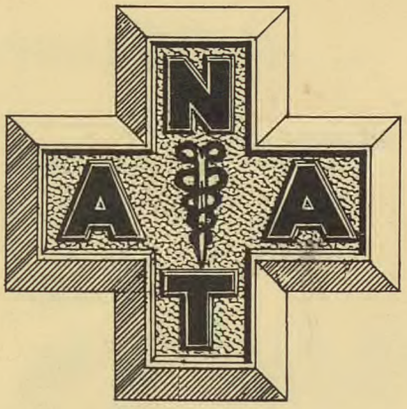
R. C. White

The JOURNAL

WINTER 1961

OF THE

NATIONAL ATHLETIC TRAINERS ASSOCIATION



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12th ANNUAL MEETING

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AN OPEN INVITATION

The National Athletic Trainers Association is pleased to extend, to other than their members, an opportunity to subscribe to *The Journal*, the official publication of the association. This quarterly magazine serves as a publication source and clearing house for the research and writings about topics pertinent to the casual factors, prevention, or treatment, of athletic injuries. In previous issues have been articles authored by member athletic trainers, physicians, physiologists, physical therapists, corrective therapists, and others vitally interested in improving athletic performance or furthering the health and safety of the young men entrusted to their care. It is the sincere hope of the association that through the interchange of information by *The Journal* that all students participating in sports programs in secondary schools and colleges of the county will benefit by the greater knowledge available to us.

We hope that you will want each issue as a reference for your staff and for your student majors. Yearly subscription price is two dollars, which should be sent to Wm. Newell, National Secretary, 1104 Beck Lane, Lafayette, Indiana.

A REPORT FROM THE NATIONAL PROGRAM CHAIRMAN

The program for the 1961 National Athletic Trainer's Association meeting in Madison, Wisconsin, is moving along very well. The dates, time schedule, and many of the speakers have been set up. This year, in contrast to the past few years, the program will be a 2 day affair. The dates are June 11, 12, and 13. Some committee meetings will be held on Saturday, June 10, all of which will be arranged by our Executive Secretary. Sunday, June 11, will serve as arrival day, and the evening will be set aside for a social gathering to be arranged by Walter Bakke, our Host Trainer. All lectures and program sessions will be held on Monday and Tuesday, June 12 and 13. So that many of you may be able to plan in advance, the following is a breakdown of the daily time schedule for the 2 day program:

Monday, June 12 –

8:45 A.M. to 12:00 noon, morning sessions
1:00 P.M. to 2:00 P.M., District and Committee Meetings
2:00 P.M. to 4:30 P.M., afternoon sessions

Tuesday, June 13 –

9:00 A.M. to 12:00 noon, morning sessions
1:30 P.M. to 3:15 P.M., afternoon sessions
3:30 P.M. to 4:30 P.M., NATA National Meeting

The entire program will take place in downtown Madison, Wisconsin, at The Loraine Hotel. On the program this year, I feel that we have many outstanding men in the field of Athletic Training. Where at all possible, I have a Doctor-Trainer team on all lectures. Also this year, a lecture-demonstration is being planned by some of our physical education colleagues in the field of modern dance. I feel the women who teach this fine art have a great deal to offer in showing us some of their warm up and stretching exercises to develop specific muscles of the body. Lloyd Stein of Minnesota, who has a "world" of knowledge to offer, has suggested a panel on unusual injuries and how various Trainers care for these injuries. The entire program is shaping up to be a very fine educational experience.

The following is a list of some of the subjects to be covered:

1. Panel on Unusual Injuries in Athletics.
2. M.D.-Trainer on the Problem of a "Drop Foot" Condition Resulting from Knee Injuries.
3. M.D.-Trainer on the Recognition and Referral of Athletic Injuries.
4. Trainer on the Practical Care of the Feet in Athletics.
5. Basketball Conditioning Panel–Pre-season, Season, Off-season, and Meal Habits.
6. M.D.-Internal Injuries, Emergency Care.
7. An excellent movie on the Knee–Injury, Diagnosis, First-aid, Surgery, Rehabilitation, and Taping.
8. Modern Dance Techniques–lecture, demonstration.
9. M.D.-Trainer–On Field Care of the Football Player.
10. Football Conditioning Panel – The Professional's Point of View.

I hope that all of you will make plans to attend the National Meeting this summer. Madison is the home of the University of Wisconsin, and is situated on beautiful Lake Mendota. This can be a welcome vacation spot for you and your family. Your attendance at the National Meeting can serve to strengthen yourself and our Association. It will certainly give you a personal pride to be a member of such a fine group of men.

Thomas E. Healion
Northwestern University
National Program Chairman

LET'S GO TO MADISON IN JUNE

The 1961 N.A.T.A. Convention will be held in Madison, Wisconsin June 11, 12 and 13, 1961. Tom Healion of Northwestern U. is getting the program together and it will appear in the next edition of the Journal. The meetings will be held in the Loraine Hotel. Walt Bakke of the University of Wisconsin is handling all of the hotel arrangements as well as the Sunday evening get-together.

Below you will find a list of the hotels and motels that are members of the Madison Chamber of Commerce. Any other information that you may desire can be obtained by contacting Walt Bakke at the Madison Chamber of Commerce, P.O. Box 71, Madison 1, Wisc.

Madison will be a wonderful place to be in June. We hope everyone will plan to make this trip a must in their summer schedule and make this the year we break all attendance records for our convention.

Editor.

HOTELS

Belmont Hotel, 31 N. Pinckney St., 200 rooms, from $4.75 up.
Edgewater Hotel, 666 Wisconsin Ave., 89 units, from $8.00 up.
Loraine Hotel, 123 West Washington Ave., 400 rooms, from $4.75 up.
Park Hotel, 22 South Carroll St., 155 rooms, from $3.50 up.
Vikingtown Hotel, Inc., 4353 West Beltline, 36 rooms, from $6.00 up.

MOTELS

Arbor Motel, 3313 West Beltline, 14 units, from $6.00 up.
Bel-Aire Motel, 3351 West Beltline, 7 units, from $6.00 up.
Beltline Motel, 2905 West Beltline, 7 units, from $6.00 up.
Capitol Motel, 881 West Beltline, 20 units, from $7.00 up.
Edgewood Motel, Hy. 12 and 18, 14 units, from $6.00 up.
Fairview Motel, 3230 Commercial Ave., 10 units, from $6.00 up.
Hart's Cloverleaf Motel, 875 S. Beltline, 19 units, from $5.00 up.
Holiday Inn, 4402 E. Washington Ave., 168 units, from $7.50 up.
Ivy Inn Motor Motel, 2355 University Ave., 60 units, from $9.00 up.
Lake View Motel, City Hy. 12, 13, 14, 21 units, from $5.00 up.
Madison Travelodge, 909 W. Beltline, 50 units, from $6.00 up.
Motel Madison, Hwy. 51 Junction, 21 units, from $6.00 up.
Motel Mayflower, 2500 Perry St., 25 units, from $7.50 up.
Motel Royal, East Hwy. 30, 12 units, from $6.00 up.
Porky's Motel, 3000 West Beltline, 14 units, from $4.00 up.
Rego's Sands, 2800 West Broadway, 22 units, from $5.50 up.
Romdon Motor Court, City Hwys. 13, 14, S., 24 units, from $5.50 up.
Spence's Motel, 3575 E. Washington Ave., 20 units, from $7.00 up.
Sterling Motel, 901 Applegate Road, 20 units, from $8.00 up.
Town and Campus Motel, State at Frances, 46 units, from $8.50 up.

THE PATHOLOGY OF TRAUMA: HEALING FACTORS AS THEY APPLY TO INJURIES IN SPORTS

RICHARD PATTON, M.D., and WILLIAM PATTERSON
The Ohio State University, Columbus, Ohio

Injuries in sports are repaired by the same body processes that heal all other injuries. As we follow the sports pages during the football season, it is not uncommon to read of the football player who is injured, unable to practice, and certainly will be unable to play in the weekend game. However, by some stroke of magic at game time he is not only able to play but also turns in an outstanding performance. This leads many people to believe that athletes must heal injuries by different processes than normal individuals, or that miraculous drugs have been injected during the course of the week to make playing possible. Actually there is no question that the well-conditioned individual or athlete heals injuries rapidly. His quick recovery is due to good physical condition and training rather than any miraculous form of treatment. This rapid recovery may also be due to participation in spite of pain rather than because of rapid healing.

