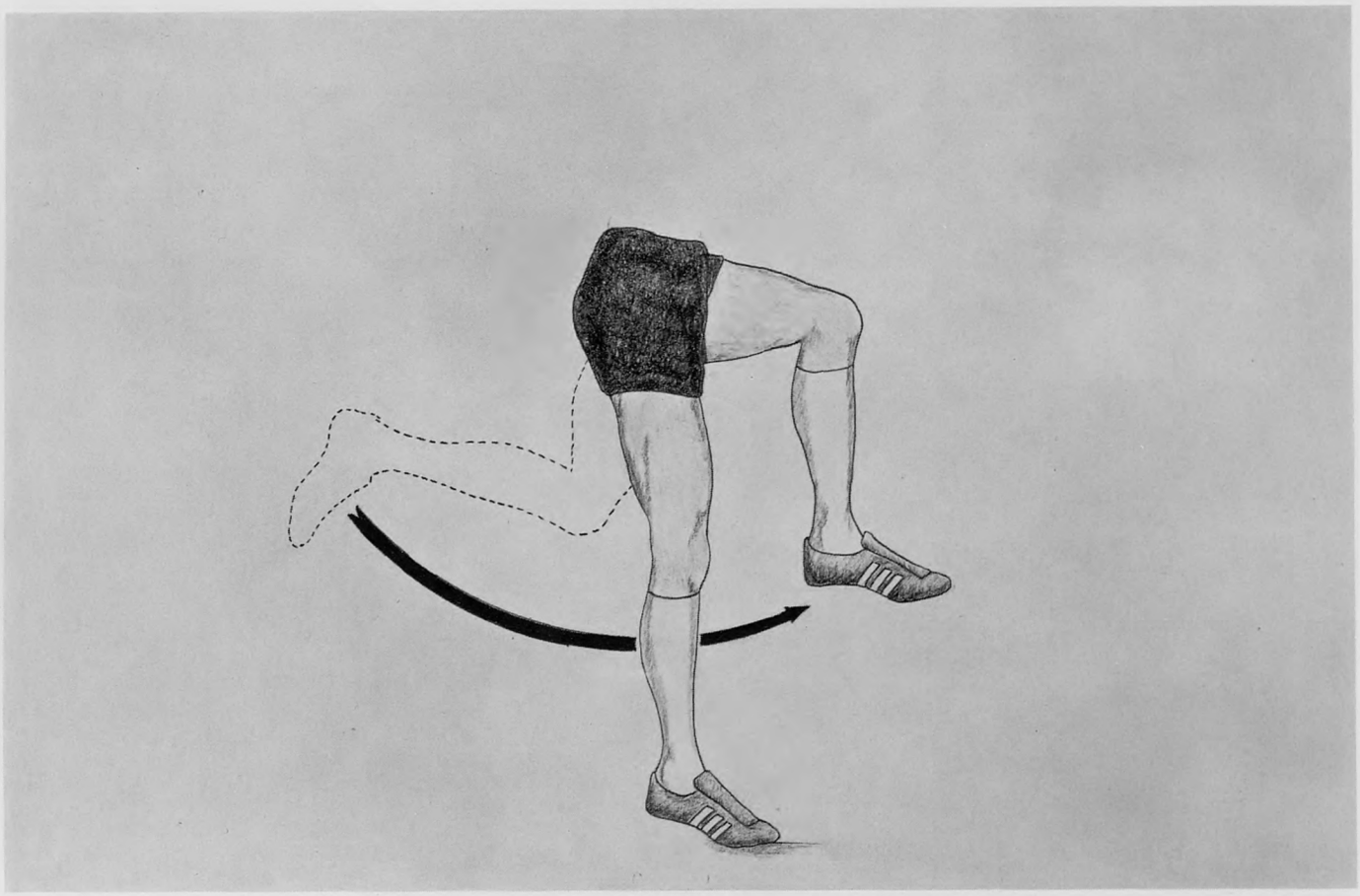


FIGURE 6

the body to rotate to that all-important, back-to-the-bar position for the Flop. Since body rotation must begin with the plant foot on the ground, any improper placement of the plant foot will disrupt the jumper's attempt to achieve an efficient position for bar clearance once he has left the ground.

The plant itself should be a heel-to-toe action. The rock-up may not be as pronounced as in the straddle style, but it is still essential. Because of the acceleration in the jumper's approach there will be a braking action with his heel spikes, checking horizontal motion, prior to rocking up for take-off. In other words, the jumper must attempt to transfer horizontal velocity into vertical velocity. This transfer action is considered easier to perform with the Flop technique than with the straddle.

