

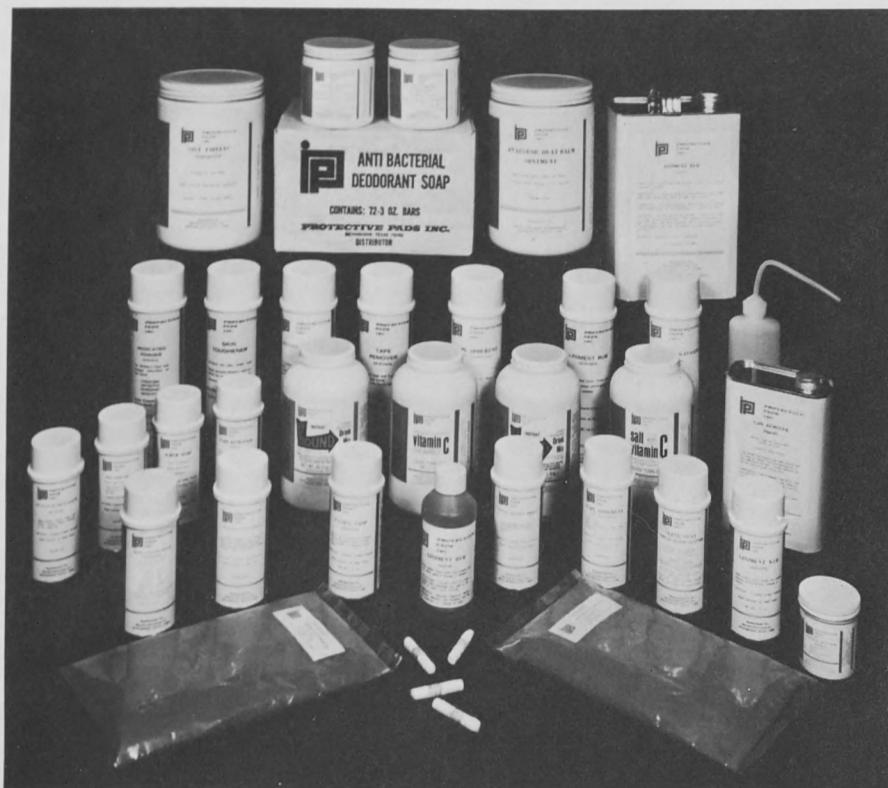
THE JOURNAL OF THE NATIONAL **ATHLETIC TRAINERS** ASSOCIATION

VOLUME 6

NUMBER 2

SUMMER 1971

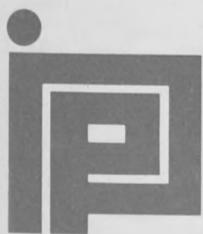




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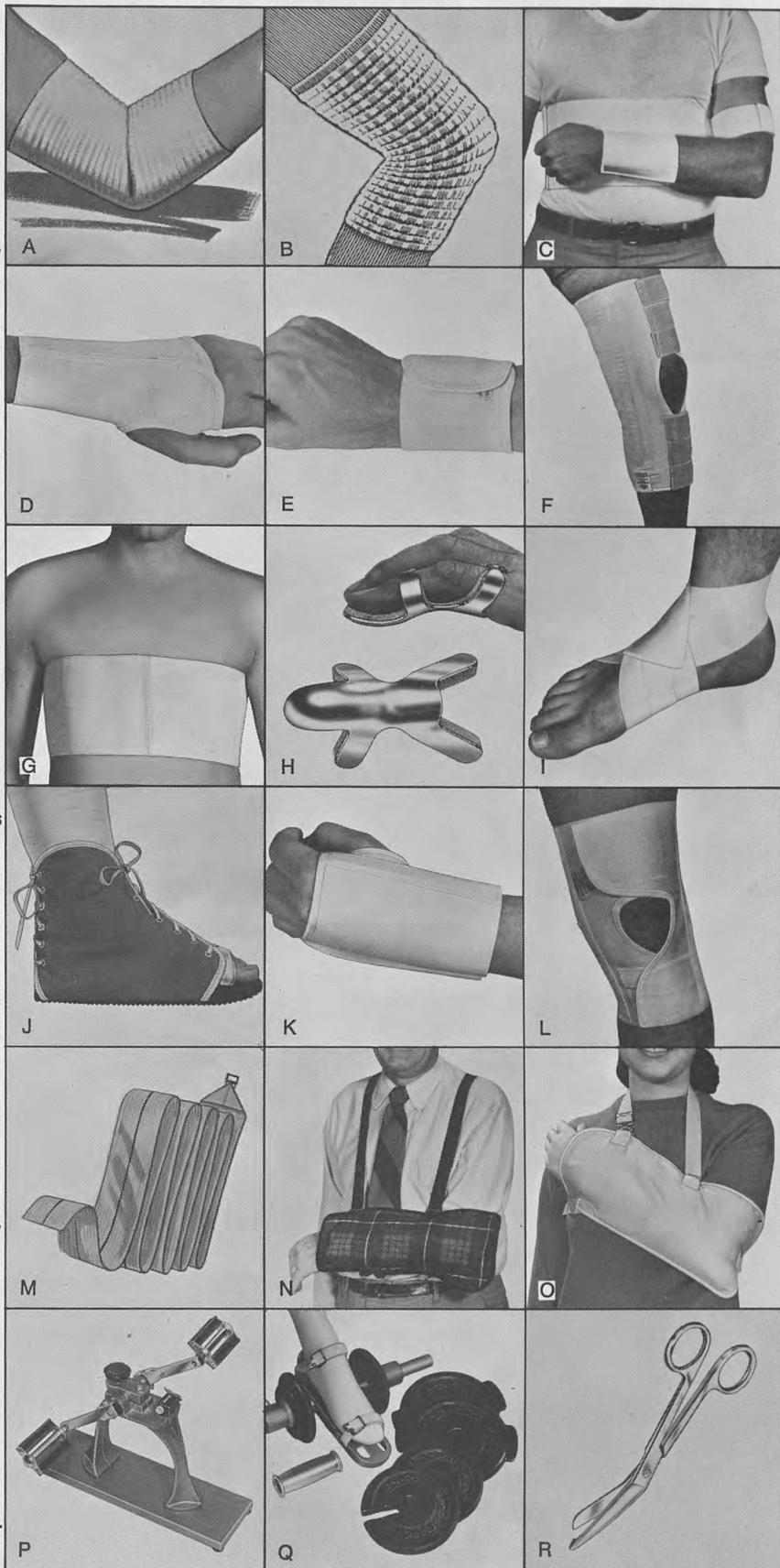
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**1971 Annual Meeting — Baltimore, Maryland**  
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## Liability Insurance For Trainers?

Many of the requests that have been received from our membership since the first of this year have expressed a desire for more adequate legal liability insurance protection.

Very few of our National Athletic Trainers' Association members would ever question the need for professional liability insurance. Professional liability (malpractice) coverage is classified as one type of casualty insurance. This is in contrast to life insurance in that the entire premium paid by the casualty policyholder is absorbed by administrative costs, protection against loss, and profit for the carrier.

The application for a contract for malpractice insurance usually contains a statement of the insured's work or job classification, and any previous loss experience, and any employees or assistants associated with the insured person. The contract serves as a promise of the insurer to pay on this policy if a casualty occurs. If a suit for alleged professional negligence is filed, the insured member may expect the insurer to investigate, defend or settle, and pay any judgment. This would hold true so long as the insured follows the provisions named in the policy with his company.

Unfortunately, one must realize that lawsuits have been on the increase. One must constantly remember that each individual is liable for his own negligence. Negligence has been defined as failure to exercise the care that a prudent person usually exercises. This may involve the doing of an act *or* the omis-

sion of an act that a prudent person would *execute* in similar circumstances. Although innocent of any intention or action of malpractice, competent and skilled professional persons have suffered from the publicity and gossip associated with such a lawsuit.

Although some employers provide liability insurance, one should not be misled by the arrangement. Under these circumstances, the skilled employee would be covered if sued in a joint action with employer. To cover the actions of the professional person in a separate suit requires the payment by the employer of an extra premium.

If one is covered on an insurance policy, he must not be of the impression that this is adequate protection in the case of a suit for negligence. For example, a homeowner's policy with a "rider" clause should be thoroughly investigated. Some individuals have assumed that this type policy provided protective coverage, but in reality this is not the case. **DO NOT BE MISLED!**

A professional association such as NATA is able to offer its members *group* liability insurance with a better coverage and at a lower rate than if secured individually. Your national officers are presently preparing information about an advantageous group insurance plan with coverage to benefit all certified athletic trainers. We are hopeful of having this data to present at the June convention in Baltimore.

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Executive Director

# Conservative Treatment and Rehabilitation of Athletic Injuries to Soft Tissue of the Hand

By Joe Gieck, Certified Athletic Trainer

and

Frank McCue, M.D.

Possibly the most neglected of athletic injuries are those to the hand, especially to the fingers and thumb. The hand is not usually weight bearing, therefore these injuries do not cause an abnormal gait, lack of range of motion as in a major joint, or much initial distress to the athlete, thus the lack of concern about them. They are often dismissed as minor, and seemingly insignificant, but can develop into a permanent disability, and disfigurement in later life, e.g. mallet finger and degenerative arthritis.

Many times all that is needed to prevent further complications is minimal and proper treatment, such as the use of proper splinting devices. An example of this is the dislocation of an interphalangeal joint that is reduced and the player allowed to return to competition. If this injury is splinted the player can still return, but further injury to the joint is prevented. The same damage occurs to the interphalangeal joint in a dislocation as occurs to the knee joint, only on a smaller scale. (Nerves, bones, vessels, muscles, tendons, and collateral ligaments of the fingers are essentially the same as in other ginglymus joints only on a more delicate and refined scale).

The athlete may not report injuries to the fingers or hand as almost every football player has some kind of contusion, sprain, strain, or "stove" to the hand and tends to think of these injuries as part of the game, unless he is instructed to report them to the trainer. In many cases the first time the trainer sees the injury is after a flexion contracture, or some other deformity, is present in the hand. Then lengthy conservative procedures or surgery are often indicated.

The goals of rehabilitation of the hand, as in injuries to other parts of the body are: regaining complete range of normal joint motion, restoring muscle power, regaining normal coordination and rhythm, and reducing edema and pain.

## LIGAMENTOUS INJURY

Ligamentous injury to the joints of the fingers and thumb is, with the possible exception of contusions, the most commonly seen athletic injury of the hand. Contusions and simple sprains are treated with the usual physical therapy modalities to reduce the resultant edema, stiffness and soreness. Athletes have to be encouraged to treat interphalangeal and metacarpalphalangeal sprains. They may work religiously treating an ankle sprain, but neglect physical therapy to the hand as they can still participate without much disability.

A pass receiver, or ball carrier with poor prehensile grip because of impairment of a finger has his effectiveness reduced markedly. Simple taping of the individual joint, or the taping of two fingers together is usually ample support for these sprains. The thumb requires a bit more protection. As the force causing the sprain is usually that of radial abduction or extension, care should be taken to pull the thumb into the hand when taping and not tape the digit in extension, and radial abduction. The figure of an eight wrapped around the wrist and thumb may suffice, as may applying the tape around the proximal phalanges of the thumb, and first finger to restrict movement of the thumb. In severe sprains the thumb is taped flat against the first finger. Abduction-adduction stress is diagnostic for ligament sprains as in the testing of medial and lateral collateral sprains of the knee.

Dislocations of the interphalangeal joints require a period of three weeks immobilization with the joint splinted in a functional position (30° flexion). The splint may be worn either on the dorsal or volar surface. The splint should be worn another 2 weeks during competition. It is obvious that a tongue depressor should never be used for a splint. Splints are easily made from Orthoplast\* or hammered out and molded from 3/4" aluminum finger splinting material covered with moleskin

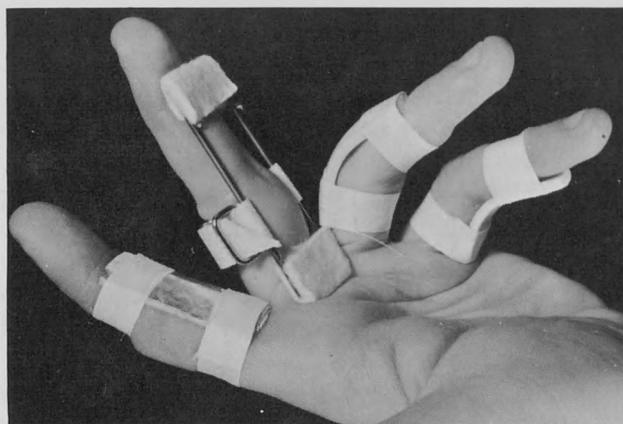


Figure 1

(Fig. 1). The Orthoplast\* is a bit more bulky, but does not bend as is sometimes the case with aluminum during competition. A receiver may use a tape splint (several layers of tape), which also restricts complete range of motion, for greater feel of the ball. Heat, active and resistive flexion-extension exercise are indicated in the rehabilitative phase of simple sprains, and uncomplicated dislocations. Rehabilitation is begun at 2 weeks for dislocations. Unfortunately, not all sprains and dislocations are seen, and a stiff joint is the result.

Once the joint becomes enlarged and stiff, the problem of rehabilitation becomes more difficult. The stiff hand requires special techniques to regain normal function. Massage is a useful adjunct in reducing the stiffness and enlargement of the joint due to edema and fibrosis. The joint should be heated prior to massage and exercise. Hydrotherapy and paraffin treatments are two excellent modalities for heating the hand. Lanolin or cocoa butter can be used for the massage with care being taken to avoid any open lesion. After about 5-10 minutes of massage, stretching or mobilization can be instituted. Care should be taken not to overstretch the joint, but stretch with a steady gentle traction.

