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- Student Writing Contest: Artificial Playing Surfaces
- The Schering Symposium: Enigmatic Anterior Cruciate Ligament
- CEU Quiz: Field Evaluation of Eye Injuries
- Proceedings of the National Athletic Trainers Association
- Plus More Handy Tips from the Field
ANKLE PROBLEMS?

Whether you're a player, coach, doctor, trainer or therapist, these new PRO ankle braces can help you solve those troublesome ankle support problems.

PRO "SUPER 8" ANKLE BRACE
(Patent Pending)

Exclusive PRO design combines leather over Neoprene rubber to provide maximum support and therapeutic heat retention.

Features a one-piece padded tongue that provides maximum fit and comfort while four pivoting Malleoli straps with separate lacings give added support to the joint ligaments.

Additional support, if required, is provided by a heavy elastic strap attached to the lateral edge, wrapped in a figure eight pattern and secured with a Velcro fastener.

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The PRO exclusive one-piece padded tongue provides maximum fit and comfort.

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The Varsity Ankle Brace is an excellent replacement for taping in the prevention of ankle sprains. It also functions as an ideal walking strap.

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A figure eight lateral lift strap is attached to each varsity for added support and stability.

The Varsity is easy to use and it is fully machine washable for long life.

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215/265-3333 • Toll Free 1-800/523-5611 (9 to 5 Eastern Time)
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Dear NATA Members:

Best wishes to each of you as we begin a new year. Hopefully 1982 will be a great year for you in every respect. Your officers and National Office staff are going to continue to help you meet the challenges of our profession and in doing so we anticipate another banner year for NATA.

It is encouraging to have so many people getting involved in our Association. The key to our, NATA, accomplishments is the contributions and involvement of the membership. Our Association will continue to grow and we will reach our long range goals because of the members' contributions and involvement. Your officers are committed to respond to your concerns and by doing so all of us can cooperatively accomplish our goals and solve our problems.

An excellent example of what I mentioned in the foregoing paragraph was the participation in the Presidential election. There was tremendous response from the voting membership and this is an indication of the strong interest in the direction NATA is going. I am confident Bobby Barton will do an outstanding job in directing the future affairs of our Association.

Plans for our Seattle meeting in June are going along very well. Indications are that we will have another outstanding meeting. I'm sure each of you would enjoy the great Northwest and I hope you will make a special effort to attend.

The decision by your Board of Directors to purchase our own building has proven to be a sound investment in many ways. The National Office staff now has the space to deal with and handle the demands of our daily growth. Our staff in Greenville is outstanding and they continue to be very efficient in taking care of NATA business.

I hope each of you will continue to inform your officers of your thoughts and suggestions about the direction of NATA. We, your officers, are going to continue to do what is best for NATA. We may make mistakes and, if we do, we'll learn from these mistakes. Keep in mind that a gem can't be polished without friction nor can our future direction be taken without trials.

Best wishes to each of you.

Sincerely,
Editor's Remarks

Ken Wolfert, ATC

Trainers' Association has been indeed fortunate to have had Bill guide us through some very crucial times over the past four years he has been in office. President Chambers can be very proud of the unselfish effort he has given to a never ending and, often times, thankless job. We are sure that the entire NATA membership agrees when we say “Congratulations” and “Thanks” for the dedication, perseverance and success on our behalf.

New Leadership....

There is every reason to expect a smooth transition as the NATA’s presidency changes leadership. Congratulations go to newly elected Bobby Barton and with it the best of fortunes as he continues the high standards and progressive policies that have been established by our previous leaders. We think Dr. Barton possesses the necessary experience and abilities to turn the many necessities facing us into realities.

First Time CEU Quiz....

It is finally here—an opportunity in our Journal for the many who have difficulty acquiring Continuing Education Credits. Beginning in this issue, we have provided a “quiz” following the conclusion of the manuscript by Jane Sandusky entitled, “Field Evaluation of Eye Injuries”. If you are interested in participating, make sure to complete every part of the answer sheet before submitting it.

In our Spring Issue there will be a complete explanation by the CEU Committee about the entire CEU credit requirement. This will include all possibilities in which to earn credit, procedure to receive credit for your effort, and the appealing process if there is a deficiency. It might be noted at this time that both certified and associate members are required to earn CEU credit beginning in January 1982.

Thank You, Bill Chambers....

This issue of Athletic Training is the last one to be published under the outstanding leadership of our president, Bill Chambers. The National Athletic

New Listing Service....

You may be pleased to learn that we have been notified that Athletic Training has just been listed in the Physical Education Index. Remember to use this service when appropriate.

A Welcome Donation....

Charlie Johnson, Defensive Nose Guard for the Philadelphia Eagles, was recently voted the defensive player of the week following the Eagles-Atlanta game. With this honor, a donation of $1000.00 was made to his favorite charity.

Otho Davis informed us that Mr. Johnson has donated this to the NATA Grants and Scholarship Fund. We should all be grateful for Otho’s suggesting NATA’s need and for Charlie Johnson’s understanding and generosity.

Warmest holiday greetings to each of you from the entire Journal Committee!

Do it and Keep it Safe....(KW) +
Using highly advanced solid-state technology, Chattanooga Corporation's Intelect Model 500 high voltage, high peak current galvanic stimulator can provide the maximum effective stimulation of nerves and muscles. New features include a unique, variable surge on and off control, a peak current readout, and intensity balance control of the active electrodes.

Intelect Model 500 features smooth, non-burning, non-irritating, unidirectional pulsed direct current. This effective modality is used for relieving muscle spasm, increasing local circulation and re-educating muscles.

Intelect Model 500 standard accessories include a hand probe with interchangeable rectangular and spot electrodes, a rugged stainless steel table with drawer, three Nylatex wraps, two weight bags and two bifurcated leads for a four pad treatment. Solid-state circuitry and high quality materials and construction ensure years of safe, dependable service.

Look to Intelect Model 500 for maximum effective high voltage galvanic stimulation. Look to Chattanooga Corporation for:

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1981 TRAINER OF THE YEAR AWARDS ANNOUNCED
As 20 Million Viewers Watch

Announcements

Winners of the 1981 Trainer of the Year Award are pictured at the National College Football Hall of Fame with Bill Boswell, center, of the Drackett Company. Shown with their plaques are: Bill Chambers, Fullerton Jr. College; Otho Davis, Philadelphia Eagles; Paul Zeek, Lamar University; and Glen Snow, Floyd Central (IN) High School.

NATA President Bill Chambers, Fullerton Junior College, and Executive Director Otho Davis, Philadelphia Eagles, have each been voted Trainer of the Year in their division for the fourth time. The sixth annual Trainer of the Year Award ceremony was held November 17 at the College Football Hall of Fame near Cincinnati, Ohio. The presentation was video-taped for broadcast New Year's Eve on the Bluebonnet Bowl.

Glen Snow, of Floyd Central (IN) High School was honored for the second time in this year's voting. He won the award previously in 1979. Cracking the winner's circle for the first time was Paul Zeek, Lamar University. His selection doubles the score for Lamar since Otho Davis is a Lamar graduate.

The winners of the high school, college and junior college division awards received $1,000 donated in their name to the athletic programs at their schools. A $2,000 grant was presented to the NATA scholarship fund in the name of the professional division winner.

Impressive Trainer of the Year plaques were presented during the awards banquet. Also present at the banquet were representatives of The Drackett Company, a sponsor of the awards.

In an effort to call public attention to the dedicated and high skilled work performed by athletic trainers, Drackett also sponsors "They Keep 'Em Playing" which has become a regular feature of the Tangerine Bowl. The seven-minute film features various aspects of the training profession. One of the highlights of this year's film was Dr. Robert Behnke talking about the licensure movement and certification.

AV Material Needed

"The NATA Audiovisual Aids Committee will have a media review room available to the membership at the next Annual Meeting and Clinical Symposium. This room will be used to continuously show AV material on any athletic training subject. If you know of a film or have any AV material that may be of interest and help to the rest of the membership, please contact John Streif, Chairperson of the Audiovisual Aids Committee as soon as possible." Write John Streif, Athletic Department, University of Iowa Training Room, Iowa City, IA 52242.

A Timely Reminder . . . .

Your contributions and continuing support to the NATA Scholarship Fund are always welcome and are necessary so that the endowment goal of $500,000 can become a reality. Please remember that our program of financial assistance is a four-fold one that offers scholarships, loans, grants and part-time employment. Organizational support from the NATA to the Fund continues, but your individual contributions are vital to the Scholarship Fund's ultimate success. All contributions are tax deductible. Won't you consider now the importance of your participation in the NATA Scholarship Fund? Make your checks payable to Scholarship Program, and mail them to this address: William E. Newell, Purdue University Student Hospital, West Lafayette, Indiana 47907.

Brochure Requests

All requests for the brochure entitled "Careers in Athletic Training" should go to Charles O. Demers, ATC, Chairperson, NATA Career Information Services, Athletic Department, Deerfield Academy, Deerfield, MA 01342. Single brochures are supplied upon request at no charge. NATA officers and committees, schools having an approved athletic training curriculum, and those having an apprenticeship program are furnished multiple copies of the brochure upon request at no charge.

Change of Address and District Transfers

Please be advised that many of our members are listed incorrectly by District. This is partially due to the many address changes we receive that are unaccompanied by requests for District Transfers.

In order to facilitate the District Transfer process and to aid in updating our records, could you please do the following: 1) Check billing statement or membership card to aid in updating our records, could you please do the following: 1) Check billing statement or membership card as to the correct District listing, 2) When requesting address changes, if they are changing Districts, request a District Transfer application.

Many members are unaware as to the process involved in transferring their records from one District to another and should be reminded of the correct procedures.

Students must be members of the District in which the university they attend is located.

Helmet Inspection

To assist the person responsible for repair and maintenance of helmets, NOCSAE has developed a number of guidelines to observe when inspecting helmets. There may be other things you want to check as this list is not intended to cover every observation which may be made. NOCSAE recommends that a periodic inspection of all helmets be made and that they be periodically retested under the NOCSAE Recertification Program.
SUGGESTED INSPECTION CHECK LIST

1. Check helmet fit for agreement with manufacturer's instructions and procedures.
2. Examine shell for cracks, particularly around any holes (where cracks begin), and replace any that have cracked. DO NOT USE A HELMET WITH A CRACKED SHELL.
3. Examine all mounting rivets, screws, velcro and snaps for breakage, distortion and/or looseness. Repair as necessary.
4. Replace faceguards if bare metal is showing, there is a broken weld or if guard is grossly misshapen, causing shell distortion and resulting in a poor fit.
5. Examine for helmet completeness, and replace any parts which have become damaged, such as sweat-bands, nose snubbers and coinstraps.
6. Replace jaw pads when damaged. Check for proper installation and fit.
7. Examine chinstrap for proper adjustment and inspect to see if it is broken or stretched out of shape; also inspect the hardware to see if it needs replacement.
8. Read instructions provided by manufacturer regarding care and maintenance procedures. Always follow these instructions:

CAUTION: Only paints, waxes, decals, or cleaning agents approved by the manufacturer are to be used on any helmet. It is possible to get a severe or delayed reaction by using unauthorized materials, which could permanently damage the helmet shell and affect its safety performance.

PLAYERS: Inspect your particular helmet prior to each usage as follows:

Suspension Style
Check hardware, i.e., screws or rivets that may be loose/missing.
Check webbing for tears in threads, stretching or pulling away at rivet locations.
If crown webbing is adjustable check that crown rope is properly adjusted and is tied tightly using a square knot.
Check interior padding for proper placement and good conditions.

Padded Style
Foam/Air/Liquid
Check foam padding for proper placement and any deterioration.
Check for cracks in vinyl/rubber covering of air, foam, liquid padded helmets.
Check that protective system of foam padding has not been altered or removed.
Check for proper amount of inflation in air padded helmets. Follow manufacturers recommended practice for adjusting air pressure at the valves.
Check all rivets, screws, velcro and snaps to assure they are properly fastened and holding protective parts.
If any of the above inspections indicate a need for repair and/or replacement, notify your coach. This is your responsibility.

Never Wear A Damaged Helmet!

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Correction
In the Fall 1981 issue of Athletic Training, (Volume 16, No. 3), on page 184, Section III, under the Section Requirements, should read "Actively Engaged — Uncertified" rather than Certified.
ANKLE PROTECTOR...
Support you need for the games you play.

When you're involved in active sports, your ankles need all the support they can get. Ankle Protectors by Peris Industries, Inc. have been designed to prevent shifting and riding up... even during the toughest game. Constructed with a soft inner layer of cotton for absorbency that laminates around a thick layer of lightweight impact absorbing neoprene for extra protection. Originally developed for professional soccer players, Ankle Protectors are also ideal for racquetball, tennis, jogging, track, football, basketball and others. Junior (up to 12 yrs) and Senior sizes $7.50/pr. To order send check or money order to Peris Industries, Inc.

QUANTITY DISCOUNT TERMS ARE AVAILABLE FOR TEAMS, CLUBS, AND DISTRIBUTORS.

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B&G Portable Fountains ... toughest members of the team.

No matter what kind of abuse your team dishes out, B&G can take it. With a solid line-up of winners:

Portable Water Fountain — Polyethylene tank has 5-gallon capacity. Available with 4 fountains. Sanitary because mouths cannot touch brass squirt nozzles.

Actiondrink 400 — Stainless steel tank holds 4 gallons of water or concentrated energy drinks. Wide opening takes big chunks of ice and makes cleaning easy. Four players can drink at one time from sanitary mouthguards.

Gunga-Din — Lightweight, easy-to-clean polyethylene tank. Available in 2 or 3 gallon sizes with or without cart.

Whatever your budget, there's a B&G portable drinking fountain just for you. Every B&G fountain is built rugged to outlast team after team.

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Telephone: (215) 766-8811 Telex: 902061 B&G CO PTDV
Every season over 1,125,000 players put us on.

More professional, college and high school teams wear Riddell helmets than all others combined.

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First, there’s Riddell’s Pac-3. It has a unique interior made up of 32 individual vinyl air cushions. Each has layers of fitting and energy absorbing foam.

Because the fitting foam compresses to the exact shape of a player’s head, it provides a super fit. And whenever a blow is struck, both layers of foam reduce the impact.

Riddell knows there are players with unusual head sizes and protection needs, so they offer the Micro-Fit.

Micro-Fit’s exclusive interior combines foam, air and liquid cells. Because the air cells are inflatable, Micro-Fit guarantees a perfect fit for everyone. And when a collision occurs, the Micro-Fit disperses the shock three ways.

For the number of your local Riddell representative, just call 312/595-1515. Because you wouldn’t want your players to put on less than the best.

All Riddell helmets feature: Kra-Lite Polycarbonate Alloy shells, 28 different impregnated or painted colors, Virtually unlimited striping combinations, Removable, leather or vinyl-covered, snap-in jaw pads, Replaceable Wildcat sweat bands, PS-4 chinstraps, Pre-installed face mask mounting systems, Super strong nylon alloy rivets.
TO BECOME CERTIFIED AS AN ATHLETIC TRAINER BY THE NATIONAL ATHLETIC TRAINERS ASSOCIATION, A CANDIDATE MUST MEET THE CORE REQUIREMENTS, AS WELL AS THE REQUIREMENTS STATED IN THE SECTION UNDER WHICH THE CANDIDATE IS APPLYING.

THE CORE REQUIREMENTS OF THE NATA CERTIFICATION WHICH MUST BE FULFILLED BY ALL CANDIDATES ARE:

1. Proof of continual membership of 12 months prior to the closing date of requesting an application for the desired certification examination, either as a student or associate member.
2. Student members of the NATA may continue this classification for 12 months from the date of their undergraduate graduation.
3. A person may be a student member for no more than two calendar years after the year he/she becomes eligible for student membership as a graduate student.
4. Verification of an Associate members status is required before the application will be processed.
5. Proof of current Standard First Aid and CPR certification, or EMT-equivalent.
6. Presentation of a Competency Evaluation Form endorsed by an NATA Certified Athletic Trainer.
7. Completion of Section D of the Certification Application by your endorsing certified athletic trainer.
8. For section II, III, and IV candidates; a letter of recommendation from an NATA Certified Athletic Trainer.
9. For section II, III, and IV candidates; a letter of recommendation from acting team physician.
10. Proof of Graduation (official transcript) from a college or university. Students in their last semester of school are eligible to take the certification examination provided the CORE and Section Requirements have been fulfilled at the time of application. Certification will not be awarded until the Board of Certification is presented with official proof of graduation.

SECTION REQUIREMENTS

Section I: Graduate of an NATA APPROVED CURRICULUM

Section II: APPRENTICESHIP

Section III: ACTIVELY ENGAGED — UNCERTIFIED

Section IV: PHYSICAL THERAPY DEGREE GRADUATE

Section I

THE STUDENT MUST HAVE CONTINUAL COMMUNICATION AND DIRECTION, ON A DAILY BASIS, WITH A NATA CERTIFIED ATHLETIC TRAINER.

A - Have spent a minimum of 800 clock hours over a minimum of two years and not more than four years in an NATA approved educational program.

Of these 800 hours, 700 hours must be attained at the collegiate, professional, or interscholastic level, working in the athletic training setting under the direct supervision of an NATA Certified Athletic Trainer.
The additional 100 hours may be attained from the acceptable related areas, under the direct supervision of an NATA Certified Athletic Trainer.

B - No more than 400 clock hours can be credited for one year.

ACCEPTABLE HOUR GUIDELINES

Please Note:

In order for hours to be credited for certification purposes, they must be attained under the direct supervision of a NATA Certified Athletic Trainer.

The hours must be worked in connection with programs by which the supervising certified athletic trainer is employed.

Acceptable Hours:

(1) Hours spent at organized team practices and contest, (professional, collegiate, or interscholastic)
(2) Hours spent teaching or lecturing in athletic training.*
(3) Hours spent in practicums and labs related to athletic training.*
(4) Hours spent working in sports medicine clinics or centers.**
(5) Hours spent in other allied health areas**.

*Verification from the department chairperson and supervising certified athletic trainer must state amount of hours spent, course content and mode of measurement.

**In order to receive credit for hours spent in sports medicine clinics or centers, please request that the establishment send for the NATA Athletic Training/Sports Medicine Clinical Affiliation application. Please note: No hours will be accepted by applicants from centers that were not first approved by the Board of Certification.

Non-acceptable Hours:

(1) Hours spent in a program not supervised or directed by an NATA Certified Athletic Trainer.
(2) Time spent travelling with teams.
(3) Academic hours.
(4) Hours spent in sports medicine clinics or centers that are not first approved by the NATA Board of Certification.

Section II

A - Have spent a minimum of 1800 hours over a minimum of two years and not more than six years under the direction of an NATA Certified Athletic Trainer.

Of these 1800 hours, 1600 hours must be attained at the collegiate, professional, or interscholastic level working in the Athletic training setting under the direct supervision of an NATA Certified Athletic Trainer.

The additional 200 hours may be attained from the acceptable related areas under the direct supervision of an NATA Certified Athletic Trainer.

B - No more than 900 clock hours can be credited for one year.

ACCEPTABLE HOUR GUIDELINES

Please Note:

In order for hours to be credited for certification purposes, they must be attained under the direct supervision of a NATA Certified Athletic Trainer.

The hours must be worked in connection with programs by which the supervising certified athletic trainer is employed.

Acceptable Hours:

(1) Hours spent at organized team practices and contest, (professional, collegiate, or interscholastic)
(2) Hours spent teaching or lecturing in athletic training.*
(3) Hours spent in practicums and labs related to athletic training.*
(4) Hours spent working in sports medicine clinics or centers.**
(5) Hours spent in other allied health areas.**

*Verification from the department chairperson and supervising certified athletic trainer must state amount of hours spent, course content and mode of measurement.