Improper Angle of Plant

Improper foot plant can contribute to an injury in many ways. The first consideration is the angle of the plant. When the foot is planted at a large angle with respect to the bar, forty-five degrees to ninety degrees, the action of driving the knee to achieve the back-to-the-bar position can result in injury to the ankle, knee, and hip of the plant leg. Torque of this type is transferred first to the ankle joint. As the jumper rocks to his toe this action will cause the foot to supinate (inversion of the ankle) more than it would on a proper plant. The large angle of plant forces the jumper to attempt to obtain rotation from the ankle joint as he moves into the back-to-the-bar position. As rotation is not possible at the ankle joint, supination of the foot results. This excessive supination (inversion) usually stresses ligamentous structures of the ankle but can also involve the peroneal muscle group as well. The action of the peroneals would be to control excessive supination (inversion) of the foot at this time. This error in technique often results in pain symptoms often categorized as "shin splints."

Actually, the more common complaint with this error in technique is knee pain due to excessive external rotation of the femur on the tibia. This mechanism is exactly opposite of the more familiar external rotation of the tibia on the femur associated with football. The result, however, is still a stress to the medical collateral ligament. Generally, the foot is fairly well fixed at the plant stage. The heel and front of the foot are held in solid contact via the spikes. As the rock-up is being completed remember the lead knee simultaneously drives across the body causing the thigh on the plant leg to go into extreme external rotation on the fixed tibia. Merely attempting to demonstrate this to one's self can elicit painful sensations in the knee.

Finally, the hip joint of the plant leg may also be acted upon injuriously. Providing the knee and ankle joints escape trauma, the structures of the posterior capsule of the hip may be stretched while attempting to limit internal rotation of the hip. The athlete will complain of pain over the posterior aspect of the hip. This "pain in the rear" can be attributed to transmitted torque forces on the hip joint being overly stressful due to an incorrect angle of the plant foot.

Planting with the foot parallel to the bar or even at a negative angle to the bar (Figure 4) is equally conducive to injury and loss of effectiveness. In order to plant at this angle to the bar the jumper must evert the foot to maximum. This action may also lead to strains within the peroneal compartment. Whether this injury is due to concentric contraction or to eccentric lengthening at the time of take-off is pure conjecture. However, the point of take-off is where most jumpers feel or complain of this problem.

When the foot is planted at too shallow an angle to the bar the basic hinge-moment principle so essential to high jumping is disrupted. The jumper will, upon continuation of the plant and take-off motion, assume the back-to-the-bar position too soon. This results in the loss of certrifugal force from the now famous curved approach [1]. Without centrifugal force from the approach there is nothing to project the jumper back into the pit. His take-off actions will now take him straight up, and regretfully, straight down. To the spectator, the jumper may appear to have a smooth approach, good take-off, and yet he "stalls out" on top of the bar. Often, this is dangerously close to the front edge of of the landing pit. Serious head and neck injuries now become a possibility. One of the chief contributing factors to injury in this type of plant and take-off is an approach to the bar that is too flat to the bar (Figure 5).

Improper Foot Plant Technique

Another very common error at the plant by young athletes is stomping. In their zeal to exert an upward drive

to their body they are attempting to invoke a strong action-reaction situation with the ground. The basic problem is that most of the reaction is absorbed by the soft tissues of the body, resulting in many of the common overuse problems of the foot and lower leg. Contusions of the calcaneal bursa may appear with this type of plant. A combination of stomping and an attempt to externally rotate the foot for the proper angle of plant will result in the contusion appearing on the posterior-lateral aspect of the heel. Longitudinal arch problems stemming from fatigue and stretching of the plantar fasic and ligaments may lead to overuse of the long muscles of the lower leg, e.g., peroneals and tibialis posterior. This problem will of course manifest itself as the well known shin split syndrome.

One of the more interesting and subtle injuries occuring at the ankle joint results from stomping at the plant. As the heel makes contact from a near vertical position above the ground, the forefoot makes contact immediately. This can be noted by a very definite slap sound at the plant. As the foot makes contact the leg moves rapidly over the foot prior to take-off, this can and does result in a total forward shift of the tibia and fibula on the talus. This forward displacement results in stretching the ankle joint capsule and symptoms are usually elicited with an attempted drawer sign at the ankle joint.

Planting On
The Forefoot

Planting on the forefoot (Figure 6), without heel contact, is often seen among jumpers who do not have the proper equipment, namely a high jump shoe with heel spikes. The jumper must avoid planting on the front part of the foot as the first and only contact with the ground. This type plant prevents the jumper from checking his horizontal velocity and hinders full development of vertical velocity. Planting on the forefoot can lead to several problems. The most obvious is of course that if the jumper does try to brake at plant by making contact without heel spikes he will slip. Here again is a potentially serious situation. The athlete who slips and falls out of control is likely to suffer extreme trauma to whatever part of the anatomy first makes contact with the ground. More subtly, the plant will cause the jumper to be inefficient at take-off and will most likely drive him into the bar as though he were long jumping rather than high jumping. This of course severely limits the ultimate height he can drive his center of gravity, and subsequently his body.