The adjacent structures and joints should be supported to prevent false movements. Support contributes to the relaxation of the part to be mobilized. Sharp, or sudden movements in stretching, are to be condemned as they only result in added pain and fibrosis. Ice is sometimes useful prior to stretching, to allow a greater motion to the joint. The wrist should be positioned alternately flexed and extended during this period of mobilization.

The athlete should attempt to actively help with mobilization. Active and resistive exercises are added throughout his present joint range of mo-

\*Johnson & Johnson Trademark

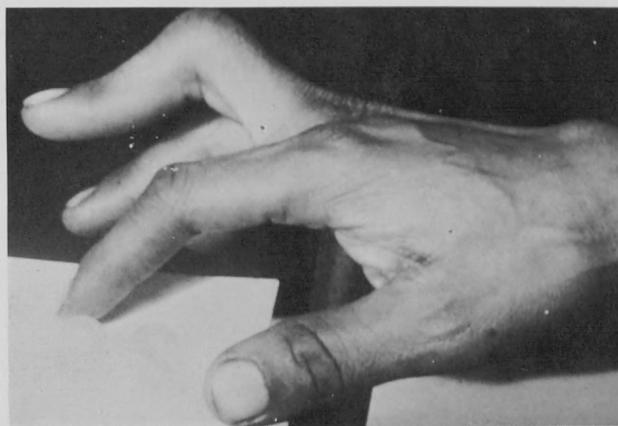


Figure 2

tion. This rehabilitation procedure should be carried out four to six times a day. Most of these techniques can be taught to the individual so he can do them on his own. Following the last period of rehabilitation before bedtime, a night splint of Orthoplast\* may be worn to maintain the maximum motion obtained during stretching. This prevents loss of regained motion during the night. By reheating, this splint can be remolded with each gain of motion. As the athlete uses his hands during the day, the active motion is usually more valuable in obtaining normal range of motion than by using the splint. The splint should include the wrist when used in mobilizing an interphalangeal joint. With flexion deformities of the fingers, measurements of the distance between the fingertip and the palm, and making a fist should be recorded to gauge the progress of his rehabilitation. A small *gonionmeter* is useful in assessing progress also.

#### FRACTURES

Fractures involving an interphalangeal or metacarpophalangeal joint usually result in some permanent flexion deformity, that only becomes painful and stiff if aggravated by stretching. Useful diagnostic tests for suspected fractures of phalanges, and metacarpals are: applying push and pull type stress at the distal phalanx with pain being elicited at the fracture site. Immobilization in the functional position is necessary for a period of 4-6 weeks.

#### TENDON INJURIES

The boutonniere deformity is characterized by hyperextension of the metacarpophalangeal, and distal interphalangeal joints and flexion at the proximal interphalangeal joint (Fig. 2). This is caused by detachment of the central slip of the

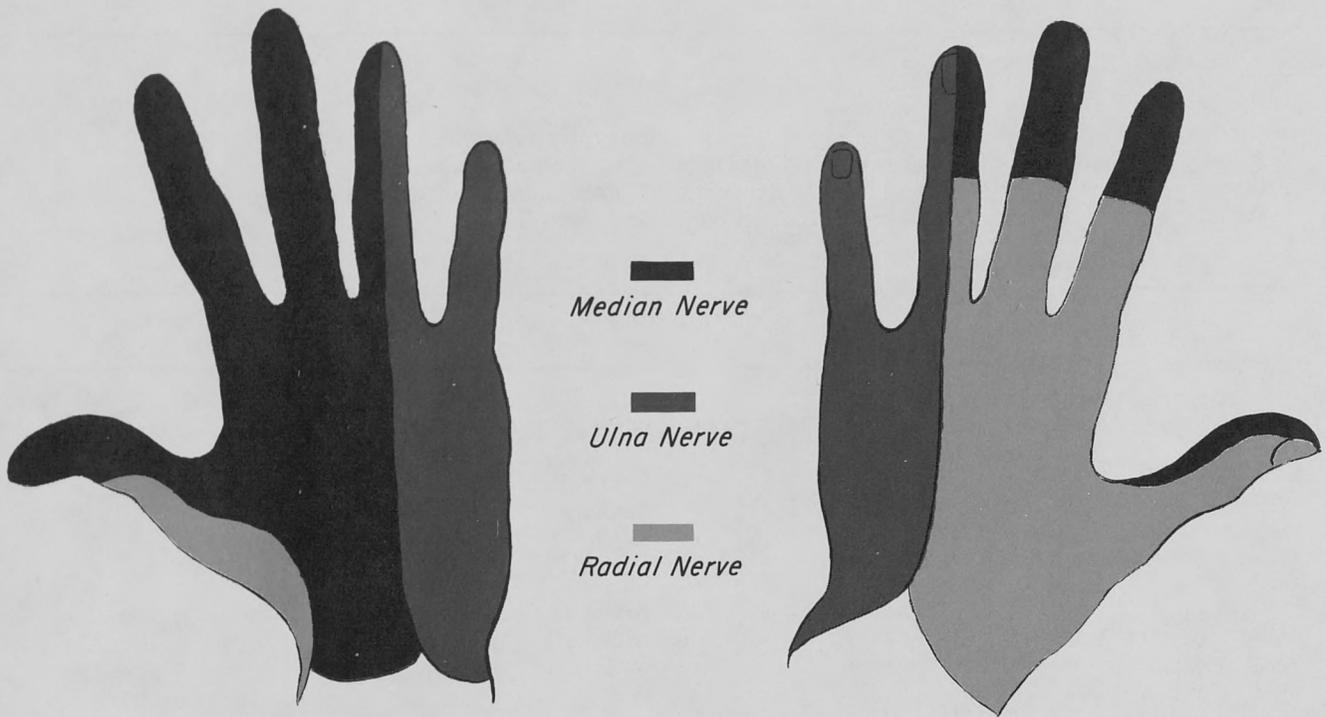


Figure 6

For extensor grafts, an excellent exercise is to place the hand flat on the table, raise the finger in hyperextension and abduct-adduct the finger. Full function may be achieved at four to six weeks, but flexor graft recovery is a longer process. Some massage, exercise, and mobilization may be necessary in flexion contractures and scarring.

#### NERVE INJURIES

Permanent injuries to the radial, median and ulnar nerves to the hand, (Figs. 4, 5, 6,) are generally in the form of lacerations, only rarely from stress or compression trauma. Compression trauma in the athlete is usually the carpal tunnel syndrome involving the median nerve at the wrist, involvement of the ulnar nerve posterior to the medial humeral condyle at the elbow, and in the canal of Guyon at the wrist. The four sensations of touch, pain, cold and warmth are lost when the sensory branches of the nerve are severed. Sensory loss of the median nerve is the greater loss. Motor function is more important in the ulnar nerve. Delicate work is impossible without median sensation. Sensory training consists of the blind-folded recognition of touch (sharp vs. dull), temperature (cold vs. warm), and two point discrimination (relearning distances between two points on the area of paraesthesia). Exercises for radial lesions include gripping and wrist and finger extension exercises, especially the extensor tendon exercises used in re-educating grafts.

Exercises for ulnar lesions consist of opposing the little finger to the thumb. Resistance may be

added by trying to pull a pencil through this grip. Various sizes of flat sticks or dowels can be used for gripping with the little finger. One inch of foam rubber may be placed between the thumb and index finger for resistance, and the thumb adducted to the index finger for exercising the adductor pollicis; also holding small objects in this grip to prevent them from being withdrawn. The interossei may be exercised by placing the palm on a flat surface, raising each finger and abducting-adducting actively and isometrically. Extension exercises of the metacarpalphalangeal and interphalangeal joints should be utilized for the interossei also. Exercise for the lumbricals consists of stabilizing the metacarpals as over a table edge and flexing and extending the metacarpalphalangeal joints against resistance while the interphalangeal joints maintain extension. Squeezing a ball or egg-shaped rubber object with the fingers spread is of benefit in exercising the intrinsics, as is the exercise of picking up small objects.

In lesions of the median nerve, the thenar muscles are affected. Only in higher lesions of the nerve are the wrist and finger flexors denervated. As the thumb is the most important digit, a supreme effort is necessary in its rehabilitation. The abductor pollicis brevis is exercised by bringing the thumb away from the palm in palmar abduction. Resistance may be given manually. This short abductor is also important in opposition so the exercise of touching each finger with the thumb to make an "O" is a useful exercise. This pinch grip may be exercised with a ruler or paper which

is attempted to be withdrawn. These rotation exercises of the thumb also exercise the opponens muscle. It should be remembered to keep the nail of the thumb in a vertical position during rotation. Gripping different objects benefits opposition also. The flexor pollicis brevis is exercised by stabilizing the metacarpal and flexing the thumb metacarpal-phalangeal joint toward the metacarpal-phalangeal joint of the fifth finger. The thumb interphalangeal joint is held in extension during this exercise.

Passive range of motion exercises should be carried out during periods of denervation to all joints affected. This may be begun, along with mobilization and massage of scar tissue for any flexion deformity that may be present, eight weeks after surgical repair of the nerve. Rotation of the webs between the metacarpal heads should be included. Electrical stimulation is of benefit during denervation to prevent adhesions from forming and to maintain muscle tone. Galvanic current is usually necessary for this stimulation.

#### PROPRIOCEPTIVE NEUROMUSCULAR FACILITATION

Several principles of proprioceptive neuromuscular facilitation techniques apply when working with the rehabilitation of these peripheral nerve injuries such as: (1) muscles will contract more vigorously if their antagonists are strongly exercised first; (2) use of flexion and extension patterns; (3) pressure and resistance over the muscle with intensive patient concentration; (4) mass action of all joints (fingers) reinforces the action of the weaker muscle (finger); (5) relaxation techniques for mobilization, etc.

Regeneration of a peripheral nerve is about one inch per 4-6 weeks. Ulnar lesions at the wrist take five to seven months for recovery, whereas the same lesion of the median is about three months, but this will vary depending on many factors.

This paper has been presented to illustrate that the treatment and rehabilitation of athletic injuries to the soft tissues of the hand are more than just taping and squeezing a rubber ball or grip. It is the hope of the authors of this paper that it will be enlightening to the personnel treating these injuries.

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## Educational Programs Leading to Professional Qualifications in Athletic Training

Programs listed here are approved by the National Athletic Trainers Association. At present, only undergraduate programs are available.

### INDIANA

INDIANA STATE UNIVERSITY. Contact: Mr. Mel Blickenstaff, School of Health, Physical Education and Recreation, Indiana State University, Terre Haute, Indiana 47809.

PURDUE UNIVERSITY. Contact: Mr. William E. Newell, Basketball Arena, Purdue University, West Lafayette, Indiana 47907.

### MINNESOTA

MANKATO STATE COLLEGE. Contact: Mr. Gordon L. Graham, Athletic Trainer, Athletic Department, Mankato State College, Mankato, Minnesota 56001.

### NEW MEXICO

UNIVERSITY OF NEW MEXICO. Contact: Mr. L. F. 'Tow' Diehm, Athletic Trainer, Department of Intercollegiate Athletics, University of New Mexico, Albuquerque, New Mexico 87106.

### PENNSYLVANIA

WEST CHESTER STATE COLLEGE. Contact: Mr. P. B. Donnell, Athletic Trainer, School of Health and Physical Education, West Chester State College, West Chester, Pennsylvania 19380.

### TEXAS

LAMAR STATE COLLEGE OF TECHNOLOGY. Contact: Mr. Robert H. Gunn, Athletic Trainer, Department of Intercollegiate Athletics, Lamar Tech Station, Box 10066, Lamar State College of Technology, Beaumont, Texas 77705.

# Flexibility-Strength and Balance in Athletics

Prof. Karl K. Klein\*  
 Rehabilitation Laboratory  
 Department of Physical Instruction  
 University of Texas at Austin

“There is an amazing amount of lateral motion in the knee of the 14, 15 or 16 year old youngster which is entirely physiologic so says Dr. Don O’Donoghue. Certainly from the mechanical point of view this knee is much more susceptible to injury at this time. O’Donoghue further states that this is apparently a normal condition of this age level and that the ligaments have not tightened up as much at these age levels as in subsequent years. He also makes the point that there is a great variation between individuals. A wiry, short, slightly bowlegged individual may have very tight cruciate and collaterals, whereas, the over-grown 14, 15 and 16 year old boy, six feet tall, may have the physique of an adult but the wobbly knee of a junior teenager. Certainly they are more susceptible to injury.”

Dr. Milton Thomas, Orthopedist, San Antonio, Texas, believes that this evidence of looseness of the ligaments may well be due to serological changes that take place during puberty and these changes, that appear to be of a temporary nature, may well be responsible for the increase in collateral ligament looseness.

Of course your first reaction to this information on ligaments looseness will be what can be done to protect the young athlete during this period of growth change as a preventive measure — of course basically it would be an emphasis on strength development and teaching habit patterns of movement. The basic approach would be through the use of Progressive Resistive Exercise — Here the emphasis should be on all of the supportive structures of the joint — quads, hamstrings, gastrocs and last but not least the medial and lateral muscle of the joint. Remember this, removal of the heel cleats is also important.

A point to remember is that the strength of these various muscular components that surround the knee joint, as well as other joints of the body, are not necessarily equal and vary at different age levels. For example, the hamstrings are never

measured strong as the quadriceps but play a very important part in support of the joint because they form two points of the tri-pod of support. Measured strength relationship of the hamstrings to the quadriceps are:

	Hamstrings	76% strength of quads	Note:
9 years	"	"	As hamstring
13 years	"	"	strength relationship
15 years	"	"	decreases, injury
Sr. Hi.-College Frosh	"	"	increases.
College Football	"	"	

And the gastroc or calf muscle, in many cases, may be almost as strong as the quads and hamstrings combined.

As the hamstrings are powerful *extensors* of the knee in the last 15-20 degrees when the foot is in contact with the ground, then it would be well to pay considerable attention to them in conditioning efforts; especially the medial hamstrings as they also play a very important role in controlling and slowing external rotation of the tibia (lower leg), a basic component of knee injury.

