IN THIS ISSUE:
Pre-Season Isokinetic Knee Evaluation in Professional Football Players
Treatment and Rehabilitation of a Complete Acromioclavicular Separation
The Importance of Pre-Testing the Knee Joint
Ankle Taping Effects From Torque and Range of Motion
Each chart recording above — the result of an easily performed isolated-joint test series — provides precise measurements of muscular capability, functional range of motion and comparative joint integrity. This test data quantifies performance deficiencies to help you determine the degree of injury or disability, evaluate rehabilitation goals or progress and verify treatment results. In addition to its unique testing function, CYBEX II has been clinically proven the safest, most effective rehabilitative exercise modality ever devised.

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**ATHLETIC TRAINING**

**THE JOURNAL OF**

**THE NATIONAL ATHLETIC TRAINERS ASSOCIATION**

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**VOLUME 14/NUMBER 4/WINTER 1979**

**FEATURES**

199  Second Annual N.A.T.A. Student Writing Contest

205  Preseason Isokinetic Knee Evaluation in Professional Football Athletes  
     SKIP HUNTER, THOMAS E. CAIN, M.D., CHARLIE HENRY

218  Treatment and Rehabilitation of a Complete Acromioclavicular Separation  
     BRUCE C. JOHNSON

225  The Importance of Pre-Testing the Knee Joint  
     GERALD W. SLAGLE

227  The Effect of Ankle Taping Upon Torque and Range of Motion  
     THOMAS E. ABDENOUR, WILLIAM A. SAVILLE, PH.D., ROBERT C. WHITE, MICHAEL A. ABDENOUR

229  Methodological Considerations on Percent Body Fat in Athletes  
     TOM R. THOMAS, PH.D., GIL L. ETHERIDGE

234  Forty-Seventh Annual Survey of Football Fatalities 1931-1978  
     CARL S. BLYTH, PH.D., DAVID C. ARNOLD

238  Bylaws of The National Athletic Trainers Association

244  Index to Volume Fourteen

**TIPS FROM THE FIELD**

212  Protective Strapping For the Hands of the Gymnast  
     RON PFEIFFER

224  A Space Saving Taping Table  
     CHARLIE CODY

232  An Orthotron® Knee Rehabilitation Program  
     KENNETH E. WRIGHT, ALICE McNEILL

**DEPARTMENTS**

191  President’s Message
194  Editor’s Comments
196  Announcements
197  Advertising Index
198  Guide to Contributors, Journal Deadlines

200  Calendar of Events
207  Potpourri
209  Current Literature
214  Book Reviews

---

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ATHLETIC TRAINING • Winter 1979
Dear NATA Members:

On behalf of all your officers — best wishes for a good year in 1980.

Your Association has grown in many ways this past year and we will continue to grow. The increased interest in athletic participation has increased the interest and awareness of the Athletic Trainer. Each of us should make a special effort to grow professionally and do everything possible to uphold our high standards.

There was a lot of concern about the CEU’s not being listed on the dues statement. It was decided by the Board of Directors to have all CEU accounting done at our Greenville office, and because of the large amount of work involved it was not possible to get the CEU’s on the statements. Our staff in Greenville are putting all earned CEU’s into the computer and this job will be completed in the near future. Next year’s dues statement will have your CEU’s listed for two years.

Each certified member has an individual CEU file and if you have any questions regarding this, contact our office in Greenville. Rest assured you will be given all approved CEU’s you have applied for.

The course approval for the CEU’s will continue to be handled by the chairman of that committee, Jack Redgren.

This Journal is the second one for our Editor-in-Chief, Ken Woffert. Ken has done an excellent job thus far in handling this very demanding challenge. If you have any suggestions or comments I’m sure Ken would like to hear from you. It’s your Journal so let Ken know your feelings or suggestions.

I hope each state will continue to work for state licensure. This is very important and we must continue to push for licensure.

I hope each of you is making plans to attend our Annual Meeting and Clinical Symposium in Philadelphia. There will be something of interest for everyone and I am confident it will be beneficial to you to attend.

Again, best wishes for a good year in 1980. Please continue to let your Board of Directors know how they can best serve you. Your input is vital to the continued success and growth of our Association.

Best regards,

William H. Chambers
President

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Warmest greetings to each and every one of you at this most joyous time of the year. Hopefully most of you will be home at or around the Holiday Season with your loved ones and will have more of a chance to read this issue of *Athletic Training* than some of the others. I am very honored to have this opportunity to contribute to the continued success and respect that our Journal has gained in recent years due to the efforts of many others including the past Editor-in-Chief, Rod Compton. In order to maintain this journal as a useful, practical and informative publication that all of us look forward to reading, I must ask for the help of each and every one of you members. It does not matter whether you are retired or just starting as a student. There should be something that each of you can do to contribute. If you do not believe this, then it will be virtually impossible for the Journal Committee to maintain the type of journal you want. Not only do we need your input in the form of manuscripts but also in the other areas of information such as case reports, tips from the field, letters of concern, knowledge of current events and anything that is happening in our profession.

Please look the Journal over and be critical of the format and content if there is any reason to be. Let me know your thoughts if you have any concerns. In an upcoming issue we will invite you to give us specific information on what can be done to improve *Athletic Training* in the form of a summary questionnaire.

In the meantime, friends and colleagues, please make the most of your time with those who are closest to you at this beautiful and special time of the year.

— Ken Wolfert

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A 1965 graduate of Ohio University, Ken Wolfert is in his 12th year as head athletic trainer at Miami University in Oxford, Ohio. He spent one year as head trainer at Cleveland State before coming to Miami in 1968. He serves on the executive council of the Great Lakes District of National Athletic Trainers and is a member of the Joint Advisory Committee on Sports Medicine of the Ohio State Medical Association and Ohio High School Athletic Association. In the summer of 1977 he was a trainer for the U.S. team competing in the World Games for the Deaf in Bucharest, Romania. Ken also organizes one of the largest sports medicine workshops for high school students each summer and in its 10th year attracted students, coaches, and teachers from as many as 8 different states. Wolfert and his wife, Pat, have three sons, Mike, 13, Matt, 12, and Danny, 1½. Ken enjoys his free time camping and traveling with his family as well as participating in softball, racketball, and running.

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First row, left to right: Wesley Jordan, District One; Richard Malacrea, District Two; President William Chambers; Otho Davis, Executive Director; Andy Clawson, District Three; Bob Behnke (representing Gordon Stoddard), District Four. Second row, left to right: Frank Randall, District Five; Cash Birdwell, District Six; Troy Young, District Seven; Don Chu, District Eight; Bobby Barton, District Nine; Gary Craner, District Ten. Not pictured: Bruce Melin, Parliamentarian and Mary Edgerley, Administrative Assistant.
Schedule of Future Sites and Dates
N.A.T.A. Certification Examination
Revised: June 1979

REGIONAL
(All regional sites subject to a minimum of five candidates per site and limited to a maximum of thirty candidates.)

January 20, 1980
New Haven, CT.
(E.A.T.A.)
Valparaiso, Indiana
Tampa, Florida
Forth Worth, Texas
(All sites subject to change)

Deadline for requesting application forms:
October 15, 1979
Deadline for returning applications:
December 1, 1979

March 16, 1980
Tucson, Arizona
(All sites subject to change)

Deadline for requesting application forms:
December 15, 1979
Deadline for returning applications:
February 1, 1980

NATIONAL
June 8, 1980, National Convention Site: Philadelphia, Pennsylvania
(Subject to a maximum of 50 candidates — applications accepted in order of remittance — only 25 additional candidates accepted for written examinations)

August 3, 1980
Terre Haute, Indiana
West Chester, Pennsylvania
State College, Pennsylvania
Walnut, California
Portland, Oregon
(All sites subject to change)

Deadline for requesting application forms:
March 15, 1980
Deadline for returning applications:
April 30, 1980

(Other site(s) if a minimum of 10 regional applicants creates such a demand.)

Application forms available from: N.A.T.A. Board of Certification
Valparaiso University
Valparaiso, Indiana 46383

(Please indicate date you wish to take the exam when requesting application, also indicate the section under which you plan to apply — I, II, III, or IV)

NOTE: 1981 exam dates will approximate the 1980 dates and sites on a regional basis. The national exam will be at the site of the annual N.A.T.A. convention with similar numerical limitations.

ATHLETIC TRAINING • Winter 1979

Continuing Education
Continuing Education for the National Athletic Trainers Association is under way. While it is slow getting started there is one important item the membership can help us with.

As of this year we all have a six (6) digit membership number as well as our certification numbers. It is the six digit number that goes to the computer so please put this number on all reporting forms you send in for CEU. Without this information, the recording process is slowed considerably.

Many of you have raised questions concerning CEU, many of them valid. Keep two things in mind: (1) re-read the initial information and some of your questions will be answered and (2) this is our initial endeavor and we are aware that at the conclusion of the initial three-year period review and revision will be necessary.

At this point we are doing our best to keep all members in all levels of employment in mind and will keep your best interest in mind where professionalism is concerned.

Thank you,
Jack Redgren
NATA Sub-Committee
Continuing Education

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, A.T.C. Chairman, NATA Career Information Services, Athletic Department, Deerfield Academy, Deerfield, MA 01342.
Guide to Contributors

*Athletic Training*, the Journal of the National Athletic Trainers 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. One original and five copies of the manuscripts should be forwarded to the editor and each page typewritten on one side of 8½ x 11 inch plain paper, double spaced with one inch margins.

2. The first page of the manuscript should include title of paper, full name of author(s), academic degrees, name of the department and institution of author(s).

3. Photographs must be glossy black and white prints 5½ x 7 unless color is absolutely necessary to indicate detail. Graphs, charts, and 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. Legends to illustrations should be typed separate from the illustrations on a page following the last illustration. Copies of all illustrations should accompany each of the five copies of the manuscript.

4. It is the understanding of the editor of *Athletic Training* that manuscripts submitted will not have been previously published or simultaneously submitted to any other publications. The author accepts responsibility for any major corrections of the manuscript as suggested by the editor.

5. For reprints, authors are authorized to reproduce their material for their own use or reprints can be reproduced at time of initial printing if the desired number of reprints is known.

6. References should be typewritten (double spaced) beginning on the first page following the manuscript. They must be alphabetized and numbered consecutively. Citations in the text of the manuscript should take the form of a number in parenthesis (7) directly after the name of the author being cited, or after the reference if the author's name is not used. The style of the references is that of Index Medicus. Examples of references to a journal, book, chapter in an edited book, and presentation at a meeting are illustrated below:


7. Potential authors are referred to reference 1 above, for help in preparing their manuscripts.

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

9. Manuscripts not following the preceding procedures will be returned to the author.

Address all manuscripts to:

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

Deadline for “Calendar of Events”: Information on upcoming events should be sent to:

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

Fall Issue July 1
Winter Issue October 1
Spring Issue January 1
Summer Issue March 1

Articles must be sent to:

Clint Thompson, ATC
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East Lansing, Michigan 48824

The Editorial Board will then review each article and work with authors to help prepare the articles for publication. Each article is handled on an individual basis.
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 13:196-198, 1978. 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, 1980.

NATA Student Writing Contest
C/o Dr. Ken Knight
Men's Physical Education
Indiana State University
Terre Haute, Indiana 47809
JANUARY, 1980

4-6  NATA Conference on Professional Preparation, Nashville. Contact John Schrader, Department of HPER, Assembly Hall, Indiana University, Bloomington, Indiana 47401.

12  11th Annual Medical Aspects of Sports Seminar, Newark. Contact C. Roy Rylander, Head Trainer, Athletic Department, University of Delaware, Newark, Delaware 19711.


25-27  Cardiac Rehabilitation Seminar, New Orleans.

FEBRUARY, 1980


15-17  NATA Conference on Professional Preparation, Palo Alto. Contact John Schrader, Department of HPER, Assembly Hall, Indiana University, Bloomington, Indiana 47401.

22-24  Cardiac Rehabilitation Seminar, Las Vegas. Contact La Crosse Exercise Program, Workshop Unit, Mitchell Hall, University of Wisconsin - La Crosse, La Crosse, Wisconsin 54601.


MARCH, 1980

9-16  Sports Medicine Graduate Course Sponsored by the Center for Sports Medicine of Northwestern University Medical School and the Division of Sports Medicine, North Carolina Department of Public Instruction, Maui, Hawaii. Contact Marianne Porter, Center

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for Sports Medicine, 2-063, 303 E. Chicago Ave., Chicago, Illinois 60611.

13-15 Great Lakes District 4 Annual Meeting, Kalamazoo, Contact Jack Jones, Western Michigan University, Kalamazoo, Michigan 49008.


24-26 5th Annual University of Cincinnati Sports Medicine Symposium, Cincinnati. Contact Ken Rusche, University of Cincinnati, Cincinnati, Ohio 45267.

28-29 Tenth Annual Sports Injury and Health Fitness Conference, Peoria. Contact Jeff Sunderlin, Great Plains Sports Medicine Foundation, St. Francis Hospital, Peoria, Illinois 61637.

Athletic Training will be happy to list events of interest to persons involved in sports medicine, providing we receive the information at least two months in advance of publication. Please include all pertinent information and the name and address of the person to contact for further information. This information should be sent to Jeff Fair, Athletic Department, Oklahoma State University, Stillwater, OK 74074.

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Preseason Isokinetic Knee Evaluation in Professional Football Athletes

By

SKIP HUNTER, R.P.T.
DR. THOMAS E. CAIN, M.D.
CHARLIE HENRY, A.T.C.

Prior to the beginning of practice for the 1978 football season, seventy-seven members of the Houston Oilers were evaluated for knee weakness using a Cybex Isokinetic Dynamometer.* All of the rookies and free agents of the team were tested along with several veterans with previous knee pathologies. The purpose of this testing was two-fold:

1) To identify those players with possible knee pathology resulting in strength levels below those adequate for play.

2) To provide a permanent record of quadriceps and hamstring strength in the event that rehabilitation of the knee was necessary at a later time.

Three standard Cybex tests were used to check both the quadriceps and hamstrings strength. These were 1) Maximum torque at 5 rpm with a recording chart speed of 5mm/sec. 2) Time rate of tension at 5 rpm and a recording chart speed of 25 mm/sec. 3) Functional torque at 30 rpm and a recording chart speed of 5 mm/sec.

Each knee was tested and the results compared between each knee. These tests were run approximately one hour before each player received his preseason physical by an orthopedic surgeon. This allowed time for the results to be analyzed and the physician to be notified of the results. This delay also allowed the physicians to note any changes which might develop from exertion of the knee.

Five players were identified by this technique as unfit for practice at the time of the test. These players were either given time for rehabilitation or waived. Nineteen players with previous knee pathologies were shown to be rehabilitated and fit for practice. Figs. 1-6 are readouts at 5 rpm and show chart speed from several of the tested athletes and the suspected pathologies involved.

Figure 1. This player reported to camp overweight, but otherwise healthy. Chart A shows a healthy left knee with a quadriceps peak torque of 258 foot-pounds and a hamstrings peak torque of 138 foot-pounds. Chart B is of the right knee. Irregular and jagged curves on extension indicate substandard performance, chondromalacia. Note the decreased quadriceps and hamstring peak torque of 162 footpounds and 102 footpounds respectively.

Figure 2. Inadequate rehabilitation following off-season surgery was revealed in this chart. Chart A shows the non-operative left knee with a maximum quadricep peak torque of 252 foot-pounds and maximum torque of 144 foot-pounds on the hamstrings. Chart B shows the right post-meniscectomy knee with a maximum torque of 156 foot-pounds and hamstrings maximum torque of 150 footpounds. The right quadriceps is 51 percent of the left while the right hamstring is over 100 percent of the left pointing to the need for emphasis toward quadriceps.

*Lumex, Inc., 100 Spence Street, Bayshore, New York 11706

Skip Hunter is a Registered Physical Therapist with Shamrock Physical Therapy at 2210 Maroneal, Houston, Texas 77030.

Dr. Thomas E. Cain is an Orthopedic Surgeon with the Orthopedic Clinic of Houston at 2210 Maroneal, Houston, Texas 77030. He is a team physician for the Houston Oilers.

Charlie Henry is a Licensed Athletic Trainer and is District Trainer with the Springbranch Independent School District of Houston, Texas. He was formerly Associate Trainer for the Houston Oilers.