In the haste of planting on his forefoot only, the jumper opens himself to two other problems. First, the torque of the lead knee driving across the body will cause the jumper to pirouette on the forefoot. This situation may be noted by examining the take-off surface after the jump is completed. Tell-tale scrape marks resembling a semi-circle can actually be seen in the surface if the jumper is wearing a high jump shoe and performing a forefoot plant. The resulting jump from a pirouetting plant is likely to be one that is out of control or is again, straight up and down. Second, planting on the forefoot can cause the foot to roll into inversion. This is particularly so when combined with too large an angle of plant. The result of this combination is usually sprain of the anterior talo-fibular ligament.

Improper Knee
Position in Planting

Planting with the knee of the plant leg in complete extension can be both painful and costly. The effectiveness of the jump is hampered severely since the body's center of gravity must then drop, due to the knee bending, prior to leaving the ground. Two mistakes lead to this situation. The first is the misconception that the horizontal velocity of the approach is converted, in its entirety, ito vertical velocity at take-off. This tends to cause the inexperienced jumper to develop excessive horizontal velocity during the approach and then try to brake this action by using a straight leg plant. This second mistake occurs when the jumper attempts to gain a lean back position prior to take-off. (This is seen more often among stradlers than floppers.) The result, of course, is a tremendous compression force on all three joints of the plant leg. The knee appears to be the most often injured joint with this technique. The compressive forces result in injury to the articulating surfaces of the tibia and femur. The hip absorbs much of the force as well; however, it can be seen in the picture sequence (Figure 7) that the head of the femur can be driven superiorly against the lip of the glenoid labrum. This results in a sprained feeling within the hip which in actuality is sprain spelled subluxation.

FIGURE 7

In summary, the art of high jumping has come a long way with the advent of the Fosbury Flop technique. However, those mysterious joint injuries that track athletes often incur may have a definite cause beyond the normal realm of control of the athletic trainer. It is when complaints become chronic that a consultation between coach, trainer, and athlete must take place so that each member may contribute his knowledge to solving the athlete's dilemma.

REFERENCES

1. Chu, Donald A. "Biomechanical Essentials of the Fosbury Flop,"- *Scholastic Coach*, April, 1975.
2. _____. Injury Records, California State University, Hayward, California. 1970-1976.

N.A.I.R.S. QUESTION CORNER

Q. While artificial surfaces are a controversy in football with respect to injuries, what are the indiciations of ankle injury frequency between wood and artificial surface basketball courts?

A. Interpretation of our data must be considered preliminary. More teams and years are needed. Our data from the 1975-76 college season (19 teams, 492 games, 1679 practices) surprisingly indicate that while no difference between surfaces were found in this regard, hightop shoes were associated with higher frequencies of ankle injuries than lowcuts regardless of the type of surface played on. Further examination suggests that this was attributable to a higher frequency of taped ankles among those who wore lowcuts. This contention will be pursued again when the 1976-77 season concludes.

Q. Which sports are the most injurious in terms of significant injuries?

A. To compare sports' rates, we must accommodate differences in season's length and number of athletes at risk. According to our 1976-76 college data, adjusted for squad size and number of sessions, the ranking of significant injuries per 1000 athlete-exposures by sort is listed below. Only those sports having at least 4 teams reporting are included. After 1976-77 year concludes, we will be examining the constancy of these levels.

Sports	Sex	Teams Reporting	Significant Case Rate 1000 Athlete-Exposure
1. Spring Football	M	23	7.1
2. Wrestling	M	12	4.6
3. Fall Football	M	42	3.3
4. Lacrosse	M	4	3.2
5. Soccer	M	15	3.0
6. Ice Hockey	M	9	2.2
7. Basketball	F	20	2.2
8. Softball	F	10	2.1
9. Gymnastics	M	7	2.0
10. Basketball	M	8	1.9
11. Volleyball	F	13	1.8
12. Gymnastics	F	9	1.7
13. Baseball	M	11	1.6
14. Tr & Fld, Ind	M	6	1.6
15. Tr & Fld, Outd	M	8	1.5
16. Tr& Fld, Outd	F	6	1.5
17. Tennis	F	6	1.0
18. Field Hockey	F	14	0.9
19. Cross-country	M	11	0.9
20. Lacrosse	F	4	0.5
21. Swimming/Diving	M	7	0.5
22. Tennis	M	6	0.3
23. Swimming/Diving	F	8	0.2
24. Golf	M	4	0.0

Calendar of Events

by Jeff Fair
Oklahoma State University

FEBRUARY 1977

3-8 - American Academy of Orthopedic Surgeons, Las Vegas. Contact C. V. Heck, MD 430 N. Michigan Ave., Chicago, IL 60611

5 - Athletic Injury Workshop with Lab, 4th Annual Metroplex Trainers Clinic: Garland, Texas. Contact Carroll Montgomery, North Garland High School, 2109 Buckingham Road, Garland, Texas 75042.