The leg adductors appear to be slightly stronger than the abductors, but even so should be greatly emphasized in strength development.

The gastroc (calf) muscle should always be considered in conditioning, but little emphasis is given to its antagonist. Over emphasis on gastroc building without flexibility emphasis may lead to a problem that especially track and basketball coaches are too familiar with — Shin Splints — and even though one might not emphasize strength building of the anterior tib, maintenance of *FLEXIBILITY* of the gastroc will act as a preventive measure in prevention of “Shin Splints.”

In this matter of flexibility of muscles that have been exposed to progressive exercise effort it is important that certain concepts concerning stretching procedures be utilized. The age old fallacy of just stretching and “*stretch until it hurts*” should be forever barred from use. Why? Because an active muscle rapidly stretched into the point of overstretching or *PAIN* physiologically reacts by shortening and by the same token a used muscle tends to shorten. So, on stretching a muscle to gain flexibility only stretch to the point of comfort

\*Paper presented at the 4th Annual Sports Medicine Seminar, Seattle, Washington 20/March/71.

and maintain the stretch for a period of duration, i.e. 50 to 60 seconds or more; release and repeat. And then following a workout repeat the stretching process to release the tension, and shortening produced from activity.

An over work syndrome that causes muscular shortening can result in limitations of motion that is detrimental to sports efficiency and the cycle can be reversed by the simple procedure of systematic mild prolonged daily stretching exercise.

In our daily activity we tend to use some muscles more than others, and unless this is recognized, there is a great tendency to develop imbalance between the antagonist that results in shortening of those that are used the most. Continuation of the effort without systematic stretching can lead to a number of problems, that result in mechanical inefficiency as well as stress and strain. For example: (1) when the major hip flexors iliopsoas and rectus femoris become too short, the pelvis is tipped forward increasing the normal pelvic angle, resulting in an increased arch of the low back, muscle tension and limitation of movement. (2) the hamstrings then give the appearance of being tight; BUT ACTUALLY they are placed on an over stretch because of their insertion on the lower posterior part of the pelvis. In other words, the hamstrings are lengthened beyond their normal physiological length, and (3) of course the abdominals are placed on stretch. The gluteals are also stretched as the posterior part of the pelvis is elevated. Now how does this effect the efficiency of the athlete. If he doesn't develop low back symptoms of stress and pain, he'll be lucky, but beyond this his functional efficiency will be impaired.

The sprinter or athlete who only moves short distances will not be involved too much in the movement pattern, except for possible stress; BUT the distance runner will definitely feel the effect through shortened stride due to lack of freedom of full range of hip extension-flexion action. With over stretched hamstrings the forward stride will be shortened. Conversely the hip extension action will be limited due to the tight rectus femoris.

The football place kicking specialist may also be at a disadvantage — especially when he tries for some of those long 3 pointers. The reason here is this — with an over developed rectus femoris and iliopsoas, there is a loss of movement in the preparatory action of hip extension, necessary for the extra forward movement, needed in hip flexion and knee extension in developing the power needed for the longer kicking effort. The simple solution to this problem of the “kicker syndrome” is daily systematic stretching of the rectus and iliopsoas.

Now what about bi-lateral leg strength balance

as an important factor in contact sports from the standpoint of its relationship to injury potential? As near as I know there have been two studies done in this area: one by Dr. Jay Bendar and one by Klein. The findings were very similar. Over a period of four years Klein measured the leg strength (quads and hamstrings) of some 502 football players in pre-season (16 squads). Those with a history of previous injury are not included in these findings, 437 (87%) non-injured players had a mean leg strength imbalance of 4.7%. Of the 65 (12.7%) injuries reported, 80% had a measured leg strength imbalance of 9.8%. Bendar's studies at the West Point Academy showed that a 10% leg strength imbalance was a predictive factor, as injury resulted to the players with 10+ % leg strength imbalance. Further statistical analysis of Klein's study also predicts that as the percentage of imbalance increases, so does the percentage potential of injury increase, refer to Figure I. Why these strength imbalances exist in these athletes is an unknown factor, but the simplicity of measuring strength balance or imbalance is easily determined and it takes about 2 or 3 minutes per man.

Useable techniques are a spring scale, the single boot maximum lift capacity and the most accurate the tensionmeter. Strength measurements of both legs will enable the determination of balance or imbalance. So *not to* check this important factor is the wasting of a player's potential as the techniques for preventive conditioning to overcome the strength imbalance is easily accomplished, by Progressive Resistive Exercise techniques.

And once the player has been injured his potential of re-injury is about 27 times greater for secondary involvement than the non-injured player according to the N.Y.S.P.H.S.A.A. study of some 35,000 football players.

Flexibility—strength, and balance—goes beyond the muscular components for sports efficiency and reduction of injury. Here the emphasis is directed to the weight bearing skeletal structure of the body. Evidence pointing to the significant incidence of lateral asymmetry of the skeleton is adequately documented by numerous studies. Reported incidence by Pearson of minor asymmetries in a study of 831 school children via standing x-ray showed 93.7% with evidence of lateral asymmetry. A study by Klein of 585 elementary, junior and senior high boys, by standing measurement techniques, was 92% at the senior high school age level, and of some 500 chronic back stress cases worked with, 100% demonstrated lateral asymmetries. All of this can be classified as the “short leg syndrome.”

Now what are the implications for sports? Fur-

EFFECT OF KNEE STRENGTH IMBALANCE  
ON  
KNEE INJURY POTENTIAL

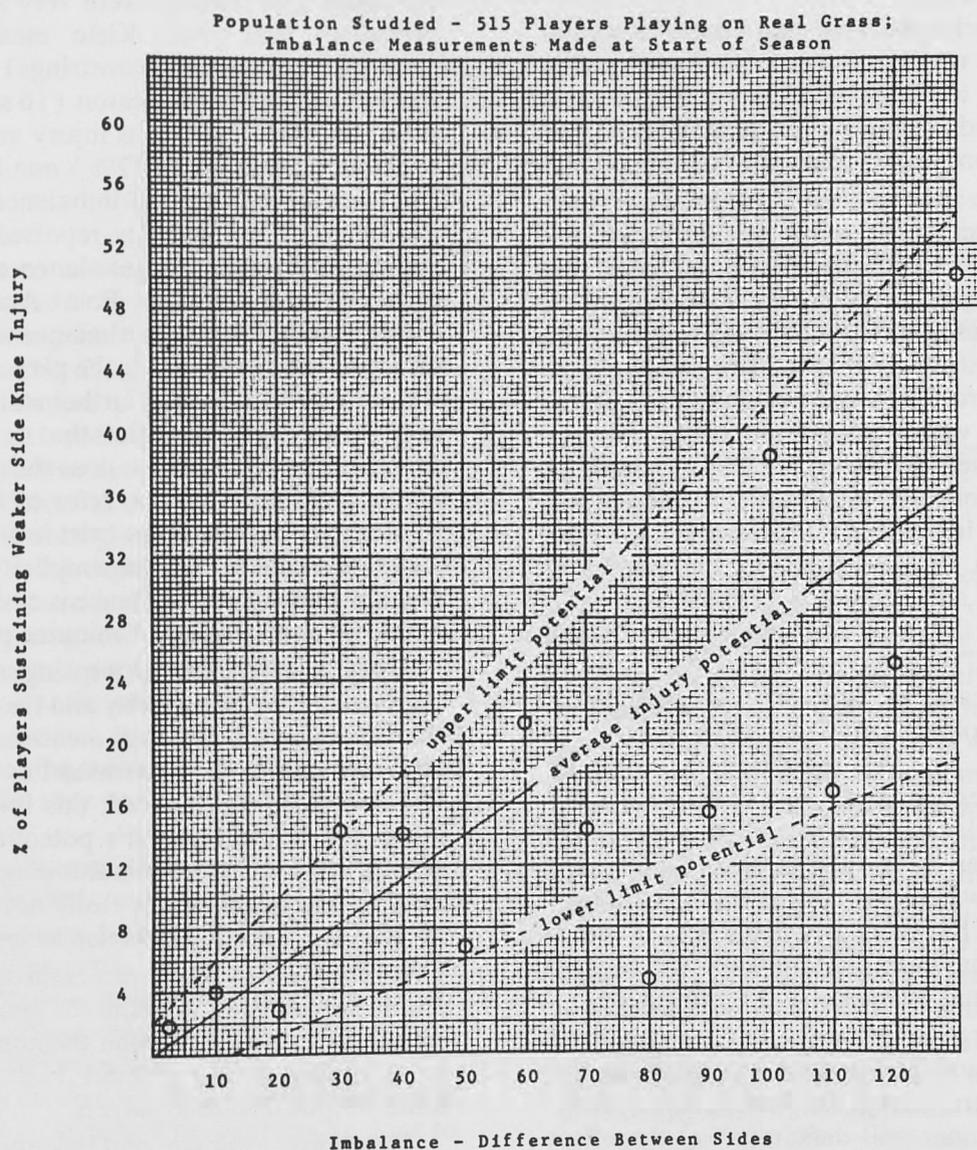


Figure 1

ther study of the problem points to the probability that these minor skeletal anomalies can be directly related to the potential of knee, and other stress injuries. To date measurement records on some 150 post injury, and operative cases, gathered over a 4 year period, consistently have shown 80-82% of the injuries taking place on the short leg side. The data also shows that the injury incidence increases as the lateral imbalance increases.

Mechanically and functionally there is a justification for the short side injury! In normal movement the foot and leg on the short leg side tend to point outward as the person steps into the "HOLE"—this places the knee in a slight valgus position on

forward movement. At this point the knee is inside the toe, which is the basic position and mechanism of injury. Contact at this point or a forceful change in direction increases the stress on the joint, and if the force is great enough, and the heel remains "locked in" the result is injury. You may advise the player to run and cut "pigeon toed" and as long as he thinks the pattern, he can do just this, but when the thought process stops, out goes the foot again. Mechanical correction of lateral imbalance is easily accomplished with a heel lift on the shoe. Now movement patterns, pigeon toed action, can be corrected—thought patterns help—and symmetry of movement will be maintained, re-

ducing the injury potential.

Now, what is the possible effect of this lateral asymmetry on the distance runner who uses the heel-toe technique? Every time he steps on the short leg side the length of the step is shorter than that of the long leg side. So in a mile run, of alternating a short and long step, it should take more time to travel the course. Although there is little evidence of any postural balancing work being done in this area, it seems logical that lateral postural balancing to equalize the gait pattern would result in a new world record or two, and reduce the veering tendencies of gait action.

The torque action of the hips and spine in lateral asymmetry function results in the development of considerable muscle imbalance under normal conditions. To expose the athlete to progressive weight training adds insult to the developmental effort of attempting to build body balance.

For just a few more comments about the ankle and the problem of muscle balance between the inverters (ankle inward) and everters (ankle outward). A study conducted a few years ago related to strength and strength loss due to activity showed that even though the everters were the stronger of the two muscle groups, during activity the everters (peroneals) lost strength at a significant progressive rate while the inverters tended to maintain their strength during activity. Recognizing the fact that most of the ankle sprains are on the outside, due basically to the mechanics of ankle movement, the fact remains that the supporting musculature on the lateral side is not available when needed to support or aid in preventing the inversion motion, due to stress fatigue when the critical situation arises. The implications are for special emphasis on conditioning for strength, and endurance of the ankle everters to reduce injury potential.

As an additive factor why not reconsider the high top shoe which adds considerable ankle support, and is a less deterrent to speed than most coaches would like to believe!

Another major problem related to the ankle and effective function is that of pronation. Little emphasis seems to be placed on its presence unless related to problems of injury; but its presence is found in too many people, and it has special implications for decreasing maximal physical function, and can be directly related to both ankle and knee injury. Attempts at correction should begin early in life, even before we see the person as a budding athlete. When he does arrive the problem may be more difficult to correct, but there are a few things that can be done to insure better function! First get him out of those miserable running

shoes with the narrow heel; they are great promoters of ankle pronation. Secondly, show him how to strengthen the inverter muscles of the foot. Third, try to teach him good foot mechanics in movement (pigeon toed action) and a great assist to all of these efforts would be to use Rear Foot Controls in his sport and regular shoes. These mechanical devices will greatly assist in the effectiveness of the other efforts to correct the problem.

Moving upward to the shoulder area let me first mention that the problem of strength maintenance once developed is quite different from that of maintenance of the lower extremities. Gained strength after the cessation of exercise of the upper extremities loses 50-60% within a year (Elkins-McMorris Study), while strength gained in the lower extremities has been shown to be maintained for 3½ years or more after termination of P.R.E. There are physiological and muscular factors accountable for this phenomenon. The shoulder mechanism has numerous muscular components that account for the various movements of the arm, and shoulder girdle involved in the throwing action. Some muscles are large and strong, i.e. triceps, pectorals, latissimus, and trunk rotators. But internal rotators of the arm, which are small and relatively weak, as compared to those previously mentioned, are vital in the throwing mechanism and have to be specifically conditioned. But in all of this there is a tendency to forget that the antagonists control the prime muscle movement and should also be conditioned to maintain balance so as to prevent the "fatigue syndrome." The antagonists of the throwing movement are responsible for "ball control." Another reason for emphasis on conditioning of the antagonists is to insure the flexibility of the shoulder throwing mechanism that aids in ball control. The same concepts for condition of the shoulder musculature should be applied for swimmers, or any sport where the arms are used excessively in the activity.

Not to be repetitive, but for emphasis, the antagonists control prime mover muscle action, and unless these muscles are considered in the training program, for balance and flexibility, muscular coordination will suffer due to the earlier fatigue of the antagonist.

In conclusion, Flexibility-Strength and Balance—is extremely important for function in sports, both from the standpoint for development of maximal efficiency, and reduction of injury potential. Consideration in the development of these factors when preparing the athlete for competition will keep more of them on the field and that's where they should be.