Athletic injuries are similar qualitatively to injuries from other causes. No matter how the force is applied, the injury occurs when the normally prevailing anatomical relations are altered by force. In the production of such injuries a moving or stationary object changes the state of uniform rest or motion of the second object. Whether such a collision results in injury depends on several factors of which the most important is the momentum of impact.[1] Other factors being constant the greater the momentum the more severe the injury. When the force is not dissipated but is centered in a small period of time and in a small area the injury is greater. Therefore the shorter the duration of contact and the smaller the area of impact, the greater the injury.

Traumatic injuries depend for their occurrence on a non-uniform change in the state of rest or motion of the body tissues. No injury occurs if the change is uniform. The body structure and condition are of equal importance to the force applied in determining the nature and severity of the injury. Any association with athletics reveals some participants prone to injury and others who are seldom injured. A twelve year association with athletic injuries indicates that resistance to injury is not a result of muscular strength or of body size.[2] The overweight athlete does seem to be prone to injury, as is the player who is not in top physical condition generally, and specifically in training for the sport involved. Minor variations in structure may be significant, as for instance the fact that knee injuries have been relatively common in this period in athletics who tend to be slightly knock-kneed, and uncommon or even rare in those who are bowlegged.

No matter how the tissue destruction is brought about, it initiates the process of soft tissue repair. The degenerating or damaged cells appear to liberate a chemical substance which causes cellular proliferation leading to repair of the injury.[3] The mechanism of soft tissue repair is simple and for purposes of our discussion can be divided into six steps.

1. Destruction of tissue.
2. Effusion of blood and plasma.
3. Coagulation and formation of a fibrin network.
4. Vascular and fibroblastic proliferation.
5. Fibrous reaction leading to firm scar.
6. Reaction to use.

It is obvious that these steps do not lead one to the other as through a series of gates but rather they overlap and intertwine to produce the process that we know as wound healing. Wound healing has been divided by some investigators into only two phases.[4] The process from destruction of tissue through the step of vascular and fibroblastic proliferation is the substrate phase and steps five and six in the above list are combined as the collagen phase.

In sports injuries, where early but safe return to participation is the goal, an understanding of the tissue sequence of repair is important. The effusion of blood and plasma starts at the time of injury and occurs for the first twenty-four to thirty-six hours. Coagulation of blood and plasma occurs early if the collection is small, and later if large or progressive. As coagulation occurs a fibrin network is laid down which forms the framework for repair. This period of clot formation begins at about twelve hours and is well established in thirty-six to forty-eight hours. Cellular proliferation, which is the actual process of repair, occurs very early in response to the tissue destruction. Fibroblastic and endothelial proliferation has begun at the end of a few hours and in the experimental wound is uniformly established by twelve hours. The fibroblasts begin to lay down collagen by the third day. The active process of fibrous union is well advanced by the fifth day after injury. The scar becomes firm, contracted and strong and at the end of three weeks there is fully formed non-vascular scar tissue. Although substances that accelerate the healing process are unknown, we recognize many factors which slow wound healing.[5] Some of these are important experimentally and in the field of surgery such as vitamin C deficiency, lowered body proteins, circulating corticosteroids, and wound x-irradiation. We are not concerned with these factors in sports injuries. However, we do deal with the following problems in wound repair.

1. *Hemorrhage.* It takes only a small amount of hemorrhage occurring from capillary and venous disruption to initiate the healing reaction. Further hemorrhage slows wound repair. It not only forms a mass which the fibrous tissue must bridge, but also it causes tissue damage which delays the repair.

2. *Edema.* Edema leads to a decrease in tissue vascularity with relative hypoxia and ischemia and a slowing of repair.

3. *Separation of tissue.* Any factor which separates the torn ends of the injured tissue will mechanically interfere with healing of this tissue. This is demonstrated in acromioclavicular joint separation in which the outer end of the clavicle springs upward separating the free ends of the torn ligament. Delayed healing can occur when other tissue is interposed between the ends of a torn ligament. It can also occur from a lack of immobilization, and from traction and mechanical separation of torn fibers.

4. *Infection.* Mild inflammation is a normal part of wound repair but it is an aseptic type of inflammation. A true infection calls forth tissue response leading to inflammation and suppuration and this response takes precedence over wound repair.

5. *Muscle spasm.* Muscle spasm may occur following any traumatic injury, but it is particularly prone to occur following injury to skeletal muscle. It leads to further traction and further damage to the injured muscle and to local and generalized ischemia in the limb involved.

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THE PATHOLOGY (Continued)

6. *Corticosteroids.* The use of local corticosteroids in the treatment of acute sports injuries is currently popular. However there is no argument to support the use of these preparations in the early stages of trauma. In fact cortisone has been shown to suppress fibroplasia, and capillary and vessel proliferation.[6] Collagen synthesis has been shown to be decreased. The tensile strength of healing surface wounds is markedly diminished in experimental animals treated with steroids and the contraction of wounds is retarded. The mode of action of the corticosteroid hormones is thought to be at the cell membrane or on the ground substance or collagen. As the action of corticosteroids is known at present there is no indication for their use in the immediate care of acute lesions. Their role in the therapeutic regimen comes later when they are useful in suppressing fibroplasia. The usefulness of corticosteroids in the treatment of chronic athletic injuries is not subject to question.

7. *Disuse atrophy.* Disuse atrophy begins immediately when active motion is suspended. Following sports injuries it is important since true healing means not only firm fibrous fixation of the wound but also a return of muscles, ligaments, and joints to full power and full range of motion. It is important then to begin active motion as early as possible. Early active motion will not only aid in the absorption of hemorrhage and edema but will also keep disuse atrophy at a minimum.

It is obvious that pathology is not the only important basic science in the management of athletic injuries. A knowledge of anatomy, physiology, pharmacology and psychology are likewise requirements. However, to demonstrate the use of the principles of wound repair in planning treatment, we will use as examples the following sports injuries.

A bruise or contusion is probably the most common sports injury. Certainly they occur in all shapes, sizes, and degrees in sports. The immediate swelling and hemorrhage will continue for twelve to twenty-four hours. This is the time for the use of cold applications and pressure bandages to limit the extent of the hemorrhage and edema. Pressure will likewise produce approximation of torn fascia or ligaments. After twenty-four to thirty-six hours, heat, motion and massage are used to hasten absorption and allow repair of the injury. During the stage of fibrous repair continued use of heat to promote active circulation and active motion is advocated. The active motion has multiple benefits. An increase in circulation to the damaged area is obtained, and the tension and use improves the tensile strength of the fibrous repair.[7] Disuse atrophy is prevented.

In *a simple ligamentous strain* the same problems are present but active motion is even more important. In a ligamentous tear where actual disruption of the ligament can be diagnosed this ligament must be in accurate apposition if proper healing is to occur. This apposition can be obtained in many ways from simple pressure to firm immobilization in plaster. However, in many areas immobilization will not properly approximate an injured ligament and surgical repair is necessary. An example is the medial collateral ligament of the knee. When this ligament is completely torn so that abnormal lateral motion is present at the knee joint, the synovia is also torn and protrudes externally keeping the fibers of the ligament separated. This separation persists even when the limb is immobilized in a plaster cast. Since distraction results in poor healing, operative repair is usually indicated.

The open wound is not an uncommon athletic injury. Since most wounds are contaminated by equipment or by dirt from the playing field, each open wound must be treated as a contaminated wound. Tetanus should no longer be a problem in sports injuries since no athletic field should ever be contaminated with manure products, and since the players who participate in any sport which might involve an open wound should receive a prophylactic course of tetanus toxoid before participation. The open wound should be treated with soap and water cleansing and thorough irrigation using saline solution. If a wound is potentially infected it should not be closed. Old wounds, bites, and wounds with marked mechanical contamination should be considered as potentially infected.