18 - Sports Medicine Lecture, Academy of Medicine of New Jersey. Contact Academy of Medicine of New Jersey, 2424 Morris Avenue, Union, New Jersey 07083.

25-26 - Physical Fitness and Sports Clinic, Contact: Keeler Conference Center, Penn State University, University Park, PA 16802.

MARCH 1977

12-13 - 10th Annual Sports Medicine and Conditioning Seminar. Seattle, Washington. Contact: Sports Medicine Seminar, 5409 17th Northwest, Seattle, Washington 98107.

25-26 - Sports Medicine Conference. The California Coaches Association is being held in conjunction with the meeting at San Francisco's Jack Tar Hotel. Contact James M. Glick, M.D. 250 Masonic Avenue, San Francisco, CA 34188.

APRIL 1977

15-16 - Physical Fitness and Sports Clinic, Contact: Linda Sorrell, Illinois State Normal Univ., Normal, Illinois 61761.

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.

Editor's Comments

Yours truly had had an accident. I suffered a Colles fracture and got "plastered"! So I am turning over the "Comments" portion to my righthand assistant, Mary Edgerley, for this issue, to avoid further delay of the Journal. Take it away Mary.

JOURNAL
COMMITTEE CHANGES

Holly Wilson has resigned from the Journal Committee to give more to pursuing her Ph.D.

Don Kaverman, Assistant Trainer at Northwestern University, has taken over the "Book Reviews" section of the Journal. Don replaces Ken Murray. Welcome aboard Don! Best wishes to Holly and Ken.

CONVENTION
Last year our group at Journal Headquarters started planning our trip to the National Convention in April. We had such a great time in Boston that our plans for Dearborn began as soon as we arrived back in Greenville. We sincerely hope that you and yours are planning for Dearborn, NOW, June 12, 13, 14, 15 - location - the Hyatt Regency. If you need any further information contact Convention Chairman Fred Hoover, Clemson University.

TANKARDS
Don't overlook the Commemorative Tankards, they are something every NATA member will want. Both Disneyland 1975 and Boston - 1977 are available, just check the ad in this issue. Incidentally you might think along the lines of what a great gift they would make for graduation presents.

J. C. MAKES PRESIDENT
After working with John Cramer in the advertising department of Cramer Products Inc. for the past two years, it was with regret when we were informed he would be leaving this position. However another John, John O'Neal, has filled his shoes and J. C., like another with those same initials, has been elected to the position of President of Cramer Products, Inc. Our very best to John Cramer and John O'Neal - incidentally do either of you have a brother named Billy?

LIBRARY COPIES
ATHLETIC TRAINING copies directed to Libraries often end up in the Training Room. It would be of great assistance to the Circulation Department and your school library if you would see they are delivered to the correct address. Need any extra copies of ATHLETIC TRAINING? Just let us know we'll send them to you personally.

ADVERTISERS' NEWS
The Tetra Company has been in operation since the early 1900's. Barry Petrigala, Director of Marketing, sent me a copy of a letter written by Harry Erabiner, who was trainer for the Chicago White Sox in 1916 endorsing Tetra way back then. Welcome - Tetra.

Southern Athletic/Bike has announced the election of John Axford to the position of President and Chief Operating Officer of that Company. Fred W. Isaccs, Jr. has been elected as Chairman of the Board of Directors.

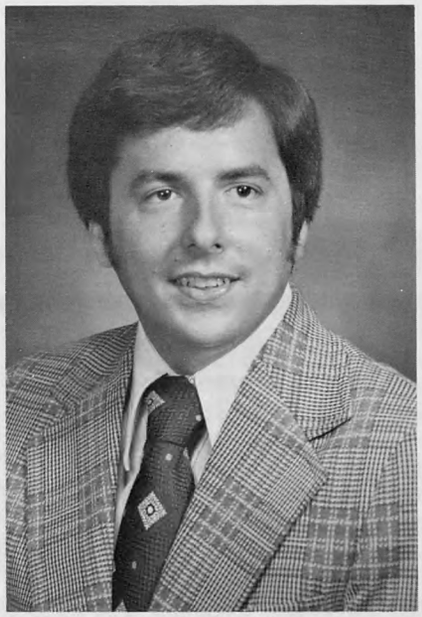
TRAINER OF THE YEAR
In the College/University Division, the award winner was Tom Wilson, Head Trainer of the University of Houston. He has been there for 25 years and celebrated, with the rest of the football program, the Cougars' first visit to the Cotton Bowl making it unable for him to attend the half-time festivities at the Peach Bowl. Tom, with his wife, Charlotte and their four boys, reside in Houston.

