



# ATHLETIC TRAINING

THE JOURNAL OF THE NATIONAL ATHLETIC TRAINERS ASSOCIATION

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ROBERT H GUNN



#### IN THIS ISSUE:

- CEU Quiz: Ankle Ligament Injuries
- Code of Ethics
- The Vegetarian Athlete
- Tips from the Field

VOLUME 17  
NUMBER 3  
FALL 1982



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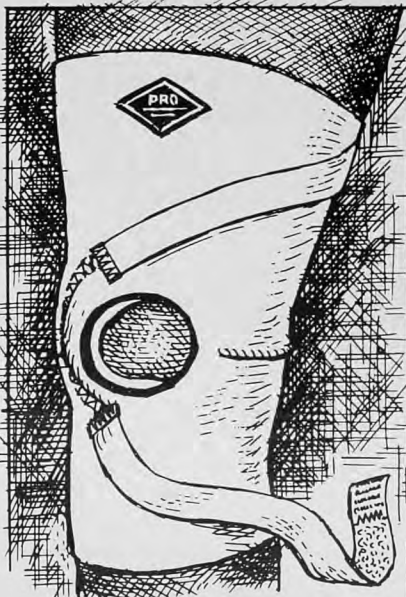
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# ATHLETIC TRAINING

THE JOURNAL OF  
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Volume 17, Number 3, Fall 1982

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# President's Message

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Dear NATA Members:

I would like to express sincere appreciation to Bill Chambers for the professional growth the NATA has experienced during his tenure as President of NATA.

A special "thank you" is extended to Dennis Sealey, Gary Craner, and Fred Hoover for the efforts put forth in planning and executing the outstanding Annual Meeting and Clinical Symposium in Seattle.

Numerous members of NATA have questioned me in regard to the National Commission on Health Certifying Agencies. Your Board of Directors supports pursuing NATA membership in this organization. Paul Grace and I met with the Commission in July and feel very positive about our future relationship with this group.

During the summer I received inquiries concerning the NATA's licensure efforts. At this writing, four states have achieved this goal. If your state is interested in pursuing licensure or another form of state regulation please contact Vice President Bob Behnke at Indiana State University. Bob chairs the licensure committee which has a representative from each district. I strongly encourage trainers in each state to organize and form a state association. There are many advantages, even if the main objective is not to gain licensure.

Many of you have expressed concern regarding the drug related problems in athletics being sensationalized by the media. We should be concerned with this issue and become as knowledgeable as possible as to the extent of the problem and our role in providing a feasible solution. I believe that NATA statement of Policy#1 regarding the use of non-therapeutic drugs adequately summarizes the position of our membership at this time. John Wells will write one article a year in *Athletic Training* related to Drug Education which will help us to keep current on this issue.

Please communicate your thoughts and suggestions to your District Director. We have five new directors who, along with the five returning directors, are eager to convey your ideas to the Board. Your input is needed in order for your director to effectively represent you.

Sincerely,

A handwritten signature in dark ink that reads "Bobby Barton". The signature is stylized with a large, sweeping "B" and a cursive "Barton".

Bobby Barton, ATC  
President



# Editor's Remarks



Ken Wolfert, ATC

## Code of Ethics . . .

This past June, L.F. "Tow" Diehm of the University of New Mexico turned over the leadership position he has had with the Ethics Committee since its adoption in 1957. A big thanks must go to him from each and every one in this profession for his efforts in helping to keep us ever mindful of the importance of our role in the athletic program and making clear the principles of honesty, integrity and loyalty.

The new chairperson of the Ethics Committee is Mr. Chris Patrick from the University of Florida. Chris picks up where "Tow" left off and is very concerned and would like to pass along the following message.

"It has been brought to the attention of the Code of Ethics Committee that some persons have been misrepresenting the facts pertaining to their individual NATA membership classification. Also, it has been known for people to state they are a "certified trainer" which may insinuate they are NATA certified, when indeed they are not even members of our Association.

Therefore, the committee encourages prospective employers to request NATA certification and/or membership numbers on the application of prospective employers and research the NATA rolls for proper representation.

Also, the committee wants to take this opportunity to encourage the membership to document their complaint pertain-

ing to ethics and send such to Chris Patrick, University of Florida Athletic Association, P.O. Box 14485, Gainesville, Florida 32604."

Let us be constantly aware of our ethical responsibilities. See the latest revision of the NATA Code of Ethics found on page 204 of this issue.

## Alumni News . . .

We are aware that some schools have initiated "Athletic Trainers Alumni Newsletters," which includes items such as upcoming events, recent happenings with athletic trainer alumni, training room tips, minutes of staff meetings and a directory. Perhaps other NATA approved curriculum schools and internship programs would enjoy beginning a similar newsletter.

## National Fitness . . .

In an effort to focus even greater attention on the pleasures and benefits of physical activity, President Reagan has designated October 9, 1982, as *American Running and Fitness Day*. The President said that he recognizes the "phenomenal growth of participation in physical activities and the fact that nearly half of all Americans engage in some form of exercise and sport," and encourages individuals and communities all across the country to observe *American Running and Fitness Day* on October 9.

## College Football Hall of Fame . . .

Thanks to the fine efforts of Bill Walker from the University of Cincinnati and Sara Paxton of the Drackett Company (makers of Nutrament), we will soon be proud of an on-going display located at the College Football Hall of Fame near Cincinnati, Ohio. The public is invited to a ribbon cutting of the Athletic Training permanent exhibit on December 14. I encourage you to contribute visual aids for the display. Contact Bill Walker for more information on this.

Do it and keep it safe . . . (KW)+

# Letters to the Editor

To the Editor:

I want to thank all of you for the honor of being inducted into the NATA Hall of Fame. To every member NATA member past and present as well as all connected with the NATA all over, I want to thank you for this honor. It is quite a tribute to be selected and inducted into our Hall of Fame and be included with so many outstanding members. It is the turning point of my career after 38 years of athletic training on the high school, college and professional levels.

Joe Romo  
Oakland, California

To the Editor:

This letter is in regards to the article of taping procedures for the unstable knee from *Tips from the Field* by Keith Handling in the Winter issue 1981. According to Mr. Handling, the secret of this taping procedure for the unstable knee is the felt pad. I would like to know what the biomechanics' mechanism is behind providing this type of support for the knee? Also I would like to know what type of instability is this taping job for? Is this type of instability a rotary or a straight type?

Jack Halbach, PT, ATC  
Kent, Ohio



To the Editor:

We appreciate Dr. Moffroid's candid comments concerning our article. We did not intend to imply that the Moffroid and Wipple paper (*Physical Therapy* 50: 1699-1700, 1970) advocates only fast speed training during rehabilitation following surgery, or that their work implies that fast speed training strength gains overlap in equal proportion into slower speed strength gains. In fact, their work demonstrated that the strength gain overlap into slow speeds diminished in magnitude as the velocity of contraction decreased. However, the fast speed training strength gains tended to shift the entire force-velocity curve upward and to the right. Nevertheless, this point has been the victim of misinterpretation and overly generalized as we state in our paper. The magnitude of this misinterpretation was further supported by the appearance of two programs of rehabilitation which advocated fast speed training to recover strength deficits at slow speeds (see references 18, and 21). Based on these suggested programs of rehabilitation, and the overly generalized concept stated above and in our discussion, we decided to determine, if in fact, slow speed strength deficits were normalized by fast speed training. The results of this question appeared in our paper.

We hope that our representation of the literature in our discussion has not diminished the integrity or quality of Moffroid and Wipple's study, and we apologize for any unintended implications of their study. We do hope that our article and these letters emphasize the point that "specificity of speed" training is an important concept which must be taken into account when isokinetic contractions are used as the strength training modality.

William M. Sherman, MS, ATC  
Columbia, South Carolina

To the Editor:

I would like to respond to the interesting article published in the Summer '81 (pp. 138-141) issue by Sherman et. al. entitled "Isokinetic Strength During Rehabilitation following Arthrotomy". My first and foremost concern is the assumption that exercising at fast speeds "eliminates the strength deficits" evidenced at slower speeds. This is a dangerous and invalid practice, and if one uses the 1970 Moffroid and Whipple study as a basis for this practice, then one is inept at reading the content of a publication. Our data clearly showed that training at slow velocities produced the greatest gains of any group, but only at the slow velocities. Furthermore, training at the high velocities did produce gains at that training velocity and at lower test speeds, but the gains were much smaller in magnitude. And lastly, anyone familiar with literature on transfer, knows that gains made through transfer are only proportional to gains made through direct learning. Therefore, since fast speed training (as evidenced in our study) did not produce impressive strength gains (as compared to those made at a slow speed of training) one cannot anticipate maximal strength gains at a slow speed from transfer effects alone. My position in isokinetic rehabilitation is that the moderate speeds (15-20) RPM are often the most comfortable for initiating exercise but that one has to also eventually exercise against resistance at the slower velocities (8-15) as well as at higher ones to complete a meaningful rehabilitation program. Sherman's data clearly brings this out, and it is my hope that those in the field who are engaging in irresponsible rehabilitation programs, based on misinterpretation of the literature, will quickly alter their tactics. Thank you for the opportunity to comment.

I do not mean to take Sherman et. al. to task but only to use their study and inclusive statements as a vehicle for advancing the practice of rehabilitation.

Mary Moffroid, RPT, PhD  
Burlington, Vermont

To the Editor:

The recent announcement by the Athletic Training Board of Certification to discontinue the physical therapy route to certification is cause for serious concern for all certified athletic trainers. In the future, physical therapists must apply through the only two remaining routes: approved curriculum, or internship (apprenticeship).

Under the present arrangement the physical therapist needed 800 clinical hours under the supervision of a certified athletic trainer to qualify to take the certification exam. Prior to the present arrangement, less hours were required. In both arrangements, physical therapists as a group have scored very well on the exam. They are also making many contributions in every facet of athletic training.

It seems unreasonable to now require the physical therapists to spend 1000 hours more (internship) or complete the requirements of a graduate or undergraduate NATA approved curriculum to qualify to take the exam. They have already demonstrated their abilities with less formal or structural athletic training education.

The new standards do not take effect for a year or more. There is time for reasonable revision. My discussions with Gary Delforge (University of Arizona), Chairman of the NATA Professional Education Committee, and Paul Grace (Massachusetts Institute of Technology), Chairman of the NATA Certification Committee have revealed a sincere interest to resolve what appears to me to be unrealistic requirements.

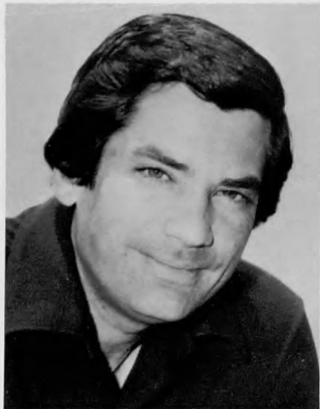
It is important that certified athletic trainers respond to their Chairman concerning this issue. My preliminary discussions with PT/ATC's have been quite negative.

This is a time when the NATA at the state and national levels is trying to build bridges for greater cooperation between NATA and APTA. The end result of this cooperation will be improved health care for athletes of all ages because of the improved preparation for individuals from both groups.

The proposed requirements for athletic training certification for physical therapists seems sure to antagonize physical therapists in general and physical therapy educators in particular. It is time for enlightened input from a broad base in both groups. Paul Grace has indicated his willingness to present a review of the genesis and forecast results of these changes in the near future. In the mean time, more membership input is needed, especially from those involved in education, licensure, and certification at the state and national levels.

Phillip B. Donley, PT, ATC  
Prof. Physical Education  
Head Athletic Trainer  
West Chester State College  
West Chester, Pennsylvania +

# Calendar of Events



Jeff Fair, ATC, MS  
Oklahoma State University

## October, 1982

**2** Nutrition and Competitive Athletics: A Conference for Coaches and Trainers, Berkeley, California. Contact American Heart Association, Box 5157, Oakland, CA 94605.

**6-7** Clinical Use of Exercise Testing, Prescription, and Training Seminar, Minneapolis, Minnesota. Contact Larry Hamm, Cardiovascular Intervention and Rehabilitation, North Memorial Medical Center, 3220 Lowry Ave. N., Minneapolis, MN 55422.

**18-22** Sports Medicine Physical Therapy — Basic Course, New York, New York. Contact Ronald G. Peyton, The Sports Medicine Education Institute, Inc., 993 Johnson Ferry Road, Atlanta, GA 30342.

**24-25** The Elbow in Sports, Houston, Texas. Contact American Academy of Orthopaedic Surgeons, 444 N. Michigan Avenue, Chicago, IL 60611.

## November, 1982

**4-6** The Pediatric Athlete is Different, San Antonio, Texas. Contact American Academy of Orthopaedic Surgeons, 444 N. Michigan Avenue, Chicago, IL 60611.

**6-7** Intermediate Cybex/Isokinetic Clinical Workshop, La Crosse, Wisconsin. Contact George J. Davies, Orthopaedic and Sports Physical Therapy, % Bethany St. Joseph Health Care Center, 2501 Shelby Road, La Crosse, WI 54601-8099.

**7-12** Sports and Tennis Medicine Symposium, New Braunfels, Texas. Contact Robert P. Nirsche, M.D., 3801 N. Fairfax Drive, Suite 60, Arlington, VA 22203.

**10-14** Sports Medicine Now — Monterey, California. Contact Linda Russel, Office at Continuing Medical Education, School of Medicine, TB 150 University of California, Davis, Davis, CA 95616.

**10-13** Current Concepts of Operative Arthroscopy, San Diego, California. Contact American Academy of Orthopaedic Surgeons, 444 N. Michigan Avenue, Chicago, IL 60611.

**12-13** Semi Annual Conference of the Ohio Chapter, APTA, Contact Norma Jean Finissi, Columbus, Ohio. Chapter, APTA, 4355 North High Street, Columbus, OH 43214.

**12-13** Second Annual Sports Health Forum, Minneapolis, Minnesota. Contact Bob Finke, Institute for Athletic Medicine, 606 24th Avenue South, Minneapolis, MN 55454.

**15-19** Sports Medicine Physical Therapy — Basic Course, Kansas City, Kansas. Contact Ronald G. Peyton, The Sports Medicine Education Institute, Inc., 993 Johnson Ferry Road, Atlanta, GA 30342.

