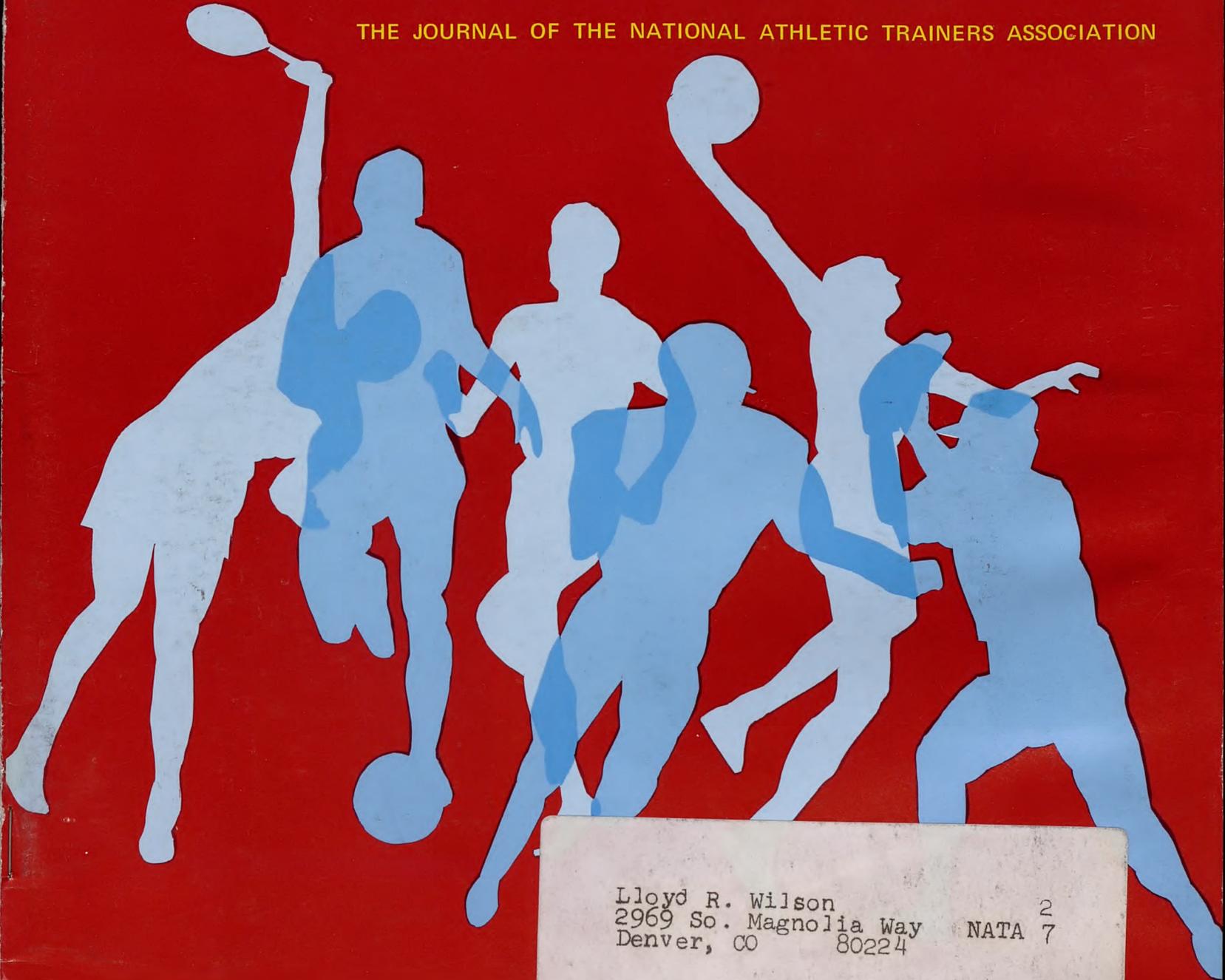




ATHLETIC TRAINING

THE JOURNAL OF THE NATIONAL ATHLETIC TRAINERS ASSOCIATION



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7

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Relative Strength in Males and Females
The 1975 Schering Symposium on Musculotendinous Injuries
Legal Implications Concerning the Use of Physical Therapy
Modalities by Athletic Trainers

Volume 10
Number 4
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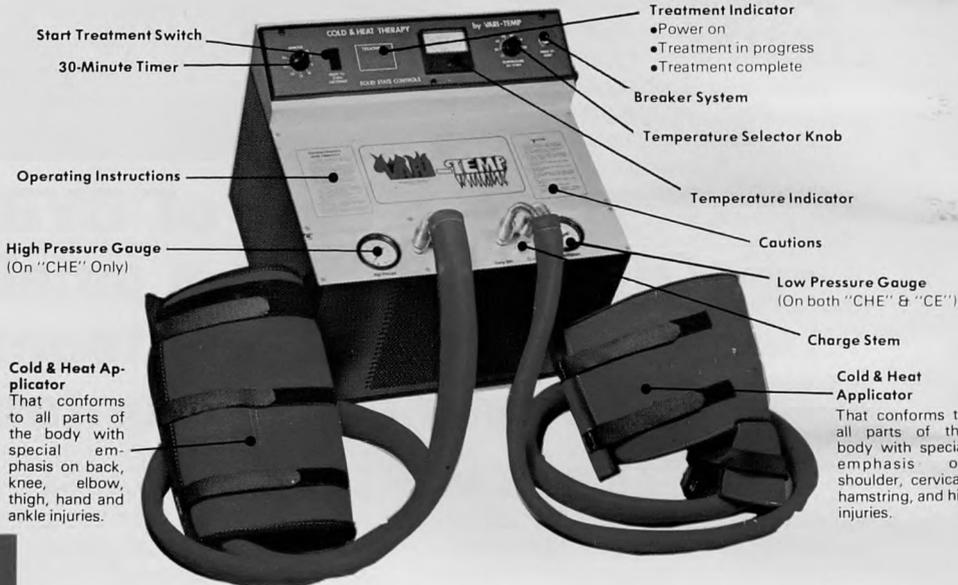


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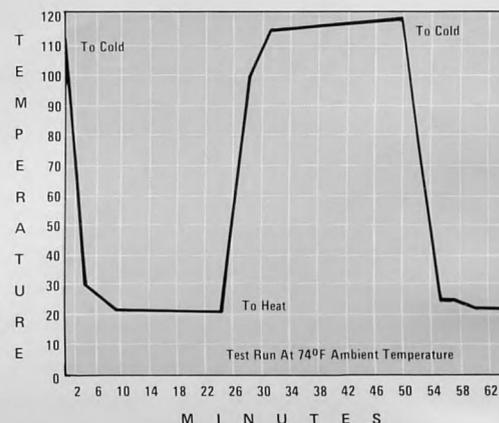
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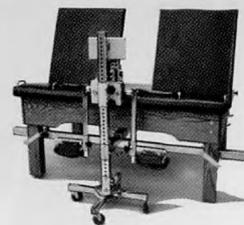
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FROM THE PRESIDENT'S DESK

EXECUTIVE DIRECTOR
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Dear NATA Member,

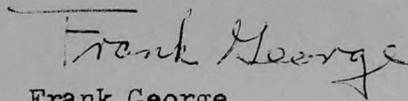
Have a happy and healthful holiday season.

The NATA Board of Directors meeting will be in mid-January, 1976. If you have suggestions, comments, or issues you would like to present to the Board, please contact your District Director.

In the June, 1975 issue of Athletic Training, there were comments on athletic trainers suturing, aspirating, and injecting. At the meeting in Anaheim a lawyer, James Hayes, spoke on the increasing legal implications of sports medicine, with emphasis on athletic training. In this issue of Athletic Training there is an article, "Legal Implications Concerning the Use of Physical Therapy Modalities by Athletic Trainers". Please be very aware of the laws in your state and what your duties as an athletic trainer are. I have discussed these subjects in previous Journal letters. The NATA president, executive director, and board of directors, will try to keep the membership informed on these subjects, as best we can.

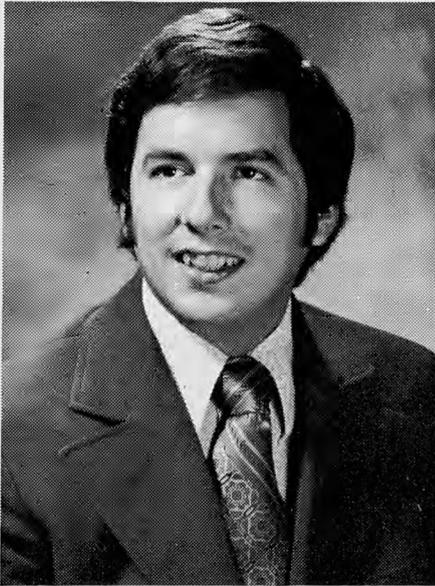
The NATA was invited to send a representative to a meeting at HEW concerning the athletic injury study being conducted by HEW. When recommendations were discussed, NATA was strongly in favor of a certified athletic trainer at each school as a means of providing proper care for, and reducing the number of injuries which occur. The results from this HEW study will be tabulated some time after June, 1976.

Sincerely,



Frank George

President NATA



EDITOR'S COMMENTS

BY ROD COMPTON, A.T.,C.

Behind the Journal

This issue marks the end of another volume. I must express a most sincere thank you to everyone who has contributed to our Journal during the past year. A special thanks must go to the Journal Committee and Editorial Board for their many hours of work and thought dedicated to this publication.

Few people realize that our publication is rather unique in that it is organized and administered for NATA members, by this volunteer group of NATA members! All of the Journal Committee and Editorial Board, including Clint Thompson and yours truly, donate their services to the publication, receiving no payment for it. This is even more remarkable when considering how busy their professional positions keep them without this additional labor of love.

My hat goes off to each and every one of them for their unselfish contributions, without which the Journal could not exist!

Survey Results

There was a very good response to the Journal Survey from the September issue of *Athletic Training*. There were many constructive suggestions and interesting

comments which will greatly aid us in directing the Journal toward the desires of our membership.

The Schering Symposium

Papers and the "Case Study" section received almost 100% favorable replies. This issue continues both of these sections with what should be very helpful information. If you have an interesting case study please send it in for consideration. Use photographs and/or illustrations whenever possible.

The types of articles members want is extremely varied. Some of the types of articles requested were more research oriented, scientific approach; more practical, how-to-do, articles; and also human interest type of articles.

We have tried to vary the types of articles as much as possible. However, we are limited by the types of contributions sent to us by our potential authors - you, the membership of the NATA. Without your literary contributions the Journal will become dependent on outside sources for the articles and perhaps miss the needs and desires of athletic trainers.

Medicolegal considerations are becoming more apparent for the

athletic trainer, as reflected in our 1975 Convention. Be sure that you read the "Letter from the President", the "Minutes of the Board", and Baker and Rode's article on legal implications.

In order to improve the legal status of the profession it is probable that legislation at the state level will become a necessity. This will require participation of athletic trainers and you should prepare yourself for it by first, gaining all possible knowledge of your state's situation, second helping develop the legislation, third helping support the passage of legislation.

Perhaps the NATA can help by developing general guidelines and/or sample forms of legislation but the burden of responsibility for each state will fall on to the trainers in that state. There will be no place for apathy with these projects. Here is an excellent opportunity for you to help upgrade the standard of your profession.

Talk to, write, or call your District Director or Secretary to see how you can help.

Speaking for the entire Journal Committee, may you and yours enjoy a safe and happy holiday season.

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Relative Strength in Males and Females

BY
DR. CARL S. CHRISTENSEN

Athletic trainers faced with the task of rehabilitating injured athletes have cause to wonder if there is a difference between male and female muscle tissue. Are male reconditioning programs appropriate for females? Further, trainers are often consulted on matters related to conditioning programs for women. Are women as strong as men, and can they be expected to withstand progressive resistive exercise and/or interval training? One method of assessing the qualitative difference between male and female muscle tissue is to compare their ability to produce force (strength). If muscle strength is the same in male and female, then it may be assumed that the quality of male and female muscle is the same.

It comes as no surprise to most individuals that men as a group are stronger, heavier, leaner, and larger than women. These measures represent the current absolutes which are of importance to those focusing on training methods for men and women. In accepting that women

as a group are weaker than men, one is inclined to overlook the fact that strength comparisons are usually based on absolute measures without reference to intervening variables. A generalization of this nature may be misleading. It implies a difference in muscle tissue between two groups who happen also to differ in total body weight, lean body weight, height, and body type. Perhaps this is like comparing the power of a Cadillac to a Volkswagen, using the more meaningful comparison of power to weight ratio, the two vehicles may have equivalent power. Likewise, if male and female strength were compared in relative (force/weight) rather than absolute terms, strength differences may not exist. On the basis of this premise, it was the purpose of this investigation to determine if college age male and female physical education majors differed in leg and back strength relative to total body weight and lean body weight.

Review Of Literature

Morris (6) studied the strength per square centimeter of muscle cross-section in college age males and females and concluded that females were approximately 78 percent as strong as their male cohorts. Although the inference from this study was that the quality of muscle tissue in male is superior, it would appear that she was aware that other variables could account for strength differences -- for example, sex related

hormones, body shape, training, fat, and imposed demands on muscle tissue. Astrand and Rodahl (1) report that strength per square centimeter of muscle tissue may be the same in men and women of the same age and degree of training. However, when corrected for body size, adult women were reportedly 20 percent lower than men in average strength. It should be noted that the correlation between muscle groups even in the same individual, male or female, varies considerably. This variance has been attributed to the differences in training and daily usage. These two factors also may account for the 20 percent strength difference between sexes. When one reflects on the social stigma attached to the athletic female or "tomboy," training and daily usage become tenable explanations for the strength difference between men and women.

Wilmore (9) presented evidence that when lower body strength was expressed relative to body weight, males were only 7.6 percent stronger than females and that females were 5.8 percent stronger than males when lower body strength was expressed relative to lean body weight. He supported that concept that the contractile properties and ability to exert force were identical in males and females. In comparative weight training studies, Wilmore noted limited muscular hypertrophy in women, but equal potential for strength improvement. Since it is probable that hypertrophy is related to the quantity of testosterone (male

Dr. Carl S. Christensen received his B.S. from Springfield College in 1953, his M.S. from the University of Illinois in 1954, and his Ph.D. from the University of Maryland in 1967. He has served as a professor of exercise physiology at Northeastern University in Boston since 1967 and more recently as Professor and Chairman of the Department of Physical Education.

hormone) present, it is understandable that as a rule males will experience greater muscle hypertrophy than females and perhaps greater absolute strength. Wilmore suggested that cultural restraints on female activity habits were responsible for the decline in strength performance of post-menarche females.

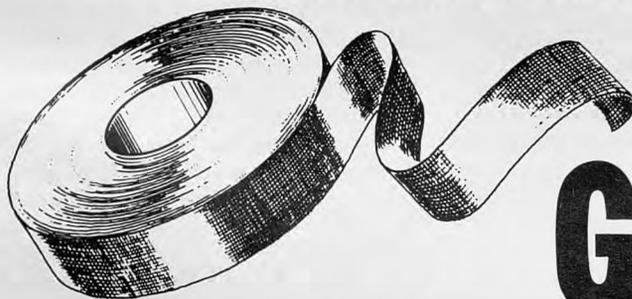
Although body weight, lean body mass, and mesomorphy correlate fairly well with total mean strength (4, 7), they are not good predictors of strength. Shaffer (7) has reported that by the age of 17, males were two to four times stronger than females as a result of the greater ratio of muscle to fat in males. Although the muscle mass in mature females was one half that of males, no evidence was presented which suggested a difference in neuromuscular efficiency or in the quality of male muscle.

Malina and Johnston (5) studied the arm strength of boys and girls ages 6-16 and determined that boys had greater absolute values for strength and weight but smaller values for fat content. Sex differences in the composition of the upper arm appeared at adolescence and were explained as a fat loss



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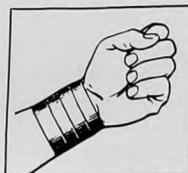


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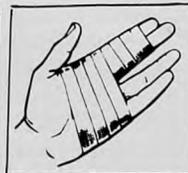
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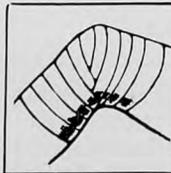
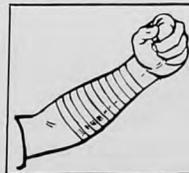
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experienced by the boys. By the age of 15, females had approximately twice the amount of measurable fat of males.