**In order to receive credit for hours spent in sports medicine clinics or centers, please request that the establishment send for the NATA Athletic Training/Sports Medicine Clinical Affiliation application. Please note: No hours will be accepted by applicants from centers that were not first approved by the Board of Certification.

Non-acceptable Hours:

(1) Hours spent in a program not supervised or directed by an NATA Certified Athletic Trainer.
(2) Time spent in travelling with teams.
(3) Academic hours.
(4) Hours spent in sports medicine clinics or centers that are not first approved by the NATA Board of Certification.

Section III

A person may be granted certification under this section by:

1. Proof of 5 years of athletic training experience, after graduating from college on the undergraduate level, provided that it would meet the minimum of one of the following requirements:
   (a) graduate of an NATA approved faculty - athletic trainer educational program.
   (b) a minimum of one year apprenticeship (800 hours*) under the direct supervision of a certified athletic trainer. *See Section I requirement - A.
   (c) providing proof of equivalent coursework to that of an NATA approved curriculum graduate. If this method is selected, the applicant must submit his/her academic (official) transcripts for approval, a minimum of 12 months prior to the anticipated date of examination.

ACCEPTABLE HOUR GUIDELINES

Please Note:

In order for hours to be credited for certification purposes, they must be attained under the direct supervision of a NATA Certified Athletic Trainer.

The hours must be worked in connection with programs by which the supervising certified athletic trainer is employed.

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(2) Hours spent teaching or lecturing in athletic training.*
(3) Hours spent in practicums and labs related to athletic training.*
(4) Hours spent working in sports medicine clinics or centers.**
(5) Hours spent in other allied health areas.**

*Verification from the department chairperson and supervising certified athletic trainer must state amount of hours spent, course content and mode of measurement.

**In order to receive credit for hours spent in sports medicine clinics or centers, please request that the establishment send for the NATA Athletic Training/Sports Medicine Clinical Affiliation application. Please note: No hours will be accepted by applicants from centers that were not first approved by the Board of Certification.

Non-acceptable Hours:

(1) Hours spent in a program not supervised or directed by an NATA Certified Athletic Trainer.
(2) Time spent in travelling with teams.
Section IV

A - Have spent a minimum of 800 clock hours over a minimum of two years and not more than four years under the direction of an NATA Certified Athletic Trainer.

Of these 800 clock hours, 700 hours must be attained at the collegiate, professional or interscholastic level, working in the athletic training setting under the direction of an NATA Certified Athletic Trainer.

The additional 100 hours may be attained from the acceptable related areas, under the direct supervision of an NATA Certified Athletic Trainer.

B - No more than 400 clock hours can be credited for one year.

ACCEPTABLE HOUR GUIDELINES

Please Note:

In order for hours to be credited for certification purposes, they must be attained under the direct supervision of a NATA Certified Athletic Trainer.

The hours must be worked in connection with programs by which the supervising certified athletic trainer is employed.

Acceptable Hours:

1. Hours spent at organized team practices and contest. (professional, collegiate, or interscholastic)
2. Hours spent teaching or lecturing in athletic training.*
3. Hours spent in practicums and labs related to athletic training.*
4. Hours spent working in sports medicine clinics or centers.*
5. Hours spent in other allied health areas.**

*Verification from the department chairperson and supervising certified athletic trainer must state amount of hours spent, course content and mode of measurement.

**In order to receive credit for hours spent in sports medicine clinics or centers, please request that the establishment send for the NATA Training/Sports Medicine Clinical Affiliation application. Please note: No hours will be accepted by applicants from centers that were not first approved by the Board of Certification.

Non-acceptable Hours:

1. Hours spent in a program not supervised or directed by an NATA Certified Athletic Trainer.
2. Time spent travelling with teams.
3. Academic hours.
4. Hours spent in sports medicine clinics or centers that are not first approved by the NATA Board of Certification.
To The Examiner:
The applicant at the time of application, should be able to describe, explain, and demonstrate the appropriate athletic training
procedures and techniques for the following areas. Please review the following sections, with the candidate, to determine their competency
in each part. Listed is a recommended sequence to follow in evaluating competencies: 1) Observation 2) History 3) Inspection (A)
OBJECTIVE 1) Range of Motion (active, passive, resistive) 2) Palpation 3) Neurological 4) Special tests 5) Assessment 6) Plan/Man-
gement. If the candidate is deficient in any area, do not date until the applicant demonstrates proficiency in that area.

Part 1  Acute injury recognition procedures and management techniques for sprains, fractures
and soft tissue injuries or conditions to:

Section A: Upper Extremity
- sternoclavicular joint
- clavicle
- humerus
- acromioclavicular joint
- glenohumeral joint
- radiohumeral joint
- radioulnar joint
- ulnohumeral joint
- radius/ulna
- wrist
- hand/metacarpals
- phalanges
- scapulothoracic

Section B: Lower Extremity
- hip joint
- groin region
- femur
- patellofemoral joint
- tibiofemoral joint
- tibia/fibula
- ankle joint
- foot
- metatarsals/etc.

Section D: Spinal, Head, Face
- lumbrosacral
- thoracic
- cervical
- cerebral
- mandible/oral cavity
- nasal region
- eye/orbit
- ear/outer and inner

Part 2  Chronic and/or Overuse Syndrome recognition procedures and management techniques
for conditions to the following:

- shoulder region
- elbow region
- hip, groin, and pelvis
- knee joint
- lower leg
- ankle
- foot
- lower back

Part 3  Describe the principles and demonstrate the application of the following reconditioning
modalities:

- cold therapies
- assistive exercise
- active exercise
- manual resistive ex.
- isometric exercise
- isokinetic exercises
- flexibility exercises
- hydrotherapy
- aquatic exercise
- cardiovascular training

Part 4  Plan, implement, evaluate, and modify appropriate preconditioning, conditioning, and
reconditioning programs for the healthy and injured athlete. This should include at
least the following areas:

- ankle/foot
- lower leg
- knee
- thigh
- groin
- hip
- spine
- abdominal region
- thoracic region
- elbow/arm
- forearm/hand

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Part 5 Demonstrate appropriate techniques in the application of adhesive tape, elastic tape, corrective devices, elastic bandages and other supplies for injuries or conditions to the following:

- ankle joint
- foot, arch, and toes
- lower leg
- knee joint
- upper leg
- groin region
- hip
- lower back
- rib
- shoulder complex
- elbow/forearm
- wrist, hand, and finger
- head/eyes/etc.
- open skin wounds

Part 6 Design, construct, and apply protective padding/support devices for tissue injuries or protection.

- hip
- upper leg
- knee
- lower leg
- foot/toes
- shoulder
- upper arm
- elbow
- forearm
- wrist, hand, and fingers
- chest/ribs
- neck

Part 7 Demonstrate and explain the following:

- crutch fitting
- stretcher (regular and/or scoop type) management
- spine board use
- splinting techniques
- cervical collar application
- sling management

Part 8 Recognition procedures and management techniques for environmental stress conditions.

- heat stroke
- heat exhaustion
- hypothermia
- heat cramps

Part 9 Candidate has current CPR card and demonstrates proficiency in performing CPR.

Part 10 Examiner Endorsement: Please Type.
Letters to the Editor

To the Editor:

This letter is in response to the letter to the editor written by Matthew T. Costello in the fall 1981 edition of our Journal. It is also a response to those who would advocate abolishment of the apprenticeship route to certification in the NATA.

To assume that all apprenticeship programs leading to NATA certification are without curricula and professional preparation guidelines is absurd. Many apprenticeship programs do offer an educational and clinical setting to learn the rudiments of modalities use, theory, and practice; therapeutic exercise; and rehabilitation protocol.

I would suggest that those who wish to abolish the apprenticeship route first talk to the small college athletic trainer and others who must rely heavily on the student trainer for existence. Also, research the NATA certification examination results to find out how the apprenticeship graduate has performed compared to those coming from approved curriculum programs.

In addition, if those who advocate abolishment of the apprenticeship route would like to see a structured curriculum with an excellent clinical and in-service sports medicine program, drop by the University of Wisconsin and visit our sports medicine center. You will see first hand well-trained, knowledgeable, and most professional student athletic trainers at work. We are proud of our program of professional preparation in athletic training and have produced many outstanding graduates who are now certified athletic trainers making a positive contribution to our profession.

If anything, the apprenticeship route to NATA certification should be standardized with more structured guidelines by our professional education committee, rather than abolished. It’s also about time the committee had some input from those who are conducting similar apprenticeship programs.

Gordon Stoddard, Supervisor
Professional Preparation in Athletic Training
Head Athletic Trainer
University of Wisconsin

To the Editor:

I would like to express my disappointment regarding an article that appeared in the summer issue, entitled “The Athletic Trainer’s Innovative Tool”.

If the NATA is truly interested in advancing itself as a profession within the medical community, then we, as trainers, must get away from archaic practices such as those described by Mr. Schulz. Despite the author’s excellent intentions he is advocating a modality that is uncontrolled and without indication.

When the patella is found to be hypomobile, mobilization should be the treatment of choice. The restoration of normal patellofemoral joint play involves small precise movements in the cephalad, caudal, medial, and lateral direction. These are discrete movements to be performed by one skilled in the art of mobilization. Occasionally, they can be taught to the patient. Knowledge is always the most innovative tool a trainer has at his disposal.

Jonathan M. Cooperman, RPT, AT, EMT
Kent, Ohio

To the Editor:

Many thanks to the observant eye of Professor D.F. Huckle of the University of Michigan. I’m sure our readers will be interested in his comments and the added information concerning the critical area discussed in “The Mechanics of Head and Neck Trauma to Football Players.” His comments are indeed succinct and duly accepted.

I am glad to know there are readers out there who take the time to comment on the contents of our articles. It is like having extra Review Board members out there working. Thank you so much.

Clint Thompson
Editor
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(Please copy this for other CEU submittance)
Progress has been made in transplanting into bacteria (and recently into yeast cells) human genes responsible for manufacturing many critical biochemicals. Hundreds of laboratories around the world have become "germ farms". These farms are growing human genes mostly for research purposes, but in some cases for valuable medical substances. These substances include, endorphin, which some term the brain's own opiate.

Research has been limited on endorphins because the substance is difficult to synthesize. Now scientists at the University of California at San Francisco say beta-endorphin (which may prove to be an effective treatment for schizophrenia, depression, and pain) could be available in abundance for definitive tests because bacteria can be used to mass produce it.

TV Sports Proven to Cause Stress

UPI Press Release

Some die-hard sports fanatics susceptible to stress can endanger their health by agonizing over crucial games on television, a Harvard medical school professor has stated.

Dr. Thomas B. Graboys, in a letter to the New England Journal of Medicine, said the emotional stress produced by such an activity can cause irregular heartbeats that in already weak individuals may precede fatal complications.

The letter was based on a 54-year-old Boston Celtics basketball fan and heart attack patient.

The unnamed fan, who watched the National Basketball Association playoffs last winter and became so excited that towards the end of the game "he was having what we could call very serious, threatening rhythm problems - the kind that if we see, may portend sudden death," Graboys said in an interview.

The man, who underwent testing at Brigham and Women's Hospital, had suffered a heart attack two months previously. He underwent monitoring during the seventh NBA playoff game between the Celtics and Philadelphia 76ers.

"We did this in part because we knew this fellow was a do or die Celtics fan," Graboys said.

Certain types of irregular heartbeat can precede more serious disruptions of heart rhythm that may cause death by failing to allow blood to circulate properly, Graboys said.

Before the game, only a few irregular heartbeats were...
recorded in the patient, Graboys wrote. By 2 P.M., "in anticipation of the tip-off," the man's heartbeat increased and so did the rate of irregular beats.

At the end of the game, his heart rate had nearly doubled and the beat was wildly erratic, Graboys wrote. Both subsided during the two hours after the game.

There was a direct relationship between the patient's "sense of dread (expressed in a diary) the Celtics would lose" and the heartbeat irregularities, the doctor wrote. Graboys said he didn't want to give the impression that everyone should be careful about such emotional activities - only that "if someone has suffered a heart attack recently and you know he's a Dallas Cowboy nut, perhaps you should keep him from watching the game on T.V."

"I wrote to indicate there are a wide array of factors that may be responsible for a given individual's susceptibility to sudden death - emotional, psychological as well as physical," he said. "And for every individual it's different."

In another letter, doctors from Stanford University noted that skin infections can be spread during contact sports. They found that after a rugby player with a strep infection on his leg played in a tournament, three more players appeared with similar infections and two had strep throat as well.

All had had contact with one another during the games.

Nutrition and Alcohol Pamphlet Offered
National Institute on Alcohol Abuse and Alcoholism

A pamphlet on dietary guidelines jointly produced by the U.S. Departments of Agriculture and Health and Human Services advises those who drink alcohol to do so in moderation.

The booklet, "Nutrition and Your Health: Dietary Guidelines for Americans," lists six other rules for good nutrition: eat a variety of foods; maintain ideal weight; avoid too much fat, saturated fat, and cholesterol; eat foods with adequate starch and fiber; avoid too much sugar; and avoid too much sodium. Copies of the pamphlets are available from public health nutrition directors in State health departments, from cooperative extension nutrition specialists at land grant universities, or by writing the USDA Office of Governmental and Public Affairs, Washington, D.C. 20250.

Fetal Alcohol Effects Linked to Moderate Drinking Levels
National Clearinghouse for Alcohol Information

Fetal alcohol effects - range of physical and mental problems in the newborn child - may result from a pregnant woman's social drinking in the same way fetal alcohol syndrome (FAS) can be caused by heavy drinking, according to recent research.

In light of these findings, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) cautions that abstention from drinking is the safest course to follow during pregnancy.

The fact that alcohol consumption during pregnancy could affect the developing fetus was first brought to public attention in the U.S. during the early 1970's. The full fetal alcohol syndrome is characterized by prenatal and postnatal growth deficiencies, abnormalities of the head and face, joint and limb problems, cardiac defects, delayed development, and mental deficiency. After Down's syndrome and spina bifida, FAS is the third most common birth defect in this country causing mental retardation, and it is the only one of the three that appears to be preventable.

It has not yet been determined at what stage of pregnancy various effects might occur, or how much liquor is "safe" to consume at any one time. Binge drinking may cause some problems, while more moderate, social drinking may cause others, researchers believe. But they do not agree on the timing, amounts, or frequency of consumption.
January, 1982


18-21 Aerobics Workshop, Dallas, Texas. Contact the Aerobics Conference Center, 12200 Preston Road, Dallas, Texas 75230.


29-31 Ninth Annual Sportsmedicine Symposium, San Antonio, Texas. Contact Jesse Delee, MD, Division of Orthopedic Surgery, University of Texas Health Services Center, 7703 Floyd Curl Drive, San Antonio, Texas 78284.

30 Medical Aspects of Sports Seminar, Newark, Delaware. Contact C. Roy Rylander, Athletic Department, University of Delaware, Newark, Delaware 19711.

February, 1982


6 Metroplex Trainers Clinic, Fort Worth, Texas. Contact Mike Pruitt, Richland High School, 5201 Holiday Lane, Fort Worth, Texas 76118.

15-19 Sportsmedicine for the Orthopedic Surgeon, Family Practitioner and Allied Health Professional, Lake Placid, New York. Contact John A. Bergfeld, MD, Cleveland Clinic Foundation, 9500 Euclid Avenue, Cleveland, Ohio 44106.

March, 1982

8-12 Sports Medicine Postgraduate Course, Maui, Hawaii. Contact Bates Noble, MD, Course Director, Northwestern University Center for Sports Medicine, 303 East Chicago Avenue, Chicago, Illinois 60611.


IMPORTANT NOTICE

The Journal staff endeavors in every possible way to make sure that every issue of Athletic Training is received by Association members and subscribers; however, this goal is quite difficult, in some cases impossible, when the National Office is not apprised of address changes before publication dates.

When a Journal is mailed to an incorrect address, that particular issue is thrown away by the addressee's local post office unless prior arrangement has been made with the post office for forwarding second class mail. Inasmuch as only a specific number of each issue is printed, back issues are frequently unavailable. So even at the $5.00 cost per back issue, sometimes the National Office can not furnish a missing issue because the supply is exhausted.

There is a very simple way to avoid this problem and keep your volumes of Athletic Training intact while paying no additional charges: When you change your address sign a second class mail forwarding agreement with your local post office. You must request this form. If you agree in advance to pay forwarding costs, the post office will forward your second class mail (usually magazines) and not throw it away.
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A Tip From the Field

FOOTBALL HIP PAD PROTECTION FOR HIP POINTERS AND A-C SPRAINS ON ICE HOCKEY PLAYERS

Beth Deutsch MA, ATC and Tom Fashouer MA, ATC

Hip

Hip pointers can be a devastating injury to any athlete. An inexpensive way to protect the iliac crest is the use of hip pads from a football girdle and a shoe string.

This past year many of our players received hip pointers from the open space between the hip pads and the hockey pants, when checked into the boards. To eliminate this space and protect the iliac crest even more a football hip pad was devised and sewn into the ice hockey pants.

The hip pad consists of semi-rigid material that is vinyl coated, soft, and somewhat flexible. The total weight of the pad is 11 oz.

The pad measures 10 1/4 inches across the widest section of the pad, tapering to 4 1/2 inches at the bottom, and 11 1/2 inches long. These dimensions offer adequate protection for the hip and iliac crest. See photo no. 1.

Attaching the pad to the hockey pants, drill four 5/32 inch holes at the widest part of the pad, one inch from the top, bottom, and sides of extensions on the pads. Two additional holes must be drilled through the girdle hip pad 1/2 inches from the bottom and sides of the pads. Each of the holes that are drilled through the girdle hip pad are also drilled through the hip pad in the hockey pants. Place the shoe laces through the holes and tie them off. See photo no. 2.

Shoulder

An inexpensive way to protect the A-C area once again is to use the old hip pads from football girdle pants attached with a shoe string.

Ice hockey shoulder pads afford little if any protection for the vulnerable A-C area, as only the deltoid is covered and protected in the Cooper and CCM shoulder pads. To eliminate this from occurring the hip pad was tied down onto the shoulder pads.

The hip pad consists of a semi-rigid material that is vinyl coated, soft, and somewhat flexible. The total weight of the pad is 4 oz. See photo 3.

The pad measures 6 inches long, 4 inches wide, and is sewn on length wide to the shoulder pads.

Ms. Deutsch is Head Athletic Trainer at Union College, and Mr. Fashouer is Assistant Athletic Trainer at Union College, Schenectady, New York 12308

Attaching the pad to the hockey shoulder pads, drill four 5/32 inch holes at the narrowest portion of the pad 1/2 inch from the top and bottom. Each of the holes that are drilled through the girdle hip pad are also drilled through the pad on the shoulder pads. See photo 4. Place shoe string laces through the holes and tie them off. See photo no. 5.

Summary

At Union College it has been made optional that members of the ice hockey teams wear the additional padding on their shoulder pads as well as the extra pad in the pants for the hip. Since this has been done, there has been no reported A-C injuries to the shoulder or hip pointer injuries at the iliac crest to those athletes wearing these modifications to their equipment.

