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THE JOURNAL OF THE
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VOLUME 7
NUMBER 3
JUNE 1972

IN THIS ISSUE:

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THE JOURNAL OF THE NATIONAL ATHLETIC TRAINERS ASSOCIATION

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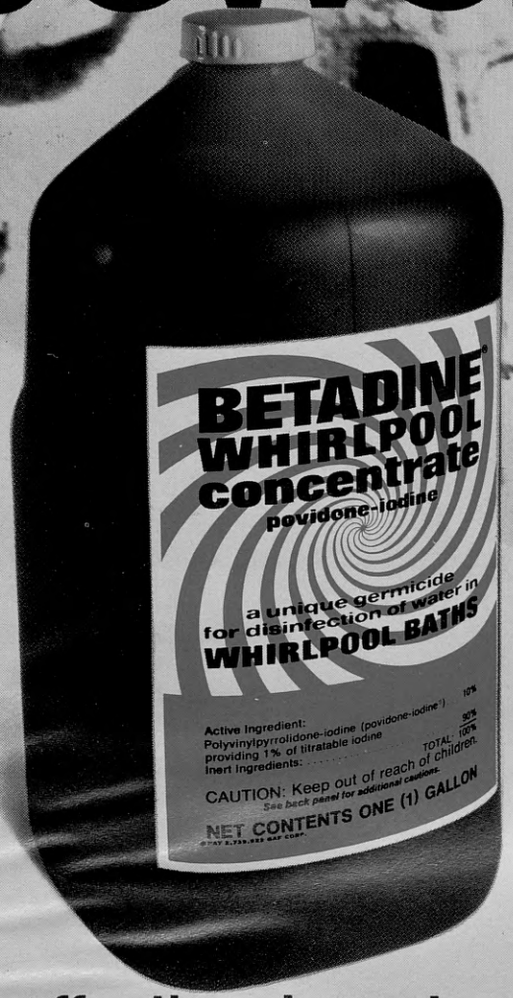

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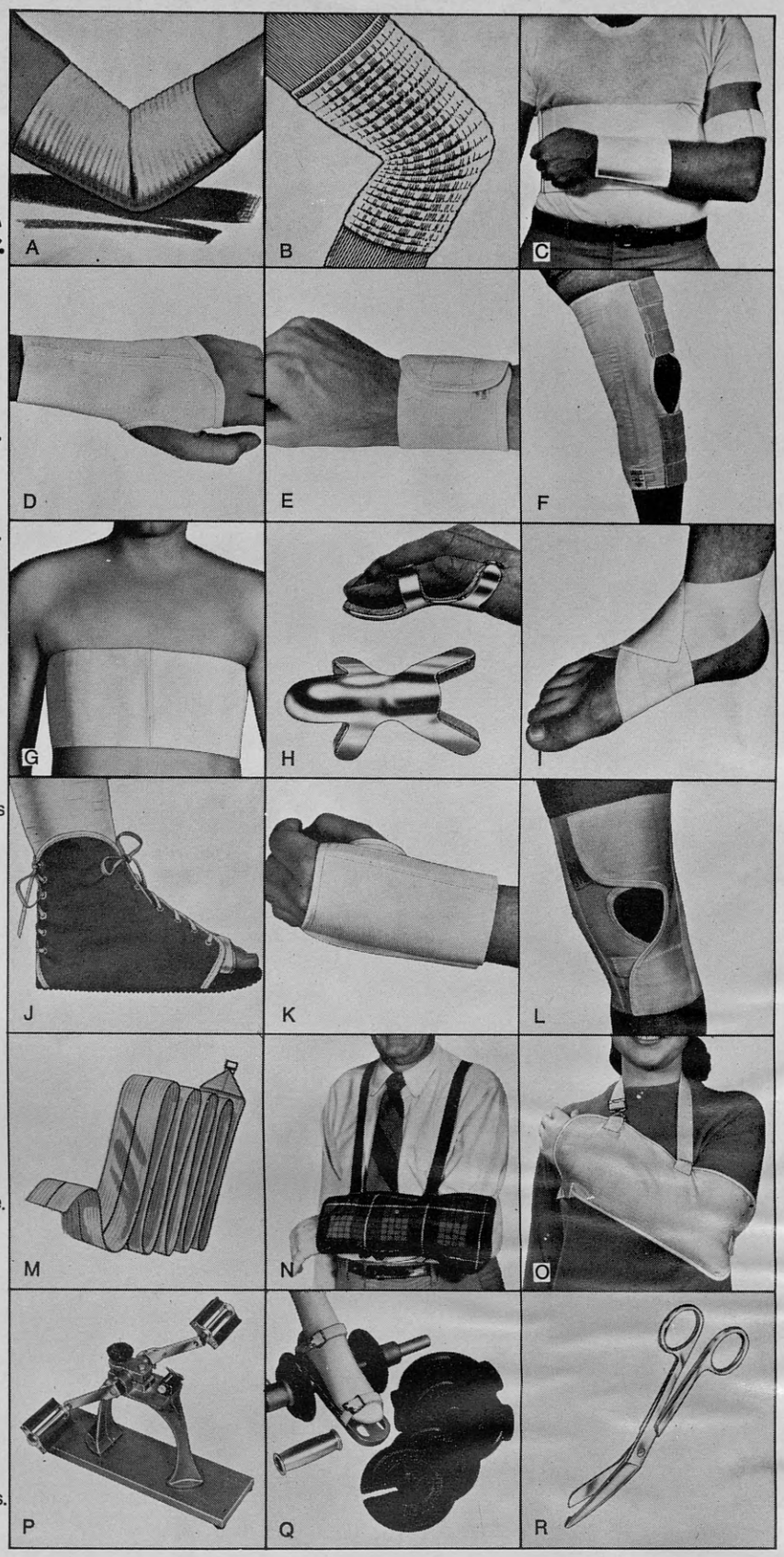

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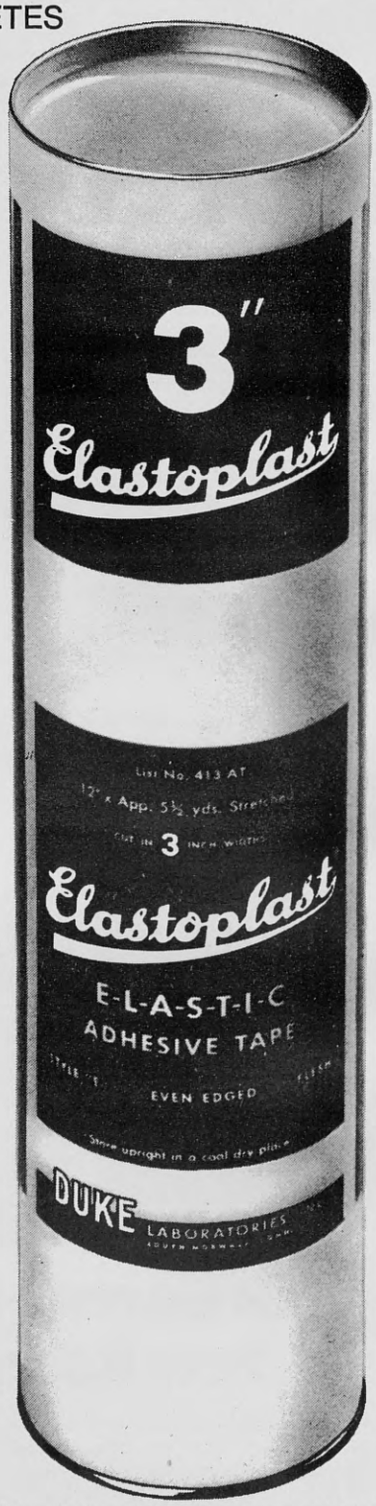

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COMMENT:

Growth, Looking Ahead?

Membership in the National Athletic Trainers Association has been growing steadily since the establishment of the Association over twenty years ago. This indicates not only the growth of an organization, but also the expansion of a profession. This is a growth in both areas that athletic trainers, both past and present, can view with pride.

Looking to the future, the question arises as to whether the National Athletic Trainers Association and the profession of athletic training will be able to continue to expand to meet the needs of health care in athletics.

Some people point with dismay and frustration at the school systems who are cutting back in the area of athletic budgets, to the closing of some of the small private colleges and to the professional sports which in many cases are filled with qualified athletic trainers. This point of view seems to indicate that future growth of the profession is not a bright picture.

Others, however, point to more encouraging areas such as the rapid growth of athletic training clinics and camps and the great response that the majority of these sessions have received. At present, there is no clear cut evidence of the future of athletic training. But, there are some indications as to what steps should be given emphasis by the athletic trainers of today and by the National Athletic Trainers Association.

Although recruitment of men and women into the field of athletic training is an important aspect in the growth of the profession, it would be most hypocritical to place an emphasis upon recruitment when future placement is questionable. Recruitment of potential athletic trainers and accepting the responsibility of placing these men in suitable positions as they become qualified *must* stand as important goals in continued growth.

An important area of Association affairs which can contribute to the promotion of these vital areas is that of an increased membership. The membership classifications of the National Athletic Trainers Association cover almost any individual who might be interested in the advancement of health care for the athlete. One of the most conspicuous membership classes in its availability to a great spectrum of interested parties is that of the Associate Member. This classification also stands out in the membership rolls as one of the smaller membership areas. And yet, it can be the members of this classification who can contribute greatly toward the advancement of the profession. The Associate Member in one who is working professionally in education, athletics, research or medicine. This is a type of individual who could help to contribute to the area of job development as his sphere of influence and knowledge will extend beyond those of most athletic trainers to help promote the fact of the existence of an important need for the athletic trainer in contemporary athletics.

Each membership classification within the Association is important, as each group serves in some manner toward the continued development of the profession. Each current member of the N.A.T.A. can provide a contribution to the future of athletic training by being well versed in the various membership classifications and the qualifications for each, and then encouraging all who express an interest to apply for membership in the National Athletic Trainers Association.

CLYDE STRETCH

Letters to the Editor

Help for Female Trainers

To the Editor:

As a member of the NATA, I would like to request the help of my fellow trainers in securing information on the care and treatment of the female athlete. I am currently working on my doctoral thesis, a manual on athletic training for women, and the information would be invaluable. Currently there are so few women trainers that many of the men have had to take on the additional responsibility of caring for the female athletes. They perhaps have had to modify training techniques in caring for the female and the knowledge they have can benefit women trainers and coaches.

The NATA Journal would be the best method of reaching trainers throughout the United States. If possible would you include such a request in the next edition of the journal? Any information in the following areas will be greatly appreciated.

1. Incidence of injuries among female athletes.
2. Common injuries among female athletes.
3. Treatment techniques used on female athletes or modified for them.
4. Taping techniques used on female athletes or modified for them.
5. Rehabilitation programs for female athletes.
6. Plans for improvised equipment that is inexpensive and could be included in a women's training room.

Anyone who submits useful information will be given credit in the thesis. Information should be sent to me at the Department of Physical Education for Women.

Thank you for your time and help.

Miss Holly Wilson
Certified Athletic Trainer
The University of Iowa
Iowa City, Iowa 52240

Development or Discretion?

To the Editor:

As we are working with the youth of our schools, we are faced with two important problems, the total physical development and ascertaining how much and or how little emphasis to place on certain areas of his body.