VARIATIONS IN HEALING OF SPECIALIZED STRUCTURES

Muscle. A muscle tear can be a prolonged, disabling injury to the athlete. This extended disability is usually the result of a delayed healing process. Striated muscle heals in two ways.[8] A clean incised wound or tear in striated muscle without the complicating factors of hemorrhage or muscle degeneration will heal by actual proliferation of the cells in striated muscle. This means that the muscle fibers heal without the interposition of scar between the two segments. If the muscle fibers are separated mechanically or by hemorrhage, this gap is filled in by granulation tissue and repaired by scar. Since this type of repair requires approximately three weeks, reinjury with additional hemorrhage is common. Rest, cold and pressure should be started immediately to limit hemorrhage and edema and to try to obtain primary union. The local hemorrhage after an injury of this type does not form a hematoma, but rather extravasates through the muscle. For this reason aspiration is not feasible but it is usually helpful to inject the torn area immediately with hylauronidase in one-half per cent procaine to relieve muscle irritability and aid in absorption of the hemorrhage.

Repaired tissue is active cellular tissue. Pathologically the fibroblast in the process of repair has similar evidences of activity to those shown by a fibroblast in an active fibroblastic sarcoma. This active tissue, particularly in muscle, does not withstand repeated trauma. Recurrent hemorrhage results. Further activity may result in the formation of a large, bulky, tender mass of active hemorrhagic and partially repaired tissue which will often calcify and end in a chronic, painful muscle mass that we know as a myositis ossificans. The basic problem in a myositis ossificans is repeated injury with marked tissue reaction. It is obvious that the best management is complete inactivity. These calcific deposits may take six months to resorb but they will heal completely unless stimulated by ill advised therapy or particularly by ill advised operative intervention.

Tendon. The repair of a completely severed tendon is a surgical problem, usually an incised wound, and is not a common sports injury. However, the pathology of tendon repair must be considered in the management of partial tendon tears which are commonly seen as athletic injuries. A tendon being a highly specialized structure heals much more slowly than fibrous tissue. It has been shown experimentally that the active cellular process of repair following a tendon injury continues for four to six weeks.[9] A sprain or strain of a tendon then leading to

Continued on page 6

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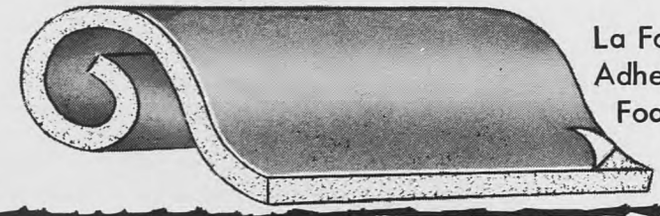

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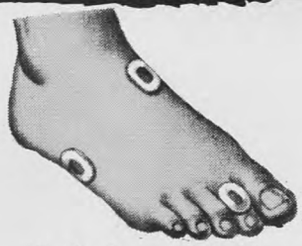

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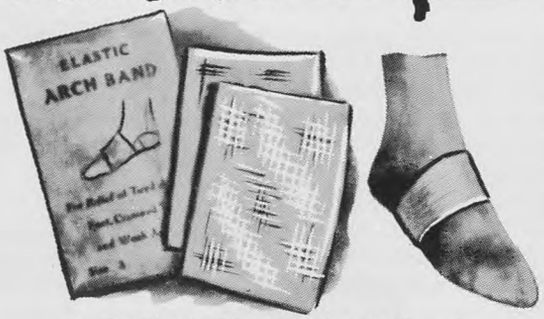

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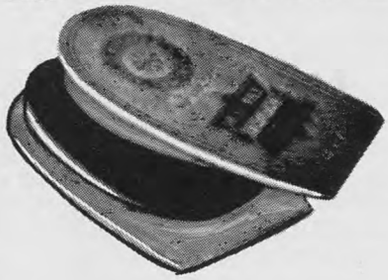

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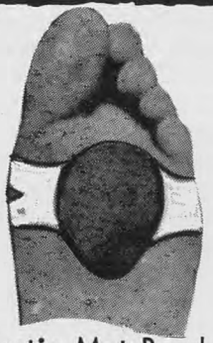
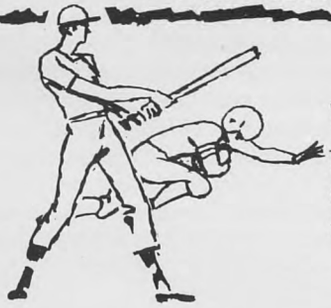


Elastic Met-Band



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THE PATHOLOGY (Continued)

In the later stages of the process the only solution is surgical removal of the bursa.

Joint Structures. Injuries to joints and joint structures often lead to damage either to the synovia or to the lining cartilage of the joint. The synovia of the joint capsule will not stretch. It is a vascular, non-elastic membrane which is torn when the joint is severely strained or damaged and gives rise to immediate hemorrhage into the joint cavity. The actual repair of the synovia follows the same pattern as the repair of fibrous tissue. The blood within the joint cavity leads to repair problems since it produces irritation and increased fluid accumulation. Moreover, blood is slowly absorbed from the joint cavity and in many cases will produce a pannus, or a layer of fibrin which is deposited on the inner surface of the joint. Since this can only heal by fibrosis, stiffness and limitation of motion are the result. It has been shown that motion of a joint hastens absorption from the joint.

The smooth cartilage lining the bony surfaces of the joint functions as a sliding structure, allowing motions of the joint, and as an elastic structure serving to take up shock following trauma. It has no blood supply of its own but gets its nourishment from the bone below it and from the joint fluid.[10] The nutrition from normal joint fluid is quite adequate. Loose cartilage bodies present within the lumen of the joint will survive for years receiving nourishment only from the synovial fluid.

With these facts concerning repair of joint structures in mind it is evident that blood in the joint should be removed. Since it is technically difficult to remove all the blood at one aspiration, and since the blood that remains after one aspiration causes continual irritation and an outpouring of more fluid, repeated aspiration is usually necessary until the fluid it clear. It should also be evident that a swollen joint is a damaged joint. Active motion of the swollen joint is indicated. Sports participation is contraindicated. Any joint condition that causes partial tear of some of the tendinous fibers may be a prolonged problem. If active motion is started too soon it will lead to irritation of the synovial sac through which the tendon slides and a tenosynovitis will result. Local immobilization of the injured tendons must be maintained until healing is complete, but to prevent adherence of the tendon to its sheath daily passive motion is advised after the first week. Free movement of the unaffected parts of the limb must be allowed.

Bursa. A bursa is a smooth, thin walled sac containing a very small amount of fluid. It is present over a bony prominence allowing skin, tendon or muscle to slide over this prominence. Normal repair processes apply to single injuries to a bursa, but in sports repeated injuries to bony prominences and therefore repeated injuries to the bursal sac are common. A chronic bursitis is formed by an irritation of an active repair process comparable to that which produces a myositis ossificans. The wall of the sac is damaged by trauma and begins its repair cycle. While it is in the active phase of repair another injury occurs and the process of repair is exaggerated. A fibrous nodule forms on the bursal wall and fluid accumulates because of irritation of the sac. Repeated injury may lead to more fibrous projections on the wall of the sac. These projections break off producing the melon seed bodies that are found in chronic bursitis. Protection from reinjury will avoid this chronic problem. After the chronic problem has developed, corticosteroids by local injection into the sac will decrease the fibrosis and lessen the irritation. prolonged swelling or repeated swelling should be corrected since it can lead to chronic damage to the lining cartilage.

CONCLUSIONS:

1. The healing of sports injuries is governed by the laws of wound repair.
2. A knowledge of the pathology of wound repair provides the basis for proper treatment of athletic injuries.

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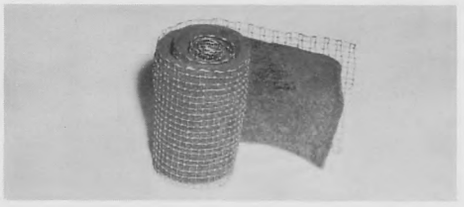
WIRE MESH SPLINT PROVES ITS WORTH

HAROLD H. BEAN, HMC, USCG
Athletic Trainer
U. S. Coast Guard Academy



The wire mesh splint, which is standard medical equipment in the Armed Forces, has a definite place in the Athletic Trainer's kit. It is extremely useful where fractures of the arm, elbow, forearm, wrist, and ankle are concerned.

The wire mesh is 5″ wide and 36″ long, and as the splint should be well padded, a piece of ¼″ felt 5″ wide and 18″ long is used for this purpose. The felt is rolled up with the wire when the splint is not in use. When rolled, this splint (including the felt), has a diameter of only 2½″, so it does not take up much room in the kit. The felt tends to make the splint sturdy, but if for some reason a more unyielding splint is needed, the wire may be doubled back to give more support.