In view of the apparent relationship of weight to strength measures, it was the hypothesis of this investigation that males would have significantly greater absolute leg and back strength than females, but there would be no difference when strength was expressed as force per body weight or force per lean body weight.

Procedures

Twenty-four male and 24 female junior and senior physical education majors ages 21-27 volunteered to serve as subjects in this investigation. Both back and leg static extension strength were assessed with a standard leg and back dynamometer (3). Back strength was measured with the legs straight and the back flexed approximately 15 degrees from the vertical. Static leg extension strength was assessed with the knees at a 120 degree angle and the dynamometer linkage hooked to a canvas belt anchored around the subject's mid-section. Each test was administered twice, and the best effort was recorded.

Total body weight (TBW) and lean body weight (LBW) of each subject were assessed at a second testing session. The Behnke (2) technique for predicting lean body weight based on eight anthropometric measures was used in this investigation. The writer acknowledges that the use of a predictive measure increases the risk of measurement error. At the completion of testing, female and male leg and back strengths were calculated in absolute terms (raw score in pounds) and in relative terms (absolute strength/TBW and absolute strength/LBW in pounds).

Male and female leg and back strength scores were compared by a t^2 - test of mean differences for independent groups. Differences were accepted as being significant when the t^2 - ratio exceeded the critical ratio for the F distribution with 46 degrees of freedom at the .05 level of significance. Since the t^2 distribution is equal to the F distribution, the significance of t^2 is appropriately evaluated by using the F distribution (8).

Results

As hypothesized in this study and reported in the literature, males are

stronger than females in absolute terms. This appears to be a result of the greater lean body weight and psycho-motor familiarity with heavy lifting in males. Table I indicates that absolute strength differences were significant at the .01 level of significance (los.). This robust difference decreased when strength was expressed as the ratio of strength to TBW and/or LBW. Leg strength/TBW and leg strength/LBW for males and females were significantly different (.05 los.) while the back strength/TBW and back strength/LBW ratios produced no significant differences. In fact, Table I shows the mean for female back strength/TBW was higher by 1 percent than for males.

Discussion

The significant difference between male and female leg strength/LBW found in this study does not agree with the findings of Wilmore (9) who reported females to be 5.8 percent stronger in lower body strength/LBW than males. This lack of agreement may be due to differences in strength measurement techniques, differences in the population studied, and/or the 10-12 percent day-to-day variation in

TABLE I. BACK LIFT, LEG LIFT, AND WEIGHT MEANS, STANDARD DEVIATIONS, t^2 - RATIOS, AND PERCENT OF MEAN DIFFERENCES FOR COLLEGE AGE MALES AND FEMALES.

	Male		Female		% Diff.	t^2 - Ratio
	Mean (lbs.)	S.D.	Mean (lbs.)	S.D.		
Leg strength, absolute	1172.08	383.69	694.58	219.80	68.70	27.986**
Back strength, absolute	303.54	72.51	225.83	87.97	34.00	11.151**
Leg strength/TBW	6.58	1.80	5.30	1.71	24.00	6.422*
Back strength/TBW	1.71	.34	1.73	.68	1.00	.007
Leg strength/LBW	8.00	2.16	6.29	1.92	27.00	8.384*
Back strength/LBW	2.08	.40	2.05	.79	1.00	.030
TBW	176.88	20.38	132.08	15.79	33.90	72.510**
LBW	144.98	8.80	110.74	13.30	31.00	111.02**

*Significant at .05 los.

**Significant at .01 los.

strength scores reported by Astrand and Rodahl (1).

One might speculate that among male and female physical education majors there would be a higher degree of similarity in physical activity than among males and females from the general population of college age students. If this is so, then the similarity in relative back strength scores is not surprising. However, leg strength remained significantly different (.05 los.) even when expressed in relative terms. It will be noted from Table I that the robustness of the difference decreased considerably as strength was changed from absolute (.01 los.) to relative (.05 los.) terms. The similarity in relative back strength in males and females supports the concept of structural muscle tissue equality between the sexes. Where differences existed (leg strength), it was probably the result of measurement error or differences in the degree of training and extent of familiarity with heavy lifting. The investigator observed that in the leg lift especially, females were much more timid and less competitive than males. They appeared less timid in the back lift which indicated that they were more confident in this activity. Most of the male subjects were or had been involved with weight training as a hobby or in preparation for athletic competition. Leg strength differences also may have occurred as a result of the greater body weight carried by male legs, the resultant overload producing greater strength and greater lean body weight. This concept is supported by the fact that the relative strength of the nonweight bearing back muscles was not different in male and female while the relative strength of the weight bearing leg muscles was different in male and female.

As one contemplates the difference between male and female athletes, it would appear appropriate to generalize regarding relative strength similarities and absolute strength differences. However, where relative strength similarities are evident, one must remember that most competition is on an absolute rather than relative basis. Therefore, in most sports requiring strength, women will continue to be at a disadvantage when they are pitted against men. Strength calculated in relative terms indicated enough similarity in the quality or composition of male and female muscle to warrant similar rehabilitation methods and conditioning procedures.

Conclusions

It appears that, within the limitations of this study, there is a significant difference between male and female leg extension strength as expressed in both absolute and relative terms but no difference in back extension strength when expressed as strength per pound of body weight or lean body weight. There is enough similarity between male and female relative strength to warrant similar muscle rehabilitation and conditioning procedures.

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Continuing education has long been required of such professionals as teachers and airline pilots. More recently, the medical profession has adopted standards of continuing education, and allied health professions such as physical therapy are now recommending similar programs to their members. The National Athletic Trainers Association is to be commended for their soon-to-be-implemented policy of mandatory continuing education with requirements formulated so that it will be feasible for all members to meet these standards. However, all of us certified members must ask ourselves what we as individuals and we as an organization wish to gain from a continuing education program. Although the policies regarding what constitutes continuing education credits must of necessity be broad to insure that all certified trainers have an opportunity to comply, these policies must not be abused by the individual members or continuing education will become meaningless. As an example, I recently attended a high school student trainer seminar which was sponsored by a certified athletic trainer (who would have received continuing education credit for his efforts had the policy been in effect) during which the trainer spent forty minutes praising the benefits of ballistic stretching and telling the young audience how important it is to stretch out the ligaments in the ankle. Giving this trainer continuing education credits would accomplish very little for either the individual or our organization.

If each certified member pursues a good personal continuing education program, he/she will not only refresh and update knowledge and skills, but will also improve our collective professional image. Are these the only goals of such a program? Why can't a program be designed to fit within that system and provide interested members with the opportunity to obtain educational experiences that have been unavailable in our backgrounds? Short, in-depth courses on selected topics could be taught by experts in an educational setting such as a medical school. Such programs would help us reach a higher level of proficiency and respectability in the allied health professions. A series of short, intensive courses would give our continuing education program direction and may even be of some value in helping to solve some of the problems of the status, salaries, and recruitment, help to open new avenues of

Continuing Education: What Direction?

BY

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employment, and may even thwart future attempts of other allied health groups to "take over" sports medicine. An expansion of our knowledge base and skills can open many doors for our profession.

Courses of this type must be inexpensive and short enough to allow even the busiest members of our profession the opportunity to attend. To serve everyone, they must be offered at various times throughout the year and in every locality. Materials and references must be made available so that the trainer can continue to pursue this knowledge on his own, or in local study groups upon his return home.

An Example Program

With the preceding concepts in mind, the Rainbow Sports Medicine Center organized such a course. The course was three and one-half days long, a total of 28 contact hours, and was held at the Case Western Reserve University School of Medicine in the summer of 1975. The topics were confined to the upper extremity, and the faculty consisted of five orthopaedic surgeons, one radiologist,

one exercise physiologist, and two certified athletic trainers. To supplement the lectures, discussions, and demonstration-evaluation sessions, cadavers were secured for laboratory use by the attending trainers. The cadavers, in various degrees of dissection, provided an opportunity for the trainers to see and feel what had been presented in lectures and discussions as well as an opportunity for further dissection. Written materials and references were provided for future research and study. The cost of the course was kept to \$50.00 plus \$6.00 per night for on-campus housing.

Judging by the evaluation forms which attending trainers filled out on the course, it was successful in that it met their needs as practicing athletic trainers. Old information was reviewed, new ideas presented, and communication and rapport between trainer and medical specialist were nurtured.

It would seem that this type of format has a place in the continuing education program of our organization. Our members who are in a position to develop such courses should be encouraged to do so. •



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The 1975 Schering Symposium on Musculotendinous Injuries:



Ruptures of the Achilles Tendon

BY
VINCENT DISTEFANO, M.D.

EDITED BY
ROD COMPTON A.T.,C.
EAST CAROLINA UNIVERSITY

The famous French surgeon, Ambroise Pare', is credited with the first description of complete subcutaneous ruptures.

In observing the quadricentennial of this event, it would be appropriate to review certain aspects of this puzzling diagnosis.

Despite the fact that it has been in the literature for some four centuries, all too frequently the initial diagnosis is either delayed or missed and the patient's disablement thereby increased by a factor of weeks or months.

Dr. DiStefano was the moderator for the 1975 Schering Symposium. He is an Associate Orthopedic Surgeon at the hospital of the University of Pennsylvania and affiliated hospitals. He also serves as team physician for the Philadelphia Eagles, and physician for Villa Nova University.

Dr. Di Stefano received his M.D. from Hanneman Medical College in 1963. He is a member of many committees and organizations dealing in sports medicine.

Experimental Findings

Tantamount to a full understanding of this problem is an explanation of the pathogenesis involved. There are several facts which have arrived our way by way of experimentation that bear heavily on the pathogenesis and eventually the diagnosis of Achilles tendon ruptures.

First of all, it is important to remember that a healthy tendon does not rupture through its substance.

When rabbit patella tendons or Achilles tendons are removed from the animal, fixed and blocked by bone at their distal and proximal attachments and then stretched on an instron or similar machine to the point of failure, the unit does not rupture through the substance of the tendon. Rather it ruptures at the junction of the muscle and the bone, or the tendon in the bone, or at the junction of the muscle or tendon but not through the substance of the tendon itself, which is what we see in

most cases of Achilles tendon rupture.

Secondly, one must appreciate that there are tremendous tensile forces which develop in the Achilles tendon. One investigator has reported forces on the order of 2,000 pounds during very rapid running.

Thirdly, and probably most enlightening, some authors in the Scandinavian literature have had the opportunity to biopsy and report on cases of Achilles tendon ruptures which were submitted to surgery on the day of clinically manifest rupture.

If one creates a lesion in a tendon in an animal, sutures it, closes the wound and then re-examines his wound at periodic intervals, what one finds within twenty-four hours and forty-eight hours at the latest, are very few elements of inflammation and granulation.

On specimens that are studied between the first and the fourth day, one sees a picture of considerable inflammatory element yet very little

or no granulation tissue.

Between the fourth and fourteenth day, the inflammatory elements begin to wane and the elements of granulation tissue dominate the field.

In lesions that are studied beyond the second week what one sees are poorly differentiated connective tissue in different phases of regeneration.

In these tendons that were biopsied the same day that the rupture became clinically obvious, what was found was a mixed picture. There were elements of fresh hemorrhage, which one would date to the first twenty-four or thirty-six or possibly forty-eight hours, mingled with various elements of repair and actually poorly differentiated connective tissue which would date

final result does not necessarily have to be of great magnitude but is inversely proportional to the amount of degenerative changes which preceded the final insults. So the more advanced state of degeneration or micro tears or macro tears or partial tear, the less the insult need be to produce what we recognize as rupture of the Achilles tendon.

Figure 1 shows serial sections taken through an Achilles tendon at an area directly adjacent to the rupture. As one proceeds from left to right, you can see a changing macroscopic and, had you the opportunity, a changing microscopic picture as well. The section on the far left consists of considerable hemorrhage and with progression toward the right, fewer elements of

no means conclusive.

Blood Supply

What probably is an important factor in the rupture of Achilles tendon is the blood supply to the tendon. Using radioisotope sodium studies, one can prescribe a progressive decrease in blood supply to the Achilles tendon which follows the third decade of life.

Also, in a study in which cadavers were injected with a panpague material, it was found that the blood supply in the Achilles tendon is poorest in the section two to six centimeters above the calcaneus. It is the site where ruptures of the Achilles tendon occur more frequently.

Regressive change in the blood supply and a "critical zone" of vascularization are doubtless important factors in Achilles tendon ruptures. This is probably because they decrease the tendon's resistance to stress and limit the extent to which reparative processes can take effect.

Steroids

Finally, the subject of steroids and Achilles tendon ruptures, which is very controversial. One must remember that the steroids were given for a reason to begin with, in all likelihood, a microscopic or macroscopic rupture of the Achilles tendon. So that rather than causing the rupture of the tendon, steroids may be significant to the extent that they relieve the patient of his symptoms of a partial rupture and thereby allow him an earlier return to work, play or athletics and the added stresses on the tendon, while at the same time retarding or delaying the normal healing process.

Mechanism of Injury

The actual mechanism associated with the final insult or rupture, in most cases, takes the form of indirect trauma. The individual is not usually struck over the area of the tendon but is performing some other maneuver and the most common maneuver is pushing off. One drives the knee into extension while pushing off with the forefoot or off the balls of the feet. This is the most common of the indirect mechanisms.

Less commonly, there is sudden, unexpected dorsi flexion of the ankle or violent dorsi flexion of the plantarflexed foot.

At the time that the patient ruptures his Achilles tendon, he



FIGURE 1:

Surgical cross-section of ruptured Achilles tendon showing extensive hemorrhage and necrosis.

the lesion to beyond two weeks.

So here we have a picture of elements of varied age. Why this picture of elements of varied age in what for all practical purposes can be said to be a freshly ruptured tendon? The explanation then is that the tendons cannot possibly be healthy at the time that it is ruptured. And, this is substantiated by the fact that healthy tendons not rupturing through their substance in the laboratory. So the individual who runs down through a kick-off and takes two steps and limps off the field with a ruptured Achilles tendon did not have a perfectly healthy tendon to begin with. On the contrary, it had to be quite a diseased tendon.

If one extrapolates this information, that the intensity of the

hemorrhage and more elements of granulation tissue.

In other words, if we were to stay to these lesions, the cross section on the far left presents with elements that are much, much more recent vintage than the section on the right.

Diseases

Various diseases have been implicated as causes of Achilles tendon ruptures. These have been mainly tuberculosis, syphilis, rheumatoid arthritis, and gout. However, despite these claims, we have yet to recover any pathologic findings diagnostic of these lesions from an Achilles tendon. So the role that these diseases play in the production of an Achilles tendon is by

usually has a sensation that he has been kicked or struck with a stone or hit by something else. Usually he will turn to his squash partner because he thinks he hit him with the racket or the ball. At times, there is a sensation of snapping, tearing or ripping apart. Not infrequently, it is an audible pop which is heard by his opponent or a bystander. He obviously has pain on weight bearing and some elements of stiffness and pain related to the posterior ankle region.

Physical Findings and Tests

The physical findings, when the patient is examined shortly after the rupture, reveals some local tenderness, swelling about the entire ankle with echymosis, which can at times extend distally beneath the fascia and present at the toes and not infrequently is the cause of a misdiagnosis on the order of an ankle sprain or something similar.

A positive Thompson Test is a diagnostic of complete functional discontinuity in the tendon. Also, with retraction of the opposed or unopposed gastrocnemius-soleus group a visible and palpable gap develops and a limp begins as the inevitable consequence of the problem.

In later, unrecognized tendon ruptures, one sees a thickened tendon when viewed from behind with the patient standing, obvious atrophy and acne of the gastrocnemius-soleus muscle group. There is also excessive dorsiflexion when this motion is tested in the passive manner.

Figure 2 is an excellent example of an old, unrecognized, partial subcutaneous therapeutic Achilles tendon. You can see, on the right, the fine detailed outline of the Achilles tendon, which is lost in a maze of swelling on the left side. This figure shows the echymosis distal to the lesion which can extend as far distally as the toes and cause the individual to misdiagnose the condition.

Figure 3 shows an obvious gap in a patient about to undergo the ultimate cure.

Figure 4 shows the shaved limb in the background, prepared for surgery. When this cap is squeezed, the foot remains in a neutral position. Note that the uninjured side has moved into plantar flexion. This failure for the foot to be driven into plantar flexion when the cap muscle is squeezed constitutes a positive Thompson Test and is pathopneumonic of complete ruptures of the Achilles tendon.

Figure 5, in the foreground



FIGURE 2:
Thickening of Achilles tendon (left) in a patient with partial subcutaneous rupture.