One of the problems that is of major importance to us is the avulsion of bone from the crest of the ilium. This injury usually occurs to an athlete while he is either running or jumping, but what really causes this injury to happen is that as the athlete strains, the overdeveloped quadriceps femoris hyper-contracts to either lift the leg or extend it. As the process occurs excess pressure, as the result of the overdeveloped muscle mass, is applied to the origin of this muscle, at the crest of the ilium, and the avulsion takes place. This seldom happens to the matured athlete. "Why"? you ask. The growth center, epiphysis, on the hip has not yet ossified completely and is still soft. So as the "Super Quad" contracts, the injury occurs.

This brings us to the second phase of our problem —discretion. Many times we see a well-developed young man, and we say, "With some real training this guy would be a warhorse player." So what do we do— we put him in our training program, weights, running, agility, and so on. Eventually one day we see him finish a 50 and suddenly stand still or see him running the quarter and suddenly pull up limping, or after jumping practice, he complains of pain and discomfort to the crest of the ilium. Generally this is of such nature that he must lay-off from all exercise; thus we lose him for weeks or an entire season.

As we evaluate our program, we would probably see much more quad concentration than hamstring or lower leg developers. Such things as squats (half or full), leg presses (200, 300, 400+ pounds many times), leg extensions (150 lb. or more) and on we go. Here is where we have to decide on development and discretion. Most doctors usually explain this to we lay people by saying that his muscles are ahead of his bones, and this satisfies us. But now we must ask ourselves why they are so much ahead. Has our effort to avoid a knee injury caused another problem not as severe physically to the athlete, but just as destructive structurally to our program? The outcome may hinge on this boy's performance now and in the future.

Now we must sometimes exercise our discretion and let nature determine development, just as we must now let nature heal this imbalance.

In the last 5 years I have seen this injury occurring more and more in high school athletics and I believe our answer lies in less mechanical concentration and therefore allowing for a more natural and even muscle to bone development to take place.

John Donaho
Athletic Trainer
Forest Park High School
Beaumont, Texas

Ankle Taping, Wrapping, and Injury Prevention

DANIEL LIBERA

Athletic Trainer
University of Northern Colorado
Greeley, Colorado

Prevention of injury is one of the many facets of the athletic trainer. Means of prevention vary from physical conditioning and rebabilitation to protective equipment and application of tape or wraps. Since the ankle, next to the knee, is the most often injured bodily part, it should receive a significant portion of the trainer's preventive time. Due to the amount of time and expense that is put forth in this area, perhaps the terms ankle taping, ankle wrapping, and ankle injury prevention should be synonymous.

Despite the great usage of cloth and adhesive strapping, little research has gone into analyzing their effectiveness. Factors such as need, purpose, method, support, and retention are either vague, subjective, or nonexistent in the literature.

The ankle has been recognized as one of the most vulnerable areas of the body in relation to athletic participation. Statistics compiled by McCoy (6)[1] and Moore (7), among others, pointed out that ankle injuries accounted for approximately 25% of all injuries, this incidence being second to the knee. The mechanism of ankle sprain is usually forced inversion, planar flexion or a combination of these two motions. O'Donohue states that approximately 85% of all ankle injuries are of this type (8). A brief review of structural anatomy will demonstrate why inversion is usually the rule (1, 2).

The anatomical structure of the ligament and bones create a smoothly functioning and integrated unit. Normal motion requires flexible, but stable ligaments. Motion in the ankle is produced through two separate joints functioning together; talotibial, or mortise joint, permitting plantar and dorsal flexion, and the subtalar permitting inversion and eversion. The tibial and fibular malleoli form a mortise-like slot to receive the talus. In dorsi flexion no lateral motion of the talus is permitted, while in plantar flexion some is possible. Most of the lateral motion is provided by the calcaneus moving around the talus. Because the lateral malleous is longer in the vertical plane than the medial malleous, this tends to restrict eversion while permitting greater movement in inversion. The amount of eversion is usually 20–25° while inversion is 40–45°.

The anterior talofibular ligament is most commonly injured. When stretched, its sensory nerves invoke a muscle reflex spasm which protects the joint from further motion. The prime everters, the peroneal muscle group, have little functional strength or mechanical position to greatly resist inversion stress. In the plantar flexed-inversion motion the fibers of this ligament run parallel to the line of stress.

The practice of taping an ankle for support to the ligaments has been utilized for at least a century. Stretch (35) mentions the use of adhesive ankle strapping in the U.S. Army in the 1880's. The use of cloth wrapped around the ankle has been used at least as early as 1930 when it was used at Harvard University as a regular preventive procedure (9). During the long use of taping or wrapping, numerous methods have been developed. Dolan (3) mentions there are at least 24 different methods of taping an ankle with each trainer having his own variation of a tape or wrap application.

The intent of these methods of taping and wrapping appears to be twofold: first, to support the ligament and tendons which prevent excessive inversion of the ankles; and second, providing this support with little plantar and dorsal flexion restriction which would hinder running. McCorkle (5) utilized an electrogoniometer while running on a treadmill with the ankles taped and concluded that running agility time was not affected by the wearing of tape through functional plantar and dorsal flexion was reduced 6.4%.

The consensus of opinion is that taping or wrapping will reduce the incidence and severity of ankle injury, although some recommend tape and others advise wraps to accomplish this means (3, 8, 10, 15). Ward (16) mentions that taping is harmful due to restrictions on circulation, atrophy, and a false sense of security and high stress levels that results.

[1] Numbers in parentheses designate References at the end of the paper.

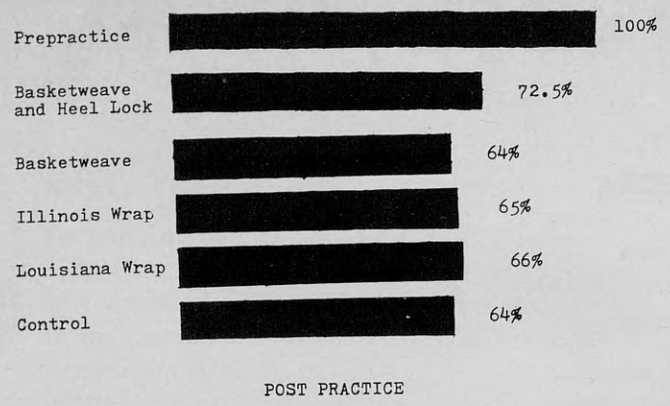

Fig. 1 Percentage of maintained support after practice sessions

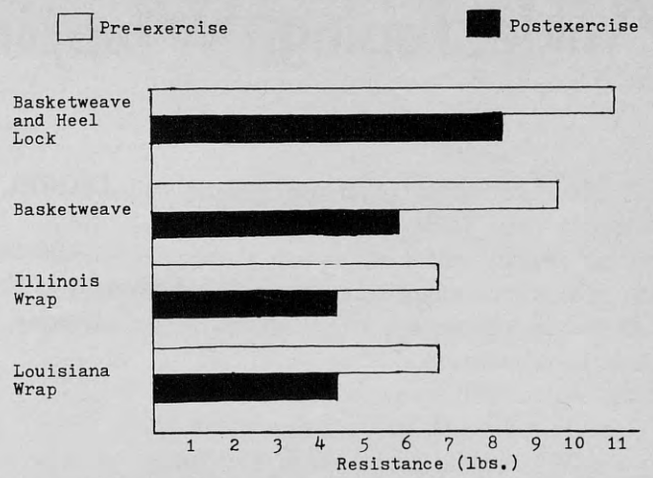

Fig. 2 Net resistance of methods under pre- and postexercise conditions.

Despite all that has been written on ankle injury prevention and protection, there is a scarcity of evidence that either supports or rejects these practices. A survey conducted by Simon (13) demonstrated no scientific evidence to support the expense of taping or wrapping, but rather only opinion. Related to this survey was a study which concluded that neither taping or wrapping was superior in preventing ankle injury over each other. Quigley has written that the use of ankle wrap has prevented ligament ruptures and lessened sprain disability over a 15-year period of investigation. Zeno (17) utilized stress x-ray techniques to determine talar tilt and concluded that athletes with known ligament laxity could benefit from some specific protection whether this be taping, wrapping, or exercise. Rhodes (12) used stretching exercises, but found there was no effect on injury prevention. However, the groups that utilized these exercises missed less practice time when an injury occurred.

Malina (4) and Rarick (11) examined the effects of a ten-minute period of exercise on the support offered by methods of taping and wrapping. The combined results indicated that all methods lost approximately 40% of their initial support following the activity period. A basketweave with stirrups and heel lock on the skin proved superior in support to taping over a stockinette or the Louisiana ankle wrap.

In order to determine the effects of a football practice session on the support and retention of tape and wraps, a study was undertaken. Ten football players playing the positions of wide receiver or defensive back were utilized as subjects. Each subject experienced five treatments. The Louisiana ankle wrap, Illinois ankle wrap, Modified basketweave tape, Modified basketweave and heel lock, plus a control or no protection were randomly applied to the subjects over the testing period. All wraps were applied over a cotton sock. Tape was applied directly to the skin after application of adherent. The subjects then participated in a spring football practice of 110 minutes consisting of the usual drills and scrimmage situations.

Initial support and retention of the method's support was measured by a device similar to the methods employed by Rarick (11) and Malina (4). The subject assumed a supine position on a table with the treated leg placed in a wooden frame which prevented any lateral motion outside of the ankle. A cuff with an attached eye hook was secured to the foot over the distal head of the fifth metatarsal. Through the use of a cable and pulley system, the secured foot could be passively pulled through a motion of 60° plantar flexion and 50° inversion. This simulated the mechanism of the inversion stress put on the anterior talofibular ligament. The point of pain was approximately six inches of movement for all subjects. Care was taken so that muscular contraction would not come into play. A cable tensiometer measured through the movement. Measurements were conducted before and after each practice session.

The gathered data was grouped and meaned for each treatment. For each method the maximal tension (six-inch postion) was used for statistical treatment. As shown in Figure 1, all treatments substantially lost support due to the practice session. The basketweave and heel lock maintained 72.5% of initial support while the other methods were about 65% effective. The decrease in the control or unprotected ankle indicates the effects of the practice on the ligamentous support of the joint. The studies by Malina and Rarick demonstrated similar results though the percentage of lost support was slightly greater.

Figure 2 compares taping and wrapping methods pre- and post-practice. The net resistance is indicative of tape or wrap support minus ligamentous support. The

results of a multiple range test ($p < 0.01$) verify the conclusions one might make from a visual inspection of the graphs. The taping methods provided significantly greater support (34%) than the ankle wraps in the pre- and post-measurements. Further examination reveals post exercise taping with a heel lock superior to pre-exercise wrapping as well as a basketweave without heel lock method. Retention of support in preventive methods should be a consideration since McCoy's data (6) pointed out that more injuries occur in the second half of a game or practice. Of the methods examined, the use of a heel lock in taping significantly provided higher levels of support and retention than taping without a heel lock or wrapping methods. Besides the methods employed, the tensile strength of the tape, amount used, and the applicator are variables that can affect overall support.

IMPLICATIONS

Some implications can be drawn from the results obtained. Participation in a football practice will substantially lessen the level of support of the taping or wrapping observed. Ankle taping will provide superior support and retention than wrapping. The use of heel lock will provide greater retention of support than those methods without one.

Despite these conclusions, pertinent questions still arise. How much support is needed? Obviously taping or wrapping does not eliminate ankle injury. The higher protection afforded by taping might not be necessary if an ankle wrap will prevent injury as well. Perhaps developing joint strength should be given as much time as taping and wrapping. This could be an important factor in severity and recovery time. Obviously more research is needed in the area of ankle injury prevention.