ATHLETIC TRAINING • Winter 1979
rehabilitation.

**Figure 3.** This player was recovering from a hamstring strain. Note that the hamstring curves in Chart B are inconsistent with the smooth curves of Chart A.

**Figure 4.** Although the curves produced by the left and right knee are almost identical, the jagged quadriceps curves of each indicate patello-femoral pain, felt to be secondary to bilateral chondromalacia patellae. This player admitted that both knees were painful during extension. Note that the hamstrings and quadriceps produced similar maximum torques. Normally the hamstrings show a torque of only 60-70 percent of that produced by the quadriceps.

**Figure 5.** This rookie underwent left knee surgery in the spring and obviously had undertaken little rehabilitation. Maximum torque by the left quadriceps is only 41 percent of that on the right.

**Figure 6.** This rookie had left knee surgery during his last season as a collegiate. Cybex showed that the left knee (Chart A) had been rehabilitated so that the quadriceps were slightly stronger than those of the right knee (Chart B).

The great desire to play professional football leads many rookies and veterans alike to overlook pains and weaknesses which later might lead to devastating injuries. Isokinetic strength evaluation provided the orthopedist with an added tool with which to identify those individuals who are not ready to undergo the rigors of professional football. While not an absolute predictor of possible injury, this method reveals those individuals likely to have problems in the future.

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Sports Medicine Elective

Dr. W. F. DeShazo, M.D., discusses an interesting pioneering venture into sports medicine education for the family practitioner resident. Hopefully, this concept might grow to other medical schools.

As physician for the past six years for The University of Alabama football team, he has developed an elective for the second and third year Family Medicine residents and fourth year medical students in conjunction with the Athletic Department of The University of Alabama. This one-month elective is available from 1 August through 1 November, and, again, during spring football training. The elective primarily is with the Alabama football program but also spills over into other athletic programs, as most of the athletes use the training room during the morning and afternoon for sick call or for consulting the physician.

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More On Panty Girdle Protection

It may be difficult to understand the related mechanics, but “Medical World News” reported that rodeo stars and football players have discovered that wearing panty girdles gives them added protection against torn muscles. Because of its grip, a knee-length panty girdle can prevent the thighs from splitting when a rider lands on the back of a bucking bull, steer or horse. The girdle prevents all kinds of bruises, tears and ruptures that might be caused by the rider abruptly hitting the animal’s sharp spine. And football players with sore hamstrings have found that wearing a girdle can prevent further injury to those muscles.

National Electronic Injury Surveillance System

The National Electronic Injury Surveillance System has been an important source of information on product-related injuries since it was initiated in 1972. NEISS collects two levels of injury data — surveillance and investigation. The surveillance data are comprised of data elements from the record of each product-related injury treated in hospital emergency departments. The data are extracted from the emergency department records, coded, and transmitted daily to CPSC (Consumer Product Safety Commission) through a network of telecommunication terminals located in the participating hospitals. These data are then used to generate the type of information presented in the data tables of this publication.

The second level of NEISS is comprised of accident investigations which provide detailed information derived by contacting the victims and witnesses. Investigations are assigned for all deaths, all injuries identified as associated with flammable fabrics, and other high priority cases selected by the U.S. Consumer Product Safety Commission. Although most investigations conducted by the Commission are not necessarily statistically representative of all reported injuries in a particular product category, they do provide details concerning the accident sequence and the cause of injury — information which is not usually available from surveillance data. In addition, special studies are conducted in which the cases to be investigated are statistically selected from particular product categories.

Investigations are not limited to injuries collected through the surveillance system. The Commission also investigates reports of injuries from sources other than NEISS. These sources include consumer complaints, newspaper accounts, reports from a selected group of medical examiners and coroners, and governmental agencies outside the Commission. The Commission has investigations dating back to 1965. They are on file and available to the public at the Commission’s National Injury Information Clearinghouse.

Further details may be obtained by writing to the National Injury Information Clearinghouse, Hazard Identification and Analysis, Consumer Product Safety Commission, Room 625, 5401 Westbard Avenue Washington, D.C. 20207. Or phone (301) 492-6424.


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A common complaint of many young gymnastics team members every season is "hey coach, I've got a rip on my hand!" A "rip" refers to a partial or complete tear in the skin in the area of the upper palm of the hand. Most gymnasts develop a layer of thick calluses along the upper palm, at the base of the proximal phalanges. The skin thickens in this area because of the added friction due to the stress involved in such events as High Bar, Parallel Bars, Still Rings, and to a lesser extent, the Side Horse.

The "rips" occur most often when an athlete has little or no callus development or, conversely, when an abnormal buildup is present. I have found that after the first month of practice fewer rips occur. This is probably due to a toughening of the skin in the affected area of the hands. I advise athletes to keep callus buildup to a minimum by "sanding" the skin down periodically with a pumice stone or course sandpaper. If the calluses are allowed to become abnormally thick a rip is more likely to occur.

I have experimented with many different strapping techniques and have come up with a procedure which is effective in most cases. Before I describe the details I should make an additional comment. Gymnasts are a difficult group for the trainer to please in all instances. Most don't want to damage their hands, however, they dislike putting anything over the skin which may interfere with their "feel" for the apparatus. Consequently the trainer and the athlete must reach a happy median. This can usually be accomplished by keeping the amount of tape running across the upper palm to a minimum.

The procedure which follows is designed for use on the athlete who does not have any rips. When dealing with rips the technique is basically the same except a type of dressing is applied under the tape. It should be understood that the severity of a particular rip will determine if the athlete should be allowed to continue participation. This decision should be based upon the diagnosis of the trainer and/or the team physician in conjunction with the views of the athlete.

Both of these strapping techniques work effectively when used with the leather grip which is used by some
athletes on certain apparatus.

(STEP 1) Remove all perspiration and apply a liberal amount of tape adherent around the palm of the hand, especially over the calluses. Adherent should be applied around the backside of the hand, as well as, around the wrist. Avoid getting any adherent on the athlete's fingers.

(STEP 2) With the fingers slightly spread, apply a single layer of 1/2 inch tape around the upper palm and backside of the hand (see photo 1), press it into place with your hands. Apply a single layer of 1/2 inch tape around the wrist also.

(STEP 3) This is where you "individualize." Tear thin strips of tape from a role of 1/2 inch tape as shown in photos. These strips should fit between the fingers without rolling up at the edges. The strips are first attached at the anchor strip at the backside of the wrist; they follow up the backside of the hand, go between the fingers and then down across the palm and secure at the wrist. You should have three strips running across the palm when finished. On heavy athletes, over 160 pounds, use double thickness of these strips. Anchor the strips at the wrist with a single or double layer of 1/2 inch tape.

(STEP 4) Apply a single or double layer of 1/2 inch tape around the hand at the upper palm as illustrated in photo 3. Again, this should be "pressed" into place by the trainer. The athlete should apply chalk over the tape as normally would be done.

In the case of strapping over an existing rip the procedure is the same with the exception of the dressing. I apply a thin layer of clean skin lube directly over the rip. Cover the rips with patches of gauze which are cut slightly larger than the rip. Make sure any rough or jagged edges around the wound(s) are trimmed away. Apply the first layer of 1/2 inch tape directly over this dressing. The athlete should be on a reduced program until the hands are healed.

These procedures give good protection which stays in place without putting excessive materials over the palm. You may find that variations of these methods will work better for you. The important thing is that you and the athlete communicate with each other and work together for the correct combination.
Health and Fitness Through Physical Activity
BY: Michael L. Pollack
Jack H. Wilmore
Samuel M. Fox
List Price: $11.95
357 pages - Illustrated
John Wiley and Sons Inc.
1978

When a coach describes a player who is multi-talented, the word "super" is most likely to be included in that context. When one reads *Health and Fitness Through Physical Activity*, the work that described the multi-talented player is also accurate in the evaluation of this text: SUPER! The super player like the super book have a quality unique to all number one draft choices, they can do many things well.

Doctors Pollack, Wilmore, and Fox have blended several topics in sportsmedicine into a volume of information that gives an excellent overview of situations which confront us on a daily basis. Subjects that are discussed include research findings on exercise, cardiac rehabilitation, as well as the topic of the exercise prescription with its guidelines for the frequency, duration and types of activity to be included.

A chapter on "nutritional aspects to human performance" explores the question whether a person can alter what they might eat to enhance their performance. Topics discussed here cover the areas of the protein diet, the resurgences of fats along with the use of vitamins and minerals. The authors tackle the subject of the "pre-contest meal" by suggesting a liquid pre-game meal to be a possible solution to the question of bettering one's own performance.

Prior to having enhanced performance, one needs to objectively know their physical fitness status. Section III of the text deals with "medical screening and evaluation procedures. It is highly informative when it boils down to telling someone exactly what kind of shape they are in.

The section's purpose is to describe the proper testing protocol for fitness evaluation. This is not a run of the mill chapter where you are confused with one chart after another with little or no explanation. It is a carefully organized presentation of valuable data that can be easily understood and employed to help in the evaluation of an individual's fitness level. Topics that have set evaluation procedures include cardiorespiratory fitness, body composition, strength, muscular endurance and flexibility.

To say that this text would be a fine addition to any professional library would most certainly be an understatement. This book is well written and is very applicable to all sportsmedicine environments.

Mike Abdenour A.T.,C.

Competitive Weightlifting
BY: R.V. Foder
List Price: $7.95
160 pages - Illustrated
Sterling Publishing Co.
1978

In reviewing this book, I must first admit my ignorance to the competitive aspects of weightlifting. The athletes involved within this competitive frame work are truly dedicated to their sport.

However, I have some reservations as to the usefulness of a text of this nature within a clinical or teaching athletic training environment. My initial response after reading the contents of the book was to stereotype this into the group of "you too can be an Olympic champion."

There is only one true section within the context of the material that could possibly aid an athletic trainer and it deals with the procedures on "how to get started."

This section suggests some specific exercises for strength and flexibility for upper and lower body development with approximate sets and repetitions for each activity.

Within the appendix of the book is a chapter titled diet and weightlifting. In this section is a thumbnail review of protein, carbohydrates, fats as well as comments on major body minerals and their functions. This overview on diet and weightlifting may be of some benefit if it is used to build from rather than supplement any discussion of diet.

In conclusion, the book is a teaching book of competitive weightlifting with limited practical information to a clinician of athletic training.

Mike Abdenour A.T.,C.

Anabolic Steroids and Sports
BY: James E. Wright, Ph.D.
List Price: $9.95
150 pages - Illustrated
Sports Science Consultants
11 Heritage Lane
Natick, Ma. 01760
1978

"'Normal' may be 'the best there is' in terms of health, but the question of whether it is best for maximal performance remains open." The role of anabolic steroids in both amateur and professional sports is becoming an increasingly controversial and important issue. The use of steroids on national and international levels has reached epidemic dimensions and "had never been worse" ac-
According to a sports medicine task force of the United States Olympic Committee. Of critical importance is the fact that this phenomenon of drug use filters down to the younger athletes and greatly influences their decisions to use drugs for greater and more rapid improvements in performance.

This recently published book addresses many of the issues regarding the relative hazards and benefits derived from the use of anabolic steroids. The author is an athlete and an exercise physiologist who is involved in muscle strength research for the United States Army.

The book is organized into six chapters. The introduction discusses sports related drug use in general. The second chapter provides some general background information on the role of hormones in cell growth. The next chapter chronicles the development of anabolic steroids, describes their physiological properties, and categorizes their therapeutic applications. Also included in this chapter is a list of structures, trade and generic names, and anabolic-androgenic ratios for 15 of the most widely known and used steroids. The two chapters comprising the major portions of the book are entitled "Steroid Effects on Muscle Size, Body Weight and Composition, Strength, and Performance" and "Medical Considerations." The first of these begins by discussing the dilemma facing scientists who are attempting to determine the relative safety and effectiveness of supposedly ergogenic substances, and it explains how and why the results of scientific research have led to conflicting conclusions in this area. Some of the confounding factors mentioned are the placebo effect, the requirement for a double (or at least single) blind experimental design, the financial, administrative, and ethical considerations, and most importantly the training background of the subjects and the type and intensity of the training during the period of drug administration.

A summary of about 25 human studies conducted since 1942 makes evident that steroids are not necessary for gaining size and/or strength and that they do not help everyone. The manner in which the data are presented suggests that the efficacy of steroids in facilitating increases in muscle size and strength is primarily dependent upon training intensity and experience - assuming the diet provides adequate protein and calories. The author concludes that while the results of the three to 12 week laboratory studies (using therapeutic dosages) indicate that gains can usually be expected from the use of steroids combined with an appropriate diet and program of intensive resistance training, these results are not necessarily reflective of the true potential of the drugs (taken in high dosages for considerable periods of time).

While all available data on athletes in training has been considered, the majority of the information on the adverse effects of steroids has come from studies on clinical patients or normal individuals, not athletes, and thus may not be completely applicable. Hazards are enumerated and described with respect to the principle organs and systems affected with the liver, kidney, cardiovascular and reproductive systems receiving the most attention. An apparently critical point concerns the relatively greater danger to virtually all systems from the use of oral as opposed to the injectable steroids. Although the occurrence of any given side effect will vary among individuals, the chances of producing these effects increase with dosages and duration of their administration. A summary of the results of what has been considered as the most relevant research leads to the conclusion that the major physiological threat comes not from using the drugs with appropriate guidance (i.e. using moderate dosages under the supervision of a physician) but from taking larger and larger quantities (five to 50 times the recommended dose) over longer and longer periods - the apparently common practice among serious athletes. The most threatening aspects - the long term effects - unfortunately are unknown. Of grave importance is that in reference to patients who have received the drugs on a long term basis, more and more reports are appearing implicating serious and potentially fatal association.

Although the preface states that the book is directed primarily to athletes, coaches, and trainers, because of its extensive documentation and objectivity, it will serve as an authoritative work in this field for physicians, physiologists, and physical educators as well. Anabolic Steroids and Sports provides an excellent and greatly needed comprehensive review of the literature relating to anabolic steroids in athletics. The book, which unfortunately is currently available only on a mail order basis, would represent a welcome addition to any sports or medical library.

Roberta H. Mawdsley

Skiing Safety II

BY: Jose M. Figueras

List Price: $24.50

311 pages - Illustrated

University Park Press

233 East Redwood Street

Baltimore, Maryland 21202

1978

Skiing Safety II is a compilation of the presentations delivered to the Second International Conference on Ski Trauma and Skiing Safety in Granada, Spain in 1978. The volume is divided into five sections: 1) etiology/epidemiology of skiing injuries, 2) treatment of injuries, 3) safety measures, 4) biomechanical factors, and 5) physiological factors. The focus is not upon the elite alpine skier, but upon the prevention and/or analysis of injuries among the general alpine skiing public. Among the specific topics covered are: prevention of ultraviolet light injury, orthopedic trauma associated with skiing, research on ski bindings and ski garments, knee mechanics, gycogen depletion and incidence of injury among week-end skiers, etc.

A constant theme of the material presented is that skiing is no longer the leisure activity of a select few. It is a vastly popular sport. And, more skiers, who are skiing at faster speeds, are producing more injuries. Also, because of higher speeds and crowded slopes, the injuries seen are of a more serious nature than those of 10-15 years ago. This fact lends much credence to the necessity of the research contained within the book.

Included within the book are a number of studies on optimum binding release characteristics, injury thresholds, and injury mechanics. Much of the technical knowledge may escape the non-skiing reader or those unfamiliar with biomechanical analysis of movement. This book is of distinct value for those who deal with skiing injuries - coaches, trainers, therapists, physicians, etc. Its value is not in outlining the care and the treatment of ski trauma, but in acquainting those who deal with skiing injuries with the etiology, control, and prevention of its injuries. This knowledge can be of particular use in educating the injured skier to avoid re-injury. For this purpose it is a useful addition to one's library.

Kathleen Heck, A.T.C.

CORRECTION

The review of the book, The Biomechanics of Sport Techniques and 2nd Edition that appeared in the Fall 1979 issue was prepared by Dave Grossman rather than Don Kaverman.
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Treatment and Rehabilitation of a Complete Acromioclavicular Separation

by BRUCE JOHNSON

Anatomy and Mechanisms of Injury

The shoulder is a complex mechanism of bones, muscles, nerves, and ligaments that act together to form a very practical unit. The relatively exposed position of the shoulder makes it a vulnerable area to injury.