FIGURE 3:
Defect at the site of rupture.

demonstrates the excessive amount of dorsi flexion on the involved side when compared with its mate.

Now, additional means of diagnosis involve different types of X-rays and, more recently, certain electrodiagnostic studies. The plain lateral X-ray of the ankle joint will show changes in the Kager triangle. The Kager triangle is a triangular area of light density behind the ankle joint, occupied mostly by fat and seen on the lateral X-ray of the ankle. Its borders are formed anteriorly by the tendons of the long flexors of the foot, posteriorly by the Achilles tendon and the base of the triangle is formed by the superior portion of the

oscalcis or calcaneus.

The left X-ray in Figure 6 shows a normal Kager triangle without distortion. On the right X-ray, the individual has sustained a complete subcutaneous rupture of the Achilles tendon. Note how the upper portion of the triangle is distorted by the forward inclination of the relaxed tendon stump. One can even see the actual site of rupture here.

Pitfalls in Diagnosis

Common pitfalls in the diagnosis of Achilles tendon ruptures are basically three in number.

The first is a result from the diffuse



FIGURE 4:
Thompson Test. Normal response in foreground. Positive Thompson test in background indicating complete rupture of Achilles tendon.



FIGURE 5:
Excessive Dorsiflexion (foreground) in a patient with complete Achilles tendon rupture.



FIGURE 6:
Lateral x-ray of ankle showing normal Kager triangle (left) and pathologic changes (right) caused by complete tendon rupture.

swelling and edema which follows these ruptures, along with an inexact history by the patient, which all too frequently leads to the diagnosis of an ankle sprain. Therefore, the individual is X-rayed, he is told he sprained his ankle, there is nothing broken and an ace bandage is applied and three weeks later he limps into your office with obvious rupture of the Achilles tendon.

The second pitfall is a consequence of the victim's ability to perform active plantar flexion of the foot despite a complete tendon rupture since this action is also subserved by the long flexors and peroneals. While plantar flexion may be present, it will be decidedly weak when compared with the opposite side.

The third pitfall is the basket diagnosis of plantaris rupture. This is mentioned only in the hope that it will be eliminated from your vocabulary. It is my personal opinion that this is an extremely rare entity, if in fact it does exist at all.

If one carefully examines a patient with a reported diagnosis of plantaris tendon ruptures, what he will probably find in most cases is a tennis leg or a rupture of the medial head of the gastrocnemius at the musculotendinous junction. The plantaris is a muscle variable in appearance, reportedly present in somewhere around ninety percent of the population at large, which runs along the medial side of the cat muscle and has a long, wisp-thin tendinous element which attaches in the same general area as the Achilles tendon and slightly medial to it.

The site of rupture usually when these patients are carefully examined, is clearly in the area of the junction of the medial head of the gastrocnemius tendon.

Closing Comments

It is my personal opinion, despite some literature to the contrary, that no high performance athlete can expect to again participate without compromise if not subjected to operative repair. It seems to me that excision of all necrotic tissue, with opposition of healthy tendon to healthy tendon, held in position by pull-out wire or similar device, to relieve tension at the repair site and allow it to heal in a protected manner offers the best chance for an excellent result.

The exceptions obviously are those who are too aged or infirmed to undergo such a procedure or those who are content to exist with rather a sedentary existence. ●



ABSTRACTS

"Evaluation of the use of a wedge in Quadriceps Strengthening," Dean Currier, *Physical Therapy*, Vol. 55, No. 8, August, 1975, pp. 870-874.

Currier notes that during Quadriceps strengthening exercises, a small wedge is frequently placed under the knee to insure that the Femur remains parallel to the floor, thus maintaining a full gravitational load on the muscle. Using a cable tensiometer setup, an attempt was made to evaluate the functional significance of this common practice. Testing with the knee in positions of 0, 30, 60, and 90 degrees of flexion, the differences in tension the muscle was able to generate with and without the wedge were not statistically significant. Using trigonometry, this can be easily explained: a decrease of 5 cm. without the wedge results in an angle of approximately 6.6 degrees. The function of the weight arm, then, become 0.99272 of the original weight. The gravitational pull of an 18.0 kg. weight on the knee is only reduced to 17.86896 kg. -- not a significant drop. The conclusion, then, is that the use of the wedge is simply a matter of personal preference, and not a necessity.

Greg Vergamini

"Cerebral Atrophy in Young Cannabis Smokers," Cambell, A.M.G.; Evans, M.; Thomson, L.G., and Williams, M.J., *The Lancet* 2:1219 - 1224, December 4, 1971.

This article is the report by four English physicians on a study of brain damage to 10 patients who had smoked cannabis for 3 to 11 years.

The average age of the smokers was 22 years. Personality changes, mental illness, impairment of recent memory, and disturbed sleep are symptoms discussed in detail. Air was injected into the spinal fluid and central nervous system in order to outline the portions of the brain on the x-ray film. Diagrams of ventricles of patients and controls are shown plus measurement comparisons of patients and controls. Significant atrophy of the brain was observed. The physicians believe that certain parts of the brain may be damaged by the cannabis and that signs and symptoms of nervous disorders should be investigated from the standpoint of possible marijuana effects. Three of the 10 patients had medical histories that showed the individuals were entirely normal before the use of marijuana. The authors point out that for many years the production of brain damage from boxing was not realized. They suggest that a similar state of affairs may be happening in relation to marijuana.

John Wells

"Which Cardiovascular 'Problems' Should Disqualify Athletes?", Kenneth D. Rose, M.D., *The Physician and Sportsmedicine*, pp 62-68, June, 1975.

The use of the preparticipation screening electrocardiogram is presented. Of the 2,449 screening-ECG's that were recorded in the Spring of 1974, only 79 (3%) were considered abnormal and worthy of further investigation. The discussion begins with the less important cases

and ends with the more severe cases. An unexplained tachycardia is one clue to myocardial disease. Case histories are presented to show proper and improper handling of unexplained tachycardia. Several ECG tracings are presented to show the pathologies being discussed: T-wave Inversions; Minor ST Elevations; Axis Deviations; S'S²S³; Sinus Tachycardia at Rest; Ischemia Pattern; Arrhythmias; and Wolff-Parkinson-White Syndrome. The author includes seven recommendations and six simple ways for obtaining the information needed in the screening examination. In the four year study of sports-related cardiac deaths, 93 percent of those who died (primarily football players) were between the ages of 9 and 19. Thus, high school team physicians, family physicians, and all other responsible for the care of athletes must be alert to this important area in sports medicine if needless deaths on the field are to be eliminated.

John Wells

"Tennis Elbow: Who's Most Likely to Get It, and How," *The Physician and Sports Medicine*, pp. 43-58, June, 1975.

The Physician and Sports Medicine brought together a panel of experts to examine questions related to the pathology of tennis elbow. Participants were: Vaughn Baker; Joe Becknell; Geoff Harvey; Tim Jensen; Arthur Jones; Robert P. Nirschl, M.D.; and Stan Palgenhoef, Ph.D. The moderator of the panel was Fred L. Allman, Jr, M.D. Tennis elbow was defined as lesions of the conjoined tendon of the extensor communis and

extensor carpi radialis brevis at the lateral epicondyle. At least 50 percent of tennis players over 35 years of age experience this condition. The diagnosis of tennis elbow is not limited to athletes but is used with politicians, luggage handlers, and meatcutters among others. Incidence by sex seems to be about equally divided among males and females. The poor quality tennis players tend to suffer tennis elbow more frequently than better quality players. Some of the other multiple factors discussed are: mechanical construction of the elbow joint itself; female hormonal deficiency; swing forces of acceleration, impact, and torque; and strength reduction with age. The question of possible nerve involvement is related to secondary changes around the elbow and is not related to fatigue itself. Racket and ball construction are discussed. From a torque force point of view a larger handle is better, but if the handle is too large the player has reverse problems. The importance of warming up is emphasized to prevent injuries. Treatments presented range from relief of inflammation to surgery. About 90 percent of the players who play a counterforce brace find that their symptoms are improved.

John Wells

"The Hip: Structure, Stability, and Stress," Singleton, Mary C., Ph.D., and LeVeua, Barney F., Ph.D., *Physical Therapy: Journal of the American Physical Therapy Association*, 55:957-973, September, 1975.

This article presents a review of the precise structural details of the hip joint, the normal stresses, and the abnormal stresses which are placed on the hip joint. The outstanding characteristics of the hip joint is its stability. Retention or regaining of this stability is, therefore, the chief treatment aim of any pathological conditions with mobility as a secondary objective. Moreover, mobility without stability is useless. An anatomical review is accompanied by pictures. The position of the acetabulum and of the femoral head and neck determine the forces which are exerted at the hip joint and along the proximal end of the femur. Angle of inclination helps to determine the forces which are exerted at the hip joint and along the proximal end of the femur. Angle of inclination helps to

determine the direction of joint force and lever arm length of the hip joint. During normal standing, the pelvis resting on the femurs is considered to be a supported beam. The load at the hip joint produces a bending moment in the neck of the femur around the anatomical axis of the femoral shaft and a shearing stress along the head and neck of the femur. The bending moment produced by the force acting on the femoral head increases proportionally as the distance from the applied force increases. When standing on one limb, quite a different situation exists. In order to stand over one foot and maintain equilibrium, the line of gravity must fall through the base of support and the sum of the moments acting about the hip must equal zero. To maintain this position, the body must be shifted to provide a line of gravity which will fall over the supporting foot. Joint force is greatly increased when progressing from a position of standing on both limbs to the stance phase of rapid locomotion.

John Wells

"Evaluation of the Hip," Phillios, Kathryn E., *Physical Therapy: Journal of the American Physical Therapy Association*, 55:975-981, September, 1975.

The effective functioning of the hip requires integrated responses of many psychic and somatic systems acting on strong muscles and mobile joints. This article is primarily concerned with the changes of the mobility of the hip joint resulting from contractures of the muscles of the hip and the adjacent iliotibial band and with the clinical evaluation of voluntary strength of the muscles. Such complications as pain, loss of proprioception, spasticity, and myositis ossificans are frequently encountered and must receive consideration in the complete analysis of strength and mobility. Loss of hip mobility is important not only because it interferes with functional activity but also because it places the spine, opposite hip, and both lower extremities under abnormal stress during rest and activity. Pathologies covered are: hip flexion contracture; Iliotibial band contracture; hip extensor contractures; rotator tightness, adductor tightness; Gluteus medius weakness; Gluteus maximus weakness; Psoas weakness; adductor weakness; and rotator weakness. A

review of manual muscle testing procedures is presented.

John Wells

"Those Viral Skin Infections Can Run Wild," Larry E. Millikan, M.D., *The Physician and Sportsmedicine*, pp. 39-44, July, 1975.

Viral skin infections in athletes are far more than mere cosmetic problems. If left untreated, these infections can reach epidemic proportions, especially in indoor sports that involve less clothing and thus a greater chance of skin-to-skin spread of the virus. To prevent spread or morbidity from these infections, early treatment is imperative. Appropriate therapy depends upon precise understanding of the modes of spread of the various viral infections and pathophysiology of the virus. Herpes simplex is commonly seen in wrestlers and basketball players. Any athlete in a contact sport who is suspected of Herpes simplex should be removed from activity until the vesicles have completely dried. Therapy is aimed at (1) simple destruction, (2) augmentation of delayed hypersensitivity, and (3) stimulation of the inflammatory process. Herpes zoster usually begins as a single dermatome with local symptoms preceding vesicles and bullae. Often these patients have deep nerve-root pain radiating throughout the dermatome, and the dermatome may be inflamed. In the early stages Herpes zoster is not contagious, but when vesicles appear the patient should be removed from contact sports because these vesicles contain virus that can cause chickenpox in susceptible athletes. Cool soaks and the drying agents used in Herpes simplex may be beneficial. Molluscum contagiosum, or water warts, is so named because of its resemblance to warts. One basic difference is that the molluscum is much more infectious than the common wart. Warts create problems in athletes when they occur in certain areas of the body such as the plantar or palmar surfaces so that they interfere with competitive abilities. The body has control mechanisms to prevent the spread of warts, but in many cases these same mechanisms seem to be ineffective in eradicating them. Various treatments are presented as are color pictures of the pathologies.

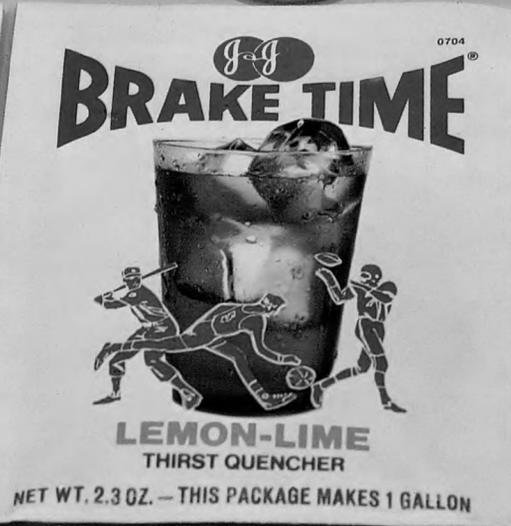
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SHIN SPLINTS: A Preventative Measure

COMPILED BY
RAY BAGGETT, A.T.,C.

The term "shin splints" is probably one of the most nonspecific terms used in athletic training today. There are as many definitions of shin splints as there are athletic trainers. It seems that any dull, aching pain along the anterior crests of the tibia and fibula is usually classified as shin splints if a major portion of the athlete's training program or athletic activity involves running. It is not the purpose of this article to delve into the diagnostic ramifications of shin splints. What will be presented is a preventative technique which has proven highly successful in reducing the incidence of shin splints in athletic programs where such incidence has been prevalent.

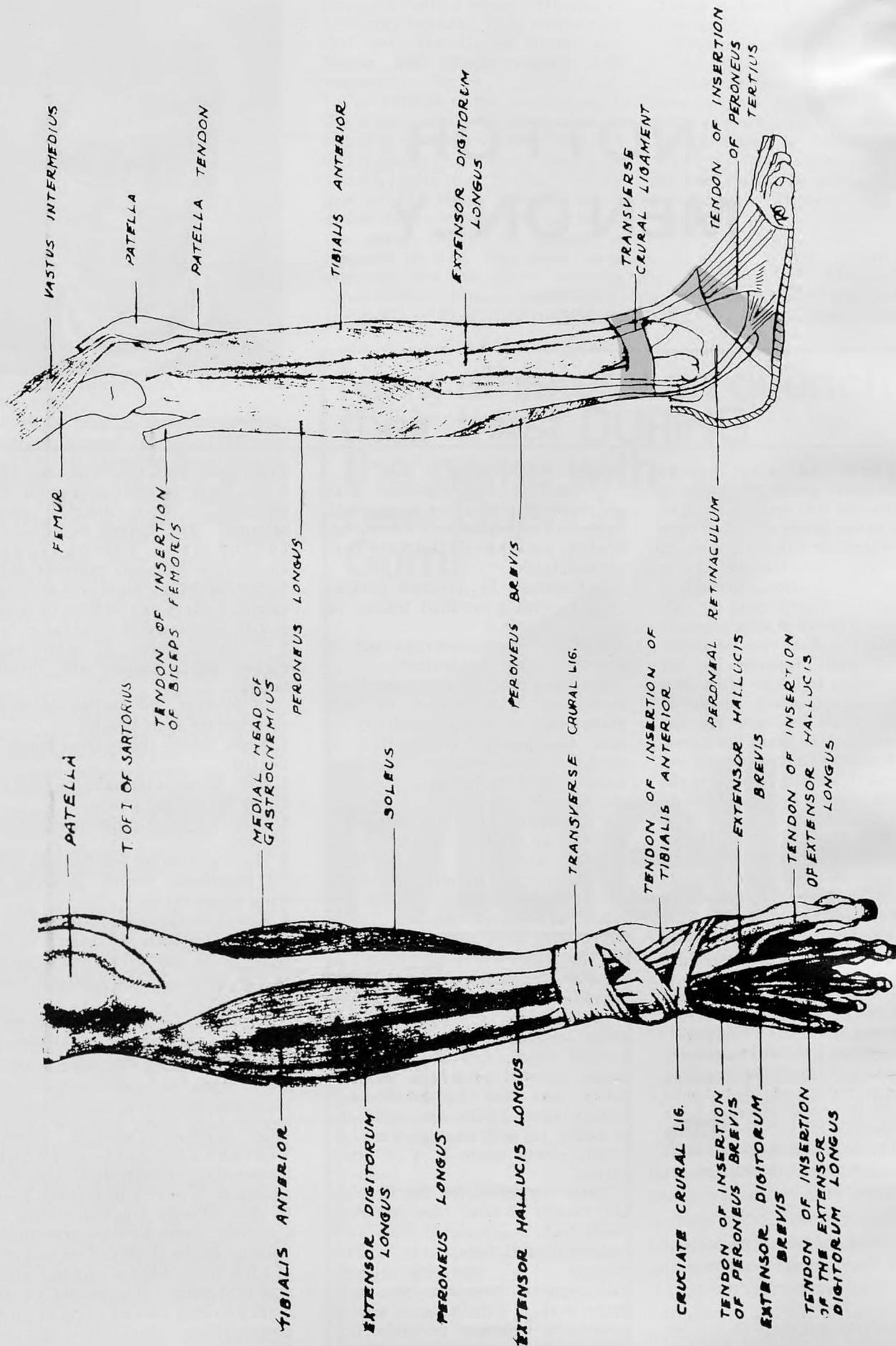
One of the most common tape supports for shin splints usually involves some type of support for the longitudinal arch. There is a tendency for the long arch of the foot to weaken when subjected to the constant pounding during physical activity particularly on playing surfaces of a hard substance. As the arch weakens there

is a tendency for the bones of the foot to spread increasing the width of the foot. When this widening of the foot occurs, there is also a tendency for the transverse crural and the cruciate crural ligaments above and below the ankle joints to stretch. (See Illustration I.) The muscles of the lower leg run from well above the ankle joint to well below the ankle joint and attach to various bones of the foot. As is illustrated, it can be seen that the transverse crural and cruciate crural ligaments actually hold down the tendons of these lower leg muscles. As the arch weakens and the bones of the foot and ankle separate, there is the possibility that the transverse crural and cruciate crural ligaments will be placed under stress and will stretch. With the shortest distance between two points being a straight line, there is a tendency for the lower leg muscles being held in place by the transverse crural and cruciate crural ligaments to raise up from their bony attachments to the tibia and fibula and their at-

tachments to the interosseus membrane between the tibia and fibula. This tearing away of muscle tissue can result in the dull, burning, aching sensation commonly known as "shin splints."