SELECTED BIBLIOGRAPHY

1. Cailliet, Rene, *Foot and Ankle Pain*, Philadelphia: F. A. Davis Company, 1968.
2. Coleman, S. S., "Ankle Joint Fractures and Ligamentous Injuries," *Proceedings of the Fifth National Conference on the Medical Aspects of Sports*, Chicago: American Medical Association, 1962, pp. 19-21.
3. Dolan, J. P., and Holladay, L. J., *Treatment and Prevention of Athletic Injuries*, 3rd ed., Danville, Illinois: Interstate Printers and Publishers, 1967.
4. Malina, R. M., Plagenz, L. B. and Rarick, K. L., "Effects of Exercise upon the Measurable Supporting Strength of Cloth and Tape Ankle Wraps," *Research Quarterly*, 34: 158-165, May, 1963.
5. McCorkle, R. B., "A Study of the Effect of Adhesive Strapping Techniques on Ankle Action," Unpublished Master's Thesis, Springfield College, 1963.
6. McCoy, E. B., "Football Injury Report," National Collegiate Athletic Association Committee on Sports Injuries and Safety, Pennsylvania State University, University Park, Pennsylvania, January, 1965.
7. Moore, R. J., "A Study of Football Injuries at Three Big Ten Universities," Unpublished Master's Thesis, University of Illinois, 1967.
8. O'Donoghue, D. H., *Treatment of Injuries to Athletes*, Philadelphia: Saunders, 1962.
9. Quigley, T. B., Cox, James, and Murphy, Joseph, "A Protective Wrapping for the Ankle," *Journal of the American Medical Association*, 132: 424, December 14, 1946.
10. Quigley, T. B., "Management of Ankle Injuries Sustained in Sports," *Journal of the American Medical Association*, 169: 1431-1436, March 28, 1959.
11. Rarick, G. L., Bigley, Gene, Karst, Ralph, and Malina, R. M., "The Measurable Support of the Ankle Joint by Conventional Methods of Taping," *Journal of Bone and Joint Surgery*, 44A: 1183-1190, September, 1962.
12. Rhodes, E., Van Huss, W. D., and Nelson, R., "The Effects of a Preseason Ankle Exercise Program on the Prevention of Ankle Injuries in High School Basketball Players," *Journal of the Association for Physical and Mental Rehabilitation*, 14: 78-79, May-June, 1960.
13. Simon, J. E., "Study of the Comparative Effectiveness of Ankle Taping and Ankle Wrapping on the Prevention of Ankle Injuries," *Journal of the National Trainers' Association*, 4: 6–7, Summer, 1969.
14. Stretch, C. J., "The Gibney Ankle Strapping — A Brief History," *Journal of the National Athletic Trainers Association*, 2: 16, Fall, 1967.
15. Thorndike, Augustus, *Athletic Injuries*, 5th ed., Philadelphia: Lea and Febiger, 1962.
16. Ward, Christopher, *Sports Injuries, Prevention and Treatment*, London: Max Parris, 1954.
17. Zeno, Joseph, "The Degree of Inversion Mobility and Its Relationship to Ankle Injuries," Unpublished Master's Thesis, University of California at Los Angeles, 1964.

Dermatology in Athletics—Third of a Series

Prickly Heat

L. W. STAUFFER, M.D.

Eugene, Oregon

Prickly heat is frequently a minor but potentially major complication of living in areas with sufficiently high day and night temperature to demand 24-hour sweat gland function. The condition is more severe when prolonged exertion adds to the sweat gland load.

Two main types of this disorder are recognized. In miliaria rubra, lesions are small red papules (bumps) varying from pin head to match head size, surrounded by 3 to 5 mm. of redness. In miliaria crystallina, the papule tip instead of being a solid structure is a small 1 to 2 mm. thin walled blister filled with crystal clear liquid—probably trapped sweat. This eruption can develop anywhere on the skin except palms and soles. The disease is inordinately severe before axilla, scalp, and genitals are involved.

Symptoms vary with degree of involvement from pesky prickling to a severe burning itch. Since each lesion represents a knocked-out sweat gland, widespread involvement will drastically alter the mechanism of body temperature control. This brings in the possibility of heat stroke as a symptom and complication of prickly heat.

Miliaria is caused by prolonged sweating—continuous function of the sweat glands for 48 to 72 hours. Sweat glands given a rest period do not develop the disorder. Pre-existing injury such as abrasion, friction from clothing, sunburn, over-washing, mild contact allergic reaction can increase the incidence and severity of prickly heat. Occlusion increases the probability of trouble. Some skins resist this disorder much more than others. Unfortunately no way has been found to predetermine which skin is susceptible. Certainly any athlete with a history of prickly heat should avoid around the clock sweating.

Miliaria may be confused with other skin eruptions.

Scabies (seven-year itch) itches severly at night, usually does not involve the back or face, and usually does involve the glans penis. The typical lesion of scabies is a papule 3 to 5 mm. in diameter with a small blister-like top containing a pin prick sized black dot in the center. There is almost always much evidence of scratching, in fact an unscratched lesion can be hard to find. (For additional information see article on Scabies.)

Papular pityriasis rosea is more common in the Spring and Fall and involves the body from the neck to elbows to knees (if full blown) with some "leaking" of lesions to the forearms and legs. This itching rash has oval papules, the oval diameter follows the line of cleavage of the skin so it tends to "circle" the armpits and follow a down and out pattern from the back to the abdomen.

Clothing contact dermatitis may be difficult to differentiate from prickly heat. Clothing dermatitis tends to occur in moist friction areas such as the armpit, under belts and straps, and along muscular ridges of the back. There is itching, sometimes severe, with clothing dermatitis. The rash is usually quite red, covered with fine papules or vesicles (blisters) and frequently is moist from oozing of serum. The most dependable finding for differential diagnosis is lack of eruption in areas of depression of the skin, such as the grooves along the spinal column, deep skin folds, etc.

Drug reaction from sulfa, aspirin, muscle relaxing drugs, and many others can produce a diffuse, finely papular eruption. These usually are not surrounded by a halo of redness, although the papules themselves are often red. Itching, not burning, is the usual symptom.

Prevention is the real treatment for miliaria. Air conditioned rooms for chalk talks, studying game movies, eating and sleeping will adequately interrupt the 24-hour sweat cycle. Limiting the use of soap to axillae, groin, and feet will help. Clothing should be loose, soft and not too occlusive. Attempting to fool the skin with cooling dusting powders, in my experience, has not been effective.

If prickly heat does develop, keep the skin cool in an air conditioned room at 70 to 74 degrees with 30% humidity. Avoid friction from clothing. Sponge periodically with cool water, spray with aerosol steroids 4 or 5 times daily. (Many people waste most of this medication. If you can see it on the skin, you have overtreated.)

Should secondary infection develop, manage it as described for infected abrasions and impetigo.

Recent studies indicate a time lapse of 3 to 6 months before sweat glands begin functioning again after being knocked out by miliaria. An athlete who has had prickly heat within that period of time is a likely candidate for heat stroke if more temperature regulation is called for than his damaged skin can deliver.

Treatment of Football Injuries

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Eugene, Oregon

FOOTBALL has long been a valued segment of the sports heritage which has become an integral part of the American way of life. Educators and physicians alike, although divided on some issues, agree that a properly planned and controlled sports program has definite educational, physical and social values. Such a program not only builds strong, healthy, coordinated bodies, but also stimulates the desire for competition so essential for progress, aids in socialization through the necessity for teamwork and cooperation, brings out qualities of self-motivation, pride of achievement, emotional stability, and reduces juvenile delinquency. Be that as it may, the concern of many of us is that permanent injury may follow the rigors of this vigorous body contact sport. As physicians our major objectives lie in the prevention of injury, treatment of such when it does occur, and early rehabilitation of the injured athlete. In the last instance the attitude of the physician is important for without confidence in him the injured player will not cooperate and submit to the technical aspects of adequate treatment, or he may hide an injury for fear of being eliminated from his chosen sport. The goal must be full recovery so that the player may return to participation with **safety;** if this cannot be accomplished a little time may be well spent explaining the medical reasons for restriction from the game. Without comprehension of these reasons the teenage and preteenage athlete can scarcely understand why early, adequate and thorough treatment offers the quickest route to recovery and return to competition.

The first step in athletic safety is to ensure physical fitness through the pre-participation physical examination. This serves to determine those physically qualified for play, eliminates the unfit, and segregates those who need medical treatment either to raise the physical level to a point which will permit participation or to improve performance. The prospective athlete is first graded into categories of body build, strength and physical maturity. This is particularly important in the pre- and early teenage groups where matching of opponents is essential if injury to growing tissues is to be avoided. For instance, the twelve-year-old child may vary in physical maturity between the physiological ages of nine and fifteen. This does not necessarily apply to body size alone but is primarily concerned with musculoskeletal development and coordination. Fortunately there is a fairly good correlation between somatotype, muscular strength, physical maturity and athletic performance which naturally segregates the more advanced physical types into the better teams. The big, fat, slow boy (the endomorph) and the thin, gangly elongated one (the ectomorph) will almost routinely be more immature, weaker, and less coordinated than the muscular well-developed "athletic type" (mesomorph and meso-endomorph). Muscular strength can usually be evaluated by gross testing, although specific strength tests give more reliable information. Physical maturity can usually be judged by general body development, the appearance of pubic hair, etc., but in cases of doubt x-ray of the wrist for skeletal boneage (which parallels physical maturity) will be of value. The obvious import of such tests is to avoid mismatching of opponents. When this is done, examination by systems of the various parts of the body is carried out. The physicians should always bear in mind that it is just as important to the individual to determine those physical defects with which the athlete may safely compete as those which would eliminate him. The psychic trauma which may occur when the stamp of "cripple" is placed on a boy may have a major impact on his future, whether it be on the basis of musculoskeletal, cardiac, or other defects. For example, a functional heart murmur or orthopaedic defect may have little other than a diagnostic significance and to eliminate a boy on this basis would be unjust. Amongst the non-disabling conditions which are correctable, posture and flexibility should receive particular note, since they play a significant role in body movement and susceptibility to injury.

Although the physician has little actual control of other factors pre-disposing to injury, such as training, conditioning, knowledge of game skills, and protective equipment, it is important that he have the basic in-

[1]EDITOR'S NOTE: This article originally appeared in the spring, 1960 issue of this publication. So much of the material remains pertinent today, it was felt that is was well worthy of repetition.