# The Role of the Athletic Trainer as an Educator in the NATA's Educational Program

Education Report:  
By Sayers "Bud" Miller\*

**H**ave you thought about being a teacher of athletic training students? Maybe you have, but you don't have an advanced degree or feel you don't have the personal qualities.

What about your abilities? If you are a good athletic trainer, chances are you can become a good instructor. You have to be able to motivate the injured athlete to do what you want him to do. True, you may be an expert in rehabilitative and conditioning exercise, but unless you can influence the athlete to perform, you will get nowhere.

The same is true for the instructor. All of the degrees and expertise in the world do not necessarily make you a good teacher. Many would have you think differently. They are unable to realize that being an expert in knowledge does not mean that they can motivate the students to learn.

To prove a point, think back to your College days, or now, if you are a student. It is most likely that you had at least one professor or teacher who filled the above description perfectly. He knew his subject well, but he scared you to death. Yes, you learned with probably minimal carry-over knowledge, but you had to or fail the course.

To be a good teacher, or athletic trainer one has to be a good communicator and perceiver. He must be able to accept each athlete or student as a person. He must praise and encourage when due, and temper justified criticism with humility and kindness. He should accept, encourage, and make use of ideas from students which may be new or better. He should encourage questions, and opinions even though these may sound foolish or may be wrong.

Being a teacher does not mean that you are there only to teach a student a profession so he can make a living. You are helping him to mature by giving him new situations to meet, new challenges to pursue, and by being an example yourself.

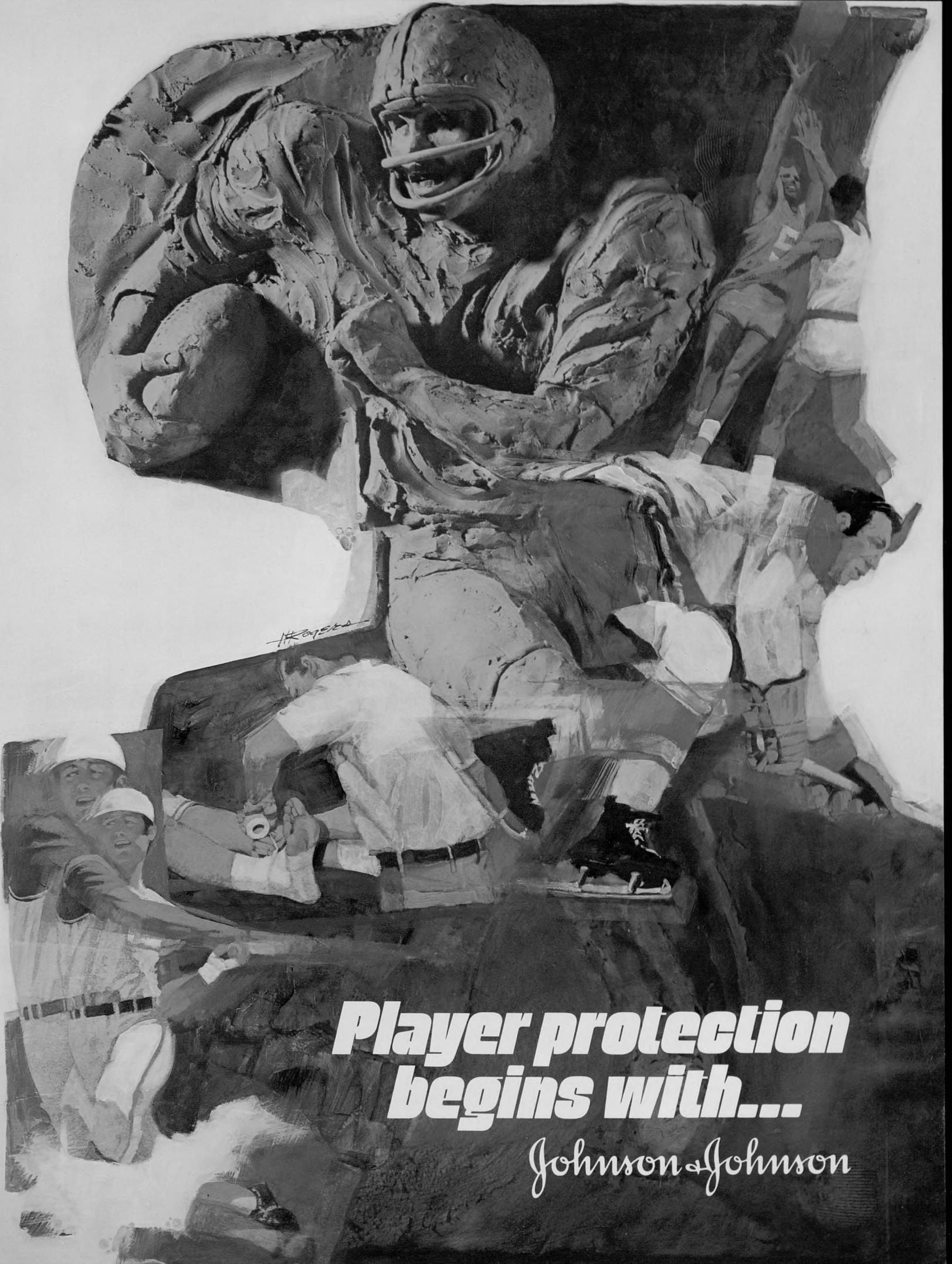
This is not an easy task. Few people are endowed with all of these abilities. Motivating stu-

dents is hard, and challenging, but rewarding if you want to learn and grow yourself, and in turn help the NATA and the whole athletic training profession grow in stature.

What are your opportunities for teaching in athletic training? The NATA has expended a great deal of time, thought, and effort in laying the foundation for the professional preparation and certification of athletic trainers. However, with athletic training still an emerging profession, and a mere neophyte in the field of education, the NATA with great foresight has established a very flexible program for the professional preparation of athletic trainers. At the present time there are three primary tracks of professional preparation leading to the goal of NATA Certification, which include: (1) college preparation in an athletic training curriculum approved by the NATA which includes two years of supervised clinical education (2) college preparation in a physical therapy curriculum with a minor in health and/or physical education, a valid teaching certificate and two years of clinical education supervised by NATA approved supervisors and (3) on-the-job training (1800 clock hours minimum) under the direct supervision of a Certified athletic trainer, a college baccalaureate degree, and letters of recommendation by his immediate supervisor and his team physician.

In all three tracks, opportunities for teaching students interested in the field of athletic training are available, both formally and informally in the classroom, the clinical education program in the training room, and continuing education programs such as seminars, clinics, workshops, etc. However, the opportunity for teaching in athletic training only exists at the present time for those who want to develop an educational program in athletic training. Athletic training teaching positions are not for the wanting. It is the appeal of the NATA that its membership work to establish and take the opportunity to teach students interested in the field of athletic training.

\*Head, Division of Sports Medicine, University of Washington, Seattle  
Chairman, NATA Professional Education Committee



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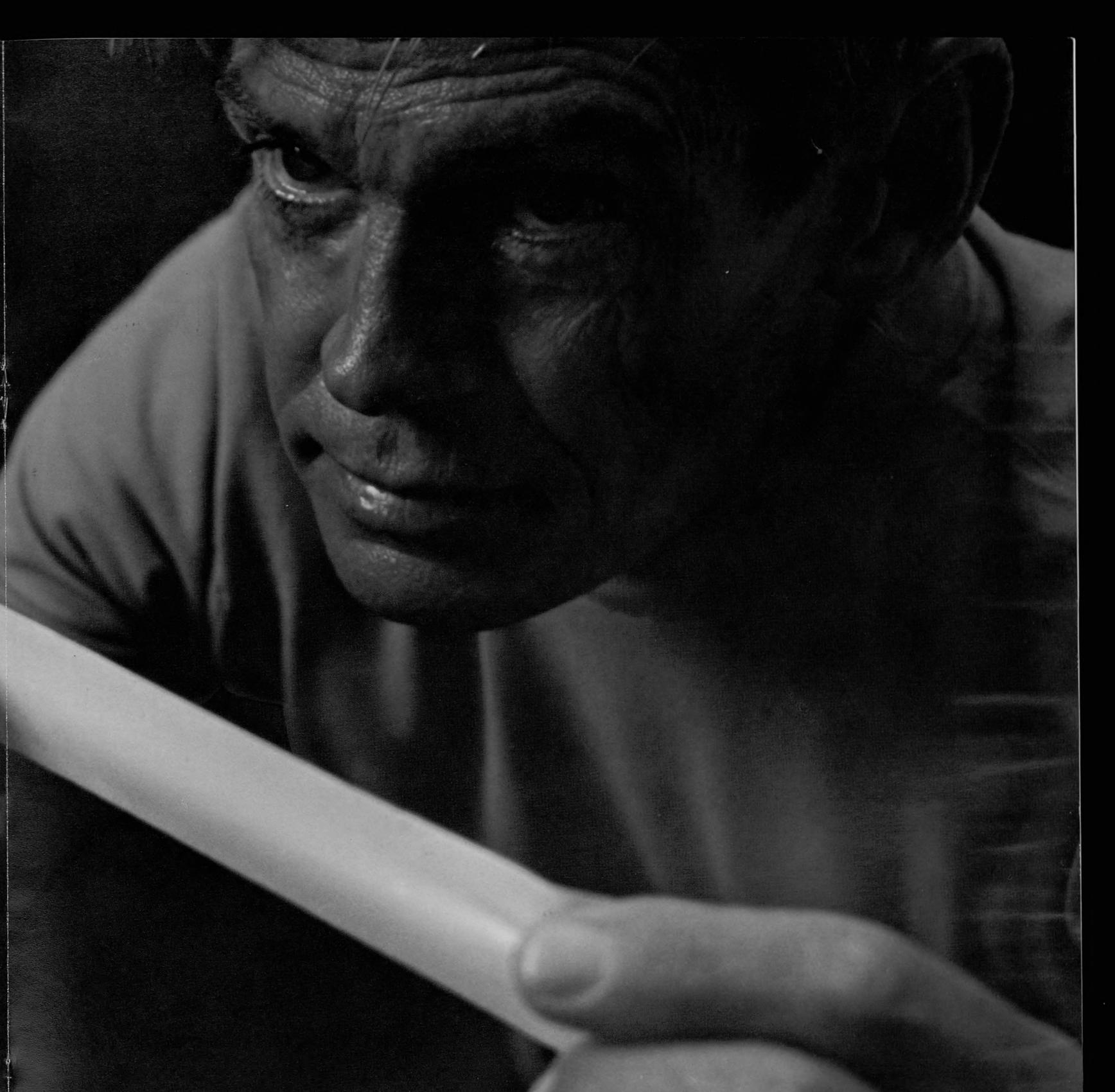
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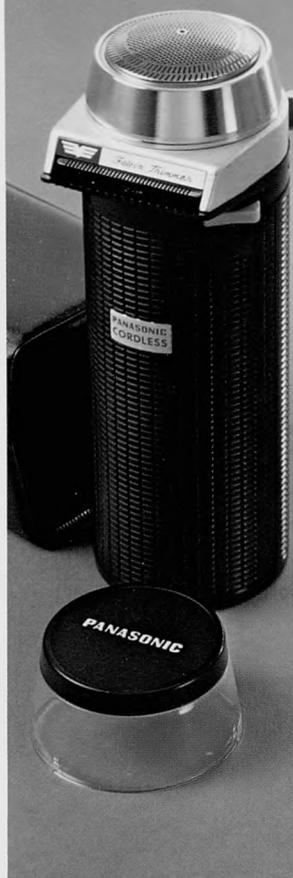
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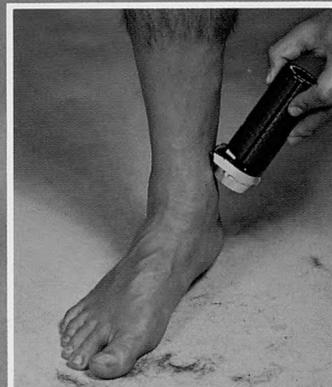
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How do you become an athletic training educator? It is not an easy task. If you are an athletic trainer employed by a college or university with an established school, or department of physical education, and either have faculty status in this department, or don't have any teaching responsibilities at all, you should seek out all the possible opportunities for establishing an athletic training curriculum—a minor, option or area of specialization—within the physical education department. You should become knowledgeable about the curricular offerings of your college, and the course requirements of the NATA Educational Program. The NATA's Committee on Professional Education stands ready at all times to give you assistance in the development of your athletic training curriculum.

In many colleges you will discover that the NATA educational requirements will neatly fall in place with the physical education curriculum or one of its established areas of specialization such as pre-physical therapy, therapeutics or adapted physical education with only the need for the addition of the advanced athletic training course or courses and laboratory credit for clinical education in the training room. In addition, you will find that in many colleges you can teach at the instructor level in the undergraduate curriculum without a Master's degree, but you will probably stay at that rank. Usually advancement in rank depends first on a higher degree and then on experience and ability. A doctoral degree is a must if you plan to develop a graduate program in athletic training.

If the undergraduate or graduate curriculum in athletic training is not a possibility within the offerings of the college physical education department, a certificate course in athletic training may be another avenue to follow. There is a definite need for this type of curriculum. Many letters are received by the Professional Education Committee from persons holding a baccalaureate degree desiring a postgraduate, and not necessarily a Master's degree, curriculum in athletic training. At the present time there are none approved by the NATA.

The design for such a one year intensive postgraduate certificate course could follow closely those established by physical therapy schools in the early 1940's. The curriculum would not have to lead to the earning of a Master's degree; therefore, the athletic training instructional staff would most likely not be required to hold a doctorate degree. In addition, the NATA educational requirements could be prerequisites for entering this type of curriculum with the certificate course

concentrating only on the advanced athletic training courses and the clinical education aspect. If there is a lack of physical education department within the university, this type of certificate course may find support in the medical school especially in the allied health fields, physical therapy or the orthopedic department.