**21-24** Fractures, Dislocations, and Associated Serious Soft Tissue Damage — Diagnosis and Treatment, Hilton Head Island, South Carolina. Contact American Academy of Orthopaedic Surgeons, 444 N. Michigan Avenue, Chicago, IL 60611.

**19-20** Second Annual Southwest Chapter of the American College of Sports Medicine Meeting, Las Vegas, Nevada. Contact Gene Adams, Physical Education Dept., California State University, Fullerton, CA 92634.

**20-21** Techniques for Mental Preparation of Superior Athletes, San Francisco, California. Contact Northern California Society of Clinical Hypnosis, 918 Hilldale, Berkeley, CA 94708.

## December, 1982

**1-4** La Crosse Health and Sports Science Symposium, La Crosse, Wisconsin. Contact Philip K. Wilson, Ed D., La Crosse, Wisconsin Exercise Program — Workshop Unit, Mitchell Hall, University of Wisconsin, La Crosse, WI 54601.

**3-4** How to Implement and Manage A Sports Medicine Program, Tucson, Arizona. Contact Ronald G. Peyton, The Sports Medicine Education Institute Inc., 993 Johnson Ferry Road NE, Suite 450-D, Atlanta, GA 30342.

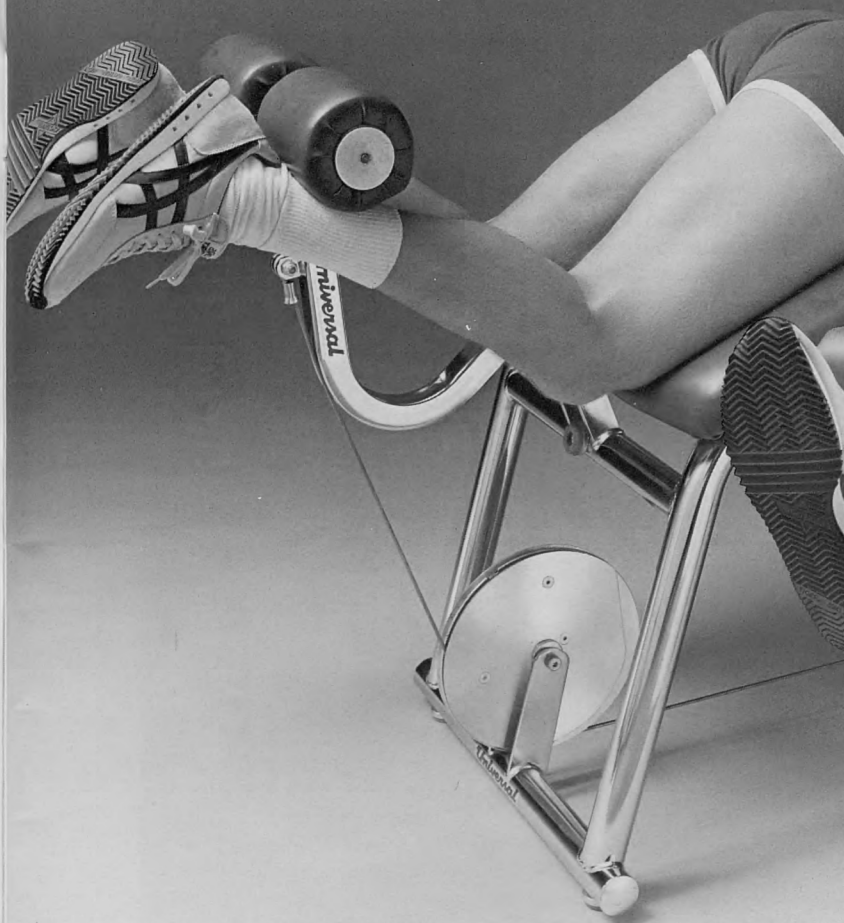
**5** Application of Biofeedback in Sports Medicine, Miami Beach, Florida. Contact Wallace Miller, M.D. The American Orthopedic Society for Sports Medicine, 70 W. Hubbard St., Suite 202, Chicago, IL 60610.

**11** Basic Cybex/Isokinetic Clinical Workshop, La Crosse, Wisconsin. Contact George J. Davies, Orthopaedic and Sports Physical Therapy, % Bethany St. Joseph Health Care Center, 2501 Shelby Road, La Crosse, WI 54601-8099.

**18-19** A National Conference on the Medical Aspects of Competitive Swimming, Phoenix, Arizona. Contact U.S. Swimming, 1750 E. Boulder Street, Colorado Springs, CO 80909. +



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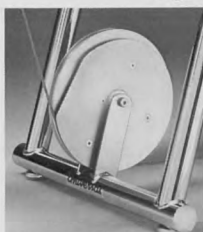
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**Dennis Aten, ATC, RPT, MS**  
Eastern Illinois University

## Contracting Injuries

*Family Weekly 9-27-81*

Reflecting on today's long-term, big-money baseball contracts, Mickey Mantle recently observed, "Once players sign the contract, they figure they don't have to work as hard."

Mickey may have a point. Economist Ken Lehn of Washington University in St. Louis has found a direct correlation between long-term guaranteed contracts and the increasing time baseball players are spending on the disabled list.

After studying 1980 contracts for 526 players, Lehn noted that those with one guaranteed year of salary remaining averaged 9.4 days on the disabled list, while those with five years averaged 21.2 days. Disability rose 165 percent among players with three to five guaranteed years after they signed the long-term contracts.

"Once you insure against a risky event, like injury or a poor season there is less incentive to avoid that risk," theorizes Lehn. "There is less incentive to stay in condition and less incentive to recover quickly."

## TV, Video Games; Causes of Eye Problems

*Decatur, Ill. Herald and Review Article*

Technical advancements of the past several years are creating eye problems, especially for children, says Dr. Wayne E. Gordon of Clinton, president of the Illinois Optometric Association.

In Decatur for the association's 74th annual convention at the Holiday Inn, which continues to Wednesday, Gordon says television is one of the biggest causes of eye problems.

The proof is that about twice as many children today have eyesight problems as 30 years ago, he says.

Also, today's child is more likely to suffer from being near-sighted than far-sighted.

The problem is not just with television, Gordon says. It also is a problem for people who work at video display terminals, play video games for extended periods or live in small apartment.

The problem is that the eyes are not being allowed to develop and use the muscles necessary to see far-away objects, he explains.

They become sluggish and tired when used to see things far away, such as a blackboard from the back of a room.

Contributing factors, especially with children, are proper lighting and posture while watching television.

Children need to sit, not lie on the floor, he says. The lighting is important because it allows the eye to focus on things in the room other than the television screen.

Prior to that, parents can watch whether the child is constantly rubbing his eyes, if they are usually red, if he squints a lot, turns his head to one side to see quite often or if the eyes are not aligned correctly.

To combat the problems created by television and other devices, Gordon suggests taking a break every half-hour and going outside.

For office workers, Gordon suggests looking away from the video display terminal at least once every 15 minutes.

## Stress Controlling Chemicals

*UPI News Release*

Researchers announced Thursday the discovery of a powerful brain chemical believed to control stress in humans. They said the finding someday may lead to treatment of stress-related diseases such as heart disease, stroke, ulcers and high blood pressure.

Dr. Wylie Vale, head of the Salk Institute's Peptide Biology Laboratory, said studies are now beginning to determine how the substance, a hypothalamic hormone called Corticotropin Releasing Factor, works in the body.

The hormone, a chain of 40 amino acids, is believed to be the triggering device in the brain that releases other pituitary hormones, including adrenal steroids and a morphine-like pain killer, when a person is under stress.

Existence of the stress-regulating hormone has been known for nearly a quarter of a century and it took researchers almost 10 years to identify it.

Researchers purified a half-million sheep brains before obtaining 90-millionths of a gram of the chemical and determining its "chemical blueprint." They then were able to synthesize 10,000 times the original amount of the peptide which is now being used in expanded studies.

"The (hormone) appears to be a key hormone in mediating the stress response, the 'fight or flight' reaction that enables man and animals to cope with their environment," the researchers said.

Vale explained that evolution has provided man with a complex set of responses aimed at helping him either fight or escape from an imposing physical or mental threat.

The symptoms of stress are universal, he said, characterized by a racing heartbeat, knotting of the stomach and an acute awareness of the environment.

One million years ago, the stress response in man was short-lived. But stressful situations of the 20th century tend to be prolonged, leading to anxiety which can produce high blood pressure, heart disease, peptic ulcers, reproductive dysfunction, and other disorders, Vale said.

He said the research could eventually lead to production of the hormone in various molecular forms to be given to human in pill or injection form to fight stress-related diseases.

"I think it is in the realm of possibility that the chemical could eventually be used in those areas but there are many years of research ahead of us, he said.

"What we have found so far is a chemical which seems to activate a certain part of the hormone system that increases levels of hormones associated with stress that increase blood pressure, heart rate, activate the adrenal glands. It also appears to have some behavioral effect as well."

"We're now trying to find out what the real significance will be," he said.

The finding was published in the Sept. 11 issue of Science magazine.

In another report in Science, a Team of researchers from the Mount Sinai School of Medicine and from Rockefeller University, both in New York, reported that rat experiments indicated that stress suppresses the body's disease defenses in proportion to the intensity of cause of the stress.

Vale said toxicological research is planned to determine whether there is any danger in using the brain hormone on humans.

(Continued on page 174)





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# Current Literature



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- 
- "Adult Age Trends in Athletic Performances," Stones, M. *Experimental Aging Research*, Box 29, Mt. Desert, ME 04660. 1981 Fall; 7(3):269-80.
- "A Thermophysical Rationale for Endurance Training for Racquet Activities," Hancock, P. *British Journal of Sports Medicine*, 39 Linkfield Road, Mountsorrel, North Loughborough, Leices, LE12 7DJ, England. 1981 December; 15(4):234-7.
- "Beware the 'Simple' Fibular Fracture (a clue for severe unstable ankle injury)," Israeli, A. *British Journal of Sports Medicine*. 1981 December; 15(4):269-71.
- "Body Composition and Somatotype Characteristics of Junior Olympic Athletes," Thorland, W. *Medicine and Science in Sports Exercise*. 1981, 13(5):332-8.
- "Cervical Spine Injuries in Rugby Football," O'Carroll, P. *Irish Medical Journal* 10 Fitzwilliam Place, Dublin, Ireland. 1981 December; 74(12):369-70.
- "Cortical Bone, Body Size, and Skeletal Maturity in Ice Hockey Players 10 to 12 Years of Age," Meleski, B. *Canadian Journal of Applied Sport Sciences*, Box 5004, Windsor, Ontario N9J 2LS, Canada. 1981, December; 6(4):212-7.
- "Common Medical Problems in Sub-Aqua Sport", Betts, J. *Practitioner*, 5 Bentinck St., London W. 1, England. 1981 August; 225(1358):1169-74.
- "Dynamic Strength Test as a Predictor for Maximal and Acceptable Lifting", Pytel, J. *Ergonomics*, 10-14 Macklin St, London, WC2B 5NF, England. 1981 September; 24(9):663-72.
- "Diagnosis and Treatment of Ankle Pain and Instability," Bremer, S. *Journal of Foot Surgery*, 1981 Summer; 20(2):88-90.
- "Diagnosis of Internal Derangements of the Knee," McElwaine, J. *Irish Medical Journal*. 1981 December; 74(12):369-70.
- "Exertion Injuries in Female Athletes," Orava, S. *British Journal of Sports Medicine*. 1981 December; 15(4):229-33.
- "Injuries of the Quadriceps Mechanism," Nance, E. *Radiology*, Radiological Society of America, 20th and Northampton Sts., Easton, PA 18042. 1982 February; 142(2):301-7.
- "Long-term Holter ECG Monitoring of Athletes," Hanne-Paparo, N. *Medicine and Science in Sports Exercise*, 1981; 13(5):294-8.
- "Optometry at the 1980 Winter Olympics," Erenstone, R. *Journal of the American Optometric Association*. 1981 August; 52(8):647-9.
- "Overuse Syndrome in Women," Julian, J. *Texas Coach*, P.O. Drawer 14627, Austin, Texas 78761. 25(9):44-46, May, 1982.
- "Peroneus Longus Tenosynovitis," Folan, J. *British Journal of Sports Medicine*. 1981, December; 15(4):277-9.
- "Physiological and Training Profits of Ultramarathoners," Thompson, W. *The Physician and Sportsmedicine*, 4530 W. 77th St., Minneapolis, MN 55435. 1982 May; 10(5):61.
- "Popliteal Artery Entrapment Syndrome in Athletes," Rudo, N. *The Physician and Sportsmedicine* 1982, May; 10(5):104.
- "Post-competition Blood Lactate Concentrations in Competitive Trac Cyclists," Burke, E. *British Journal of Sports Medicine*. 1981 December; 15(4):242-5.
- "Rehabilitation of Knee Flexor and Knee Extensor Muscle Strength in Patients with Meniscectomies, Ligamentous Repairs, and Chondromalacia," Campbell, D. *Physical Therapy*, 1156 15th St., N.W., Washington, DC 20005 1982 January; 62(1):10-15.
- "Selected Fitness Parameters of College Female Lacrosse Players," Schmidt, M. *Journal of Sports Medicine and Physical Fitness*, 1440 Monroe SE, Madison, WE 53706. 1981 September; 21(3):282-90.
- "Sports Medicine — Health Care Information — Supply and Demand," Markee, K. *British Journal of Sports Medicine*. 1981 December; 15(4):224-8.
- "Subacute Anterior Tibial Compartment Syndrome," Stefl, D. *Journal of Foot Surgery*. 1981 Winter; 20(4):258-61.
- "Tennis Elbow: Incidence in Local League Players," Carroll, R. *British Journal of Sportsmedicine*. 1981 December; 15(4):250-6.
- "Therapeutic Cold," Downer, A. *Texas Coach*. 1982 May; 25(9):46-48.
- "The Child with Heart Disease: Play, Recreation, and Sports," Strong, W. *Current Problems in Cardiology*, 35 E. Wacker Dr., Chicago, IL 60601. 1981 November; 6(8):1-38.
- "The Effect of Knee Injury on the Number of Muscle Fibers in the Human Quadriceps Femoris," Young, A. *Clinical Science*, 1982 February; 62(2):227-34.
- "The Pes Anserinus Transfer. A Long-term Follow-Up," Chick, RP. *Journal of Bone and Joint Surgery*, 10 Shattuck St., Boston, MA 02115. 1981 December; 63-A(9):1449-52.
- "The Value of Sports in the Rehabilitation of the Physically Disabled," Stewart, N. *Canadian Journal of Applied Sport Sciences*. 1981 December; 6(4):166-7.
- "Water, Water Everywhere — And Not a Drop to Drink," Harland, M. *Texas Coach*. May 1981; 25(9):54-55. +



# THE FLOWER OF FRIENDSHIP

## (A Method to Stop Hiccups)

Hanzhao Xian, MD

I am a visiting Chinese Doctor at Cortland College, working under Mr. John Sciera, Director of SUCC's Sport's Medicine Program. I am very interested in the athletic training program at Cortland and in athletic training in America. At Mr. Sciera's urging I frequently relate my experiences in China to them. I once told a story as follows:

"About ten years ago I was watching a basketball game in China. The game was very exciting and everyone was enjoying it. All of a sudden the public address announcer dropped the hiccups. Being concerned I went over to see how he was doing and, shaking hands with him, said "Good evening Sir, I am enjoying your comments very much." At the same time I suddenly pressed on the ventral aspect of his forearm with my left thumb. This pressure point is called Nai-Kuan. He was taken unaware and wondered why this lady is being so impolite. It did not take long for him to see the light because his hiccups went away."