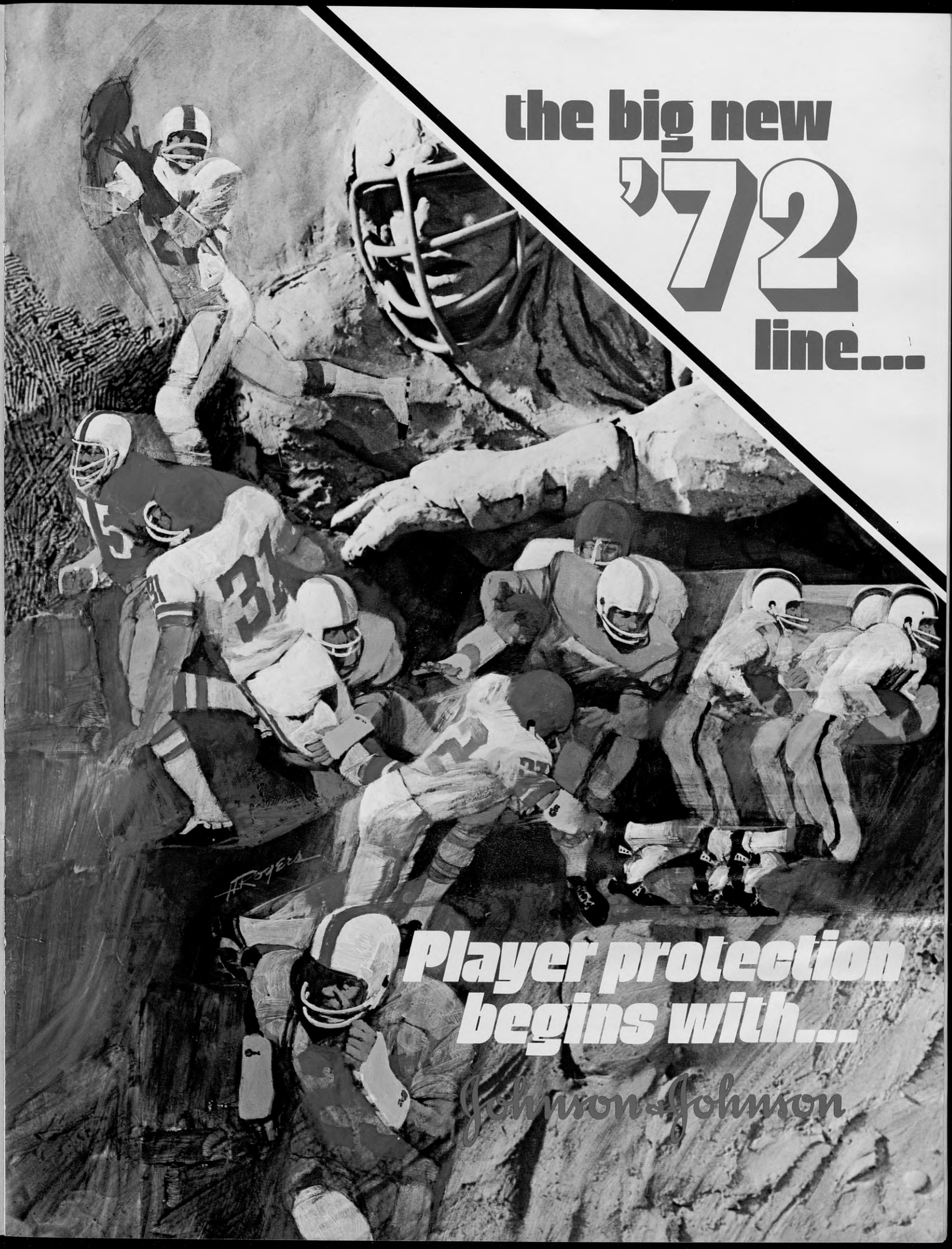
Term	Synonym	Definition
Simple Sprain	Sprain	A stretch injury of a ligament without loss of strength or joint stability.
Incomplete Ligament Tear	Moderate Sprain	A stretch injury with a partial ligamentous tear permitting loss of strength and joint stability in one segment of the range of joint motion only.
Subluxation	Dislocation	A stretch injury with a complete ligamentous tear permitting instability throughout the range of joint motion protected from abnormal motion by the torn ligament.
Dislocation		A stretch injury with a wide ligamentous tear permitting complete displacement of the joint.

formation as to when, where, how and to whom football injuries occur. This is well brought out by a recent study by Krause who compared injuries sustained in Oregon High Schools in 1955 with similar studies by Van Brocklin in 1948 and Lillie in 1939. Although the basis of injury varied somewhat in the three studies, because of better protective equipment and changing game techniques (trap blocking, etc.) the incidence and type of trauma has remained relatively constant over a period of years. He found that the halfback position was most hazardous and accounted for 26.27% of injuries and that the quarterback and center positions were safest. Blocking was the single greatest cause of injury. More injuries were likely to occur in smaller schools, in larger squads, in games (as contrasted to practice) in the last half hour of two hour practice sessions, and in the first (12.5%) and third (15.6%) quarters of games. Knee (11.3%) and ankle (7.3%) sprains have retained the lead in incidence throughout the years.

Since ligamentous traumata of the knee and ankle present the largest single group of serious injuries in football, the present discussion will be limited to this phase. Unlike fractures where therapy is well standardized and generally efficient, or contusions in which recovery with minimal disability is the rule, ligamentous trauma is all too often regarded as minor in nature and worthy only of palliative or expectant care. The old adage that a "sprain is worse than a fracture" should be altered to read "a sprain treated ineffectually or not at all is often worse than a well treated fracture." The genesis of the "laissez faire" attitude at first lay in a failure to understand the nature of ligamentous injury, its pathology, and the basic requirements for healing and repair. The system of nomenclature did not effectively describe the functional state of the involved joint at the following injury. With the development of definitive surgery, it became apparent that the extent of ligamentous injury may vary from a simple sprain without loss of strength or instability of the joint, to complete dislocation. To categorize these clinical types, a classification embracing a visual concept of the pathological anatomy better serves the clinician in orienting his concepts of treatment than one which deals with degree of damage to the ligament alone. The requirements of such a classification are that it must be simple enough to be understood by physician, coach, trainer, and participant, that it must use accepted medical terminology and that it must eliminate the connotation that ligamentous injuries are "just sprains" for this implies lack of seriousness, early return to participation, and palliative treatment only. By definition, a sprain is a partial or complete ligamentous tear resulting from a subluxation of the joint as it is forced beyond its normal range of motion. One extreme of this situation is dislocation where ligamentous tear is so extensive that the contiguous joint surfaces are completely displaced; the other, a simple sprain without loss of ligamentous strength or continuity. It has not been general practice to designate dislocations as primarily ligamentous injuries (together with associated tears of the joint capsule and synovia) but rather to categorize the displacement as the essential factor and to consider the residual abnormal mobility of the joint as an unavoidable sequela. The essential difference between dislocation and subluxation is simply one of degree: It is the extent of trauma to ligamentous and associated structures which determines whether the ligament remains intact, is partially torn, completely torn, or widely torn to the extent that joint dislocation occurs: and in direct corollary to the extent of ligamentous damage is the degree of joint stability which may be complete, may be unstable in one segment of the range of motion only (partial ligamentous tears), unstable throughout the range of motion (complete tears), or may be completely unstable so that the joint will actually luxate.

Since the clinical course is dependent upon the degree of joint displacement at the time of injury, the writer prefers the above classification which implies both the mechanism and the residual instability of the joint.

The function of ligaments and related structures and their response to trauma should be understood before discussing treatment. A **ligament** is primarily constructed to provide stability and restrict motion of those planes of movement for which the joint has been designed. It is composed of dense, relatively acellular,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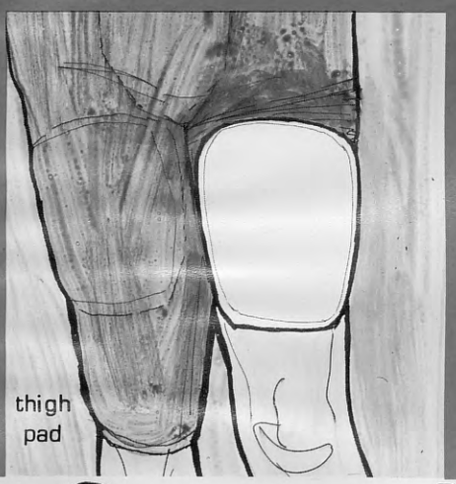

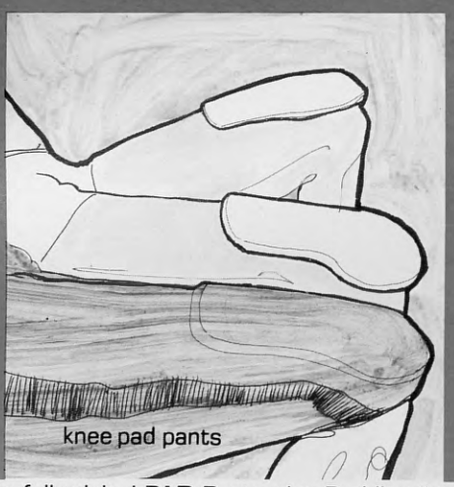

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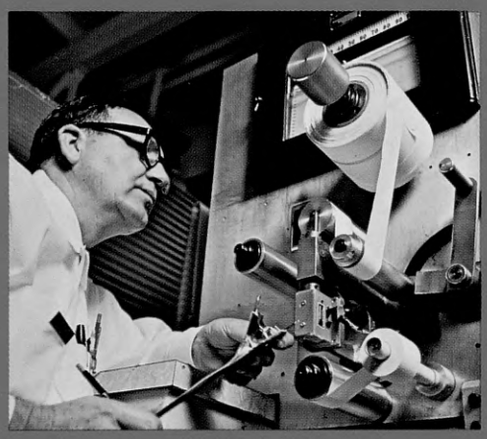

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A GUIDE TO THE TREATMENT OF LIGAMENTOUS INJURIES OF TH E KNEE AND ANKLE

Signs and Symptoms	Mild Sprain	Incomplete Ligament Tears	Subluxation	Dislocation
Pathology	Tear of a few ligamentous fibers only; no loss of strength	Partial tear of ligament (varies in extent from minor to major); definite loss of strength	Complete tear of ligament with subluxation; often sprain fractures at ligamentous attachments	Complete tear with joint displacement; often accompanied by fracture
Disability	+	++ to +++	++++	++++
Tenderness				
1. Degree	+	++ to +++	++++	++++
2. Location	Site of tear	Same	Same	Same
Pain on normal motion (early)	(—)	(—)	+	+
Pain on stretch of involved ligamentous	Mild	Moderate	Severe	Cannot be carried out due to pain
Ligamentous relaxation (abnormal motion)	None; Ligament intact	In one portion of range of motion only (i.e., in knee at 180° none; at 135° varies with extent of tear)	Complete	Complete
X-ray	Normal	Normal or sprain fracture; may show subluxation on stress x-ray	Normal or sprain fracture; subluxation on stress x-ray (use anesthesia if necessary in knee or ankle)	Dislocation with or without fracture

collagenous fibers arranged in parallel longitudinal bundles according to lines of tension. While it is flexible, it has very little elasticity so that when it is stretched unduly it will either tear in its continuity, be avulsed from its moorings to bone, or the ligamentous attachments may not yield but the bone itself may give way so that a sprain-fracture results. When a ligament is torn obliquely the sides of the ligament draw toward their attachment but remain in contact due to the nature of the tear and heal with elongation; such a ligament has lost its normal restrictive function. When the tear is transverse, the frayed ends of the ligament lose contact and a gap remains which must be bridged with scar tissue. This probably occurs when the ligament is torn within the elastic areolar covering which grips the lax ends and prevents them from falling back in place when the joint resumes normal position. If the ligament is allowed to heal with scar tissue bridging the gap, not only will it be elongated and weakened because scar tissue has little tensile strength, but its mobility is also likely to be impaired by cicatrix. **It is self-evident that there is definite fallacy in the assumption that bony alignment is an indication of normal ligamentous apposition.** Immediate surgical replacement of the ligament without tension is easy because of the inelastic nature of the tissue, but in seven to ten days the retracted ligament shrinks and the tissue becomes edematous and friable. This limits the opportunity for optimal surgical repair to the early post-injury period.

The joint capsule serves a somewhat different function. Rather than limiting abnormal motion it exerts a checkrein action to movement beyond the extremes of normal motion. Tears occur in the capsule when the restraining action of ligaments is no longer present and the full brunt of the traumatizing force is brought to bear upon it; capsular tears vary in extent relative to the amount of ligamentous injury. Synovial rupture occurs following more severe capsular tears.