Probably the wire splint's most important asset is the fact that it may be molded into just the correct contour by fitting it to the opposite member of the injured part. It is then secured with roller gauze, cravat bandages, or similar material.

If this splint cannot be obtained commercially, it can easily be made from wire mesh obtained at a local hardware store.

BASEBALL TRAINING

DON FAULS, *Trainer*

Florida State University

Preparing for a baseball season requires the players to start preliminary work, on their own, about a month before practice sessions start. In order to be ready for the opening practice, time and effort must be expended to get into condition. Pre-practice work should be divided into four (4) categories: Running, Stretching, Throwing, and Weight work.

RUNNING

Early conditioning requires plenty of running. The only way for any player to develop speed and stamina is to run, run, run. It is the *only* way to get into shape. Good legs make good ball players. Running is hard work and demands initiative and self-sacrifice. This applies to all players, especially pitchers. Remember, it is possible to play with a sore arm, but practically impossible to play with a sore leg.

STRETCHING

All parts of the body need plenty of stretching. Stretching exercises will prevent muscle pulls in the legs and back. All players, especially pitchers, should stretch their arms. To stretch the arm, all one needs to do is to hang from a suspended bar, the top of a door, or any other available place that is above the head. This will also stretch the shoulder muscles. Just hang for a minute or so: *no pullups.* Do this anytime, but particularly, just before the daily workout. Two (2) or three (3) stretches of a minute or so will suffice; *Do not overdo it.* It should be continued throughout the season. Make it a daily habit.

THROWING

After stretching good, start throwing easily. Test and find out how much easier it is to throw after a good arm stretch. Throw every day. Don't throw hard until the arm is warmed up.

For the pitchers in early season practices: Don't throw hard for a week. Start spinning curves the first day. Don't try to break them off, just spin the ball to get the feel.

WEIGHT WORK

This phase of training applies to pitchers. However, other players may use it after consultation with the Coach or the Trainer. Working with weights is not designed to develop bulging muscles, but to develop muscle tone. The following is a tentative program that can be followed:

Get a barbell or any fifteen (15) lb. weight that is easy to control. Standing, with the arm at the side in full extension, palm up, eight in hand, *flex* the arm *slowly* to complete flexion. Return to full extension. Do this ten (10) times. This exercise strengthens the anterior arm muscles, *above the elbow.* Then, in same basic position but with the lower arm in the midway position (thumb pointing up), repeat above exercise ten (10) times. This exercise also strengthens arm muscles, *above the elbow.*

To strengthen muscles in the *back of the arm, above the elbow:* Raise the arm above the shoulder with elbow bent (flexed), straighten arm ten (10) times.

To strengthen muscles of the arm, *below the elbow:* Elbow and lower arm resting on table with wrist extending over end of table, weight in hand, palm up; flex wrist ten (10) times. These muscles are the most important for wrist action in throwing the curve ball or any breaking pitch.

The Rotator muscles of the wrist and elbow are strengthened by assuming the same position for *below the elbow* work. Turn hand over so that it faces the floor, then return to starting position. Ten (10) times.

These exercises are to be done *only three (3) times per week.* Add one (1) repetition to each exercise per week. In other words, each exercise is done ten (10) times per day, three (3) days a week. The next week, each exercise is done eleven (11) times per day, three (3) days a week, and so on until twenty (20 repetitions per day are reached.

Here at Florida State, this program is instituted in the fall of the year. When the maximum of twenty (20) repetitions are reached, the player is called in for evaluation and consultation.

Let me emphasize again that these exercises are not designed to develop Charles Atlas muscles, but to tone and strengthen the important muscles used by a pitcher. For players, other than pitchers, twice the number of repetitions per day are recommended.

TIPS FOR PITCHERS

Pitchers should always do their running just before going into the clubhouse, at the end of practice. In this way, the pitcher gets up a good sweat and goes in rather than stand around with a damp sweat shirt, which may lead to a sore arm. All pitchers should have at least two (2) sweat shirts. Prior to a workout on a cold, windy day, it is advisable to put some oil on the arm, shoulder, and back. After a good workout or after pitching a game, pitchers should get a massage on the arm, shoulder, and back muscles, with alcohol. This is done to close the pores and to prevent sore arms. This massage should be of short duration, only enough to close the pores.

Pitchers, as well as all players, should play plenty of "Pepper" games. This helps to develop quick reflexes. Also, these games are good exercise, good for stomach muscles and overall conditioning.

Many pitchers develop a blister on a thumb side of the middle finger of the pitching hand. This is caused by the pressure exerted on the ball by this finger—especially when throwing the curve ball. The finger nail is always pointed in this area. When pressure is exerted on the ball, as in throwing the curve, the point of the nail projects into the skin, causing a blister to form. What it amounts to is a soft surface being compressed between two hard surfaces. This condition can be eliminated by keeping this point of the nail filed down. Never use clippers on this nail. Use a nail file.

EMERGENCIES ON THE FIELD

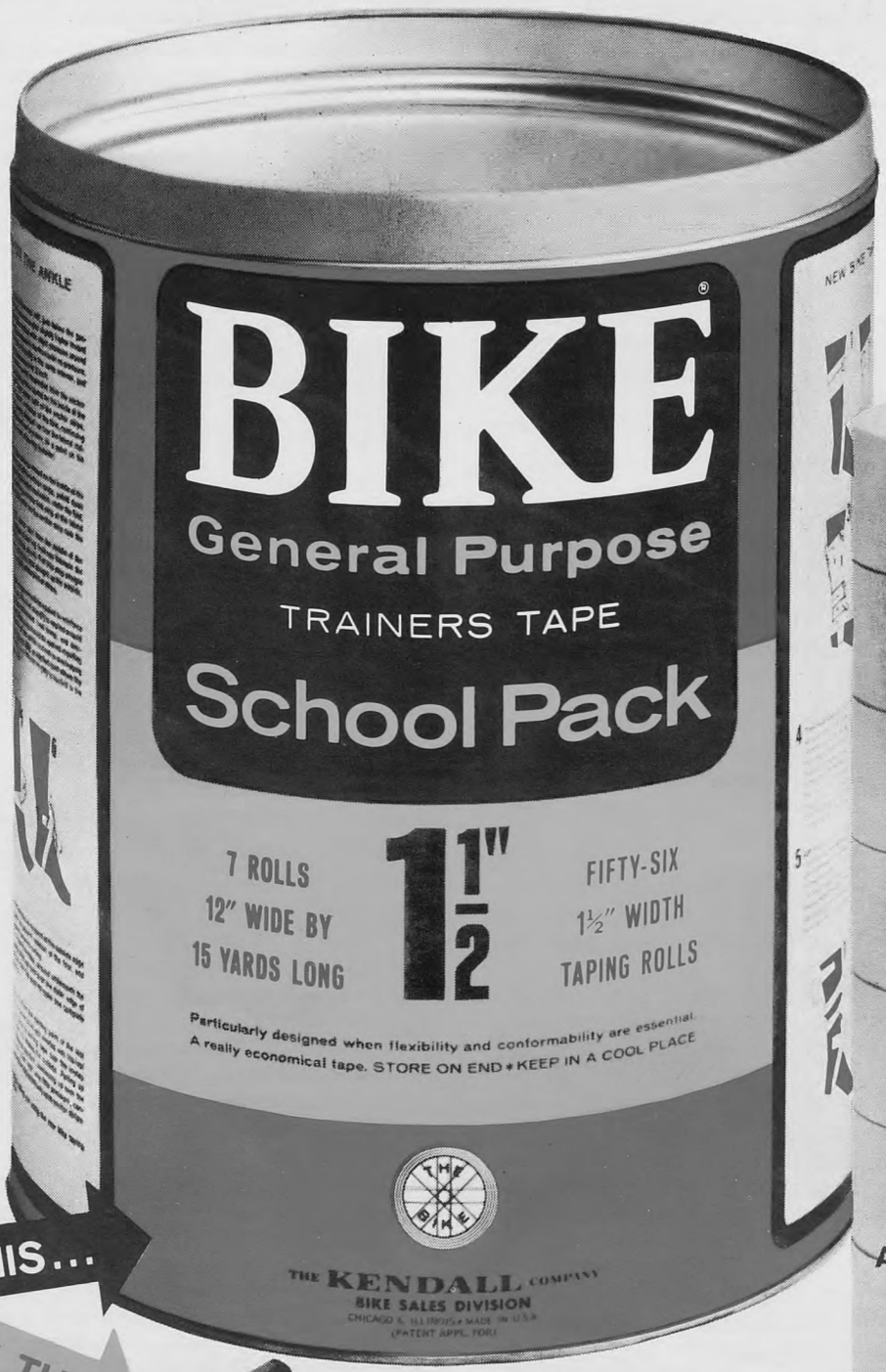
Any player hit on the head with a pitched or a thrown ball should be carefully examined, before he is moved. If injury is severe, player may be unconscious, eyes may be dilated, or bleeding from the ear. Any or all of these symptoms may be present. If so, call a doctor. Let him handle the case.