The shoulder can be injured in a variety of ways, especially from abnormal pressures put on the joint from contact with immovable objects.

One of the primary joints in the shoulder complex is the acromioclavicular joint. Because of the exposed position, the acromioclavicular joint is frequently injured.

The acromioclavicular joint consists of the acromion of the scapula and the clavicle. The outer end of the clavicle joins the anterior edge of the acromion. The joint is firmly attached by ligaments. The surface of the joint are covered by articular cartilage and the joint contains a fibrocartilaginous disc about one third of the time as reported by DiStefano (1). Individual differences are quite common with reference to the cartilaginous disc.

Included generally with acromioclavicular joint discussions is the coracoclavicular ligament. The coracoclavicular ligament actually consists of two separate ligaments, the trapezoid and conoid ligaments (Figure 1). The trapezoid and conoid ligaments prevent upward displacement of the clavicle.

The acromioclavicular joint is bound by ligaments that run almost horizontally. By this arrangement the joint is very strong in preventing distraction of the two bones but fairly weak in preventing upward displacement of the clavicle (2).

Motion occurs at the acromioclavicular joint throughout all movements of the shoulder. The acromioclavicular joint does not move appreciably during early abduction but does so at about ninety degrees. In clinical evaluation, pain from the acromioclavicular joint is not generally seen until the patient has abducted the shoulder past ninety degrees.

The clavicle is also capable of thirty degrees axial rotation during abduction. By this arrangement, the joint is able to conform with concomitant changes in the relationship between the scapula and humerus (1).

There are three mechanisms of injuries in acromioclavicular separations that occur quite frequently. They consist of falling on the outstretched arm, falling directly on the shoulder or receiving a blow on the shoulder from behind.

The most common force that causes an injury to the acromioclavicular joint is a downward blow against the outer edge of the shoulder driving the acromion downward while the clavicle remains upward (2) (Figure 2).
First degree separations involve some minor tearing or stretching of ligaments. There is little or no deformity of the clavicle. Second degree separations involve partial tearing of ligaments and slight deformity of the clavicle. Third degree separations involve complete disruptions of the structures of the acromioclavicular and coracoclavicular ligaments. There is marked deformity with the clavicle being very prominent.

Third degree acromioclavicular separations show considerably more deformity than either first degree or second degree separations. The outer edge of the clavicle rides high but motion at the shoulder may or may not be hampered. Occasionally, muscle spasm may cover up complete displacement of the clavicle. Pain is often not as vigorously complained about with third degree separations as in first or second degree separations (3).

Klafs and Arnheim (4) have reported that in third degree separations, there is gross deformity of the outer end of the clavicle, severe pain, loss of movement and instability of the shoulder girdle. O'Donoghue (2) reported that in third degree separations there is more swelling and tenderness. Pain is elicited on any motion of the shoulder.

Treatment
The treatment of third degree separations is quite controversial. The surgeon has a variety of techniques to reduce the separation. The surgeon must satisfy himself and the patient that the treatment selected is appropriate. The prime goal of treatment in third degree separations is

![Figure 2](image_url)

Figure 2
Most Common Mechanism of Acromioclavicular Separation.

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219
to reduce and maintain reduction until healing occurs (3).

There are two treatments for acromioclavicular separations, open and closed. Open reduction refers to an operative technique to reduce the separation. Closed reduction does not include surgery but does include special slings or casts to retain the integrity of the joint.

Closed Treatment

The closed method of treatment involves the use of a special sling or cast intending to transfer the weight of the extremity to the distal clavicle. In recent years the Varney brace was developed for the closed treatment of acromioclavicular separations. The sling supports the forearm and thereby elevated the acromion while a piece of felt holds the clavicle down. These forces are maintained until healing occurs, in approximately six weeks. The halter keeps the sling pulled inward over the clavicle. The subject of this study was fitted with this type of brace as routine treatment for his acromioclavicular separation (Figure 3).

Open Treatment

Strong opinions are held by many surgeons as to the necessity of open treatment. A number of advantages have been cited by experts for open treatment. Those who favor open reduction include, O'Donoghue (2), Bateman (6), Badgley (7), and Sage and Salvatore (8).

Probably the major advantage of open treatment is that the surgeon can directly see the joint and its damage. Error is also minimized as a more anatomically correct result can be obtained surgically.

Basically, there are two types of open treatment. One involves the fixation of the distal clavicle to the acromion process, and the other involves fixation of the clavicle to the coracoid process (3).

Obviously there are some disadvantages to surgery. Urist (9) cited a number of reasons why open treatment of acromioclavicular separations was not advisable:

1. two operations are necessary, one to reduce and transfix and another to remove the holding device,
2. external immobilization is not avoided by open surgery,
3. wires, pins and screws may migrate if not removed early,
4. functional results in untreated patients are frequently equal to or better than open fixation.

Thorndike (10) reported that in twenty seven years of study of 223 acromioclavicular sprains, not a single case could be recommended for surgery.

Case Study

The subject of this study was twenty two years of age at the time of the accident. His description of the accident: the subject was riding his motorcycle when he hit some loose gravel on July 12, 1977. He was thrown from the motorcycle and landed on his right shoulder. The pain was not overwhelming as evidenced by the fact that he got up from the ground, picked up his helmet and threw it. At this time he realized something was wrong with his right shoulder. He stated that the pain was minimal except on a throwing motion.

After initial treatment, the subject was subsequently referred to an orthopedist on July 13, 1977. The diagnosis was acromioclavicular separation with rupture of the coracoclavicular ligament. The physician elected to treat the injury with the closed method. A Varney brace was the treatment of choice as the physician stated that this was his routine procedure for injuries of this nature (11).

The principles of the brace were described previously.

One week after the accident, on July 19, 1977, x-ray photographs revealed the acromioclavicular separation with subsequent rupture of the coracoclavicular ligament as well (Figure 4).
When the subject was examined again by his orthopedist on September 26, 1977, the only alternative was surgery. The closed reduction technique had failed. Surgery was scheduled for October 18, 1977, with a secondary repair of the acromioclavicular and coracoclavicular ligaments. Between September 26, 1977 and October 18, 1977, the subject was capable of full range of motion with pain only past ninety degrees abduction and when imitating a throwing motion. This was quite an accomplishment owing to the severity of the injury.

Under general anesthesia, the orthopedist elected to insert a Bosworth lag screw along with ligamentous repair. An incision was made exposing the distal clavicle and the area of the acromioclavicular joint and the area immediately above the coracoid process. A drill hole large enough to accomadate the Bosworth screw was placed in the clavicle immediately above the coracoid process. With the clavicle in the reduced position, the second drill hole was placed in the dorsal surface of the coracoid process. The screw was then tightened down.

When the clavicle was drilled, there was danger of its breaking. Care had to be taken that adequate fixation of the Bosworth screw was obtained in the coracoid process. This was easily checked by x-ray examination (Figure 7).

Postoperatively, the Varney brace was employed again to facilitate immobilization while the ligaments healed. Motion was to remain restricted while the Bosworth screw was in place. Restriction of motion was essential as rotation of the clavicle takes place on shoulder movement, and thus, pressure is applied to the Bosworth screw attachment with motion.

Removal of the screw was carried out under general anesthesia on December 28, 1977, ten weeks and one day post operatively. Normal range of motion and function was encouraged at this point.

On January 3, 1978, range of motion was found to be almost maximal in all positions except for a lack of ten degrees in forward flexion of the shoulder. The deficiency was corrected in approximately two days.

Rehabilitation

Probably the most important facet of any surgery is the rehabilitation. Various methods of exercise have been published for shoulder rehabilitation. They generally consist of a variety of progressive resistant exercises.

O'Donoghue (2) has listed six exercises that he thinks are vital in the rehabilitation of the shoulder:

1. pendulum swing. The patient leans over at the waist and swings a weight in the hand to loosen up muscles around the shoulder joint,
2. finger ladder. The patient stands next to a wall and walks his fingers as high as possible,
3. internal-external rotation of arms with elbows bent to ninety degrees,
4. raising and lowering the arms overhead with weights in the hands,
5. pushing and pulling against pulleys with the arms and shoulders,
6. pullups.

Klafs and Arnheim (4) suggested shoulder exercises with a few variations:

1. pendulum. Patient leans over and rotates the arm and shoulder in a circle.
2. shoulder stretch. Patient hangs on a chinning bar,
3. swimming,
4. shoulder wheel,
5. shoulder flexion with weights,
6. sidelying abduction,
7. horizontal extension,
8. shoulder shrug,
9. shoulder extensions,
10. rhomboid lift. While lying prone on treatment table with arms abducted to ninety degrees, lift
While the programs previously mentioned probably enjoy an appreciable success rate, the rehabilitation choice in this case was somewhat different.

G.L. Jarvis, at the Orthopedic clinic, P.C. of Grand Forks, North Dakota, has developed an extremely effective shoulder program (12). The Jarvis program is very thorough and can be administered effectively by the subject after initial instruction on the principles. The program is simply based on muscle testing positions as shown in Daniels and Worthingham’s muscle testing book (13). The strong points in this program lie in the fact that small supportive muscles of the shoulder joint are strengthened as well as the larger groups.

By using the appropriate positions with weight in the hands, strengthening can be instituted through the range of motion. In most positions weights were used with both arms to balance the body. When the injured side could be handled as easily as the uninjured side, the program was terminated and a retainer program instituted. Usually at least four weeks of intensive work is needed to return the subjects to full strength.

The shoulder joint, prior to exercise, was loosened through the use of pendulum exercises. These exercises consisted of bending over at the waist with unaffected arm resting on a stool or bench and the affected arm hanging freely. A five pound weight was held in the hand of the affected shoulder in this position. The arm was slowly rotated in a circular motion, starting with small circles and advancing to larger ones. This motion loosened the shoulder joint muscles and allowed for a better exercise bout. East day’s exercise was started with this exercise procedure of five minutes duration.

The following program was administered once daily at the same time each day to make it routine. The program was started with ten repetitions and no weight on January 3, 1978. Rehabilitation was carried out in the training room at Warren High School in Warren, Minnesota.

Pendulum Exercises — five minutes

Supine Exercises: The two exercises could be performed while standing.

1. With the palm down, take straight arm over head. Do not bend elbow. (Forward flexion). Exercises the anterior deltoid, coaracobrachialis, and the clavicular fibers of the pectorals.
2. With palm facing body, take straight arm out to side to ninety degrees at shoulder. Do not bend elbow. (Abduction). The deltoid and supraspinatus muscles are exercised in the standing position.
3. With the arm out to side to ninety degrees and elbow bent to ninety degrees, roll arm half circle forward and half circle backward. (Internal and external rotation). Exercises the subscapularis, teres major, pectoralis major, and lattimus dorsi (internal rotation); infraspinatus and teres minor (external rotation).
4. With arm over chest at ninety degrees at shoulder, punch towards ceiling from the shoulder. Do not bend elbow. (Scapula abduction and upward rotation). Exercises serratus anterior.
5. With arm over chest at ninety degrees at shoulder, take straight arm over chest. Do not bend elbow. (Horizontal flexion). Exercises the pectoralis major.

Prone Exercises:

6. With arm by side and palm turned up, take arm straight up. (Shoulder extension). Exercises teres major, lattimus dorsi, posterior deltoid and the triceps.
7. With arm out to side at ninety degrees at shoulder and palm facing feet, take arm straight up. Do not bend elbow. (Horizontal extension). Exercises the middle trapezius, rhomboids, and posterior deltoid.
8. Same as #7 but with palm facing head.
9. With arms over head, touching ear if possible, take arm straight up. Do not bend elbow. (Overhead shoulder extension). Exercises inferior fibers of the trapezius.
10. With arms by side, retract scapulas. (Scapula abduction). Exercises rhomboids and trapezius.

This exercise can also be accomplished by placing the arms on the lower back and lifting the arms.

The number of repetitions varied as strength increased. At the onset of the program, only ten repetitions were done until the subject felt comfortable with it. Pain was used as a guide to increase or decrease weights and/or repetitions.

Positioning of the subject was extremely important at the start of the program. This allowed the isolation of muscles that were actively engaged in shoulder strength and stability. After the first few days the subject was able to perform the exercises with proper positioning so every day supervision was not necessary.

The shoulder program was not easy for the subject. He was usually quite fatigued at the end of each session which lasted approximately twenty minutes.

Lossenedness of the muscles surrounding the shoulder joint was to be expected since the activity was completely new to the subject. Muscle stiffness was encountered for the first few days of the program. Again, this was to be expected as any person would attest to when strenuous activity was accomplished after a long period of inactivity. Progress was made rapidly when the subject developed confidence in his ability to exercise the shoulder without pain.

The motivation of the patient was excellent. Very seldom, if ever, were extra motivational forces needed to stimulate the subject. Encouragement and reinforcement did play an important role in his progress. Actual producing the subject, however, was not necessary.

Two and one-half pound increments were used as the subject increased in strength. Ankle weights weighing two and one-half pounds worked very well as they could easily be strapped to the wrists. As strength improved, the increase in weight was accomodated by holding disc weights in the hands along with the ankle weights strapped to the wrists.

As stated previously, the program was started without weight on January 3, 1978. When the exercises were performed with ease on that day, weight was added to the arms on January 4, 1978. On January 10, 1978, the weight was increased to five pounds and the repetitions increased to fifteen.

The decision to change weight and repetitions was made in conjunction with how well the subject was able to perform and retain proper form while exercising. The weight and repetitions increase was the same for both prone and supine positions until January 20, 1978, when seven and one-half pounds was reached. After this date the repetitions were more easily performed in the prone position.

By January 30, 1978, the prone exercises increased from ten repetitions to fifteen repetitions while the seven and one-half pound weight remained constant.
On February 8, 1978, the supine exercise was increased to ten pounds while the repetitions were decreased to fifteen. The prone exercises remained constant in weight and repetitions.

**TABLE 1**

<table>
<thead>
<tr>
<th>Chronology of Rehabilitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3-78 Supine No Wt. 10 repetitions</td>
</tr>
<tr>
<td>1-3-78 Prone No Wt. 10 repetitions</td>
</tr>
<tr>
<td>1-10-78 Supine 5 lbs. 15 repetitions</td>
</tr>
<tr>
<td>1-10-78 Prone 5 lbs. 15 repetitions</td>
</tr>
<tr>
<td>1-30-78 Supine 7½ lbs 20 repetitions</td>
</tr>
<tr>
<td>1-30-78 Prone 7½ lbs. 15 repetitions</td>
</tr>
<tr>
<td>2-11-78 Full Strength</td>
</tr>
</tbody>
</table>

The following photographs were taken on February 8, 1978, four and one-half weeks after rehabilitation was instituted (Figures 8 and 9). One can readily see the dramatic contrast in these photographs as compared to those previously shown in Figures 5 and 6.

**Figure 8**  

**Figure 9**  

The subject was able to cross country ski and play basketball with no problems on February 11, 1978. The program was discontinued on this date and a general weight program was substituted as full strength was accomplished. A workout was encouraged three times weekly with bench presses, shoulder shrugging, upright rowing, high lats, abduction exercises, and internal-external rotations.

Throughout the rehabilitation period, active motion was encouraged. The only complaints registered by the subject were general stiffness after the first few days of the program and some minor stiffness when the weather changed. Some joint crepitation was felt but the subject stated that it did not hamper motion.

**Summary**

The Jarvis program is quite simple and thorough. No special equipment is needed so application of the program is simple. The most important factor of the entire program lies in the fact that proper positioning of the patient is maintained.

The subject of this study, after nearly eighteen months of followup since his surgery, has had no problems. He is entirely free to participate in any activity that he chooses without pain, stiffness or soreness of the shoulder.

**References**

A Tip from the Field:

A SPACE SAVING TAPING TABLE

By
CHARLIE CADY, A.T.C.,
Colgate University

Recently, Colgate University renovated its varsity athletic facility, Reid Center. This renovation more completely utilized the existing space available creating more locker room areas for both men and women. In the process, the Training Room was moved to a more central location but, unfortunately, decreased in size. This reduction in space created the need for a more efficiently designed taping table; one that could serve more than one athlete at a time.

Thus, a round taping table was devised. This table provides four taping stations and storage areas in approximately the same space used by two (2) conventional taping tables and storage trays. It consists of a square plywood base and a round plywood formica covered top. Built into the base are shelving areas for storing supplies; there are also four trays that slide out from under the top to hold supplies easily accessible while taping.