Recognizing that the young student trainers in the United States are very interested in scientific experiment, and after hearing this story, some of them tested this method when they had the opportunity. They reported good success, the results being shown in Table.

Generally, hiccups are not a disease, but the intermittent contraction of the diaphragm involuntarily can be caused by laughing, gulping of cold air, talking, eating and drinking too fast. To say the least, the onset of hiccups can make a person uncomfortable particularly during an athletic endeavor. In my experience it is easy to stop them by pressing the Nai-Kuan acupoint. According to the results shown in Table, the success rate was 90%. Nai-Kuan is an acupoint recorded in

*Dr. Xian graduated from Hunan (Province) Medical School, China, in 1955. Since then she was assigned to the Beijing Institute of Physical Education, teaching sports medicine programs for 25 years to September, 1980. She was a visiting scholar at Springfield College, MA from September, 1980, to August, 1981, then transferred to Cortland College for one more year.*

Chinese traditional medical lectures. This acupoint is located on the forearm two inches above the wrist ventral fold, between the flexor carpi radialis muscle and the palmaris longus muscle (Figure 1).

### The Mechanism of Nai-Kuan

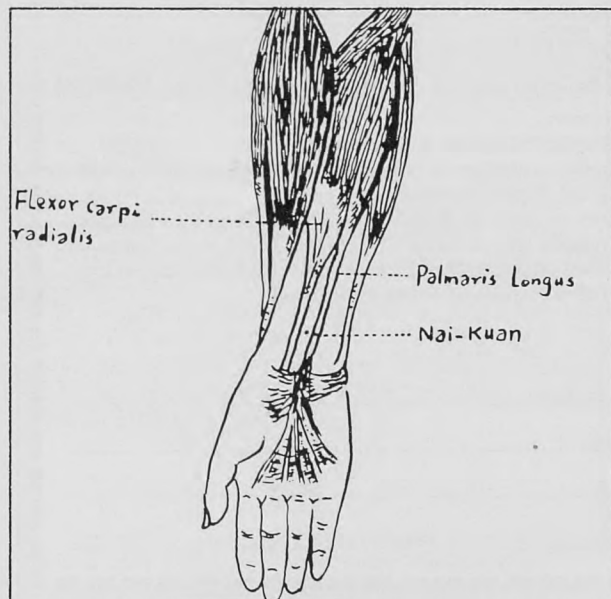
It is difficult to explain the mechanism of the Nai-Kuan acupoint, as well as the acupuncture phenomenon, but I will attempt to do so through neurological pathways.

As is known to all, movements of the diaphragm are supplied by the phrenic nerve (C<sub>3</sub>-C<sub>5</sub>). The median nerve, (C<sub>6</sub>-T<sub>1</sub>, sometimes C<sub>5</sub>), supplies all the muscles on the lower surface of the forearm except the flexor carpi ulnaris and the ulnar head of the flexor digitorum profundus. Both the medial antebrachial cutaneous nerve (C<sub>8</sub>-T<sub>1</sub>) and the lateral antebrachial cutaneous nerve (C<sub>5</sub>-C<sub>7</sub>) supply the forearm on the volar surface.

When stimulating (pressing) the Nai-Kuan acupoint a resulting impulse travel along the median nerve, the medial, lateral antebrachial cutaneous nerve, passing through the brachialis plexus to the sensory neurons at the posterior horn of the spinal cord. These impulses continue through a synapse with the internuncial neuron or commissural neuron, whose axons consist of fasciculi proprii, ascending to appropriate motoneurons at the anterior horn of the spinal cord (these might be located in the C<sub>3</sub>-C<sub>4</sub> segment) so that the abnormal movements of the diaphragm are inhibited.

The investigators in this experiment included five college student trainers, one high school health teacher and eight high school health students. They had never heard any information about acupoints before this time. They were successful as indicated, in this experiment.

It is most encouraging to me to be able to have brought a seed of the Chinese traditional medicine to these young American students. We brought a small flower together here. I would like to present this small flower of friendship to the membership of the NATA. +



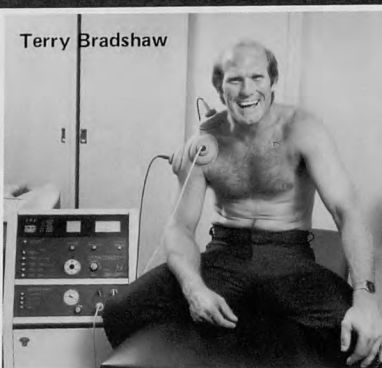
Reporter	Cases	Time hiccups lasted prior to treatment	Time pressure lasted	Results	
				Success	Failure
1	4	15-30 sec.	10 sec.	4	0
2	7	3-12 Min.	9-25 sec.	7	0
3	2	-	15 sec.	1	1
4	1	20 sec.	20 sec.	1	0
5	2	20-45 min.	30 sec.-2 min.	1	1
6	2	30 sec.	few sec.	2	0
7	1	2 min.	30 sec.	1	0
8	1	2 min.	few sec.	1	0
9	1	3 hours	1min.	1	0
10	1	10 min.	15 sec.	1	0
11	2	a few min.	few sec.	1	1
12	1	a few sec.	few sec.	1	0
13	1	2 min.	1min.	1	0
14	4	several min.	few sec.	4	0
Total	30			27	3

# Head Trainer, Ralph Berlin, proved to the Pittsburgh Steelers that the best defense against pain is a good offense...

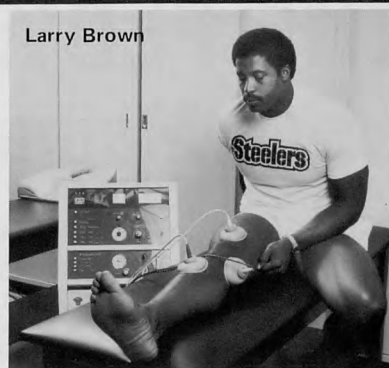


Ralph Berlin

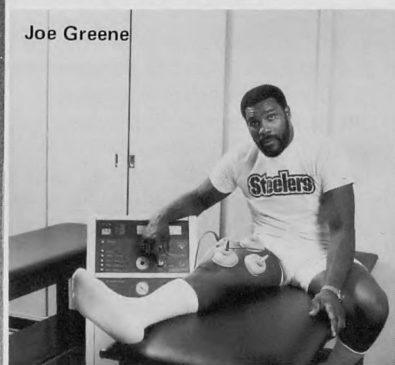
Jon Kolb



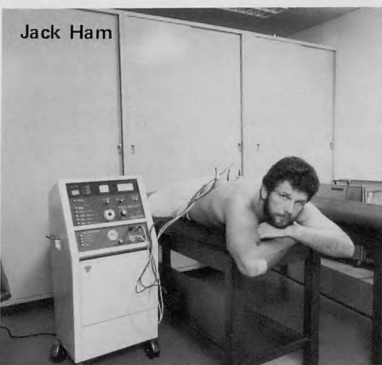
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# Trainer in a Counseling Role

Barbara Kane, PhD

**A**thletic trainers are in an ideal position to provide crisis, referral, and informal counseling services to the athletes in their professional contacts. The trainers are generally looked upon with respect and regarded as able to maintain the trust of a confidential relationship. Trainers see their athletes frequently over a relatively long period of time, and their encounters often have a high degree of intensity. When trainers have their own offices, even those no larger than closets, they are able to offer athletes a degree of privacy which tends to increase the closeness of their relationship. The factors of respect, trust, frequency, duration, intensity and closeness increase the chances that trainers will be called on to counsel athletes at every possible or impossible time.

Crisis counseling is appropriate when the athlete has had a physical or emotional training and is in terrible distressed and is frightened, shocked, bewildered, distraught, or in pain. Joe's Dad drowns. Mary Ann has a trailer fire. Tony wrecks his car. Lester is in jail. Sally and Vinnie end their relationship. Tony falls off the trampoline. Paul finds his roommate's body. If the trainer is available, these situations will occasion crisis counseling.

Crisis counseling relieves some of the pain of the moment, providing a warm heart and a cool head in the immediate present. It also paves the way for action in the immediate future.

Crisis counseling requires the trainer's full attention, total acceptance and complete support. Full attention means that the trainer gives the athlete top priority, with no distractions. The telephone is off the hook, and the door is closed. The trainer sits or stands close to the athlete, touching and holding when physical comfort is necessary.

When crisis counseling the trainer remembers that the athlete's values belong to him/her and the trainer does not judge. Judgements actually impede the counseling process. Blame such as, "How silly you were to do that," "That was a mean thing to do," and "That's a sin," tell the athlete that the trainer does not accept him/her and isn't really an ally. Praise, such as, "You were good to do that," encourages needless dependence on the part of the athlete who then may want to behave in ways that please the trainer rather than to act independently.

In addition to withholding praise or blame, the trainer does not provide any threat to the athlete's self-esteem. Threat will make the athlete want to defend him/herself. Defense is an additional burden as a time when the athlete is already in a state of intense vulnerability.

The trainer does listen and does respond emphatically. Empathy is not sympathy. Sympathy says, "I am sorry that you are hurting." Empathy, on the other hand, says, "My heart is open to you, and I can feel your pain." This means that the trainer makes him/herself available to experience the athlete's pain, anguish, rage, fright, or suffering. Needless to say, crisis counseling is exhausting.

If the trainer has been empathizing with the athlete, he/she may be tempted to solve the athlete's problem so they both will feel better. The trainer's place, however, is outside the athlete's anguish, accepting but not entering into the pain. The trainer knows, "I am not in your problem. Because I am removed from it I can help you find alternatives that will ease your misery."

The trainer's use of empathic non-verbals permit the athlete to freely express what he/she is feeling, up to the point of hurting himself or someone else. Accepting sounds and words such as, "Ahh," "Well," "Oh," "Yes, I understand," and "Mm" tell the athlete that he/she is not alone. The trainer cares, is concerned about the problem, and is an ally. The athlete can relinquish emotional control to the trainer and at the same time retain control of the problem and the solutions because the trainer's crisis counseling gives the athlete a small but powerful support system which fully appreciates the athlete's problem but is outside of it. This system strengthens the athlete to bear the present pain.

Because the trainer uses the warm heart to empathize with the athlete but does not become immersed in the athlete's distress, the trainer can use the cool head in the support system to help the athlete to gather information, see alternatives, and make decisions about his/her immediate future.

The trainer may choose to give direct support by providing a source of information about alternatives he/she may also be able to provide formative data to let the athlete know what directions other people take in similar situations.

The trainer doesn't ask questions to find out the details; they are not really his/her business. The trainer does ask questions in order to bring the athlete in touch with the reality of his/her situation. Questions such as, *How will you be able to get home? Do you have a place to stay tonight? Do you have an attorney? Do you have any money? How can I make you more comfortable? and Does he have family?* give some direction to the athlete's thinking. This direction helps in decision making and action.

Most people who are in distress have a limited view of possibilities and a short supply of energy to gather information to expand their ideas to make decisions and take independent action. Their weakness and vulnerability increase their dependence. Often they would like someone else to take charge. Their problems, however, belong to themselves. The solutions, therefore, must be wholly theirs. Because the trainer is outside the problem, he/she does not give advice or

suggestions. They are harmful because they cause the trainer to intrude on the problem and its solutions; the trainer loses that valuable outside position. In addition, even with the best intentions, the trainer could be wrong; it is presumptuous for the trainer to think that anyone could possibly be certain of the best course of action for anyone else. Furthermore, any advice or suggestions have the effect of narrowing the athlete's perspectives, and, just as praise and blame do, they tend to increase the athlete's dependence on the trainer. Problem solving is hard work. The athlete, in crisis, is in a state of natural debility. It is so much easier for him/her to follow the lead of the trainer and act as the trainer suggests or advises.

Instead, the trainer may use phrases such as, "Now let's see some of the things that could be done," and then go on to name a few while encouraging the athlete to add more ideas. This sort of supportive intervention can move the athlete into a stronger, more independent position.

Crisis counseling generally is one step ahead of referral counseling. It is entirely appropriate and practical for the trainer to have at his/her fingertips a personal referral directory. The list might include the telephone numbers of the police, several pastors and shelters, a couple of attorneys, a social worker or two, physicians and dentists, and community agencies such as Planned Parenthood and the Salvation Army, the school administrative offices, and the office of financial aids.

The trainer's referral directory is an up-to-the minute source of mid and long range support for the athlete. In referral, the trainer is not "passing the buck." Quite to the contrary, the trainer is saying in effect, "I care about you. I am concerned with your problem. I want the best for you. I want you to be in good hands." Indeed, there is much good and no harm in the trainer saying words such as these openly to the athlete. Then the athlete can fully appreciate the strength of the trainer's alliance and support.