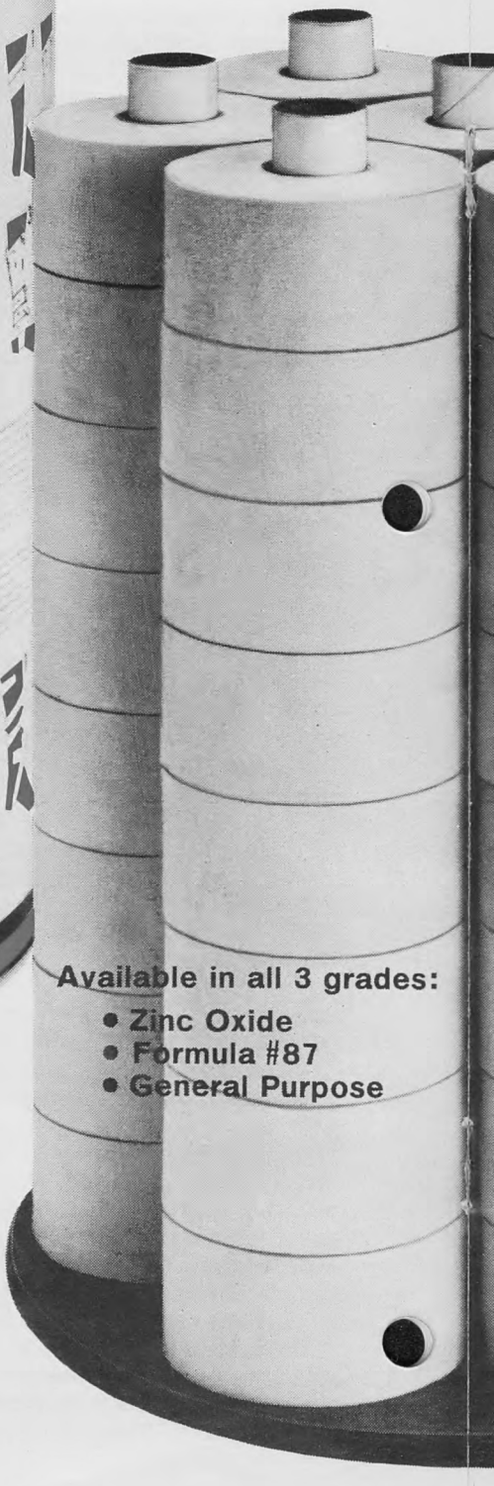
Any severe fracture can be seen immediately. The fractured area will be distorted. The utmost care should be exercised to prevent further injury. Splint and send to the hospital as soon as possible. A catcher's shin guard makes as fine a splint as one could use.

If possible, always have a doctor present. However, if the team has a trainer, he will know what to do in these emergencies.

Continued on page 10

New tape, new package, give ...





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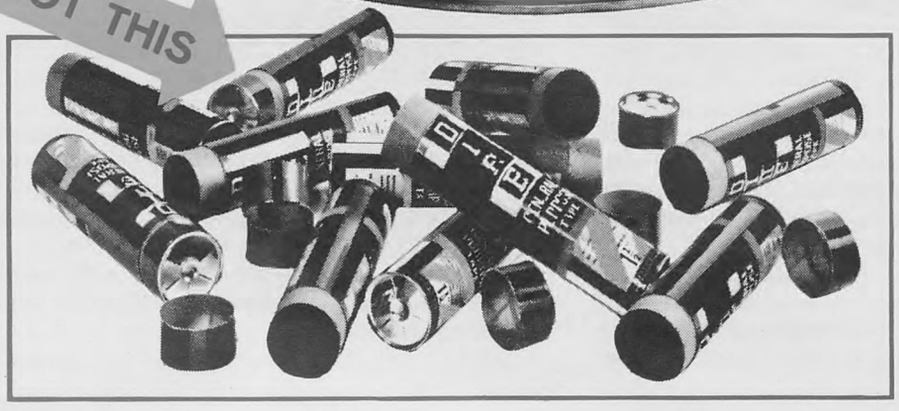

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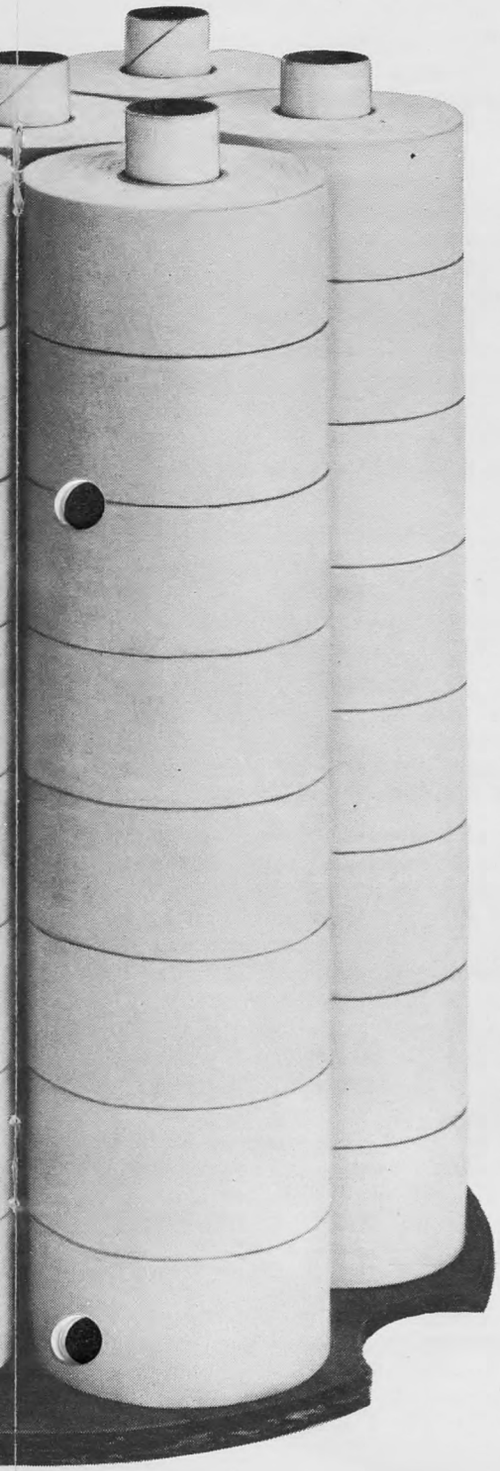

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BASEBALL TRAINING (Continued)

TREATMENT FOR "STRAWBERRIES"

Shave area around wound. Paint the shaved area with Tuf-skin or benzoin. A sterile gauze pad is covered with a good ointment (zinc oxide and placed on top of the wound. Two or three extra gauze pads or a piece of combine roll are placed on top of the first pad. This is taped to the skin, starting from the bottom and working up. You now have an extra sliding pad over the wounded area. Also, the wound will heal from the inside out, eliminating a scab.

GENERAL COMMENTS

All players should wear a helmet while batting.

Players that get frequent blisters on the finger tips should use Tuf-skin or benzoin on them. This will toughen the skin.

Break in new shoes and gloves in pre-season workouts. They will be broken in for use during the season.

THE DISLOCATED SHOULDER AND ITS AFTER CARE

By MR. JAMES BALLANTINE, R.P.T.

Trainer, Cody, Wyoming, Public Schools

The dislocated shoulder is a subject of which in the past many, many articles have been written. There are various viewpoints on the after-care of this type of injury. I will attempt to describe the method of treatment I have followed during my career as a physiotherapist. I have had occasion to treat 54 patients with this injury having spent eight years in the Physiotherapy Department of a large Orthopedic Hospital near Glasgow, Scotland, and a further four years in a General Hospital in Wyoming, U.S.A. The results obtained using this pattern of treatment have been excellent.