If planning to have one of these tables built, one should be sure to receive estimates from a number of sources. Prices will vary a good deal. Money could be saved by having one's school's shop class or carpentry department construct the table. Another money-saving measure would be to substitute chipboard in place of plywood. When working with a carpenter on this project, be sure to specify the exact dimensions of the table. One should be sure the carpenter understands that the 72" diameter does not include the trays when pulled out in use. Finally, the size of the entrance to the Training Room should be checked. It may be necessary to have the table constructed in two pieces, the base and top, and assembled after delivery to the Training Room.
The Importance of Pre-Testing the Knee Joint

by

GERALD W. SLAGLE, AT.C.

Of all the joints in the body, the knee joint is probably subject to more stress than any other joint. Injury to the knee is also probably most feared among athletes than any other type of injury.

The "classic" knee injury occurs with the knee slightly flexed, foot planted, upper leg rotated inward and a force is delivered to the lateral side of the knee. Such action may cause stretching, tearing or possible rupturing of a ligament and also a possible tearing of the meniscus.

The severity of the injury depends upon (1) strength level of the athlete and (2) the amount of force or stress put upon the knee joint. The athlete has little or no control over the amount of force being applied to the knee joint (force of the opponent hitting his knee); however, the athlete does have the responsibility of maintaining muscular strength and endurance.

Much literature has already been written concerning the types of knee injuries and the rehabilitation of the knee; however, the author has found little information concerning the importance of pre-testing (before participation) the muscular strength levels of the knee joint.

Reasons for pre-testing the muscular strength levels of the knee joint are two-fold: (1) Comparison for weakness and (2) Use for guidelines.

Comparison for Weakness

Although clinical examination of the knee may show negative results, the muscular strength levels of the quadriceps and hamstring muscle groups should be tested and a comparison of both knees should be made.

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At Penn State University, each football player is thoroughly examined (before drills begin) by the team physicians. Each player is also tested for muscular strength of the quadricep and hamstring muscle groups. Using the Orthotron exercise machine (isokinetic) at a setting of three (3), the athlete is instructed to perform reciprocal contractions of the quadricep and hamstring muscle groups by extending and flexing the knee joint. The athlete is instructed to do three sets of eight repetitions (exerting maximum pain-free effort) with a minute rest between sets. The peak performance of the quadricep and hamstring muscle group readings are recorded for both knees. A comparison of quadriceps vs. quadriceps and hamstrings vs. hamstrings is then made. If there is a definite weakness in one knee or a muscle group comparison, the athlete is then placed on a rehabilitation program.

EXAMPLE: The results of the pre-test are as follows:
1. Right Quadricep muscle group = 255 Torque ft. lbs.
2. Left Quadricep muscle group = 215 Torque ft. lbs.
3. Right Hamstring muscle group = 170 Torque ft. lbs.
4. Left Hamstring muscle group = 168 Torque ft. lbs.

A comparison of both knees indicates a weakness in the left quadricep muscle group.

The athlete is then placed on a rehabilitation program to strengthen his left knee. Using the Orthotron exercise machine (isokinetic) at a setting of three, the athlete is instructed to:
1. Exercise the knee at least three days a week (every other day).
2. Perform reciprocal contractions of the quadricep and hamstring muscle groups exerting maximum pain-free effort.
3. Execute three sets of ten repetitions (extension and flexion) with a minute rest between sets.
4. Record peak performances of the quadricep and hamstring muscle groups. Daily records must be kept in order to evaluate the progress of the athlete. A simple form (Fig. 1) can be used.

Once the athlete consistently reaches the readings equal to or better than the “good” knee, the athlete is instructed to go through a normal leg workout designed by the strength coach; however, once a week, for several weeks, the athlete is re-tested (before lifting) to make sure his strength levels are comparatively equal.

If no clinical problems are found during the physical examination and both knees are relatively equal in the strength levels (the four readings), the athlete is instructed to go through a normal strength workout designed and supervised by the strength coach.

Guidelines
Once an injury occurs to the knee, weakness or atrophy will develop. It is essential that the athlete begin a corrective rehabilitation program immediately. Only through hard work and time, can the athlete correctly rehabilitate himself.

The question most athletes ask is “How much weight must I lift before I can practice?” Although the amount of weight the athlete uses is not the only criteria, it is one standard to measure his progress. It must be noted and emphasized at this time that other factors are involved in determining the return to action by the athlete; however, by knowing the strength levels of the knee before injury, it does give the athletic trainer and team physician another guideline to use in determining the athlete’s readiness for participation.

As mentioned before, this information can be of value to the team physician in determining the progress of the athlete. The athletic trainer should have some type of pre-testing data and up-to-date records on each individual.

Summary
Pre-testing (before participation) the strength levels of the knee joint can be beneficial in many ways. Data from such testing may indicate weakness in one knee as compared to the other knee. If weakness occurs, a corrective rehabilitation program should be implemented to help prevent injuries. It can also be used as one of many guidelines in determining the progress and readiness of the athlete for participation.

**FIGURE 1**
Record of Progress

<table>
<thead>
<tr>
<th>Name Pre-</th>
<th>Mon.</th>
<th>Wed.</th>
<th>Fri.</th>
</tr>
</thead>
<tbody>
<tr>
<td>R. H. Q.</td>
<td>H.</td>
<td>Q.</td>
<td>H.</td>
</tr>
<tr>
<td>L. Q. H.</td>
<td>Q.</td>
<td>Q.</td>
<td>Q.</td>
</tr>
</tbody>
</table>

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THE EFFECT OF ANKLE TAPING
UPON TORQUE AND RANGE OF MOTION

By
THOMAS E. ABDENOUR, A.T.C.
WILLIAM A. SAVILLE, Ph.D.
ROBERT C. WHITE, A.T.C.
MICHAEL A. ABDENOUR, A.T.C.

Introduction
Preventative ankle taping is found in virtually every athletic training room, however, opponents of this technique and practice have maintained that the joint's flexibility and/or overall strength are affected by the taping (9). The purpose of this study is to compare the taped and not-taped ankles with respect to the ranges of motion and torques involved for each of the four movements of the ankle. Each subject was tested for torque and range of motion via a series of separate strength and power contractions on an accommodating resistance device with the ankles taped and not taped. The results obtained from the two conditions were statistically compared.

Procedures
Seven male volunteers, ages 19 to 27, served as subjects. All of the subjects were free of a significant history of ankle injury, and each had declared that they were asymptomatic of ankle trauma for the six weeks prior to the study. Each subject had both ankles taped. The tape used was a conventional porous grade of a nationally advertised brand, one and one half inch in width. This was applied after the ankle had been prepped with a light spray of an adherent and a thin layer of underwrap. The ankles were taped by two Certified Athletic Trainers who used slight variations of the method of ankle taping as described by Klafs and Arnheim (7). Each was required to put one heel lock on both the medial and lateral aspects.

Data was collected using the Cybex II.* This machine has a dual channel recording device which gives a paper strip readout of the degrees of range of motion for each particular ankle movement within the sagittal or transverse plane, and the amount of force exerted by the contracting muscles throughout each range of motion as measured in foot pounds. The actions and muscles involved in this study are as follows:

- **Plantarflexion:** gastrocnemius, soleus, plantaris, tibialis posterior, flexor digitorum longus, flexor hallucis longus, peroneus longus, and, peroneus brevis.
- **Inversion:** tibialis anterior, tibialis posterior, extensor hallucis longus, flexor digitorum longus, and, flexor hallucis longus.
- **Eversion:** peroneus longus, peroneus brevis, peroneus tertius, and, extensor digitorum longus. (10)

The initial testing was for plantar flexion and dorsiflexion of the not-taped ankles. Then, the subjects were taped as previously noted. The subjects then walked a prescribed distance for approximately 30 seconds to facilitate acclimation to the tape. The subjects then repeated the contractions for plantar flexion and dorsiflexion in the taped ankle condition. Inversion and eversion were then tested with the same tape on the ankles. Upon completion of this task, the tape was removed and not-taped inversion and eversion movements were performed. In all testing, each subject had both ankles taped and tested.

Results
The data was analyzed with respect to the maximum amount of foot-pounds generated and the degrees of range of motion achieved by each of the four movements of the ankle in the taped and not-taped conditions. For the test of significance between the taped and not-taped conditions, the Mann-Whitney U test for small samples was selected. This non-parametric test allowed a direct comparison and contrast of the two conditions in order to calculate a Z value at a 0.05 level of significance. Tables I and II summarize this data for the conditions during Contraction A and Contraction B respectively.

An examination of the data shows that there was no significant difference between the two conditions in fifteen of the sixteen areas considered. The only significant difference noted was in the range of motion of inversion in the taped ankle condition. Inversion and eversion movements were performed. In all testing, each subject had both ankles taped and tested.

Acknowledgment
The authors would like to thank Mr. Ron Modjeski of Lumex Inc. Cybex Division for his technical assistance and advice.

Athletic training • Winter 1979

*Cybex II: Cybex Division of Lumex, Inc. Bay Shore, New York.
TABLE I
A summary of the Z scores of the movements in Contraction A

<table>
<thead>
<tr>
<th>Movement</th>
<th>Criteria</th>
<th>Z Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plantarflexion</td>
<td>Torque</td>
<td>+1.0340</td>
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<tr>
<td></td>
<td>Range of Motion</td>
<td>+0.1379</td>
</tr>
<tr>
<td>Dorsiflexion</td>
<td>Torque</td>
<td>-0.0460</td>
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<td></td>
<td>Range of Motion</td>
<td>+0.1379</td>
</tr>
<tr>
<td>Inversion</td>
<td>Torque</td>
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<td></td>
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<tr>
<td>Eversion</td>
<td>Torque</td>
<td>-1.7233</td>
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<tr>
<td></td>
<td>Range of Motion</td>
<td>-1.3097</td>
</tr>
</tbody>
</table>

(*significant at 0.05 level)

TABLE II
A summary of the Z scores of the movements in Contraction B

<table>
<thead>
<tr>
<th>Movement</th>
<th>Criteria</th>
<th>Z Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plantarflexion</td>
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<td>+1.1259</td>
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<tr>
<td></td>
<td>Range of Motion</td>
<td>-0.8502</td>
</tr>
<tr>
<td>Dorsiflexion</td>
<td>Torque</td>
<td>-0.7583</td>
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<tr>
<td></td>
<td>Range of Motion</td>
<td>+0.2528</td>
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<tr>
<td>Inversion</td>
<td>Torque</td>
<td>-0.5515</td>
</tr>
<tr>
<td></td>
<td>Range of Motion</td>
<td>-2.6654*</td>
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<tr>
<td>Eversion</td>
<td>Torque</td>
<td>-1.4476</td>
</tr>
<tr>
<td></td>
<td>Range of Motion</td>
<td>-1.9531</td>
</tr>
</tbody>
</table>

(*significant at 0.05 level)

Discussion
The purpose of the ankle strapping is to support the joint during activity and prevent hypermobility of the ankle without severely inhibiting the normal biomechanics of motion. (8) The only condition of significant difference was the range of motion as attained by the muscles of inversion during Contraction B. This result concurs with Mayhew’s observation that restriction of this range of motion may prevent the extreme deviation that could result in an injury. Perhaps this restriction then should be considered acceptable in view of the high percentage of ankle sprains that involve an overload of this inversion motion. (2) Libera (8) has also noted that taping caused a restriction of the anterior-posterior movements. The results of this investigation indicate no significant difference between the taped and not-taped conditions for plantar flexion and dorsiflexion.

Prior studies have suggested that for certain activities the non-taped ankle was preferred. Juvenal (6) suggests that there is significant impairment in vertical jumping ability with the tape, and Mayhew (9) observed that some running and jumping activities are restricted by the tape. The results of this study indicate that the same muscles which are used in these types of activities were capable of producing movements which were not significantly different between the taped and not-taped conditions.

Oponents of the theory and practice of the preventative ankle taping cite psychological as well as anatomical reasons for their opinions. (4) Although this study does not deal with feelings of “false security” or preferential treatment in team taping schedules, it does consider some of the biomechanical arguments. Ferguson (4) considers ankle taping ineffective and a hazard to the athlete because it limits the “natural safety action of muscles and tendons.” The results of this investigation indicate that ankle taping does not significantly impair the total or functional strength of the joint.

Summary
A group of professed asymptomatic subjects were taped with a standard preventative ankle taping method in order to compare the taped ankle to the same ankle without tape for muscular torque and the joint’s ranges of motion for the four movements of the ankle. These motions were generated by separate contractions representing the dynamic strength and effective power of the joint as recorded on an accommodating resistance device. Maximum values for the torque and ranges of motion for the taped and not-taped conditions were evaluated statistically. The results showed that only the inversion range of motion of a power contraction was statistically different. Therefore, it is concluded that, with this exception, preventative taping of ankles does not impair the development of maximum force and does not limit range of motion. The significantly different condition may provide a restriction which may be considered beneficial with respect to the prevention of inversion ankle sprains.

REFERENCES
1. Cybex II Testing Protocol; Lumex, Inc. Cybex Division, 100 Spence Street, Bay Shore, New York 11706.
The percent body fat (% fat) of athletes can be an important component of optimal weight prediction and evaluation of the effects of a physical training program. Recently, researchers have developed theories on "ideal" body weight for athletes. Tcheng and Tipton (13) suggested that high school wrestlers reduce no lower that 5% body fat. Katch and Katch (7) reported that adult males have 5% "essential" fat and females 9% (essential plus sex specific). This latter value may be important to female distance runners since menstrual irregularities have been noted in very lean runners (6, 7).

The % fat of successful track athletes has been performed using a variety of methodologies, including hydrostatic weighing (HW) (10, 11), scintillation counting (40K) (8) and anthropometric measurements (AM) (3). However, little research using athletes has been performed to compare these various % fat methods. The purpose of this study was to compare % fat values as assessed by HW, 40K, and AM.

Methods

The study was divided into two parts. Exp. 1 compared the HW and AM techniques. In this experiment eight trackmen from various events volunteered to be assessed for % fat by HW (14) and AM (18) methods. The AM procedure includes a series of multiple regression formulas which predict % fat from height and weight plus various body skinfolds, circumferences, and diameter measures. The values were obtained by a skilled technician using standardized techniques (1).

 Immediately following the AM assessment, % fat of each subject was determined using HW. Each athlete was weighed in air on a Toldeo digital scale, accurate to 50 g, and weighed in water using a 15 kg Chatillon, accurate to 25 g. Underwater weight was measured in a large water tank with subject in the prone position (figure 1). Lung

Table 1. Comparison of % Fat Values by Hydrostatic Weighing and Anthropometric Procedures in Collegiate Track Athletes.

<table>
<thead>
<tr>
<th>Athlete Event</th>
<th>Hydrostatic Weighing</th>
<th>Anthropometric</th>
<th>A Diff.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. high jump</td>
<td>4.3</td>
<td>9.8</td>
<td>5.5</td>
</tr>
<tr>
<td>2. marathon</td>
<td>11.4</td>
<td>12.1</td>
<td>0.7</td>
</tr>
<tr>
<td>3. mile</td>
<td>7.5</td>
<td>9.4</td>
<td>1.9</td>
</tr>
<tr>
<td>4. mile</td>
<td>5.8</td>
<td>7.9</td>
<td>2.1</td>
</tr>
<tr>
<td>5. 4 mile, mile</td>
<td>11.4</td>
<td>7.4</td>
<td>4.0</td>
</tr>
<tr>
<td>6. 2 miles</td>
<td>12.4</td>
<td>6.8</td>
<td>5.6</td>
</tr>
<tr>
<td>7. 2 miles, steeple</td>
<td>6.1</td>
<td>7.3</td>
<td>1.2</td>
</tr>
<tr>
<td>8. mile, 2 miles</td>
<td>8.1</td>
<td>6.1</td>
<td>2.0</td>
</tr>
<tr>
<td>Mean</td>
<td>8.4</td>
<td>8.4</td>
<td>2.9</td>
</tr>
<tr>
<td>S.D.</td>
<td>3.0</td>
<td>3.0</td>
<td>1.9</td>
</tr>
</tbody>
</table>

*Absolute difference

Table 2. Comparison of % Fat Values by Hydrostatic Weighing and 40K Counting in Collegiate Distance Runners.