If none of the aforementioned opportunities for teaching within a structured curriculum is available, on-the-job training of student trainers is another informal teaching possibility. But isn't this supervision rather than teaching? In many cases I am afraid this is true.

A series of informal seminars along with the on-the-job training, has become a necessity in offering students adequate preparation in the techniques of teaching supervision, administration, and consultation. Our student trainers have been assuming positions of great responsibility very early; some are doing so immediately upon graduation. Their work includes budgetary preparation for personnel, equipment, and supplies; understanding of administrative lines of authority, and responsibility; legal aspects of health-care work; techniques of conducting effective interpersonal relationships without which effective teaching, supervision, administration and consultation cannot be carried out. In most training rooms the student trainer's position in the line of responsibilities, and duties is not sufficiently high to be able to observe, and carry out these aspects of athletic training. Therefore, you as an on-the-job student trainer supervisor should structure and plan an informal non-credit educational program for each of your students. You should give the student guidance in what courses he should take as college electives in accordance to the NATA educational program, at least 1800 clock hours of practice in the therapeutic, and preventive skills of the athletic trainer, and informal seminars to round out his knowledge.

Every training room should have students, the number depending upon the size of your staff, faculty, and sports program. Do not feel insecure about your ability to teach them. Does the coach of the ice-skating champion who holds an Olympic gold medal have to have the same type and degree of skill as his student, who receives the award? The skill levels of your graduating students may far exceed your own skills in the performance of certain tasks, but this fact need not put the responsibilities and the positions of athletic trainers as their teachers and supervisors in jeopardy. Help your students and at the same time yourself to learn and grow. Why don't you try it?



## athletic training in the literature

**M**ax M. Novich, M.D. and Buddy Taylor have written a book just recently released entitled *Training and Conditioning of Athletes*, Lea & Febiger, 1970. With some 28 texts available on the subject of athletic training and conditioning, the advent of a new volume devoted to that subject might be expected, at best to be only repetitions of previous texts. By the nature of the subject of athletic training and conditioning, some repetition is unavoidable to have a desirable complete volume. Novich and Taylor, however, present their content in such a way that a refreshingly new approach to many old, oft printed, subjects is available. The athletic trainer who is interested in the latest attempt to explain and guide those who seek information about the many facts about our profession should be pleased with this book. No small contributing factor is the extensive background in sports medicine, and athletic training possessed by the authors. Few physicians carry the sports medicine credentials of Max Novich, and his contributions as co-author are constantly evident throughout the manuscript. Buddy Taylor has some 22 years of outstandingly varied associations with the sports world as an athletic trainer.

The contents of *Training and Conditioning of Athletes* follows the traditional format, but with some modern updating in such chapters as "A National Sports Problem," discussing sports values, academic administration leadership, parental roles, and medical and paramedical cooperation. The chapter "Conditioning of Athletes," fills some fifty-six pages with condensed but informative sections of pre-season physical examinations, conditioning, an excellent coverage of fluid balance and weight charts, and discussion on conditioning for the major sports. A very pertinent chapter, "Drugs in Sports," is presented including a section on ethical and medical aspects of doping which stresses the dangers of drug usage for any reason but therapeutic purposes.

A disappointment was the brief mention of the training and conditioning of women athletes and an exclusion of a section dealing with the psychology of athletic performance, particularly as it pertains to injury treatment and prevention (the subject is lightly touched upon in portions of the first three chapters). Three chapters cited no references to their information, while citations for other chapters contained the

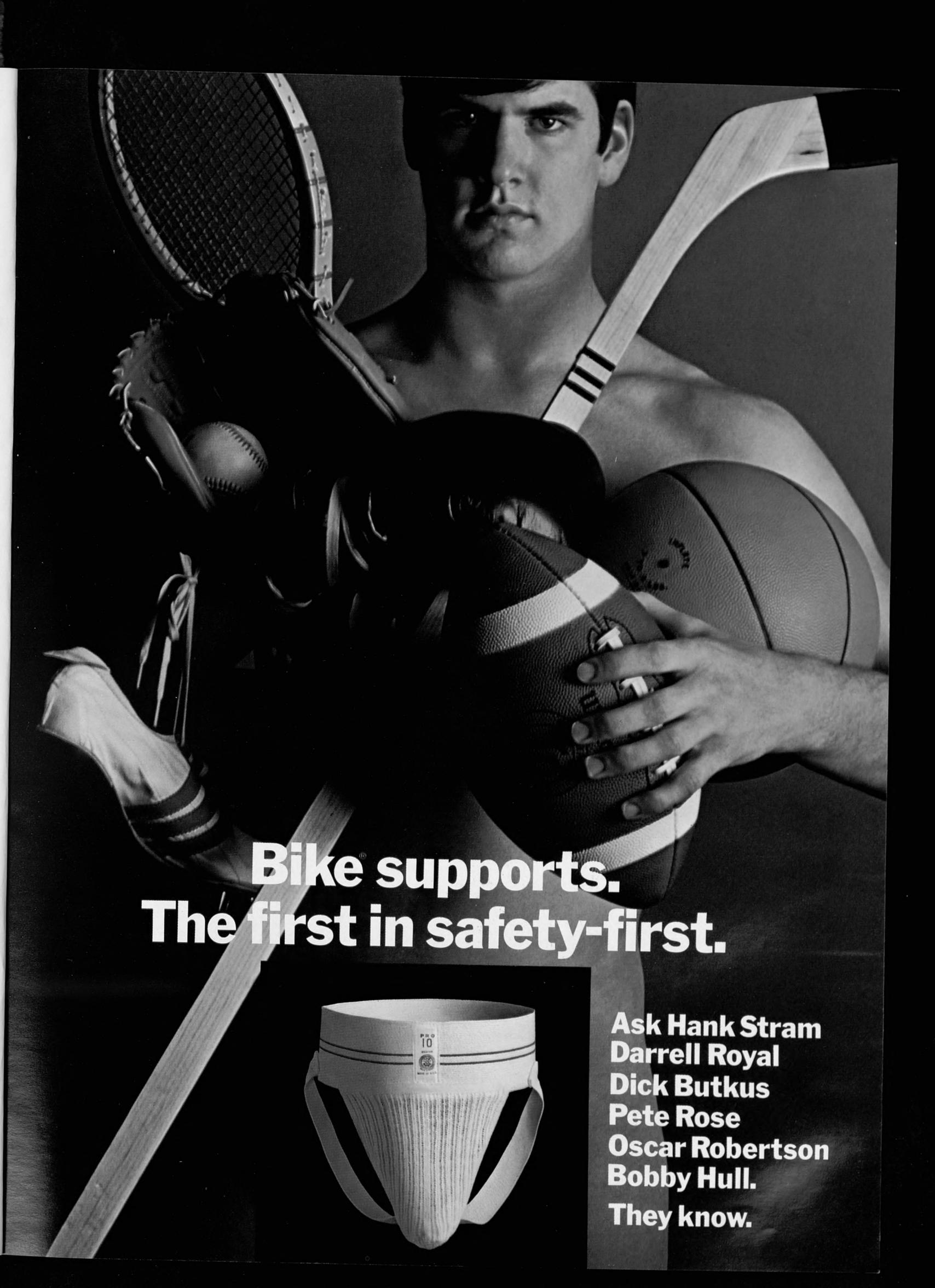
latest references available for the subject.

The text is available for \$6.00, and may be obtained in paperback form.



R. J. Shepard, M.D., Ph.D. is a world renowned researcher in the field of endurance fitness and has compiled a book entitled *Endurance Fitness*, University of Toronto Press, 1969. His compilation disseminates information that is so necessary to the world of physical education, athletics, and sports medicine. The book, however, is in many cases highly controversial due to the world wide sources from which such information is available. Much of that information has come from his own laboratories, his associates and students.

For the athletic trainer who makes endurance fitness knowledge a useful tool in the conditioning of his athletes, this volume contains a world of information in just 238 pages. Some of the material presented includes: physiology of endurance fitness, fitness tests, motivation to fitness, nutrition and fitness,



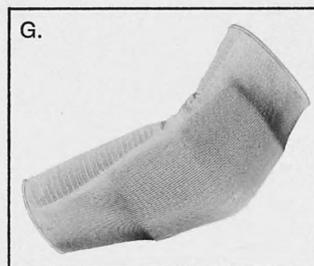
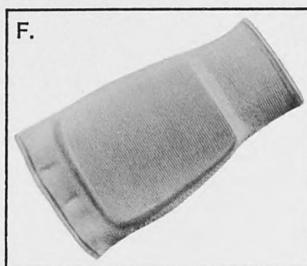
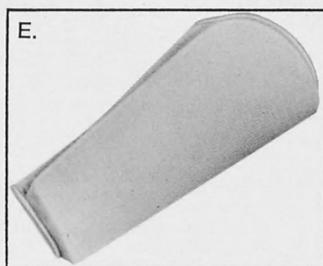
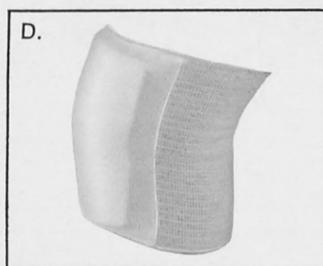
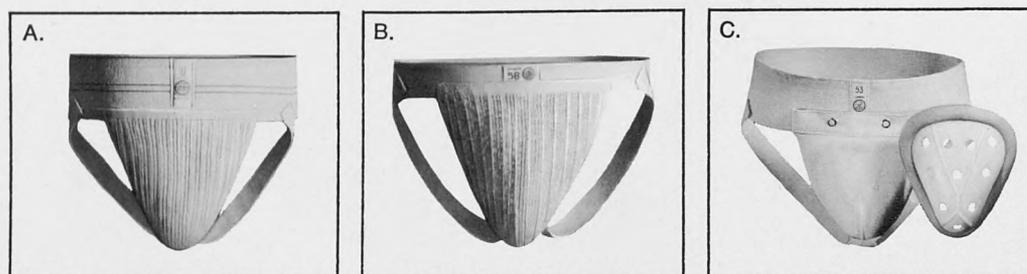
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fitness and body musculature, fitness and drugs, and 392 citations on the included chapters.

*Endurance Fitness* is easily one of the handiest desk references on this subject for the price of \$6.50. For the trainer that needs only a review, or a little more depth into the knowledge of fitness, this book can meet those needs, either in its pages or through the number of latest referenced cited by Dr. Shepard.



Among many new kinesiological texts appearing on the market is *Applied Kinesiology* by C. R. Jensen and G. W. Schultz, McGraw Hill Book Co., 1970, \$8.95. Jensen and Schultz intended and succeeded in putting together many fact of the analysis of human activity into a book designed to serve as an undergraduate text. While the title was the attracting feature to this volume, the authors precede the kinesiological applications with a concise, but complete section on muscular actions, including a chapter on the specific muscular analysis of the actions of a hurdler and a chapter on increasing the effectiveness of muscles through strength, endurance and power. Perhaps, notably absent from the discussion of methods for increasing strength was that of strengthening by isokinetic exercise.

A section on contributions of other body systems to muscular functions is a welcome adjunct to a volume on kinesiology and helps make this book one which the undergraduate can add to his reference library. An expected section mechanical laws and principles, including a chapter on the mechanical analysis of the right handed golf drive, is followed by a section of kinesiology applied to locomotion, jumping, throwing, water performance, etc. This section could prove valuable to the athletic trainer who is looking for an inexpensive, one

volume addition to his library for reference to basic patterns of performance.

For a text covering kinesiology from as many directions as it does, the sixty-nine citations for reference are somewhat low numerically. The authors, no doubt, have reasons for not including more citations, but as an undergraduate text, a broader coverage, readily at hand, could be an advantage.

A very interesting editorial appeared in the April issue of *Archives of Physical Medicine and Rehabilitation*, 51:245, 1970, called "Re-education of Vastus Medialis: A Misconception." The author of the editorial, Dr. J. V. Basmajian, brings together some enlightening facts concerning the role that the vastus medialis plays in the stability of the knee joint.

The accepted idea that a weak vastus medialis is the primary muscular cause of an unstable knee, due to the inability of the muscle to produce the last 15° of extension, has come under fire from the author. He is not denying the importance of the terminal 15 degrees of extension to the stability of the joint but only that the vastus medialis may not play as large a role as was thought. While the vastus medialis acts through the whole range of knee extension one very important contribution is its prevention of lateral dislocation of the patella during the final degrees of knee extension.

"Lieb and Perry concluded that early atrophy of the vastus medialis prominence coupled with the loss of terminal extension is simply indicative of a general quadriceps weakness. Hallen and Lindahl, stressing the importance of pain inhibition and adhesions in the limitation of extension in its last 10 degree, confirmed the general role of the vastus

medialis rather than its widely touted terminal-extensor function."

An informative discussion on the limiting factors of ligament pain and fluid distension with respect to joint motion and quad strength is followed by the author stating, "In a retraining program, the causing of pain in the joint, per se, will not cause reflex inhibition. So a clinician should be the judge of: a) how much pain can the patient tolerate? b) can movements be carried out without insulting the joint structures? c) can he avoid joint effusion which will produce reflex inhibition of the vasti?"



Whatever else the miniskirt may be, it's healthy. *The British Medical Journal* reports that most people bend and lift objects incorrectly, thus putting unnecessary and harmful strain on the back. The miniskirt wearer, however, typically shuns bending to pick anything up, to avoid unwanted exposure. She uses her legs, instead of her back . . . or haven't you noticed?



Having a Sauna on the property is a status symbol. So states the American Medical Association. If you want to know what else they have to say about this relatively new American institution, the minuses and pluses, then send fifteen cents to the AMA, 535 N. Dearborn St., Chicago, Illinois 60610 and ask for the pamphlet, "What You Should Know About Saunas."

The Nutrition Foundation, Inc. and the American Dietetic Association have a \$2.00 volume for those who would like added reference material on nutrition. The book is entitled *Nutrition for Athletes—A Handbook for Coaches*.