Editor’s Note: Anyone wishing to have an idea, technique, etc. considered for this section should send one copy to Ken Wolfert, 111 Buckeye Street, Hamilton, Ohio 45011. Copy should be typewritten, brief, and concise, using high quality illustrations and/or black and white glossy prints.
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Artificial Playing Surfaces

David A. Hammer
West Virginia University

Introduction

Much controversy exists as to whether or not artificial playing surfaces present an increased hazard to athletes over natural turf. Numerous studies have been conducted \(1, 2, 4, 5, 7, 11, 15, 16, 17\) and many articles written \(3, 8, 10, 12, 13\) supporting one side or the other of this controversy. The purpose of this paper will not be to compare a set of newly collected data nor interpretations of that data, but to investigate the scientific background of the current literature and determine if there are inherent weaknesses in a particular type of surface which alone or in combination may predispose an athlete to danger. The paper will deal with four areas of concern, (1) Surface uniformity (2) Surface hardness (3) Shoe-turf Interface and (4) Injury potential. A brief history of artificial surfaces and a discussion of some of the limitations in the current literature will also be presented.

History of Artificial Turf

Artificial turf was originally designed and installed in response to the Ford Foundation studies on recreation of young, inner city children. These reports, made in 1960, stated that these children were at a disadvantage in their growth patterns because their environment, namely lack of recreational areas, did not compare with that of their rural counterparts. \(16\) A project was funded to find a surface that would provide these children with better recreational areas than the asphalt playgrounds they were using. Monsanto's Astroturf\(^a\) was the surface developed in this pilot project. Astroturf made its emergence as a major commercial venture in 1966 in the Houston Astrodome. Here the painted roof panels and heavy use in the enclosed structure made natural grass unfeasible. Since then three other companies have marketed a form of artificial turf.

Artificial surfaces are currently manufactured by two companies, Monsanto Recreational Services of St. Louis, Missouri under the brand name Astroturf; and Superturf International, Inc. of Garland, Texas under the brand name Superturf\(^b\). Two other brands, Tartan Turf\(^c\) (3M Company) and Polyturf\(^d\) (U.S. Bilt-Rite), are no longer manufactured though some installations still exist.

Except where a more specific analysis is appropriate, all types of playing surfaces using man-made materials will be referred to as artificial turf, while use of a particular brand name will refer to that specific brand alone.

Limitations of Current Literature

One practice common to much of the material written in regard to playing surfaces involves the comparison of injury rates on one natural surface to those on one artificial surface. One exception to this has been the National Athletic Injury/Illness Reporting System (NAIRS) reports. In two reports to the U.S. Consumer Product Safety Commission\(^e\) the NAIRS staff was able to compile data on a nationwide scale over a period of two years including over 1.3 million athlete-exposures. The data presented would tend to support the contention that there is no difference in injury rates on the two types of surface, however, the authors of these reports feel that more time was needed to make a conclusive report.
Obviously any venture involving the development and subsequent marketing of a new product undergoes a certain amount of testing, redesign and modification. The development of artificial turf is no exception. In the over twenty years since artificial turf was first developed, many changes affecting all aspects of its make-up have taken place. Hence a problem encountered in a comparative study is not only which brand of turf is being compared but also which “generation” of that brand is being used. When one takes into account the number of variables possible and the number of athletic fields across the nation it becomes clear that a study comparing numbers or severity of injuries between any two surfaces must lack a certain amount of reliability. Another factor which must be taken into consideration is the fact that not all coaches utilize practice time in the same manner. Hence it might seem more advantageous to compare only game-related injuries, however, this could very well exclude over one-half of the injuries incurred on the particular type of surface being used.

Rather than compare type, number, or severity of injury it would be better to eliminate as many variables as possible and consider the basic characteristics of the surface with the idea that conclusions made in this manner will be reproducible on a large percentage of similar surfaces and therefore be reliable.

**Surface Uniformity**

Obviously no two natural turf fields can be exactly alike. Differences in usage, maintenance, climatic conditions, growing season and type of grass all have an effect on the surface of a natural turf field. In addition, natural turf differs not only among different regions and different fields, but also different areas of the same field differ greatly due to the presence of divots and soft-spots. Similarly, artificial surfaces do not provide as uniform a surface as one might think. Besides the differences in brand and generation of each product, artificial surfaces are also affected by age, usage, maintenance, and climate factors. The most noticeable change in artificial turf is the accumulation of a green “dust” on the shoes and equipment on the field.

The appearance of the dust is due to two factors (1) ultraviolet rays from the sun and (2) airborne particles. The ultraviolet rays cause a reduction in the molecular weight of the “grass” fibers. The normal weight of these fibers is approximately 30,000 g/mole. When this value below 7-8000 a flaking of the surface “grass” fibers occurs, causing the dust. The effect of airborne particles, although more varied throughout the country than sunlight, can be just as detrimental. The phenomenon known as “acid-rain” is the most familiar type of this pollution. At West Virginia University the artificial surface was vacuumed four times per year resulting in an average accumulation of approximately 100 lbs. of dust. This figure does not take into account the amount of dust taken off the field on the shoes of the people using the turf.

Other, more subtle, changes occur in artificial surfaces. These include a matting down of the grass-like fibers and changes in the shock absorbancy of the system. These two areas will be discussed in subsequent sections.

**Shoe-Turf Interface**

Traction is a common parameter used when research is done on the shoe-turf interface. Coaches and players want as much traction as they can get, while physicians and trainers report that excessive traction leads to foot fixation and greater stress on the body, namely the ankle, knee, and hip. With the advent of artificial surfaces the conventional shoes worn on grass were no longer useable as they penetrated the roots and the dirt of the surface. Instead of a molded sole shoe similar to the one described above the shoe is just as important in considering traction as the surface is. One study showed that changing from the conventional grass shoe having seven, 3A inch cleats, to a molded sole with fourteen, ¼ inch cleats produced a marked decrease in both the incidence and severity of knee and ankle injuries. A second study reported release coefficients of five types of shoes on wet and dry grass, Astroturf, Tartan Turf, and Polyturf. This report found that a molded sole shoe similar to the one described above was the safest shoe on any surface wet or dry.

Another factor to consider is the absence or presence of “grain”. In installations of turf as late as 1974 a pronounced grain was present due to the random fashion in which the surface fibers layed down. However, as a result of testing and modification by the manufacturer (Monsanto in this case), changes were made in the weaving of the fabric which works to control the manner in which the fibers lay down. This has reduced the grain effect in Astroturf surfaces but not eliminated it. SuperTurf International, Inc. reports that the pile density of its Super-turf surface is high enough that it does not permit any laying down of the fibers and hence no grain can be produced.

**Injury Potential**

In regard to player-surface contact, reference has already been made to the various papers that present relevant injury data. Reasoning has also been presented
as to some of the limitations of these papers. The only injury which has been shown to occur with an increased rate on artificial turf is injury to the metatarsophalangeal joint of the great toe, (1st M-P), more commonly referred to as "turf-toe". Coker, et al. found that the primary mechanism for this type of injury was either a hyperextending or hyperflexing of the first M-P joint combined with a force driving the toe into the artificial surface. The injury is also a function of the flexibility of the sole of the shoe being worn. Bowers and Martin determined that the stiffness of the sole, combined with the hardening of the turf with age clearly predisposes the athlete to this condition. Two questions must be explored further in regard to this injury. First, is the fact that "turf-toe" is less common on natural turf more a function of the turf or the shoe? Second, in the likely event that it is the shoe, can a new one be developed that will satisfactorily protect the first M-P joint?

The amount of injury resulting from player-player contact is directly related to the speed of those players. A subjective comment made by many is that artificial surfaces provide for a faster game. Objectively, Staniski, et al. reported that six randomly selected football players were able to run 40-yard straight and slalom dashes faster on artificial turf than natural. Whether or not this is true under actual game conditions must be shown before a correlation between higher injury rates due to player-player contact and artificial surfaces can be drawn. If this would be the case it would obviously present an increased hazard to the players.

Summary

The scientific basis of four areas of concern regarding the controversy surrounding artificial turf were examined. The areas included surface uniformity, surface hardness, shoe-turf interface and injury potential. Comparative studies lack a certain amount of reliability due to the number of variables present and the design limitations of the experiments. Natural turf fields obviously vary a great deal throughout the country but also vary greatly upon themselves. Artificial surfaces do not provide as uniform a surface as one might expect either. The most noticeable change in artificial turf as it ages is the accumulation of a green dust due to the flaking of the fibers. Studies have shown a decrease in the shock absorptivity of the Astroturf system as it ages. This change is most likely due to changes in the pile of the turf. Studies on friction and release coefficients have shown that a molded sole shoe with fifteen three-eighths inch long and one-half inch in diameter cleats may be the safest on any surface under any condition. A profound grain effect may still be present in installations as late as 1974, however, upgrading by the manufacturer has lessened the grain effect. Sprains of the M-P joint of the great toe is the only injury to be connected with a higher incidence on artificial surfaces. It has been shown that this injury is a function of the shoe as well as the surface. There may be some truth in the belief that artificial turf enables players to attain higher speeds; if this can be shown to be the case it clearly presents a hazard to the players.

The question should no longer be "is artificial turf safer than grass." Research efforts should be directed to making the surfaces used as safe as possible to the participants, whether that surface be grass, artificial turf, or an as yet undeveloped surface. Byron Donzis, the revolutionary inventor who has been taken under the wing of the National Football League, predicts that by the year 2000 football will be played on pressure adjustable air mattresses. Presentation of a problem is not in itself the solution; presentation of a problem which then leads to a change is the solution. Certainly artificial turf is here to stay. Clearly a mass return to grass is unfeasible, hence the objective should be to refine that surface so that the incidence and severity of injuries is as low as possible.

Conclusions

From the material examined the following conclusions can be made:

(1) As artificial turf ages it undergoes changes that affect the shock absorptivity of the system.

(2) Visible and subtle changes occur in artificial surfaces, demonstrating that they do not provide as uniform a surface as is usually accepted.

(3) A study on player speed under actual game conditions is needed to determine if there is an increase in speed on artificial surfaces.

(4) Development of a shoe for artificial turf use that satisfactorily protects the M-P joint of the great toe is needed.

References

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The Enigmatic Anterior Cruciate Ligament

The anterior cruciate ligament, long thought to be expendable or insignificant to function, has been ushered into the limelight of late by an ever-enlarging body of research-oriented sports traumatologists.

Anatomy

The ligament, so-named because of its anterior attachment onto the tibia, travels posteriorly and laterally to its femoral insertion on the inner wall of the lateral femoral condyle. In the adult it is 1-2/3 times as long as the posterior cruciate ligament and is nourished by a branch of the medial geniculate artery which enters its substance proximally. Injury to this vessel at the time of cruciate rupture results in an intra-articular arterial bleed accounting for the rapid tense hemarthrosis observed at the clinical level. The ligament is composed of multiple bundles or fascicles which coalesce to form two distinct bands, the anteromedial and posterolateral. (Figure 1) The anteromedial band is the more significant in terms of providing stability, since in cadaver studies a positive anterior drawer test could not be obtained unless the anteromedial band was severed.1,2

Biomechanics and Function

The cruciate ligaments stabilize the knee in the anteroposterior and rotational planes. As the knee flexes, tension mounts in the anterior cruciate ligament which resists excessive posterior rolling of the femoral condyles and, in turn, produces an anterior sliding of the condyles.3 When this ligament ruptures, abnormal sliding movements of the tibia occur relative to the femur. These are appreciated subjectively by the patient as a luxating phenomenon or a sense of the knee “going out.” Objectively, the examiner may produce a positive drawer test or variant thereof. Clinical tests of cruciate instability may be subclassified into those which assess straight anteroposterior instability and those which detect the abnormal rotational elements of the cruciate-deficient knee:

Anteroposterior Instability

1. Drawer Test — This standard time-honored test may be performed as shown in Figure (2). Note that the lower leg does not hang free but is grasped between the examiner’s knees to remove the effect of gravity in creating tension in intact capsular and ligamentous structures and possibly creating a false-negative result. A second pitfall is avoided by palpating the distal hamstring tendons to make certain they are relaxed since contracted hamstrings would tend to drawer the tibia posteriorly and resist its abnormal anterior translation in cases of anterior cruciate ligament rupture. The test may be alternately performed with the patient supine and the foot of the bent knee resting on the table. Abnormal forward motion of the tibia constitutes a positive test. The quality of the endpoint rather than the absolute degree of anterior motion is significant since the end point in the cruciate deficient knee will be soft and indistinct as opposed to the sharp distinct endpoint achieved in the normal knee. Ligament stress tests should always be performed for comparison on the opposite normal member since various amounts of physiologic laxity may exist in certain individuals.4,5

2. Lachman Test (Figure 3) A modified drawer test which is performed with the patient supine and the tested extremity externally rotated in a posture from 1-15 degrees flexion. The femur is stabilized with one hand while firm pressure is applied to the posterior aspect of the proximal tibia. Proponents of this test claim it is more reliable in acute cases than the standard drawer test, since the acutely effused knee is tested in a position of relative comfort, the effect of the hamstrings in producing a false-negative result is lessened. Also, the geometry of the femoral condyle in contact with the tibial plateau is such as to only minimally obstruct forward motion of the tibia.5

Rotational Instability

1. Anteromedial Instability — Defined as abnormal motion of the knee relative to the femur in an anterior direction and away from the medial side of the knee, this type of rotational instability is best elucidated by the...
Slocum test (Figure 4), which is actually a modified drawer test. The patient rests supine on the examining table with the knee flexed to 90 degrees and the foot resting on the examining table. The foot is first placed in 30 degrees of internal rotation and the drawer test performed. The presence of anterior instability suggests damage to the posterolateral knee which could include the posterolateral capsule, posterior cruciate ligament, popliteus tendon, fibular collateral ligament and terminal portion of the tensor fascia lata and thus renders the subsequent test for anteromedial rotary instability less meaningful. Assuming, however, the internal rotation drawer test is negative, the foot is then placed in 15 degrees of external rotation and the test repeated. Early resistance to anterior tibial translation is afforded by the tibial collateral and medial capsular ligaments. A markedly positive test demonstrating anteromedial rotary instability indicates the anterior cruciate ligament which offers the main resistance to drawing in external tibial rotation once the medial capsular and tibial collateral ligaments are compromised. 2. Anterolateral Rotary Instability — Abnormal motion of the tibia relative to the femur occurs in an anterior direction and away from the lateral side of the knee. Three tests are presently in vogue to describe this type of instability: A) Lateral Pivot Shift — The patient lies on the unaffected side with the knee flexed and the pelvis rotated posteriorly 30-50 degrees, sufficient to suspend the test leg in such a manner as to place the weight of the limb on the inner border of the heel with the knee flexed to about 10 degrees. When anterolateral rotary instability is present, a forward displacement of the tibia on the femur can be palpated on the lateral side of the knee. With equal pressure on the lateral femoral condyle and fibular head, the knee is pushed gently forward into flexion. As reduction of the subluxation occurs in the 25-40 degrees flexion range, it is accompanied by a palpable and occasionally audible “shift”. B) Jerk Test (Figure 5) — With the patient supine, the lower extremity to be tested is supported in order to flex the hip approximately 45 degrees and the knee to 90 degrees. The foot is grasped and the tibia internally rotated while the opposite hand is used to exert valgus stress on the proximal tibia and fibula. The knee is then slowly extended maintaining valgus stress and internal rotation. In the unstable knee, subluxation of the lateral tibio-femoral joint is maximized at approximately 30 degrees and spontaneous relocation occurs with further extension. C) Flexion-Rotation-Drawer Test (FRD) (Figure 6) — The patient lies supine and the test leg is elevated by lifting at the calf and ankle allowing the knee joint to assume a posture of slight flexion (i.e., approximately 15 degrees). This allows the femur of the cruciate deficient knee to displace posteriorly and externally rotate resulting in anterolateral tibial subluxation. Valgus stress and axial compression are then applied as the knee is slowly flexed causing the tibia to move posteriorly and the femur to internally rotate producing reduction of the joint which can be sensed by the examiner. Proponents of this test claim it is more reliable than the anterior drawer test and will be positive when other tests of anterior cruciate ligament functions are negative.

Clinical Aspects of Anterior Cruciate Ligament Rupture
The true significance of an injury producing damage to the anterior cruciate ligament may be lost due to its apparently trivial nature: most are of the noncontact variety involving torsional weight bearing or hyperextension stresses. Typically, there is an associated “pop,” inability to continue, a vague sense of instability and a tense hemarthrosis which develops within a few hours of injury. In the absence of significant concomitant capsular or other ligamentous injury, instability to stress testing is usually not demonstrable in the acute case but will become increasingly positive with the passage of time. Thus proper diagnosis depends on a high index of suspicion to direct the appropriate diagnostic measures, foremost of which are examination under anesthesia and arthroscopy. The significance of traumatic hemarthrosis should not be lost: between 60-75% of such cases involve injury to the anterior cruciate ligament and as many as two-thirds of these cases will also demonstrate injury to either meniscus. 8, 9

Treatment
Controversy exists over the treatment of acute ruptures of the anterior cruciate ligament. Currently three courses of action prevail: 1) non-operative, 2) primary repair with or without augmentation, 3) primary intra and/or extra-articular reconstruction.

1. Non-Operative Treatment — Unquestionably, a certain number (probably small), of athletically active individuals with isolated injury to the anterior cruciate ligament will respond to non-operative treatment sufficient to allow resumption of their pre-injury level of competition. The main difficulty arises in attempting to identify such patients at the outset. In many cases, the anticipated course of an untreated rupture of the anterior cruciate ligament is one of progressive deterioration of knee function with development of rotary instability, meniscal tears, degeneration of articular cartilage and eventual degenerative arthritis. 10

2. Primary Repair/Augmentation — Primary repair of the anterior cruciate ligament is a viable alternative when the injury involves avulsion of bone at the tibial or rarely the femoral end with the basic ligamentous structure remaining intact. Primary repair of mid-substance ruptures represents little more than a surgical exercise with virtually no prospects for restoring normal anatomy or

Figure 2. Standard drawer test.

Figure 3. Lachman test.
function. This fact is easily reconciled by the knowledge that ligamentous failure occurs by serial failure throughout the entire ligament. This occurs prior to final separation with 50-100% elongation over the resting length of the ligament. Ruptures occurring at the proximal or distal end of the ligament may allow direct suture to bone and the repair is often augmented with fascia lata or other biologic substitute to provide additional strength. 3. Reconstruction — The advantages which accrue as a result of primary intra-articular reconstruction of the anterior cruciate ligament are the presence of a structure of anticipated ultimate tensile strength greater than the repaired ligament. There is also the optimistic expectation of preventing meniscal tears, lessening degenerative change and improving functional ability. These repairs are often augmented by extra-articular reconstruction as well. Such surgery requires technical expertise on the part of the surgeon and requires, for success, a lengthy and dedicated rehabilitative effort by the patient. Obviously, such an approach is not suitable to every patient with anterior cruciate ligament rupture.

Summary
Despite early reports to the contrary, it is now generally accepted that an intact anterior cruciate ligament is of critical value to function of the knee under conditions of high performance. The ligament controls anteroposterior movements as well as rolling and sliding of the femoral condyles relative to the tibia. Its loss usually leads to various instability patterns. Clinical diagnosis is made early by maintaining a high index of suspicion in torsional weight bearing injuries (often non-contact) which are accompanied by a rapid tense hemarthrosis or in hyperextension injuries with hemarthrosis. It is best confirmed by examination under anesthesia and arthroscopy. Considerable controversy still exists over the treatment of primary and remote ruptures of the anterior cruciate ligament and presently such treatment must be tailored to the individual patient and tempered by the experiences of the treating physician.