<table>
<thead>
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*Absolute difference

Tom R. Thomas is a former high school football, basketball, track and baseball coach. He received his B.S. degree from Missouri Valley College, Marshall, Missouri. He received his M.A. and Ph.D. from the University of Missouri. Presently he is Assistant Professor of Physical Education and Director of the Exercise Physiology Lab, University of Kansas, Lawrence, Kansas.

Gil L. Etheridge received his B.A. degree from Missouri Western State College, and a M.S. degree from Northeast Missouri State University. He is a Research Assistant presently working toward a Ph.D. (Exercise Physiology) and NATA certification at the University of Kansas, Lawrence, Kansas.

ATHLETIC TRAINING • Winter 1979
Results

Discussion

HW is perhaps the most accurate of the indirect methods for assessing % fat (1). Fat is buoyant underwater and thus fatter people have a greater tendency to float and are lighter when submerged in water. Air is also a buoyancy force underwater and should be measured while the subject is submerged. HW, like ⁴⁰K, is based on only limited cadaver studies, and equations derived from such few chemical analyses cannot be assumed to fit all populations.

The very low correlations between HW and AM and between HW and ⁴⁰K techniques found in this study should be interpreted cautiously because of the small number of subjects. The AM technique used was developed using an active college-aged population and its validity for athletes is unproven. However, few regression equations exist which utilized track athletes for the regression derivation. Wilmore and Behnke (18) found a correlation of 0.87 when comparing HW body density to AM body density in their nonathletic population.

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References


10. Pipes, T. Body composition characteristics of male and female track and field athletes. *Research Quarterly* 48:244-


Orthotron, an isokinetic exercise unit, is a strenuous, self-motivating physical rehabilitation modality. This machine, used with proper rehabilitation supervision and specific guidelines, can help reduce the time needed to restore strength, power and endurance to the surrounding muscle groups of the injured joint. In this article will be demonstrated clearly the values and specific guidelines that should be utilized in an Orthotron Knee Rehabilitation Program.

Isokinetic

Isokinetic contractions occur as muscle fibers shorten to counteract an “accommodating” resistance developed by a device that allows only a constant rate of movement regardless of the force exerted by contracting muscles. With this definition, the speed of the Orthotron can be reduced which would allow more time to be taken in extension or flexion of the knee joint. It is very important to provide maximal resistance to the affected muscle group but to protect the joint from possible reinjury. (This will be discussed in the testing section.)

Purpose of Orthotron Rehabilitation Program

There are three phases in an Orthotron rehabilitation program: strength, power and endurance. It is very important that each phase has specific guidelines, weekly workouts and accurate dial settings. Listed below are guidelines concerning these phases.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Strength</th>
<th>Dial set at 2½</th>
<th>3 sets - 10 reps</th>
<th>4 times a week</th>
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<td>Phase III - Endurance</td>
<td>Dial set at 7</td>
<td>3 sets-20 reps with reading over 50% maximal</td>
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Our main concern in a rehabilitation program for the knee is development of complete 135° range of motion (R.O.M.) and muscular development for the quadricep and hamstring muscle groups. With this in mind, flexion and extension are the primary motions that are of major concern. Although internal and external rotation are important, they are excluded in this particular rehabilitation program.

Workouts or testing on the Orthotron can begin when the athlete can tolerate light resistive loading with the physician’s approval, has minimal swelling and greater than 90° range of motion. During a workout or testing, each angle of the joint can be loaded maximally. Resistance always is equal to the force exerted at every point in the range of motion. The athlete never meets more resistance than can be handled. The athlete must work hard to achieve results but is protected against re-injury during rehabilitation.

Testing

To establish the type of program required to meet a particular athlete’s needs, it is necessary to make an initial test. First, measure circumference of both legs, two inches and seven inches above the patella. The measurements should be taken with the knee at 45° flexion. Compare differences between injured and the uninjured leg. Atrophy is an important factor in assessing the type of program needed.

Prior to any testing, the athlete should warm up with a hot whirlpool, riding the bike and range-of-motion exercises. After warm-up, both legs should be tested in all three phases.

Phase I:

Set the dials at 2½. After a few easy warm-up repetitions, the athlete makes three maximal repetitions. Since the machine tests both flexion and extension, the athlete must work hard through the entire R.O.M. The highest readings are recorded.

Phase II

Set the dials at 7. Again, after a few warm-up reps, the athlete makes three maximal repetitions and the highest readings are recorded.

Phase III

The dials remain at 7. The athlete now does maximal repetitions until the readings are less than 50% of the readings recorded in Phase II.
Record the number of repetitions the athlete can do above the 50% mark. Usually, the hamstrings will exhaust more quickly than the quadriceps. Again, record the results on the record sheet.

### Phase I Strength

<table>
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<th>Date</th>
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<td>6-5-79</td>
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<td>150</td>
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**Dial Setting:** 2½

### Phase II Power

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<th>Left (Ext)</th>
<th>Right (Ext)</th>
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<tbody>
<tr>
<td>150</td>
<td>100</td>
<td>66%</td>
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**Dial Setting:** 7

### Phase III Endurance

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<th>Left (Ext)</th>
<th>Right (Ext)</th>
<th>Left (Flex)</th>
<th>Right (Flex)</th>
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<tr>
<td>18</td>
<td>14</td>
<td>15</td>
<td>10</td>
<td>50%</td>
</tr>
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</table>

**No. of reps over 50% of maximal**

After testing, a better assessment of the athlete's condition and rehabilitation needs can be made. A work-out schedule now can be set.

### Work Program

Always begin the program with Phase I for strength to ensure less chance of injuries. Always, with Phase I, the dials are set at 2½. The final goal of this phase is three sets of 10 reps. Begin slowly with 4-6-6 and add two reps a day until 10-10-10 is reached. The following illustrates the procedure to follow in obtaining the goal of strength for Phase I (4-6-6, 6-6-8, 8-8-10, 10-10-10). Record the results on the back of the record sheet.

The athlete usually works four days a week and remains in the phase two to three weeks. The athlete is tested, as in the testing section, in all three phases once a week. When the injured leg's readings are 80% of the uninjured leg's strength in Phase I, move to Phase II.

In Phase II, the dials are set at 7. The athlete works three or four days a week and remains in the phase two to three weeks. The goal is three sets of 15 reps. Begin with 6-6-8 and work to 15-15-15. Four reps are added each day. The following illustrates the procedure to follow in obtaining the goal of power of Phase II (6-6-8, 8-8-10, 10-10-10).

In Phases I and II the athlete should not work more than two days in a row. Record the results on the back of the record sheet.

If, during the weekly testing, an 80% level is reached, move to Phase III.

Phase III is very similar to Phase II. For Phase III, dials again are set at 7. The goal is three sets of 20 reps that are recorded over the 50% factor. The athlete usually works three days a week, and six reps are added at each workout. Begin with a low number of reps (10-10-10) and work up to the final goal of Phase III. Record each workout's results on the back of the record sheet. This phase is complete when the readings for the injured and uninjured legs are equal.

### Motivation

The trainer must remember that rehab is slow and difficult. Learn to recognize signs of boredom and frustration. If gains are not as high as the trainer desires, do not yell at the athlete — change the rehab program. Add or replace an exercise or drop an exercise for a day or two. Keep the workout interesting. Variety is helpful for motivation. The athlete is working hard and would like to see proof of his work. It is part of the trainer's job to reassure the athlete and to keep him motivated. Without motivation, recovery is slower and often not as complete.

### Summary

The writers hope this article will help in setting up an Orthotron Rehab Program at other institutions. It has been found to be a very beneficial program at Ohio University, but the writers would like to remind you to observe the following precautions:

1. Remember to use the joint being tested for the center of axis on the Orthotron.

2. If swelling occurs, rest the joint and begin at the next lower phase. It is advisable that the athlete be seen by a physician, because swelling can indicate a more serious problem.

3. Do not be surprised if the test results fluctuate from week to week, or if work-out readings vary from day to day. Many factors, emotional as well as physical, affect the athlete's performance.

4. In Phases I and II, do not work more than two days in a row.

5. On full knee extension thrust, the athlete can throw the reading off the dial. This is not an accurate reading. Be sure to watch the dial closely and maybe even set the needle back after the first repetition.

6. The time limits and number of repetitions used throughout this report are good guidelines, but each athlete must be assessed individually. Not everyone will fit exactly into this pattern. Use common sense to modify it as needed.

### REFERENCES


Forty-Seventh Annual Survey of Football Fatalities 1931-1978

by CARL S. BLYTH, Ph.D.
and DAVID C. ARNOLD

INTRODUCTION
In 1931 the American Football Coaches Association initiated the First Annual Survey of Football Fatalities. The primary purpose of the Football Fatality Survey is to make the game of football a safer and, therefore, a more enjoyable sports activity. Because of these surveys, the game of football has realized many benefits in regard to rule changes and improvement of equipment.

The original survey committee was chaired from 1931 to 1941 by Marvin A. Stevens, M.D., of Yale University. Dr. Floyd R. Eastwood succeeded Dr. Stevens in 1942 and directed the Football Fatalities Survey through the season of 1964. In January 1965, Carl S. Blyth was appointed by the American Football Coaches Association and the National Collegiate Athletic Association to succeed Dr. Floyd R. Eastwood. Dr. Blyth was directed to compile and prepare the Football Fatality Survey report on the college, professional and sandlot levels. Mr. David C. Arnold of The National Federation of State High School Associations assumed complete responsibility for collecting and preparing the senior and junior high school phase of the Football Fatality Survey.

At the conclusion of the 1978 football season, both reports of the Football Fatality surveys were compiled into this final report. This report is sponsored by the American Football Coaches Association, the National Collegiate Athletic Association, and The National Federation of State High School Associations.

All materials in this report dealing with high school football fatalities were gathered and compiled by The National Federation of State High School Associations under the direction of Mr. David C. Arnold.

Acknowledgements
This 1978 report was compiled with the assistance of association executive officers, high school and college coaches, athletic directors, school administrators, physicians, a national newspaper clipping agency, and professional associates of the authors of this report.

Throughout the year, upon notification of a suspected football fatality, immediate contact was made with the appropriate officials. In every case the appropriate officials (coaches, school administrators, physicians) responded to the inquiries. The data collecting forms were returned and in many cases covering letters were included giving more valuable information. In several instances of reported cases of football fatalities, the respondent stated that the fatality should not be attributed to football. Reasons for these statements were that the fatally injured were not playing football when the accident occurred. And further, some of the reported fatalities were attributed to physical defects that were unrelated to football injuries. Dr. Fred Mueller also assisted in compilation of this year’s survey.

SUMMARY
1. Nine fatalities were directly related to football during the year 1978. All of the fatalities occurred in high school football (Table 1).
2. Nine football fatalities were associated with indirect causes (heat stroke, heart failure, etc.).
3. The incidence of direct fat injuries is very low on a per 100,000 player exposure basis. The average number of fatalities per 100,000 team members for 1978 was 60 participants per 100,000 players.
4. Most direct fat injuries occur during the regularly scheduled games. During the 1978 season eight fatalities occurred in games.
5. The 1978 survey shows that the greatest number (44.4 percent) of fatalities occurred during October.
6. The major activities in football would naturally account for the greatest number of direct fatalities. In 1978 tackling incurred 55.6 percent, being tackled resulted in 11.1 percent, and being blocked number 11.1 percent of the total fatal injuries. The remaining 22.2 percent were unknown.
7. In 1978 four of the direct fat injuries resulted from injuries to the head. Three fatalities resulted from injury to the spinal cord, and two resulted from internal injuries—lung and gut.
8. In many cases football cannot be directly responsible for fatal injuries. In 1978 indirect fatalities numbered nine. Four of these nine were the result of heat stress problems.

DISCUSSION AND RECOMMENDATIONS
This report shows that the number of direct fatalities dramatically decreased when compared with the reports of the past twenty-five years. In their effort to reduce serious injuries and fatalities, the football rules governing bodies, as well as the administrative organizations, made some rule changes for the 1976 football season. The primary rule change eliminates the head as a primary and initial contact area for blocking and tackling.

The equipment for football athletes continues to improve under the guidance of the National Operating Committee on Standards for Athletic Equipment (NOCSAE). The NOCSAE organizations continue their research on improving helmets for football. The authors of this study are firmly convinced that the rule changes that eliminate the head in blocking and tackling and the helmet research of NOCSAE have played the primary role in reducing fatalities and serious head injuries in football.

The criteria used in this report which classify football fatalities as Direct and Indirect are as follows:

Direct—Those deaths which resulted directly from participation in football.

Indirect—The indirect football fatalities are those which are caused by systematic failure as a result of exertion while participating in football activity or by a complication which was secondary to a non-fatal injury.

Since 1960 most of the direct fatalities have been caused by head and neck injuries. The 1978 Survey shows four of the direct fatalities resulted from injuries to the head. These fatalities were as a result of neck injuries. We must continue to reduce head and neck injuries. It has been suggested that the increased protection afforded by recent advances in protective equipment encourages young athletes to take undue risks.
when executing football skills. Several suggestions for reducing head and neck injuries are as follows:

1. Athletes must be given proper conditioning exercises which will strengthen their necks so that participants will be able to hold their heads firmly erect when making contact.

2. Coaches should drill the athletes in proper execution in the fundamentals of football skills, particularly blocking and tackling.

3. Both coaches and officials should discourage the players from using their heads as battering rams when blocking and tackling. The coaches and officials should enforce the rules prohibiting spearing in practice and in games. The players should be taught to respect the helmet as a protective device and that the helmet should not be used as a weapon. All coaches, physicians, and trainers should take special care to see that the player’s equipment is properly fitted, particularly the helmet. Enforcement of the rules prohibiting “spearing,” properly fitted helmets, and excellent physical condition are the factors which will help reduce fatalities and serious head and neck injuries resulting from participation in football.

All reports stated that player equipment was satisfactory and did not contribute to any of the fatalities. Nevertheless, it is imperative that old and worn equipment be properly renovated or discarded. It is also imperative that all athletes wear properly fitted equipment. Emphasis should always be placed on developing the best equipment possible. Manufacturers, coaches, trainers and physicians should continue their joint and individual efforts toward this end.

It should be mandatory that all football players receive thorough and complete medical examinations and medical histories at the beginning of each football season. The complete medical examination and medical history should be on file with the proper authorities before an athlete is permitted to participate in any phase of the football program. It should also be required that a physician gives written approval to permit a player to return to practice and competition after injury.

Whenever possible, a physician should be on the field of play during game and practice sessions. When this is not possible, arrangements must be made in advance to obtain a physician’s immediate service when emergencies arise. Each institution should have a team trainer who is a regular member of the institution’s staff and who is qualified in treating and preventing injuries.

Since its inception of the Annual Football Fatalities Survey in 1931 and through 1963, there have been fifteen cases of heat stroke reported which resulted in death. In 1964 there were four cases of heat stroke, and in 1965 six cases of heat stroke resulting in death were reported. One of the eight indirect fatalities of 1966 resulted from heat stroke, and two heat stroke cases resulting in death were reported in 1967. In 1968 and 1969 five of the indirect fatalities resulted from heat stroke or heat exhaustion. In 1970 eight of the fourteen indirect fatalities resulted from heat stroke, and in 1971 four of the twelve indirect fatalities resulted from heat illness. In 1972 seven of the indirect fatalities resulted from heat illness. In 1973 three of the eight indirect fatalities resulted from heat illness. In 1974 and 1975 none of the indirect fatalities resulted from heat illness. In 1976 and 1977 one of the indirect fatalities in each year resulted from heat illness. In 1978 there was a dramatic increase of heat stress deaths to four.

All coaches, trainers, and physicians should continue their efforts toward eliminating athletic fatalities which result from physical activity in hot weather.

Heat stroke and heat exhaustion are prevented by careful control of various factors in the conditioning program of the athlete. Basic, of course, is an adequate and complete medical examination and medical history prior to participation in football activities. With the start of practice, it is essential to provide for gradual acclimatization to hot weather activity. Equally important is the need to adjust salt and water intake to weather conditions.

When football activity is carried on in hot weather, the following suggestions and precautions should be taken:

1. Schedule sensible practice sessions for early morning or evening during August and early September.

2. Acclimatize athletes to hot weather activity by carefully graduated practice sessions.

3. Provide rest periods of 15-30 minutes during workouts of one hour.

4. Furnish extra water and salt recommended amounts. A recognized replacement for fluid loss is a sterile 0.1 percent saline solution—that is, two teaspoonsful of ordinary table salt for each gallon of water. It is generally suggested that it be ingested at the rate of at least one quart per hour during extreme perspiration.