Two strips of tape, *non-elastic*, applied before workouts, can act as artificial transverse crural and cruciate crural ligaments and reduce the likelihood of the lower leg muscles raising away from their attachments. (See Illustration II.)

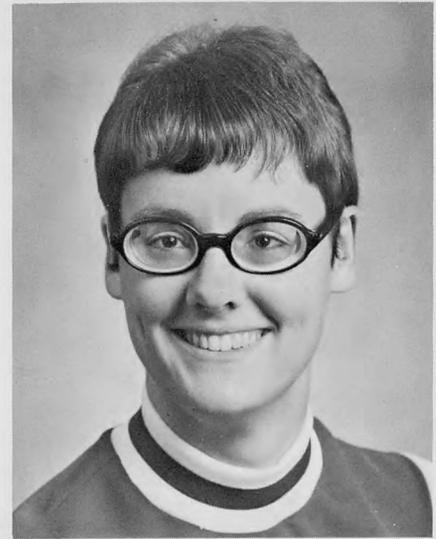
While all other common preventative procedures such as proper footwear, running on soft surfaces, running workouts alternately clockwise and counter-clockwise, running on outside lanes versus inside lanes on a track, taping the longitudinal arch, and the performance of specific exercises to strengthen the arch are typically followed, the addition of this simple tape job has resulted in the reduction of the condition commonly referred to as "shin splints." ●





NOT FOR MEN ONLY

BY
HOLLY WILSON, A.T.,C.
UNIVERSITY OF IOWA



"Be Prepared" a statement commonly heard among the ranks of Boy Scouts and Girl Scouts should be foremost in the minds of trainers and coaches whenever either steps onto a practice field. Unfortunately this is not always the situation, especially in the competitive sports scene for girls and women. The coach who is usually faced with the dual role of coach-trainer is well prepared for her coaching duties but how often does she have the necessary equipment readily available to care for the injured athlete? In many instances, the coach may not have received any background in athletic training so she has no idea of what equipment should be on the sideline.

With this thought in mind, the NAGWS (National Association for Girls and Women in Sport) Committee on Athletic Training and two women trainers in the Big Ten, Marge Albohm and Sue Anthony, have prepared a set of guidelines for emergency preparation. Members of the NAGWS committee are Holly Wilson, Chairperson, Marge Albohm, Sherry Kosek and Linda Treadway.

I am presenting this information in the Journal in the hope that it will be passed on to coaches who do not have the benefit of sports coverage by a trainer. Secondly, I am seeking suggestions on how to make this most complete, yet not overburdening set of guidelines.

Suggested Preparation for Emergency Situations at Practices and Competitions

The following suggestions are for minimal sports coverage at Big Ten

competition for women.

1. Certified trainer present with physician in attendance or on call: basketball, gymnastics, swimming-diving, volleyball, field hockey, softball, track.

2. Coverage by qualified student trainers with a certified trainer on call: golf, tennis.

3. Club sports coverage left to discretion of the host trainer.

4. Minimum service provided: emergency transportation on call, availability of ice, accessibility to area for taping, accessibility to treatment modalities, availability of water - drinking fountain, house or plastic squirt bottles.

Equipment that should be readily available on the field or court for all practices and games in basketball, gymnastics, swimming-diving, volleyball, field hockey, softball, and track are listed below. These suggestions were made by members of the NAGWS Committee on Athletic Training: stretcher, spine board (short) with neck traction unit if unavailable, substitute four 5 pound sandbags.), blanket, crutches, cervical collar, arm sling (a large muslin triangular bandage with two safety pins may be substituted), splings-board, plastic air, cardboard or ladder, ice with small plastic bags, towels, elastic wraps-3", 4", 6", first aid kit.

Items suggested for the first aid kit: variety of tape, tape adherent, underwrap, tape remover, tincture of benzoin (liquid), tape cutter, bandage scissors - 7 1/2", operating scissors, nail clippers, tweezers, pen light, green soap or substitute, alcohol or substitute, hydrogen peroxide, first aid cream, petroleum jelly, sterile

gauze pads - 3x3, 4x4, band aids - 1x3, 3/4x3, Ex large, kling gauze rolls - 2", analgesic - mild, aspirin, gauze sponges - 3x3, tongue depressors - junior sizes, cotton tipped applicators, ammonia capsules, hand mirror, ophthalmic boric acid solution - sterile, contact lens wetting solution - sterile, combine, felt, vinyl foam - 1/4", 3/8", elastic wraps - 4", safety pins, rubber bands, needle and thread, tampax.

In addition, the trainer or coach covering the sport should:

1. Know where the nearest phone is located.
2. Have 15 cents taped to the first aid kit for use in a pay phone.
3. Carry a First Aid-Emergency Care manual.
4. Have a working relationship with the ambulance service in order to know whom to call.
5. Post all emergency phone numbers, including the team physician's, on the inside of the first aid kit and adjacent to the phone in the training room and/or office.
6. Carry the phone numbers of each athlete's parents or guardian if working with minors.

* * *

Gail Weldon, Certified Athletic Trainer at Western Illinois University, accompanied the Pan American Women's Basketball Team to the World Championships in Columbia, South America prior to the opening of the Games. This was one of a few times when a woman trainer was sent with a U.S. women's team competing in international competition. Hopefully this is changing, as more and more women

become Certified Athletic Trainers there will no longer be a scarcity of qualified women to serve the medical needs of our female athletes.

Here is a summary of the highlights of Gail's trip as trainer for the Pan American Women's Basketball Team at the World Championships.

* * *

One evening in July, the vice-president for women of ABAUSA called and asked if I would be interested in accompanying the U.S.A. women's basketball team to the World Championships in Columbia, South America. After two solid seconds of deliberation, I said I'd be interested.

I left for training camp in Alamosa, Colorado August 16. We spent four weeks in Colorado for altitude training. This was one of the first times a certified woman trainer had accompanied a national team. The girls were apprehensive initially, then seemed to be appreciative of having a woman working with them. We were on a rigorous practice schedule with a two-hour practice in the morning as well as the evening and an hour shooting session in the afternoon. We worked out of the men's training room. Jack Butorac, a trainer of 25 years, was an excellent host, but we created quite a stir once football practice began; they never had a cold training room in the past.

September 20 we left Miami for Columbia. We received a warm reception in Bucaramanga; waving flags and cheering people throwing flowers greeted us as we got off the plane.

The training facilities I found were as many of the men had described them to me, my hotel room. I generally had a single room because no one else enjoyed going to sleep to the smell of analgesic. One evening before a game, we had six maids and two bell-hops in the room marveling at the fact the girls could move after I put "all that" tape on them. They asked if it was part of the pre-game ritual. We told them that it has become ingrained as an integral part of our athletic programs.

Getting ice posed problems for us at times. Room service would bring buckets to us after we managed to communicate what we wanted. They could never understand why I'd order three buckets of ice and no glasses. They decided we must be passing the bucket around.

Many of the people involved with the tournament thought it very

strange to have a woman traveling in a training capacity. They commented that only the United States and Russia had female coaches and trainers.

The attitude of the people toward the female athlete is tremendously different from the attitude exhibited by the people in the State. The status of the female athlete is very prestigious. Huge crowds would gather as we would leave the hotel, the games would be played to capacity crowds, the game were televised and the games received three or four full pages of coverage in the sports section of the newspaper.

It was a switch from the type of coverage or lack of it that the women athletes receive in the States.

The experience was a tremendous one for me both professionally and personally. I don't think I've ever taken as much pride in being from the United States or being associated with a particular group of athletes. My best wishes go with them to the pre-Olympic Tournament next spring.

Gail Weldon
Athletic Trainer
Western Illinois University
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Legal Implications Concerning The Use Of Physical Therapy Modalities By Athletic Trainers

BY
BOYD B. BAKER, Ed.

AND
CLIFFORD A. RODE, B.S., R.P.T., A.T.,C.

Athletic trainers have been using the treatment modalities common to the practice of physical therapy for many years. Oddly enough, not much consideration has been given as to the legality of their use of these modalities until lately. Licensure of physical therapists, who are especially trained health personnel, has been instituted in many states since the early 1960's. The statutes requiring licensure define, and in certain instances limit, the practice of the physical therapist in his

treatment of health disorders. The athletic trainer, however, is in an unlicensed paramedical profession which, except for Texas, has not even been defined in most states. With lawsuits charging malpractice so prevalent in our contemporary society it is important that the people who make up this "undefined profession" ascertain the legal parameters of their job function in the state in which they practice. It is the purpose of this paper to give a general view of the legalities involved

in the use of physical therapy modalities by the athletic trainer who is not registered to practice physical therapy in his or her given state.

Physical Therapy Defined

Basic to all state statutes regulating the practice of physical therapy is a definition of what that practice entails. The content of such definitions varies little from state to state. The following is representative of the contents of such definitions:

The treatment of human beings by the use of exercise, massage, heat, cold, water, radiant energy, electricity, or sound for the purpose of correcting or alleviating any physical or mental disability, or the performance of neuromuscular-skeletal measurements to determine the existence and extent of body malfunction, provided, however, that physical therapy shall not include radiology, electrosurgery, orthopedics or the practice of optometry. (Oklahoma Statutes Annotated, T. 59, Sec. 887.2)

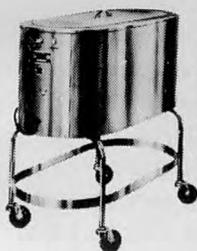
Boyd B. Baker is Associate Professor of Physical Education at the University of Arizona. He developed and teaches a graduate course entitled "Physical Education and the Law". He writes and lectures extensively in the legal aspects of physical education and athletics.

Clifford A. Rode received his Bachelor of Science and certificate in physical therapy from the University of Oklahoma in 1973. He is most recently serving the Department of Athletics, University of Arizona, Tucson. He is presently completing a Master of Science degree in physical education at the University of Arizona.

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Four General Categories

Although the definition of physical therapy appears to differ very little from state to state, statutes governing who may practice physical therapy or hold himself out to be a physical therapist are somewhat diverse. Although there is diversity in defining the qualifications of practitioners, there are also enough similarities to allow a general categorization of such statutes. Basically the statutes fall into one of four identifiable sub-divisions, as follows:

- 1) States limiting the practice of physical therapy to those licensed to do so in that particular state;
- 2) States which require licensure to practice physical therapy or hold oneself out as a physical therapist but do not limit any person licensed or registered in the state under the law from engaging in the practice for which he or she is licensed or registered;
- 3) States which require licensure to practice physical therapy or hold oneself out as a physical therapist, which do not limit any person licensed or registered in the state

under the law from engaging in the practice for which he or she is licensed or registered, and which permit the use of physical therapy, as previously defined, by unlicensed personnel under the supervision of someone who is licensed;

- 4) States placing no licensure requirements as to practice of physical therapy as defined, so long as one does not hold oneself out to be a physical therapist.

Category 1

The Indiana State Statute governing the practice of physical therapy is representative of the first category mentioned, and states:

Except as hereafter otherwise provided, it shall be unlawful for any person to practice physical therapy or to profess to be a physical therapist, physio-therapist, physical therapy technician or to use the initials R.P.T., P.T. or P.T.T., or any other letters, words, abbreviations, or insignia indicating that he is a physical therapist, or to practice or to assume the duties incident to physical therapy without first obtaining from the board, a

license authorizing such person to practice physical therapy in this state. (Barn's Indiana Statutes Annotated, T. 25, Art. 27, Sec. 25-27-1-2).

Other states which fit into this category are Alabama (Sec. 297 (22c), California (Sec. 2630), Connecticut (Sec. 20-73), Delaware (24 Sec. 2606), Hawaii (Sec. 321-14), Nevada (640.022), Maine (Sec. 3101), New Mexico (67404), North Carolina (90-266), North Dakota (43-26-13), Ohio (4731.73), Oregon (688.020), Rhode Island (5-40-2), South Dakota (36-10-24), Tennessee (63-1309), Vermont (Sec. 2072), and Wisconsin (488.22).

Category 2

The second category pertains to those states which require licensure to practice physical therapy but provide exemptions for those licensed by the state who use physical therapy as defined in their occupation. The following, from the West Virginia Code, typifies such legislation:

Six months after the effective date of this article (July 1, 1963), no person shall practice nor hold himself out as being able to practice physical therapy in this state unless he is licensed in accordance with

the provisions of this article: Provided, however, that nothing in this article shall prohibit any person licensed in this State under any other article from engaging in the practice for which he is licensed.

Other states which can be placed in this category are Kentucky (327.020), Nebraska (71-2802), New Hampshire (328-A12), Oklahoma (Sec. 887.3), Texas (4512e, Sec. 6), Utah (58-24-5), Wyoming (Sec. 33-226.2).

Category 3

As previously described, the third category consists of states which hold the same requirements as those in category two except that unlicensed persons are allowed to practice physical therapy when under supervision of someone who is appropriately licensed in that state. The following statutory enactment is representative of this group:

Prohibitory provision of this chapter shall not apply to the following:

A chiropractist, professional nurse, or a graduate physiotherapist, masseur, electro-therapist, or hydro-therapist, while operating in each particular case under the specific direction of a regularly licensed physician or surgeon. This exemption shall not apply to such assistants of persons who are licensed osteopaths, chiropractors, optometrists or other practitioners holding limited licenses. (New Jersey Statutes Annotated, 45: 9-2Hc)

Additional states which can be placed in this category are Arizona (Sec. 32-1996), Illinois (Sec. 22.2), Louisiana (Sec. 2410), Massachusetts (Sec. 23Q), and Virginia (Sec. 54-274).

Category 4

The fourth and final category concerns itself with those states in which statutes place no licensure requirements on the practice of physical therapy as long as one who is not licensed does not hold himself out to be a physical therapist or licensed physical therapist. The following is an example of such legislation:

Any person who holds himself out to be a professional physical therapist or a licensed physical therapist within this state and who, in fact, does not hold such license is guilty of a misdemeanor and upon conviction shall be punished as

provided by law. Any person who, in any manner, represents himself as a physical therapist, or who uses in connection with his name the words or letters physical therapist, physio-therapist, registered physical therapist, P.T., Ph.T., P.T.T., R.P.T., or any other letters, words, abbreviations or insignia indicating or implying that he is a physical therapist without a valid existing license as a physical therapist, issued to him pursuant to the provisions of this chapter, is guilty of a misdemeanor. Nothing in this chapter shall prohibit any person licensed or registered in this state under Chapter 331 or any other law from carrying out the practice for which he is duly licensed or registered; nor shall it prevent professional and semi-professional teams, schools, Y.M.C.A., clubs, athletic clubs, and similar organizations from furnishing therapy services to their players and members. This section, also, shall not be construed so as to prohibit masseurs and masseuses from engaging in their practices not otherwise prohibited by law and provided they do not represent themselves as physical therapist. (Vernon's Annotated Missouri Statutes, 334.610)

Additional states which come under this category are Florida (486.161), Georgia (84-3011), Idaho (54-2204), Iowa (148A.3), Kansas (65-2913), Maryland (Sec 604), Minnesota (Sec. 148.76), Mississippi, (Sec. 73-23-5), Montana (66-2513), and South Carolina (Sec. 56-1346.9).