References
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A Tip From the Field

TAPPING PROCEDURE FOR AN UNSTABLE KNEE

Keith A. Handling, MS, ATC, RPT

A not too uncommon complaint heard by athletic trainers is the report by an athlete of his knee “giving way”, “collapsing” or “locking”. Possible causes of this sensation could be a torn meniscus, a foreign body in the joint, or osteochondritis dissecans. If the knee is not locked and symptoms are so mild as to cause no effusion, instability, or actual disability, a more definitive examination of the knee (involving arthroscopy and arthrotomy) may be postponed until the end of the season, provided the knee can be protected.

At the University of Delaware our rehabilitation program for athletes with these symptoms consists of: (1) cryotherapy (cold whirlpool for 15 minutes at 50 degrees F.), (2) exercising the injured knee on an orthotron, (3) cryotherapy, and (4) taping. We have observed that properly taping the injured knee is an important part of the rehabilitation program. If the knee is improperly taped, the knee will often continue to “give way” or “collapse” during strenuous activity. In order to prevent this, we tape these athletes in a special manner. One such special taping procedure which provides maximum stability for an unstable knee will be described.

Taping Procedure

1) First, the knee is taped in a double diamond, using three inch elastic tape (see figures 1 and 2).

2) Next, a quarter inch felt pad is cut (see figure 3). The pad completely encircles the knee joint and is designed to give support and pressure along the entire joint line. The anterior aspect of the pad extends from one inch above the superior border of the patella to one inch below the tibial tuberosity. An oval design is cut out in the front to allow the patella to slide freely. On the medial and lateral aspects of the knee, the pad extends one inch above and one inch below the knee joint. In the posterior aspect, the two ends of the pad join together in the popliteal fossa.

3) The felt pad is held in place by applying a series of spiral layers of one and a half inch white tape. The first strip is applied on the lateral aspect of the anterior thigh. The tape is carried downward and obliquely around the back of the knee crossing the popliteal fossa and continuing downward around the lower leg, ending on the medial aspect of the anterior lower leg. The second strip is applied on the medial aspect of the anterior thigh. The tape is carried downward and obliquely around the back of the knee crossing the popliteal fossa and continuing downward around the lower leg, ending on the medial aspect of the anterior lower leg. The second strip is applied over top of the felt pad, following the same pattern as used in the double diamond.

4) Next, a series of four, three inch elastic strips are applied over top of the felt pad, following the same pattern as used in the double diamond.

5) The final step is to lock the ends by the application of two circular strips of three inch elastic tape around the thigh and one around the calf (see figures 6 and 7).

The secret to the success of this taping procedure lies in the felt pad. The pressure and support provided on the joint line decreases the chance of the knee “collapsing” or “giving way”. Without the felt pad, the knee is often unable to withstand the vigorous demands of athletic competition.
PHYSICAL ACTIVITY AND THE DEVELOPMENT OF OSTEOARTHRITIS

• William E. Prentice, Jr., PhD, ATC

Introduction

Osteoarthritis is a disease involving central or peripheral, moving diarthrodial joints characterized by attrition and degeneration of articular cartilage, remodeling of bone ends with marginal osteophyte formation and growth of subchondral bone cysts on the articular surface. This particular form of joint disease occurs as a result of both normal and abnormal wear and tear on the joint over a period of years. Clinically the disease is characterized by pain and dysfunction of afflicted joints.

Evidence of osteoarthritis has been found in dinosaurs and in prehistoric human skeletal remains. It occurs in all mammalian species. In fact, osteoarthritis is so common in man that it has been described as a physiological rather than a pathological process. The 1962 United States Health Examination showed definite radiological evidence of osteoarthritis in over 40 million Americans.

Anyone involved with sports medicine should be aware of the frequent incidence of osteoarthritis in individuals involved with physical activity. The literature seems to indicate that the articular cartilage tends to wear out with "normal" use. Those people who subject the joints to the additional wear and tear that is inevitable with physical activity may tend to develop degenerative joint disease at a much earlier age. Increasing numbers of people, both young and old, are becoming involved with some type of physical activity, in particular running. These individuals are continually subjecting their ankle, knee, and hip joints to repeated microtrauma which facilitates the wear and tear process. There is little doubt that some cases of osteoarthritis may be directly attributed to sport. Those involved in sports medicine will very likely be dealing with increasing numbers of patients who are developing osteoarthritis. Thus, an understanding of the disease process is necessary.

Structure and Function

Synovial joints, also known as diarthrodial joints, possess a joint cavity and are specialized to permit relatively free movement. The articular surfaces of the bones are covered with a hyaline cartilage. The bones are surrounded by a fibrous synovial capsule and gain stability from the supporting ligaments. The inner surface of the capsule is lined with a synovial membrane which is made of connective tissue. The cells of the membrane produce synovial fluid which fills the joint cavity and lubricates the joint. The joint cavity sometimes contains a fibrocartilaginous disc which primarily increases the shock absorbing capacity of the joint.

The shape of the bones in the joint, along with the muscular, ligamentous, and capsular arrangement, determine the type of movement, the range of motion, and the mechanical stress and strain placed on that particular joint. There are three types of active movement, gliding or slipping, angular movement around a horizontal axis, and rotary movements about a longitudinal axis. The most common types of joints, named according to their motions and shapes, are condylar, hinge, plane, ball and socket, pivot, ellipsoidal, and saddle joints.

Joint lubrication is extremely important in reducing the coefficient of friction between the moving bones, otherwise the articular cartilage would be very quickly worn away. This lubrication of the joint is accomplished as a result of the presence of synovial fluid produced by the synovial membrane. During movement, synovial fluid circulates through wedge-shaped spaces between the bones. The intra-articular pressure increases during movement and is greatest where the cartilages are closer together. This pressure is sufficient to keep the articular surfaces apart. Consequently the film of synovial fluid, rather than articular cartilage takes up the friction. In addition to joint lubrication, the synovial fluid is responsible for nutrition of the articular cartilage.

Articular cartilage is a very tough, resilient connective tissue made of cells and fibers held in a firm, gel-like matrix, formed mainly of chondroitin sulfate. Adult cartilage is generally avascular. Articular cartilage is usually hyaline cartilage and is calcified at its attachment to the bone. Cartilage grows by laying down new cartilage on the surface of the old. This new cartilage is formed by chondrocytes. It also grows due to an increase in the size and number of existing cells and by an increase in intercellular material. The cells in the adult hyaline cartilage have lost the ability to proliferate. Consequently, repair or regeneration of the articular cartilage following injury does not easily occur. However, it appears that in normal use some replacement of articular cartilage is possible.

Degeneration normally occurs with advancing age and eventually becomes severe, particularly in weight bearing joints. Physiologically, the aging process begins in teenage years. Degeneration is a result of repeated microtraumas to the joints including tendons, ligaments, and fasciae surrounding the joint. By age 60, thinning and ulcerations of the cartilage and thickening and polishing of the exposed subchondral bone, is usually found.

Poor alignment of a particular joint imposes unequally distributed stresses on one side or part of the joint. The cartilage is damaged as a result of this pressure. Obesity or being overweight can also facilitate the onset of osteoarthritis.

Perhaps, one of the most common causes of degenerative joint disease, as seen by the athletic trainer is trauma. Single or multiple trauma damages cartilage. Such injuries may be caused by a direct blow or fall, pressure of carrying or lifting heavy loads, or repeated microtrauma to the joint as in running or cycling. Sufficient reaction may occur about this site from repeated motion and use so that enough excess osteoid and scar tissue develops to make the joint function abnormally.

A joint which has been traumatized may become the first to
be affected by other forms of arthritis such as rheumatoid arthritis. Trauma may also aggravate osteoarthritis and the involved joint would not respond as well as would a normal joint. Several injuries which are commonly seen in sport are considered possible etiological factors in the development of osteoarthritis. Among these are ligamentous injuries, meniscal injuries, and a subluxing or dislocated patella. Osteoarthritis most often affects the weight-bearing joints; the knees, hips, and lumbar spine. Also affected are the shoulders, cervical spine, the interphalangeal joints of the fingers, the first metatarsophalangeal joint, and the temporomandibular joints. Although many other joints may show pathological degenerative change, clinically the disease only occasionally produces symptoms in them. Any joint which is subjected to acute or chronic trauma may develop osteoarthritis. Generalized osteoarthritis is very rare. Adams, in a thorough review of literature discusses a number of authors who related the incidence of osteoarthritis in particular joints to specific sports. These studies suggest that osteoarthritis is extremely common among those individuals who are involved in some type of physical activity although several studies do not support this view. It is important to point out that there are at least three types of osteoarthritis. The first type consists primarily of small alterations, erosions and osteophytic lesions of limited progression. This type is generally not very severe and is essentially asymptomatic. It is generally discovered during an autopsy of older patients. A second type of osteoarthritis is progressive and leads to alterations within the joint that often become intolerable to the patient, and sometimes require fairly radical medical treatment. The lesion is highly focal and may be considerably modified both by damage to the old cartilage and by production of new cartilage, either adjacent to the site of erosion or covering the surface of newly formed osteophytes. The joint space narrows and there are osteophytes present at the margins of the joint. For the athletic trainer the most frequently seen form of osteoarthritis is known as chondromalacia and seems to affect younger individuals. It is most commonly observed in the cartilage of the patella or the femoral condyles. The process results in moderate pain and stiffness. The changes are confined to cartilage and consist of a moderate degeneration, irregularity and erosion. The affected sites very rarely develop osteophytes or effect the underlying bone. Any mechanical system wears out with time. The joints in the body are mechanical systems, and wear and tear is inevitable just due to normal activity. The most common result of this wear and tear is a degeneration of the articular cartilage. The cartilage may be worn away to the point of exposing, eroding and polishing of the underlying bone. This degeneration process may be speeded up or exaggerated by factors such as trauma, disease, or biochemical changes in the articular cartilage. Symptoms The symptoms of degenerative joint disease are relatively local in character. It may be localized to one side of the joint or may be generalized about the joint. One of the most distinctive symptoms is pain which is brought about by friction which occurs with use and which is relieved by rest. Pain is intensified when the weather becomes damp or cold due to lowered barometric pressure which permits greater synovial swelling. Stiffness is a common complaint which occurs with rest and is quickly loosened with activity. This symptom is prominent upon rising in the morning. Joints may also show localized tenderness, crepitus, creaking, or grating which may be heard and felt. In advanced stages with marginal proliferation and cap-
pression. It may be necessary to aspirate the joint to prevent the formation of adhesions which tend to add to joint stiffness. Cold therapy seems to be used more and more as a preferred form of treatment, not only because of its apparent ability to restrict swelling which impairs the range of motion, but also because of its extreme analgesic effects.

A physician may choose a more radical method of treatment in addition to the physical therapy techniques, which call for the use of different types of drugs. An intra-articular injection of a corticosteroid appears to dramatically reduce pain and swelling within a few hours. The steroid has an anti-inflammatory action but has no effect on the degeneration process. It greatly increases the motion of a joint. The symptoms may be relieved for varying periods of time from several weeks to months. A schedule of injections given at regular intervals keeps the patient comfortable and active. A particularly tender spot may be injected with a local anesthetic such as procaine or xylocaine. Pain will be quickly relieved but may reappear if the degeneration is widespread. Aspirin may also be recommended for its pain relieving as well as anti-inflammatory effects.

Summary

A joint which is exposed to excessive mechanical stress and strain resulting from participation in athletic activity appears likely to develop osteoarthritis. Any process whether pathologic or physiologic which changes the mechanics of the joint may facilitate wear and tear of that joint leading to degeneration of the articular surface. The most effective treatment regime for osteoarthritis seems to be moderation of activity, correction of faulty body mechanics through appropriate rehabilitation techniques, and, if necessary, the use of drug therapy as an adjunct to these other forms of therapy.

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The quiz that appears in this Journal and those that follow will provide an excellent educational opportunity for Certified members to obtain their required CEUs. Associate members will also benefit from this program beginning January 1, 1982.

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James B. Gallaspy
Chairperson, Continuing Education Committee

Schedule of Future Sites and Dates
NATA Certification Examination
Revised: July, 1981

REGIONAL

(All regional sites subject to a minimum of six candidates per site and limited to a maximum of thirty candidates.)
ALL SITES SUBJECT TO CHANGE.

January 17, 1982
Eugene, Oregon                     San Jose, California
Fort Worth, Texas                 Raleigh, North Carolina
Grossingers, New York             Ann Arbor, Michigan
Atlanta, Georgia                  Lawrence, Kansas
Dayton, Ohio

Deadline for requesting application forms:
October 15, 1981*

Deadline for returning applications:
December 1, 1981*

March 21, 1982
Odessa, Texas                      Tucson, Arizona
Lexington, Kentucky                Ann Arbor, Michigan
Eugene, Oregon                     New Britain, Connecticut
Raleigh, North Carolina            San Jose, California
Philadelphia, Pennsylvania         Lincoln, Nebraska*
(District 5 meeting)
(test date 3-19-82)

Deadline for requesting application forms:
December 15, 1981*

Deadline for returning applications:
February 1, 1982*

NATIONAL CONVENTION

(Subject to a maximum of 50 candidates - applications are accepted in order of remittance - only 25 additional candidates accepted for the written examination. June and August applications are processed under the same deadlines.)

August 1, 1982
Ann Arbor, Michigan                Raleigh, North Carolina
Cedar Falls, Iowa                  Philadelphia, Pennsylvania
Lexington, Kentucky                Indianapolis, Indiana
Eugene, Oregon                     Costa Mesa, California
New Britain, Connecticut

Deadline for requesting application forms:
March 15, 1982

Deadline for returning applications:
May 8, 1982

Application forms available from:
NATA Board of Certification
P.O. Drawer 1865
Greenville, NC 27834

NOTE: The 1983 Exam dates will approximate the 1982 dates and sites on a regional basis. The national exam will be given at the site of the annual NATA convention with similar numerical limitations.

*All items must be received by the NATA Board of Certification Office by the specified deadline date.
FIELD EVALUATION OF EYE INJURIES

• Jane C. Sandusky, MS, ATC

Few injuries can be quite as potentially devastating and permanently disabling as an injury to the eye. An athletic trainer's early correct evaluation and first aid care can prevent further injury and decrease the incidence of permanent disability and vision impairment. This article will discuss the evaluative techniques and the first aid measures to be taken when assisting an athlete who has sustained a blunt and/or penetrating injury to the eye.

Annual Statistics

The National Society to Prevent Blindness estimates that approximately 35,000 eye injuries are sustained annually by people involved in sports and/or recreational activities. Studies reveal that there has been a 75% increase in sports related eye injuries. In 1973, 24,644 individuals reported eye injuries sustained from baseball, racquet sports, basketball, football, bicycling, guns, hockey, volleyball, soccer, and sportsballs not specified. By 1978, sports-related ocular injury had increased to 35,324 reported incidents. Of the ten sports presenting the greatest potential hazard for ocular injury, baseball, racquet sports, and basketball account for 48% of all reported injuries.12

Investigators report that athletes who wear corrective glasses or contacts may be at a slightly greater disadvantage than their perfect vision counterparts when encountering eye trauma during competition. Reports of injury inflicted by broken lens particles, frame abrasions to soft tissues, or corneal abrasions and lacerations caused by contacts have been documented.3 4 6 19 20 Studies also indicate that individuals who have a history of diabetes, sickle cell anemia or other vascular-related pathology, may be more susceptible to hemorrhage within the deep intraocular tissues following the receipt of blunt or penetrating trauma. Vitreous hemorrhage, due to damage to retinal or choroidal vessels, will produce a loss of vision which may be sudden and profound.14

The eventual sequella of eye injury often depends upon the severity of the trauma, the structures involved, as well as the prompt first aid care rendered by the athletic trainer. Knowing what to do, as well as what not to do, will in most cases not only serve to calm a pained and apprehensive athlete, but also increase the probability of maintaining the individual's vision with minimum impairment.

Trauma History and General Physical Assessment

As when dealing with any type of athletic injury, the trainer must first obtain a complete trauma history. This is particularly true if the accident was not witnessed by the trainer. Knowledge of the mechanism of injury, the athlete's immediate reaction following the trauma, and what, if any first aid care has been rendered prior to one's arrival at the scene, is very important in order to provide the athlete with prompt, correct medical assistance.

The most common mechanism of injury has been identified as a low impact/high velocity injury in which trauma is inflicted by a piece of playing equipment such as a ball, stick, bat, racquet, etc. The resulting injury is usually confined to the small localized area of direct impact.

A quick assessment of the athlete's general medical status should be made noting the cardiopulmonary functions, state and level of consciousness, and the presence of any serious arterial bleeding. Radiating pain in the cervical area, the development of shock, or any other signs associated with severe internal trauma should be investigated. Since some blunt or penetrating injuries may be associated with intracranial injury, the presence of blood-tinged cerebrospinal fluid draining from the ears and nose, severe tinnitus, or other symptoms of concussion should also be considered.

Examination of the External Ocular Structures

When all apparent life threatening situations have been eliminated, the trainer should make a cursory, but thorough visual examination for gross deformities of the face, lids, and orbits. The depth and extent of the injuries should be noted. External trauma which concusses or penetrates the lids, orbits, or conjunctiva, may directly affect both lid function and the motility of the extraocular muscles.17

Prior to the rapid onset of edema and ecchymosis, the external surfaces of the lids should be examined for lacerations. (Figure #1) The highly vascular lids will produce associated periorbital and subconjunctival hemorrhage with exophthalmos or protrusion of the globe.14

Figure 1. Anatomy of the eye and adnexa.
Orbital Fractures

A blow out fracture of the ocular orbit may involve the internal bony framework of the orbit wall or be coupled with sustained damage to the orbital rim. The mechanism of injury for a blowout fracture occurs when the bony rim is forcefully struck by a rounded object of greater circumference than its anterior bony dimensions. 13

Signs and symptoms of a blow out fracture will vary according to the severity of the injury and include: 1) pain at the point of impact, 2) pain and restriction of extraocular muscle movement, 3) a transient episode of visual blurring due to the shock of the impact, 4) the immediate and persistent development of diplopia or double vision, 5) immediate hypoesthesia along the distributions of the superior or inferior branches of the Trigeminal nerve, 6) the onset of nausea and vomiting, 7) the presentation of exophthalmos or enophthalmos (the recession of the globe into the bony orbit), 8) periorbital crepitus, 9) subconjunctival and conjunctival hemorrhage and ecchymosis, 10) lid edema, and 11) the possibility of related intraocular injury.

In assessing a suspected orbital fracture, the trainer gently palpates the orbital rim, noting sites of point tenderness and crepitation. Manual examination of the orbital rims should be quickly undertaken due to the rapid onset of periorbital edema following most eye trauma. (Figure #2)

Fractures to the roof of the orbit are rare but potentially dangerous since the possibility of the development of intracranial hemorrhage or an infection exists. Injury at this site may involve the lacrimal gland or the optic nerve. Injury to the levator papebrae superioris and the superior rectus muscles and their nerve supplies may result in otiotic or the drooping of the upper lid, and weakness in supraduction. 14 The trainer will note the presence of hemorrhage into the upper lid along the course of the levator muscle as well as subconjunctival hemorrhage on the lateral aspect of the globe. Early exophthalmos, secondary to orbital hemorrhage and ecchymosis, may be present due to the fracture site or the development of an intraorbital hematoma. 15 Bleeding from the orbital roof, associated with cranial injury, will be accompanied by loss of cerebrospinal fluid. 14

Fractures of the lateral orbital wall are more commonly associated with optic nerve avulsion and a profound loss of vision is immediately reported. Trimalar or tripod fractures involving the lateral and inferior orbital rims as well as the zygomatic arch may be induced by blunt trauma and will display physical signs similar to those found for blow out fractures of the orbit. 14

The inferior rim and floor generally constitute the weakest section of the orbit and are therefore the most common site of blow out fractures. The trainer will immediately detect the downward and inward displacement of the globe within the maxillary sulcus. Dermal anesthesia on the ipsilateral side of the nose, lower lid, cheek, gums, and teeth will be reported by the athlete due to impairment of the infraorbital branch of the Trigeminal nerve. Associated hemorrhage and ecchymosis will be present in the lower lid and inferior part of the orbit.