Most shoulder dislocations arise from some forcible violence that drives the head of the humerus forwards, the commonest cause being a fall on the outstretched arm. Also if the person falls with the limb partly in front of the trunk the force is still resolved into a forward drive of the humerus on the glenoid, because of the plane of the joint being obliquely forwards, the so-called anterior dislocation. When the fall is backwards either on the arm or the elbow, then the forward drive is much more obvious. The dislocation can also occur by forcible external rotation or extension of the partly abducted arm; as in the hand-off at football. This again thrusts the arm and the humerus forwards. Generally always the capsule of the joint is involved. There is either an avulsion or a tear. Frequently the capsule itself is avulsed from the scapula.

No matter the type of injury it will heal properly only if the joint is given complete rest from external rotation for the first 21 days following the injury. There are various complications that can occur with the dislocation of the shoulder, for example, 1. Fractures of the Glenoid or of the Humerus, 2. Nerve injury, especially to the Circumflex Nerve, thus involving a paralysis of the Deltoid Muscle, 3. Vascular injury resulting from pressure on the vessels of the axilla. However, I will deal only with the Anterior Dislocation of the shoulder without complication.

After examination by a physician and the diagnosis has been established; the patient's dislocation has been reduced and the injured limb placed in a sling (either the triangular type or the collar and cuff type) the following treatment schedule is authorized and carried out.

Beginning the day after reduction the patient is given two 30-minute treatment periods daily consisting of 20 minutes Infrared and ten minutes of exercises. The exercises that are performed are specific Remedial Exercises relative to the injury and adhere to the following aims of treatment:

1. To maintain the muscles of the shoulder joint.
2. To maintain the muscles and the mobility of the Shoulder Girdle.
3. To maintain the muscles and the mobility of the Elbow, Radio-Ulnar, Wrist and Finger joints.

The exercises taught and carried out for the first seven days following reduction are:

a. Deltoid Contractions. Tensing the muscle fibres slowly without producing pain, then relaxing.
b. Pectoral Contractions. Tensing the fibres of Pectoralis Major.
c. Arm pressing inward. Press injured arm to trunk, hold, then relax without producing pain.
d. Shoulder raising without producing pain.
e. Shoulder bracing without producing pain.
f. Bending and stretching Elbow joint. Flexion and Extension.
g. Forearm turning. Pronation and Supination.
h. Wrist bending and stretching. Flexion and Extension.
i. Making a fist and Relaxing.

All of the exercises are performed sitting and the sling remains in position.

From the eighth day to the 21st day the above exercises are repeated with the following new exercises added: with the next group the arm is removed from the sling but the injured limb is supported by the Physiotherapist.

a. Arm raising forward. Flexion.
b. Arm raising backward. Extension.
c. Arm raising sideways. Support the head of the humerus during this exercise.
d. Arm carrying across Chest.
e. Arm turning. Internal rotation only.

During this second phase of treatment, gentle massage may be given following the Infrared and prior to the exercises. The massage should begin with stroking of the whole arm, effleurage of the shoulder, neck and chest to reduce the swelling, if any. Beginning on the 14th day Frictions around the shoulder are given and the massage is deepened, especially to the Deltoid and the Pectoralis Major. However, it must be foremost in the mind of the person giving the massage that the doctrine of Physiotherapy is that the patient must cure himself. The great danger in massage is that the patient will recline on the massage table and wait to be cured. The massage and Infrared are a valuable preliminary to the active exercise but they are not an end in themselves. The patient must have it impressed upon him that we cannot cure him but we can show him how to cure himself.

Following the removal of the sling the exercises are graduated in strength and mobility and the use of the cord and pulley circuit to restore the range of elevation by Auto Assisted Active Tension movements are extremely valuable in the intermediate phase of recovery.

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DISLOCATED SHOULDER (Continued)

The following list of exercises are especially useful to maintain the primary aim of treatment.

a. Standing facing the wall, crawling up the wall with the fingers of the injured arm and reaching as high as possible without bending backward. This exercise should be performed slowly and smoothly.
b. Standing as above but with the injured side toward the wall again being careful that the patient does not flex toward the sound side.
c. Lying on the back, internally and externally rotating the shoulder with the upper arm being supported on the floor.
d. Placing the injured arm behind the neck and the Lumbar Region alternately.
e. Hands behind the head, elbows pressing backward and pulling forwards.
f. Use of weights on the cord and pulley circuit to give active resisted exercises for Flexion, Extension, Abduction and Adduction of the Shoulder and Scapula, the weights being graduated accordingly.

Some useful points to remember in the treatment of a Dislocated Shoulder are:

1. If strict immobilization of the Shoulder is carried out for the first 21 days and nothing other than the treatment and the exercises listed for that period are given there is little or no danger of a recurrent dislocation.
2. Dislocations of the shoulder are the same as dislocations of all the other joints and recurrent dislocations are the same—they arise from faulty treatment of the primary injury.
3. When the shoulder has been immobilized for the period of 21 days so long as all the other joints have been exercised constantly and conscientiously, there is little or no danger of permanent stiffness of the shoulder joint.
4. There must be no Passive Stretchings of the Shoulder, this can be the cause of permanent stiffness and may even result in Myositis Ossificans.
5. Full strength and mobility can be regained and recovery can be complete in a period of six to eight weeks from the date of injury.

Summary

It is the purpose of this article to give the readers the salient points of the treatment and from my personal experience I have found the results obtained are good; of the 54 patients treated 51 were Anterior Dislocations and three Posterior Dislocations. In the follow-up the patients were seen 12 months after the injury and 47 of them had excellent results with no recurrence of the Dislocation. Four were reasonably good results but could not perform a complete and full range of movements, three were definite failures.

If the patient and the Physiotherapist have both done their best and been conscientious, then the results obtained from this procedure are good.

WATER AT 67° TO 69° FAHRENHEIT TO CONTROL HEMORRHAGE AND SWELLING ENCOUNTERED IN ATHLETIC INJURIES

DON BENNETT, *Head Athletic Trainer*

Houston, Texas, Public Schools

People in the training profession are turning more and more each day to the scientific aspect of rehabilitation of injuries that confront them. This is as it should be. Not only that, but those of us who have to work with this type of rehabilitation should feel the personal obligation to investigate and assure ourselves and the athlete that the utmost in scientific knowledge is being taken advantage of.

We have all heard and read of trainers who initially treat injuries that involve hemorrhage and swelling by using heat, while others go to the other extreme of using some type of cold applications. The recent trend is towards the use of some type of cold, since it has been agreed that the heating of a part initially will cause more swelling.

In using the different means of producing a cold effect several questions seem to reappear; namely, how cold and for how long should the cold applications be continued? A great many in our profession use ice packs of some nature. When we hear and think of ice being used, we possibly visualize that the cold restricts the blood flow to the periphea. Many of us thought that the answer had been arrived upon.

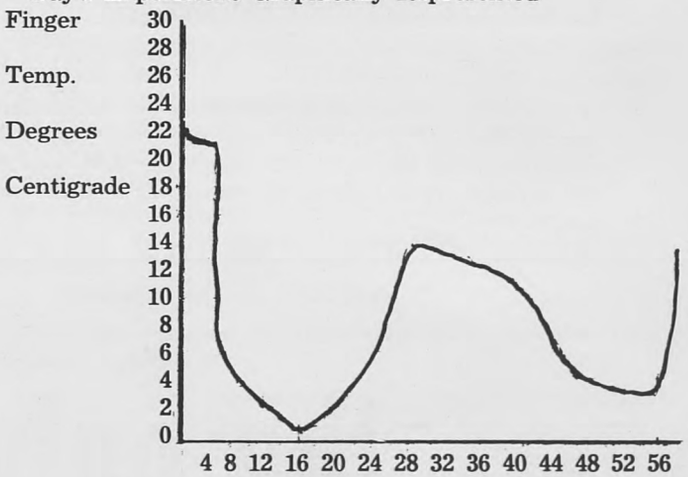
The use of ice is attributed the function of helping to check hemorrhage, and thus preventing swelling as much as possible. All of this is vital to initiate treatment and insure a more rapid recovery. The next question that comes to my mind is "does ice do this"? To my knowledge, there have been no controlled experiments along these lines. From reviewing the literature, it is my opinion that ice packs do not achieve these desired results.