Informal counseling is similar to crisis counseling except

that the athlete's distress or shock is not as intense and he/she is not as debilitated or as vulnerable as when in crisis. Any number of problems will occasion the trainer's informal counseling of the athlete. David is dropped from the team. Margaret loses her job. Carl gets drunk on school nights. Tony's mother is an alcoholic. Les thinks he might be gay. Sarah wants to "come out of the closet." Craig's tired of Sarah's whining. Fred wants to lose weight. Bill wants to gain weight. Tish is lonely. Greta is depressed.

Just as the trainer did in crisis counseling, he/she listens and responds empathically with a warm heart and cool head. The trainer accepts the athlete's problem with out judgement or threat to the athlete's self-esteem.

The trainer's acceptance is a powerful tool in informal counseling. The trainer is the athlete's ally and support. Together they can explore alternatives without the terrible pressure of crisis. As before, the trainer is caring and concerned but remains apart from the problem. He/she provides the support of information and norms but is careful not to intrude or be so presumptuous as to lead the athlete with suggestions or advice. If the trainer asks a question it is only to give the athlete a direction from which to explore alternative courses of action.

Like crisis counseling, informal counseling is one step ahead of referral counseling and, again, the trainer is not reluctant to offer the support of the referral that is at his/her fingertips.

While the job description of athletic trainers may or may not include counseling, it occurs often and is a necessary and valuable part of work. Because of the strength of their positions, they can provide relief for the athlete's crisis and chronic anguish. When trainers use counseling tools as a routine part of their professionalism, the worth of this on-site counseling service cannot be overestimated because it reduces stress and builds the strengths of those who come to the trainer in pain. +

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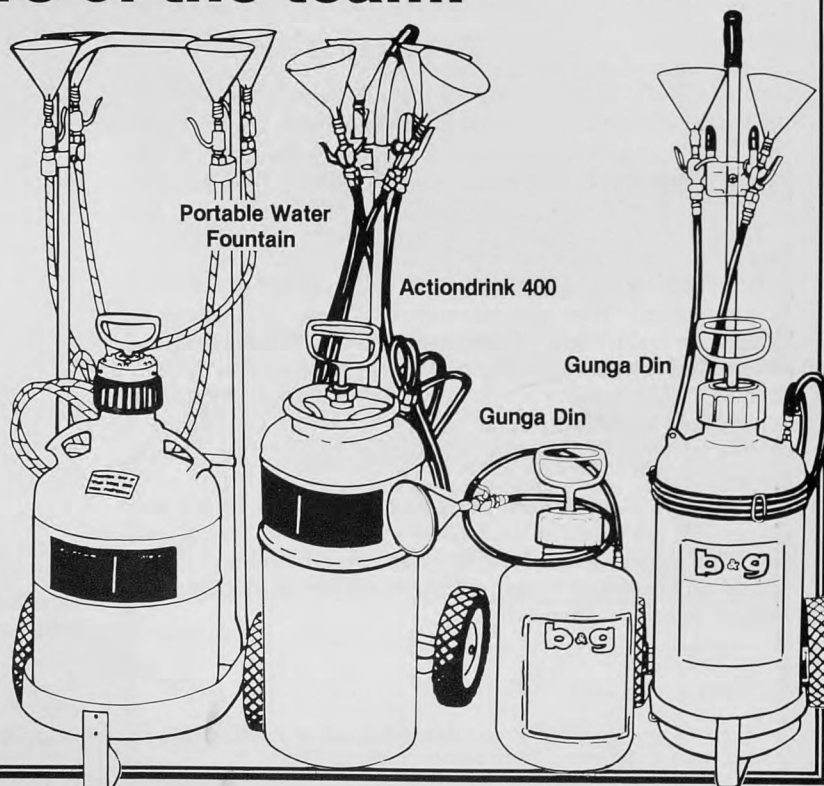
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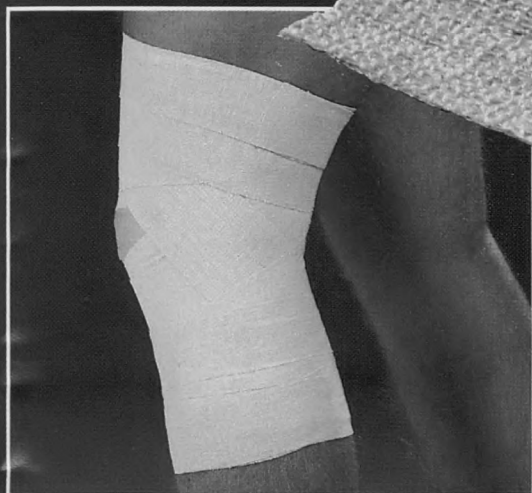
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## Alcohol: The Number One Drug of Abuse in the United States

John Wells, ATC, PT, PhD

**A**t a cocktail party during the annual meeting and Clinical Symposium of the National Athletic Trainer's Association, Athletic Trainers are having alcoholic beverages. At the same time, down the street, a group of people at a "pot party" are having marijuana. What do the Trainers at the cocktail party and the people at the pot party have in common? They are **all** having drugs. Alcohol is a drug and alcohol is the number one drug of abuse in the United States, if not the world. The difference between the Trainers and the people at the party is that alcohol is a legal drug and marijuana is an illegal drug.

A drug may be defined as any substance, synthetic or naturally occurring, which affects the normal physiology of the body. This definition does not include normal nutrition.

### Physiological Effects of the Drug Alcohol on the Human Body

Alcohol is absorbed directly and rapidly from the stomach, small intestine, and the large intestine by passive diffusion. Once the alcohol enters the blood the alcohol is carried to the liver where 85 percent of the alcohol is metabolized. As the alcohol is metabolized 7 calories are released for every gram of alcohol injected. However, the body can metabolize only 300 grams of alcohol every 24 hours.<sup>3</sup>

Do these calories then lead to the "beer belly" observed on some individuals? The calories obtained from the metabolism of alcohol are utilized for energy only and are not stored in the human body. What happens is that the calories from alcohol are utilized for energy instead of the calories from the food injected. Thus, the term should be really "food belly."<sup>3</sup>

The effect of alcohol on human performance is determined by the rate of absorption of the alcohol into the body. The rate of absorption varies (1) among different people, (2) in the same individual at different times, (3) according to the percent of alcohol in the drink, (4) by the speed of consumption, (5) due to the emptying time of the stomach, (6) according to the emotional level of the individual, and (7) in relation to the chemical makeup of the body.<sup>3</sup>

The drug alcohol has its most impressive effects on the central nervous system. The earliest changes are on (1) emotional functions, (2) automatic functions, (3) judgement, (4) memory, and (5) learning ability.<sup>3</sup> The reader will note that these five functions are quite vital to the performance of the athlete. In the central nervous system alcohol interferes with synaptic transmission by reducing the frequency of nerve impulses across the synapse.<sup>3</sup>

There is an affect on the red blood cells known as "sludging." Within five minutes after one shot of 100 proof whiskey or one bottle of beer the red blood cells begin to stick together or to the walls of the blood vessels. This may be noted in the

blood vessels inside the eyeball. In narrow blood vessels where only one red blood cell can pass at a time, sludging may cause the red blood cells to cease flowing. This means that less oxygen can be transported to the tissues served by these blood vessels.<sup>5</sup>

Alcohol is a diuretic by suppressing the antidiuretic hormone produced by the pituitary gland and by local irritation of the genitourinary system. This leads to increased urination, but the individual under the influence of alcohol may not necessarily be dehydrated because of this. There is an osmotic expansion which may actually increase the amount of water in the body. The largest percentage of water goes to the skeletal muscle and the cerebral tissue. This may decrease the water level of the cerebrospinal fluid which may be a cause of the headache associated with drinking alcohol.<sup>3</sup>

Brief drinking sprees by apparently healthy individuals can result in premature heartbeats or total loss of rhythmic beating in the atria.<sup>5</sup>

### Alcohol and Statistics

The national average of highway fatalities shows that at least 50 percent of the deaths are directly attributable to alcohol. At least 40 of the pedestrian fatalities show that the pedestrian, and not the driver, was drinking. Public intoxication causes over 40 percent of all arrests. Under the influence of alcohol an individual is 55 times more likely to commit suicide while 60 percent of all murders involve at least one of the parties under the influence of alcohol.<sup>1</sup> Under the influence of alcohol the individual runs 8 times greater a chance of getting a sexually transmitted disease because "the individual does not know who he is doing what with."

Drinking and swimming is dangerous in that 69 percent of those people drowning had been drinking alcohol. Smoking in bed is dangerous, but in conjunction with alcohol it is even more dangerous. Of those people killed in fires, 83 percent had been drinking alcohol.<sup>1</sup>

Alcohol has been shown to be highly correlated with child abuse and 49 percent of child molesters were drinking prior to the molestation.<sup>1</sup>

Also in the area of sex crimes, 50 percent of rapists were drinking alcohol prior to the rape and 43 percent of these were drinking heavily (10 beers or more).<sup>1,5</sup>

Tartaric acid is used in beer to cause the particulate matter to precipitate out.

Papain is an enzyme from the papaya used to tenderize meat, as a vasodilator, and to dissolve warts. Papain keeps the beer from getting thick and clouding.

Magnesium sulfate (epson salts), which is a laxative, is used in beer because the brewers believe that the brew is made better. In large quantities, magnesium sulfate causes respiratory failure and kidney disorders.

Dextrin insures foaming and the head. Dextrin is used in matches, fireworks, and explosives.

Formaldehyde, acetaldehyde, acetone, methylethyl (paint remover), formic acid, and ethyl acetate are other ingredients found in beer.<sup>5</sup>

*Dr. Wells is Associate Professor of Physical Education and Supervisor of Sports Medicine at Mars Hill College in Mars Hill, North Carolina 28754. In addition to serving as Abstract Coordinator for ATHLETIC TRAINING, the author is also Chairperson of the NATA Drug Education Committee. This article is the fourth in a series being presented by the Drug Education Committee.*



### Metabolism of Alcohol

The rate of metabolism of alcohol is approximately one gram of alcohol per 10 kilograms of body weight per hour. According to this formula a 70 kilogram male metabolizes 7 grams of 100 proof whiskey or 226.792 grams of beer in one hour. Theoretically, this 70 kilogram male could consume these quantities per hour, 24 hours per day and never become intoxicated. However, as in any formula for alcohol capacity, this formula has a  $\pm$  factor of 50 percent.<sup>3</sup>

### Ingredients in Beer

Acacia (gum arabic) is used to stabilize the beer to prevent a change in color or flavor and to promote the foaming quality. Pharmacologically, acacia is used as a suspending agent. Acacia can also cause allergic reactions.

Sodium hydrosulfite is a grayish white salt of hydrosulfurous acid used to inhibit the deterioration of flavor.

Tannic acid (tannin) is a yellowish brown substance added to beer to remove sediment which causes cloudiness during brewing. Medically, tannin is used as an astringent and as an antidote for various poisons. At one time tannin was used to treat burns. Tannin causes liver damage and gastric irritation.

Ammonium phosphate is used as a fertilizer, to fireproof clothing, and as a soldering flux. In beer, ammonium phosphate is used to alter American water to resemble European water in flavor.

Potassium metabisulfite is used to protect the flavor of beer. Medically, potassium metabisulfite has been used as an antitoxin.

### Fetal Alcohol Syndrome

A consequence of alcohol consumption during pregnancy is the Fetal Alcohol Syndrome, a cluster of birth anomalies that is now the third leading cause of birth defects involving mental retardation in the United States, **and the only one that is preventable.**<sup>1</sup>

For years the Fetal Alcohol Syndrome has been recognized among the approximately one million alcoholic female of childbearing age. The Fetal Alcohol Syndrome starts with the pregnant female consuming enough alcohol to become intoxicated upon more than one occasion before the termination of the pregnancy. An alcoholic mother has a 20 percent greater chance of having a child with one or more of the following features: low IQ (the range of 50-83 has been reported), underdeveloped skeleton, deformed arms and/or legs; slow motor skills; and a birth weight of less than 2.268 kilograms.<sup>4</sup>

What about the pregnant female who is a social drinker? Do one or two drinks have any affect on the fetus? The placental membrane is no longer considered a barrier to alcohol. Once alcohol is in the maternal circulation, the alcohol passes into the fetal circulation within 60 seconds. Traces of alcohol may still be present in the fetal circulation up to 24 hours later. Enzymes produced in the liver are necessary for the metabolism of alcohol, but these enzymes are underdeveloped until approximately five years of age.<sup>1,4</sup>

Excretion of alcohol and its metabolites take place through the kidneys. The kidney function of the fetus and the newborn infant is only 30-40 percent as efficient as the adult kidney; thus, the alcohol that reaches the fetus remains there for a longer period of time.<sup>4</sup>

The distribution of alcohol in the body is regulated by the speed of transportation of the alcohol through the membranes and by the extent of the alcohol binding to protein. The unbound alcohol is more likely to reach other parts of the body more quickly than the bound alcohol. Unbound portions of the drug alcohol may be two or three times higher in the fetus than in the adult, and it is this difference in binding that may be responsible for the greater effects that alcohol has on the fetus.<sup>1,4</sup>

Body weight in relation to alcohol consumption is one factor that has to be considered in relation to the effects of

alcohol on the body. What is the body weight of the fetus in comparison to the body weight of the mother? How much alcohol must pass from the maternal circulation to have a physiological affect on the fetus?