In football, the knee and ankle receive the greater share of ligamentous injuries. Treatment is based on the pathologic sequence of events following injury:

(1) Rupture of the ligament.

(2) Bleeding from torn blood vessels (intra- or extra-articular).

(3) Hematoma formation.

(4) Absorption of hematoma, and

(5) Healing by scar tissue varying in amount with the hematoma. The goal of treatment is to obtain complete rehabilitation of the athlete.

In dealing with the ligament the treatment has three purposes:

(1) To restore the ligament to normal strength.

(2) To prevent healing in an elongated position.

A GUIDE TO DIAGNOSIS OF LIGAMENTOUS INJURIES OF THE KNEE AND ANKLE

	Mild Sprain	Incomplete Ligament Tears	Subluxation	Dislocation
Control of Bleeding	1. Ice early 2. Pressure dressing with sponge rubber 3. Immobilization	1. Ice early 2. Same 3. Same	1. Ice early 2. Same 3. Same	1. Ice early 2. Same 3. Same 4. Anatomic reduction of dislocation and fractures
Release of Vascular Spasm	1. Procaine injection 2. Ethyl Chloride spray (avoid frostbite)	2. Procaine injection in lesser tears	1. None	1. None
Absorption of Hematoma	1. Hyaluronidas injection 2. Fibrolytic enzymes: Trypsin, Chymotrypsin, Streptokinase, 3. Massage 4. Pressure dressing	1. Same 2. Same 3. Massage in lesser tears 4. Same	1. Same 2. Same 3. — 4. Same	1. As indicated 2. Same 3. — 4. Same
Control of Edema	1. Pressure dressing 2. Elevation not required	1. Same 2. Elevation	1. Same 2. Elevation	1. Where applicable 2. Elevation where applicable
Aspiration of Joints	1. Usually not necessary	1. As necessary	1. As necessary	2. As necessary
Surgical Repair Ligaments	No	In more severe partial tears	Yes	Yes
Immobilization	1. Strapping to prevent reinjury; early ambulation (ankle) or mobilization	1. Plaster splint with compression 2. Walking cast after swelling subsided until healing	1. Same 2. Same	1. Same 2. Same
Convalescent Treatment	1. Heat 2. Massage 3. Mobilization 4. Progressive resistive exercises 5. Adhesive strapping	Same	Same	Same

(3) And to preserve ligamentous mobility to insure free joint movement.

In a **simple sprain** where the length and strength of the ligament is unimpaired, the problem is simply one of eliminating hemorrhage and edema, providing transitory rest to the joint to permit healing, protecting it against re-injury by protective strapping, mobilizing the joint, and strengthening the supporting muscles. The patient with the simple sprain is incapacitated for only a few days before return to competition, and the principal problem is to prevent further injury which may result from lack of normal use of the joint.

In a complete **subluxation** of the knee or ankle, the restoration of bony alignment and cast immobilization will not re-establish the length and strength of the ligament. Here the indication is clear-cut: re-establish the ligament through surgery or be faced with a permanently relaxed and weakened ligament and an unstable joint. Since surgical repair may be done easily in the first ten days following injury with excellent results in the hands of skilled surgeons, and since the results of later surgery or reconstruction are progressively poorer with each successive lapse of time, it is essential that the diagnosis and decision for surgery be made early. The "wait and see" attitude has no place in treatment for it can only mean acceptance of avoidable disability. An athlete with an unstable knee or ankle is rarely able to return to running or contact sports.

Dislocation or fracture dislocation is merely a more extensive form of subluxation and, like it, demands early reconstruction for the predicament of the ligaments is no different than that in subluxation but is simply complicated by fracture and extensive capsular damage.

It is the **incomplete ligament tear** with partial subluxation that offers the clinician the greatest challenge, for here one portion of the ligament remains in continuity while the other is subjected to a tear of varying degree. One must not fall into the diagnostic trap of examining the joint in one position only, for if the section of the ligament protecting this position is in continuity there will appear to be no damage. For instance, if the tibial collateral (medial) ligament of the knee is examined in extension and the posterior portion of the ligament is intact, no relaxation will be demonstrated on forced valgus; on the other hand, if the anterior portion of the ligament has been torn this same knee, when placed in 35° to 40° of flexion will demonstrate abnormal medial motion. Since the knee is most commonly injured in flexion, this latter test assumes great importance. The choice of treatment actually depends on the extent of the ligamentous damage. If slight, as demonstrated by minimal abormal mobility, cast immobilization from four to six weeks will be adequate; if severe, ligamentous repair should be carried out. I know of no way other than experience to select the type of treatment for moderately severe partial tears. Clinical judgment remains the guide in selecting the method of obtaining ligamentous apposition and if there is a doubt one should err on the side of perfection rather than expediency.

Post-traumatic swelling may arise either from hemorrhage or edema. Bleeding from torn vessels is usually responsible for rapid early swelling, while reactionary edema usually follows several hours to several days later. Regardless of its origin, swelling must be controlled for if it is not, excessive scar tissue will follow in its wake and may restrict joint motion; in the first instance through the organization of the hematoma and, in the latter, by the diffuse interstitial fibrosis which follows chronic waterlogging of tissues.

In the immediate post-injury period swelling is controlled by a temporary bandage and the use of ice water. Cold will cause temporary vasoconstriction and minimize bleeding into the tissues. The time limits of its effectiveness for this purpose is about twenty to thirty minutes; following this, a reactionary vasodilatation occurs as the body attempts to counteract the reduced skin temperature. The subsequent value of cold is therefore based on its well known sedative effect which often provides considerable comfort to the patient. The next step is the application of the pressure dressing. Cotton or sheet wadding may be used about the joint, extending well above and below. Sponge rubber is used for additional compression and placed over the sites of hematomata and the natural hollows about the joint which might be spanned rather than compressed when the covering elastic bandage is applied. Such hollows are found at the sides of the patella in the knee and about the malleoli in the ankle.

Once a hematoma has formed every effort should be made to hasten its absorption. If healing occurs through organization of a large clot, residual scarring is excessive and may encumber joint and soft tissue mobility. While diffision of the hematoma by a sponge rubber pressure dressing is the most effective method, massage has a valued place in the armamentarium of treatment in instances where immobilization is not required. It should only be undertaken after bleeding is controlled and then should start at the proximal edge of the area and work the tissue fluids toward the trunk. The efficiency of his method is greatest when carried out several times daily rather than two or three times a week, which is little more than palliative treatment. The use of trypsin, chymotrypsin, and streptokinase and streptodornase may also hasten the absorption of the hematomata and edema. The efficiency of these drugs is variable: in the author's experience it has proven dramatically effective in some instances, has appeared to hasten decrease in swelling in many cases, but in about a quarter of the cases has had little or no effect.

Aspiration of joints is carried out for diagnosis, to aid in the application of pressure dressings, and to increase healing and prevent intra-articular damage. In the initial stages aspiration is often necessary to relieve the pressure within a joint so that pain may be relieved and examination may be carried out throughout a wider range of motion than otherwise possible. The presence of blood within a joint is indicative of synovial or capsular damage. This is of prognostic value as well as being a therapeutic guide. Intra-articular swelling is a barrier to the application of pressure dressings since a swollen joint will not permit the pain caused by the increased tension resulting from their application.

A word might be said of the use of procaine derivatives. They are used in minor sprains to relieve pain and release vascular spasm, and thus allow earlier mobilization of the joint. In incomplete ligament tears and subluxation it is also of value in diagnosis since the ablation of pain will permit examination to be carried out more readily and will often be adequate for the taking of stress x-rays in the knee and ankle to determine the extent of abnormal mobility. They should never be used to "keep a player in the game" in which he would not otherwise be able to compete since this invites further injury and morbidity.

SUMMARY

The most important aspects of football injuries is prevention by matching of opponents, proper training and conditioning, knowledge of game skills and elimination of the physically unfit or injured player.

Of those injuries which result, ligamentous injuries of the knee and ankle are most commonly the ones which remain undiagnosed or inadequately treated. Classification based on an understanding of the pathological anatomy will go far to guide the team physician in his choice of treatment.

BIBLIOGRAPHY

1. Anderson, K. J. and LeCocq, J. F., "Operative Treatment of Injury to the Fibular Collateral Ligament of the Ankle." *The Journal of Bone and Joint Surgery*, 36-A; 825 (1954).

2. Jack, E., A., "Experimental Rupture of the Medical Collateral Ligament of the Knee," *The Journal of Bone and Joint Surgery* 32-B: 396 (1950).

3. Kraus, Melvin A., "The Nature and Frequency of Injuries Occurring in Oregon High School Interscholastic Football." Unpublished Master's Degree Thesis, University of Oregon, 1959.

4. Lipscomb, A. B., "The Management of Knee Injuries in Athletes," *J. Tennessee State Medical Association* 51: 369 (1958).

5. O'Donoghue, Don H., "Surgical Treatment of Flesh Injuries to the Major Ligaments of the Knee," *The Journal of Bone and Joint Surgery*, 2-A: 721 (1950).

6. O'Donoghue, Don H., "Surgical Treatment of Injuries to Ligaments of the Knee," *Journal of the American Medical Association*, 1969: 1423 (1959).

7. Quigley, T. B., "Management of Ankle Injuries Sustained in Sports," *Journal of the American Medical Association*, 1969: 1431 (1959).

8. Slocum, D. B., "Mechanics of Some Common Football Injuries," *The Journal of the American Medical Association*, 170: 1640 (1959).

Potpourri

CHANGE IN ATHLETIC TRAINING?

What is the greatest change in athletic training? An article in the *Athletic Journal* concerns the answer to this question by one of the leaders in athletic training, Ken Ralwinson. Difficult as it was to single out one improvement, Ken discussed the recognition of the value and use of water, salts, and other fluids during practices and games as the greatest.

Five physicians in sports medicine were asked a similar question. Their answers involved the status of the program, educational levels, and methods of care and prevention of heat stress illness.

The profession has these and many other worthwhile changes to look back upon with pride. It would be wonderful if as many positive changes can continue in the near future.

NEEDED WOMEN ATHLETIC TRAINERS

An article in the *Journal of Health, Physical Education, and Recreation* indicates a growing recognition for the need of paramedical care for female athletics. The article discussed the need and background required for female athletic training. It mentioned some of the dangers inherent in sport with haphazard non-professional paramedical care.

This need is so prominently recognized that a workshop has been developed in "Athletic Training Techniques for Women" at the 1972 AAHPER Convention.

OLD WHEELCHAIR WHEELS[1]

The wheels from a wheelchair which is no longer usable for patient transportation may be used to support barbells. This method affords safety for the patient during exercise routines and allows for ease in moving the weights around the gym area.

On some occasions, the hub of the wheel will not have a large enough diameter for the weight bar to pass through freely. If this is the case, the hub should be cut out by clamping the wheel in a vise and using a hacksaw to cut through the center of the hub by inserting the hacksaw blade between the spokes. This should be a vertical cut through the hub, leaving the spokes attached at the center. Once the cut is completed, a hammer can be employed to pound out the two halves of the hub. A wooden two-by-four, 13 centimeters long with a hole bored a bit larger than the diameter of the weight bar, usually 2.8 centimeters, can be inserted between the spokes and the tightness of the spoke against the block secures the block in place.

Not all wheelchair wheels will be adaptable because the center ring connecting the spokes may not have a large enough diameter. This should be checked before the work is done to remove the hub. If the ring connecting the spokes is cut, the wheel will lose its stability.

[1] Varick, Olson, "Don't Throw Away That Old Wheelchair," *Physical Therapy*, 52:44, January, 1972.