The skin temperature is proportional to the environmental temperature, and its temperature will continue to drop as low as 2° C, while the core or deep body temperature is dependent upon the metabolic rate of the person. As some trainers use ice over the area from 30 minutes to 24 hours, and some longer, depending upon their belief of its use, it would seem that the area covered by the ice pack would soon become the same or nearly the same temperature as the ice. True, this is but a small area compared to the entire body surface, but when the body is exposed to cold that intense, there is vaso constriction. This allows the body's core to become smaller, and the insulation of the core to become greater in thickness. The body will go along with this for a while, but before it will allow the tissues to be injured it will adjust and increase the circulation to the area being jeopardized. This circulation increase brings heat from the deep body to be dissipated at this site. Depending upon the degree of cold, shivering will take place, causing an increased metabolic rate and in increased circulation or minute volume. Also accompanying these changes would be vaso dilation. These are items we are actually trying to prevent. We don't want this increased circulation to an injured area. That is, we don't want the injured area to become so cold and at a depth that these changes reflexly take place. Rather, we want the restriction which is produced by controlling the degree of cold that will not bring on the secondary reactions mentioned above. Physiologists find that minimal blood flow to a body part is achieved through temperatures approximately 67° to 69° F.

The foregoing explanation, keep in mind, is for the entire body to be subjected to lowering of temperatures. Shivering should not play as important a role as would the intense cold to the injured area. The author has never seen an athlete shiver from the use of ice packs while being treated initially, but the injured area is still a part of the body's live tissue and it is felt that ice packs will promote these secondary reactions spoken of a moment ago.

Day [1] showed that the temperature of fingers immersed in an ice bath dropped from 22° C to 2° C in fifteen minutes. In this same experiment he showed that, as the temperature dropped to 2° C there was a rise of finger temperature which rose to 13° C, following which there was a series of rise and falls in temperature. These rises of temperature can be attributed to an increased flow of blood to the area. This temperature rise is circulated from the core or deep body. His experiment shows the reflex action the body has that will not allow the parts to be damaged.

Day's Experiment Graphically Represented



Time in Minutes of Finger Immersion

Lewis [2] says "In the absence of freezing, adequate cooling damages the skin and releases H substance and the latter may be liberated in quantities sufficient to produce local vasodilation and added arteriolar dilation depending upon an axon reflex in sensory nerves, or even a triple response." He also says, "the vasodilation occurs in water 18° C - 15° C or lower but is not known at higher temperatures." Lewis also found that ice to the skin for one and a half to two hours drops the temperature 15° - 26° at a two-inch depth. The nearer the tissue to the cooling agent, the lower the temperature drop. Thus, the outer skin would be somewhat colder than the tissue at the two-inch depth. That would lower the temperature to near 70° F at the two-inch depth, and would of nature be quite colder as the tissues near the surface. This is felt to be cold enough to produce these secondary reactions of protection which result in an increased blood flow to the area. This is the one thing we are trying to limit.

Kovacs [3] said of using ice bags, "this cooling effect is quite penetrating; it has been shown that with ice bags applied to the calf of the leg for 1½ to 2 hours, a drop of 15° - 26° F has been recorded."

Experiments performed by the above three men rather convincingly relate to us that more desired results might be obtained by controlling the temperatures of our cold applications. Lowering the temperature about the injury

Continued on page 14

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WATER AT 67° TO 69° (Continued)

as low as ice to skin will do, will certainly start axon reflexes into operation to direct blood flow and a rise in temperature to the iced area. The body does this to protect the tissue from injury. It is therefore felt that we might more nearly obtain our desired results with water at 67° F - 69° F. This would be cold enough to obtain the minimal blood flow determined by physiological experiments.

Please keep in mind, that to present reviewing of the literature, there have been no experiments along these lines on injured athletes. The indication for controlled temperature is based on the above mentioned experimental data. One other point that might help to clear up this idea of controlling temperature at 68 - 69° F as opposed to over-cooling an injured part: the next time it snows in your area, get out and throw a few snow balls with your bare hands. You won't leave the snow balls in your hands nearly so long as you do the ice packs to an injured area. After throwing a few, look at the palms of your hands. They will be quite red. This redness is due to an increased circulation to these areas. This of course brings warmth to the hands and protects them.

This controlling of temperature through the use of cold water might be somewhat difficult to do. In some areas of our country the tap water will be exactly the desired temperature, in others it might be too cold, and others too warm. The main problem would be to cool down the water in the warm areas. This might be done through the use of a cold-drink box that uses cold water as its means of cooling soft drinks. By setting the thermostat of such a box, the desired results could be attained. One other problem that arises is a means of application. The one that has been thought up, but not actually perfected, is the use of fishing waders that have been renovated so the water can be circulated through them. An inlet connection at the toes, and an outlet in the back and towards the top is necessary for the water to enter the waders, be circulated about the injury, assuming it is one about the lower limbs, and leave, so that the temperature might be more evenly maintained. A similar device might be constructed for the upper limbs.

At this time it might be well to inject this finding, that if you have a sprain of the right ankle and you are trying to cool it down and retard the flow of blood to the area, cool down as much of the body as possible, the entire extremities of the lower limbs, and you will achieve the results much quicker. In cooling down the extremities, assuming you are using a device such as the waders, there could be used the triad, cooling, elevation and pressure—a hard combination to beat. As for the cooling down of a body part and having better peace of mind that the desired results are being obtained, water at 67° F - 69° F is preferred.

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KNEE AND ANKLE INJURIES*

By Stephen E. Reid, M.D., and Mr. Thomas E. Healion**
Evanston, Illinois

Athletic injuries require different attention than those of the general student body or of the population at large. This specialized attention is not meant to make the athlete a prima donna. An injured athlete cannot be treated in the routine fashion of allowing nature to take its course. Time is essential and many short cuts must be taken to get the player back to his team. The routine care of plenty of rest to the injured part cannot be followed. This type of treatment does not mean detrimental care to the athlete. It requires willingness of the athlete to endure a variable amount of temporary discomfort for the sake of time.

Surgeons generally are becoming increasingly aware of the advantage of early ambulation after major abdominal operations. Patients are encouraged to get out of bed on the day following surgery. Fractured hips in the elderly are nailed and these patients are mobilized immediately with gratifying results. Certainly if these major insults to patients of all ages can be treated without complete rest, an injury to an extremity of a well conditioned football player requires less rest than we have been accustomed to use.

That rest of an injured part can be detrimental is shown by the case of a middle aged man who sprained his ankle in a fall from a ladder. He was instructed to go to bed and rest his injury. When two weeks stay in bed had not healed his injured ankle, he was instructed to continue resting his ankle. After six weeks of rest and out of work, he became desperate and hobbled in on crutches. His ankle was completely stiff, swollen, and indurated. He was unable to bear weight. This man had developed greater disability from disuse than from his original injury.

Since athletes, and particularly football players, are subjected to considerable body contact, their injuries are the result of rather violent force and can often be of a serious nature. We, therefore, x-ray all but obviously minor injuries because of the possibilities of fractured bones. Fractures are thereby discovered early and their treatment instituted.

Our discussion here will cover only soft tissue injuries since they are more common and often more serious. Soft tissues cannot be diagnosed by x-ray examination and therefore may be neglected.

The rapidity with which the athlete can be returned to the game depends on many factors:

1. *The seriousness of the injury:* Obviously, complete tears of the ligaments of the knee, or dislocations at the ankle, will require months, whereas a simple sprain of a joint may cause very little if any disability.
2. *The desire of the athlete to get back to the squad:* A boy may use the injury as an excuse for not being on the first team. He may not have any real desire to play football, but feels he should because of his

Continued on page 15

*Presented at Conference on Athletic Injuries, sponsored by Charitable, Educational and Scientific Foundation of SMS; November 7, 1958, Milwaukee.

**Team Physician and Head Trainer, respectively, Northwestern University, Athletic Department.

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KNEE AND ANKLE (Continued)

size; his family, or fraternity brothers, may have encouraged him to go out for the team. This boy may not want to heal his injury. A surgeon cannot put desire into a knee joint. We have been impressed with how few injuries we have after a winning ball game.