Obviously, the athletic trainer who is not a licensed physical therapist in the state in which he practices, particularly in categories one and two, has been circumventing the state statutes governing physical therapy in some manner. In all likelihood this had been due to a lack of enforcement of these statutes by the appropriate state agency.

Considerations

At this point two considerations should be made. First of all, is this the manner in which a highly trained professional should operate? Secondly, should the occasion arise, possibly through pressure brought to bear by one or more of the professional groups involved, as had happened in the past, or through a

generally more stringent enforcement of existing statutory provisions whereby a closer investigation of licensing procedures is adopted, are athletic trainers, as individuals and as a professional body, prepared to define and describe the exact nature of their job function so as to enable licensing through existing channels or, moreover, prepared to seek passage of legislation which would enable licensing under a new format.

In the latter instance, the somewhat permissive language of the Illinois statute might possibly serve as a mode. In part, it states:

No person shall, after the date of August 31, 1965 begin to practice physical therapy in this State or hold himself out as being able to practice this profession, unless he is registered in accordance with the provisions of this Act.

This Act does not prohibit:

(1) Any person licensed in this State under any other Act from engaging in the practice for which he is licensed. (2) The practice of physical therapy by those persons who have met all of the qualifications as provided in Sections 6,7, and 8 of this Act, until the next examination is given for physical therapists and the results thereof have been made public providing such practice shall be under the supervision of a physician, or dentist, or a registered physical therapist. (Smith Hurd Illinois Annotated Statutes, S22.2).

Section 6, 7 and 8 referred to in the above excerpt refer to age citizenship and character requirements; educational and professional requirements; and file of application for registration as a physical therapist.

As the statutes now stand, an athletic trainer can not use physical therapy modalities in states where such use is prohibited. Persistence in doing so could result in being charged with a misdemeanor and, if found guilty, the athletic trainer could be fined anywhere from \$25 to \$500, and imprisoned up to thirty days in the county jail or both. (This appears to be the procedure in the state statutes which were investigated).

The trainer can more easily comply with the laws of the states represented in categories three and four. Laws of the states represented in category three could more likely be adhered to by the addition of a registered physical therapist to the athletic training staff. A physician or

surgeon with unlimited license could also be used as long as treatments were under his or her supervision. So far as the states in category four are concerned all that is needed for compliance is to carefully not represent oneself as a physical therapist. To do this, it would be best to eliminate the words "physical therapy" from the training staff vocabulary and records. Physical therapy modalities could be referred to as treatment modalities. The term "rehabilitation" should be eliminated because of its close relationship to the field of physical therapy and replaced with "injury reconditioning".

As previously mentioned, Texas is the only state which has thus far defined the role of the athletic trainer. Indeed, it is the only state which at this time requires licensure of athletic trainers. The definition as set forth in the Texas Statutes is as follows:

(An athletic trainer is) a person with specific qualifications, as set forth in Section 9 of this Act, who, upon the advice and consent of his team physician carries out the practice of prevention and/or physical rehabilitation of injuries incurred by athletes. To carry

out these functions the athletic trainer is authorized to use physical modalities such as heat, light, sound, cold, electricity, or mechanical devices related to rehabilitation and treatment. (Revised Civil Statutes of the State of Texas, 4512d-1)

Section 8 of this Act, which sets limitations, is as follows:

No person may hold himself out as an athletic trainer or perform, for compensation, any of the activities of an athletic trainer as defined in this Act without first obtaining a license under this act. (Revised Civil Statutes of the State of Texas, 451d-3)

The Act, as interpreted by the State Attorney General, implies:

Those persons who do not hold themselves out to the public as athletic trainers and whose profession or occupation is that of an athletic coach and who are not compensated to perform activities of an "athletic trainer" are exempted from the provisions of H.B. 602 (Acts 1971, 62nd Leg., P. 1722, Ch. 498, enacting this article), and may use physical modalities on

athletes as a necessary activity in the performance of their duties of an athletic coach. (Op. Atty. Gen. 1971, No. M-1012).

A trend may be developing in state legislatures concerning the licensure of athletic trainers by the state. Texas has obviously led the way and it is likely that the Texas legislation may be used as a model for future statutory enactments.

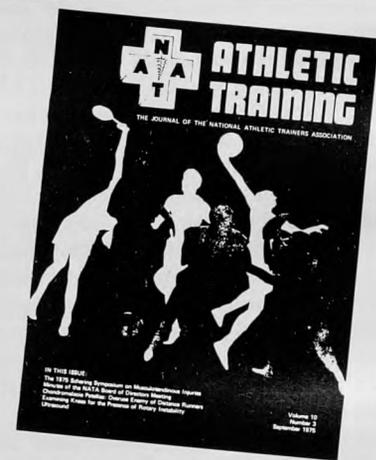
Summary

This paper was prepared with essentially three goals in mind. First, the comparison of various state statutes governing the practice of physical therapy. Second, to present a general idea of the implications these law present to athletic trainers in the carrying out of their duties. Third, to give impetus to the consideration of possible future legislation needs in the profession of athletic training. Despite the contents presented in this paper, whether it be considered complete or incomplete, it is advisable that the athletic trainer investigate the physical therapy act of the state in which he practices so that he will know where he stands in relation to his profession and the law. •



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POTPOURRI

BY
DENNIS ATEN, A.T.,C.

ACSM POSITION STATEMENT ON PREVENTION OF HEAT INJURIES DURING DISTANCE RUNNING

Based on research findings and current rules governing distance running competition, it is the position of the American College of Sports Medicine that:

1. Distance races (16 km or 10 miles) should not be conducted when the wet bulb temperature — globe temperature* exceeds 28° C (82.4° F).
2. During periods of the year, when the daylight dry bulb temperature often exceeds 27° C (80° F), distance races should be conducted before 9:00 a.m. or after 4:00 p.m.
3. It is the responsibility of the race sponsors to provide fluids which contain small amounts of sugar (less than 2.5 g glucose per 100 ml of water) and electrolytes (less than 10 mEq sodium and 5 mEq potassium per liter of solution.)
4. Runners should be encouraged to frequently ingest fluids during competition and to consume 400-500 ml (13-17 oz.) of fluid 10-15 minutes before competition.
5. Rules prohibiting the administration of fluids during the first 10 kilometers (6.2 miles) of a marathon race should be amended to permit fluid ingestion at frequent intervals along the race course. In light of the high sweat rates and body temperatures during distance running in the heat, race sponsors should provide "water stations" at 3-4 kilometer (2-2.5 mile) intervals for all races of 16 kilometers (10 miles) or more.
6. Runners should be instructed in

how to recognize the early warning symptoms that precede heat injury. Recognition of symptoms, cessation of running, and proper treatment can prevent heat injury. Early warning symptoms include the following: piloerection on chest and upper arms, chilling, throbbing pressure in the head, unsteadiness, nausea, and dry skin.

7. Race sponsors should make prior arrangements with medical personnel for the care of cases of heat injury. Responsible and informed personnel should supervise each "feeding station". Organizational personnel should reserve the right to stop runners who exhibit clear signs of heat stroke or heat exhaustion.

It is the position of the American College of Sports Medicine that policies established by local, national, and international sponsors of distance running events should adhere to these guidelines. Failure to adhere to these guidelines may jeopardize the health of competitors through heat injury.

*Adapted from Minard, D. Prevention of Heat Casualties in Marine Corps Recruits. *Milit. Med.* 126:261, 1961. WB - GT - 0.7 (WBT +0.2 (GT) +0.1 (DBT)

SPORTS MEDICINE OFFICERS

Joe W. King, M.D., Houston, Texas, was elected president of the American Orthopedic Society for Sports Medicine last March in San Francisco, California. Other society officers are Leslie M. Bodnar, M.D., South Bend, Indiana, president-elect; Marcus J. Stewart, M.D., Memphis, Tennessee, vice-president; H. Royer Collins, M.D., Cleveland, Ohio, secretary; and Bernard R. Cahill,

M.D., Peoria, Illinois, treasurer.

Donald B. Slocum, M.D., Eugene, Oregon, was given the "Mr. Sports Medicine Award" this year. He received an old track shoe in recognition of his work with runners.

DRUG OPINIONS

Recently a study was completed at the University of Wyoming to determine attitudes and opinions of coaches and trainers regarding the use of ergogenic aids by male intercollegiate athletes. Amphetamines, sedatives, androgenic - anabolic steroids, and local anesthetics were considered to be "ergogenic aids" in this study. Ergogenic aids might be more properly discussed as drug usage.

Opinions regarding drug usage was correlated to geographical area or region, position, age, experience, type of training, size of college, and sport involvement. Approximately 50% of the 1255 questionnaires sent out were completed and returned. On the basis of the data presented in this study the following conclusions appear warranted:

1. Coaches and trainers of male intercollegiate athletes do have a definite opinion toward the use of ergogenic aids. They believe that the use of ergogenic aids changes the essence of sport and should be considered unethical.
2. The opinions of NCAA coaches and trainers are extremely diverse concerning effects of drugs on athletic performance.
3. There is a definite need for an intensive educational campaign concerning the effects and side effects of ergogenic aids to be directed toward NCAA coaches, trainers, and athletes.

4. Coaches and trainers of male intercollegiate athletes do not want to "wait and see" what occurs with relation to the use of drugs in future NCAA competition. However, they did not support any of the reasons for guidelines suggested in the study.
5. NCAA coaches and trainers disagree with the use of amphetamines, sedatives and androgenic-anabolic steroids by male intercollegiate athletes. Neither of the two suggested guidelines to control the use of these drugs were strongly supported by the respondents.
6. There is little association between geographical region, experience, size of college, or type of training and opinion toward the use of ergogenic aids to improve athletic performance.
7. Generally, more of the athletic trainers tended to express an opinion on each item than did the coaches. The additional number of athletic trainers who circled a response other than No Opinion were evenly divided between Agree and Disagree on the majority of the items.
8. The younger coaches were more adamant that NCAA not "wait and

see" what happens before establishing guidelines concerning the use of drugs. They did not consider the problem limited to a small number of male intercollegiate athletes.

9. More respondents with experience in both team and individual sports expressed an opinion than did those coaches or trainers involved in only team or individual sports. In most of the items, these additional responses appeared to add to the majority opinion.

SKIING SAFETY

The Consumer Product Safety Commission estimates that each year 84,000 individuals are injured seriously enough in accidents involving skiing and skiing equipment that they require treatment in a hospital emergency room.

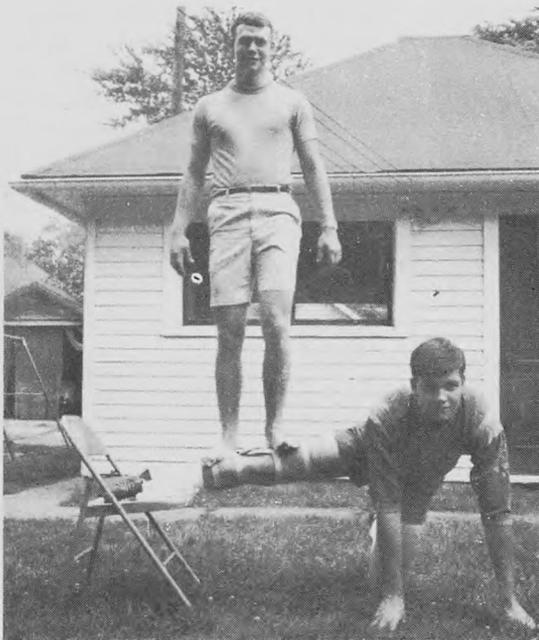
Although there are many factors involved in skiing accidents, two stand out: the experience of the skier and the quality and condition of his equipment.

It is not surprising that beginners have far more accidents than veteran skiers. They have less technical knowledge of the sport, they know

less about their equipment and they often sadly misjudge their abilities. One study revealed that at one resort new skiers suffered 55% of the injuries even though they represented only 21% of the skiers. And though beginners have the most accidents, they spend considerably less time per day on the slopes than veterans.

Without question, any beginner should get expert instruction. Many experts recommend a minimum of five lessons. These should familiarize the new skier with the basic turns and give him the right amount of confidence — neither too much nor too little. Boots, bindings, proper clothes, and proper maintenance are important safety areas in skiing.

Following normal ski slope safety rules is another must. One proper conditioning should also be considered a safety rule. It only makes a good sense to be in good physical condition when attempting any strenuous activity. Conditioning will not only make the activity safer but more enjoyable as well. Of course good conditioning does not refer to a week of hastily contrived exercise just prior to a ski trip, but involves daily activity over a long period of time. ●



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TAPE COMPOSITION AND PERFORMANCE

BY
RONALD L. VAN DAM, Ph.D.
AND
ROBERT O. RUHLING, Ph.D.

Klafs and Arheim (4) indicated that the use of adhesive substances in the care of athletic injuries dated back to ancient times. Perhaps, it is logical to assume that such Greek and Roman physicians as Herodicus, Galen, and Hippocrates were not only concerned with modalities such as ice, healing pastes, heat, and water but also with joint stabilization. With the inception of adhesive tape, team physicians and athletic trainers, among others, soon assessed the new adhesive product as a vital therapeutic adjunct to be used in joint stabilization. Mayhew (6) indicated that it has become an almost universal practice to support the ankle joint with adhesive tape. While Mayhew wrote within the framework of modern sports medicine trends, it appeared that others have long held to such practice. Stretch (10) reported that the U.S. Army considered

adhesive strapping as a joint stabilizer as early as the 1880's.

Stafford (9), Bilik (1), and Zarchen (12) believed that the best adhesive strapping technique for ankle joint stabilization was a combination of the closed-faced-basketweave and the figure-of-eight. The closed-faced-basketweave was also preferred by Meanwell (7) and Lockhart (5). While Novich and Taylor (8) advocated the closed-faced-basketweave, they preferred it in combination with either the figure-of-eight or the Louisiana-heel-lock technique.

Even greater adaptability in the use of adhesive tape in athletics occurred when rubber backing was applied to the adhesive mass, and elastic athletic tape was developed. Because this adhesive product was financially prohibitive, it was usually applied to the athlete only before actual competition. Eventually, elastic tape was listed at a price comparable to that of non-elastic tape. This price change, in addition to the fact that the new adhesive product was applied with more speed, ease, and joint conformability than the non-elastic tape, soon resulted in a sharp increase in its utilization within the area of athletics. Usage of elastic tape was not universal, however, for some team physicians and athletic trainers refused to give their sanction to the

new product. Others maintained that it was best used with non-elastic tape in a combination adhesive strapping procedure which was especially effective for ankle joint stabilization. The diversity of opinion generally resided in whether or not significant changes in performance occurred when athletes had their ankles strapped with either elastic tape, non-elastic tape, or a combination adhesive strapping procedure. No statistical inquiry existed, however, which assessed whether or not significant differences in performance did exist.

The purpose of the present study was to determine the effects of adhesively strapping selected subjects' ankles either with (a) a non-elastic tape, or with (b) an elastic athletic tape, or with (c) a combination of non-elastic and elastic athletic tapes on a selected motor performance test. The motor performance test consisted of a forward agility run, a backward agility run, a lateral agility run, a vertical jump, and a standing long jump.

Procedures

Fifteen intercollegiate basketball athletes, ranging in age from 18 to 23 years, from Central Missouri State University served as subjects. The

Dr. Van Dam is Head Athletic Trainer at Central Missouri State University at Warrensburg. He is a member of the National Athletic Trainers Association. He has been at Central Missouri State University since 1969.