HIGH LEVEL MEDICAL CARE

When Detroit Lions pass receiver Chuck Huges died of a heart attack on the field in front of 54,000 fans last season, questions were immediately raised about the quality of medical care for athletes. But the truth is, medical care for athletes has never been so good. In the old days, when players were injured, coaches simply told them to "run it off." Now, when football, baseball, and basketball stars are receiving salaries in six figures, the team doctor has become an indispensable part of the staff. As one observer put it "Who wants to pay for Joe Namath or Gale Sayers, only to have him sit home on Sunday with a torn knee?" The AMA estimates that there are 40,000 doctors working full- or part-time in sports.

Medical costs are also indicative of the emphasis that athletics has placed on proper medical care. A typical professional football team will spend around $120,000 for doctor and hospital bills and another $20,000 for paramedical supplies. The biggest cost to NFL football teams involves salary payments to injured athletes who do not compete. One NFL official puts this tab at about 5 million dollars annually.

TURF DISCUSSION

Dr. Richard Thompson stated at the Kansas-Missouri athletic injuries seminar that artificial turf was a factor in many injuries; however, he did not condemn artificial playing surfaces. He felt the turf was a factor from the standpoint that it was hard turf. Moisture and thicker padding was believed to make artificial turf less hazardous. Dr. Thompson stated that football fields should have three-fourths the one-inch thick padding. One-fourth inch padding is preferred for baseball fields for the ball to retain its lively bounce.

SOLUTION FOR SOGGY CASTS

An orthoplast sole covering the foot of a cast tends to prevent moisture from being absorbed in the plaster. The orthoplast should be cut to cover the bottom of the foot and overlap the edges about an inch. It should be placed on the cast just prior to the walking heel. This procedure has helped deter the saturation of casts from the winter elements.—Submitted by Ron Ribaric Graduate Assistant in Athletic Training, Central Michigan University.

N. A. T. A. Reports

Editor's Note: In order to keep the Association membership informed as to the current status of the standards and procedures in use by the Association, N.A.T.A. Reports will from time to time present material of a nature to provide this service.

Membership Classes

as approved June 7, 1970
and revised January 27, 1972
by the Board of Directors
of the National Athletic Trainers Association

CERTIFIED – CODE 1

Qualifications for membership:

Actively engaged in the profession of athletic training.

The N.A.T.A. definition of "actively engaged" is as follows: A person who is on a salary basis (no fee) employed by an educational institution, professional athletic organization or other bona fide athletic organization for the duration of the institution's school year, or the length of the athletic organization season and who performs the duties of athletic trainer as a major responsibility of his employment.

Completion of procedure for N.A.T.A. certification.

Completion of two (2) consecutive years as an Active member immediately before requesting Certified membership.

Certified and Retired members only are entitled to vote on N.A.T.A. affairs.

Dues: National — $25.00

ACTIVE – CODE 2

Qualifications for membership:

Actively engaged in the profession of athletic training.

Completion of at least two years of accredited college study applicable to physical education, athletic coaching and athletic training.

Active members are not entitled to vote on N.A.T.A. affairs.

Dues: National — $25.00

INACTIVE – CODE 3

Qualifications for membership:

A Certified or Active member who has been in good standing in either of these membership classes for at least three consecutive years (may be combined) may, after becoming inactive in the athletic training field, retain membership in the N.A.T.A. in the Inactive membership class. Change to Inactive membership must be requested and done without previous membership discontinued.

An Inactive member may be reinstated to previous membership class (Certified or Active) if he resumes active engagement in the athletic training profession within five years of becoming an Inactive member. If member is inactive for more than 5 years his reinstatement to previous membership class will be subject to review by the National Membership Committee. Time as an Inactive member shall not count as time engaged in the athletic training profession.

Inactive members are not entitled to vote on N.A.T.A. affairs.

Dues: National dues $10.00 per year plus district dues.

STUDENT – CODE 4

Qualifications for membership:

An individual who is a full-time student in a high school, college or university and who is performing some of the duties of athletic trainer under the supervision of an athletic trainer, coach or team physician and who expresses interest in preparing for the profession of athletic trainer is eligible for Student membership. He must be recommended by the trainer (preferably an N.A.T.A. Certified or Active member) coach or team physician under whom he is working.

If he ceases to be a full-time student or receives a bachelor's degree related to the preparation for athletic training and/or a physical therapy certificate he may not remain in the Student membership class after that year. If he receives a bachelor's degree in a field not related to athletic training but remains in school as a full-time student in preparation for athletic training he may coninue as a Student member until he is eligible

for Active membership, after which time he may not remain as a Student member.

Experience as a student trainer before enrolling as a full-time student in college shall not count toward requirements for N.A.T.A. membership (except Student membership) nor count as time engaged in the athletic training profession.

Student members are not entitled to vote on N.A.T.A. affairs.

Dues: National dues — $5.00 per year plus district dues.

ASSOCIATE – CODE 5

This membership class is open to individuals who are interested in the relationships of athletic training to education, biological sciences, psychology, athletics or sports medicine but who at the time are not directly related to athletic training.

Qualifications for membership:

Bachelor's degree from an accredited college or university or certification in physical therapy.

Professionally working in education, athletics, research or medicine. Note: Physicians who are team physicians should be N.A.T.A. members in the Advisory class.

Associate members are not entitled to vote on N.A.T.A. affairs.

Dues: National $10.00 per year plus district dues.

ADVISORY – CODE 6

Qualifications for membership:

Team physicians for universities, colleges, junior colleges, high schools, military schools, preparatory schools and professional athletic teams who are directly associated with the sports program and providing medical care and advice to members of the teams and in advising the athletic trainer in regard to his duties may be eligible for membership in this class.

A Certified or Active member must nominate a prospective candidate for this membership. The nomination must be presented to the district committee on membership and its acceptance is subject to their judgment.

Advisory members are not entitled to vote on N.A.T.A. affairs.

Dues for members in this class are $10.00 per year (By Board action, June 9, 1970).

ALLIED – CODE 7

This class of membership is open to individuals

whose business interest is related to athletic training or athletics in general.

Allied members are not entitled to vote on N.A.T.A. affairs.

Dues: National $25.00.

HONORARY – CODE 8

An individual shall be elected to Honorary membership through the National organization only and by a majority vote of the Certified members present at an annual meeting. Proposals for Honorary membership shall be made only through the chairman of the Honor and Awards Committee.

Any person, who, by virtue of his acts and speech, shows a profound interest in the athletic training profession and in enhancing its service to those in athletics shall be eligible for membership in this class.

Nominations may be made only by a Certified member and shall be directed to the Chairman of the Honor and Awards Committee and the presentation of the name of the nominee to the members at an annual meeting shall be subject to the committee's judgment.

Honorary members are not entitled to vote on N.A.T.A. affairs.

There are no dues for Honorary members.

RETIRED – CODE 9

A Certified member of Active member who retires because of age shall have the privilege of continuing in the class of membership held at retirement without further payment of dues. A Certified or active member who is eligible for Retired status and who wishes to continue membership in the N.A.T.A. in this class must request change to this class through the director of the district in which he is a member.

A Retired Certified member shall continue to have the privilege of voting on N.A.T.A. affairs.

ELECTION OF MEMBERS

Candidates for membership (except Honorary) in the N.A.T.A. shall be proposed and recommended by at least one Certified member of the district in which the candidate is located. The application for membership shall be directed to the district director and accepted or rejected by the membership committee of the district. If the candidate is accepted for membership (class of membership designated) the application with national and district dues is sent to the district secretary who will then record the membership for the district and send record of membership with national dues to the national office.

Membership in the N.A.T.A. must come through a district and is subject to the district officers' approval. In cases of doubt regarding an individual's qualification for membership, the National Membership Committee should be consulted.

A person who is a member in one of the N.A.T.A. Districts must also be a National member and pay both National and District dues. An N.A.T.A. Member must hold District membership in the DUES District in which he is employed.

DUES

Dues become payable on January 1st for the calendar year. If they are not paid by March 1st the member becomes delinquent. If dues for the year are not paid by June 30th, the member is suspended and must apply for reinstatement.

The Membership Committee of the district should consider the circumstances of non-payment of dues and make a judgment as to the reinstatement of a member to the previous class of membership later in the year. However, if a member is suspended for non-payment of dues for a full year or more he must apply for membership as a new member and meet the qualifications for membership in the class of membership for which he is applying.

The time during which suspension is in effect (year or more) does not count as time qualifying a person for certain classes of membership.

MILITARY SERVICE

If a member in good standing enters Military Service, he may continue to be a member in his present membership class and is required to pay dues only if he remains in military service longer than his initial enlistment. Time in military service shall not count as time in athletic training unless military duty is that of athletic trainer.

A member in military service shall maintain communication with his district secretary to keep continuity of membership.

CHANGE OF MEMBERSHIP CLASS

If a member wishes to change his N.A.T.A. membership class and he believes that he is eligible for such change, he should request form for Change of Membership Class from the director of his district. This form is completed and sent to the director for review and action by the district membership committee. If change of membership class is approved the change is recorded and notice sent to the National office.

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R REHABILITATION

–CIRCUITS

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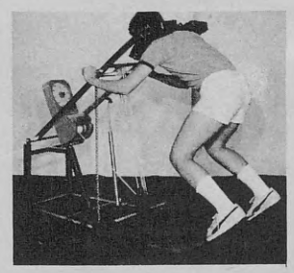

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whose business interest is related to athletic training or athletics in general.

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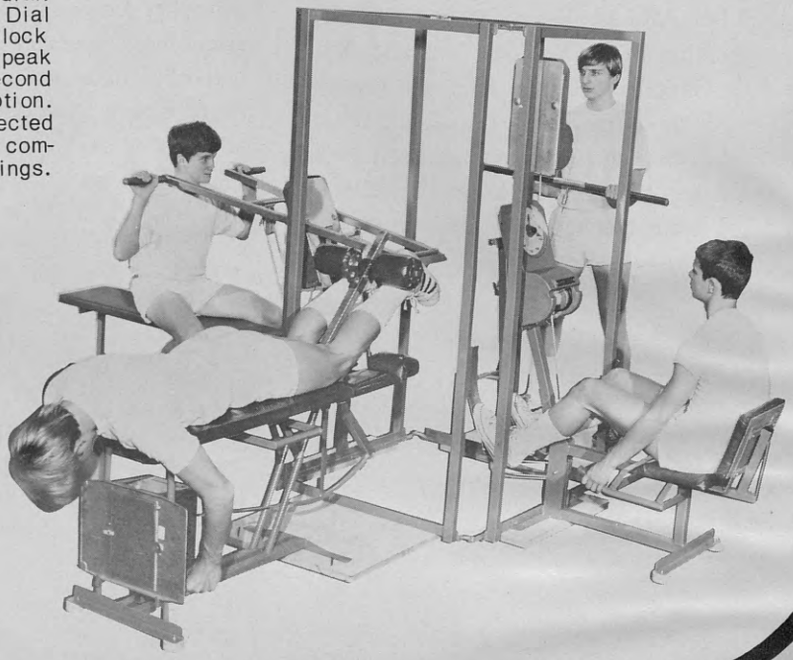
ISOKINETIC MINI-GYM FOR REHABILITATION

WITH ADD–A–GYM–CIRCUITS

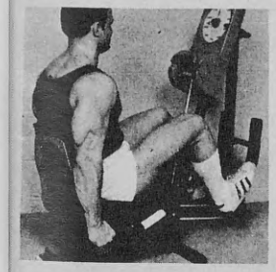
With the Isokinetic ADD–A–GYM Circuit work is accomplished **quicker** because there is no exerciser tension to set, none to release, as individuals change stations. Actual exercise time is cut 50% to 70% as every repetition is done at near maximum (not possible with weights). No warmup time is needed when exercising with Isokinetic resistance, yet it is **safer**, as little or no muscle or joint soreness is experienced. **More strength** is developed because the resistance is not dissipated with the accelerated speed (as with weights) but is in direct ratio to the varying force applied, making it the ideal way to build strength through a full range of motion.