In the Junior College Division, the award was received by Bill Chambers, Head Trainer of Fullerton College. Bill has been Head Trainer for the Hornets' team since 1962, and makes his home in Fullerton, California with his wife, Elsie and their two children.

Both trainers are recognized for the outstanding job they've done over the years in developing student trainer programs at the respective schools.

The award-winning trainers were selected by a panel of 1500 certified professional college trainers from coast to coast.

Nutrament presented a $2,000 award and trophy to the University/College Division and a $1,000 award and trophy to the Junior College Division winners.



Rod Compton, A.T.,C.
Editor-in-Chief
East Carolina University

Mary Edgerley

Book Reviews

Developmental Conditioning For Women and Men

by Anthony A. Annarino
List Price $7.75
256 pages - Illustrated
C.V. Mosey, St. Louis

This represents the first revision of Dr. Annarino's excellent text dealing with every aspect of conditioning for both men and women. He has divided the book into ten sections, thereby conveniently ordering the presentation of his material. The sections address the following topics:

Foundations for the Development of Conditioning Programs
Circuit Training
Interval Training
Weight Training
Calisthenics
Isometric Exercises
Exercise Programs and Equipment Innovations
Athletic Conditioning Programs for Men and Women
Physical Education Conditioning Activities
Physical and Motor Fitness Tests

This reviewer found particularly interesting the authors accumulation of contributing information. He has chosen to solicit and include in his text exercise and conditioning programs developed by trainers and coaches all over the country. Each sport is covered, both male and female. The inclusion of variety of programs for each sport allows the reader the opportunity to ascertain what others across the country are doing and extract information to possible improve one's own approach to conditioning and exercise.

This reviewer highly recommends this book. It is a great reference and could serve as a valuable tool in the revision or establishment of conditioning and exercise programs.

Don Kaverman, A.T., C.

The Makings of an Olympic Champion

by Russell Wright
List Price $10.00
140 Pages - Illustrated
Exposition Press, Inc., New York

This book provides a basic overview of the various topics pertaining to weight training. Specifically the text is divided into eight sections each of which contains numerous subheadings. The section titles are:

Weight Training Exercises
Basic Health
Weight Lifting Techniques
Weight Training
Drugs and the Weight Lifter
First Aid
Speaking from Experience
An Interview With Morris Weissbrot

This reviewer feels that although this book offers some rewarding insights for the trainer, better texts on the subject are certainly available. The information presented on the topics relevant to the athletic trainer is most basic in nature and, in many cases, incomplete and uninformative. The techniques concerning flexibility are the same as those that have been practiced by trainers for years. The first aid section of the book is simply written and offers no new information.

The text does not present a new approach to weight training and weight lifting but rather reiterates in the simplest terms the most basic principles concerning these topics.

Don Kaverman

Stretching

by Bob Anderson
List Price $6.50
183 pages - Illustrated
P.O. Box 1002
Englewood,
Colorado

The title of this book is appropriate for the text deals entirely with attaining flexibility for various parts of the body. It would serve as an excellent manual for coaches, trainers, and teachers insofar as they are often required to recommend flexility programs to athletes in all sports.

The book addresses the questions of who should stretch, when to stretch and how to stretch. It then reveals various techniques of stretching including warm water bathtub stretches; stretching techniques using a towel; partner stretches and variations of some of the more commonly used techniques for stretching the groin, hamstrings, and quadriceps.

The text also includes a complete series of stretching routines for every possible athletic endeavor including hiking, running, cycling, swimming, skiing, tennis, racketball, handball, golf, volleyball, baseball, basketball, and football.

The author also explores developmental exercises for the abdominal muscles, arms and chest, toes, ankles, lower legs, fingers, hands wrists, and forearms. He concludes by commenting on techniques of running and cycling and reveals his thoughts on light, nutritious eating and the relationship it bears to achieving overall physical fitness.

Although this manual does not comment on the physiological factors involved in attaining flexibility it would serve as an excellent reference in prescribing flexibility routines to athletes involved in various activities. It is simply written and simply illustrated but is valuable in its approach to the question of how to stretch. This reviewer recommends the manual as a valuable addition to any trainer's library.

Don Kaverman

Weight Training in Athletics and Physical Education

By Gene Hooks
List Price -
247 pages - Illustrated
Prentice-Hall

Condensed within the pages of this book is a concise and thorough approach to the topic of weight training. The author forwards the primary topic, ie. weight training, by discussing briefly, in a simple yet revealing way, the anatomy and physiology of muscle. He then elects to define several terms commonly associated with weight training - terms that are often misused by the practitioner in every day conversation.