The athlete will report the onset of vertical diplopia due to the entrapment of the inferior rectus and inferior oblique muscles within the fractured orbital floor. It is this muscular entrapment which elicits the pain during extraocular movement and severely limits ocular motility of not only the incarcerated muscles, but also those muscles not directly involved at the site of injury.

Blunt trauma to the medial orbital wall or the bridge of the nose will elicit palpable bony or lid crepitus, epitaxis, limited muscular abduction of the eye, deformation of the anthal region or the orbit, and the possible discharge of rhinorrhoea if the cribiform plate of the ethmoid is fractured. If a blow out fracture is suspected, the athlete should be instructed to refrain from nose blowing, sneezing, or muscular straining in order to prevent the sudden onset of orbital distension and its resulting proptosis. 14

Examination of The Globe and Adnexa

Concussive injuries often relay a traumatic shock through the globe and orbit which results in multiple injuries. 10 The trainer should instruct the athlete to open the injured eye as wide as is possible. The globe is then examined for penetrating foreign bodies, lacerations, hyphema, or herniation of intraocular structures. (Figure #3)

Conjunctiva and Sclera. The conjunctiva, or internal lining of the lids and the anterior globe, should be inspected for foreign bodies, hemorrhage, and gross physical deformity. In some cases, excessive hemorrhage and edema may be noted as swelling around the cornea. The trainer may also detect crepitation due to air infiltrating beneath the conjunctiva following a fracture of the prenasal sinus.

During this time, the trainer may also inspect the degree of continuity the sclera has maintained following trauma. If a scleral perforation is identified or strongly suspected, the trainer should take great care to eliminate any manipulation or pressure on the globe since it could lead to prolapse of the intraocular contents. A non-pressure pad and shield should be applied to the wound and the athlete transported to the hospital. If total immobilization is desired, the application of bi-lateral eye pads will be necessary.

Foreign Bodies and Corneal Abrasions. The presence of a superficial foreign body within the eye and the associated corneal abrasion, are the most commonly reported types of ocular insult. The mechanisms of injury are concussive force, or the direct contact of a foreign object such as wind-borne grit, insects, or a fingernail on the ocular surface.

In some cases, contact lenses can contribute to these types of injuries. A foreign body may become lodged bet-
ween the lens and the athlete's cornea or the lens itself may be defective and its improper fit contributes to the corneal abrasion.

The presence of a foreign body within the eye will evoke immediate pain and lacrimation. This condition will be further aggravated by blepharospasm and excessive eye motion.

In order to inspect the eye for the presence of a foreign body, the trainer must examine the anterior surface of the eye as well as the conjunctiva of the upper and lower lids. The athlete should be seated and instructed to open the eye as wide as possible to avoid squeezing the lids. A quick and thorough examination of the anterior surface of the eye is then conducted. To examine the conjunctiva of the lower lid, the trainer should gently pull downward on the skin covering the zygomatic arch. Examination of the conjunctiva of the upper lid necessitates eversion of the lid. The athlete should be instructed to gaze downward. The trainer grasps the central lashes of the upper lid and pulls it down and slightly outward. By gently applying pressure to the external surface of the lid with a cotton tipped applicator, the lid is easily everted. The palpebral conjunctiva may then be inspected for the presence of a foreign body.

When the foreign body is located, it may be removed via the tip of a sterile gauze pad. If however, the foreign body appears to be embedded, the trainer should make no attempt to remove the object. The athlete's eye should be immobilized by a non-pressure pad and the athlete referred to a physician's care.

In order to return the everted lid to its normal anatomical position following examination, the athlete should be instructed to gaze upward. The pull of the levator muscles will usually restore the lid to its pre-examination state. The trainer may also apply gentle downward and outward tension to the central lashes of the upper lid in order to assist the athlete in this motion.

In the event that no foreign body is evident upon examination and the athlete continues to report a foreign body sensation within the eye, the trainer should examine the cornea for abnormalities. If the athlete is wearing contact lenses, it may be necessary to remove them prior to examination. The lenses may be personally removed by the athlete or the trainer may assist by using a moistened rubber suction-tipped lens remover or the following technique.

Seat the athlete and locate the lens within the eye. Instruct the athlete to close the eyes. The trainer places two fingers gently on the globe through the upper lid at a position just lateral to that of the lens. The athlete is then instructed to look toward the ear on the affected side. The combination of the trainer's finger tension and the athlete's eye motion will deflect the lens away from the irritated cornea toward a more comfortable position on the nasal portion of the bulbar conjunctiva. The athlete is instructed to open the eye and to maintain an outward gaze. The trainer applies gentle finger pressure through the lid at the upper or lower margin of the lens. This action allows the opposite lens margin to disengage the globe. The lens is removed as the athlete is instructed to close the lids of the affected eye.

When examining the cornea, the trainer should employ right oblique illumination and examine the structure or any visible disruptions in the lustrous and reflective surface of the cornea. Any localized or general zones of decreased clarity or haziness, indicates a superficial disruption of the corneal epithelium. In some cases, a corneal abrasion will present itself as a “shadow” on the iris. As the trainer moves the origin of illumination to different positions which are parallel to the iris, the shadow will move in a direction opposite to that of the light source. As with foreign body injuries, corneal abrasions will evoke severe pain, profuse tearing, photophobia, and blepharospasm. Corneal abrasions will require padding and a doctor's referral. In the event that no visible injury is found even though the athlete maintains that a foreign body sensation exists, the eye should be immobilized with a non-pressure dressing and the athlete referred to a physician for a thorough examination.

Pupillary Response. Pupillary evaluation is of vital importance when assessing the athlete's degree of consciousness, as well as the severity of ocular injury and associated intracranial damage. However when examining an athlete's pupils, several causes of non-injury related pupillary assemetry or suspected abnormality must be considered. The type of lighting on the playing surface, whether bright natural or artificial in nature, should be considered since it will directly influence the size of the athlete's pupils and the amount of reaction that will be elicited by a trainer's penlight. Therefore, before examining the injured athlete, the trainer should inspect the degree of influence the lighting elicits in the pupils of a non-injured individual at the accident scene. Certain medications that may have been ingested by an athlete could contribute to non-injury related pupillary constriction, (miosis), or dilation, (mydriasis). It should also be recognized that a small percentage of the population normally exhibits anisocoria, or unequal pupil size.

When severe blunt or penetrating ocular injury has been sustained by the athlete, the size and shape of the pupil, as well as its direct consensual reaction to light stimulation should be repeatedly checked in both eyes.

In assessing pupillary reaction, the trainer should alternately illuminate the pupils of both eyes for at least five seconds and note the degree of constriction. In a normally functioning eye, the pupil, upon illumination, will initially contract and then slightly dilate within the five second span. If the degree of redilation is significantly marked in the affected eye, an injury to the optic nerve has been sustained. The amplitude of redilation in the affected eye, therefore, reflects the severity of a conduction defect of the optic nerve.

Runyan reports that the most reliable sign of the extent of injury to the optic nerve is the loss of direct pupillary response to light stimulation. When the optic nerve is constricted, the pupil on the affected side remains equal in size to its non-injured counterpart yet fails to react to direct light stimulation. Consensual response to light stimulation will however still be elicited in the non-injured pupil indicating that an afferent lesion injury has been sustained in the pupillary light reflex pathway of the affected eye.

Transient spastic miosis is a common sequela to blunt or perforating injuries to the globe. Pupillary responses will be minimum and irregular. Spastic miosis is usually followed by partial dilation of the pupil and cyclopia, the disruption of the eye's accommodation mechanism. As a result, the athlete will report difficulty when attempting a transition between distant and proximal vision.

Direct ocular trauma to the iris in the form of a rupture of the iris sphincter, iris prolapse, or traumatic iridodialysis may also present as pupillary irregularities. In the presence of iridodialysis or tear of the pupillary sphincter, the pupil will present as oval-shaped or distorted from its normal round configuration. Direct light stimulation will evoke minimum consensual reaction. If a pear-shaped pupil with the iris partially or completely maintaining a corneal perforation is observed, the trainer should use extreme caution in protecting the globe, lids, and orbital areas from any external manipulation. A non-pressure pad with a metal or plastic shield resting upon the bony orbit of the eye, should be placed over the injury before transporting the athlete to the hospital.

A fixed and dilated pupil may accompany an injury to the globe. And while it may indicate compression of the optic nerve due to an increase in trauma-induced in-
tracranial pressure, it may also denote a carotid fistula, the impairment of the eye's effector muscles, or previously instilled mydriasis.14

Hyphema. The anterior chamber of the eye is bounded posteriorly by the corneal epithelium, laterally by the trabecular meshwork, and face of the ciliary body, and anteriorly by the anterior surface of the iris and pupillary surface of the lens. It contains aqueous humor which provides the mechanism through which nutrients, oxygen, and metabolic wastes are transported into and from the lens and cornea.

Hyphema, or blood within the anterior chamber, is commonly associated with blunt and concussive injury. The increased hydraulic pressure that occurs within the ocular tissues upon impact, causes a rupture at the root of the iris, throughout the trabecular meshwork, and in the suspensory ciliary body zonules of the lens.13

Upon illuminated examination, the trainer may detect blood which has settled inferiorly about the iris, or has covered the entire surface of the iris. Due to the presence of the blood, the athlete's vision will be partially obscured. The athlete will also be subject to marked somnolence following this type of injury. The reason for this phenomena is not fully understood. However, the trainer should not disregard the possibility of head injury as a reason for the athlete's lack of alertness.14

A trainer must recognize hyphema as a serious ocular injury which may also involve globular or iris rupture and its dislocation. The athlete's eye should be immobilized with a non-pressure pad and shield. His activity should be restricted and the head elevated to prevent venous ingestion, lessen intraocular pressure, and to make the athlete more comfortable while being transported to the hospital.14

Hyphema injury is notorious for post injury complication. A severe secondary period of hemorrhage may occur three to five days after the initial injury and lead to secondary glaucoma or blood staining of the cornea.8 14

Lens. Blunt trauma to the globe may result in a subluxation or luxation of the lens if the zonule fibers of the ciliary body are torn. If more than 25% of the suspensory fibers are injured, the lens will luxate from the posterior surface of the iris and present as iridodonesis or agitated movement of the iris. The trainer will be able to detect this abnormal trembling motion as the eye is illuminated and the athlete is instructed to move the eye quickly to and fro on a horizontal plane.

The trainer may observe a brownish red or bronze pigmented ring on the surface of the anterior lens capsule if post-injury dilation of the pupil has occurred. Vossius' Ring is the result of the forceful impact of the iris against the anterior surface of the lens and it will correspond in size and location to the pupilar aperture at the time of injury.3

Subluxation is the more commonly sustained lens injury. It causes varying decreases in visual acuity such as astigmatism, refractive myopia, or uniocular diplopia.

Assessing Visual Acuity.

A measurement of an athlete's visual field and acuity should be established and compared to the individual's visual status prior to the accident. A report by the athlete of flashes of bright light or floating black specks within the visual field following a blunt or penetrating injury, may be an early indication of retinal detachment.1 14 The etiology of retinal trauma involves a combination of con-tusive and concussive forces which are elicited when a missile passes through the ocular tissues and impacts on the retina or by pressure-distortion of ocular structures when applied force suddenly reduces the anterior-posterior diameter of the eye.17 Visual blurring or the development of diplopia may also accompany ocular contusion.

The trainer should attempt to assess the athlete's degree of ocular motility only after the possibilities of global perforation, structural herniation, or penetrating injury have been dismissed. The athlete's peripheral vision can be assessed by instructing the athlete to look straight ahead while the trainer holds two fingers about one foot to the right, left, above, and below the injured eye and asks if the athlete can see the fingers. (Figure # 4) The same test can be modified to determine the athlete's ocular motility. The trainer instructs the individual to keep the head stationary, and to attempt to follow the trainer's fingers as they move 360 degrees about the athlete's face. The trainer should note any pain or un-coordinated movement of the athlete's eyes as they attempt to rotate through their normal range of motion.

Figure 4. Assessing the athlete's peripheral vision/ocular motility.

In the presence of a blow out fracture to the inferior floor of the orbit, the inferior rectus muscle may be entrapped. The athlete's range of motility in the affected eye will be significantly limited in the vertical plane and diplopia will be reported. Upward movement of the iris/pupil complex will be more restricted than downward motion due to the inability of the superior rectus muscle to elevate the globe against the shortened rein of the incarcerated inferior rectus muscle.8 11 14

The trainer should record the acuity of the athlete's close and distant vision by determining the distance at which the athlete can count the number of fingers being held before the eyes. Morin notes that if the athlete's close vision is significantly impaired, one should try to determine if the athlete can distinguish gross hand movement or even light perception.35

First Aid Management

With the completion of the eye evaluation, the trainer should apply the appropriate first aid measures before the athlete is transported to the hospital. In suspected or apparent episodes of retinal detachment, globe or lid laceration, intraocular herniation, or penetrating eye injury, no attempt should be made to manipulate the injured structures. Embedded foreign bodies, blood clots, and contacts should remain untouched. Salves or medications should not be put in the eye. Such action, if the globe is perforated, may further contaminate the internal structures of the eye or possibly contribute to the exudation of the globe contents.

A non-pressure oval dressing should be placed over the eye. During application or removal, the athlete should be instructed to refrain from squeezing the lids. A metal or plastic shield, which rests on the bony structures of the brow and cheek, should be placed over the pad. The shield protects the eye from external pressure and manipulation which could promote prolapse of the intraocular contents through the wound site. It is useful in minimizing the introduction of exogenous bacterial contamination into the
The pad and shield also minimizes the athlete's discomfort, absorbs tears and other fluids, and relays a sense of protection to the athlete.

The pad and/or shield may be secured by applying tape strips diagonally in accurate lines from the forehead to the cheek. This type of application insures firm contact necessary for the maintenance of lid closure while minimally restricting facial movement. Since the eyes work in coordinated movement, it may be necessary in some instances, to apply bilateral patches to insure complete immobilization of the affected eye. However the trainer must realize that this action will increase the athlete's sense of apprehension and may contribute to increased disorientation and combative behavior.

In anticipation that surgery under general anesthesia may be necessary upon arrival at the hospital, the trainer should restrict the athlete's food and liquid intake. Unnecessary exertion of the athlete should be avoided and the individual watched for signs of developing shock. The athlete should be transported for further medical care as soon as possible.

For non-penetrating blunt injuries which appear to involve only contusion to the surrounding soft tissues of the eye, a cold compress should be applied for 30-60 minutes to retard hemorrhage and associated periorbital edema. However, if the involvement of the globe or adjacent structures resulting in redness, pain, irritation, photophobia, or an impairment of vision is reported, the application of a protective patch may also be necessary. Havener and Makley note that while blunt trauma to the eye may or may not be associated with severe ocular injury, all injuries should nevertheless be treated as serious episodes until they have been diagnosed by a physician.

**Prevention: The Bottom Line**

Despite all the precautions one may take to prevent injury in a sport, an element of risk will probably never entirely be eliminated. Yet the bottom line, most investigators and ophthalmologists agree, is that 90-95% of all reported sports-related ocular trauma could be eliminated if proper protective equipment were used and some rules enforced. The National Society to Prevent Blindness has established guidelines which recommend the use of protective eyewear by people who engage in sports. Industrial-quality safety glasses with modified frames or goggled-styled sports-eye protectors have been suggested as an effective means for significantly reducing the incidence and severity of most eye injuries. Both types of eyewear can be fitted as needed with either prescriptive or non-corrective polycarbonate plastic lenses which meet the requirements of the American National Standard Practice for Occupational and Educational Eye and Face Protection, 287.1, 1979.

**References**

# CEU credit quiz

## FIELD EVALUATION OF EYE INJURIES

### Jane C. Sandusky

As an organization accredited for continuing medical education, the Hahnemann Medical College and Hospital certifies that this continuing education offering meets the criteria for .3 hours of prescribed CEU credit in the program of the National Athletic Trainers' Association, provided the test is used and completed as designed.

To participate in this program, read the material carefully and answer the questions in the test. Mark the answers you select by placing an X in the proper square. Then tear out the test sheet, fill in your name, address and other information, and mail with $12 for processing to: Division of Internal Medicine, Room 6217, Hahnemann Medical College, 230 N. Broad St., Philadelphia, PA 19102.

The NATA National Office will be notified of all members with passing scores of over 70%. CEU credit will be issued to each member's record at that time. All participants in this effort can expect to receive notification from the National Office if CEU credit has been earned. Participation is confidential.

| 1. Of the ten sports presenting the greatest potential hazard for ocular injury, which are the leading three? | a. basketball, football hunting  
б. football, soccer, hockey  
c. baseball, racquet sports, basketball  
d. hockey, hunting, soccer |
|---|---|
| 2. Are athletes who wear contact lenses at a greater disadvantage than their perfect vision counterparts when encountering eye trauma during competition? | a. yes  
b. no |
| 3. The most common mechanism for sports-related ocular injury has been identified as a low impact/high velocity type incident. | a. true  
b. false |
| 4. Signs and symptoms of a blow-out fracture include:  
1. pain at the point of impact  
2. pain and restriction of extraocular muscle movement  
3. a transient episode of blurring due to the shock of impact  
4. the immediate and persistent development of diplopia | a. 1, 2, 3  
b. 1, 3  
c. 2, 4  
d. 4 only  
e. 1, 2, 3, 4 |
| 5. With reference to fractures to the roof of the orbit, which of the following statements is/are true?  
1. this is the most common site of blow-out fractures  
2. intracranial hemorrhage may result  
3. dermal anesthesia of the lower lid occurs  
4. infection may result | a. 1, 2, 3  
b. 1, 3  
c. 2, 4  
d. 4 only  
e. 1, 2, 3, 4 |
| 6. If a scleral perforation is identified or strongly suspected, the trainer should take great care to eliminate any manipulation or pressure on the globe. | a. true  
b. false |
| 7. With respect to corneal abrasions, which of the following statements is/are true?  
1. a corneal abrasion may present itself as a "shadow" on the iris  
2. they are severely painful  
3. blepharospasm occurs  
4. the eye should be immobilized with a non-pressure dressing | a. 1, 2, 3  
b. 1, 3  
c. 2, 4  
d. 4 only  
e. 1, 2, 3, 4 |
| 8. If a pupil, upon illumination, initially contracts and then slightly dilates, an injury to the optic nerve has been sustained. | a. true  
b. false |
9. With respect to transient spastic miosis, which of the following statements is/are true?

- a. 1, 2, 3
- b. 1, 3
- c. 2, 4
- d. 4 only
- e. 1, 2, 3, 4

1. it is a common sequela to blunt or perforating injuries to the globe
2. this is indicative of iris rupture
3. pupillary responses are minimum and irregular
4. the eyes accommodation mechanism is not affected

10. If an athlete sustains an injury to the eye which causes hyphema,

- a. his/her activity should be restricted
- b. the head should be lowered
- c. both a and b above
- d. none of the above

For credit, form must reach Hahnemann Medical College by June 15, 1982.