The Wet Brain Syndrome, which consists of marked brain damage from alcohol, was originally only associated with chronic alcoholics. Since 1964, when Medicare permitted more autopsies, the Partial Wet Brain Syndrome has been found to be associated with the social drinker. It has only been since 1972 that the Fetal Alcohol Syndrome has been studied in relation to the social drinker. More and more the social drinking is being shown to have an affect on the fetus.<sup>1,4</sup>

Alcohol readily enters the breast milk of the lactating mother, thereby providing alcohol to the nursing infant.<sup>1</sup>

### What the Athletic Trainer Needs To Look For Signs of Developing Alcoholism

1. The individual begins to drink more than other members of the group.
2. The individual begins to drink more frequently than others.
3. With increasing frequency, the individual goes beyond the allowed license for drinking behavior.
4. The individual begins to experience "blackouts" or temporary amnesia during and following drinking episodes. (This may be the most important warning sign).
5. The individual drinks more rapidly than others. Drinks are gulped.
6. The individual drinks surreptitiously and sneaks drinks.
7. The individual begins to lose control as to time, place, and amount of drinking. He or she drinks, and often gets drunk, at inappropriate times and places when he or she did not intend to.
8. The individual hides and protects the liquor supply so he or she will never be caught short.
9. The individual drinks to overcome the hangover effects of prior drinking.
10. The individual tries new patterns of drinking as to time, place, amounts, and what he drinks.
11. The individual attempts "geographical" cures by moving to new locations, or "traveling" cures by seeking out different drinking groups, usually of lower social status.
12. The individual becomes a "loner" in his or her drinking. Ingestion of alcohol becomes the sole purpose of drinking.
13. The individual develops an elaborate system of lies, alibies, excuses, and rationalizations to cover up or explain his drinking.
14. The individual has personality and behavioral changes, even when not drinking, which adversely affect the family situation, friendship groups, or on-the-job relationships. Accidents, job losses, family quarrels, broken friendships, and trouble with the law may take place not just when the individual is under the influence of alcohol, but even when not.
15. Characteristics of the final phase are obvious and tragic: extended binges, physical tremors, hallucinations and delirium, complete rejection of social reality, malnutrition with accompanying illnesses and diseases and an early death.<sup>2</sup>

## Clues to an Individual Driving Under the Influence of a Drug

1. Unreasonable high speed.
2. Driving in spurts: slow, fast, slow, etc.
3. Frequent lane changing with excessive speed.
4. Overshooting or disregarding traffic signals.
5. Improper passing with insufficient clearance; taking too long to pass, or swerving too much in overtaking and passing, i.e., over control.
6. Approaching signals unreasonably fast or slow and stopping or attempting to stop with uneven motion.
7. Driving at night without lights, delay in turning lights on when starting from a parked position. (This is what police look for around drinking establishments).
8. Failure to dim lights to oncoming traffic.
9. Driving in lower gears without appropriate reason, or repeatedly changing gears (standard transmission).
10. Jerky starting or stopping.
11. Driving unreasonably slow.
12. Driving too close to shoulders or curbs, or appearing to hug the edge of the road or continually straddle the center line.
13. Driving with the windows open in cold weather.
14. Driving or riding with the head out of the window.<sup>4</sup>

The Athletic Trainer must be aware of these signs which might appear in his athletes or colleagues. The Athletic Trainer must be aware of the local agencies for referral of suspected cases. The most noteworthy of the local agencies is Alcoholics Anonymous. Their phone number is found in almost every local phone directory. On the national level Operation Cork is especially designed for alcohol difficulties in athletics. They may be reached by contacting:

Wendy Gross, Director of Public Relations  
% Golin/Harris Communications, Inc.  
500 North Michigan Avenue  
Chicago, Illinois 60611

For any reader who is not yet receiving *Alcohol Affairs*, an international newsletter, a free subscription may be obtained by writing:

P.S. O'Brian  
2160 Terrace Avenue  
Baton Rouge, Louisiana 70806

As in any other medical condition, the earlier medical intervention is obtained the easier the recovery will be. The Athletic Trainer is in an ideal position to assist in early referral.

## Bibliography

1. *Fourth Special Report to the U.S. Congress on Alcohol and Health*, DHHS Publication NO (ADM) 81 — 1080, Superintendent of Documents, U.S. Government Printing Office, Washington, DC, January, 1981.
2. *Alcoholism: Definitions and Early Warning Signs*, Kemper Insurance Company, Lang Grove, Illinois 61049, 1981.
3. *Manual on Alcoholism*, American Medical Association, Chicago, Illinois 60610, 1973.
4. John Wells, "The Fetal Alcohol Syndrome," *Alcohol Affairs*, issue one, 1975.
5. *Alcohol, Nicotine, and Other Drugs*, John Wells, Medical Readings, Inc., Stanford, California, 1974.

## Additional References

*Employee Assistance Program: Baseball Management Guide*, Operation Cork 4425 Cass Street, San Diego, CA 92109, 1981.

*NIAAA Information and Feature Service*, National Clearinghouse for Alcohol Information, Box 2345 Rockville, MD 20852 (Subscription is free)

*Operation Cork Update*, Operation Cork 4425 Cass Street San Diego, CA 92109. +

(Potpourri continued from page 162)

"After we've done that, and we're satisfied that it is safe, we plan to test people who have problems with their pituitary hormones, such as people with arthritis who are having problems in their hormone production," Vale said.

## Grant Information

Grants, awards, fellowships, and private gifts have grown to a multibillion dollar enterprise providing support for human services. *The Annual Register of Grant Support*, 14th ed, is considered an authoritative standard reference source for non-repayable financial support. For information write Geraldine Lynch, Managing Editor, Marquis Academic Media, 200 East Ohio Street, Chicago, IL 60611.

## Committee on Sports Medicine

September, 1981 AAOS Bulletin

The American Academy of Orthopaedic Surgeons has reported on the activities of its committee on Sports Medicine. This committee was given the following charges:

- 1 — Define the problem areas in patient care related to its field of interest and, when indicated, arrange workshops and/or seminars to solve such problems and seek the cooperation of allied medical disciplines whenever possible.

- 2 — Develop and categorize within its field of interest, the important educational content and needs for future emphasis within the total AAOS educational matrix.
- 3 — Implement the recommendations of the Committee on Educational Programming, whenever possible.
- 4 — Consider the development of a manual regarding sports injuries that could be useful to trainers at both the secondary and collegiate levels.
- 5 — Participate in programs on sports subjects at general meetings and continuing education courses.
- 6 — Study and make recommendations regarding the management of sports injuries at the secondary school and collegiate levels.
- 7 — Maintain contact with national sports medicine organizations.

## More on DMSO

The DMSO Report, a new national newsletter published 10 times yearly, presents research and clinical information as well as the political and legal questions surrounding dimethyl sulfoxide (DMSO). In response to the controversy surrounding DMSO, the newsletter seeks to act as an intermediary in the scientific and social debate surrounding its application and trends in research and to establish direct links between the researcher, the practitioner, and the public. Cost of a one-year subscription is \$50. Contact DMSO News Service, Suite 103, 10149 SW Barbur Blvd. Portland, OR 97219. +



# Securing the Neck Collar

Gerald W. Slagle, ATC

One of the most feared (non fatal) type of athletic injury is that in which the athlete becomes a paraplegic or quadriplegic. There has been an increasing amount of literature recently written on the subject of head and neck injuries.

The National Athletic Trainers Association (NATA) has made several recommendations to the National Collegiate Athletic Association (NCAA) toward rule changes to eliminate the increasing number of head and neck injuries.

One of the most common types of neck injury that occurs in football is that in which the athlete describes his head being forced back or to the side and a "burning" sensation shoots down his neck, shoulder and many times reaching the arm and hand. This type of injury is commonly known as "stingers" or "burners;" however, it must be recognized as a brachial plexus or cervical nerve root injury.

The brachial plexus injury may be caused by the (1) head flexed and forced downward, (2) head laterally flexed and rotated, (3) head extended and forced backward, and (4) from a direct blow on top of the head causing a direct force to the cervical spine.

Neck collars have been worn by those athletes who have had or have such cervical nerve root injuries. The collars have also been built up on the sides and in the back in order to help prevent full range of motion of the neck. The neck collar, if properly worn, helps to prevent the neck from going into its full range of motion, thus preventing a stretching or pinching of the cervical nerves.

### Problem

Many players do not properly fit and tie the neck collars, thus causing movement of the collar. Notice in figure 1, the neck collar is not giving any protection against hyperextension.

### Solution

To eliminate such movement of the collar, the following steps should be taken:

1. Properly fit the correct length of the collar. The length should not extend the anterior border of the neck (Figure 2).
2. The covering (stockinet) should be long enough so that both ends extend the ends of the collar by one and a half feet.
3. Place collar around the neck so that it fits comfortably and touches the posterior portion of the neck (Figure 2).
4. With the two loose ends of stockinet, tie a square knot as close to the collar ends as possible (Figure 3).

*Mr. Slagle is an assistant professor at Penn State University. He is currently instructing in the student athletic training program and athletic trainer for the Penn State football team, University Park, Pennsylvania 16802.*

5. With the posterior end of stockinet, slip the covering down through the lacing of the shoulder pads (Figure 4).
6. With the other loose end of stockinet, bring it down over the anterior side of the lacing of the shoulder pads (Figure 5).
7. Tie a square knot (Figure 5).

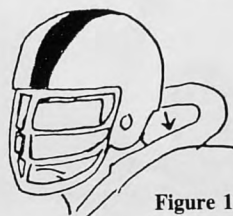


Figure 1



Figure 2

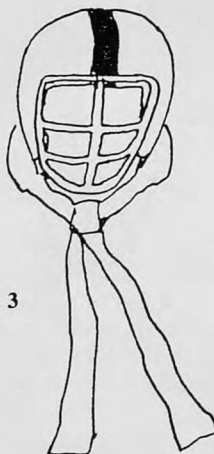


Figure 3

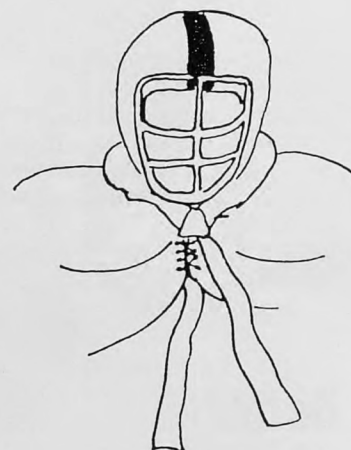


Figure 4

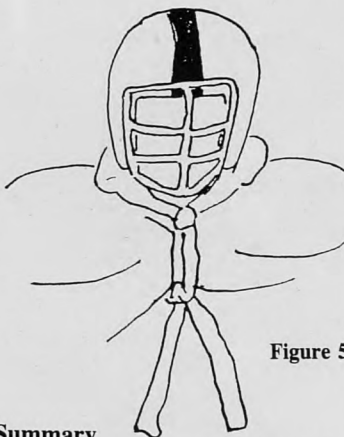


Figure 5

### Summary

In football, there has been an increasing number of head/neck injuries. Rule changes have been made to help eliminate such injuries.

Properly fitting and tying the neck collar is no cure for cervical nerve root injuries; however, it will help to prevent unnecessary movement of the collar and limit the range of motion of the neck.

The importance of proper treatment and correct exercises must be recognized. A correct exercise program is essential in developing and maintaining strength of the neck and shoulder. +

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# Association Activities



**David G. Yeo, DPE, ATC**  
Montgomery County  
Community College

One of the highlights of the NATA annual meeting is the announcement and presentation of awards and scholarships at the Awards Banquet. Recipients are honored for their contributions, initiative, and dedication within the profession, and the NATA takes great pleasure in acknowledging these individuals. "The awards honor the past, recognize the present, provide stimulus and inspiration for the future, and sponsor education for deserving young people" (NATA Committee on Grants and Scholarships). On behalf of the Association, I would like to recognize and sincerely thank NATA Committee Chairpersons W.E. "Pinky" Newell, *Grants and Scholarships*, and George Sullivan, *Honor Awards*, for their tremendous efforts in coordinating these awards. Previous winners were listed in the Fall 1981 issue of *Athletic Training*, and will be included in the Fall 1982 issue.

## *President's Challenge Cup Award* (sponsored by Kwik Kare Products)

Dr. Loyal W. "Bill" Combs  
Orthopaedic and Team Physician  
Purdue University, West Lafayette, Indiana

## *First Interstate Bank Athletic Foundation* *Trainers Hall of Fame*

Francis J. "Packey" Boyle (Deceased)  
Robert A. "Bobby" Lane, Arlington, Texas  
Mike Linkovich, Brunswick, Maine  
Leo F. Murphy, Medina, Ohio  
Joseph Romo, Hayward, California  
Bruce Vogel song, Carlisle, Pennsylvania

## *1982 Scholarship Awards*

**Eddie Wojacki 1982 Achievement Award** (sponsored by  
Mueller Chemical Co.)  
Leslie Rogan, Ohio University

### **Undergraduate Scholarship Awards**

Wayne Rodrigues, Bridgewater State College,  
Massachusetts (sponsored by National Football League  
Charities)  
Sandra Janine Shultz, California State University,  
Fullerton (sponsored by National Basketball Trainers  
Association)

**Robert H. Gunn Scholarship Award** (sponsored by NATA)  
Duane Lloyd Wieding, Southwest Texas State University

**Sayers J. Miller, Jr. Scholarship Award** (sponsored by  
NATA)

Leslie Paul Sewall, Northeastern University,  
Boston-Bouve College

**Chuck Cramer Scholarship Award** (sponsored by Cramer  
Products, Incorporated)

Gary Lee Harrelson, University of Southern Mississippi

**Frank Cramer Scholarship Award** (sponsored by Cramer  
Products, Incorporated)

Warren David Franke, East Carolina University

**William F.X. Linskey Scholarship Award** (sponsored by  
Johnson and Johnson)

Karen J. Freeman, Canisius College

**William E. Newell Scholarship Award** (sponsored by  
Chattanooga Pharmaceutical Company)

Jeannie B. McCormick-Hayden, Washington State  
University

### **Post Graduate Scholarship Awards**

Dale Frank Blair, Central Washington University  
(sponsored by National Football League Charities)

Robert Huston Cochrane, Jr., Bowling Green State  
University (sponsored by National Basketball Trainers  
Association)