Dr. Rubling is an Assistant Professor of Exercise Physiology and Director of the Human Performance Research Laboratory at the University of Utah, Salt Lake City. He has been there since 1972.

subjects were tested on three successive days. Each day, each subject went to one of three different taping stations and had his ankles taped. The sequence of being taped was randomized for each subject. Subjects shaved their own ankles, daily, from the area of the base of the fifth metatarsal to the midpoint of the shin. They then went to their designated taping stations, and had their ankles sprayed with a tape adherent. To prevent skin irritation from the tape, the ankles were then wrapped with an underwrap from the midpoint of the foot to approximately one inch above the malleoli. The wrapping was applied in a Louisiana-heel-lock technique (8) with one lock on each side of the heel. The subjects were then taped with the closed-faced-basketweave which was followed with the Louisiana-heel-lock. The Louisiana-heel-lock was applied continuously until two heel-locks had been added.

At station 1, non-elastic two-inch athletic tape was applied to the ankles. At Station 2, elastic two-inch athletic tape was utilized. At Station 3, the subjects had the closed-faced-basketweave applied with the non-elastic tape while the Louisiana-heel-lock was applied with the elastictape.

All taping procedures were performed by three highly competent, equally trained athletic trainers. During taping, the foot was held in dorsiflexion, and the stirrup strips were applied with lateral tension. The Louisiana-heel-lock was applied with equal lateral and medial tension.

The forward agility run, the backward agility run, and the lateral movement agility run were chosen as tests of speed and of the body's ability to rapidly change the direction of its momentum. These tests were run on an agility course as described in Van Huss and others. (11) Times were recorded to the nearest one-tenth of a second. The agility runs were performed in the above mentioned sequence. Each subject ran each run twice in succession on each testing day. The times were averaged.

The standing vertical jump was chosen as the jumping test which required both upward thrust and forceful plantar flexion. The jump was performed twice; scores were recorded to the nearest one-fourth of an inch and were averaged for each subject.

The standing long jump was chosen as the jumping test which required both forward thrust and forceful

plantar flexion. The jump was performed twice in succession; scores were recorded to the nearest one-fourth of an inch with a steel tape measure. These two scores were then averaged for each subject. No warm-up jumps were allowed for either the standing vertical jump or the standing long jump.

Each phase of the motor performance test was analyzed utilizing the one-way analysis of variance technique. Significant F-ratios were analyzed using the Scheffe method for multiple comparisons (2). The probability of committing a Type I error was set at 0.005. The data was processed at the University of Utah Computer Center.

Results

The performance scores of the fifteen subjects on each of the five phases of the motor performance test under each taping condition were averaged and are presented in Table I. Differences between times for the various taping conditions for the forward agility run, backward agility run, and lateral movement agility run were non-significant ($p > 0.05$). Differences between distances for the various taping conditions for the

TABLE 1
Motor Performance Test Scores
by Taping Condition

TAPING CONDITION (Mean \pm SD)

Test Phase	Non-Elastic Tape	Elastic Tape	Combination Tape	F-ratio*
Forward Agility Run	15.9 \pm 0.8	15.9 \pm 0.7	15.8 \pm 0.7	0.07
Backward Agility Run	19.5 \pm 1.4	19.4 \pm 1.4	19.4 \pm 1.6	0.02
Lateral Movement Run	17.7 \pm 1.2	17.7 \pm 1.3	17.7 \pm 1.4	0.00
Standing Vertical Jump	24.1 \pm 3.5	24.3 \pm 3.6	24.3 \pm 3.6	0.02
Standing Long Jump	98.7 \pm 7.1	99.8 \pm 7.0	99.8 \pm 7.1	0.12

*An F-ratio based upon 2 and 42 df must be 3.22 or larger to be significant at the 0.05 level.

standing vertical jump and the standing long jump were also non-significant (p 0.05).

Discussion

Inasmuch as the motor performance test scores are quite similar between taping conditions for each test phase (see Table 1) and no differences were observed (p 0.05), it becomes appropriate to discuss the implications of these results. In terms of tape composition and performance, it makes no difference which tape one uses. Performance of the above mentioned tests is not affected. Additionally, for some of these tests, norms are available (11). With the time of 15.9 seconds for the forward agility run, the athletes placed in the 98th percentile for ectomorphic mesomorphs. In addition, the distance of 24.3 inches on the standing vertical jump placed the athletes at the 70th percentile.

It does not appear that taping or the composition of the tape hindered their performance on the forward agility run. However, falling in 70th percentile on the standing vertical jump may or may not have been influenced by taping per se and not the composition of the tape used (3).

Conclusions

Agreeing with Mayhew (6) that the ankle joint will be adhesively taped, the results of this study indicate that the trainer can, with confidence, use the non-elastic or elastic tape of his choice without fear of impeding his athletes' performance.

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Sincere appreciation is extended to those members of the 1972-1973 Central Missouri State University Basketball Team who served as subjects in this study.

Data for this report have also been presented by the senior author at the Midwest Regional Meeting of the American College of Sports Medicine which was held at the University of Kansas, Lawrence, Kansas, December 8, 1973.

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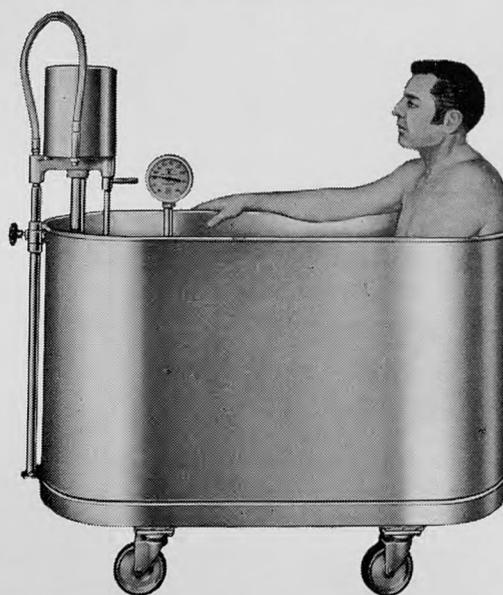
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Management of a Crucial Triad Knee Injury: A Case Study

BY

MARK J. DOUGHTIE, A.T.,C.

Unfortunately, knee injuries occur quite often in athletics and especially football. During the 1974 football season our fullback received a serious knee injury during game competition while playing on natural turf.

The mechanics of the injury were as follows:

1. The injured player was carrying the ball on a quick dive play.
2. The ball-carrier was in the open field when a defender drove his helmet into his knee from the outside while his foot was firmly planted on the turf. This immediately forced the joint far beyond its normal range of motion.

The signs and symptoms of the injured athlete that were seen when the team trainer and physician examined the athlete were as follows:

1. The athlete stated that he felt a "pop" and a "tearing" in his knee.
2. Observation of both knee joints showed no visible joint deformity. A careful inspection was made of the injured knee; with the injured knee in full extension a valgus stress was applied. When this was done the knee joint opened approximately 3/4 to 1". This stress caused the athlete no pain indicating that the medical collateral ligament had been completely torn.
3. A pressure bandage and an ice pack were applied. The athlete was evacuated by ambulance and admitted to a local hospital for further evaluation.

Our team orthopedic surgeon surgically repaired the athlete's knee two (2) days after the injury. During surgery the following structures were found to be damaged: 1) medial collateral ligament, 2) anterior cruciate ligament, 3) medial meniscus, and 4) the posterior capsule.

The athlete's rehabilitation program began as soon after surgery as possible. Basically the rehabilitation program was as follows:

1. While the athlete was still in a full

leg cast straight leg raises were performed as were isometric leg contractions.

2. Once the cast was removed, isometric quad-setting was performed, as well as range of motion exercises primarily for flexion. In conjunction with these exercises warm whirlpool treatments were given.
3. When full flexion of the injured knee was regained, extension and flexion exercises were performed on an isokinetic knee machine. We feel that since isokinetics is a variable resistance type exercise the pain factor is reduced in the early stages of rehabilitation. I must mention that while the injured leg was our primary concern, the uninjured leg was also exercised daily.
4. As strength continued to increase, the athlete began leg presses to increase the strength of his hip flexors, and toe raises to increase strength in the lower leg.
5. Next the athlete began light running exercises. He was

permitted to run in straight lines only, as well as run stairs.

6. As substantial strength was gained he progressed to sprinting and running figure of eights. The athlete was ready to return to competition when the injured knee was stronger than the uninjured leg.

Approximately eight months post-surgery the athlete was able to resume playing football. Because of the rotational instability of the joint, the athlete was required to wear a derotation knee brace. Our 1975 football season has just been completed. The athlete competed in nine of ten contests at the fullback position. He missed one week of competition due to fluid in the knee joint following a game played on an artificial surface.

In summary, the results of surgery and rehabilitation enabled this player to continue his football career. This accomplishment was not made by the trainer or physician, but through the athlete's hard work and determination to come back. •

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Mark J. Doughtie is presently the Head Athletic Trainer at Boston State College. He graduated from the University of Massachusetts with a B.S. in Physical Education in 1973. He is currently a graduate student at Northeastern University working toward a Masters Degree in Sports Medicine.

A Memorial



On Monday, November 17, 1975 all athletic trainers lost a friend when Dr. James Feurig passed away. Dr. Feurig served as team physician for Michigan State University for twenty-two years. Literally tens of thousands of high school, college and professional athletes received the benefits of his expertise in sports medicine. Hundreds of trainers have come in contact with his willing way to share his knowledge of athletic medicine. His service with the N.A.T.A. in helping establish the certification exam was just one of the ways he contributed to one of the more enjoyable interests of his life - athletics.

Dr. Feurig played professional football, right out of high school, with the Green Bay Packers in 1933-34-35 to earn enough money to attend college and medical school. He was a highly decorated flight surgeon during World War II and began his college avocation as a team physician at the University of Missouri.

His presence will be sorely missed by so many but there are so many who can recall his smile and pleasant manner and be thankful for having known him.



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CALENDAR OF COMING EVENTS

by
JEFF FAIR, A.T.,C.

January 29 - February 4, 1976 - The American Orthopaedic Society for Sports Medicine will hold the first 1976 meeting in New Orleans. For information contact Robert Larson, M.D., 750 East Eleventh Avenue, Eugene, Oregon 97401.

February 14, 1976 - A Metroplex Trainer's Clinic will be held in

Mesquite, Texas. For information contact Dennis Hart, Athletic Trainer, North Mesquite High School, Mesquite, Texas.

Athletic Training will be happy to list events of interest to persons involved in sports medicine, providing we receive the information at least two months in advance of publication.

Please include all pertinent information and the name and address of the person to contact for further information. This information should be sent to Jeff Fair, Athletic Department, Oklahoma State University, Stillwater, Oklahoma 74074.

BOOK REVIEWS

The Oxford Companion to World Sports and Games

Edited by: John Arlott
List Price: \$29.95
1143 Pages
Illustrated

Oxford University Press
200 Madison Avenue
New York, New York 10016

The Oxford Companion to World Sports and Games is a good "reference book" and "a guide and aid to appreciation." It is a very interesting book that covers every sport that this reviewer has ever heard of or has not heard of. This book was planned as an authoritative introduction to most active sports and games which are played in international and national competition. *The Companion* is very good in telling how the sport is played instead of how to play the sport. Each main entree has an historical as well as a descriptive section, and there are shorter entries on outstanding players and performers.

There are too many sports to list all of the sports that are covered, but

some of the more interesting uncommon sports are aquabobbing, bandy, bicycle polo, camogie, curling, gliding, orienteering, pelota, sepak takraw, and many, many others.

This is a well-written, easy to understand, comprehensive book on sports. It is a tremendous reference book and good for any trainer's library.

Athletic Training: A Programmed Instructional Text

By: Richard J. Carey
Gary D. Reinholtz
John W. Schrader
Mark J. Smaha
Edited by: Richard Hoover
400 Pages
Illustrated

Beta Publishing Company
940 Pine
Glenview, Illinois

This book is a must for any athletic trainer or would be athletic trainer. As stated by the title, this book allows a person to teach and test himself on the material he learns. A well-

BY
KEN MURRAY, A.T.,C.
EASTERN KENTUCKY UNIVERSITY

written, easy to understand book that can refresh experienced trainers or help young trainers understand for the first time material that he has not seen before. Instructors of athletic training classes may be interested in this book as a workbook for his athletic training class.

The topics that are covered in this book are as follows:

1. Ankle, Foot, and Lower Leg.
2. The Knee, Thigh, and Hip.
3. The Upper Extremity.
4. The Head and Spine.
5. Heart Disorders in Athletic Environments.
6. Special Athletic Injuries and Problems.
7. Protective Equipment.
8. The Training Room.
9. Nutrition in Athletics.
10. Taping, Wrapping, Bandaging, and Splinting.

The material covered is up to date and fairly accurate, as far as I can tell. The review recommends this book very highly. •

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NATIONAL ATHLETIC TRAINERS' ASSOCIATION BOARD OF DIRECTORS MEETING

JUNE 5-10, 1975 DISNEYLAND MOTEL, ANAHEIM, CALIFORNIA

LXXXI. The Post-Convention meeting of the Board of Directors of The National Athletic Trainers' Association was convened at 8:10 o'clock a.m., Tuesday, June 10, 1975 with Mr. Frank George, President presiding.

LXXXII. Following a brief discussion in reference to the office of vice-president, Mr. Bill Flentje nominated Mr. Eddie Lane, who was seconded by Mr. Smith and moved that nominations be closed by Mr. White.

ACTION: Eddie Lane was elected Vice-President of NATA - unanimously.

LXXXIII. President Goerge discussed The Olympic selections again and informed The Board that he had been asked to submit an additional name. The Board, following discussion, directed President George to resubmit the same list as approved by The Board previously.

LXXXIV. Following discussion on the report by Dr. Gary Delforge for the American College of Sports Medicine, a motion was made by Mr. Flentje and severally seconded to accept the report.

ACTION: Approved

LXXXV. Mr. Sayers "Bud" Miller appeared before The Board of Directors to give the Professional Education Committee report and The Continuing Education Program report.

LXXXVI. A motion was made by Mr. Lane and seconded by Mr. Lee to accept the request of The Professional Education Committee to postpone the starting date of January 1, 1976 to January 1, 1977 for The Mandatory Continuing Education Pro Program.

ACTION: Approved

LXXXVII. The Professional Education Committee report on undergraduate curriculum was presented to The Board. A motion was made by Mr. Lee and severally seconded to accept the following undergraduate Programs report:

University of Southern Mississippi
Toledo University
South Dakota State University
Portland State University
Brigham Young University
Lock Haven State College
Cortland State College
West Virginia University
Eastern Kentucky University
University of Delaware

LXXXVIII. A motion was made by Mr. Lane and severally seconded to accept the following Graduate Programs:

University of Oregon
University of North Carolina

LXXXIX. A motion was made by Mr. White and seconded by Mr. Flentje to extend revisitation to Indiana State University until mid-year.

ACTION: Approved

XC. A motion was made by Mr. Flentje and seconded by Mr. Jordan to approve the programs at Lamar University, University of New Mexico, and West Chester State College for an additional 5 (five) year period.

ACTION: Approved

XCI. A request was made by The Professional Education Committee to eliminate Section Number 3 of the Procedure for Certification. Following discussion, a motion was made by Mr. Lane and severally seconded to table the discussion until a later date.

XCII. Chairman Miller presented a new Professional

Education Committee proposal for restructuring the Committee. Following discussion, a motion was made by Mr. Lee and seconded by Mr. Crowl to accept the new plan.

ACTION: Approved

XCIII. A motion was made by Mr. Bunch and seconded by Mr. Lane to charge \$1.00 for each endorsement certificates used for clinics.

ACTION: Not approved

Failed 2-8

XCIV. A motion was made by Mr. Flentje and seconded by Mr. Crowl to accept the budget request of \$9000.00 by The Professional Education Committee for 1975-1976.

ACTION: Approved

XCV. Mr. L.F. "Tow" Diehm appeared before the Board to discuss The Ethics committee and The Code of Ethics.

XCVI. Following a lengthy discussion in reference to the request by The Ethics Committee that the word "seek" be changed to "accept" in Article II, Section 3, National Representation of The Code of Ethics, a motion was made by Mr. Bunch and seconded by Mr. Lee change the wording.

ACTION: Not approved

wfor - Districts 3 and 7

Against - Districts 1,2,4,5,6,8,9, and 10 (Motion Fails)

XCVII. The Ethics Committee chairman requested that the name of Mr. Bruce Vogelsong Dickinson College, be removed from his committee. The Ethics Committee only meets during The National Convention and Mr. Vogelsong has been unable to attend during the last two years.

A motion was made by Mr. White and seconded by Mr. Flentje to delete the name of Bruce Vogelsong from the Ethics Committee.