5. Watch athletes carefully for signs of trouble (fatigue, lethargy, inattention, stupor, awkwardness, etc.) particularly the determined athlete who may not report discomfort.

6. Remember, temperature and humidity, not the sun, are the important factors and that heat stroke and heat exhaustion can occur in the shade.

7. Finally, if an emergency arises on the football field, seek a physician’s immediate service. DON’T WAIT (see recommendation Number 3).

This year (1978) there were three deaths of football athletes reported that were not related to the athletes’ participation in football activity. Medical as well as other evidence revealed that the deceased died of natural or other causes, not as a result of football activity.

Recommendations

Specific recommendations resulting from the findings of the 1978 Football Fatalities Survey Report are as follows:

1. Mandatory medical examinations and medical history should be taken at the beginning of each season before allowing an athlete to participate in football activity. Provide the physician with adequate time to do a complete and thorough physical examination. If the doctor or coach has any questions about the athlete’s readiness to participate in football, the athlete should not be allowed to play.

2. All personnel concerned with training football athletes should emphasize proper, gradual, and complete physical conditioning. Particular emphasis should be placed on neck strengthening exercises.

3. A physician should be present at all games and practice sessions. If it is impossible for a physician to be present at all practice sessions, emergency measures must be provided.

4. All personnel associated with football participation should be cognizant of the problems and safety measures related to physical activity in hot weather.

5. Each institution should strive to have a team trainer who is a regular member of the faculty and is adequately prepared and qualified.

6. Cooperative liaison should be maintained by all groups interested in the field of Athletic Medicine.
A student, age 15 years and 7 months, was injured on October 23 in a game. It was not known when or how he received his injury, and he did not complain of being injured. On October 24 he passed away. An autopsy was performed which revealed that there was a bruise on the left side of his chest with a puncture wound of the left lung occurring. The cause of death was internal chest hemorrhage due to traumatic lacerations in the upper left lobe of the left lung.

A student, age 16 years and 1 month, was injured on October 27 in a game when he executed a tackle on a kick-off. He died the following day. The autopsy revealed that death was due to a transection of the spinal cord at the third cervical vertebra.

A student, age 17 years, was injured on August 29 when he executed a tackle in a practice session. He died on October 2. An autopsy revealed that death was caused by a fracture of the fifth cervical vertebra and subsequent infection in the medulla oblongata (brain stem).

A student, age 16 years and 5 months, was injured on November 19 in a game. It is not known when or how the injury occurred. The student died November 26. Death was due to a subdural hematoma.

---

### TABLE I

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**No study was made in 1942.**
UNIQUE

THE RICH-MAR VI H.V.

AS A PORTABLE

AS A CONSOLE

THE FIRST FCC APPROVED combination of ultrasound and high voltage galvanic stimulation. Featuring a super smooth galvanic wave, used singly or in combination with ultrasound, thereby offering three modalities—ultrasound—H.V. galvanic and the combination of both.

RM VI-H-V. Specifications:
• Pulse repetition rate selectable from 5 to 80 pairs per second.
• Pad Alternation rate selectable at 2.5, 5, and 10 seconds.
• Output voltage continuously adjustable from 0 to 500 volts peak.
• Circuitry: Monolithic integrated linear circuits and discrete solid state devices.
• Safety Circuits with reset switch.

Accessories:
• 1 — Hand held applicator with fingertip intensity control and circuit opening switch.
• 2 — 4” x 4” pads.
• 1 — 8” x 10” dispersive pad.
• 1 — Spot electrode for localized areas.

Ultrasound Specifications:
• Ultrasound frequency 1 mHz. • Crystal area: 10 sq. cm.
• Power output 20 watts, continuous or pulsed. • Pulse duty cycle: Selective from 5% to 25%.
• Line voltage: 115-125V/50-60 Hz/1.6A. • Case Size: 16½” x 13½” x 7½”.
• Weight: 22 lbs. • FCC U-378.

All RICH-MAR ultrasound and stimulation models are safety engineered to surpass present and proposed hospital electrical safety standards of 50 micro amperes line leakage.

RICH-MAR products are available upon request with appropriate modifications for foreign use.

RICH-MAR CORPORATION
MEDICAL ELECTRONICS DIVISION
P.O. BOX 49
INOLA, OKLAHOMA 74036 U.S.A.
918-543-2222
ARTICLE I
PRESIDENT OF THE NATIONAL ATHLETIC TRAINERS' ASSOCIATION
Section 1
Selection: In accordance with ARTICLE VIII, Section 3 of the Constitution.
Section 2
Term of Office: In accordance with ARTICLE VIII, Section 3 of the Constitution.
Section 3
Functions and Responsibilities:
1. Serves as the official spokesman for the Board of Directors and the Association concerning public relations and speaking engagements for the membership.
2. Maintains communications with the Executive Director in all matters pertaining to the coordination, management and supervision of the Association's affairs.
3. Calls all meetings of the Board of Directors as deemed necessary and advisable.
4. Presides over all meetings of the Board of Directors.
5. Presides over all National Business Meetings.
6. Represents a tie-breaking vote on the Board of Directors and votes only in the event of impasse.
7. Keeps the Board of Directors informed about Association affairs between Board meetings.
8. This is a non-paying position; however, all traveling expenses are paid by the NATA.
9. Serves as ex-officio member of all Association committees.
10. Appoints with agreement of Executive Director and with the approval of the Board of Directors, all committee chairmen.
11. Appoints with agreement of Executive Director and with the approval of the Board of Directors, representatives of NATA to allied organizations.

ARTICLE II
VICE PRESIDENT
Section 1
Selection: In accordance with ARTICLE VIII Section 3 of the Constitution.
Section 2
Term of Office: In accordance with ARTICLE VIII Section 3 of the Constitution.
Section 3
Functions and Responsibilities: The vice president has no duties except to assume the office of president as prescribed in the Constitution of the National Athletic Trainers' Association.

ARTICLE III
BOARD OF DIRECTORS
Section 1
Selection: Elected representatives of the ten (10) NATA Districts plus a president elected by popular vote of the Certified membership. Each representative must be a Certified member of the Association.

Section 2
District Geographic Areas:
District 1: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, Quebec, New Brunswick, Nova Scotia
District 2: Delaware, New Jersey, New York, Pennsylvania
District 3: Maryland, North Carolina, South Carolina, Virginia, West Virginia, District of Columbia
District 4: Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin, Manitoba, Ontario
District 5: Kansas, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, University of Colorado
District 6: Arkansas, Texas
District 7: Arizona, Colorado, New Mexico, Utah, Wyoming
District 8: California, Nevada, Hawaii
District 9: Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, Tennessee

Section 3
Terms of Office: Three (3) years for elected representatives to the board.
Districts 1, 4, 7: 1971 and every third year thereafter
Districts 2, 5, 8: 1972 and every third year thereafter
Districts 3, 6, 9, 10: 1973 and every third year thereafter

Section 4
Functions and Responsibilities:
1. Meets at the National Convention and at any other time during the year the president determines it necessary to call a board meeting.
2. Serves as the official legislative body of the Association.
3. Approves appointment of all committee chairmen and standing committee members.
4. Approves the appointment of all special committees deemed necessary for the conduction of special Association projects of study.
5. Appoints all executive officers of the Association.
6. Serves as the nominating committee for the position of President, of the Board of Directors. Will nominate two candidates with biographies of the candidates published in Athletic Training-Journal of the National Athletic Trainers Association prior to the popular vote.
7. Continually evaluates and defines the roles and functions of all Association officers, standing committees and special committees.
8. Receives recommendations, suggestions and requests from Association districts and makes recommendations to the President for their inclusion in the agenda of Board of Director's meetings.
9. Continually re-evaluates the goals and objectives of the Association and accepts primary responsibility for progress toward these goals.
10. Meets in a private session at the annual NATA convention for the purpose of reviewing personal performances and appointing persons to all positions open or deemed necessary. A majority vote of the board is necessary to terminate the office of an appointed person; this will be done by secret vote and counted by the president and one other board member.
11. Receives and acts on recommendations of the Ethics Committee in regard to matters of unethical conduct. Notifies the accused person of charges pending and advises him of his right to appear before the board prior to board action on the charges. The decision of the Board of Directors in Code of Ethics matters is final, except that if the decision is to initiate cancellation of membership such cancellation shall be done as prescribed in ARTICLE VI. Sections 1 and 2 of the Constitution.
12. Approves recommendations of Board of Certification for certificate of candidates.
13. Acts as an auditing committee for NATA financial affairs and approves financial statement of Executive Director.

ARTICLE IV
EXECUTIVE DIRECTOR
Section 1
Selection: Appointed by the Board of Directors.
Section 2
Term of Office: Subject to yearly review by the Board of Directors.
Section 3
Salary: To be determined by the Board of Directors.
Section 4
Functions and Responsibilities:
1. Implements the mandates and policies of the Association, as determined by the Board of Directors.
2. Between meetings of the Board of Directors, enforces policy on behalf of the Association as is consistent with the mandates and legislation enacted by the Board of Directors.
3. Possesses full power and complete responsibility to transact all business for and on behalf of the Association and to manage all property, affairs, and activities of the Association subject to the provisions of the Constitution and By-Laws and the resolutions and enactments of the Board of Directors.
4. To commit the Association to no financial obligation in excess of its available financial resources.
5. Provides for the maintenance of an Association headquarters which shall serve as the center of all official activities of the Association.
6. Serves as the official spokesman concerning business and governmental affairs for the Association.
7. Serves as the custodian of all records, books and papers belonging to the Association.
8. Secures the minutes of all Board of Directors' meetings from the Administrative Assistant and distributes the minutes to all board members within a reasonable time subsequent to each meeting.
9. Submits a written report of the Association's progress to the Board of Directors of each annual meeting and upon the request of the Board.
10. Conducts the official correspondence of the Association including such matters as notifying members of meetings, officers of their election, committee members of their appointments, and all notices as required by the By-Laws or as requested by the Board of Directors.
11. Handles all financial matters of the Association with the assistance of the Administrative Assistant.
12. Maintains a current and accurate mailing list and an official record of the Association membership.
13. Coordinates the activities of the Association and acts as liaison between the districts and the National office and polls the District Directors at least one month in advance of the annual board meeting for suggestions on board agenda.
14. Maintains liaison with allied organizations in conjunction with NATA.
representative to such organizations.

15. Maintains communication and records of all committee chairmen, committee members and members of the Board of Directors.

16. Submits an audited financial report to Board of Directors prior to the Annual Meeting.

17. Prepares the annual budget and presents this budget to the board for approval.

18. Serves as ex-officio member of all Association committees.

19. Continually reviews the Association Constitution and By-laws in terms of newly enacted legislation and makes recommendations to the Board of Directors for revisions, deletions or additions.

20. Maintains an accurate and current record of newly enacted legislation and incorporates it into the Constitution and By-Laws and as instructed by the Board of Directors.

ARTICLE V
ASSISTANT EXECUTIVE DIRECTOR(S)
Section 1
Selection: Appointed by the Executive Director from the Certified membership of the Association with the approval of the Board of Directors.

Section 2
Term of Office: Subject to yearly review by the Board of Directors.

Section 3
Salary: To be determined by the Board of Directors.

Section 4
Functions and Responsibilities:
1. To assist the Executive Director in functions and responsibilities as designated by the Executive Director.

ARTICLE VI
ADMINISTRATIVE ASSISTANT(S)
Section 1
Selection: Appointed by the Executive Director with approval of the Board of Directors.

Section 2
Term of Office: Subject to yearly review by the Board of Directors.

Section 3
Salary: To be determined by the Board of Directors.

Section 4
Functions and Responsibilities:
1. Assists Executive Director in all functions and responsibilities of the National Office.

*See Functions and Responsibilities of Executive Director.

ARTICLE VII
PARLIAMENTARIAN
Section 1
Selection: Appointed by President with agreement of Executive Director and approval of Board of Directors.

Section 2
Term of Office: Subject to yearly review by the Board of Directors.

Section 3
Functions and Responsibilities:
1. Should be a Certified member of the NATA and must have a thorough knowledge of parliamentary procedure. If no such individual is available within the Association the NATA must hire a qualified expert from outside the Association.

2. Is in charge of keeping the Board of Directors and annual business meetings operating under parliamentary procedure as prescribed by the Robert's Rules of Order.

ARTICLE VIII
ADVISORY COMMITTEE
Section 1
Selection of Chairman: Appointed by the President with agreement of Executive Director and approval of Board of Directors from the Certified membership of the Association.

Section 2
Term of Office: One year and may be reappointed with approval of the Board of Directors.

Section 3
Committee Members: The number of committee members will be determined by the President and Executive Director.

Section 4
Selection of Committee Members: Appointed by the President with agreement of Executive Director and approval of Board of Directors.

Term of Office: One year and may be reappointed.

Section 5
Term of Office: One year and may be reappointed.

Section 6
Functions and Responsibilities:
To advise the President and Executive Director, at their request, on matters needing specific information in the respective specialty fields of the committee members.

ARTICLE IX
AUDIO-VISUAL AIDS COMMITTEE
Section 1
Selection of Chairman: Appointed by the President with agreement of Executive Director and approval of the Board of Directors from the Certified membership of the Association.

Section 2
Term of Office: Two years and may be reappointed with approval of the Board of Directors.

Section 3
Committee Members: The number of committee members will be determined by the committee Chairman to form a workable group.

Section 4
Selection of Committee Members: Recommended by the Chairman and appointed by the President with the approval of the Board of Directors from the Certified membership of the Association.

Section 5
Term of Office: Two years and may be reappointed by the Board of Directors.

Section 6
Functions and Responsibilities:
1. Maintains a bibliography and sources of audio-visual aids available to Association members.

2. Investigates and recommends to Board of Directors the advisability of sponsorship, co-sponsorship, authorship, etc. of audio-visual aids. The Committee given authority to approve audio-visual projects for further development, but not to give final approval.

3. Coordinates and supervises all Board approved audio-visual aid projects.

4. Establishes and maintains an audio-visual aid loan library for the membership of the Association.

5. In charge of keeping the Board of Directors and annual business meetings operating under parliamentary procedure as prescribed by the Robert's Rules of Order.

6. Maintains an accurate and current record of newly enacted legislation and incorporates it into the Constitution and By-Laws and as instructed by the Board of Directors.

ARTICLE X
CAREER INFORMATION AND SERVICES COMMITTEE
Section 1
Selection of Chairman: Appointed by the President with agreement of the Executive Director and approval of the Board of Directors from the Certified membership of the Association.

Section 2
Term of Office: Two years and may be reappointed by the Board of Directors.

Section 3
Committee Members: The number of committee members will be determined by the committee Chairman to form a workable group.

Section 4
Selection of Committee Members: Recommended by the Chairman and appointed by the President with the approval of the Board of Directors from the Certified membership of the Association.

Section 5
Term of Office: Two years and may be reappointed with approval of the Board of Directors.

Section 6
Functions and Responsibilities:
1. Answers correspondence, inquiries and requests for guidance and counseling concerning the professional preparation of athletic trainers.

2. Investigates the use of films, slides and filmstrips for recruitment purposes and makes recommendations to the Board of Directors.

ARTICLE XI
CERTIFICATION COMMITTEE
Section 1
Selection of Chairman: Appointed by the President with agreement of Executive Director and approval of the Board of Directors from the Certified membership of the Association. The Chairman shall also serve as Chairman of the Board of Certification.

Section 2
Term of Office: Two years and may be reappointed with approval of Board of Directors.

Section 3
Committee Members: The number of committee members will be determined by the committee Chairman to form a workable group.

Section 4
Selection of Committee Members: Recommended by the Chairman appointed by the President with approval of the Board of Directors from the Certified membership of the Association.

Section 5
Term of Office: Two years and may be reappointed with approval of Board of Directors.

Section 6
Functions and Responsibilities:
1. Receives and reviews all applications for certification.

2. Ascertains the fulfillment of Certification requirements and makes recommendations to the Board of Directors.

3. Reviews and reviews all applications for certification.

4. Coordinates and supervises the administration and grading of all certification examinations.

5. Continually reviews the Association Constitution and By-laws in terms of newly enacted legislation and makes recommendations to the Board of Directors for revisions, deletions or additions.