## athletic training in the news

George Sullivan, head physical therapist at the University of Nebraska, has replaced Jack Rockwell on the National Operating Committee on Standards for Athletic Equipment, Inc. That announcement recently came from James Wilkinson of the N.C.A.A. executive office and secretary-treasurer of the N.O.C.S.A.E.

In further action, the National Sporting Goods Association was admitted to NOCSAE membership. Other members include the NCAA, NATA, Athletic Goods Manufacturers Association, American College Health Association, National Federation of State High School Athletic Association, and the National Junior College Association.

The Committee's most recent undertaking has been the funding of a \$40,000 research project on football head impacts at Wayne State University, Detroit.

SAN FRANCISCO, March 8, 1971—Tom Dempsey, the place kicking star of the National Football League, despite half a kicking foot, has one advantage over others. He has no moving toes, a prime reason for loss of power.

Physicians associated with the New Orleans Saints football team pointed out in a scientific exhibit here that Dempsey's congenital foot deformity "enables him to hit the ball with a sledgehammer effect."

Dempsey still retains a key anterior tibial tendon that would be absent had his deformity been the result of a traumatic amputation rather than a birth defect.

"Without this tendon a kicker would be unable to bring up his foot in a flexed, locked position for the kick," said Drs. Kenneth Saer and Ray J. Haddad, Jr., orthopaedic surgeons who serve the Saints and are faculty members of the Tulane University Medical School. Their exhibit was presented here at the American Academy of Orthopaedic Surgeons Annual Meeting.

Dempsey set a new NFL record by kicking a 63-yard field goal against the Detroit Lions last fall. He has become an image of courage and determination to handicapped youngsters around the world, the surgeons said, and has received thousands of letters.



From the most recent meeting of the Michigan State Medical Society comes the following resolution:

**RESOLUTION 23**  
Professional Standards for  
Athletic Trainers  
Henry A. Scovill, M.D.,  
Washtenaw County

**HOUSE ACTION:** Following Substitute Resolution Adopted in Lieu of Resolution 23 & 24.

WHEREAS, the American Medical Association and the Michigan State Medical Society have long recognized the importance of proper health supervision in providing athletics for participants, and the relationship of such supervision to the promotion of the art, and science of medicine, and the betterment of public health is clearly evident, and

WHEREAS, in 1967, the AMA House of Delegates recognized the fine rapport developed between the Committee on the Medical Aspects of Organized Athletics and the National Athletic Trainers Association (NATA), they lauded the development of professional standards by the NATA and they further recommended that all athletic teams have the benefit of a professionally prepared athletic trainer as a part of the medical supervisory team. The AMA House of Delegates specifically approved the following recommendations that:

(1) The AMA recognized the importance of the role of the professionally prepared athletic trainer as a part of the team responsible for the health care of the athlete;

(2) The NATA be commended for its efforts to upgrade professional standards, since improved preparation, and continuing education en-

able athletic trainers to work effectively with physicians in the health supervision of sports and

(3) State and local medical societies, and physicians individually be encouraged to help advance the professional goals of the NATA in their communities through appropriate liaison activities; and

WHEREAS, in 1969, the House of Delegates of both the AMA and the MSMS urged the creation of athletic medical units in all schools having sports programs, and that such units have athletic trainers or athletic health coordinators, and

WHEREAS, the NATA has just formulated an outstanding set of procedures for certification based on educational preparation, years of experience, continuing education, apprenticeship training and certifying examinations; all evaluated by a Board of Certification composed of physicians and qualified athletic trainers, and

WHEREAS, the MSMS Committee on Medical Aspects of Organized Athletics has unanimously approved this resolution; therefore be it

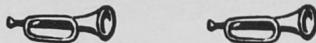
RESOLVED: That the MSMS go on record as officially recognizing NATA's certification procedures and certification board, and be it further

RESOLVED: That the Michigan State Board of Education where and when possible recommend to local boards of education the appointment of certified athletic trainers (NATA) to work with physicians in the important area of health and supervision of athletes.



It has been reported that the American Association for Health, Physical Education and Recreation approved the curriculum standards established by the NATA. This approval, reports Sayers "Bud" Miller, Chairman of the NATA Professional Education Committee, will allow this curriculum to be included in

the new AAHPER booklet on professional preparation scheduled to be developed in 1972. "Such approval should allow a greater cooperation with college physical educators in relation to the inclusion of a curriculum for athletic training," says Chairman Miller.



SAN FRANCISCO, March 7, 1971—The liftoff, not the landing, is the most hazardous part of high jumping, according to team orthopaedist at the University of California, Los Angeles.

The surgeon, Dr. Martin E. Blazina, says the risk of pathology is greatest when the right leg is swung over the crossbar and the knee of the left leg is straightened vigorously at the same time.

Dr. Blazina, associate professor of surgery, analyzes the mechanics of the high jump in this way:

"As the jumper approaches the take-off spot, he 'gathers' or 'settles down' in preparation for the explosive spring. He accomplishes this by driving less vigorously, thus approaching a semi-coasting-forward effort. The last stride is lengthened in order to provide a greater arc for the right leg swing. This tends to bring the center of gravity over the left foot rather than ahead of it, which permits moderate flexion of the left knee.

"After the jumper gathers, he springs. The left foot beats the ground flat-footed, and the right leg is thrown vigorously forward and upward.

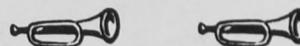
"We believe the pathology occurs at the end of the right leg swing, and closely coordinated with it, as the jumper straightens the left knee vigorously and forcefully rocks up completely on his toes."

The injury that may result is termed "high jumper's knee." It in-

volves stretching the tendon attached to the kneecap and the ligament in the back of the ankle.

Unfortunately, there is not much to be done in way of prevention, said Dr. Blazina, for a good jumper will forcibly extend the knee in order to clear the crossbar.

To some extent, "high jumper's knee" injuries occur in basketball, volleyball, and high diving, he said.



Polyturf, by Bilrite Rubber Co. is the latest addition to the artificial turf family. With Astroturf and Tartan Turf well on their way to replacing the grass playing fields of the nation, perhaps a seminar for athletic trainers to discuss the pros and cons of these new carpets would be valuable.



Some items of interest were reported by Tom Healion, NATA Advisor to the N.C.A.A. Football Rules Committee. These items were discussed and or passed at the 1971 meeting of that committee: (1) The "crack back" block was eliminated. Blocking in the clipping zone will now be above the waist. (2) Spear-ing was added to the list of contact fouls. (3) There was extensive discussion on artificial turf. It was brought out by the sporting goods manufacturers that shoes and clothing cannot hold up on this abrasive material. (4) Goalpost padding is up to each individual institution. (5) Athletic Trainers are encouraged to assist all injured players from the field, and not allow them to be "dragged" off, or "stagger" off under their own power. In other words, take the time out when necessary.



## THE JOURNAL TEN YEARS AGO —SPRING 1961

“**T**he Mechanics of Some Common Injuries to the Shoulder in Sports,” by Dr. Donald Slocum discusses the mechanics of shoulder trauma, including terminology used in describing certain injuries and the individual joint mechanics involved in the etiology of those injuries.

Describing the functions and inherent weaknesses of the four joints of the shoulder, Dr. Slocum refers several times to the role that poor posture may have on the mechanics of shoulder injury. The point is made that the malalignment of shoulder structures may be caused by poor general posture, or by general posture alteration due to a non-shoulder injury. “This predisposing factor may lead either to acute injury or to repeated minimal injuries whose cumulative effect results in chronic affections.”

As might be expected, Dr. Slocum dwells upon trauma resulting from the throwing motion. He states that, “Throwing varies greatly in different sports (baseball, football, track, etc.), and within the same sport (fast ball and curve pitching, outfielders and catcher’s throwing, etc.) due to the requirements of the game,

style, physical status and the weight and distance the object must be thrown.” After a kinesiologic description of the throwing motion, a paragraph, with accompanying diagrams, discusses the relation of length-tension curves of muscles to the type and location of muscle injuries. “Injuries to the tendon insertions and elastic elements of muscle will occur at the height of length-tension curves. Here the muscle is stretched to a point at or near its greatest length. Resistance is largely furnished by the elastic elements of muscle of the intra- and extracellular type while the contractile element plays little part. If a muscle is overloaded at this point further elongation will result in tears within the elastic tissues of the muscle itself, at the musculotendonous junction of tendon insertion. Injury to the contractile elements of muscle at or near the midpoint of the contractile curve which corresponds with the so-called rest length of the muscle.”

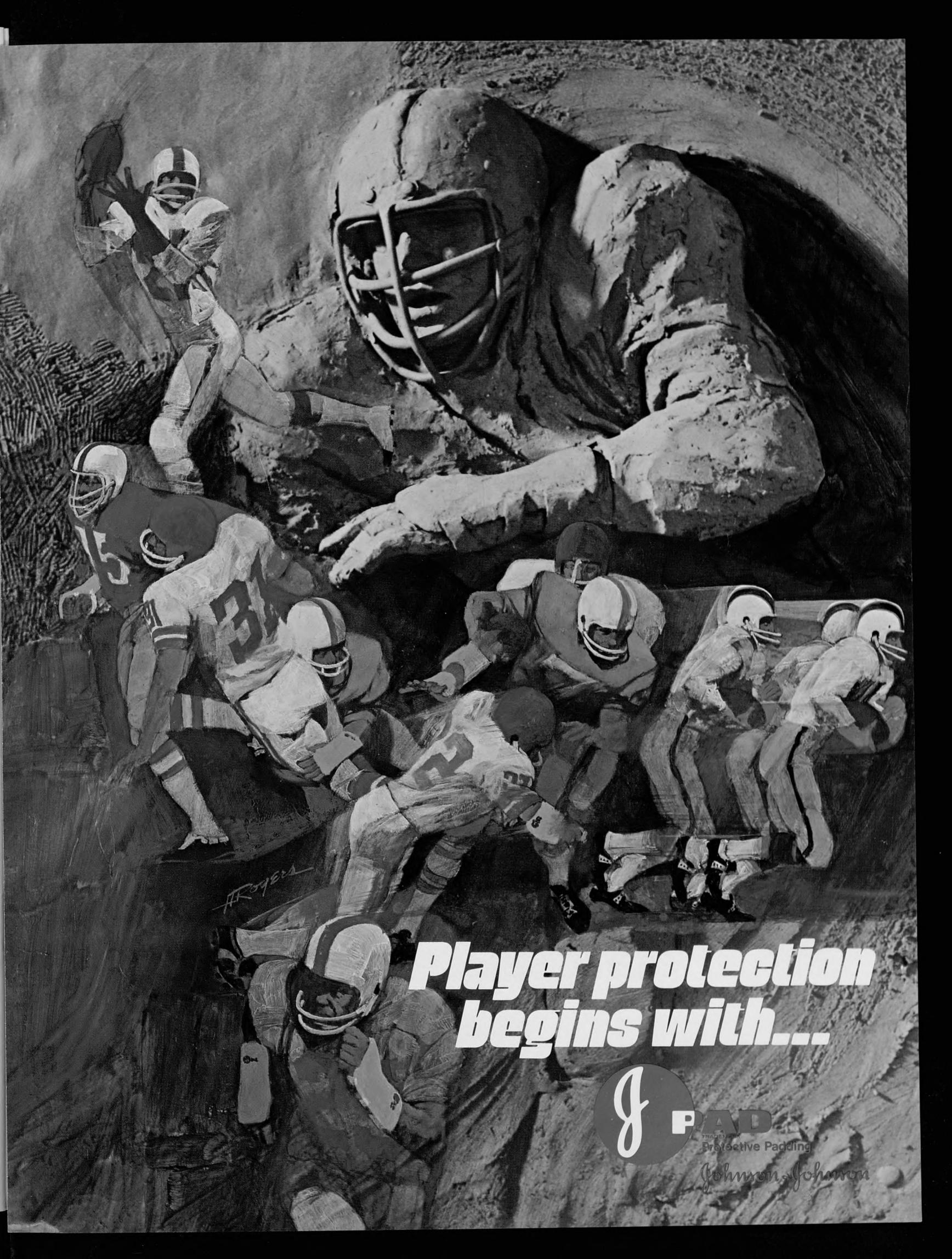
Injury to the pectoralis major and anterior deltoid muscles during the throwing motion is described as occurring in the latter portion of the preparatory phase of the throw, and may be due to: “(1) repeated check

rein action in the presence of the shortened anterior muscles, (2) the overpowering of the muscles due to excessive force applied when the muscle is already at maximal length, and (3) the tendency for luxation of the biceps tendon from the bicipital groove in the position of abduction and full external rotation.”

At the initial stages of forward movement the shoulder muscles are near the maximum length and injury to the pectoralis major and anterior deltoid muscles may occur through overuse in the presence of fatigue or incoordination.

With an explanation of each, Dr. Slocum states that, “on forward motion of the upper arm . . . three areas are commonly injured: (1) the posterior deltoid muscle near its insertion to the spine of the scapula; (2) the scapular insertion of the long head of the triceps immediately beneath the shoulder joint; and (3) the rhomboid major at the lower medial border of the scapula.”





*A. Rogers*

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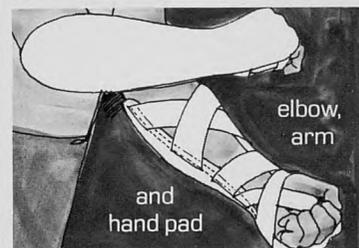
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and  
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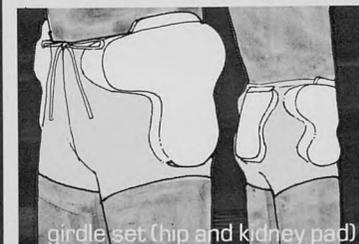
elbow forearm pad



elbow pad



forearm  
pad



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knee pad  
pants

Injuries to the gleno-humeral and acromio-clavicular joints, largely due to external factors are discussed in relation to those types of injury which occur with some frequency. Anterior and posterior dislocation, rotator cuff, and clavicular injuries are touched upon along with descriptions of injuries of the suspensory apparatus of the shoulder, the upper trapezius and levator scapulae.