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U.S. Patent #3528412
Abstracts

John Wells, ATC, PT, PhD
Mars Hill College


With the rise in the popularity of soccer in the United States has come a significant increase in injury. One of the most comprehensive studies of soccer-related injury was performed by Nilson and Roaas during the 1975 and 1977 Norway Cup International Youth Soccer Tournaments. Over 1500 medical consultations resulted, of which just over half were match related and one-sixth were from illness. The match related injuries included 39% skin abrasions or blisters, 36% contusions, 20% strains and sprains, and 3.5% fractures: 1.5% were classified as other injuries. Two-thirds of the match related injuries were to the lower extremities. Other more serious injuries included four tibial fractures and ten concussions. It is imperative that coaches and parents be aware of the possibilities of concussion. Injury to the spinal cord, unconsciousness with an obstructed airway, respiratory failure, cardiac arrest, and heat injury are other life threatening situations that could result from a soccer injury. To avoid unnecessary head, neck, and spinal cord injury and ensure player safety, the soccer ball should be waterproofed and of an appropriate size and weight for the players. Also, proper technique requiring progressive skill instruction must be employed when heading the ball. Heat-related injury is another concern to those involved in soccer. To avoid serious heat problems allow players gradually to adapt to heat over a period of two weeks. Proper warm-ups also reduce the incidence of injury; prepractice or prematch submaximal effort for a duration of 5 to 15 minutes intense enough to increase body temperature and cause perspiration. Cooling down after the match or practice with low intensity or submaximal movement over a five minute period is also advised. Proper equipment can also prevent or at least reduce injury. Before any player takes part in soccer, he should be examined by a physician to ascertain that no hidden problems will emerge during participation.

Charlie Urban

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There is evidence in the literature to support the contention that many chronic low back pain patients suffer from "muscle-tension backache." This study investigated whether low back pain patients maintain significantly higher resting levels of paralumbar muscle activity than non-pain subjects and whether low back pain subjects exert more tension in their paralumbar muscles while isometrically tensing other groups than subjects without pain. A total of 22 subjects, 8 males and 14 females, with a mean age of 39.67 years and an average duration of illness of 9.1 years were selected. Seventeen volunteers, 4 men and 13 women having no history of recurrent low back pain, also participated in the study. Levels of paralumbar muscle activity determined by an electromyogram (emg) were compared for low back pain patients and normal subjects during periods of rest and voluntary muscular contraction. Two dependent measures of low back muscle tension were recorded for use in data analysis. ANOVA analysis comparing the back pain and non-pain groups were carried out. The resting state EMG measure did not differ in the 2 groups. However, when attempting to relax the low back while contracting other muscle groups, the low back pain patients exhibited higher mean levels of low back muscle activity as compared to the non-pain group. These results suggest that such "contraction relaxation" procedures may provide a viable behavioral technique for assessing and possibly treating functional backache thought to be symptomatic of muscle spasm. Results of the study suggest that the acquisition of "resting level" relaxation may be of little benefit to patients who exhibit excessive muscular tensions while performing daily tasks. Rather, to maximize the likelihood of beneficial results, training would be better directed at relaxation of the low back during activity of other muscle groups.

Bob and Kathy Doyle

***


The frequency of ultrasound in common clinical use, 1MHz, is a compromise frequency from the standpoints of energy spread, penetration, and induction of both thermal and mechanical effects in the biological tissue. The mechanical and heating properties of ultrasound have been shown to have an effect on the ability of nerve fibers to propagate an action potential, but the physiological mechanisms responsible for this effect are not clear. Ultrasound applied at clinical intensities has been reported to both increase and decrease the nerve conduction velocity of peripheral nerves. Motor nerve conduction velocity decreased when ultrasound was administered for five minutes at intensities of 1.0 W/cm² to 2.0 W/cm², but that increases in nerve propagation velocity occurred when ultrasound was applied at 0.5 W/cm² and 3.0 W/cm². The effects of ultrasound applied at the intensities greater than those normally used in the clinic, indicates that ultrasound can cause a complete block of nerve conduction. Additional investigators have also found that ultrasound can successfully block nerve conduction, but they have attributed the phenomenon to the thermal rather than the nonthermal effects of ultrasound. Mechanical effects of ultrasound do not play a significant role in affecting nerve conduction latency. Smorto and Basmajian and Currier and associates appear to be correct in stating that changes occurring in nerve conduction velocity should be interpreted as the effect of temperature rather than the effect of the mechanical energy present in ultrasound. The findings of Anderson and associates illustrate that a histological difference exists between direct heating and ultrasound when applied at intensities of 3 to 5.8 W/cm². The design required that the ultrasound be discontinued five seconds before taking the temperature reading to ensure an accurate reading. Conceivably, this design prevented the full assessment of ultrasound’s mechanical effects on nerve conduction laten-
the thermal action of ultrasound rather than to its effect ultrasound has on nerve conduction at specific subcutaneous temperature increases. These changes were compared to nerve conduction changes caused by infrared heating at equivalent temperature intervals as measured by a thermistor needle. The findings of this study suggest that the decrease in nerve conduction latency was due to the thermal action of ultrasound rather than to its mechanical effects.

Andy Behl


Should the athlete’s ankle be taped? This question has been debated by experts in sports medicine for years. The present study attempts to determine an absolute value of restricted motion which can be expected with adhesive taping after a 2.5 to 3 hour football practice by measuring the combined foot and ankle motions of plantarflexion, dorsiflexion, inversion in neutral, eversion in neutral, plantarflexion inversion, and plantarflexion eversion. The Inman ankle machine was modified to determine the motions before taping, immediately after taping and with tape after a 2.5 to 3 hour football practice. The athlete was asked to exert maximal effort for the motion to be recorded. The right feet and ankles of 16 male college age football players were studied. None of the players had a history of an ankle sprain, and none suffered a sprain during the course of study. All taping was done by the same trainer, and all motions were recorded by the same examiner. The data obtained were analyzed statistically. Mean values in degrees for each motion untaped, taped, and taped post exercise were determined. The tape caused definite restriction immediately after application. Loosening occurred after all subjects exercised. However, some residual restriction still occurred when compared to the untaped motions.

D. A. "Bru" Brubaker


In the past, heat stress injuries were generally restricted to late August football camps. Thus, many physicians have not been required to diagnose and treat heat stress injuries. With the increased popularity of distance running, physicians are required to become familiar with and to manage heat stress injuries. To diagnose and treat heat stress diseases, it is important to appreciate body temperature regulation. Evaporative cooling is generally the principle avenue of heat loss, particularly when atmospheric temperature exceeds skin temperature. The factors controlling heat loss via evaporation of sweat are; sweat rate, atmospheric vapor pressure and wind velocity. In an untrained, unacclimated individual, the maximum sweat rate approximates 1500 ml per hour, which would theoretically yield a 900 Kcal heat loss. However, the lack of thermo-regulatory efficiency generally yields a heat loss equally two-thirds of this figure. There is also a significant difference between the cardiovascular responses to heat at rest and that with exercise. Circulatory response is more complex in the athlete exercising in a hot, humid environment. During exercise there is a significant diversion of blood flow to working muscles. Since blood is shunted to the circulatory beds of the skin and skeletal muscles, hypotension would occur without redistribution of blood from other vascular beds. Dependent upon the adequacy of venous return, cardiac stroke volume may or may not increase. Studies have shown that in highly conditioned runners suffering from heat stress injuries heart rate remained low, thus cardiac output must have been increased by an elevation in stroke volume rather than rate. This response is in contrast to the unacclimated athlete who compensates with an increased heart rate rather than an increased stroke volume. In addition, the combination of extracellular fluid loss by sweating and redistribution of blood flow to the cutaneous and muscle beds may be associated with inadequate cardiac filling pressure. Despite an increase in heart rate, cardiac output may drop. Heat stress injuries may have lethal consequences for the athlete. Once an understanding of the physiological processes of body heat regulation mechanism is obtained, more efficient management can take place.

Tim Carl


Effective management and rehabilitation of the knee begins with a detailed history and a thorough, systematic examination. For the tester to isolate each anatomical structure, the examination should be performed systematically. This isolation process will allow the identification of the involved structures as well as the severity of involvement. The uninvolved knee is examined initially in the clinic to obtain a data base for comparison with the involved knee and to demonstrate the examination techniques to the patient, thereby decreasing his apprehension. Some type of chart or form should be used during the examination to record whether the test results are positive or negative. This examination can be used in totality or modified to fit the needs of the individual patient or clinician. By carefully interpreting the data base, the examiner can identify problems and develop an accurate, individualized rehabilitation program to resolve these problems. The purpose of the physical examination is to generate a data base to be continually referred to and updated during the rehabilitation program. The clinician must not focus only upon the obvious problem. The total patient is observed with particular attention to the lower extremities. Appropriate palpation may disclose many initially overlooked injuries. The physical examination should be completed before the functional testing because the functional test may irritate an existing condition and thus prevent an effective examination. The specific functional tests used would depend upon the symptoms and sport of the individual. Specialized tests may provide information to substantiate the clinical examination. Thus, pertinent information from these tests should be documented in the systematic evaluation. Based on a comprehensive and systematic knee evaluation, the clinician can develop an effective individualized rehabilitation program. Goals are established for the patient by examining their individual needs and allowing adequate progression as directed by the patient’s response and ongoing status. The patient should be subjectively and objectively reassessed at each treatment session and have any necessary modification made in this program at that time. +

Paul Concialdi
ELECTRICAL SAFETY IN THE TRAINING ROOM

Mimi M. Porter, MS, ATC, Jonathan W. Porter, EE

On April 18th, 1980, a 17-year-old high school athlete was killed in a whirlpool in Paris, Kentucky. The whirlpool motor was government surplus equipment, installed in the high school locker room and grounded by the wall socket. Before this accident occurred, this was a typical situation to be found in many high schools and colleges throughout Kentucky and, no doubt, other states as well.

It is a common, but mistaken belief, that three-pronged plugs, circuit breakers and grounded wall sockets are adequate protection from electrical shock in a wet area. But the fact is, these devices cannot detect the small amount of diverted current necessary to injure or kill a person. Fortunately, though, there is a device that can. It is called a ground fault breaker or ground fault circuit interrupter. The g.f.b. continually compares the amount of current going to the motor to the amount of current returning from the motor. Whenever the amount going differs from the amount returning, the g.f.b. interrupts the power in as little as 1/40th of a second. This difference in current is called leakage and the path it takes to ground could be through a person.1

In a dry situation, g.f.b.'s aren't necessarily needed if electrical tools are properly grounded in some other way - if their cords have three-pronged plugs and these are inserted in grounded receptacles.2 “Grounding” means to create a path between an electrical circuit and the earth for the purpose of conducting any currents that result from a breakdown of the insulation in the equipment connected.3

In a wet area, a g.f.b. is necessary because of the rather unique situation the human body is placed in when it is wet and subjected to electrical current. The human body is a conductor of electricity. Resistance to the flow of electricity through the body is reduced when the body is wet. If a person came in contact with an energized wire, he would get shocked. If a person touched that same wire when he was wet or standing in water, the shock received would be at least five times as great as when dry. Electrical current flowing through the body causes injury.

In order to understand the protection offered by a g.f.b., the levels of current that are safe and unsafe for the human body must first be determined.

Current is measured in amps. The currents that are harmful to the human body are measured in milliamps or one-thousandths of an amp. These are very, very small currents. An ordinary 100 watt light bulb will draw about...
one amp. Power lines carry hundreds or even thousands of amps. A safe current level for the human body is defined as about eight milliamps. One can barely feel this amount of current, but 8-100 milliamps can result in a painful shock. 100-200 milliamps flowing through the heart will disrupt the normal nerve impulses to the muscle fibers and cause fibrillation. As the currents get above 200 milliamps, tissues are destroyed due to the extremely rapid rise in temperature. From this level of current severe, non-relaxing muscle contractions occur. This includes the heart muscle. The heart muscle fibers will contract but not relax.

Now, back to the whirlpool hazard. If the insulation should fail in the whirlpool motor when a person is immersed in the tank or touching it, they become a parallel electrical circuit. And as stated before, simple grounding is not enough. Grounding a whirlpool provides a circuit that supposedly will conduct current through it, if the insulation should fail. But it doesn’t matter how well grounded it is, a person in the tank or touching it is still a parallel path and will receive some amount of current. While the amount of current in the human path can be reduced by proper grounding, it cannot be eliminated and could fall into the range of harmful currents mentioned earlier. The g.f.b. will provide protection in this situation.

G.f.b.’s have been available for the past 5-6 years. They cost about 40-50 dollars and should be installed by a qualified electrician. There are two types - one type is designed for installation in the wall outlet. The other type is designed for installation into the circuit breaker panel. The number and arrangement of hydrotherapy units will determine the type chosen. Cold immersion tanks and underwater ultrasound sound should also be protected.

It is probably unnecessary to bring up the legal implications of failure to install g.f.b. The National Electric Code requires them in all health care facilities. There are two types - one type is designed for installation in the wall outlet. The other type is designed for installation into the circuit breaker panel. The number and arrangement of hydrotherapy units will determine the type chosen. Cold immersion tanks and underwater ultrasound sound should also be protected.

There are many reasons why a motor can go bad other than insulation failure, so the chances of this particular fault occurring are relatively remote. But it does occur and has occurred and the stakes are so high that it is well worth having the best protection that is technologically available. Every training room should have ground fault breakers installed. +

References:

Presidential Election

TO: NATA MEMBERS
FROM: OTHO DAVIS

The response to our recent presidential election was exceptionally gratifying in that such a high percentage of ballots were cast. Our Association can only grow and strengthen with such an active membership.

Either of the imminently qualified candidates exemplify the finest NATA has to offer. We were extremely fortunate to have two such outstanding men offer their services to us.

Congratulations to Bobby Barton who will taking over the president’s office from Bill Chambers, and to Bill sincere thanks.

Don Chu congratulates President-Elect Bobby Barton.
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Current Literature

Ed Christman, ATC, MEd
Knoxville, Tennessee


A Tip From the Field

PROTECTIVE ORTHOPLAST “BUBBLE” PAD FOR OSGOOD-SCHLATTER’S DISEASE

Mark P. Hanak, ATC, MS

Osgood-Schlatter’s disease is a common affliction in the adolescent athlete. O’Donoghue categorizes it into three manifestations, ranging from bursitis of the infrapatellar tendon bursa, aspetic necrosis of the tip of the epiphysis of the tibial tubercle and a true epiphysitis of the entire epiphysis.

The symptoms are swelling, tenderness and pain above the tibial tubercle with direct pressure and active extension of the quadriceps.

An Orthoplast® “bubble” and a Pro® neoprene knee sleeve is a very simple protective device to fabricate and protect the athlete from accidently bumping the tibial tubercle and “setting off” the symptoms.

Materials:

- Pro® Neoprene Knee Sleeve
- One-half inch felt cut to 2” diameter
- Orthoplast® 6” x 8”
- 6” of velcro (adhesive back, Loop and Hook)
- 2” Ace Bandage
- 1” adhesive tape
- Heavy scissors
- Small surgical scissors
- Permanent Marking Pen
- Heavy duty glue

Procedure:

First, size the athlete with a Pro® neoprene knee sleeve and with the surgical scissors, cut and remove the stitching to about 2” above the middle seam on both sides (Photo 2). At the area marked “X” (Photo 3) tie the threading and glue and let stand until dry. (A pocket is formed on the lower half of the knee sleeve.) Place the felt over the tender area and secure with tape (Photo 4). Heat the Orthoplast® in boiling water and mold over the felt, forming a “bubble” over the felt (Photo 5). Wrap the Orthoplast® in place with the ace bandage and let the Orthoplast® harden (Photo 6). Trim the excess Orthoplast® (Photo 7) so that the “bubble” pad fits into the lower pocket of the knee sleeve. Mark the direction the “bubble” pad should fit correctly into the pocket (Photo 7). Attach and glue and sew velcro strips to the upper flap and upper portion of the knee sleeve (Photo 9). Photo 10 shows the finished “Bubble” pad.

Photos of the Pro® Neoprene Knee Sleeve used with permission of Pro Orthopedic Devices, Inc., King of Prussia, Pa.

Mr. Hanak is currently working as an athletic trainer at Braintree Hospital in the Division of Sports Medicine, Braintree, Massachusetts 02184.
References


Editor's Note: Anyone wishing to have an idea, technique, etc. considered for this section should send one copy to Ken Wolfert, 111 Buckeye Street, Hamilton, Ohio 45011. Copy should be typewritten, brief, and concise, using high quality illustrations and/or black and white glossy prints.
THE CLINICAL COURSE OF MID-DIAPHYSEAL TIBIAL AVULSION FRACTURE

Randall L. Janes, ATC

Introduction
This author has been taught the recognition of any athletic injury is best accomplished with a thorough physical exam and patient history. X-rays and other more sophisticated studies are supplemental data.

The treatment and care of avulsion type fractures is one subject adequately defined in medical literature. The writer has spent an inordinate amount of time on this subject lately, as in the sedentary population this injury is rather insignificant in terms of its level of pain or potential for disability. However, in high caliber athletes, it disrupts performance and because of their exposure to repetitive trauma, athletes run a greater risk of these avulsions progressing to complete fracture. The physical findings will be presented in this paper followed by the prognosis. Radiographic evidence will also be included. A brief description of some clinical techniques is included as an educational note. A brief review of the literature is provided as supplementary information.

Physical Findings and History, October 29th
The patient is a scholarship intercollegiate basketball player. He is 18 years old, 6'9" in height and weighs 185 pounds. His pain was localized in the lower left leg. Stress testing of the anterior tibialis and peroneal muscle groups were negative for pain. He had no palpable hematoma or effusion in the painful area. Range of motion of the knee and ankle joints were within normal limits. Neurological and vascular function of the foot were normal. He was negative on heel strike compression testing, percussion testing, and tibial torsion testing for reflected bone pain. He is ambulatory and has no limp.

Mechanism of Injury
The athlete revealed he may have been kicked during a practice drill called, "forward denials".

Impression
First Degree Contusion of the Tibialis Posterior.

Plan
Ice for six minutes B.I.D., compression with 3" elastic wrap, and evaluation of limb when possible. He may participate in basketball practice with a foam padding taped to his leg, and will be monitored by the trainer for the development of bone pain. The athlete's coach was apprised of the injury, and of the implications of the development of bone pain.

Physical Findings, November 14th
The athlete was unable to practice today. He had a palpable mass present at the posterior border of the mid-shaft of the left tibia. Percussion testing, heel strike compression, and tibial torsion testing are all positive with respect to bone pain. Radiographic examination taken included standard anterior-posterior and lateral views of the lower left leg.

The x-ray report was positive; see Figure 1; to support a working diagnosis of an avulsion fracture to the posterior mid-tibial diaphysis. "The stress fracture shows some periosteal reaction with perhaps a small radiolucent line".

The patient was then apprised of the natural history of his injury and this treatment options.

"These fractures (avulsions) are seen most frequently on military installations, where recruits are undergoing..."
rigorous training”. They are also seen in dancers and athletes. They are frequently called march fractures.3

Treatment
“Abstinence from sport may be sufficient treatment, but a cast is helpful if a child is wild, if the pain is marked, or if the fracture looks as if it may become complete”.4

For the athlete’s protection and to assure compliance with rest phase of treatment, a short-leg weight bearing plaster cast was applied. Crutches instructions in crutch walking, and proper cast care rules were given to the patient by the Physical Therapist and the cast technician.