The author then discusses the influence of calisthenics, isometrics, isotonics, and isokinetics on overall strength development. Fitness, controlling body weight, and strength and body build are all reviewed in this section. The development of the weight training program is thoroughly discussed including the necessary facilities and equipment and the organization required insofar as warm-up, determining starting weights, selection and arrangement of exercises, grouping, time allotment, and supervision are concerned.

The author highlights the general safety practices which should be inherent in any weight training program including lifting during the playing season and its affect on in season athletic performance. After a discussion of weight training terms and exercises including a description of body movements and lifting positions the author engages in a thorough review of weight training for baseball, basketball, football, swimming, and track and field. He concludes by revealing the adaptability of weight training to the general physical education setting.

This reviewer feels the book is most worthy of a trainer's attention.

Don Kaverman

(ABSTRACTS, from page 174)
ages 20-52 and all with normal near-maximal treadmill ECG's. With sudden strenuous exertion, all showed an abnormal increase in blood pressure, leading to excessive demands on the heart and abnormal ECG's. Afterward, 15-20 minutes of warmup, followed by 15-20 minutes of rest eliminated or reduced the abnormal ECG's in all cases. The conclusion is that adaptation of coronary blood flow to increase cardiac load is *not* instantaneous, and periods of ischemia may occur in hearts without apparent vascular obstruction. Adequate warmup can be effective in reducing this ischemia, from the evidence.

- Greg Vergamini

*****

Johnson, B.L., Adamczyk, J.W. Tennoe, K.O., and Stromme, S.B., "A Comparison an Concertric and Eccentric Muscle Training." *Medicine and Science in Sports, Vol. 8,* #1, Spring 1976, pp. 35-38

Since it is possible to handle heavier loads eccentrically than concentrically, it was postulated that greater muscle strength could be achieved in six weeks of training utilizing loads greater than one repetition-maximum, than by traditional concentric training, using loads less than one R-M. Eight male university students, all right-handed, took part in a six week training session. Four trained the right arm and leg using eccentric loading, and the left arm and leg using concentric loading, while four loaded the right side concentrically, and the left eccentrically. Training sessions were three times a week. Movements were full upper extremity curl and press, and knee flexion and extension, using loads of 80 per cent of 1 R-M for two sets of ten reps concentrically, and 120 per cent of 1 R-M for two sets of six reps eccentrically. Each week, dynamic strength tests were performed to determine the next week's training loads. Both methods showed significant gains in stength, but though the eccentric loading generally resulted in greater gains, these were not statistically significant. Also eccentric loading of some motions (e.g., squats) may require an overload which could result in strain of the body's supportive framework.

- Greg Vergamini

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Round Table Discussion, "Modified Draw Test Can be Diagnostic Help," *The Physician and Sportsmedicine,* 4:79-84, May, 1976.

The main theme of this article was to discuss the evaluation and treatment of knee injuries to athletes. The modified draw test is performed with the leg in about 10 degrees of flexion. It was felt that the modified test made it easier to determine anterior displacement of the tibia by minimizing hamstring spasm and reducing meniscal impingement when the knee was in flexion. This test is quite reliable, however it is difficult to perform because you have so many variables to control. In the treatment of nonsurgical knees, splinting and nonweight bearing on crutches was employed until the effusion subsided, most of the tenderness was gone and the knee no longer was resistive to going through the complete range of motion. This translates to the patient being on crutches anywhere from 3 to 10 days. However the patient is out of the splint daily with general resistive exercises performed with the leg extended. The authors agreed that a good progressive resistive program for the knee included the quadriceps, hamstrings, hip abductors, hip flexors and gastrocnemium. A system of uniformerly grading lesions to the knee was discussed. Grade 1 is tenderness over the ligament, no instability, grade 2 tenderness over the ligament, with minor degree of instability, and finally grade 3 is complete rupturing of the ligament. Prompt evaluation of the injured knee will allow you to detect more because there is no effusion or muscle spasm. Before allowing an athlete to return to play put some ice on the knee, take him inside get his pants off and examine him on the table. Allow things to quiet down. It was noted that when fluid accumulates rapidly in a knee, it is very often blood and blood is not the characteristic of solely a torn menisci. It is more characteristic of a torn cruciate or capsule. There was some controversy regarding the use of specific knee braces. However it was emphasized that an athlete using a brace must do progressive resistive exercises, because they were more important than the brace itself.

*****

Ryan, A.J. "Replace Fulid Deficits Promptly," *The Physician and Sportsmedicine,* 4:86, August, 1976.