"Pre-Game Emotional Tension," by K. D. Rose, M.D. and S. I. Fuenning, M.D. is one of the initial investigations into the pre-event meal and its effects on the participating athlete. Hypothesizing that the heavy steak and potatoes pre-game meal may have a detrimental effect upon the quality of play of a football player, the authors began their investigation. They found that, according to Best and Taylor's *Physiological Basis of Medical Practice*, an injected barium meal will reach the hepatic flexure of the intestinal tract in four hours and the splenic flexure in about six hours in a digestive system devoid of any "disturbances of the motor function of the stomach."

Anticipating that a football player about to participate in a 'big' game would exhibit a 'nervous stomach' a series of X-rays were taken of four football players. These athletes ate an 8 oz. steak, potatoes, vegetables, etc. (and a small glass of barium sulfate) at the regular pre-game meal time, prior to the annual Varsity-Alumni spring game.

Figures of X-rays taken in one case showed ". . . a film taken at 2½ hours after eating. About 90% of his meal is retained within his stomach. After the game, and six hours and forty-five minutes after eating, he still had the meal in his jejunum and it was only just entering the large bowel. He was four hours behind in his digestive schedule. The other three boys retained twenty-five per cent to fifty percent of their meals in their stomachs at 2½ to 3 hours after eating and

were 2 to 3 hours behind in their digestive schedules."

"If one chooses to be physically active after eating, the situation then resolves into a conflict between one's digestive and muscular systems for the available blood pool." The authors do not attempt to speculate which system, digestive or muscular, suffers the most, but "strongly suspects both suffer."

After citing B. Bullen in the *American Journal of Surgery*, 1959, "Available evidence indicates that the relative composition or size of the meal preceding an athletic event of short duration is generally unimportant to the performance of the athlete," the authors state that, "steak and potatoes should be taboo," and introduce the idea of feeding the athlete a liquid pre-event meal as a solution to avoiding the problem of delayed digestion prior to and during an athletic contest. Those wishing to follow up this article will find a subsequent article, "The Liquid Pre-Game Meal, Three Years Later," by the same authors in the November, 1963 issue of the NATA Journal.



"The Effect of Vigorous Physical Activity on the Heart and Arteries," by Joseph B. Wolffe, M.D. is the presentation of a paper given to a meeting of the Eastern Athletic Trainers Association. After stressing the point that a healthy circulatory system include properly operating vascular channels as well as a well conditioned heart, Dr. Wolffe states that "more than 80% of our population, past middle life, who suffer for a long time or succumb from what is commonly thought to be heart disease, actually have vascular disease . . . the heart, and kidneys are secondarily affected." Pointing out that there is a rich supply of anasto-

moses between arteries, the body can, and does bypass obstructions to maintain tissue nutrition, particularly in the heart.

Vigorous physical activity is a must to "sustain adequate circulation for everyday life and particularly to meet unexpected emotional and physical stresses." Dr. Wolffe credits trainers, coaches and teachers with elevating the physical condition of thousands. Quoting Professor Chiari of the University of Vienna, one of the world's most prominent pathologists, in thousands of autopsies performed in his career as a pathologist in charge of the Anatomical-Pathological Institute of the University of Vienna, he had never seen normal heart or blood vessels which were damaged by vigorous physical activity. To back this up, Dr. Wolffe states that, "Based upon my own experience of over 35 years in medicine and more than an average interest in athletics, I am still seeking for a single incidence of a proven case of cardiac death or even damage to a normal cardiovascular system as a result of the most vigorous physical activity."

A lack of longevity and morbidity data on those who had either rheumatic valvular disease or even congenital heart lesion and who have outstanding records of performance in various forms of athletics leaves controversy as to the practicability or advisability of vigorous activity in this type of situation. At the same time, the general condition of diabetics, of all ages, has improved upon systematic physical exercise, allowing: "either smaller doses of insulin, could be controlled by diet alone, or were able to reduce oral medication for control of the disease."

Dr. Wolffe charged our profession with "selecting and improving the super-fit (the athlete) as an example for emulating the raising the standard for the average and rehabilitate the underfit."

# Announcements for Trainers

1. The Placement Committee is now functioning in full gear. Information on placements services are expected to be available at the National Meeting in Baltimore. Additional information concerning the placement services may be obtained from:

Alan Hart, Chairman  
NATA Placement Committee  
Department of Athletics  
Ohio University  
Athens, Ohio 45701

2. The American Corrective Therapy Association, Inc. is in the process of establishing a liaison relationship with the N.A.T.A. A request has been made by the A.C.T.A. that all N.A.T.A. members who are also members of the A.C.T.A. notify by mail:

Professor Karl K. Klein  
Liaison ACTA with NATA  
Department of Physical Instruction  
Rehabilitation Laboratory  
University of Texas

Austin, Texas 78712

3. The Audio-Visual Aids Committee is in the process of formulating a bibliography of Audio-Visual Aids to be made available to the N.A.T.A. membership. If you, your department, your school, or your team have a slide series, film, lecture tapes, etc. which might be of benefit to your colleagues, please send information as to title, subject matter, availability, how to obtain, etc. to:

Dick Hoover, Chairman  
Audio-Visual Aids Committee  
Department of Athletics  
Northwestern University  
Evanston, Illinois 60201

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## Calendar for Year 1971

June 3-4—University of Tennessee College of Medicine course on "The Medical Aspects of Sports", Memphis, Tennessee.

June 20-24 — American Medical Association Convention, Atlantic City, N.J.

July 26-28 — American Association of Orthopaedic Surgeons, "The Shoulder in Sports", Meeting in San Francisco.

June 27-July 3 — American Physical Therapy Association, Boston, Mass.

September 13 - 15 — American Academy of Orthopaedic Surgeons, "The Knee in Sports", Meeting in New York City.

The Committee on Injuries of the American Academy of Orthopaedic Surgeons announces its "1971 Schedule of Courses on Emergency Care". These Courses are for

Ambulance personnel, Civil Defense, Industrial, and Public Health workers; Emergency Medical Technicians, Emergency Squads, Firemen, Policemen, Nurses, Trainers. Dates and places: June 9-11, Atlanta; June 16-18, Memphis; June 21-24, Boston; August 25-28, Madison, Wisc.; August 25-28, Washington, D.C.; Sept. 15-17, San Francisco; Sept. 27-30, St. Louis; Oct. 14-17, NYC; Nov. 4-6, Johnson City, Tenn.

Inquiries should be directed to: American Academy of Orthopaedic Surgeons, 430 No. Michigan Ave., Chicago, 60611.

They have a very excellent text also "Emergency Care and Transportation of the Sick and Injured" with a 1971 publication date at \$4.95. Free if you take the course.

### SUMMER CAMPS:

1. Miami University Student Athletic Trainers Workshop, Directed by Ken Wolfert. Fee: \$75.00 for one week session, August 1-6, 1971. For information, contact: Ken Wolfert, Workshop Director, Millett Hall, Miami University, Oxford, Ohio 45056.

2. Olympia Sport Village Athletic Trainers Camp, directed by Dick Hoover. Fee: \$100.00 for one week session, June 20-26, 1971. For information, write: Athletic Trainers Camp, 3338 Green Meadows Lane, Racine, Wisconsin 53406.

3. Athletic Trainers Camp for High School Boys, directed by Gordon Stoddard. Fee: \$80.00 for one week session, June 20-26, 1971. For information, contact: Baiers Birch Knoll, Inc., P.O. Box 206, Beaver Dam, Wisconsin 53916.

Submission of announcements for consideration should be complete within four weeks after the receipt of the current issue. Direct all announcements to: Clyde Stretch, Journal of the National Athletic Trainers Association, 666 Harley Drive, Columbus, Ohio 43202.

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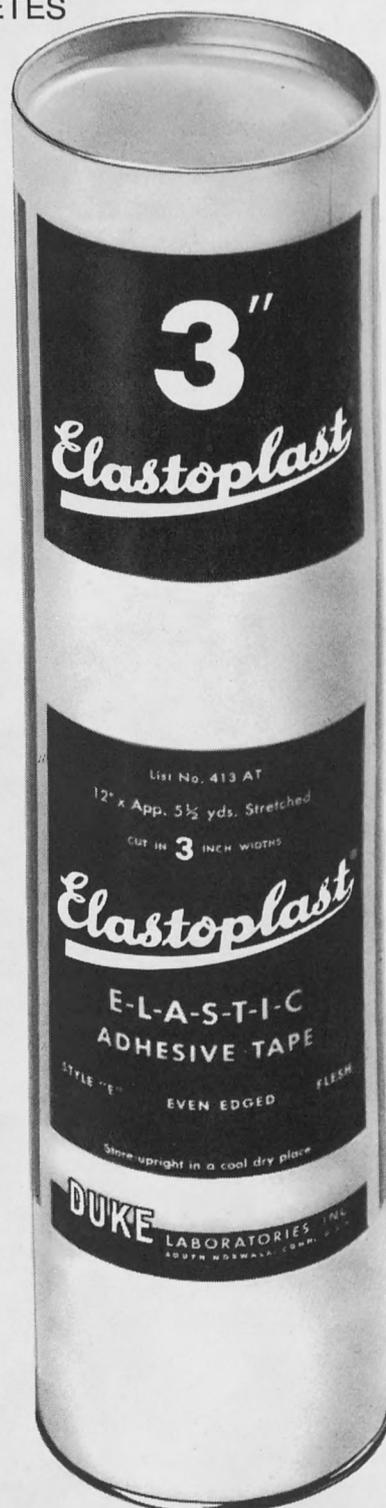
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# Recent Athletic Training Literature

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

Ahern, F. and B. Phelan: "The Lewis Flexibility Exercise Program," *Scholastic Coach* 40:64-8; January, 1971.

"Athletes' Deaths," *British Medical Journal* 4:52; October 3, 1970.

Bendit, E. P., et al: "Trauma Workshop Report: Cell Biology of Injury and Wound Healing," *Journal of Trauma* 10:1050-1; November, 1970.

Berger, R. A., et al: "Prediction of Dynamic Strength from Static Strength in Hip and Knee Extension," *American Corrective Therapy Journal* 24:118-20; July-August, 1970.

Boller, C.: "Controlling Shin Splints," *Athletic Journal* 51:124-6; March, 1971.

Buck, J. E., et al: "Trail of Chymoral in Professional Footballers," *British Journal of Clinical Practice* 24:375-7; September, 1970.

Carlson, B. R.: "Isotonic Strength and Relative Isotonic Endurance," *Perceptual Motor Skills* 30:247-52; February, 1970.

Chapin, E. J.: "What Is the Status of Dimethyl Sulfoxide (DMSO)?" *Physical Therapy* 50:1533; October, 1970.

Conway, D. H.: "Podiatry's Role in Basketball," *Journal of the American Podiatry Association* 60:393-6; October, 1970.

Costill, D. L., et al: "Fluid Ingestion During Distance Running," *Archives of Environmental Health* (Chicago) 21:520-5; October, 1970.

Cotton, D. J., et al: "Immediate Effect of Four Types of Warmup Activities Upon Static Flexibility of Four Selected Joints," *American Corrective Therapy Journal* 24:133-6; September - October, 1970.

Counsilman, J.: "New Approach to Strength Building," *Scholastic Coach* 40:50; March, 1971.

Darden, E. and H. E. Schendel: "Protein and Muscle Building," *Scholastic Coach* 40:70-6; March, 1971.

DePinto, A. J., et al: "Salt in Athletic Training," *Scholastic Coach* 40:62; February, 1971.

Dontigny, R. L.: "Passive Shoulder Exercises," *Physical Therapy* 50:1707-9; December, 1970.

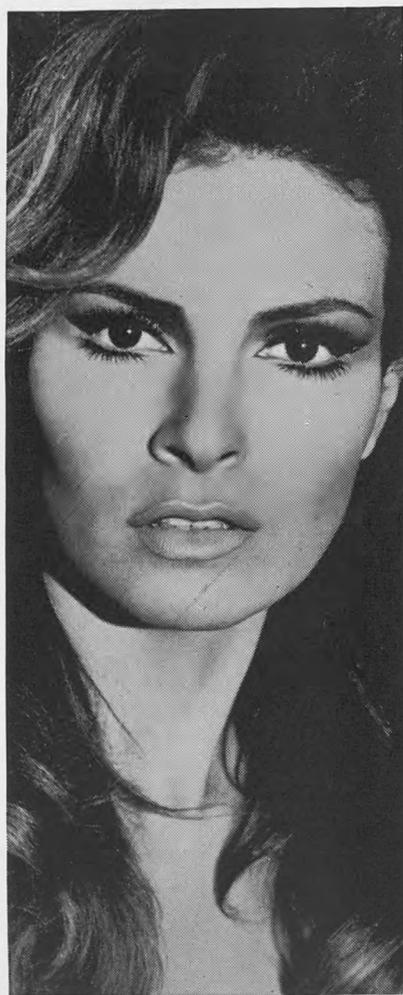


Photo: O'Neill

Miss Raquel Welch

Learn the seven warning signals of cancer. You'll be in good company.

1. Unusual bleeding or discharge.
2. A lump or thickening in the breast or elsewhere.
3. A sore that does not heal.
4. Change in bowel or bladder habits.
5. Hoarseness or cough.
6. Indigestion or difficulty in swallowing.
7. Change in size or color of a wart or mole.

If a signal lasts longer than two weeks, see your doctor without delay.

And be sure to have a health checkup once a year, no matter how well you may feel.