**Otho Davis Post Graduate Scholarship Award** (sponsored  
by NATA)

Kenneth Floyd Brown, Jr., University of North Carolina,  
Charlotte

**Del C. Humphrey Post Graduate Scholarship Award**  
(sponsored by Schutt Manufacturing Company)

Suzanne Leigh Powelstock, Lock Haven State College

**G.E. "Moose" Detty Post Graduate Scholarship Award**  
(sponsored by Pro Orthopaedic Devices, Inc.)

Michael Anthony Ramaecker, University of Wisconsin,  
LaCrosse

**Good-Smith Post Graduate Scholarship Award** (sponsored  
by School Health Supply Company)

Jamy Ann Nuttall, South Dakota State University

**Naseby Rhinehart Undergraduate Scholarship Award**  
(sponsored by NATA District Ten)

Don Gleason, University of Montana

**Living Memorial Undergraduate Scholarship Award**  
(sponsored by NATA District Four)

Janet Beth Putzier, Ohio University

**Living Memorial Post Graduate Award** (sponsored by  
NATA District Four)

Glenn Rodney Brickey, Indiana State University

**Annual 1982 Student Writing Contest** (sponsored by  
NATA)

Ron D. Fischer, Oregon State University

**Distinguished Service Award 1982** (sponsored by The  
American Orthopaedic Society for Sports Medicine)

Otho Davis, Philadelphia Eagles Football Team

## *Honorary Membership Awards*

James R. Andrews, M.D.  
Livingston College, University North Alabama

Jim Cody  
Kwik Kare Products

Arthur E. Ellison, M.D.  
Williamstown, Massachusetts

William B. Ferguson, M.D.  
Lafayette, Indiana

Richard Gardner, M.D.  
Boise, Idaho



### NATA Twenty-five Year Awards

Ed Abramowski  
Buffalo Bills Football Club  
Vernon Eschenfelder, Jr.  
Houston Baptist University  
Irving Fountain, III  
Dartmouth College  
Bobby E. McClintock  
Cleburne (TX) High School  
Eugene S. Paszkiet  
University of Notre Dame  
Joseph P. Quigley  
New Brunswick (NJ) High School  
Duane A. Stober  
Wofford College  
Richard W. Waterman  
Middlebury College

Not previously reported in the *Journal*:

**1981 Trainer of the Year Award** (sponsored by Nutrament, The Dracket Company):

Glen Snow, Floyd Central High School, Indiana  
Bill Chambers, Fullerton Junior College, California  
Paul Zeek, Lamar University, Texas  
Otho Davis, Philadelphia Eagles, Pennsylvania

### Member Credits

Joe Godek, West Chester State College, The Contributing Editor for athletic training for the *Journal of Health, Physical Education and Recreation*, edited a feature series of articles appearing in the June 1982 issue of *JOHPER*, "Balancing the Issues in Sports Health Care." NATA members writing for the series were Kenneth Clarke, US Olympic Committee, William Buckley, Penn State, and Keith Handling, University of Delaware. (Also contributing to the series were Lawrence Graham, legal counsel to the NATA, and Michael Cordas, DO)

Correction from the Summer 1982 issue of the *Journal*: Richard Ray of Kansas State University should receive total credit for the compilation of a national registry of states having state organizations and states attempting to introduce legislation to regulate the practice of athletic training.

In response to "Who Can Top This?" from the Summer 1982 issue, San Diego State University claims seven graduates working as trainers for professional teams: Mark Howard and Jim Hammond are with the San Diego Chargers, Dick Dent — San Diego Padres, Robert Lee — San Diego Soccers, Connie Spooner and Donna Palulat — Women's Professional Tennis Association, and Phil Tyne (conditioning coach) — San Diego Chargers.

Dr. Holly Wilson, leader in the area of athletic training and girl's and women's sports, has received the National Association of Girl's and Women's Sports Honor Award. Her responsibilities in NAGWS have included: the first chairperson of the Athletic Training Council, clinician to Barbados with the NAGWS Latin American Project, authoring 23 articles dealing with sports injuries, and working as a trainer at olympic and national competitions. Holly is a sports medicine consultant in Berkeley and teaches and writes for the American Red Cross.

The NATA Placement Committee, Craig Sink (North Carolina State University), Chairman, has installed a 24-hour "hot-line" of the latest job opportunities. New positions are updated daily. Call 919-752-1266.

### District News

District 2 — Edgar (Hal) Biggs, Bucknell University, has been elected NATA District 2 Director. Hal will complete the remaining two years of Dick Malacrea's unexpired term.

District 4 — Roger Kalisiak of Hoffman Estates High School, Illinois, has been elected president of the Illinois Athletic Trainers Association.

District 5 — The Kansas Athletic Trainers Society was very successful in conducting their First Annual Business Meeting and Clinical Symposium in June. District 5 has also established a scholarship program to help worthy students continue their professional education.

District 9 — Eugene Harvey of Grambling University has been selected for the Louisiana Athletic Trainers Hall of Fame.

In this issue of *Athletic Training*, recognition has been given to those individuals who have received awards and scholarships. On behalf of the entire NATA, I am pleased to take this opportunity to proudly recognize the valuable contributions, continued support, and hard work of the staff of the NATA office in Greenville, NC. This group of dedicated people is responsible for innumerable tasks and responsibilities which often go unacknowledged. Whether it be membership applications, Journal matters, CEU forms, mailings, or correspondence, the work is always accomplished in an efficient and congenial manner.

Therefore, our sincere thanks and appreciation are extended to:

Mary Edgerley — Administrative Assistant  
Sandra Robinson — Secretary  
Barbara Manning — Business Manager of *Athletic Training*  
Barbara Allen — CEU Coordinator  
Carol Hooper — Secretary  
Susan Williams, ATC — Certification  
Carla Stoddard, ATC — Certification  
Debbie Barwick — Membership  
Jane Edgerley — Secretary  
Willie Purvis — Buildings and Grounds

### Flashbacks in NATA History

**Mike O'Shea, ATC**  
**University of Miami**

#### Can you name the National Secretaries of the NATA?

1. 1950-53 — Charles Cramer, Cramer Chemical Company
2. 1953-55 — John Cramer, Cramer Chemical Company
3. 1955-68 — William Newell, Purdue University
4. 1968-71 — Jack Rockwell, St. Louis Cardinals Football Club

(These were the last years the position was titled National Secretary)

#### Can you name the Executive Directors of the NATA?

1. 1971 to Present — Otho Davis, first and only Executive Director of NATA

## Can you name the Presidents of the NATA?

(1970) — First year to have an office titled, President of NATA)

1. 1970-74 — Robert Gunn, Lamar University
2. 1974-78 — Frank George, Brown University
3. 1978-82 — William Chambers, Fullerton College
4. 1982 to Present — Bobby Barton, Eastern Kentucky University

## Request for Assistance

- A. Please write me if you have found any errors in my book, *The History and Development of the NATA*.
- B. Please send me any old pictures, NATA material, etc.,

that you think might be important for our history files. I am especially in need of pictures and material from 1973 to the present time. If you have any pictures, please send them.

- C. Individual challenge: Can you trace the athletic trainers from the beginning to the present at your school, university, or professional team. If so, I would appreciate a copy.

Send all material to:

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# The Use of Performance Profiles in Athletic Training

Edwards, S.W., PhD and G.J. Vitti, BA

Modern technology, through the use of computers, has facilitated the process of information gathering, storage, and retrieval to a point where it is not uncommon to see computers in places where televisions and toasters used to be. Among the areas newly touched by this phenomena is the sports world. Coaches, athletes, and others associated with the field of competition are making use of computer generated information for the purpose of enhancing productivity. One of the recent developments in athletics which pertains to this topic is that of Profiling. Since we already use information processing to tell us what the average family looks like, how much the average home sells for, how long the average student takes to complete college, etc., it is not surprising that profiling is now being used to tell us about the average performance characteristics of a select group of athletes. This profiling has two dimensions: group profiles and individual profiles. Group profiles are useful for comparing athletes among one another while individual profiles are useful for comparing an athlete at different points in time. For example, football coaches are not only interested in strength, speed, and agility information for individual athletes but also the averages for such information across a position. If defensive backs, for instance, possess greater quickness than other defensive players, then a group profile of performance data may help the coach select and train players for specific positions. Comparing an individual athlete's performance with the profile of performance for a specific position will permit such a determination. Similarly, other personnel associated with sports can make use of profiling in the same fashion.

Athletic profiling is currently being used by athletic trainers, medical doctors, and others associated with the medical aspects of sports to make quantitative musculoskeletal evaluations. Profiles are being created for individual athletes on muscular strength, endurance, power, flexibility, height, weight, percent body fat, foot speed, and for a myriad of other physiological, biomechanical, and motor performance characteristics. There are three purposes for which profiling can be used in athletic training. They are training, selection, (recruiting or drafting) and rehabilitation. Comparison of an individual athlete's strength measures with a profile of strength characteristics for a similar group of athletes may indicate that additional training is necessary to bring that athlete more in line with typical performance on such measures. For instance, the Institute of Sports Medicine and Athletic Trauma has developed a collection of profiles that document the normal range of physical characteristics and capabilities for specifically defined groups of athletes.<sup>2</sup> Regarding selection, in the professional ranks 27 NFL teams are presently employing independent scouting services called "combines" which gather performance data and physiologi-

cal data on college players who are prospective draftees into professional football. These combines create individual player profiles which can be compared with profiles of active, successful players. Several universities have also developed profiles that can be used as a basis for predicting player success.<sup>4</sup> However, rehabilitation is the purpose for which athletic trainers are most interested in profiling. During the course of an injury evaluation, athletic trainers are often forced to compare injured limbs with uninjured limbs using a technique known as bilateral comparison in order to determine normalcy. Smolaka<sup>3</sup> states that additional scales for comparison are needed when the uninjured limb is a poor indicator of such characteristics as strength, power, and endurance. This problem is particularly acute in the upper extremity where dominant and non-dominant limbs present very different physiological and performance characteristics. A group profile yields additional information to be used in conjunction with bilateral comparison allowing the evaluator to obtain an adjunct evaluation of the extremity. Rehabilitation can then proceed until both of the limbs meet standards which have been created by a profile which was derived from athletes taken from the same sport, competitive level, or physical stature. Ideally, all athletes should have profiles created for their physiological and performance characteristics when they are completely healthy. This would permit rehabilitation of an injured limb to its former healthy state. However, time and monetary considerations do not always permit such extensive testing, so profiles become more important and useful during such conditions.

## Methodology

The remainder of this paper is devoted to an example of profiling in athletic training which details the process that has taken place in order for a profile to be developed for football players. Specifically, the profiling process presented here is limited to strength, power, and endurance characteristics for the musculature in the femoral region as it pertains to movements of the knee. The goal was to develop individual profiles for athletes and then combine the athletes' data in order to create averages across various groups of players thereby obtaining group profiles. It should be emphasized that the following procedures could be applied by other professionals in order to create profiles specific to their own athletic groups. The actual profiles presented here are not intended to be used in other locations, only the procedures employed.

## Testing Procedures

The profiling population consisted of 81 varsity football players at the University of Utah, Salt Lake City, Utah. Data were collected on healthy players prior to the 1980 football season. The testing instrument was a Cybex II.<sup>1</sup> Cybex II is an isokinetic device accompanied by a dual channel recorder for registering peak torque curves in relation to strength and power outputs at various angular velocities. Procedurally, each athlete was seated in an upright position with the knee flexed to 90 degrees. Each athlete was then instructed to

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perform three submaximal warm-up contractions followed by four maximal contractions. A single contraction consisted of application of maximal force by the knee extensors through the range of motion from 90 degrees of flexion to full extension at zero degrees followed by application of maximal force by the knee flexors through the range of motion from full extension at zero degrees to flexion at 90 degrees. This protocol was followed for strength measurements at a predetermined velocity of 60 degrees per second along a range of zero to 360 foot-pounds. Power and endurance were tested using the same protocol with a predetermined angular velocity of 240 degrees per second through a range of zero to 180 foot-pounds. Endurance was determined by counting the number of quadricep contractions up to a point where the contractions were consistently below 50 percent of the maximal contraction. The data were recorded onto a data file using the Univac 1160 computer system at the University of Utah. Storage and immediate retrieval of the data was available through peripheral devices in the proximity of the athletic training area.

### Grouping by Statistical Analysis

In order to create profiles for various sub-groups of football players it was first necessary to create criteria for player sub-grouping. Initially players were categorized according to offensive versus defensive players. Mean data for strength, power, and endurance characteristics were compared statistically between the two groups. A t-test was used to compare each performance characteristic between the offensive and defensive groups using a .05 significance level. No significant differences were observed, so it became apparent that grouping players by offense or defense in no way helped elucidate differences which might exist among players. Similar analyses for each specific position were largely impossible due to the fact that some positions contained as little as two or three players. Such small numbers do not permit the creation of a profile which adequately represented a given position. As a result, players were then grouped according to ball handlers versus non-ballhandlers. The comparative statistical analyses did yield significant differences between these two groups but the profiles for each group contained such wide variability as to preclude their usefulness in a practical setting. Further investigation led the authors to attempt to categorize the players according to physical stature on the premise that the bigger-taller players would exhibit dramatically different performance characteristics than the smaller-shorter players. In order to facilitate this idea, a weight/height ratio was calculated for each player by dividing his weight (in pounds) by his height (in inches). A frequency distribution of these ratios permitted subsequent sub-grouping of players. For some of the performance characteristics of interest, the statistical analysis yielded significant differences when the total group was divided into two halves (using the median as the central point in the total group distribution). For other characteristics, division was more appropriate according to thirds (using the appropriate percentile rankings). For some of the performance characteristics, the groups were divided into upper two-thirds versus lower third or lower two-thirds versus upper third. In each instance the sub-grouping of players was justified by statistical analysis between the groups which yielded significant mean differences between the groups for the performance characteristics of interest.

### Results

Table 1 is a listing of the means and standard deviations for the performance characteristics used in this investigation. The high, middle, and low groups are determined by weight/height ratio for the specific performance characteristics of interest. The target scores represent approximately the 67th percentile of each distribution of scores. The use of the profile and the rationale for the suggested procedures follows below. The measurement units are foot-pounds of torque.