In an editorial by Dr. A. J. Ryan he emphasized the problem of dehydration as related to top performance in athletics. Football players are especially susceptible to heat syndromes because of their above average size and equipment tend to keep their body core temperature higher. The Committee on Competitive Safeguards in Sports was happy to report, in the fall season of 1975, there were no deaths attributed to heat syndromes. Pertaining to fluid replacement, authorities are emphasizing the importance of allowing free intake of water. There are no indications that athletes will become hypohydrated, however dehydration will cause athletes to become listless and slow in their movements. There is a definite need for electrolyte replacement, however it was indicated that this best be done before and after practice sessions. The author noted that there is a possibility an athlete may be ingesting too much salt, causing a depression of the serum potasisum levels. This depressed state is a contributing factor or fatigue and may be responsible for a condition known as "dead legs". Dr. Ryan stated that under normal conditions there is little need to be concerned about on-the-field replacement of any fluids other than water.

*****

Marshall, J.L. "Ligamentous Injuries Pose Major Diagnostic Problem," *The Physician and Sportsmedicine,* 4:58-60, May, 1976.

This article discusses one of the biggest problems in sportsmedicine, prompt and accurate diagnosis of ligamentous injuries of the knee. It was stated by the author even though patella and menisci injuries are common, most of the injuries to the knee are ligamentous. Surgery is important for some ligament injuries, and early surgery is essential for cruciate injuries. The author uses a four step method to examine a traumatized knee, with special attention given the ligamentous structures. In the first step, some good diagnostic clues can be obtained by determining the mechanism of injury. Dr. Marshall was of the opinion that a loud "pop" indicates a torn cruciate until proved otherwise. The second step, a physical examination, demands a good knowledge of anatomy because you have to know what you are palpating. It is a little more difficult to examine the laterial side of the knee, because the four stabilizing

structures: iliotibial band, lateral collateral ligament, biceps tendon, and popliteal tendon are all approximately at the same insertion. The third step, which is very important, is the stability exam. When determining the stability of a knee you should always compare it to the opposite knee. When examining an acute injury it is not only the degree of the opening that matters, but also the quality of the opening. That is, whether the end point is soft or hard. A hard end point indicates the structures are intact, and probably it is a chronic lesion. The author admits the draw sign is a controversial test, but he feels it is a good indication of an anterior cruciate tear. The final step involves the use of special studies such as an arthrogram.

*****

Fehr, Kevin A., Kalant, Harold, and LeBlanc, A. Eugene, "Residual Learning Deficit After Heavy Exposure to Cannabis or Alcohol in Rats," *Science*, Vol. 192 Number 4245, June, 1976, pp. 1249-1251.

It has long been recognized that chronic heavy use of alcohol may give rise to an organic brain syndrome characterized by slowing and interruption of mental processed, difficulty with abstract thought, and impairment of memory and learning ability. Many clinical reports from India, North Africa, and elsewhere have referred to similar "dementia" in long term heavy users of hashish. Clinical descriptions of a similar state have recently appeared in North American and European literature ranging from moderate impairment of verbal learning and recall to a full clinical picture which in some cases was thought to indicate brain damage. An ethanolic extract of preassayed marijuana leaf material was heated to convert of the tetrahydrocannabinolic acide to tetrahydrocannabinol (THC). The THC content of the extract was assayed by gas-liquid chromatoraphy and the appropriated dose was then dissolved in 0.2ml of olive oil for administration to the rats. For the acute experiment, 18 animals were reduced to 80 percent of their feeding weight, and pretrained in the Rabinovitch-Rosvoid modification of the Hebb-Williams closed field maze. Pretrained rats were tested on a series of 12 problems arranged in order of increasing difficulty. The score of each animal was the total number of errors on eight trails on each problem. The marijuana treated rats committed an average of 87.6 + 9.0 errors on problems 5 to 12. The mean control score was 68.2 + 4.8. The difference was significant on a one tailed t-test (Pr. 05) After seven days the treated animals became irritable shortly after treatment. They exhibited backward circling and licking behavior, and shrieked whenever handled. During testing they showed little interest in the problems, and moved very slowly. When they finally reached the food box, however, they ate avidly. In view of the long half-life and high lipoid solubility of THC, the apparent absence of tolorance in the maze tests might conceivably reflect drug accumulation in the body on the dosage schedule used. The ethanol animals were intubated daily with a 25 per cent solution of ethanol in water. The ethanol group performed significantly worse than the controls on two criteria and the marijuana extract group showed significant impairment in the error score and marginal impairment in runs-to-criterion score. Difficulties to human extrapolation are presented.

- John Wells •

(LETTERS, from page 160)

support. We want to grow together. Our constitution is the same as yours. That is all we are asking. The accomplishments of the N.Y.S.A.T.A. will only bring credit to our National Association and we will both be proud. We will both grow professionally, educationally, ethically and in number through an intelligent and natural growth proces..

Sincerely,

John L. Sciera
President
N.Y.S.A.T.A.

The Journal asked Frank George, NATA President, to answer this letter.

Dear John,

Thank you for writing. You have asked me to answer a couple of simple questions.