Isokinetics or "accommodating resistance" with its facility to accommodate true muscle force capacity is a new approach to muscle exercise and analysis. As compared to Isotonics, when one moves heavy weights through a range of motion, the individual moves through one or more "sticking points" where muscles and the skeleton sometimes are strained. Unlike weights, the Isokinetic ADD–A–GYM stations are "forgiving". As one reaches a position of weak leverage, Isokinetics allows one to receive proportionally less resistance and thereby automatically takes the excessive strain off arms and legs. Then, when the body is structured to do hard work, one receives proportionate resistance. WITH THE ADD–A–GYM CIRCUITS, THE USER MAKES HIS OWN RESISTANCE THROUGHOUT THE FULL RANGE OF MOTION WITH EVERY REPETITION.

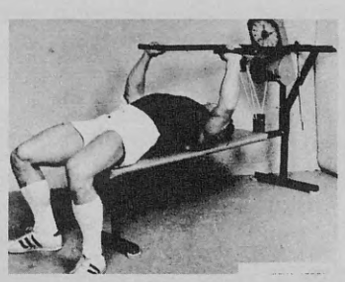
Isokinetic exercise allows movement at a rate of speed that offers resistance inherently proportional to the muscles' dynamic tension developing capacity. While the muscles are contracting, the strength output is accurately measured and registers on a clearly visible dial. Every station has an Accommodator Dial as its resistance, which as two "clock like" hands, one hand moves to the peak point in that repetition, while the second hand varies with the entire range of motion. Specific muscle weakness may be detected in the range of movement, as well as comparison of daily exercise recordings.



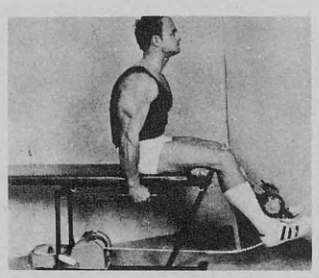
Circuit may be arranged in any pattern from four stations to the 18 available stations. **You** the trainer can **choose** the Stations you wish for your specific rehab or strength work. The circuit pictured to the right is only one possible combination. The Stations shown below are five of the 18 Stations available.



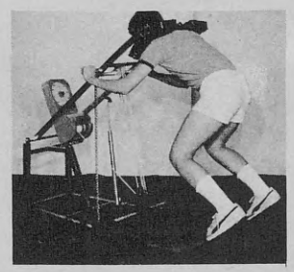
#12 Sitting Leg Press



#9 Bench Press



#15 Ham & Quads



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Book Reviews

"Taping as such is a science in the job to be done and an art in its application." So describes J. V. Cerney in his *Complete Book of Atheletic Taping Techniques* published in early 1972 by Parker Publishing Company, Inc., West Nyack, New York.

This book is a unique approach to the learning of the how and whys of adhesive strapping. Some twenty-five years as a "practitioner in a couple of medicine's ancillary professions" plus personal contacts with many good trainers is evidenced by the scope of the number of tape jobs presented. Whereas many pamphlets exist concerning taping, as well as the contribution made by each athletic training text, the *Complete Book of Athletic Training* is the most complete hardback volume entirely devoted to adhesive strapping, or flexible casting as the author prefers.

For the beginner, the chapters on the Glossary, the Qualifications of Better Athletic Tape, five Basic Techniques in the Application of a Flexible Cast, and Adhesive Tape and Its Effect on Human Skin are particularly informative. For the experienced trainer the book offers some approaches that perhaps have not been seen and certainly stimulates the trained mind in athletic strapping to perhaps more mechanically efficient strapping procedures.

Illustrations by the author abound in the text although the section on strapping the forearm has no illustrations but the reader is referred to the strapping techniques for the thigh. As well as the chapters are illustrated, the omission of illustrations for strapping the forearm is perhaps an oversight in helping the reader visualize procedures in this particular area.

All of the pertinent areas of preventive strapping are adequately discussed with four or five strapping techniques illustrated in some cases. Credit for the strapping procedures are, at times, given with trainers such as Al Sawdy, Warren Arial, Frank Creghan, Lloyd Williams, Wes Knight and Joe Romo being cited.

For each taping procedure a suggested tape width, a purpose for strapping, limb position and the strapping procedure is given along with trainer tips in which the author adds to the scope of the text somewhat with interjections concerning treatments and etiology of some injuries. "In all cases of shin splints a foot problem is present concurrently. Shin splints just don't happen. Strap the feet." "Tennis elbow positively should not be given cold therapy." "Apply no tape to a psoas magnus injury."

An interesting section on injuries to the groin includes the management of scrotal injuries by applying a scrotal injury napkin pouch and the use of a scrotal bridge.

All in all, the *Complete Book of Athletic Training Techniques* provides much food for thought with respect to types of strapping procedures available and will most likely present something new to any one trainer. Certainly for the beginning trainer or high school coach this volume could well serve as an encyclopedia of taping procedures.

• • •

The fourth edition of *Kinesiology and Applied Human Anatomy* by P. J. Rasch and R. K. Burke, published by Lea & Febiger in 1971, does not incorporate voluminous changes in this widely accepted and used text but changes are evident. In keeping with the authors' desire to update the text two new chapters were added: 1) On Analysis of Human Movement, Chapter 18, and 2) on Principles of Kinesiology, Chapter 22.

Enough change in the field has occurred in the last four years that the authors found it necessary to alter 69% of the pages of the 3rd edition as well as update the citations and references used at the ends of the chapters.

The reader will find the text just as informative as always with its 572 pages covering the multiplicity of subjects pertaining to the sciences of applied anatomy and kinesiology. As in past editions the illustrations lend themselves well to use by the novice as well as the experienced athletic trainer.

A part of each of the nine chapters on specific joint movements includes a section on Implication for Athletic Trainers. The sections are utilized to briefly and generally discuss injury to that specific joint and consequently do not delve specifically into the more detailed discussion. It is evident from this text that the authors recognize and elucidate on the value of athletic training to the sports scene.

Kinesiology and Applied Human Anatomy, which has been more than adequate text for years, is now even more informative through the latest revisions.

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Abstracts

"Human Strength: Terminology, Measurement, and Interpretation of Data," Kroemer, K. H. Eberhard, *Human Factors,* Vol. 12, No. 3; 297-313, 1970.

Application of strength data to human engineering is often hampered by ambiguities of both terminology and data. The following definition of strength is proposed: "Strength is the maximal force muscles can exert isometrically in a single voluntary effort." "Isometric" and "isotonic" refer only to the internal muscle effort, and not to the external effect or load.

Ambiguities stem from discrepancies between physiological and mechanical semantics. In mechanics, "work" is defined as the product of force and displacement. If a person holds a weight "isometrically," he does not "work" in the mechanical sense. However, the "isometric" holding of the weight increases the person's metabolism and energy consumption. Therefore, the word "effort" is proposed to be used in place of "work" to indicate physiological strain.

Only the force exertable to an outside object is of interest. Since it depends on the strength of the muscle, and on the prevailing mechanical advantages, the location of the force measuring device must be specified with respect to the next joint to make a strength measurement meaningful. In a dynamic effort the externally measured energy output at any given instant may not even be proportional to the internally developed energy. Because of the mechanical and physiological considerations, it may be questioned whether static strength tests can generally serve as accurate predictors for sustained dynamic performance even though they are somewhat loosely related by the fact that muscular efforts are involved in both.

Most instruments used to measure muscle strength can be categorized as either "indicating" or "recording." Pointer instruments belong to the first group. While observing the oscillating pointer, the experimenter has to decide "the" score of the experiment, usually the largest "peak."

Recording instruments yield a permanent record of the force exerted over the total period of time. The experimenter can then select a suitable index for measurement.

The Kroemer and Howard Check List is included as a recommended reporting procedure for strength reporting research.

John Wells

"Terminal Extension Exercise for the Knee," Dontigny, L., and Richard, B.S., *Journal of the American Physical Therapy Association,* Vol. 52, 45-46, January 1972.

One problem in rehabilitation of the knee is strengthening musculature in order to stabilize the terminal phase of extension. Emphasis has been placed on the vastus medialis but during normal gait there is a simultaneous contraction of the hamstrings and quadriceps muscles during terminal extension at heel strike. This also occurs just prior to take-off in a standing jump. The hamstring muscles act to pull the knee posteriorly into extension at heel strike, reinforcing the action of the quadriceps during terminal extension. This appears to be the action that locks the knee in extension.

One method of exercising the knee in terminal extension requires the patient prone on an exercise table with a sandbag under his foot so that the knee is flexed from 15 to 20 degrees (0.3 to 0.4 rad.). Resistance is applied to the posterior of the knee. When the knee is extended, the reinforcing action of the hamstring muscles in extension is the result.

A second method requires the patient supine on the table. The therapist holds the patient's foot in place with one hand and pulls up underneath the knee with his other hand in an attempt to flex the knee while the patient attempts to extend his knee against the flexion force and to hold it in extension. In this exercise the knee is flexed only 15 to 20 degrees also (0.3 to 0.4.).

Richard Livermore

"Should Physical Activity of the Epileptic Child Be Restricted," Livingston, Samuel, M.D., *Clinical Pediatrics,* Vol. 10, No. 12; 694-696, December, 1971.

The vast majority of epileptic children should no longer be excluded from participation in general physical activities or contact sports such as football, wrestling, lacrosse, etc., in which head injuries may be recurrent. There is no conclusive evidence that proves chronic head trauma causes a reoccurrence of pre-existing seizures. The calculated risk of injury from contact sports is the same for all individuals whether epileptic or not.

Those activities which should be avoided by those persons who are still having seizures include horseback riding or climbing at high altitudes; i.e., tree climbing, mountain climbing, working on ladders. Swimming and bicycling are questionable activities but should not be ruled out completely.

The overprotective attitude towards the epileptic child should be discouraged for the sake of the child's physical and emotional stability.

Charles Vosler

"Study of Back-Lift Strength with Electrogoniometric Analysis of Hip Angle," Singh, Mohan and Ashton, T. E. J., *The Research Quarterly,* Vol. 41, No. 4.

Twenty-four males were tested four different ways on four consecutive days using a different method each day. Changes in hip angle were continuously recorded through out the tests by means of an electrogoniometer attached to the lateral side of the left hip.

The following test methods for measuring back-lift strength were used: Method A — use of the traditional bar in the Rogers' P.F.I. back-lift test item with no restriction of backward lunging; Method B — similar to test method A, except that a vertical board was used to prevent backward lunging; Method C — use of a shoulder harness, eliminating the use of arms and hands, with no restriction of backward lunging; and Method D — identical to test method C except that the vertical board was used to prevent backward lunging. It was found that range in hip angle during the back-lift was greater using the shoulder harness technique; and less when lunging was prevented in both the traditional and shoulder harness techniques.

"Psychological Effect of Weight Reduction in the College Wrestler," Morgan, William P., *Medicine and Science in Sports,* Vol. 2, No. 1, 24-27, Spring, 1970.