**Table 1**

Classification According to Weight/Height Ratio

Performance Characteristic	Group	Weight/Height Ratio
Left Extension Strength	Low	2.206 - 2.905
Right Extension Strength	High	2.922 - 3.571
Left Flexion Strength	Low	2.206 - 2.569
Right Flexion Strength	Middle	2.571 - 2.905
	High	2.922 - 3.571
Left Extension Power	Low	2.206 - 2.708
Right Extension Power	High	2.730 - 3.571
Left Flexion Power	Low	2.206 - 2.569
Right Flexion Power	High	2.571 - 3.571
Left Extension Endurance	Total	2.206 - 3.571
Right Extension Endurance		

Profiles for Performance Characteristics

Performance Characteristic	Group	Mean	Standard Deviation	Target
Lt Ex Strength	Low	183.5	32.61	199
Lt Ex Strength	High	224.3	23.96	231
Rt Ex Strength	Low	186.3	29.17	201
Rt Ex Strength	High	224.8	25.43	239
Lt Fx Strength	Low	105.0	18.99	116
Lt Fx Strength	Middle	122.7	18.02	132
Lt Fx Strength	High	138.2	17.91	144
Rt Fx Strength	Low	110.6	22.36	120
Rt Fx Strength	Middle	126.3	23.40	144
Rt Fx Strength	High	138.0	18.16	143
Lt Ex Power	Low	105.6	15.39	110
Lt Ex Power	High	124.6	21.37	126
Rt Ex Power	Low	105.5	14.43	110
Rt Ex Power	High	126.3	20.43	131
Lt Fx Power	Low	86.1	15.33	86
Lt Fx Power	High	101.3	17.38	107
Rt Fx Power	Low	87.2	17.83	90
Rt Fx Power	High	99.4	17.55	105
Lt Ex Endurance	Total	26.0	5.98	28
Rt Ex Endurance	Total	27.6	7.20	31

### Use of the Profiles

The following procedure should be employed in order to determine accurate guidelines in rehabilitation:

**Step #1** — In the event that there is healthy data recorded on the athlete prior to the injury, the injured limb may be rehabilitated within 10% of its former strength, power and endurance scores. The sports medicine clinician should compare the healthy data to the profile to insure that no inherent weakness existed prior to injury. If there was inherent weakness, the profile should be utilized for rehabilitation as stated in Step #2.

**Step #2** — Both limbs are tested using the standard Cybex protocol. A weight/height ratio is calculated for comparison to the group profile. It should be noted that the weight/height ratio should be calculated using the athlete's playing weight. For each performance characteristic of interest, the athlete is classified into a high, middle, or low group.

(A) If the uninjured limb tests at or above the mean for the performance characteristic of interest, then the injured limb is rehabilitated within 10 percent of the uninjured limb.

(B) If the uninjured limb tests within a range from the mean to one standard deviation below the mean, then the target value is used as the rehabilitation goal for both limbs.

(C) If the uninjured limb tests lower than a standard deviation below the mean, it is unfeasible for the individual to rehabilitate to a target value specified by the profile. It is, therefore, proposed that both limbs be rehabilitated to within one standard deviation below the mean prior to resuming competitive activity. The individual should also be advised



that a long range training goal should be the target values specified by the profile.

### Examples of Profiling

In order to clarify the procedures outlined above, three examples are presented in the form of vignettes.

#### Vignette One.

A football player presents himself to the athletic trainer having recovered from a contusion to the left quadricep complex. No prior healthy data is available. A weight/height ratio is calculated to be 2.612. Both limbs are tested using the standard Cybex protocol and the results for the right (uninjured) limb are compared with the performance characteristics of interest. For example, if the right extension strength was shown to be 190 ft-lbs., then the left (injured) limb would be rehabilitated towards a goal of 171 to 190 ft-lbs.

#### Vignette Two.

A football player presents himself to the athletic trainer having recovered from a severely strained right hamstring. There is no data available from a prior Cybex test when the athlete was healthy. A weight/height ratio is calculated. Both limbs are Cybex tested using the standard protocol. The results of the test for the left (uninjured) limb are compared with the profile for each performance characteristic using the high group values in each case. For example, if the left flexion strength was shown to be 130 ft-lbs, then both limbs would be rehabilitated toward the target value of 144 ft-lbs. Each of the performance characteristics are compared in turn using the same approach.

#### Vignette Three.

A football player presents himself to the athletic trainer having recovered from a third degree knee injury requiring subsequent surgery. No prior health data is available for either limb. It is determined that, due to inherent weakness in combination with extended post-injury inactivity, the uninjured limb is unsuitable for comparison to the profile, (i.e., lower than one standard deviation below the mean). It may also be noted that the inherent weakness prior to injury may have been a contributor to knee joint instability and injury proneness. A weight/height ratio is calculated and the athlete is rehabilitated bilaterally to a value that is within one standard deviation below the mean for each performance characteristic.

#### Rationale

These vignettes serve to demonstrate instances when the

profile can be used to aid in the rehabilitation process. The rationale for the procedures employed is an outgrowth of intuition combined with scientific inquiry. Statistical tests were used to determine that significant differences existed between (or among) the groups for each of the performance characteristics except right and left extension endurance where the total group distribution is used as the profile. The difficulty arises in determining what to do with people who test out well above (high outliers) or well below (low outliers) the mean for a given performance characteristic. It would be counter-productive to target high outliers for the mean when it is quite likely that their actual prior values were well above the mean. For this reason, we recommend that these people be rehabilitated within 10% of the uninjured limb value. Conversely, since low outliers have performance values that are substantially unlike their peers, we recommend that these individuals be rehabilitated bilaterally to look more like players of similar stature. Target values were chosen at or about the 67th percentile so that players rehabilitated toward these values would have a two out of three chance of having their target amount at or above their actual prior value. Better recommendations await more research regarding these matters.

#### Summary

In summary, individual and group profiles of performance characteristics can be useful to the athletic trainer when it becomes necessary to (1) assist the coach in selecting, recruiting or drafting athletes for participation, (2) train athletes in order to minimize the potential for athletic injury, or (3) rehabilitate athletes toward goals that are likely to be consistent with their prior state of health. Continued investigation into the specific procedures to be employed when using profiles is both recommended and encouraged.

#### References

1. *Isolated-Joint Testing and Exercises: A Handbook for Using Cybex II*. Ronkonkoma, NY, Lumex Inc. 1980.
2. Sapega AA, Minkoff J, Nicholas JA: Sportspecific performance factor profiling: Fencing as a prototype. *American Journal of Sports Medicine* 6:232-235, 1978.
3. Smolaka V: Rehabilitating the injured athlete. *Physician and Sports Medicine* 5:43-52, 1977.
4. Wilmore JH, Parr RB, Haskell WI: Football pro's and strengths — and cv weakness charted. *Physician and Sports Medicine* 4:45-54, 1976. +

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# Announcements

## NATA LICENSURE COMMITTEE ANNUAL UPDATE

Robert Behnke, Chairperson

In 1980 the National Athletic Trainers Association Board of Directors created a new standing committee, the Licensure Committee. This committee consists of a Chairperson, appointed by the President with the agreement of the Executive Director and the approval of the Board of Directors, and one certified member from each of the ten NATA Districts appointed by each District's Director.

The functions and responsibilities of this committee are:

1. to serve as a clearinghouse for all matters pertaining to regulatory legislation of athletic trainers.
2. to assist state groups seeking regulatory legislation through the distribution of materials relevant to successfully achieving such legislation.
3. to serve as consultants, when requested, to state groups requesting information, guidance, and advice regarding regulatory legislation of athletic trainers.
4. to cooperate with the Professional Education Committee and the Certification Committee regarding the updating of the definition, functions, preparation, and qualifications of a member of the athletic training profession and to facilitate and promote the use of the NATA examination as prepared in cooperation and conjunction with professional testing consultants as the instrument utilized as the state examination for appropriate state licensure, certification, or registration.
5. to act as a liaison between the NATA and various related organizations (i.e., AMA, APTA, ACSM, AOSSM, NFSHAA, etc.) in matters pertaining specifically to regulatory legislation of athletic trainers.
6. to continually work to update the *NATA Model Act* accompanying *Guidelines* to reflect current status based upon the experiences of specific states seeking regulatory legislation and to prepare an annual report to the membership through an "Update" article in *Athletic Training, The Journal of the National Athletic Trainers Association*.

In accordance with the NATA By-Laws, Article XXI, Section 6, number 6 (see 6 above), this "update" is written to inform the NATA membership. Currently, five states have some form of legislation regulating the profession of athletic training. Texas, Georgia, and Oklahoma have enacted legislation requiring athletic trainers to be licensed. Kentucky has enacted a certification program. Ohio has provided for qualifications of athletic trainers through the State Department of Education.

The NATA Licensure Committee completed a survey in the Spring of 1982 attempting to determine what, if any, efforts were being made in the 45 other states regarding regulatory legislation of athletic training. Thirty-three states are currently at some stage of consideration of regulatory legislation. Some states are just organizing state organizations to consider legislation. Various states have already attempted to introduce legislation and are either awaiting results or mounting new efforts to re-introduce their Bills. Other states are very near success and within the calendar year of 1982 as many as four more states may have regulatory legislation

controlling the practice of athletic training.

The NATA Licensure Committee functions as a clearinghouse to provide the membership with information about successful attempts of others. This sharing of information obviously must be a two-way street. The Committee cannot provide information if the membership does not provide the committee with information about their current efforts. Twice annually the Committee must report to the Chair about the status of any regulatory legislative efforts within the states of the committee member's NATA District. The Chair compiles these status reports into one report which is provided to the NATA Board of Directors and returned to the entire Licensure Committee. It is this semi-annual report, along with additional materials provided the Chair, that allows the individual committee members to serve their Districts as a clearinghouse for legislative information. For those who either have information which can be shared for the benefit of others making similar legislative efforts, or for those organized state groups seeking information, listed here are the members of the current NATA Licensure Committee:

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Lake Charles, Louisiana 70605 (318) 477-2520

DISTRICT 10: Rick Troxel, Athletic Trainer  
University of Oregon  
Athletic Department  
Eugene, Oregon 97403 (503) 686-4477



It is hoped this "Update" will appear in the Fall issue of *Athletic Training* annually. The quality of the "Update" will be largely dependent upon the NATA membership informing its District representative on the NATA Licensure Committee about what is happening in your states regarding regulatory legislation for athletic trainers. Please do not hesitate to ask your District committee member for advice and information pertinent to helping your legislative efforts. Likewise, do not hesitate to report any activity in your state to your District committee member. Each District committee member has a list of contact people in the states within his/her District. If this individual changes, it is imperative the NATA Licensure committee member in the appropriate District be informed of the change. The only way we can all benefit from each others efforts is to keep the lines of communication open. To do this we must keep your District representative to the NATA Licensure Committee informed.

As an outgrowth of the work of the NATA Licensure Committee, many states have organized formal organizations with their main purpose to seek some form of regulatory legislation. Through the very fine efforts of Richard Ray, Athletic Trainer at Hope College in Holland, Michigan, a *National Registry of State Athletic Trainers Organizations* was developed. Rich presented this registry to the NATA Licensure Committee at its annual meeting in Seattle, June 14, 1982. This is just one example of the type of material available from your District representative on the NATA Licensure Committee. Materials available through your District representative should be provided to those individuals directly involved with a state's organization working towards some form of regulatory legislation. The committee does not have the resources to duplicate unlimited quantities of material. The NATA Licensure Committee serves your state group. Please utilize the committee's services and keep the committee informed of your efforts. Together we can help each other and, in turn, help provide better health care to the athletes within our individual states.

### Back Issues of Journal Still Needed

The National Office now has one copy of each issue back to 1956 except the following:

1956 Spring, Summer, Winter	1965 all issues
1957 all issues	1966 all issues
1958 all issues	1967 all issues
1959 Spring, Winter	1968 Spring, Winter
1960 Summer, Winter	1969 Fall
1961 Summer	1970 Summer, Fall, Winter
1962 Spring, Summer, Winter	1971 Summer
1963 Spring, Summer, Winter	1972 Summer, Fall
1964 Spring, Summer, Fall	1973 Spring, Summer

These missing issues are desperately needed to complete the collection of all back issues of The Journal of the National Athletic Trainers Association and thereby enable the membership to order copies of needed articles.

A donation of several old Journals from Jerry Rhea of the Atlanta Falcons filled many of the gaps and we are very grateful. Any of the above would be most welcomed as they are urgently needed.

### Certification News

Paul Grace, Chairperson

This fall update is for your use and information, particularly to make you aware of our certification procedures and processes.

Of interest to students and internship advisors are the following items:

1. The Board of Directors approved the Professional Education Committee's request to develop the Educational components of the Internship tract (Section II). This possibly will be completed for the Midyear Board Meeting allowing it to be discussed and approved and subsequently incorporated into the Certification Procedures. The end result will be as follows:

- a. current Section II (1800 hours experience) for candidates who elect to choose this route to Certification or
- b. an alternate route of Section II for candidates who complete required courses and the required internship hours (which will possibly be less than the present 1800) could choose this route to Certification

2. Make sure that the following Internship documentation of hours forms (copy in following pages) are returned to the Certification Office by December 1 of each year:

- a. Form A for interns to complete
- b. Form B for supervisors to complete

Failure to return these forms may result in hardship for you or one of your interns when application is made for the examination.

Interns who wish to attain hours at Approved Affiliated Athletic Training Settings should note that the settings must be approved prior to crediting of hours. Supervisors of such settings (sports medicine clinics, etc.) can request application from the Certification Office between the months of January and May. The Board of Certification will review the applications for approval at the annual (June) meeting. Each supervisor at these centers must submit Form B for the interns who credit hours at their facility during the year.

The one change in the Core Requirements that affects ALL candidates beginning 1984 is that candidates must have Advanced First Aid Certification (American Red Cross). This becomes effective for Certification Examinations beginning January 1984. PLEASE NOTE THIS IMPORTANT CHANGE.

For those members who responded to the Role Delineation; thank you. The initial response was very positive. The testing service, Professional Examination Services (PES), noted the fine and positive response to this study. For our process to maintain its reputation, we will have to undertake this task every three to five years.

The Board Of Certification will be initiating an Examiner Development program this year in various locations throughout the United States. If you have an interest in becoming a recognized examiner please inform your certification district representative of your interest. Through this process we will have an examiner pool that will be proficient in administering the certification examination.

In an effort to provide the certification candidate with their test results as quickly as possible and to inform candidates how they scored, I am pleased to announce that effective January, 1983 PES will directly mail examination results to the candidates. The information to be sent will include a total score and a breakdown by section of the maximum score, the average score, and the individual's score. The candidates then can analyze their score by comparing it with the average and maximum scores. Additionally, the letter from PES will inform the individual of his/her passing or failing status.

In closing, please contact me or any of the district representatives of any concerns or problems you may have. The success of our certification program relates directly to the interest, enthusiasm, and most importantly, input from our membership.