ACTION: Approved

XCVII. A motion was made by Mr. Bunch and seconded by Mr. Flentje to add the name of Mr. Charles Welty, Baptist College, Charleston, South inna, to the Ethics Committee.

ACTION: Approved

XCIX. There was lengthy discussion in reference to the Code of Ethics which prompted Mr. White to make a motion which was duly seconded to take further action at the Mid-Year Board of Directors Meeting in 1976 pertaining to the Ethics Committee.

ACTION: Approved

C. A motion was made by Mr. White and seconded that the Code of Ethics be published in *Athletic Training* annually.

ACTION: Approved

CI. Mr. William E. "Pinky" Newell appeared before the Board to discuss the Grants and Scholarship Committee report and request.

CII. Following a discussion a motion was made by Mr. White and seconded by Mr. Crowl that "Pinky" Newell, in conjunction with Bill Chambers and the convention people in Boston, schedule an appropriate time in which to honor the scholarship winners.

ACTION: Approved

CII. Mr. Chambers reported that Mr. Newell's committee has received \$200.00 from Mr. Lewis Crowl, Crowl Sports Medicine Clinic in Sacramento, California, to assist with the student trainers programs.

CIV. The Grants and Scholarship Committee requested that it be permitted to hold an annual voluntary pledge

support from the membership to raise funds for scholarships. A motion was made by Mr. Jordan and seconded by Mr. Crowl to accept this request.

ACTION: Approved

CV. Following discussion, a motion was made by Mr. Lane and seconded by Mr. Flentje that the minorities money coming to the Grants and Scholarship Committee be put on the basis of two-thirds to the Scholarship Fund and one-third to the active scholarship fund, unless specified differently by the donor then it would require Board action.

ACTION: Approved

CVII. Mr. Ted Quedenfield, Tem University and NATA representative to NAIRS appeared before the Board with Mr. Ayers "Bud" Miller to discuss the following proposal:

"I feel at this time, therefore recommended, should the relationship between NATA and NAIRS be solidified, that the NATA endorse NAIRS as the National Athletic Injury and Surveillance Reporting System; that all athletic trainers be encouraged to use the system."

A motion was made by Mr. Malacrea and seconded by Mr. Lee to adopt the proposal.

ACTION: Approved

CVII. Mr. Rod Poindexter, Chairman of the Placement appeared before the Board to present his report.

CVIII. A motion was made by Mr. Crowl and seconded by Mr. Flentje to accept a budget of \$3500.00 for the Placement Committee which will also include the mailing of the placement information direct from the chairman.

ACTION: Approved

CX. A motion was made by Mr. Lee and seconded by Mr. Flentje to accept the request of Mr. Poindexter to remove the name of Mr. James Booher from the Placement Committee.

ACTION: Approved

CXI. A motion was made by Mr. Lee and seconded by Mr. Flentje to honor the request of Mr. Poindexter and add Mr. A.G. Edwards to the Placement Committee.

ACTION: Approved

CXII. Mr. Fred Hoover reappeared before the Board to discuss the future convention sites and other convention matters.

CXII. Mr. Kent Falk appeared before the Board to discuss the 1977 convention in Dearborn, Michigan.

CXIV. A motion was made by Mr. Flentje and seconded by Mr. Bunch to change the convention sites to St. Louis in 1977 and Detroit in 1978.

ACTION: For - Districts 3,5, & 9

Against - Districts 2,4,6,7,8, & 10

Abstain - District 1

(Motion Failed)

CXV. A motion was made by Mr. Flentje and seconded by Mr. Smith an appropriate \$1200.00 for secretarial help for the National Convention committee.

ACTION: Approved

CXVI. Following a very lengthy discussion in relation to future convention sites, a motion was made by Mr. Crowl and seconded by Mr. Flentje to show the convention sites to be as follows: Boston - 1976; Dearborn - 1977; St. Louis - 1978; Las Vega - 1979; New Orleans - 1980; Further discussion in reference to future sites will be presented at the mid-year meeting.

ACTION: Approved 9-0-1

District 1 obtained CXVII. Following discussion of The Ad Hoc Committee on Women in Athletic Training by Ms. Holly Wilson, who is pleased with the progress made for women in athletic training, a motion was made by Mr. Lee and seconded by Mr. Bunch to dissolve the Ad Hoc Committee on Women in Athletic Training.
ACTION: Approved

CXVII. Liaison representative appointments to allied organizations for 1975-76 are as follows:

1. American Alliance for Health, Physical Education and Recreation
Sayers "Bud" Miller
2. American Academy of Pediatrics
Richard Malacrea
3. American College Health Association
4. American College of Sports Medicine
Gary Deforge
5. American Corrective Therapy Association
Jeff Fair
6. American Medical Association, Committee on Medical Aspects of Sports
Frank George
7. American Physician Therapy Association
Frank George
8. Division for Girls and Women's Sports
Holly Wilson
9. Joint Commission on Competitive Safeguards and Medical Aspects of Sports
Roy Don Wilson, Victor Racine, William Newell, Otho Davis
10. National Association of Intercollegiate Athletics
Joe Richardson
11. NCAA Football Rules Committee
Warren Morris
12. National Federation of State High School Associations
To Be Announced
13. National Operating Committee on Standards for Athletic Equipment
Tom Wall
14. United States Olympic Committee
Charles Medlar

A motion was made by Mr. White and seconded by Mr. Flentje to accept the above appointments.
ACTION: Approved

CXIX. A motion was made by Mr. Lane (District 6) and seconded by Mr. Smith that the NATA rescind the resolution on helmets, face masks, tackling and blocking.

ACTION: For - Districts 6 and 9
Against - Districts 1,2,4,5,7,8,9,10
Abstained - District 3
Motion - Failed

CXX. Mr. James Hayes, attorney from Iowa City, Iowa, appeared before the Board for an open discussion. The comments were as follows:

Pres. George: Mr. Hayes, we are basically interested in the remarks you made concerning our resolution on spearing and the legal implications of spearing. Therefore, make yourself comfortable and you have the floor for anything you desire to offer.

Mr. Hayes: One of the points I wanted to bring out in the NATA convention has been picked up by you men and I just continued it in the discussion there, and that is with regard to head tackling, butt blocking techniques, etc., that are being taught in the nation today, also involving your resolution which I heard yesterday concerning this matter at the Business Meeting.

Now, I was prepared to discuss with the people there this afternoon the fact that the National Federation of High Schools has adopted for the 1975 high school rule book a position similar to the one that you have taken -- a very strong and extensive one.

The NCAA has adopted the same resolution. This statement has the full support of the Rules Committee and the support in principle by the NCAA Football Rules Committee.

President George: They support it in principle. Now then, the 1975 Rule Book is not yet for the colleges and I cannot, therefore, tell you definitely what is in there. I do have the statement that appears in the 1975 High School Rule Book but, of course, I guess that is usually where it all starts anyway -- on the high school level, where the student is taught this particular technique.

Mr. Hayes: Yes, and I primarily was devoting my comments this afternoon to the possible liability on the part of the high school coach in teaching this technique. That is where the lawsuits have been filed to this point, one in New Jersey, one in California. The ones that I have seen have come up at the high school level.

Mr. White: What is the high school rule going to be? I believe you indicated that you had it there?

Mr. Hayes: What I have here is the statement of National.

President George: You received that in the mail.

Mr. White: however, how is that going to be in the rule books of the high schools?

Mr. Hayes: They have copied it almost verbatim, Bob, into the definition area of the rule book. I think it is page 63 in the 1975 rule book. They have there practically

adopted the National Federation statement word for word in the definition area.

Also, I think that since the definition has been made and the prohibition adopted by the High School Federation and Alliance, that now, more than anytime, if the technique is taught by a high school coach, he is going to be teaching something which constitutes undue risk for the player and he is going to be taking himself outside of the protection of his profession.

This is where I think the whole liability question stands in the head and neck injured area.

A lot of what we have been talking about has been the feeling for many years among the medical profession, orthopedists, neurologists, neurosurgeons and some of the high school associations and, really, this is the first time that it has been put into writing and I think that once you get to that point, it is just like in medicine, law or whatever, when you have guidelines and you have rules and the rules are violated, then you are really sticking your neck out in relation to a liability question.

I suppose this is because the resulting injuries are so devastating and it is a very critical and dramatic area, which results in hemorrhaging, brain damage and the like.

For example, I am involved with a kid right now who was a senior in high school, a player in a private school in the Midwest. He suffered a bilateral subdural hematoma and went from an I.Q. of 140 plus down to 98. This is the way he is going to be for the rest of his life. He was involved in a personality change and the whole business and his mother just won't accept that and yet he was taught to head tackle, drive, hit the nose with your face and drive straight through the face mask and all of the components. I just think that the position taken by the NATA and by the Rules Committee of the National Federation is a problem.

President George: I would like to ask Jim to kind of repeat the statement he made there regarding the athletic trainers who suture and inject or aspirate with regard to the practice of medicine.

Mr. Hayes: Let me say that I think the insurance program that you people have is an excellent one and I think it is very important that your members, the participants, the people who practice athletic training, acquire this kind of insurance.

Now, within your particular insurance policy, you have four exclusions and exclusion No. 3 is engaging in another business or profession. This means, of course, the unauthorized practice of medicine or at least can mean that insofar as I am concerned.

I think it is axiomatic that a doctor is allowed to diagnose, to prescribe medications, to treat. A trainer is allowed to recognize gross pathology, to follow a doctor's orders insofar as treatment is concerned, to follow a doctor's prescription and nothing outside of those things.

Now, when a trainer starts deciding among the disease processes and picks one out as being what is wrong -- when a trainer starts handing out medication without a written order or telephone order -- when a trainer starts instituting therapy, and this includes ultrasound, etc., I think he is in the area of the unauthorized practice of medicine and, in turn, I believe he is opening himself up for a lot of problems and by that I mean liability for suit, because the trainer just isn't authorized to conduct these kinds of things. This also includes suturing, aspirating, injecting, whether it is B-1 vitamins or whether it is antibiotic therapy.

There is no way in the world, for example, that a trainer can know whether a person will undergo an antibiotic reaction.

Mr. Malacrea: Could you develop a standard operating procedure with regard to some types of OTC medications?

Mr. Hayes: I don't think so. This is especially the case as to antibiotic therapy because antibiotic therapy is a very, very difficult and tough area in medicine today. There are many and severe actions involved. There are almost as many reactions as there are people taking antibiotics and as many as there are types of antibiotics.

I just don't think you want to open yourself up to that kind of thing.

In the _____ Case, the one I talked about, that was one of the biggest areas of defense by the doctors on the other side -- the serious consequences of antibiotics therapy -- how much testing you have to go through even as a doctor -- blood cultures, blood specimens -- and it takes days and days to determine what kind of therapy can be applied to a certain kind of illness and they said, you know, there just wasn't time to do this kind of testing in the case of this particular individual -- that he was going to die or go blind.

Golly, you know, if doctors are defending that way, if you applied some antibiotics and something went wrong, they would devour you right in that courtroom.

Now I don't want to be a harbinger of doom about this thing but there are a lot of things we can do and I say "we" because I am actually involved with the Athletic Department at the University of Iowa, with the coaches and trainers, all with a view toward trying to prevent as many problems as possible.

You know, some of you, we have a pretty good set-up there. We have a team physician and of course, everything funnels up and down to and from him. At some of the colleges in the United States you have volunteer doctors and trainers, perhaps two or three team physicians and nobody knows what is going on. I just think you are inviting problems with that kind of thing. Under those circumstances, for example, even the doctors don't know what is going on let alone the trainers and, further, who is going to protect the trainer when you get into a situation like that? It is too easy to pass the buck.

However, I think you should have as many written procedures as you can. I think it is a good idea for example, to have a sheet for confirming telephone orders by a doctor -- the name of the patient, the date of the telephone order, what the prescription was, progress notes the next day -- as a matter of fact, have one of those things for each one of the kids and have progress notes just like nursing notes in a hospital and really follow it through. This covers you. In other words, make sure that you are covered in relation to as many of these things as you can be.

President George: What about if the doctor tells you -- and I mentioned this and that is why I am asking it -- to go ahead and suture or aspirate?

Mr. Hayes: Well, you are both wrong -- absolutely.

Mr. Jordan: I have a question going back to the butt block, using the head technique.

In order words, what is the status of trainers now if an athlete is injured and he comes back to the school?

Does it make any difference at all whether or not we have informed our staff of the inherent danger of this technique? How do we stand legally in regard to this kind of question?

Mr. Hayes: I don't think there is really much you can do in relation to it other than to inform the coaches.

Mr. Jordan: Should this involve some sort of written type of thing?

Mr. Hayes: Well, I think it would be a good idea because you know darn well there is going to be a lot of resistance to this kind of thing and I don't think there is any way that you can be held responsible in this because you don't have any duty -- you are not supervising or instructing these guys and how to tackle, block or anything else -- you just happen to be there catching the remains when they come off the field.

I just mentioned that today because it is such a serious critical area for all of us in sports medicine.

You see the 32 percent of the kids that are recruited with the neck injuries, head injuries -- you see it all the time and I don't think there is any way in the world that any court could ever hold you responsible for some kid going out and head tackling and you are not out in the field telling him how to do it or not to do it. However, I think we have a perfect opportunity to tell our coaches and to be strong about our position on the things and that is about it.

I included this in my talk today because I think the coaches are part of the Sports Medicine thing, probably as much as anything else, especially when they are teaching that technique.

After the neck is broken in two or three places and there is a concussion, all we can do is kind of fix it up, tape it up afterwards you know.

Mr. Lane: You mentioned casting as one of the things that was the practice of medicine and all?

Mr. Hayes: Yes.

Mr. Lane: Where you referring to all castings -- soft castings, plaster castings?

Mr. Hayes: I sure was and we were talking about it on the way over.

Probably the biggest area today of the public screaming about malpractice is in relation to orthopedics and these people are responsible for the surgery, the reduction of dislocations from start to finish, including casting, and I think they have to take that responsibility.

I think it is critical. For example, you know, the cast might be put on just a little big wrong and the kid is, in turn, left with some disorder afterwards. I think it is easy for you people to say, "I am not going to put any cast on -- I am not a doctor." I am not going to be involved in a multi-million-dollar lawsuit of some kind coming back to me after I put a cast on."

I don't think that the doctors should throw that obligation on you in the first place.

President George: Thank you very much, Jim for your presence. Are there further questions? I am sure we have all gained a lot from your brief words to us here this afternoon. Again, thank you very much.

CXXI. A motion was made by Mr. Crowl and seconded by Mr. Flentje to move the National Office from Lafayette, Indiana to Philadelphia, Pennsylvania and have the Fanco, lue data processing Center handle the account.

ACTION: Approved

CXXII. There being no further business, a motion was made by Mr. Flentje and seconded by Mr. Lane to adjourn the meeting . . . Whereupon, at five-fifteen o'clock p.m., in accordance with regular motion, the meeting was adjourned. ●

Constitution of the National Athletic Trainers Association

Article I -- Name

The name of this organization shall be the National Athletic Trainers' Association.

Article II -- Objectives

The objectives of this association shall be:

- (1) The advancement, encouragement, and improvement of the athletic training profession in all its phases, and to promote a better working relationship among those persons interested in the problems of training.
- (2) To develop further the ability of each of its members.
- (3) To better serve the common interest of its members by providing a means for a free exchange of ideas within the profession.
- (4) To enable members to become better acquainted personally through casual good fellowship.

Article III -- Membership

Section 1

There shall be eight (8) classes of membership as follows:

- (1) Certified
- (2) Associate
- (3) Retired
- (4) Student
- (5) Affiliate
- (6) Advisory
- (7) Allied
- (8) Honorary

and no individual shall be eligible for more than one (1) class of membership at the same time.

Section 2

Qualifications for membership and the rights and obligations of members shall be as indicated in the By-Laws.

Article IV -- Election of Members

Section 1

Application: Each applicant for any

class of membership shall sign an application stating his desire and intention to become a member of the association, to advance its best interests in every reasonable manner and to accept as binding upon himself its constitution and By-Laws.

Section 2

Membership in the National Athletic Trainer's Association is based on approval of each District's membership committee, the National Athletic Trainers' Association membership committee, in addition to completion of requirements for membership as listed in the By-Laws.

ARTICLE V -- DUES

Section 1

The dues of all classes of members shall be as prescribed by the By-Laws.

ARTICLE VI -- SUSPENSION OF MEMBERSHIP

Section 1

Membership cancellations may be recommended by any member of the association for a cause and the membership of any member be caused to cease by a two-thirds majority vote of those members present at the annual business meeting.