The study attempted to evaluate anxiety levels in college wrestlers on a daily basis, while they attempted to lose approximately 5% body weight in one week. The study was conducted prior to the wrestling season to eliminate the variables of competition.

The study involved 20 college wrestlers that were willing to try and lose 5% body weight. All members were weighed, had Sills skinfold measurements for percent body fat prediction, and all completed the IPAT 8-Parallel-Form Anxiety Battery. Random selection placed 9 members in a control group, and 11 in the experimental group.

Fluctuations in anxiety levels occurred in both groups. The control group was not significant. The experimental group was significant and reached the lowest point on Friday, with Monday and Thursday being about equal and decreased on Wednesday.

The experimental group lost 4% body weight. The

anxiety shift in this study is not to be compared with other outside drives, studies or theories; and the decrease in anxiety that was observed, should not be regarded as a profound shift.

Concluded: That a 4% weight loss in the college wrestlers studied, had neither erogenic nor harmful psychological effects.

C. A. Bolton

"Mechanism of Rising on the Toes," Karpovich, Peter and Manfredi, Thomas, *The Research Quarterly,* Vol. 42, No. 4, 395-404.

The authors endeavored to demonstrate that coming up on your toes employs the use of a first- or third-class lever instead of a second-class lever as maintained historically. The fulcrum being the heads of the metatarsals in a third-class lever and the talo-crural joint in a first-class lever. They demonstrated that the gastrocnemius-soleus muscle group is not solely responsible for raising the heel unless the dorsiflexors of the ankle contract first. This was done with animal experiments as well as electrical stimulation to human subjects. In either case, it flexed the knee and pulled them backwards, even when the knee was immobilized.

The motion of coming up on the toes is then divided into three stages. The first is the action of the dorsiflexors pulling the gravitational line anterior over the metatarsal heads. The second is the forward motion of the leg and body. The third is the active contraction of the soleus-gastrocnemius group to plantar flex the ankle.

D. E. Aultman III

"A Coach's Guide to Knee Sprains, Part 2: Immediate Treatment, Therapeutic Modality, Rehabilitation," Hindley, Gary J., *Schol. Coach,* Vol. 41, No. 36, Nov. 1971.

Immediately after a quick, thorough evaluation of the injury, ice, compression, and elevation are administered. The athlete is then referred to a doctor for X-rays and put on crutches for 48 hours. After hemorrhaging has been completely arrested, rehabilitative measures are instituted.

The theory, application, and desired results of a number of therapeutic modalities are discussed. Those include: Analgesics, whirlpool (hydrotherapy), hydrocollator pack or compress, infra-red therapy, diathermy, and ultrasound.

After the knee has a "'considerable degree of mobilization," the athlete is put on a rehabilitative exercise program. Isometric and isotonic (DeLorme method) exercise programs are explained for four muscle groups: Hamstrings, quadriceps, abductors, and adductors. The exercise program must include all four of these groups.

Kenneth Knight

Recent Athletic Training Literature

This list is generally restricted to subject matter considered to be areas of athletic training and athletic rehabilitation. Topics belonging to broader areas such as athletics, physical education and physical therapy will usually be omitted.

"Effects of Taping and Bracing on the Unstable Knee," Roser, L. A., et al., *Northwest Medicine,* 70:544-6, August, 1971.

"Fatal Heat Stroke," Lawrence, T., et al., *Journal of the American Medical Association,* 217:967, August 16, 1971.

"Functional Anatomy of the Shoulder Complex. A Review," Kent, B. E., *Physical Therapy,* 51:947, August, 1971, (49 references).

"Guide to Knee Sprains," (Part III), Hindley, G. J., *Scholastic Coach,* 41:30-32, December, 1971.

"Health No-No's," Jensen, C. R., *Scholastic Coach,* 41:76, January, 1972.

"Osteochondritis Dissecans of the Knee. A Clinical Survey," Aichroth, P., *Journal of Bone Joint Surgery,* 53B:440-7, August, 1971.

"Predicting Lower-Extremity Injuries in High School Football Players," Clark, J. L., et al., *Journal of the American Medical Association,* 217:1552-3, September 13, 1971.

"Progressive Retrograde Amnesia in Concussed Football Players: Observation Shortly Post-impact," Yarnell, P. R., et al., *Neurology,* 20:416-7, April, 1970.

"Report on First Continuing State High School Study on Knee Injuries," Callahan, W. T., *Scholastic Coach,* 41:29-30, January, 1972.

"Sports Medicine XII. The Athletes' Nerves," Ryde, D., *Journal of the Royal College of General Practice,* 21:161-3, March, 1971.

" 'Spot' Reduction of Fat," Schwartz, K. V., *Annals of Internal Medicine,* 75:316, August, 1971.

"The Athlete and His Injury," Malcolm, A. R., *Physiotherapy,* 57:352-5, August, 1971.

"The Contrast of Bath," Barboza, T. J., *Scholastic Coach,* 41:58, February, 1972.

"The Effects of Vitamin E and Training on Physiological Function and Athletic Performance in Adolescent Swimmers," Sharman, I. M., et al., *British Journal of Nutrition,* 26:265-76, September, 1971.

"The Influence of Exercise on the Sweating Threshold," Crockford, G. W., et al., *Journal of Physiology,* 217:-37P-38P, August, 1971.

"The Use and Abuse of Drugs in Athletics," Murphy, R. J., *Ohio State Medical Journal,* 67:737-41, August, 1971.

"Evaluation of Ankle Injury," Chapman, D., *Journal of the Irish Medical Association,* 60:561, October 21, 1971.

"Lower Limb Actions While Running at Different Velocities," Sinning, W E.. et al., *Medicine and Science in Sports,* 2:28-34, Spring, 1970.

"Causative Factors in Hamstring Strains," Burkett, L. N., *Medicine and Science in Sports,* 2:39-42, Spring, 1970.

"Peak Head Acceleration of Athletes During Competition—Football," Moon, D. W. et al., *Medicine and Science in Sports,* 3:44-50, Spring, 1971.

"An Investigation into the Evaluation of Hockey Helmets," Bellow, D. G., et al., *Medicine and Science in Sports,* 2:43-9, Spring, 1970.

"Study of Back Pain," *British Medical Journal,* 4:4-5, October 2, 1971.

"Spinal Irritation and Osteopathy," Schiller, F., *Bulletin of the History of Medicine,* 45:250-66, May - June, 1971.

"Extra-Articular Musculoskeletal Disorders of the Upper Extremity," Policoff, L. D., *American Family Physician* 4:94-103, September, 1971.

"The Peroneus Longus and Brevis Muscles. A Roentgenological and Electromyographic study," Jonsson, B., et al., *Electromyography,* 11:93-103, January - April, 1971.

"Differences in Electrical Activity of the Biceps Brachii and Brachioradialis Muscles Performing Isometric Like Supination and Pronation Exercises," Moore, J. C., *American Journal of Occupational Therapy,* 25:391-7, November - December, 1971.

"Psychological Effect of Acute Physical Activity," Morgan, W. P., et al., *Archives of Physical Medicine and Rehabilitation,* 52:422-5+, September, 1971.

"Human Power Output in Exercise of Short Duration in Relation to Body Size and Composition," Davies, C. T., *Ergonomics,* 14:245-56, March, 1971.

"Emergency Treatment of Eye Injuries," Weinstock, F. J., *American Journal of Nursing,* 71: 1928-31, October, 1971.

"Effect of Calisthenics on Strength, Muscular Endurance and Total Body Reaction and Movement Times," Shvartz, E., et al., *Journal of Sports Medicine and Physical Fitness,* 11:75-9, June, 1971.

Guide for Contributors

The editors of *Athletic Training* welcome the submission of articles which may be of interest to persons engaged in or concerned with the progress of the athletic training profession. Submitted articles are considered as a contribution to the profession; no remuneration can be made. The following recommendations are offered to those submitting articles:

1. All manuscripts should be typewritten on one side of 8½ x 11 inch typing paper, 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 title as abbreviated in the latest edition of *List of Journals Indexed in Index Medicus,* volume inclusive pages, date.

4. It is the understanding of *The Journal* editors that manuscripts submitted will not have been published previously; and that the author accepts responsibility for any major corrections or alterations of the manuscript.

5. It is requested that each submitting author include with the manuscript a brief biographical sketch of himself.

6. It has become impossible to provide satisfactory reprint service. However, authors are authorized to reproduce their material for their own use, and it is recommended that they investigate the possibilities of having copies made at their own institutions, local job printers, or other reproduction agencies.

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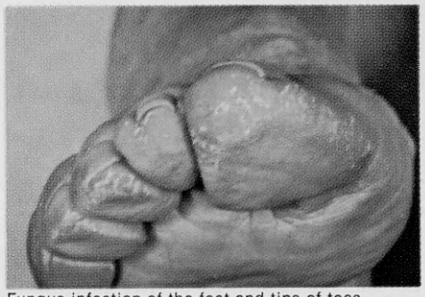
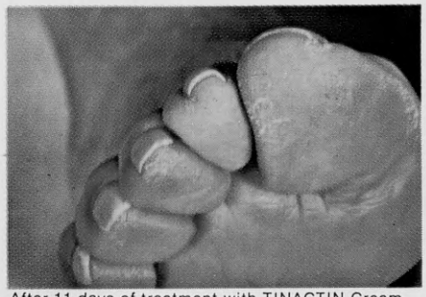
Clinical results like these explain why doctors prefer Tinactin® for athlete's foot

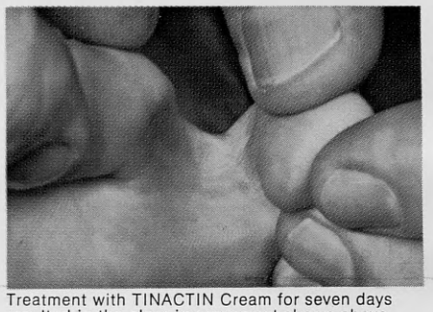


Fungus infection of the feet and tips of toes of many years' duration.

Chronic fungus infection with scaling eruption between the toes.



After 11 days of treatment with TINACTIN Cream, this patient showed obvious objective improvement.



Treatment with TINACTIN Cream for seven days resulted in the clear improvement shown above.

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

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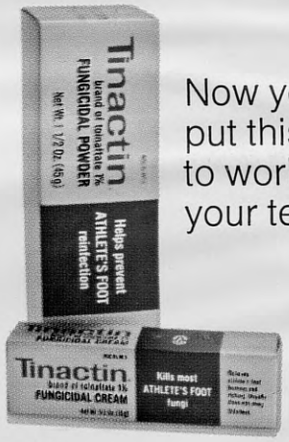

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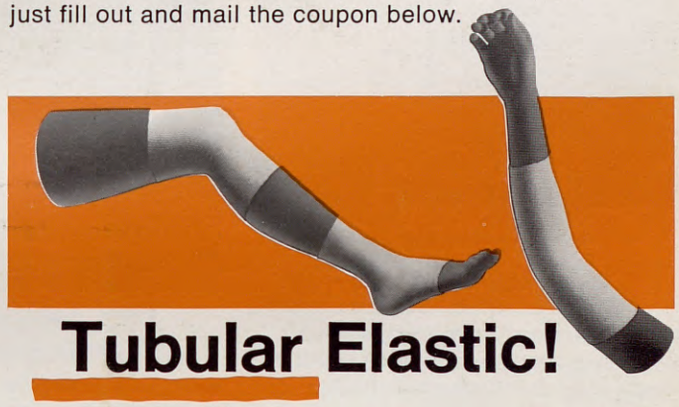

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