6. Maintains an accurate and current record of newly enacted legislation and incorporates it into the Constitution and By-Laws and as instructed by the Board of Directors.
Selection of Chairman: Appointed by the President with agreement of the Executive Director and the approval of the Board of Directors from the Certified membership of the Association.

Section 2
Term of Office: Two years and may be reappointed with approval of Board of Directors.

Section 3
Committee Members: The number of committee members will be determined by the committee chairman to form a workable group.

Section 4
Selection of Committee Members: Recommended by the Chairman appointed by the President with the approval of the Board of Directors from the Certified membership of the Association.

Section 5
Term of Office: Two years and may be reappointed with approval of Board of Directors.

Section 6
Functions and Responsibilities:
1. To develop drug education material for use and distribution by the Association.
2. To maintain a bibliography on resource material pertaining to drug education.

ARTICLE XIV
ETHICS COMMITTEE

Section 1
Selection of Chairman: Appointed by the President with agreement of the Executive Director and the approval of the Board of Directors from the Certified membership of the Association.

Section 2
Term of Office: Two years and may be reappointed with approval of Board of Directors.

Section 3
Committee Members: The number of committee members will be determined by the committee chairman to form a workable group.

Section 4
Selection of Committee Members: Recommended by the Chairman appointed by the President with the approval of the Board of Directors from the Certified membership of the Association.

Section 5
Term of Office: Two years and may be reappointed with approval of Board of Directors.

Section 6
Function and Responsibilities:
1. Accepts and investigates reports of violations of the Association Code of Ethics.
2. Reports to Board of Directors Committee findings and recommendations.

ARTICLE XV
GRANTS AND SCHOLARSHIP COMMITTEE

Section 1
Selection of Chairman: Appointed by the President with agreement of Executive Director and approval of the Board of Directors from the Certified membership of the Association.

Section 2
Term of Office: Two years and may be reappointed with approval of Board of Directors.

Section 3
Committee Members: The number of committee members will be determined by the committee chairman to form a workable group.

Section 4
Selection of Committee Members: Recommended by the Chairman and appointed by the President with the approval of the Board of Directors.

Section 5
Term of Office: Two years and may be reappointed.

Section 6
Functions and Responsibilities:
1. Promote and encourage scholarship through gifts, loans, and grants-in-aid.
2. Establish guidelines and criteria for the awarding of educational grants and scholarships.
3. Stimulates and develops scholarships sponsored by industry, individual donors, service clubs, minority groups, associations, athletic conferences, and professional sports leagues.
4. Formulates recommendations for rules and administration of self-help programs, either loan or job, to include college loan, National Defense loan, Educational Act loan, and State Guaranteed or Federal Insured loan.
5. Receives, reviews and screens all applications prior to April 1 and recommends to Board of Directors for Association approval or rejection.

ARTICLE XVI
HISTORICAL AND ARCHIVES COMMITTEE

Section 1
Selection of Chairman: Appointed by the President with agreement of the Executive Director and approval of the Board of Directors from the Certified membership of the Association.

Section 2
Term of Office: Two years and may be reappointed with approval of Board of Directors.

Section 3
Committee Members: The number of committee members will be determined by the committee chairman to form a workable group.

Section 4
Selection of Committee Members: Recommended by the Chairman appointed by the President with the approval of the Board of Directors from the Certified membership of the Association.

Section 5
Term of Office: Two years and may be reappointed with approval of Board of Directors.

Section 6
Functions and Responsibilities:
2. Establishes a plan for maintenance of historical records of the Association and preserving important archives.

ARTICLE XVII
HONORS AWARDS COMMITTEE

Section 1
Selection of Chairman: Appointed by the President with agreement of Executive Director and the approval of the Board of Directors from the Certified membership of the Association. The Chairman of the Honor Awards Committee will be Chairman of the N.A.T.A. Hall of Fame Committee.

Section 2
Term of Office: Two years and may be reappointed with approval of the Board of Directors.

Section 3
Committee Members: The number of committee members will be determined by the committee chairman to form a workable group.

Section 4
Selection of Committee Members: Recommended by the Chairman and appointed by the President with the approval of the Board of Directors from the Certified membership of the Association.

Section 5
Term of Office: Two years and may be reappointed with approval of the Board of Directors.

Section 6
Functions and Responsibilities:
1. Coordinates and supervises the establishment and disbursement of all special recognitions and awards presented under the auspices of the Association.
2. Receives, prior to February, reviews and screens all candidates for the 25 Year Award, Honorary Members Award, and Helms Award and makes recommendations to the Board of Directors prior to March 15.
3. Receives and reviews all proposals for the initiation of new or additional honor awards and makes recommendations to the Board of Directors for Association approval or rejection.
4. The Citizens Savings Athletic Foundation (formerly Helms Hall of Fame), N.A.T.A. Hall of Fame Committee will function under the Honor Awards Committee, but the committee will remain secret.

ARTICLE XVIII
INTERNATIONAL GAMES TRAINER NOMINATION COMMITTEE

Section 1
Selection of Chairman: Appointed by the President with agreement of the Executive Director and approval of the Board of Directors from the Certified membership of the Association.

Section 2
Term of Office: Two years and may be reappointed with approval of Board of Directors.

Section 3
Committee Members: The number of committee members will be determined by the committee chairman to form a workable group.

Section 4
Selection of Committee Members: Recommended by the Chairman appointed by the President with the approval of the Board of Directors from the Certified membership of the Association.

Section 5
Term of Office: Two years and may be reappointed with approval of Board of Directors.

Section 6
Functions and Responsibilities:
1. Formulates procedures for NATA members to apply for nomination to athletic training staff for international games and submit such procedures to Board of Directors for approval.
2. Conduct process of nominating the applicants to the Medical Service Committee of International Games.

ARTICLE XIX
JOURNAL COMMITTEE

Section 1
Selection of Chairman: Appointed by the President with agreement of the Executive Director and approval of the Board of Directors from the Certified membership of the Association. The Chairman also serves as the Editor-in-Chief of Athletic Training - The Journal of the National Athletic Trainers' Association.

Section 2
Term of Office: Two years and may be reappointed with approval of Board of Directors.

Section 3
Committee Members: The number of committee members shall be determined by the committee chairman to form a workable group.

Section 4
Selection of Committee Members: Recommended by the Chairman and appointed by the President with the approval of the Board of Directors from the Certified membership of the Association.

Section 5
Term of Office: Two years and may be reappointed with approval or the Board of Directors.

Section 6
Function and Responsibilities:
1. Serves as the editorial committee for Athletic Training.
2. Selects a printer, with approval of the Board of Directors to produce and distribute Athletic Training.
3. Solicits and sells advertising space in Athletic Training.
4. Establishes and maintains a written statement of the editorial policies of Athletic Training subject to review and approval by the Board of Directors.

ARTICLE XX
MEMBERSHIP COMMITTEE

Section 1
Selection of Chairman: Appointed by the President with agreement of the Executive Director and approval of the Board of Directors from the Certified membership of the Association.

Section 2
Term of Office: Two years and may be reappointed with approval of the Board of Directors.

Section 3
Committee Members: The Committee members shall be the ten District Secretaries. District Secretary shall be a Certified member.
Section 4
Term of Office of Committee Members: For the time the person is the District Secretary.

Section 5
Functions and Responsibilities:
1. Cooperates with National and District Offices regarding opinions and clarification of matters relating to qualifications for membership.
2. Periodically reviews the various membership classifications and makes recommendations to the Board of Directors for changes.
3. The Membership Committee is responsible to the Executive Director.
4. Cooperates with Professional Education Committee, Certification Committee and Board of Certification in relation to Continuing Education, Membership and Certification.

ARTICLE XXI
MEMORIAL RESOLUTIONS COMMITTEE
Section 1
Selection of Chairman: Appointed by the President with agreement of the Executive Director and approval of the Board of Directors from the Certified membership of the Association.

Section 2
Term of Office: Two years and may be reappointed with approval of the Board of Directors.

Section 3
Committee Members: One from each N.A.T.A. District.

Section 4
Selection of Committee Members: Recommended by the Director of the District which the member is to represent, appointed by the President with approval of the Board of Directors. The person must be a Certified member of the Association.

Section 5
Term of Office: Two years and may be reappointed with the approval of the Board of Directors.

Section 6
Functions and Responsibilities:
1. Assemble information regarding the death of a member of the Association.
2. Prepare a memorial resolution for each member who dies and give such resolutions to the President for Executive Director so that they can be put on the agenda of the next annual business meeting of the Association.

ARTICLE XXII
NATIONAL ANNUAL MEETING AND CLINICAL SYMPOSIUM COMMITTEE
Section 1
Selection of Chairman: Appointed by the President with agreement of the Executive Director and approval of the Board of Directors from the Certified membership of the Association.

Section 2
Term of Office: Two years and may be reappointed with approval of the Board of Directors.

Section 3
Committee Members: The number of committee members shall be determined by the Chair to form a workable group.

Section 4
Selection of Committee Members: Recommended by the Chairman, appointed by the President with the approval of the Board of Directors from the Certified membership of the Association.

Section 5
Term of Office: Two years (except host district and local committees) and may be reappointed with the approval of the Board of Directors.

Section 6
Functions and Responsibilities:
1. Selects sites and hotels for the Annual Meeting and Clinical Symposium according to guidelines set by the Board of Directors.
2. Supervises all plans and arrangements for the Annual Meeting and Clinical Symposium.
3. Coordinates all programs and functions at the Annual Meeting and Clinical Symposium.
4. Forms appropriate sub-committees in cooperation with the host district and city. Such sub-committees shall have duties and responsibilities as designated by the Chairman of the National Committee.
5. Keeps the Executive Director informed on all Annual Meeting and Symposium plans and reports to the Board of Directors at each scheduled meeting.

ARTICLE XXIII
PLACEMENT COMMITTEE
Section 1
Selection of Chairman: Appointed by the President with agreement of the Executive Director and approval of the Board of Directors from the Certified membership of the Association.

Section 2
Term of Office: Two years and may be reappointed by the Board of Directors.

Section 3
Committee Members: There shall be one committee member from each district.

Section 4
Selection of Committee Members: Recommended by the Chairman and appointed by the President with the approval of the Board of Directors from the Certified membership of the Association.

Section 5
Term of Office: Two years and may be reappointed with approval of the Board of Directors.

Functions and Responsibilities:
1. Serves as the official job placement agency of the Association.
2. Receives notification of job vacancies from high schools, colleges and universities, and professional teams, and maintains a current listing of all vacancies.
3. Receives requests from Association members for information on available position vacancies.
4. Informs only NATA members of available positions and informs employers of prospective NATA applicants.
5. Arranges for and maintains a job placement service at the National meeting, (1) posting of current job vacancies, (2) posting a list of Association members desiring placement, (3) assistance in interview arrangements.

ARTICLE XXIV
PROFESSIONAL EDUCATION COMMITTEE
Section 1
Selection of Chairman: Appointed by the President with agreement of the Executive Director and approval of the Board of Directors from the Certified membership of the Association.

Section 2
Term of Office: Two years and may be reappointed with approval of the Board of Directors.

Section 3
Committee Members: The number of committee members will be determined by the committee Chairman to form a workable group.

Section 4
Selection of Committee Members: Recommended by the Chairman and appointed by the President with the approval of the Board of Directors from the Certified membership of the Association.

Section 5
Term of Office: Two years and may be reappointed with approval of the Board of Directors.

Functions and Responsibilities:
1. Investigates and studies all possibilities for the professional education and advancement of the Association, its members, and the athletic training profession and makes recommendations to the Board of Directors.
2. Confers with appropriate consultants regarding recommendations for professional advancement.
3. Makes recommendations to the Board of Directors for the accreditation of schools offering graduate and undergraduate preparation in athletic training.
4. Establishes and supervises the enforcement of professional education standards and criteria for all association certified athletic trainers.
5. Cooperates with the Certification Committee in the establishment of certification requirements and criteria.
6. Investigates and recommends opportunities for in-service training and continuing education for Association members.
7. Serves as a consulting and liaison agency between the Association and educational institutions providing or preparing to provide professional preparation for athletic trainers.
8. Sends educational requirements and any future changes in educational standards, to all Recruitment Committee members.

Section 7
Sub-Committee for Graduate Education
1. Selection of Chairman: Recommended by the Chairman of the Professional Education Committee and appointed by the President with agreement of the Executive Director and approval by the Board of Directors from the Professional Education Committee members.
2. Term of Office: Two years and may be reappointed with approval of the Board of Directors.
3. Sub-Committee members: The number of sub-committee members to be determined by the sub-committee Chairman to form a workable group.
4. Term of Office: Two years and may be reappointed with approval of the Board of Directors.
5. Functions: To work in the area of graduate education and make recommendations to the Professional Education Committee as a whole.

Section 8
Sub-Committee for Continuing Education
1. Selection of Chairman: Recommended by the Chairman of the Professional Education Committee and appointed by the President with agreement of the Executive Director and approval by the Board of Directors from the Professional Education Committee members.
2. Term of Office: Two years and may be reappointed with approval of the Board of Directors.
3. Sub-Committee members: The number of sub-committee members to be determined by the sub-committee Chairman to form a workable group.
4. Term of Office: Two years and may be reappointed with approval of the Board of Directors.
5. Functions: To work in the area of continuing education and make recommendations to the Professional Education Committee as a whole.

ARTICLE XXV
PUBLIC RELATIONS AND INFORMATION COMMITTEE
Section 1
Selection of Chairman: Appointed by the President with agreement of the Executive Director and approval of the Board of Directors from the Certified membership of the Association.

Section 2
Term of Office: Two years and may be reappointed by the Board of Directors.

Section 3
Committee Members: The number of committee members will be determined by the committee Chairman to form a workable group.

Section 4
Selection of Committee Members: Appointed by the Chairman with the approval of the Board of Directors from the Certified membership of the Association.

Section 5
Term of Office: Two years and may be reappointed with approval of the Board of Directors.

Functions and Responsibilities:
1. Establishes and maintains an effective public relations program for the Association by preparing and distributing appropriate news releases, feature stories, etc., to the mass media, radio, television and newspapers.
2. Investigates and recommends to the Board of Directors possible avenues through which the Association may enhance its professional image and interpret its purposes and objectives to allied associations and professional, high schools, colleges and universities, and the general public.
ARTICLE XXVII

RESEARCH AND INJURY COMMITTEE

Section 1

Selection of Chairman: Appointed by the President with agreement of the Executive Director and approval of the Board of Directors from the Certified membership of the Association.

Section 2

Term of Office: Two years and may be reappointed by the Board of Directors.

Section 3

Committee Members: The number of committee members will be determined by the committee chairman to form a workable group.

Section 4

Selection of Committee Members: Recommended by the Chairman and appointed by the President with the approval of the Board of Directors from the Certified membership of the Association.

Section 5

Term of Office: Two years and may be reappointed with approval of the Board of Directors.

Section 6

Function and Responsibilities:

1. Coordinates all research efforts conducted under the auspices of the Association.
2. Receives and evaluates all research proposals from Association members, schools and other institutions, to be sent to the Board of Directors for research projects worthy of Association support and sponsorship.
3. Recommends to the Board of Directors for presentation of research findings at regional and district meetings.
4. Makes recommendations to the Board of Directors, the National Convention Chairman, and the National Program Committee for presentation of research findings at annual national meetings.
5. Prepares and submits the results of Association research to Journal Committee for possible publication in Athletic Training Journal of the National Athletic Trainers' Association and other Association sponsored publications.

ARTICLE XXVIII

MEMBERSHIP PROVISIONS AND DUES

Section 1

Membership Classes

1. CERTIFIED CODE 1
   Qualifications for Membership:
   Must be a Certified Athletic Trainer (A.T.C.).
   Dues: National - $25.00 per year plus District Dues.

2. ASSOCIATE CODE 2
   Qualifications for Membership:
   Bachelor's degree from an accredited college or university.
   Dues: National - $25.00 per year plus District Dues.

3. STUDENT CODE 3
   Qualifications for Membership:
   A full-time student (graduate or undergraduate) in a college or university and who is performing the duties of a student athletic trainer. The work experience shall include preventive and protective taping, recognition of injuries, immediate care of injuries and the use of usual training room facilities. The Certified Athletic Trainer under whom the student works must have the privilege of continuing in the class of membership held at the time of retirement without further payment of dues.
   Dues: National - $15.00 plus District Dues.