Prognosis
The plaster cast will remain in place for six weeks. The patient will then be asked to progress through a muscular strengthening and flexibility program. Emphasis will be upon peroneals, anterior tibialis, and triceps surae muscles strength, and flexibility of the tendo-achilles. Active exercise progressing to progressive resistance exercise will be used until: (1) Leg strength is equalized in the (L) vs. (R) leg; (2) Symmetry of muscle mass has been restored in the (L) vs. (R) leg

Implications
The athlete’s coach was apprised of the nature of the injury. The prognosis of six weeks casting and the probability of three or four weeks muscle reconditioning program led to a decision to withhold the athlete from competition for the remainder of the season.

Clinical Educational Note
Rang states that a bone scan or computerized tomography . . . “will demonstrate stress fractures better and earlier than radiographs”.4 Rockwood and Green concur and add, “bone scans and serology studies can be used to rule out differential diagnoses of bone sarcoma or osteoporosis, or indolent bone infection”.4

Clinically, percussion testing (fig. 2a) is done by tapping on the bone (tibia in this case) with a rubber hammer. Tapping is done both distally proximally to the area where the athlete says he has pain. Heel strike compression testing (fig. 2b) is accomplished with the athlete in a supine position. While holding the leg at the ankle above the table, the examiner strikes a blow to the calcaneus. The force vector of the heel strike should be directed parallel to the tibial diaphysis. Tibial torsion (fig. 2c) can also be accomplished with the athlete in a supine position. The examiner holds the leg at the superior epicondyles of the tibia with one hand and with the other hand just superior to the ankle mortise of the talus and the distal tibia. He then applies dextrorotatory torque with one hand and levorotatory torque with the other hand. All of these tests are scored positive or negative for bone pain. +

REFERENCES
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How to Doctor your Feet Without the Doctor
Myles J. Schneider, DPM and Mark D. Sussman, DPM
$9.95
171, illustrated
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1981

How to Doctor your Feet Without the Doctor is a well illustrated guide on self treatment of common foot problems.

The guide is divided into two general sections. The first section, “Problems Anyone May Have,” includes discussion of conditions such as the ingrown toenail, callous, warts, infection, and bunions.

Part two, “Problems Common to Athletes,” describes conditions seen in athletes and provides discussion on

- "Why Athletes Injuries Happen,”
- "General Rules for Self Treatment,”
- "Prevention of Recurrence.”

Specific athletic problems, such as Toe Tendonitis, Blisters, Morton’s Foot, Achilles Tendonitis, and ankle sprains are described in this section.

Each chapter of the guide provides a description of the condition, materials needed for treatment, cautions and contraindications, and pointers for prevention.

Appendices on related topics include discussion of Podiatrists, Foot Structure and Function, Children’s Problems, Stretching and Strength Training, Shoes, and Shoe Inserts.

This guide is a sound reference for the recreational athlete, coach, and basic student athletic trainer. +

Kathleen A. Fox

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Dear NATA Member,

"Seattle? Who wants to go there?" I'm sure you're thinking. Guess I'll skip the convention next year!"

These thoughts crossed my mind as I pondered the 1982 Annual Clinical Symposium and Workshop. I also doubted that Seattle had the facilities to handle our meeting.

Expecting the worst, I reluctantly headed toward the Northwest following our Fort Worth meeting. But, much to my surprise, I found Seattle to be a fascinating city. I was surprised to find the Pacific Ocean right on my doorstep. Not only are there enough meeting spaces, but the Northwest restaurants, and more than enough hotels are all within walking distance of the Convention Center.

Now I can't wait to go back to Seattle, one of the most interesting and entertaining cities to ever host an NATA meeting. So, make your plans now to visit the Great Northwest next June. See you there!

Sincerely,

Tim Kerin
Program Chairman
N.A.T.A. National Convention Committee

33rd Annual NATA Meeting & Clinical Symposium
June 13-16, 1982
Donald Bleam, teacher-trainer at the Adrian Michigan school system for 27 years, died on August 1, 1980. He was 57 years old.

Donald served in the U.S. Army during World War II. Following the war he attended several institutions of higher education. He received undergraduate degrees from both Adrian College in 1949 and Eastern Michigan in 1954. In 1956 he received a masters degree from the University of Michigan.

Following college Donald Bleam taught at the Bedford Rural Agricultural School in Temperance, Michigan from 1951 to 1953.

During his tenure at Adrian, Donald served in many capacities. He served as trainer not only for the school system but also Adrian College. Donald taught in the elementary school for 10 years, was principal for eight years of the elementary schools and for the last nine years was a special education instructor in the high school.

Donald Bleam was a member of a number of organizations. He was a member of the ATO Fraternity at Adrian College, the Michigan Education Association and the National Athletic Trainers' Association.

DONALD F. BLEAM
November 11, 1922 - August 1, 1980

Donald Bleam was very active in community affairs. He served in a number of service organizations locally and held the office of president in both the Exchange Club and the Campfire Council of Lenawee County. He was a very active member of the First United Methodist Church in Adrian for 31 years where he served as a youth leader, church officer and administrative board member.

Donald was instrumental in developing and number of local sports medicine seminars over the years.

On October 5, 1952 he married Evelyn Perry who survives him. Also surviving him are his two sons, Gordon and Peter; and two daughters, Nancy and Monica all at home. He is also survived by his sister, Mrs. Charles Eastwood of Birmingham, Michigan. He was preceded in death by his parents.

Donald Bleam epitomized the profile of the athletic trainer we all hope to be. One with quiet kindness and charm who served his athletes, community, church and country. Since his untimely death there have been a number of community memorials and scholarships in his name. He will be greatly missed by his professional peers.
SAMUEL R. LANKFORD
- August 7, 1981

Samuel R. Lankford, retired trainer from Virginia Tech, died Friday, August 7, 1981 at Montgomery County Hospital in Virginia. He was 70 years old.

A native of Union, South Carolina, his career in athletics began in 1932 as boxing coach and trainer at Lees McRae Junior College in Banner Elk, North Carolina while a student there.

In 1934, Sam worked as a trainer at the University of Tennessee under the late General Bob Neyland. Lankford graduated from Tennessee in 1938.

Sam Lankford served in the U.S. Army Air Force from 1941 to 1946. During his service he worked in the areas of physical training and rehabilitation. He was an instructor in several of the Special Physical Training Schools for both officers and noncommissioned officers.

Sam's military service also saw him working as the Supervisor of Physical Therapy at Randolph and Michell Fields. Here he worked to direct the rehabilitation programs for the Rehabilitation and Orthopaedic Surgery Section.

Following his military duty Sam served as the head trainer at the University of Arkansas. He was at Arkansas from 1946 to 1950. During his tenure there he also directed and equipped one of the nation's first weight training programs.

From 1950 to 1962 Sam was the head trainer and conditioning specialist at the University of Florida.

In 1963 Lankford moved to Virginia Tech as the head football trainer. Sam held this position until his retirement after the 1970 season.

Besides his athletic training duties Sam was very active and involved in the NATA. Sam served as a District Director and District Secretary for District 9 of the Association. In 1956 he served as Program Director for the NATA annual meeting.

The Twenty-Five Year Award was given to Sam in 1965. In 1970 Samuel R. Lankford was elected to the Helms Hall of Fame, an honor for a fine, dedicated trainer.

Throughout his career Sam found time to publish articles in the field. He authored some 14 articles on physical training and conditioning. He also co-authored two books. They are Training and Conditioning for Athletes and Menus for Athletes.

Sam Lankford was a fine trainer who set an example for many to follow. He worked hard, was dedicated and was involved. Efforts of trainers such as Sam have been instrumental in the growth of the NATA. He will truly be missed by all who knew him.

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Journal Deadlines

In order to avoid confusion and delays for any contributions you have for the Journal the deadlines for various sections of the Journal are provided below.

Send all materials for any selection of the Journal other than formal articles and "Calendar of Events" to:

Ken Wolfert
111 Buckeye Street
Hamilton, OH 45011

This includes sections such as "Tips From the Field," "Announcements," "Case Studies," "Letters to the Editor," etc. The deadlines are:

Journal
Fall Issue: June 15
Winter Issue: September 15
Spring Issue: December 15
Summer Issue: March 15

Deadline for "Calendar of Events":
Fall Issue: June 15
Winter Issue: September 15
Spring Issue: December 15
Summer Issue: March 15

Information on upcoming events should be sent to:

Jeff Fair, ATC
Athletic Department
Oklahoma State University
Stillwater, Oklahoma 74074

Fall Issue: June 15
Winter Issue: September 15
Spring Issue: December 15
Summer Issue: March 15

Manuscripts must be sent to:

Clint Thompson
Jenison Gym
Michigan State University
East Lansing, Michigan 48824
(517) 353-4412

The Editorial Board will then review each paper and work with authors to help prepare the papers for publication. Each is handled on an individual basis.

Guide to Contributors

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. Seven 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 providing the reproductions are glossy black and white prints are preferred. 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. Tables must be typed, not hand written. Personal photographs are encouraged. All art work to be reproduced should be submitted as black and white line art (either drawn with a Rapidograph [technical fountain pen] or a velox stat or PMT process) with NO tonal values, shading, washes, Zip-a-tone — type screen effects, etc. used. All artwork to be reproduced in black plus a second (or more) color should be submitted as black and white line art (see above paragraph), with an Amberlith® or similar-type overlay employed for each area of additional color(s). Also, all areas of tonal value, shading, "washes," etc. should also be supplied on a separate clear or frosted acetate or Amberlith® overlay. In addition, all areas to be screened (a percent or tint of black or color) should be supplied on an Amberlith® overlay.

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, (1), directly after the reference or name of author being cited, indicating the number assigned to the citation bibliography. Example of references to a journal, book, chapter in an edited book, and presentation at a meeting are illustrated below:


4. In view of The Copyright Revision Act of 1976, effective January 1, 1978, all transmittal letters to the editor must contain the following language before manuscripts can be reviewed for possible publication: "In consideration of the NATA taking action in reviewing and editing my submission, the author(s) undersigned hereby transfers, assigns and otherwise conveys all copyright ownership, to the NATA in the event that such work is published by the NATA." We believe that transmittal letters not containing the foregoing language signed by all authors of the manuscript will necessitate return of the manuscript.

Manuscripts are accepted for publication with the understanding that they are original and have been submitted solely to Athletic Training. Materials taken from other sources, including text, illustrations, or tables, must be accompanied by a written statement from both the author and publisher giving permission to reproduce the material. Headings and Subheadings are required in the involved report but they are unnecessary in the very short report. Names of patients are not to be used, only 3rd person pronouns.

3. An outline of the report should include the following components:
   a. Personal data (Age, sex, race, marital status, and occupation when relevant)
   b. Chief complaint
   c. History of present complaint (including symptoms)
   d. Results of physical examination (Example: "Physical findings relevant to the physical therapy program were ...")
   e. Medical history - surgery, laboratory exam. etc.
   f. Diagnosis
   g. Treatment and clinical course (rehabilitation until and after return to competition) use charts, graphs when possible
   h. Criteria for return to competition
   i. Deviation from the expected results - days missed

4. Release Form
   It is mandatory that Athletic Training receive along with the submitted case a signed release form by the individual being discussed in the case study investigation. Case studies will be returned if the release is not included.

The following recommendations are offered to those submitting material to be considered as a TIP FROM THE FIELD:

1. The above recommendations for submitting manuscripts apply to tips from the field but only one copy of the paper need be sent to the Editor-in-Chief

2. Copy should be typewritten, brief, concise, in the third person, and using high quality illustrations and/or black and white glossy prints.
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- Special analysis underwater bearing material allows turbine to operate indefinitely out of water without harm to motor or bearing.
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The following agenda items were considered and actions taken by the NATA Board of Directors at its meeting held on June 4-9, 1981, at the Hyatt Regency Fort Worth, Texas, Mr. William Chambers, President, presiding and with the following present:

Mr. William H. Chambers, President
Mr. Otho Davis, Executive Director
Mr. Bruce Mallin, Parliamentary
Mr. Laurence Graham, Attorney
Mr. Jack Baynes, District 1
Mr. Richard Malarean, District 2
Mr. Andy Carson, District 3
Mr. Robert Shehake, District 4
Mr. Frank Candall, District 5
Mr. Sandy Miller, District 6
Mr. Cash Birdwell, District 6
Mr. Dale Mildenberger, District 7
Mr. Donald Chiu, District 8
Mr. Roger Dennis, District 8
Mr. Bobby Barton, District 9
Mr. Roy Don Wilson, District 9
Mr. Gary Crater, District 10

I. NEW HEADQUARTERS BUILDING

Moved by District 3, seconded by District 5 and carried to approve the purchase of a 4,381 square foot brick veneer building at Greenville, North Carolina to be used as the National Headquarters building in the amount of $72,500.

II. INFORMATIONAL REPORTS:

The following reports have been submitted with no action recommendations contained therein, the Board, by regular motion, accepted them as information.

Licensure
American Corrective Therapy Association
National Association of Intercollegiate Athletics
National College Athletic Association
Football Rules Committee
National Head and Neck Injury Registry
National Operating Committee on Standards for Athletic Equipment
Schering Symposium

TO: NATA Board of Directors
FROM: Charles Demers, Chairman, Career Information & Services Committee
DATE: May 1, 1981

SUBJECT: ANNUAL REPORT

1. Requests for the Career Information Brochure continue at a brisk level. We will have distributed 16,000 brochures for the present fiscal year. 2. The Committee requests a budgetary allocation of $1500 for the next fiscal year. This sum will finance the publication and distribution of the revised brochure (projected 12,500) and all other miscellaneous Committee expenses.

3. The Cramer Company has offered to promote The Career Information Brochure in the "First Aid" and to assist us in distribution.

4. Recommendations for future consideration: it would seem that printing and distribution of the Career Information Brochure by the NATA Greenville office would be more efficient and economical than our present situation.

5. The Chairmen would be most willing to elaborate on any of the above information or to answer any questions the Board might have about the Committee and its operation.

V. DRUG EDUCATION:

Moved by District 9, seconded by District 8 and carried that the Committee requests a budgetary allocation of $1500 for the next fiscal year. This sum will finance the publication and distribution of the revised brochure projected 12,500 and all other miscellaneous Committee expenses.

6. The Cramer Company has offered to promote The Career Information Brochure in the "First Aid" and to assist us in distribution.

7. Recommendations for future consideration: it would seem that printing and distribution of the Career Information Brochure by the NATA Greenville office would be more efficient and economical than our present situation.

8. The Chairmen would be most willing to elaborate on any of the above information or to answer any questions the Board might have about the Committee and its operation.

VI. HONOR AWARDS:

Moved by District 2, seconded by District 3 and carried that the various winners as listed be approved. Twenty-Five Year Awards: Johnny S. Aggers, District 7
Alan B. Cawros, District 2
Christopher Kavanagh, District 2
James D. Nice, District 4
Bobby Pickard, District 6
John Schaefer, District 2
Charles W. Taylor, District 2
Honor Membership: Bernard R. Cahill, MD, District 4
Thurston Dean, MD, District 6
Robert C. Hamilton, MD, District 6
Sam Morgan, DO, District 6
Robert Vandermeer, MD, District 6
Eve K. Wallace, MD, District 3
Citizen Savings Athletic Foundation Hall of Fame: Edward Coppola, District 2
Oliver L. Davis, District 2
Olive William Dayton, District 1
Donald J. Faub, District 9
Thom Haslau, District 1
Fred W. Hoever, District 3

Warren G. Morris, District 9
Edward N. Mosley, District 3
Robert A. Peterson, District 10
Bud C. Taylor, District 3

VII. MEMORIAL RESOLUTIONS:

Moved by District 2, seconded by District 1 and carried that the President write to Mr. Jim Rudd and inform him that the Board of Directors is pleased with what he is doing.

VIII. AMERICAN ALLIANCE FOR HEALTH, PHYSICAL EDUCATION, RECREATION, AND DANCE:

Moved by District 3, seconded by District 4 and carried that the NATAs continue its liaison with this group.

Moved by District 3, seconded by District 1 and carried that the NATAs reaffirm its previous statement about only having one athletic training council within AAPHERD.

Moved by District 2, seconded by District 7 and carried that Item I concerning activities of the group during the past year and Item II concerning future projections be accepted as information. The AAPHERD report is as follows:

SUBJECT: Liaison Report regarding the National Association of Sport and Physical Education of the American Alliance of Health, Physical Education, Recreation and Dance.
FROM: Otho Davis, Executive Director, NATA
TO: Joseph J. Godke, NATA Liaison
The following report is intended to update the Board of Directors of NATA regarding the functions of NASPE and AAPHERD which are related to athletic training.

1. Related activities during the past year:

a. During the past year the following activities of the National Association of Sport and Physical Education and have had some relationship to the profession of athletic training:

b. The Journal of Physical Education, Recreation, and Dance appointed Joe Godke as a contributing editor to review all manuscripts related to athletic training.

2. The Athletic Training Council of NASPE furnished the National Association of Secondary School Administrators with a series of articles on athletic training which will be published in the September 1981 edition of their professional publication as a feature series on athletic training in the secondary schools.

3. The following sessions were conducted at the Annual AAPHERD Convention in Boston (the sponsoring association is indicated in parenthesis after each title):

a. "Returning the Injured Athlete to Competition" (NASPE)

b. "The High School Athletic Trainer" (NASPE)

C. "Low Back Pain: Etiology, Prevention, and Treatment" (Physical Fitness Council)

D. "Essential Emergency Care Skills for Teachers and Coaches" (American School and Community Safety Association)

E. "Running Shoes: How to Pick Them" (NAGWS)

F. "The Problem Patella: Cause and Cure" (NAGWS)

G. "Running Problems" (NAGWS)
...Medical Aspects of Running Injuries (NASPE)...

1. "Scientific Aspects of Nutrition and Human Performance (NASPE)"

A. An additional program slot for the 1982 Convention in Houston was assigned to NASPE for the Athletic Training Council.

B. The operating code of the National Athletic Trainers' Association was approved by the Delegate Assembly.

C. Joe Godek resigned as Chairman of the Athletic Training Council effective May 5 after five years of service. This resignation was filed in order that he might more effectively serve in other capacities with AATA, since there can now be no suggestion of conflict of interest as he had been associated with AATA for many years. It is given a continued very close working relationship with AATA.

D. Patricia Whiteside of Penn State and Paul Butler of Penn Charter School were appointed to the NASPE cabinet as members of the Athletic Training Council.

E. NASPE coordinated through Dr. Davis a project by which visiting trainers from Mexico were exposed to clinical experiences in Sports Medicine in cooperation with Ohio State University.

II. Future projections presently underway:

A. In June of 1982 a "feature" series of articles on athletic training will be published in the Journal of Physical Education, Recreation, and Dance. This feature will be sponsored by the Athletic Training Council of NASPE and will be coordinated by Joe Godek, the contributing editor for athletic training for the journal.

B. The Athletic Training Council of NASPE is presently considering the inclusion of such organizations related to athletic training. These publications are:

A. A publication on the basics of prevention, recognition, and treatment of athletic injuries that will be acceptable for the typical secondary school coach. This publication will be edited by a well-known sports medicine consultant. It will be a product of various athletic trainers and coaches. A Fall of 1982 completion date will be solicited by NASPE. This publication will be available by the Fall of 1982.

B. A pamphlet of approximately 50-100 pages on issues of injury prevention, recognition, and care for the youth athletic trainer will be published by NASPE. This publication will be available by NASPE.