1. It is impossible to compare N.A.T.A. to the Democratic or Republican party. There are five times as many Democrats in the small town in which I live than there are N.A.T.A. members in the entire country.
2. A similar comparison of size exists between AMA, AAHPER, APTA, and NEA. When N.A.T.A. achieves the number of members as these associations have, we will have to govern ourselves accordingly.

The N.A.T.A. Board of Directors is not opposed to growth. Yet, we do realize how limited in size we are. Some states have less than ten certified members. It would be futile to have a formal association in these states. N.A.T.A. has allowed for each state to form an association or committee — whichever suits it best. The major point which you have not mentioned in your letter is *compulsory membership.* N.A.T.A. does not feel at this time, that its members should be required to pay national, district, *and* state dues. If a state wishes to form an association, it is up to the individual to decide if he wants to join. The N.A.T.A. Board of Directors feels that, because of the size of our association, we can be best governed through districts and not states.

I am sure as we grow, more formal state associations will be formed. Infact, this may be the best solution for the larger states now. Again, it is up to the individuals in each state to decide the type of association they wish to form. N.A.T.A. recommends one committee with one goal — that is, licensure. If your state has other needs which must be met, then it should be done on the state level.

You have stated that I can be of great assistance to your organization by encouragement. John, your organization has all my encouragement and all my support for the development and passage of a license. We should not let semantics destroy what has to be done. Whether you call yourself the New York State Athletic Trainers Association or the New York State N.A.T.A. Committee on State Licensure should not deter us from seeking the goal of licensure. N.A.T.A. does not feel compulsory membership should be instituted on the state level at this time.

If the New York State Athletic Trainers Association feels that N.A.T.A. should require compulsory state membership, this should be presented at your next district meeting. If the district wishes, the director may then make such a proposal to the N.A.T.A. Board of Directors for consideration.

I'm sure we can discuss this more at the E.A.T.A. meeting in January.

Sincerely,

Frank George
President N.A.T.A.

Dear Editor:

We recently had an experience at Keene State College that I'd like to relate to and request information about from the NATA membership.

A soccer player showed late signs of first degree concussion four hours after the end of a game in which he had "headed" the ball fairly often (though not as often as he himself usually does). He reported dizziness, blurred vision, nausea, unsteadiness, but there was no recent history of loss of consiousness, no obvious head contact with another player or the field, and he reported no history of head injury.

I'd like to ask other NATA members if they can give me any references or information on such injuries following the practice of "heading" a soccer ball.

Thank you.

Sincerely,

Greg Vergamini, R.P.T., A.T.C.
Head Athletic Trainer
Keene State College

Dear Editor:

It has recently come to my attention that some of the "Cold Sprays" found on the market today and utilized by some Athletic Trainers may be damaging, environmentally.

Those which contain trichloromonofluoromethane and/or dichlorodifluoromethane are spilling out into the air the very same "freons" which were recently reported in the Chemical and Engineering News (September 27, 1976) as undergoing reactions within the ozone layer degrading it.

The only can available to me of such products which listed contents - listed only these two compounds as ingredients.

Thank you.

Sincerely yours,

Greg Vergamini, R.P.T., A.T.C.
Keene State College
Keene, New Hampshire

Dear Editor:

The Sports Medicine Interest Group of the Canadian Physiotherapy Association is attempting to compile a booklet of *doctors*, *clinics*, and *therapists* who are specifically interested in sports medicine. The booklet will be made available to Canadian sports associations, team and athletes to assist them in obtaining medical treatment while competing in Canada and abroad.

Could you assist us by supplying a list (which would include name, address and telephone number) of persons and/or clinics in your country who might wish to be included in such a booklet?

Sincerely,

L. Mason/M. Woytiuk for
SPORTS MEDICINE INTEREST GROUP
13020 - 113th Avenue
Edmonton, Alberta
Canada T5M 2X1

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The purpose, function, and nonprofit status of this organization and the exempt status for Federal income tax purposes *(Check one)*

☒ HAVE NOT CHANGED DURING PRECEDING 12 MONTHS ☐ HAVE CHANGED DURING PRECEDING 12 MONTHS *(If changed, publisher must submit explanation of change with this statement.)*

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11. I certify that the statements made by me above are correct and complete.

SIGNATURE AND TITLE OF EDITOR, PUBLISHER, BUSINESS MANAGER, OR OWNER: Mary G. Edgerley - Bus. Mgr.

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39 U. S. C. 3626 provides in pertinent part: "No person who would have been entitled to mail matter under former section 4359 of this title shall mail such matter at the rates provided under this subsection unless he files annually with the Postal Service a written request for permission to mail matter at such rates."

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Mary G. Edgerley. Business Manager

PS Form 3526 Apr. 1976 *(Page 1)* (See instructions on reverse)

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AUTHORS

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