3. *The conditioning of the athlete before the injury:* A well conditioned athlete is protected by good muscle tone. We have had many more injuries in the beginning of the season than later. Since the joints are protected by good conditioning, the injury is usually more minor and the recovery period is shorter.
4. *Cooperation of the player, the coach, the trainer, and the physician:* The player must be willing to follow the prescribed treatment for his injury. The coach must see to it that the player cooperates with the trainer, and the coach must realize that the physician is anxious to get the athlete cured.

The trainer must be interested in his work, in the team, and in the athlete. The trainer and the team physician must know the shortcomings of each other and must have easy communication. The physician must be interested in the athlete's welfare and yet realize the importance of the boy to his team.

In our experience with the varsity athletic injuries at Northwestern University during the past ten years, ankle injuries have been a lesser problem than knee injuries.

In the absence of a fracture the ankle is wrapped in an elastic bandage. This prevents swelling and allows the ankle to be treated on the following day. Depending on the amount of discomfort, the patient is instructed to bear weight, or use crutches. On the following day after a treatment, the ankle may be strapped and the athlete instructed to walk. He should attempt to walk without limping if possible. It is better to use the ankle normally for a short time rather than limp around for longer periods. The athlete who can walk without a limp is then allowed to jog, and as tolerated, to sprint without cutting. Only when the patient can sprint is he allowed to cut, and finally full activity is encouraged.

Occasionally an obviously severe injury to the ankle is noted without x-ray evidence of fracture. One must be alert to the possibility of a separation of the tibiofibular joint causing a widening of the ankle mortis. This may be demonstrated by x-rays of the ankle in inversion and eversion. In this injury, in addition to the ligaments being torn at the ankle, there may be a tear of the interosseus membrane. This injury should be treated with a cast. After several months calcium may be demonstrated at the site of the tear of the interosseus membrane above the ankle between the tibia and fibula.

Weak ankles can be protected with ankle wraps or adhesive strapping. Since most injuries to the ankle are caused by forcibly inverting the foot, strong leg muscles and tendons splint the ankle and protect this joint. Leg condition, therefore, is vital in the protection of the ankle joint.

Our most common injury and our greatest problem concerns the knee joint. The long bones, the femur above and the tibia below the knee, provide longer effort arms and cause greater strain on the knee joint. This joint cannot be braced adequately to stand such strain without restricting its motion. The football player who wears long aluminum cleats for better footing fixes the foot to the ground. When a blow is applied to the outside of the knee, medial bowing of the leg occurs which may open the joint and possibly rupture the medial collateral ligament. The cruciate ligament and cartilage also may be torn. With these long cleats and with the ankle firmly strapped, there is no "give" and the entire thrust of the blow must be borne by the knee.

We have observed that once a knee is injured, in practically all cases it is subject to re-injury. A good share of our knee problems were the result of previous high school trauma. The disability following a knee injury results in a weakness of the quadriceps muscle group. By favoring his knee the player loses the conditioning he has developed in this large muscle group of the front of the thigh. The power of this muscle which is the greatest protection to the knee, when lost, allows any blow to the knee to be taken by the knee ligaments. The knee then is more easily injured causing more disability and resulting in more quadriceps atrophy. We have seen a two-inch difference in circumferential measurement between the two thighs in a recurrent knee injury.

A case in point is that of a player who injured his knee several times throughout the season. He continued to play football and to maintain the tone in the quadriceps muscle. On examination at the conclusion of the season, this player had a perfectly stable knee joint. He was operated upon for a torn lateral semilunar cartilage which was removed, but in addition, tears of the anterior cruciate and medial collateral ligaments were found. The stability of this knee was maintained by the well-developed quadriceps muscle.

What can be done to protect the knee from injury? The knee joint is supported by four main ligaments.

1. The medial collateral ligament splints the medial side of the knee. Tenderness is elicited over its points of attachment to the femur and tibia when this ligament has been injured. Abduction of the knee stretches an injured ligament and causes pain. A torn or stretched ligament allows the medial side of the knee joint to open with abduction and demonstrates medial instability of the joint.
2. The lateral collateral ligament splints the lateral side of the knee and produces similar clinical findings with injury to the lateral aspect of the knee.
3. The anterior cruciate ligament crosses the inside of the joint. It attaches ot the tibia in front and the femur behind. This structure prevents the tibia from slipping forward on the femur.
4. The poterior cruciate ligament criss crosses with the anterior cruciate ligament, but attaches to the tibia behind and in front. This structure prevents the tibia from sliding posteriorly on the femur and prevents hyperextension of the knee.

An injury to the cruciate ligaments is demonstrated by forward and backward motion of the tibia on the femur with the knee in 90 degree flexion. This is the so-called positive drawer sign.

The quadriceps muscle in front, and the hamstring muscles in back of the knee add additional support to the knee joint. These muscles can be developed to such a degree that a general anesthetic is required to demonstrate instability of the knee joint due to injury of the ligaments.

Since these muscles support the ligaments of the knee so adequately, conditioning exercises should protect the knee. With weights attached to the foot the athlete, with maximum effort, is required to extend the knee fully. The quadriceps muscle is so developed that the football player is able to lift 90 to 100 pounds successively 10

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KNEE AND ANKLE (Continued)

times. Similarly with weights attached to the foot the athlete flexes the knee against increasing resistance. This exercise strengthens the hamstring muscles.

In the two years, 1951 and 1952, we had 34 knee injuries. Since instituting these exercises two years ago we have had only 8 knee injuries.

The long cleats are also avoided to minimize the chances of knee injuries.

Unstable knees or those with weak ligaments are strapped before all scrimmages.

Summary

We have attempted to show how muscle conditioning splints the knee and ankle joints and protects their ligaments. We have been impressed with the magnitude of some knee injuries and realize that mere casting offers little in the permanent cure of torn ligaments. Early operative intervention is the logical approach in the repair of torn ligaments.

NEW BOOKS

William Dayton, Head Athletic Trainer, Yale University, has recently completed a book entitled *"Athletic Training and Conditioning."* In the opinion of the Editor this is one of the finest and most complete books ever published on Athletic Training. This book covers almost every problem of Athletic Training in clear concise detail. It defines the duties of the Trainer as well as what responsibilities lie in the hands of the team physician.

I feel that every Trainer, Student Trainer or Coach will have a very valuable edition to their library if they secure this book. It can be purchased from the Ronald Press Co., 15 East 26th St., New York 10, New York. The price is $6.00 per copy.

Editor.

MADISON AT A GLANCE

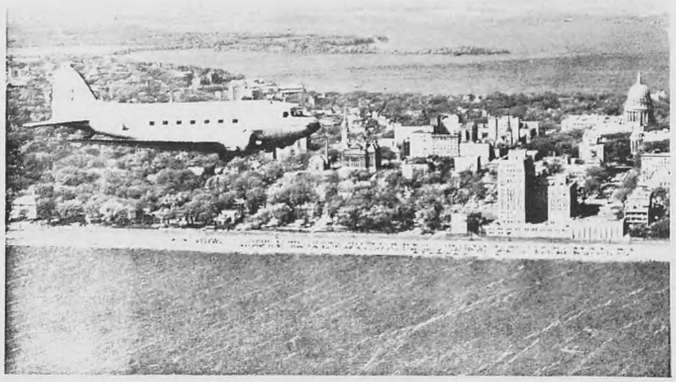
Capital of Wisconsin, Four Lakes City, home of the University of Wisconsin, recreational center, important shopping and manufacturing center . . . this, in part, is Madison.

The city is located on an isthmus between tree-trimmed Lakes Mendota and Monona, 845 feet above sea level, fanning out at either end to follow miles of wooded bluffs and level land along the shorelines of the two large lakes and smaller Lake Wingra to the south.

Dominating the center of the city is the white granite capitol, located in beautiful Capitol Park. On all sides of the surrounding Square are modern stores, hotels, restaurants, theaters, and office buildings. From the dome of the capitol, five lakes can be seen—the three nearby lakes, plus Kegonsa and Waubesa to the southeast.

Seven blocks away from the Square, at the end of State Street, is the University of Wisconsin, its vast campus running for more than a mile along the picturesque southern shore of Lake Mendota.

In Madison you'll find genuine hospitality, the finest accommodations, the latest movies, and delicious food, straight from the heart of America's Dairyland.



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