4. RETIRED
   Dues: National - $25.00 plus District Dues.

5. AFFILIATE
   Membership is open to individuals who are interested in the relationships of athletic training to education, biological sciences, psychology, athletics and other fields of interest. The affiliation is not to be confused with membership in the Association, nor as a matter of record for time engaged in athletic training.
   Dues: National - $25.00 plus District Dues.

6. NEUTRAL
   Membership is open to those who are not enrolled in athletic training but who support the Athletic Training profession and are interested in the advancement of the profession.
   Dues: National - $25.00 plus District Dues.

7. EX OFFICIO
   Ex officio status may be granted to the following:
   a. Members of the Board of Directors.
   b. Members of the National Convention Planning Committee.
   c. Members of the National Program Committee.
   d. Members of the Professional Education Committee.
   e. Members of the Student Advisory Committee.
   f. Members of the Research and Injury Committee.
   g. Members of the Ethics Committee.
   h. Members of the Certification Committee.
   i. Members of the Accreditation Committee.
   j. Members of the Professional Advisory Committee.

5. AFFILIATE CODE 5
   This membership class is open to individuals who are interested in the relationships of athletic training to education, biological sciences, psychology, athletics or sports medicine. A person applying for membership in this class does not need to be actively engaged in or directly related to athletic training.
   Qualifications for membership:
   Bachelor's degree from an accredited college or university in physical therapy, and professionally working in education, athletics, research or medicine.
   Note: A physician who is a team physician should be an N.A.T.A. member in the Advisory class.

The following paragraphs (10) are to apply specifically to the AFFILIATE - INTERNATIONAL (Code 10) classes does not count as time preparatory to certification nor as a matter of record for time engaged in athletic training. Affiliate and Affiliate-International members are not entitled to vote on
6. ADVISORY CODE 6
Qualifications for membership:
Physicians (MD or DO) who are directly associated with a sports program and are providing medical care and advice to members of the teams and advising the athletic trainer in regard to his duties are eligible for membership in this class.
A Certified or Associate member must nominate a prospective candidate for this membership. The nomination shall then be presented to the District Secretary for approval.
Advisory members are not entitled to vote on N.A.T.A. affairs or to hold office.
Dues: National - $25.00 per year plus District dues.

7. ALLIED CODE 7
This membership class is open to individuals whose business interest is related to athletic training or athletics in general.
Allied members are not entitled to vote on N.A.T.A. affairs or to hold office.
Dues: National - $25.00 per year plus District dues.

8. HONORARY CODE 8
An individual may be awarded Honorary membership through the National organization only. A person who, by virtue of his/her acts and speech, shows profound interest in the athletic training profession and in enhancing its service to those in athletics shall be eligible for membership in this class.
Nominations may be made only by a Certified member through his/her district director who will then forward the nominee’s name and resume to the Chairman. The Executive Director will notify the member, the district director, the district secretary and the membership committee.
Honorary members are not entitled to vote on N.A.T.A. affairs or to hold office.
There are no dues for Honorary members.

Section 3
CHANGE OF MEMBERSHIP CLASS
1. If a member wishes to change his/her membership class and believes that he/she is eligible for such a change, a “Change of Membership Class Form” should be requested from the District Secretary. This form (2 copies) should be completed and returned to the district secretary for review and action. Upon approval, the change is recorded and the form sent to the National Office.
2. If a member is found by the National Office to be in the wrong membership class, he/she will be reclassified by the Executive Director. This will be done in this way, the Executive Director will notify the member, the district director, the district secretary and the membership committee.

Section 4
INTER-DISTRICT TRANSFER OF MEMBERSHIP
1. A member of the Association in good standing who moves into a district other than the one in which he holds membership must transfer his/her membership to district into which the move is made. This is done by filing an “Application for District Transfer” request with the secretary of district which he/she is leaving and the secretary of the district which he/she is moving to.

Section 5
AFEES
1. National dues for each class of membership are as set by the Board of Directors. District dues are set by the district.
2. Dues become payable on January 1st for the calendar year. If dues are not paid by March 1st the member becomes delinquent. If dues are not paid by April 1st the member is suspended and must apply for reinstatement. A fee of $10.00 (payable to the National Office is charged for reinstatement. Effective Jan. 1, 1978).
3. The National Membership Committee should consider the circumstances of non-payment of dues and make a judgement as to the reinstatement of a suspended member to the previous class of membership later in the year. However, if a member is suspended for non-payment of dues for a full year (the calendar year for which dues are first not paid) or more he/she must apply for membership as a new member and meet the current qualifications for membership in the class of membership for which he/she is applying.
4. The time for which suspension is in effect, year or more, shall not count as time qualifying a person for certain classes of membership or as time engaged in the profession.

Section 6
APPROVAL OF APPLICATIONS FOR MEMBERSHIP
1. Membership in the N.A.T.A. must come through a District (except AFFILIATE-INTERNATIONAL) and is subject to the District Secretary’s approval. In case of doubt regarding an applicant’s qualifications for membership, the National Membership Committee shall be consulted.
2. Candidates for membership (except HONORARY and AFFILIATE-INTERNATIONAL) must be recommended by at least one Certified member of the district in which the candidate is located. Two (2) copies of the application for membership shall be sent to the district secretary. If the candidate is accepted (class of membership designated) the membership is recorded in the district and a copy of the approved application with National dues is sent to the National Office.
3. A person who is a member of one of the N.A.T.A. districts must be a National member and pay both National and District dues.
4. An N.A.T.A. member (except AFFILIATE-INTERNATIONAL) must hold district membership. The district membership shall be in the district in which the member is employed (except members in military service).
5. Membership in the AFFILIATE-INTERNATIONAL class shall be handled directly by the National Office and be subject to approval of the Executive Director.

Section 7
DUES
1. National dues for each class of membership are as set by the Board of Directors. District dues are set by the district.
2. Dues become payable on January 1st for the calendar year. If dues are not paid by March 1st the member becomes delinquent. If dues are not paid by April 1st the member is suspended and must apply for reinstatement. A fee of $10.00 (payable to the National Office is charged for reinstatement. Effective Jan. 1, 1978).
3. The National Membership Committee should consider the circumstances of non-payment of dues and make a judgement as to the reinstatement of a suspended member to the previous class of membership later in the year. However, if a member is suspended for non-payment of dues for a full year (the calendar year for which dues are first not paid) or more he/she must apply for membership as a new member and meet the current qualifications for membership in the class of membership for which he/she is applying.
4. The time for which suspension is in effect, year or more, shall not count as time qualifying a person for certain classes of membership or as time engaged in the profession.

Section 8
CHANGE OF MEMBERSHIP CLASS
1. If a member wishes to change his/her membership class and believes that he/she is eligible for such a change, a “Change of Membership Class Form” should be requested from the District Secretary. This form (2 copies) should be completed and returned to the district secretary for review and action. If approved, the change is recorded and the form sent to the National Office.
2. If a member is found by the National Office to be in the wrong membership class, he/she will be reclassified by the Executive Director. This will be done in this way, the Executive Director will notify the member, the district director, the district secretary and the membership committee.

Section 9
INTER-DISTRICT TRANSFER OF MEMBERSHIP
1. A member of the Association in good standing who moves into a district other than the one in which he holds membership must transfer his/her membership to district into which the move is made. This is done by filing an “Application for District Transfer” request with the secretary of district which he/she is leaving and the secretary of the district which he/she is moving to.

Section 10
AFEES
1. National dues for each class of membership are as set by the Board of Directors. District dues are set by the district.
2. Dues become payable on January 1st for the calendar year. If dues are not paid by March 1st the member becomes delinquent. If dues are not paid by April 1st the member is suspended and must apply for reinstatement. A fee of $10.00 (payable to the National Office is charged for reinstatement. Effective Jan. 1, 1978).
3. The National Membership Committee should consider the circumstances of non-payment of dues and make a judgement as to the reinstatement of a suspended member to the previous class of membership later in the year. However, if a member is suspended for non-payment of dues for a full year (the calendar year for which dues are first not paid) or more he/she must apply for membership as a new member and meet the current qualifications for membership in the class of membership for which he/she is applying.
4. The time for which suspension is in effect, year or more, shall not count as time qualifying a person for certain classes of membership or as time engaged in the profession.

Section 11
CHANGE OF MEMBERSHIP CLASS
1. If a member wishes to change his/her membership class and believes that he/she is eligible for such a change, a “Change of Membership Class Form” should be requested from the District Secretary. This form (2 copies) should be completed and returned to the district secretary for review and action. If approved, the change is recorded and the form sent to the National Office.
2. If a member is found by the National Office to be in the wrong membership class, he/she will be reclassified by the Executive Director. This will be done in this way, the Executive Director will notify the member, the district director, the district secretary and the membership committee.

Section 12
INTER-DISTRICT TRANSFER OF MEMBERSHIP
1. A member of the Association in good standing who moves into a district other than the one in which he holds membership must transfer his/her membership to district into which the move is made. This is done by filing an “Application for District Transfer” request with the secretary of district which he/she is leaving and the secretary of the district which he/she is moving to.

Section 13
AFEES
1. National dues for each class of membership are as set by the Board of Directors. District dues are set by the district.
2. Dues become payable on January 1st for the calendar year. If dues are not paid by March 1st the member becomes delinquent. If dues are not paid by April 1st the member is suspended and must apply for reinstatement. A fee of $10.00 (payable to the National Office is charged for reinstatement. Effective Jan. 1, 1978).
3. The National Membership Committee should consider the circumstances of non-payment of dues and make a judgement as to the reinstatement of a suspended member to the previous class of membership later in the year. However, if a member is suspended for non-payment of dues for a full year (the calendar year for which dues are first not paid) or more he/she must apply for membership as a new member and meet the current qualifications for membership in the class of membership for which he/she is applying.
4. The time for which suspension is in effect, year or more, shall not count as time qualifying a person for certain classes of membership or as time engaged in the profession.

Section 14
CHANGE OF MEMBERSHIP CLASS
1. If a member wishes to change his/her membership class and believes that he/she is eligible for such a change, a “Change of Membership Class Form” should be requested from the District Secretary. This form (2 copies) should be completed and returned to the district secretary for review and action. If approved, the change is recorded and the form sent to the National Office.
2. If a member is found by the National Office to be in the wrong membership class, he/she will be reclassified by the Executive Director. This will be done in this way, the Executive Director will notify the member, the district director, the district secretary and the membership committee.
AUTHORS

ABDENOUR, J.

Ankle Taping Effects From
Torque and Range of Motion, 227, (Winter)

ARCHIBALD, P.

Summertime Employment for the
Athletic Trainer, 32 (Spring)

BAGGETT, R., MATTHEWS, R.,
and KOEHNEKE, P.

Tip From the Field: Successful
Trampoline Extrication, 74 (Summer)

CADDY.

Tip from the Field: Taping Table,
224, (Winter)

COMPTON, R.

Tip From the Field: Saddle Bag
for Trainer’s Kit, 10 (Spring)

DeHAVEN, K.

The 1978 Schering Symposium on
the Knee: Internal Derangements of the Knee, 15, (Spring)

DISTEFANO, V.

The 1979 Schering Symposium: Functional Anatomy and Biomechanics of Wrist and Elbow Injuries, 131 (Fall)

DOUGHTIE, M.

The Use of RTV-11 Silicone Rubber for a Carpal Navicular Fracture, 146, (Fall)

EMERICK, C.

Ankle Taping: Prevention of Injury or Waste of Time?, 149 (Fall)

GALSTAD, L.

NATA Student Writing Contest: Anterior Tibial Compartment Syndrome, 139, (Fall)

GARREY, A.

Can Your Athletes Really See?, 156, 56, (Fall)

GIECK, J., FRISCIA, R., and BARTELLE, J.

Treatment of Pain in Athletics By the Use of Transcutaneous Nerve Stimulations, 97 (Summer)

GIECK, J., and NELSON, W.

Injuries to the Acromioclavicular Joint: Mechanisms, Diagnosis, and Treatment, 22 (Spring)

HALLING, A. and DOOLEY, J.

The Importance of Isokinetic Power and Its Specificity to Athletic Condition, 83, (Summer)

HUNTER, S., CAIN, T., HENRY, C.

Pre-season Isokinetic Evaluation for Knee Weaknesses in Professional Athletes, 205, (Winter)

JOHNSON, B.

Treatment and Rehabilitation of a Complete Acromioclavicular Separation, 218, (Winter)

KNIGHT, K.

Ligament Ruptures Produced By
Forced Inversion of Cadaver Ankles, 91 (Summer)

KULUND, D., SHOOS, T. VANNON, P.

Tip from the Field: Airplane Insulation for Flying Feet, 144, (Fall)

LATIN, R. and KAUTH, W.

A Case Report: Lower Leg Compartment Syndromes, 78 (Summer)

LUSIN, G., GAJOSKI, R. MILLER, K.

Goniometry: A Review of the Literature, 161, (Fall)

MICHIEL, L.

Special Pads for Special Problems, 68 (Summer)

PFEIFFER, R.

Tip from the Field: Protective Strapping for the Hands Of the Gymnast, 212 (Winter)

POOLE, D.

Tip From the Field: The D.P. Technique for Blisters, 88 (Summer)

POWERS, H.

Tip from the Field: Empire Gold, 165, (Fall)

SLAGLE, G.

Importance of Pre-Testing the Knee Joint, 225, (Winter)

SMITH, W.

Esophageal Airway - An Alternative to Mouth-To-Mouth, 38 (Spring)

STEVEN, N.

Case Report: Medial Meniscotony and Torn Anterior Cruciate Rehabilitation Program, 151, (Fall)

STONE, M., JOHNSON, R., CARTER, D.

A Short Term Comparison of Two Different Methods of Resistance Training on Leg Strength and Power, 158, (Fall)

THOMAS, T., ETHERIDGE, G.

Methodological Considerations on Percent Body Fat in Athletes, 229, (Winter)

WRIGHT,

Tip from the Field: Orthotron Program, 232, (Winter)

SUBJECTS

ANKLE

Ligament Ruptures Produced By
Forced Inversion of Cadaver Ankles, 91 (Summer)

Ankle Taping Effects From
Torque and Range of Motion, 227, (Winter)

Ankle Taping: Prevention of Injury or Waste of Time? 149, (Fall)

CONDITIONING

Methodological Considerations on

PERCENT BODY FAT IN ATHLETES, 229, (Winter)

EMPLOYMENT

Summertime Employment for the Athletic Trainer, 32 (Spring)

EQUIPMENT

Esophageal Airway - An Alternative to Mouth-To-Mouth, 38 (Spring)

The Importance of Isokinetic Power and Its Specificity to Athletic Condition, 83 (Summer)

Treatment of Pain in Athletics By the Use of Transcutaneous Nerve Stimulations, 97 (Summer)

The Use of RTV-11 Silicone Rubber for a Carpal Navicular Fracture, 146 (Fall)

Goniometry: A Review of the Literature, 161, (Fall)

A Short Term Comparison of Two Different Methods of Resistance Training on Leg Strength and Power, 158, (Fall)

KNEE

The 1978 Schering Symposium on the Knee: Internal Derangements of the Knee, 15 (Spring)

Case Report: Medial Meniscotony and Torn Anterior Cruciate Rehabilitation Program, 151, (Fall)

Pre-season Isokinetic Evaluation for Knee Weaknesses in Professional Athletes, 205, (Winter)

LOWER LEG

A Case Report: Lower Leg Compartment Syndromes, 78 (Summer)

NATA Student Writing Contest: Anterior Tibial Compartment Syndrome, 139, (Fall)

SHOULDER

Injuries to the Acromioclavicular Joint: Mechanisms, Diagnosis, and Treatment, 22 (Spring)

Treatment and Rehabilitation of a Complete Acromioclavicular Separation, 218, (Winter)

TIPS FROM THE FIELD

Saddle Bag for Trainer’s Kit, 10 (Spring)

Special Pads for Special Problems, 68 (Summer)

Successful Trampoline Extrication, 74 (Summer)

The D.P. Technique for Blisters, 88 (Summer)

Empire Gold, 165, (Fall)

Airplane Insulation For Flying Feet, 144, (Fall)

Protective Strapping for the Hands Of the Gymnast, 212, (Winter)

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