III. Summary and Conclusions

A. The interest of Sport and Physical Education of the American Alliance of Health, Physical Education, Recreation, and Dance has made tremendous progress in the past year. The National Athletic Training Council of NASPE has responded very positively to the needs of health and physical educators who are faced with having to hire full-time athletic trainers in their schools. Several major projects are now underway and all indications are that the Council and NASPE will continue to serve as a meeting place for those interested in athletic training to the thousands of physical educators, health educators, administrators, and coaches who are interested in such information. It is suggested that continued very close relationships between NASPE, AHPERD, and the NATA are imperative in order to assure a professional proper response to the needs of all persons in the fields served by these professional groups. Also, NASPE has always had an interest in developing "local" programs of a nature that would assist NATA certified athletic trainers in achieving required CEUs. Such projects serve as a symbiotic relationship that is potentially positive for all concerned.

B. It should be noted at this time, however, that the NATA has held significant to the leadership of AHPERD that the interest of athletic training might best be served if the existence of these two separate athletic training councils within the AHPERD structure was eliminated. The formation of a single structure within any of the existing associations would more surely serve the purpose of improvement and eliminating present duplication of efforts and competition for available resources. It seems that such a merger could be "housed" in NASPE. It is suggested that the athletic training council of that structure is not identified with a particular sex and does indeed serve tie with all sports and athletes. Likewise, one can readily see that such a structure would best be "housed" in NASPE since and competition for available resources. It seems that there is still much room in the area of job placement for both the student trainers and for the certified athletic trainers. Funding in this area is a very difficult area for some school boards and athletic departments. The present trend towards hiring full-time athletic trainers at the present time, there are still only three states (Georgia, Texas, and Kentucky) that have licensure for athletic trainers and the many other states are working on getting a state licensure law for their respective states.

C. Continuing education is still a vital part of the NATA thrust. In January of 1981, the fourth annual professional educational program was held in Nashville, Tennessee. Participation was again excellent and the program was reported as outstanding. This year the NATA's Annual Meeting and Workshop was held in Nashville, Tennessee. Participation was again excellent and the program was again outstanding and was held at the NATA Annual Meeting in San Diego, California. The American Orthopaedic Society for Sports Medicine, the National Athletic Trainers' Association, the American Congress of Sports Medicine, the American Physical Therapy Association, the American College of Sports Medicine, the American Medical Society for Sports Medicine, the American Academy of Orthopaedic Surgeons, the American Medical Association, the American College of Surgeons, the American College of Sports Medicine, the American Medical Association, the American College of Surgeons, the American College of Sports Medicine, and the American Medical Association are all involved in some way or another with this program. The NATA is now working on a proposal to the National Advisory Board for Sports Medicine for a national program on sports medicine.

D. The O'Donoghue award has been established for the best contribution to sports medicine. The O'Donoghue award is presented to the author of the best paper published in the Journal of the American Orthopaedic Society for Sports Medicine. The O'Donoghue award has been established for the best contribution to sports medicine.

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Be sure to ask about the special insulated cooler/dispenser or squeeze bottle offer.
Plays for the 1981 Interim Meeting in Las Vegas are on schedule with preregistration over 1,200—the largest in Society history. All AOSSIM meetings will take place at the Las Vegas Convention Center with registration located in the Rotunda Foyer.

I want to express my thanks to Doctor Richard Steadman, Chair of our Nominating Committee for the outstanding job they have done in coordinating the program.

The Society Board of Directors will meet in Las Vegas to review our annual reports. Among these are the Fillagreement with the Academy, ongoing liaison activities with other organizations, a number of future sites for our annual meetings, final decisions on our budget, committee structure, publications policy, journal activity and a detailed review of our education program. We will report final actions on these items in our next update.

A cornerstone of our Society is the involvement of the members. In the coming months our President, Elect, Doctor Fred Allman, will review committee assignments for all who responded in attending on a Society committee, please notify the Society office. We need to know this information so we know how Doctor Allman will make every effort to accommodate you.

Everyone is aware of the site for our summer Annual Meeting—Lake Tahoe. The preliminary program with registration forms and housing information will be sent to you in the spring. Do not attempt to preregister until you receive the necessary information.

Our liaison work with the U.S. Olympic Committee and the President's Council on Physical Fitness has consumed a tremendous amount of effort in the last few months. Doctor James Nicholas participated in the last White House Conference on Sports Medicine and continues to be a main coordinator with the President's Council. We have completed and sent a detailed list of members of our Society interested in various medical committees to the USOC. Several have already been appointed.

It has been encouraging to me to see the role of our organization grow in all areas of sports medicine. Our members have the knowledge and expertise to assist many organizations. I want to thank those who are volunteering their time and efforts in these endeavors.

MARK YOUR CALENDARS
The future Annual Meetings of the Society are as follows:

Lake Tahoe—June 22-26, 1981
Lake Placid—July 11-16, 1982
Williamsburg—July 24-28, 1983
Anaheim—July 24-28, 1984

MEMBERSHIP REPORT—MEL OLIX, MD
I'd like to thank all Active Members for responding so promptly to our last membership mailing. Because there are a large number of applicants who completed their applications in the last month, we will have another membership survey in six months. We will again need your prompt reply.

These Associate Members wishing to change their status to Active are requested to meet the following criteria:

1. Member of the American Academy of Orthopedic Surgery or its Canadian equivalent.
2. Engaged in the exclusive practice of orthopaedic surgery a minimum of five years.
3. Associate Member for a minimum of two years.
4. Submit a 250-word personal statement detailing current involvement in sports medicine.
5. All members must apply to 10 candidates for Active Membership per year. Forward your requests to me in care of the Society office.

March 10, 1981
Mr. William Newell
Student Health Services
Purdue University
West Lafayette, Indiana

Dear Pinky:
I talked with Joe Gieck and was happy to learn that you have been selected as the first recipient of the Distinctive Service Award sponsored by the American Academy of Orthopedics.

If you or anyone else thinks about someone that has made outstanding contributions to athletic training, you are the first person thought of. You being selected for this is the result of the hard work of the members of organizations, a number of them for doing so for many people and our profession. This award is going to be a truly wonderful person.

May your future be as bright and on behalf of the entire NATA membership, thanks for your invaluable contributions.

My best to you,
WILLIAM OLIX
President

XI. LIASON INFORMATION SESSION
Movements by Doctor 4, seconded by Doctor 5 and carried that our President direct our liaison to other organizations to make these organizations aware that if they contemplate any informational services with demonstration booths that relate to athletic training activities that we as the NATA desire our liaison to be involved in the planning and the participation of such group.

XII. NATIONAL ASSOCIATION OF COLLEGE DIRECTORS OF ATHLETICS:
Movements by Doctor 7, seconded by Doctor 2 and carried that the Board accept as information the verbal and written reports.

Movements by Doctor 2, seconded by Doctor 3 and carried that the NATA maintain liaison with this group for the next annual meeting and that the person to be appointed to attend as NATA liaison live in the local area of the meeting.

XIII. NATA BOOTH AT AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATIONS (AASA) AND NATIONAL ASSOCIATION OF SCHOOL BOARDS (NASB):
Movements by Doctor 6, seconded by Doctor 2 and carried that the Executive Director follow through on this—the NATA have representation and perhaps an exhibit booth in relation to the meetings of both of these organizations.

XIV. APPOINTMENTS AND ELECTIONS:
Mr. Andy Clawson was elected to serve as Vice President for the ensuing year and Mr. Otho Davis was reappointed as Executive Director.

XV. MICHAEL LEPP CASE:
Mr. Larry Graham, NATA Legal Counsel, presented a detailed review of the status of this case and upon his recommendation the matter was, by common consent, referred to the Membership Committee for ultimate solution.

XVI. AD HOC LONG RANGE PLANNING COMMITTEE:
It was moved by Doctor 8, seconded by Doctor 9 and carried that the matter pertaining to equipment purchases for the National Office be left to the discretion of the Executive Director.

Movements by Doctor 6, seconded by Doctor 1 and carried that this committee be continued in existence for one additional year.

Movements by Doctor 8, seconded by Doctor 9 and carried that the committee be continued for twenty-four months and that the Executive Director be authorized to contract with her for services in addition to those outlined in the contract on a negotiated basis.

XVII. PROFESSIONAL EDUCATION COMMITTEE:
The Board, after interviewing the various candidates interested in the position of the Chairmanship of this committee, upon the recommendation of Mr. Chambers, voted to approve the appointment of Mr. Gary Delforge to this position.

XVIII. PUBLIC RELATIONS:
The Board listened to a detailed presentation concerning the establishment of a public relations program to promote the NATA as outlined by representatives of the CPRF, Inc., public relations agency. Doctor 8 moved that Iowa with this issue subsequently, after brief discussion, be placed in the hands of the Executive Director for any further investigation that he desired to make and for possible consideration at the Board's next meeting.

XIX. FINANCIAL REPORT:
Following a detailed presentation by Mr. McIntyre concerning the progress made in the financial condition of the Association, within the past twelve months and its present improved condition during this interim, it was moved by Doctor 8, seconded by Doctor 10 and carried that the report be accepted as information.

XX. CONSTITUTION AND BYLAWS:
Mr. Melin called attention and discussion ensued as to his proposals concerning clarification of the procedures for amendment of the Constitution and Bylaws. A motion by Doctor 7, seconded by Doctor 3 to adopt Proposal #1 as outlined by Mr. Melin, resulted in a “yes” vote by Doctor 3, 5, 6, 7, 8, and 9 and a “no” vote by Doctor 1, 2, 4, and 10.

XXI. NOMINATION OF CANDIDATES FOR THE OFFICE OF PRESIDENT:
The Board of Directors, serving as a nominating committee in accordance with the provisions of the Constitution, considered as nominees for the office of President the names of Robert Rehbein, Cash Birdwell, Don Chu and William Plentje. A secret ballot vote by the Board of Directors concerning the presentation of two candidates to the membership in
count only 900 hours in any twelve-month period, it was moved by District 10, seconded by District 8 and carried that this recommendation be approved.

Concerning the recommendation that the number of hours in any twelve-month period, it was moved by District 10, seconded by District 8 and carried that this recommendation be approved.

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Your assets, for example, increased 32.2 percent. Your fund balance, which is your net worth, increased 32.2 percent. Total revenues increased 32.4 percent. Total expenditures increased 23.8 percent and your excess revenue was increased 86.5 percent.

Further, your interest income on invested funds increased 38.6 percent. Now, as I said, I consider these figures to be very, very strong and, further, at this point I would like to depart from my capacity here for a moment as your President. In my opinion, actually your President and the Executive Director, have done an excellent and extremely good job in managing your assets. Again, these percentages are strong and I think they are to be commended for the job they have done in having the organization where it is today.

Now, we were looking at a graph a couple of days ago which indicated that the net worth of the organization in 1971 was about $19,000; in 1981, $293,000; which just indicates that you have experienced a lot of growth. Are there any questions you can answer for any of you about any of these figures?

President Chambers: Thank you, Ken. I will entertain a motion to dispense with the roll call. Do I have a motion to that effect?

It was severely moved, seconded and unanimously carried that the calling of the roll be dispensed with.

President Chambers: The minutes of the 1980 meeting were published in the Journal and I would like to ask for a motion for approval of these minutes without reading. Do I have a motion to that effect?

It was severely moved, seconded and unanimously carried that the minutes of the 1980 meeting be approved without reading.

President Chambers: At this time, I would like to call on Mr. Davis, our Executive Director, to come up here and to present to us the Treasurer's report.

Mr. Davis: To make the report to you, I would like to have come up here and present to you Mr. Brooks McIntyre, whom I am sure most of you have already met at these meetings. Brooks is our CPA with Eastern Management Systems in New Bern, North Carolina. He will give you the Treasurer's report.

Mr. McIntyre: Thank you, Mr. Davis. We have prepared a one-page summary financial operation which you should have in your packets. You may want to pull that out as I go over some of the significant figures with you.

It is entitled — "Summary of Financial Operations, Year Ending April 30, 1981." I would like to give you a brief explanation of that sheet. It consists of a balance sheet and statement of revenues and expenditures.

The balance sheet is broken down into three parts. The first of these are the "assets," which is what you own, or the cash and equipment that the organization owns.

The second item consists of the liabilities which you owe and, as of April 30, 1981, there were no liabilities and so we do not owe anything on that.

Financing the fact that organization is worth and, as of April 30, 1981, the net worth figure was $292,419.

For the year ending April 30, 1981, the organization had revenues of $590,752; had expenditures of $296,693 or an excess revenue of $294,059.

Basically the organization had a very strong year. I would like to point out some of what I consider significant statistics to you.

Your assets, for example, increased 32.2 percent. Your fund balance, which is your net worth, increased 32.2 percent. Total revenues increased 32.4 percent. Total expenditures increased 23.8 percent and your excess revenue was increased 86.5 percent.

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Chambers - President, NATA; Chuck Cranker Scholarship Award: John Allen Strong, Purdue University, Sponsored by Cramer Products Incorporated; Presented by Phil Donghia, Sponsor, Northeast State College; Frank Cranker Scholarship Award: Kevin Dale Roberts, Boise State University, Sponsored by Cramer Products Incorporated, Presented by John Schrader, Indiana University; Post Graduate Scholarship Awards: Bradley John Board, Westchester State College, Sponsored by National Football League, Presented by John O'Rourke, Houston Rockets Basketball Club, Otte Davis Post Graduate Scholarship Award: Cheryl Lynn Cole, California State at Fullerton, Sponsored by National Athletic Trainers Association, Presented by Jerry Rhea - Atlanta Falcons Football Club; Del C. Humphrey Post Graduate Scholarship Award: Brian Peter Quinn, University of Southern California, Sponsored by Schutt Manufacturing Company, Presented by Millard Kelby - Apex, Colorado. G.E. "Moose" Deitz, Post Graduate Scholarship Award: Joseph Earl Robinson, Canisius College, Sponsored by PRO Orthopedic Devices, Inc.; Presented by Cash Birdwell - Southern Methodist University; Nansen Rhinestahl Scholarship Award: Undergraduate Scholarship Award, Jeannie McCormick, Washington State University, Sponsored by National Athletic Trainers Association, Presented by Jack Rockwell - Football League Charities; Presented by A. Chambers - President, NATA; Chuck Cranker Scholarship Award: John Allen Strong, Purdue University, Sponsored by Cramer Products Incorporated; Presented by Phil Donghia, Sponsor, Northeast State College; Frank Cranker Scholarship Award: Kevin Dale Roberts, Boise State University, Sponsored by Cramer Products Incorporated, Presented by John Schrader, Indiana University; Post Graduate Scholarship Awards: Bradley John Board, Westchester State College, Sponsored by National Football League, Presented by John O'Rourke, Houston Rockets Basketball Club, Otte Davis Post Graduate Scholarship Award: Cheryl Lynn Cole, California State at Fullerton, Sponsored by National Athletic Trainers Association, Presented by Jerry Rhea - Atlanta Falcons Football Club; Del C. Humphrey Post Graduate Scholarship Award: Brian Peter Quinn, University of Southern California, Sponsored by Schutt Manufacturing Company, Presented by Millard Kelby - Apex, Colorado. G.E. "Moose" Deitz, Post Graduate Scholarship Award: Joseph Earl Robinson, Canisius College, Sponsored by PRO Orthopedic Devices, Inc.; Presented by Cash Birdwell - Southern Methodist University; Nansen Rhinestahl Scholarship Award: Undergraduate Scholarship Award, Jeannie McCormick, Washington State University, Sponsored by National Athletic Trainers Association, Presented by Jack Rockwell - Football League Charities; Presented by A.
MR. DA VIS: Now, Paul Grace has a very special award to present to this group at this time. Please join me in a moment of silence for Paul Grace's presentation of an award to John Chambers.

Well, John Schrader came forward and, during the intermission, I think I mentioned to some of you that when Bud Miller passed away, we lost a gentleman that has done some leg work for us in relation to the NATA. It all started back when Pinky Newell was doing some leg work. (Applause)

When I was a student trainer, I had the opportunity to be with John because he was a student trainer himself, and he gets it. He is concerned, cares about the trainer, cares about the athletes, and is a pioneer. (Applause)

We continue to make progress in our quest for athletic trainer licensure. Granted, the progress has been slower than we desired; however, any progress is better than no progress at all. (Applause)

...Standing ovation for what he has done. (Applause)

We have one member of the Board of Certification that is retiring and since taking over the Board he has been an asset to me and to the profession and also as a committee member to work with this man. When I was a student trainer, I had the opportunity to be with John because he was a student trainer and he gets it. He is concerned, cares about the trainer, cares about the athletes, and is a pioneer. (Applause)

Mr. Da Vis: Let me say, with regard to the District meeting sites, that they are listed in your program. I will read them to you.

and have been announced by Mr. Da Vis...

Mr. Da Vis: The next merit of appreciation goes to an individual, a young lady, I don't think any of you in this room would recognize her, but one of two other persons other than myself, probably ever met this young lady.

She goes back several years in doing work for the Association. When Pinky Newell was the Director of your Association, this lady's sister was our Administrative Assistant, Ms. Harriet Fink, who recently passed away and, following Pinky, when Jack took over, he continued to use the services of the Lafayette Mailing Service at Lafayette, Indiana. Now, just a couple of years ago, we moved our office to Greenville, South Carolina, but still continued to use their services.

Now, on June 1st, Ms. Kathy Taylor retired from her business and, therefore, I would like to have Pinky come forward and do this announcement and presentation and thanks to Kathy Taylor of the Lafayette Mailing Service for many years of loyal service and dedicated work to the NATA and best wishes to her for the future.

Mr. Da Vis: Let me say, with regard to the District meeting sites, that they are listed in your program. I will read them to you.

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Summary of Actions, cont. from pg. 283

**XXXVI. COMMITTEE CHAIRMAN RATIFICATIONS:**

Moved by District 10 and seconded by District 9 and carried that the various committee chairmen be ratified or reappointed as submitted by President Chambers be ratified. Also, liaison designations as submitted by President Chambers be ratified.

**XXXVII. ADJOURNMENT:**

There being no further business, the meeting of the Directors was, at 12:16 o'clock p.m., Tuesday, June 9, 1981, declared to be adjourned.
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PATRONIZE ATHLETIC TRAINING ADVERTISERS

Fourth Annual NATA Student Writing Contest

In an effort to promote scholarship among young athletic trainers, the National Athletic Trainers Association is sponsoring an annual writing contest.

1. This contest is open to all undergraduate student members of the NATA.
2. Papers must be on a topic germane to the profession of athletic training and can be case reports, literature reviews, experimental reports, analysis of training room techniques, etc.
3. Entries must not have been published, nor be under consideration for publication by any journal.
4. The winning entry will receive a $100.00 cash prize and be published in Athletic Training with recognition as the winning entry in the Annual Student Writing Contest. One or more other entries may be given honorable mention status.
5. Entries must be written in journal manuscript form and adhere to all regulations set forth in the "Guide to Contributors" section of this issue of Athletic Training. It is suggested that before starting students read: Knight KL: Writing articles for the journal. Athletic Training 13:105-108, 1979. NOTE: A reprint of this article, along with other helpful hints, can be obtained by writing to the Writing Contest Committee Chairman at the address below.
6. Entries must be received by March 1. Announcement of the winner will be made at the Annual Convention and Clinical Symposium in June.
7. The Writing Contest Committee reserves the right to make no awards if in their opinion none of the entries is of sufficient quality to merit recognition.
8. An original and two copies must be received at the following address by March 1, 1982. NATA Student Writing Contest, c/o Dr. Ken Knight, Men's Physical Education, Indiana State University, Terre Haute, Indiana 47809.
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Pads snap off convenient roll in 3 inch squares. Cramer Heel and Lace Pads prevent painful pinching and blistering caused by taping and wrapping. Place pads on the athlete's heel, instep or other areas where friction occurs.

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