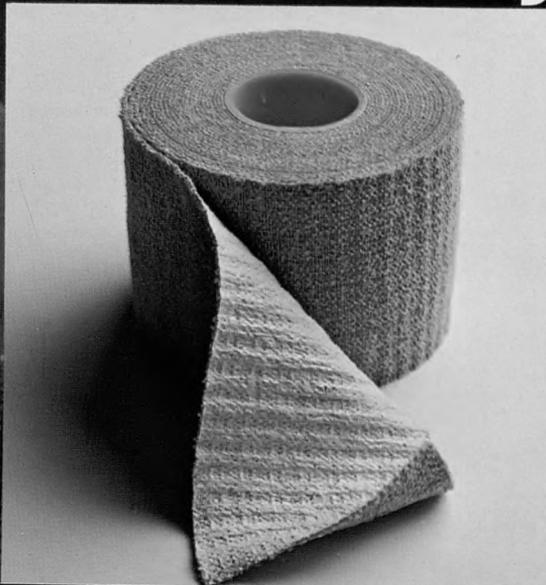
**Fight Cancer with a checkup and a check**

**American Cancer Society**



A black and white photograph of a hand holding a piece of Bike tape. The tape is wrapped around a cylindrical object, possibly a handlebar or a piece of equipment. A shipping label is attached to the tape, with the word "Fragile" written in large letters. Other text on the label includes "147-24440" and "Virginia".

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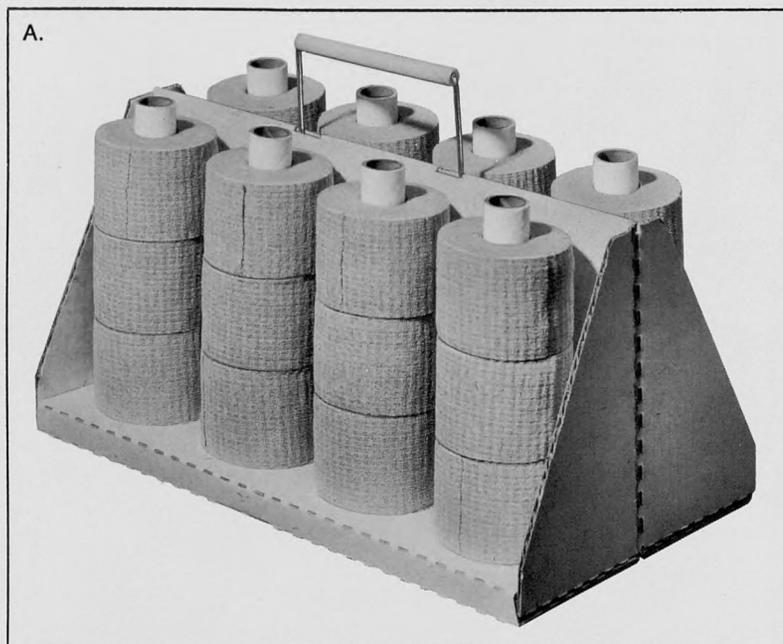


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Dick Butkus  
Oscar Robertson  
Bobby Hull  
Pete Rose.  
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your local team dealer for a demonstration of Conform and HTC trainers' tapes and Pro Wrap pre-taping underwrap—exclusive from Bike!



## With Conform,<sup>®</sup> HTC, and Pro Wrap in your training room...you'll need no other.

**New HTC\* "Super Conform" Elastic Tape.** Ideal heavy-duty strapping tape—exclusive with Bike. HTC means High Tensile Conform. Perfect conformability, plus greater tensile strength needed when taping high stress areas such as knees and elbows. Maximum support and protection. Unwinds easily off exclusive, crushproof, white plastic cores that let you use all the tape—including the last inch. 12" x 5 yard rolls.

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## Wool helps prevent blisters.

Wet socks create a harsh, abrasive action between the foot and shoe. Moisture keeps the skin soft and susceptible to abrasions, blisters and infections.

## Wool keeps shoes drier.

By dissipating or "bleeding away" perspiration, wool fibers prevent the shoe uppers from becoming saturated. Shoes that are always damp are the breeding ground for fungus.

## Wool makes shoes last longer.

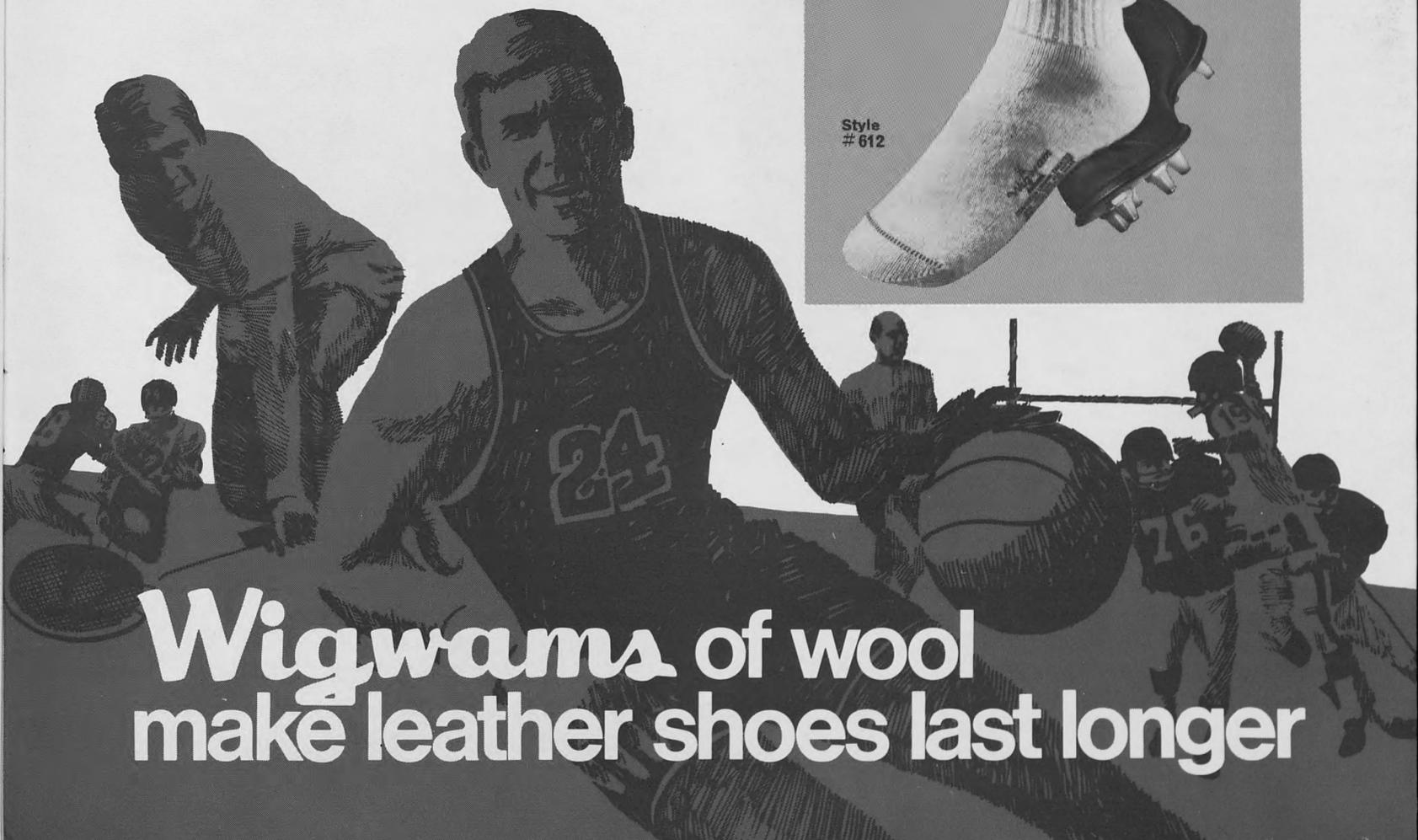
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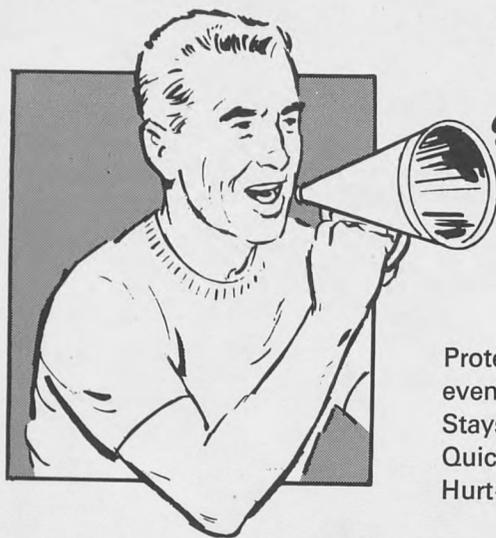
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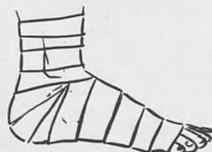


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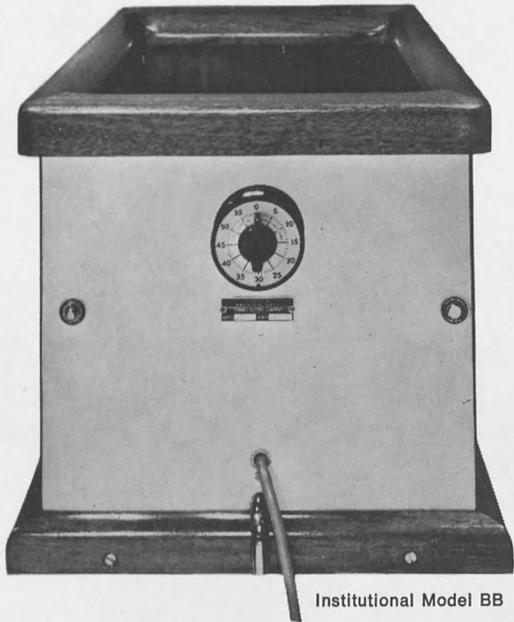
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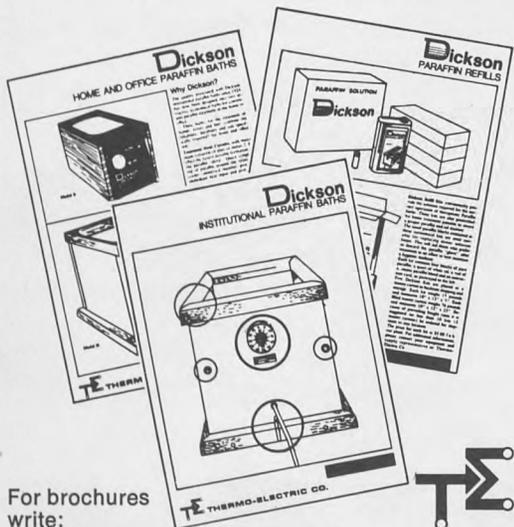
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1. All manuscripts should be typewritten on one side of 8½ x 11 inch typing paper, double-spaced throughout.

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

3. When references are made to other published works, the list of references should be in the following order: a) books: author, title, publisher with city and state of publication, year, page; b) articles; family names and initials of all authors, title of article, either the full journal title or the

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6. If reprints are desired, request should be made at time of manuscript submission. Each author will bear the cost of his own reprints.

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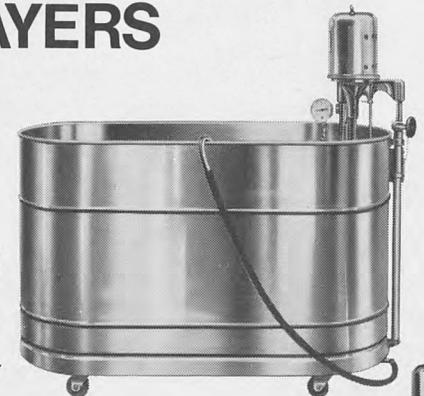
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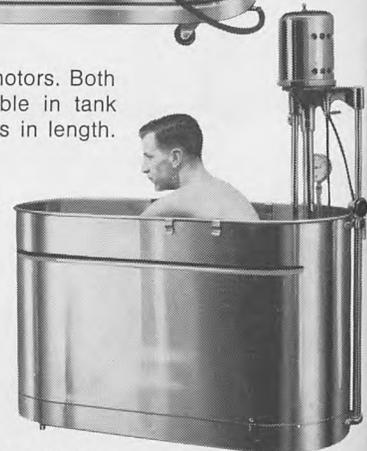
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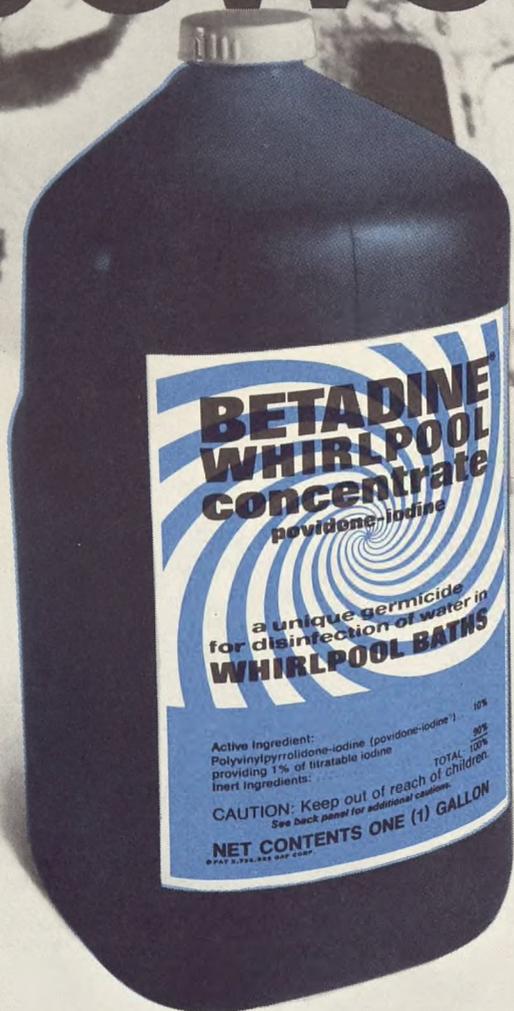
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