Section 2

Appeals: A person whose membership is cancelled in accordance with Section 1 shall be allowed, either in person or through some member of the association, to appeal to the National Membership Committee for reconsideration. Information in the appeal shall be presented to the Board of Directors and the Board shall, by majority vote, decide whether to submit the question of the membership cancellation to the association membership for another one in accordance with Section 1.

ARTICLE VII -- VOTING POWER

Section 1

Certified and certified retired members shall be entitled to one vote upon all questions submitted to the association for decision.

ARTICLE VIII -- ORGANIZATION

Section 1

National: The governing body of this organization shall be The Board of Directors.

Section 2

Regional: Each District Athletic Trainers' Association will be self-governing as per its own specific Constitution and By-Laws. Nothing in a District Constitution and By-laws shall be contrary to the National Constitution and By-laws. In its relations with the National Organization, the District Association will be under the jurisdiction of the National Athletic Trainers' Association Constitution and By-Laws.

(a) For the purpose of facilitating the work of the National Athletic Trainers' Association the United States and Canada shall be divided into ten (1) geographic areas and each district organization shall have district jurisdiction throughout one of the areas. District area boundaries shall be set by the Board of Directors, and the districts shall be designated and identified by the numbers one (1) through ten (10).

(b) Each District shall elect a District Director who must be a Certified member of the National Athletic Trainer's Association. Each District Director shall serve as a member of the Board of Directors of the national organization and act with full authority for the district in carrying out the functions and responsibilities of The Board of Directors.

Section 3

(a) President: Elected by a majority popular vote of the voting membership of the National Athletic Trainers' Association. The Board of Directors serves as the nominating committee. The Board will nominate two candidates with biographies of the two candidates published in the Journal prior to the popular vote. Vote shall be by mail. Candidates must have served on the Board of Directors during the past four years.

A ballot shall be mailed to each voting member at his address of record by May 1st and marked ballots shall be sent by mail to the Executive Director by May 15.

The term of office of the President shall be two years and may not serve more than two consecutive terms. The term of office shall begin at the time of the business meeting of the Association at the National meeting following the election.

(b) Vice President: The District Director from one of the ten districts shall be elected to the office of Vice President by the Board of Directors. One or more District Directors may be nominated by the members of the Board and election shall be by majority vote.

The Vice President must be a District Director, also. If the Vice President ceases to be a District Director, a new Vice President must be elected.

The term of office of the Vice-President shall be one year. He may be reelected.

In the event that the office of President becomes vacant before the end of the term for which the President was elected, the Vice-President shall become President immediately and shall serve as President for the remainder of the term or period for which the previous President was elected. In the event that a District (vice president) becomes President, the district which he represented shall select another Director to represent it on the Board of Directors.

The Vice President has no duties except to assume the office of President as prescribed.

Section 4

Removal of Officers: All national officers may be impeached and convicted on the following grounds; embezzlement, malfeasance in office, and actions contrary to or in violation of this Constitution and its By-Laws. Before impeachment proceedings can be instituted, a brief, containing the charges shall be drawn up and presented by a board member to the Board of Directors sitting in executive session. The aforementioned brief must then be adopted by a majority vote prior to the formal presentation of the charges. Impeachment of any officer shall require a two-thirds vote of the voting membership of the Association present at the annual meeting.

ARTICLE IX -- POWERS AND DUTIES OF OFFICERS

Section 1

The officers are the President, Vice-President, Board of Directors and Executive Director.

Section 2

All powers and duties of officers are as prescribed in the By-Laws and Article VIII Section 3 of the constitution.

ARTICLE X -- COMMITTEES

All committees, except the membership committee, shall be appointed by the President with the approval of the Board of Directors.

ARTICLE XI -- MEETINGS

Section 1

The annual business meeting shall be held each year at a time and place set by the Board of Directors.

A quorum for the annual meeting shall consist of one-fifth of the voting membership of the Association, excluding Certified Retired members in figuring the one-fifth.

Section 2

The Board of Directors may submit items of association business to the voting membership for a vote by mail. Approval of items so submitted shall require a "yes" majority of a responsiveness of at least one-fifth of the voting membership of the association.

Section 3

The Board of Directors shall meet at the National Convention and at any other time that the President

determines it necessary to call a Board meeting.

A quorum for a Board of Directors meeting shall be six (6).

The President may submit appropriate items of association business to the Board of Directors for a vote by mail. For such a voting procedure the President shall first secure a "second" to the proposal and then submit the proposal to each member of the Board by mail with a request to mail a "yes" or "no" vote on the proposal by a definite date not sooner than ten (10) days after the mailing of the proposal. Board approval of items submitted shall require a "yes" vote of at least six members of the Board.

The President may submit emergency items of Association business that are appropriate for Board action to the Board of Directors for a vote by telephone. For such a voting procedure the President shall first secure a "second" to the proposal and then call each member of the Board for his vote on the proposal. Board approval of items so submitted shall require a "yes" vote by at least six members of the Board.

ARTICLE XII -- AMENDMENTS TO THE CONSTITUTION

Section 1

All proposed amendments to the constitution shall be submitted in writing to the Executive Director at least six weeks prior to the annual business meeting. The Executive Director shall distribute copies of the proposal to all voting members at least three weeks prior to the annual business meeting.

Section 2

A proposed amendment to the constitution that has been properly submitted shall be read at the annual business meeting and a two-third (2/3) majority vote of the voting membership present shall be necessary for the adoption of the said amendment.

ARTICLE XIII -- AMENDMENTS TO THE BY-LAWS

The By-Laws may be amended at any official meeting of the Board of Directors by a majority vote.

By-Laws may not be added, deleted or amended by a vote by mail or telephone.



ANNOUNCEMENTS

NATA ENDORSED PROFESSIONAL ATHLETIC TRAINING PROGRAMS

Dates: April 23-25, 1976

Location: Town & Country Hotel, San Diego, California.

Sponsor: Robert Moore, A.T.,C.
Department of Athletics, San Diego State University, San Diego, California.

SCHEDULE OF FUTURE SITES AND DATES OF N.A.T.A. CERTIFICATION EXAMINATION

REGIONAL (all sites subject to a minimum number of five candidates per site)

March 21, 1975

Tucson, Arizona; Raleigh, North Carolina; Lincoln, Nebraska; Odessa, Texas; Ann Arbor, Michigan; West Chester, Pa.; Gainesville, Florida (all sites tentative)

Deadline for applications: February 15, 1976.

Deadline for requesting application forms: January 20, 1976.

NATIONAL

June 13, 1976
Boston, Massachusetts

Deadline for applications: May 1, 1976.

Deadline for requesting application forms: April 1, 1976 (Subject to a limit of 50 candidates - applications accepted in order of remittance - regional applicants granted preference).

August 8, 1976

Terre Haute, Indiana; West Chester, Pa. (and other site(s)) if a minimum of 10 regional applicants creates such a demand. Application deadlines are the same as for the National site and are strictly enforced.

Application forms available from:

N.A.T.A. Board of Certification
Post Office Box X18
Ann Arbor, Michigan 48107

(Please indicate date you wish to take the exam when requesting application).

NOTE: 1977 Exam dates will approximate the 1976 dates and sites on a regional basis. The national exam will be at the site of the annual N.A.T.A. Convention with similar numerical limitations.

NATIONAL ATHLETIC TRAINERS ASSOCIATION

EDUCATIONAL PROGRAMS LEADING TO PROFESSIONAL CERTIFICATION IN ATHLETIC TRAINING

Programs listed here are approved by the National Athletic Trainers

Association. With the exception of one undergraduate program, all are coeducational. For detailed information, write to the program director whose name is given in parenthesis in the listing. Two basic plans of education for athletic training are listed in the following key:

- (1) Bachelor's degree level curriculum
- (2) Master's degree level curriculum
- (3) Accepts male students only

ARIZONA

UNIVERSITY OF ARIZONA (2)
Department of Physical Education
Tucson, Arizona 85721 (Gary Delforge)
ARIZONA STATE UNIVERSITY (1)
Department of Health, Physical Education & Recreation, Tempe, Arizona 85281 (Troy Young)

CALIFORNIA

CALIFORNIA STATE UNIVERSITY, FULLERTON (1)
Department of Health, Physical Education & Recreation, Fullerton, California 92634 (Jerry Lloyd)
CALIFORNIA STATE UNIVERSITY, LONG BEACH (1)
Department of Physical Education, Long Beach, California 90840 (Dr. Daniel Arnheim)
CALIFORNIA STATE UNIVERSITY, NORTHRIDGE (1)
Department of Physical Education & Athletics, Northridge, California 91324 (Chuck Wolcott)

DELAWARE

UNIVERSITY OF DELAWARE (1)
Department of Physical Education, Newark, Delaware 19711 (Dr. C. Roy Rylander)

ILLINOIS

EASTERN ILLINOIS UNIVERSITY (1)
School of Health, Physical Education & Recreation, Charleston, Illinois 61920 (Dennis Aten)
WESTERN ILLINOIS UNIVERSITY (1)
College of Health, Physical Education & Recreation, Macomb, Illinois 61455 (Roland E. LaRue)

INDIANA

BALL STATE UNIVERSITY (1)
Department of Men's Physical Education, Muncie, Indiana 47306 (Ronald Sendre)
INDIANA UNIVERSITY (1)
School of Health, Physical Education & Recreation, Terre Haute, Indiana 47809 (Robert Young or Sam Newberg)
INDIANA STATE UNIVERSITY (1,2)
School of Health, Physical Education & Recreation, Terre Haute, Indiana 47809 (Mel Blickenstaff)
PURDUE UNIVERSITY (1)
Athletic Department, Mackey Arena, West Lafayette, Indiana 47907 (William E. Newell)

IOWA

UNIVERSITY OF IOWA (1)
Department of Physical Education for Men, Iowa City, Iowa 52240 (Ed Crowley or Dan Foster)

KENTUCKY

EASTERN KENTUCKY UNIVERSITY (1)
School of Health, Physical Education & Recreation, Richmond, Kentucky 40475 (Ken Murray)

LOUISIANA

LOUISIANA STATE UNIVERSITY (1)
Department of Health, Physical Education & Recreation, Baton Rouge, Louisiana 70803 (Marty Broussard)

MASSACHUSETTS

NORTHEASTERN UNIVERSITY (1)
Department of Physical Education, Boston-Bouve College, Boston, Massachusetts 02115 (Kerkor Kassabian)
SPRINGFIELD COLLEGE (1)
Division of Health, Physical Education & Recreation, Springfield, Massachusetts 01109 (Sherrod W. Shaw)

MICHIGAN

CENTRAL MICHIGAN UNIVERSITY (1)
School of Health, Physical Education & Recreation, Mount Pleasant, Michigan 48859 (Kenneth Kopke)

MINNESOTA

MANKATO STATE UNIVERSITY (1)
Physical Education Department, Mankato, Minnesota 56001 (Gordon Graham)

MISSISSIPPI

UNIVERSITY OF SOUTHERN MISSISSIPPI (1)
Department of Athletic Administration & Coaching, Hattiesburg, Mississippi 39401 (Dr. E. L. Harrington)

MONTANA

UNIVERSITY OF MONTANA (1)
Department of Health, Physical Education & Recreation, Missoula, Montana 59801 (Dr. Walter C. Schwank, Chairman or Naseby Rinehart)

NEW MEXICO

UNIVERSITY OF NEW MEXICO (1)
Department of Health, Physical Education & Recreation, Albuquerque, New Mexico 87131 (L. R. Diehm)

NEW YORK

STATE UNIVERSITY COLLEGE AT CORTLAND (1)
Division of Health, Physical Education & Recreation, Cortland, New York 13045 (John Sciera)

NORTH CAROLINA

APPALACHIAN STATE UNIVERSITY (1)
Department of Health, Physical Education & Recreation, Boone, North Carolina 28607 (Ron Kanoy)

EAST CAROLINA UNIVERSITY (1)
Department of Health, Physical Education, Recreation & Safety, Sports Medicine Division, P.O. Box 3247, Greenville, North Carolina 27834 (Dr. Edgar Hooks, Chairman or Rod Compton)

UNIVERSITY OF NORTH CAROLINA (2)
Department of Physical Education, Chapel Hill, North Carolina 27514 (Dan Hooker)

NORTH DAKOTA

NORTH DAKOTA STATE UNIVERSITY (1)
Department of Physical Education and Athletics, Fargo, North Dakota 58102 (Dennis Isrow)

UNIVERSITY OF NORTH DAKOTA (1)
Department of Health, Physical Education & Recreation, Grand Forks, North Dakota 58201 (A. G. Edwards)

OHIO

OHIO UNIVERSITY (1)
Athletic Department, Convocation Center, Athens, Ohio 45701 (Charles Vosler)

TOLEDO UNIVERSITY (1)
Department of Physical Education, Toledo, Ohio 43606 (James D. Nice)

OREGON

OREGON STATE UNIVERSITY (1)
Physical Education Department, Corvallis, Oregon 97331 (Richard F. Irvin)

UNIVERSITY OF OREGON (1,2)
College of Health, Physical Education & Recreation, Eugene, Oregon 97403 (Lou Osternig)
PORTLAND STATE UNIVERSITY (1)
Department of Health & Physical Education, Portland, Oregon 97207 (Leo Marty)

PENNSYLVANIA

EAST STROUDSBURG STATE COLLEGE (1)
Koehler Fieldhouse, East Stroudsburg, Pennsylvania 18301 (Lois E. Wagner or John R. Thatcher)
LOCK HAVEN STATE COLLEGE (1)
School of Health, Physical Education & Recreation, Lock Haven, Pennsylvania 17745 (David Tomasi)
SLIPPERY ROCK STATE COLLEGE (1)
Health Science Department, Slippery Rock, Pennsylvania 16057 (Dr. James R. Pennell)
THE PENNSYLVANIA STATE UNIVERSITY (1)
102 Sports Research Bldg., University Park, Pennsylvania 16802 (Sayers J. Miller)
WEST CHESTER STATE COLLEGE (1)
Physical Education Department, School of Health & Physical Education, West Chester, Pennsylvania 19380 (Phillip Donley)

TEXAS

LAMAR UNIVERSITY (1)
Department of Intercollegiate Athletics, P.O. Box 10066 Lamar Station, Beaumont, Texas 77710 (Paul Zeek)
SOUTHWEST TEXAS STATE UNIVERSITY (1)
Department of Health & Physical Education, San Marcos, Texas 78666 (Dr. Bobby Patton)
STEPHEN F. AUSTIN STATE UNIVERSITY (1)
Department of Health and Physical Education for Men, Nacogdoches, Texas 75961 (Joe E. Richardson)
TEXAS CHRISTIAN UNIVERSITY (1,3)
Department of Athletics, Fort Worth, Texas 76129 (Elmer Brown)

UTAH

BRIGHAM YOUNG UNIVERSITY (1)
Department of Physical Education Provo, Utah 84602 (Marvin Roberson)

WASHINGTON

WASHINGTON STATE UNIVERSITY (1)
Department of Physical Education for Men and Women, Pullman, Washington 99163 (Dr. Roger Wiley, Chairman or Richard Melhart)

WEST VIRGINIA

WEST VIRGINIA UNIVERSITY (1)
Department of Professional Physical Education, Morgantown, West Virginia 26506 (John Spiker)

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

1. Eight Copies of the manuscript should be forwarded to the editor and each page typewritten on one side of 8 1/2 x 11 inch plain paper, triple spaced with one inch margins.

2. Good quality color photography is acceptable for accompanying graphics as well as glossy black and white prints. Graphs, charts, or figures should be of good quality and clearly presented on white paper with black ink, in a form which will be legible if reduced for publication.

3. The list of references and citations should be in the following form: a) books: author, title, publisher with city and state of publication, year; b) articles: family names, initials and titles of all authors, title of article, journal title, with abbreviations accepted as per Index Medicus, volume, page year. Citations in the text of the manuscript will take the form of a number in parenthesis, (7), directly after the reference or name of author being cited,

indicating the number assigned to the citation in the bibliography.

4. It is the understanding of the editor of *Athletic Training* that manuscripts submitted will not have been either previously published nor simultaneously submitted to another journal. The author accepts responsibility for any major corrections of the manuscript as suggested by the editor.

5. It is requested that each submitting author include a brief biographical sketch and acceptable photograph of themselves. Please refrain from putting paper clips on any photograph.

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

Address all manuscripts to:

Clint Thompson
Department of Athletics
Michigan State University
East Lansing, Michigan 48824



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