(A)  
**STUDENT REPORT FORM  
FOR TRAINING ROOM HOURS**

Dec 1, \_\_\_\_\_ to Nov 31, \_\_\_\_\_

NAME: \_\_\_\_\_ SS#: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ Member #: \_\_\_\_\_

District: \_\_\_\_\_

Are you a member of the NATA? YES \_\_\_\_\_ NO \_\_\_\_\_

Institution where Internship hours were attained:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Supervising Trainer: \_\_\_\_\_

I \_\_\_\_\_ have interned under the above mentioned NATA Certified Athletic Trainer and have  
acquired \_\_\_\_\_ hours.

Sign: \_\_\_\_\_ Date: \_\_\_\_\_

\*These hours must be submitted by the Intern and the Supervising Trainer.

(please photo copy for your use)



BOARD OF CERTIFICATION  
(B)  
Documentation of Internship Hours

NOTE: To be completed and returned to the Board of Certification office in Greenville, NC by December 31, of each year.

Please Print or Type

Name: \_\_\_\_\_ Membership #: \_\_\_\_\_

Title: \_\_\_\_\_ Certification #: \_\_\_\_\_

Place of Employment: \_\_\_\_\_ District: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Please list names of other NATA Certified Athletic Trainers who supervise Interns at the institution listed above.

Name	Member #	Certification #
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

**INTERN HOUR LOG**

Dec 1, \_\_\_\_\_ to Nov 31, \_\_\_\_\_

Name	Social Security #	# of Hours
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

(please photo copy for your use)

### Description of Athletic Training Clinical Experience Guidelines

The work experience shall include the following components of athletic training:

1. Evaluation procedures and techniques for athletic injuries.
2. First-aid procedures and techniques for athletic injuries.
3. Management procedures and techniques for athletic injuries.
4. Application of therapeutic modalities and techniques for athletic injuries.
5. Application of rehabilitative modalities and techniques for athletic injuries.
6. Planning and implementation of preconditioning, conditioning, and reconditioning exercise procedures for the prevention of athletic injuries.
7. Application of protective and supportive devices, adhesive/elastic taping procedures, and supportive bandaging procedures.
8. Organization and administration procedures for the training room.

### NATA CERTIFICATION EXAMINATION SCHEDULE OF FUTURE SITES AND DATES

All regional sites subject to a **minimum** of six candidates per site and limited to a **maximum** of 30 candidates. Applications are accepted and scheduled for sites in order of remittance. NOTE: All sites are subject to change within the region.

**JANUARY 9, 1983** — Deadline for returning applications is 11-27-82

New Britain, CT	Fort Worth, TX
Philadelphia, PA	Denver, CO
Raleigh, NC	Sacramento, CA
Chicago, IL	Portland, OR
Dayton, OH	

**March 20, 1983** — Deadline for returning applications is 2-5-83

Boston, MA	Fort Worth, TX
Pittsburgh, PA	Tucson, AZ
Springfield, VA	Costa Mesa, CA
Anderson, IN	Richmond, KY
Lincoln, NE	Boise, ID

**June 26, 1983** — Deadline for returning applications is 5-21-83

New Britain, CT	Denver, CO
Philadelphia, PA	Sacramento, CA
Raleigh, NC	Richmond, KY
East Lansing, MI	Portland, OR
Lawrence, KS	

**July 31, 1983** — Deadline for returning applications is 6-18-83

Boston, MA	Costa Mesa, CA
Philadelphia, PA	Chattanooga, TN
East Lansing, MI	Seattle, WA
Cedar Falls, IA	

**WHEN REQUESTING AN APPLICATION:** It must be in written form, it must state the date to be examined and what section you will be applying under. Application forms are available from:

NATA Board of Certification  
P.O. Drawer 1865  
Greenville, NC 27834

NOTE: The 1984 examination dates will approximate the 1983 dates on a regional basis.

**All items must be received by the NATA Board of Certification Office by the specified deadline for the date you have chosen; however, all applications are accepted and scheduled in order of remittance.**

### Membership Dues

Dues statements will be mailed from the National Office on October 1. BE SURE to return copy of the invoice with your payment to assure proper credit. If your address of record is not current at the National Office, please send correction immediately. If you have recently changed your address but do not receive your notice shortly after October 1, contact the National Office. Non-receipt of dues statement sometimes results in membership deletion due to non-payment of dues. **DON'T LET THIS HAPPEN TO YOU!**

### The Chronic

They call me the chronic  
I'm really not sure why.  
Is it the spastic tic  
In my contused right thigh?  
No — It must be my back,  
But the disc or muscle?  
(I got slapped with a hack  
And got into a tussle).  
But these aren't the reasons,  
There must be something more.  
(Shorter are my seasons  
From the muscles I tore).  
My chondromalacia?  
Or my tendinitis?  
Maybe sciatica,  
Or just my bursitis?  
The surgery it's not,  
The hematoma? — no,  
Or is it my blood clot?  
I give up — I don't know!  
Now just 'cause I get hurt  
In practice and in game  
Doesn't mean I deserve  
Such a depressing name.  
It seems very unfair,  
But they all call me it,  
It's not that they don't care,  
It's me — I must admit.  
Still it seems like a scandal,  
And yet the name seems to stick.  
It's become my new handle,  
So, just call me the chronic.

**Martha Godfrey**  
Graduate Student Athletic Trainer  
Old Dominion University, Norfolk, Virginia



# Fractures of the Carpal Navicular: A Single Case with Unexpected Signs

David Leigh, MS, ATC  
Greg Vergamini, PT, ATC

**F**racture of the carpal navicular is an enigma in athletics in that recognition of the fracture is sometimes difficult for the health care professional. The one sign that is most often discussed in the literature is pain at the "anatomical snuff box". (Fig. 1) The snuff box is proximal to the carpometacarpal joint of the thumb and outlined by the extensor pollicis longus tendon ulnarly, and the extensor pollicis brevis and abductor pollicis longus tendons, radially (Fig. 2). In the following case study this was not present, though other signs led to suspicion of navicular fracture, and x-rays confirmed this to be the case.

## Review of Literature

In reviewing the literature, physical findings found on a carpal navicular fracture include swelling and tenderness over the anatomical snuff box.<sup>1,3,4,5,7,9</sup> In addition, limitation of wrist motion in hyperextension (dorsiflexion) and radial deviation is commonly found.<sup>8</sup> This injury is frequently misdiagnosed as a sprain because initial x-rays may be negative and a fracture line may not be present on x-rays until up to two weeks post injury. In the literature reviewed, though radial side pain at the base of the thumb is pointed out as a sign of carpal navicular fracture,<sup>6</sup> no mention of volar surface wrist pain is made.

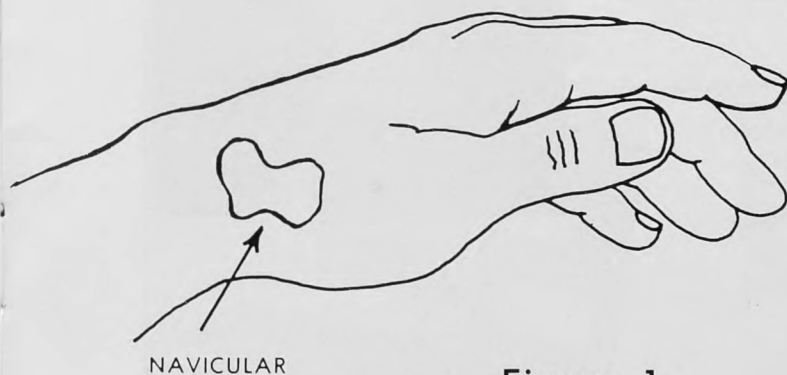
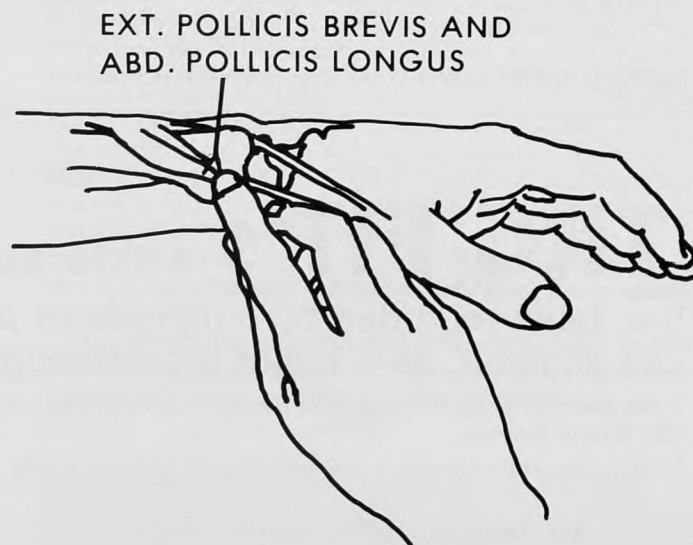


Figure 1

Figure 2



## Case Study

The subject of this study is a twenty year old male caucasian who complained of wrist pain on hyperextension with no recollection of precipitating incidents other than one evening of playing volleyball. History included a previous fracture of the carpal navicular which had been grafted approximately one year before. He had no pain or limitations since the grafting. He was seen in the physical therapy unit of the student health center on August 31, 1981, after noticing pain one day earlier.

Physical examination revealed decrease in range of motion due to pain by approximately fifty percent in all motions except extension, which was limited by approximately seventy-five percent. Manual muscle testing was painful in all motions. No stability testing was performed due to pain. There was no temperature increase, no crepitus and no pain either at rest or with palpation of the anatomical snuff box. Pain was

*Mr. Leigh is presently Head Athletic Trainer at the University of Wisconsin-La Crosse. Mr. Vergamini is presently a staff Physical Therapist/Athletic Trainer at St. Mary's Hospital, Department of Physical Medicine & Rehabilitation, La Crosse, Wisconsin 54601.*

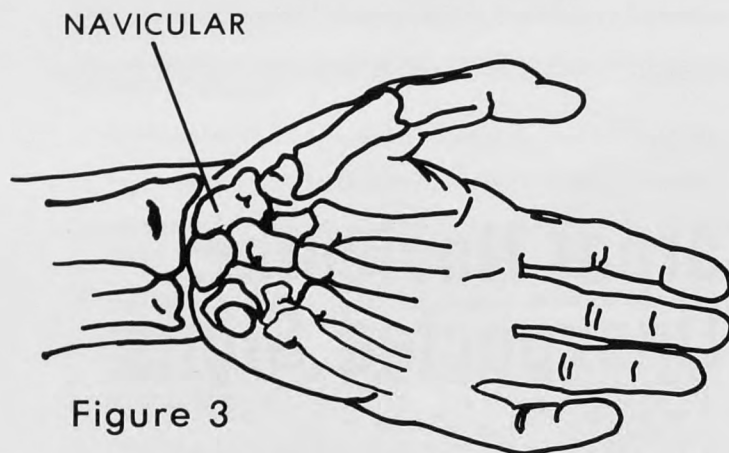


Figure 3

present over the volar surface radial aspect (Fig. 3) of the carpal navicular with palpation and at rest. No edema was apparent. The patient was instructed to ice several times daily and to wear a wrist splint until he was to be seen again (September 2, 1981). Following re-evaluation the patient was still tender over the volar surface, and after discussion with a health center physician, was referred for x-rays to rule out repeat fracture of the carpal navicular. The x-rays revealed an acute mid-waist fracture of the carpal navicular, and he was subsequently referred to an orthopedic surgeon for appropriate care.

#### Summary

Recognition of the carpal navicular fracture can be a problem for the health care professional since clinical examination and x-rays are not always conclusive. In most cases physical findings of a carpal navicular fracture will include pain in the anatomical snuff box. In the case cited, pain was not present

at the snuff box, but only over the volar surface of the navicular. Other signs were present on clinical examination, and a mid-waist fracture of the carpal navicular bone was found on x-rays. From this evidence, when ruling out this entity, it would seem best not to rely too heavily on classical "snuff box" pain alone.

#### References

1. Boyes JH: *Bunnells Surgery of the Hand*, Fifth ed. Philadelphia, J.B. Lippincott and Comp. 1970, p. 592.
2. Cailliet R: *Hand Pain and Impairment*. 2nd ed. Philadelphia. F.A. Davis Co. 1979 p. 115.
3. Klafs CF, Arnheim DD: *Modern Principles of Athletic Training*, 5th Ed., St. Louis, C.V. Mosby Co., 1981, p. 513.
4. Muckle D: *Injuries in Sport*, Chicago. Yearbook Medical Publishers. 1978. p. 52.
5. Rockwood CA, Green DP: *Fractures Volume I*. Philadelphia J.B. Lippincott and Co., 1975, p. 386.
6. Ryan AJ, Allman FL Jr: *Sports Medicine*. New York, Academic Press, 1974, p. 276.
7. *Standard Nomenclature of Athletic Injuries*: American Medical Association, 1976, p. 18.
8. Strauss RH: *Sports Medicine and Physiology*. Philadelphia. W.B. Saunders 1979, p. 204.
9. Williams JG, Sperry PN: *Sports Medicine* 2nd Ed., London 1979, p. 418.

*The authors wish to thank David A. Lundberg, M.D. for advice and Mary Robertson for assistance in preparing this manuscript. Graphics by Bert Sasse.+*

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# Computerized Training Room Records

Thomas E. Abdenour, ATC

Recording meaningful training room injury information has taken a novel twist at Weber State. Vital information regarding injuries, rehabilitation, and daily treatments is being computerized.

At the end of each day, significant information about a fresh injury or an athlete's rehabilitation progress is dictated into a tape recorder. A day or two later, the tape is played back and these notes are entered into computer files that have been created for our injured athletes. The information is typed on a standard cathode ray terminal (Figure 1) which is connected to the campus computer by telephone (Figure 2). The telephone uses a specific frequency that communicates between the terminal and computer to allow new information to be fed in and old information to be reviewed. Typing on the terminal requires basic typing skills, and our program has just a few simple computer language commands. The process requires that the individual's file is printed on the terminal screen and the new information is inserted at the end of the file. The notes are arranged chronologically to allow day to day comparison

*Mr. Abdenour is the Head Athletic Trainer at Weber State College in Ogden, Utah 84408.*

and analysis. We use this filing system to record a variety of data. Each fresh injury is recorded and the significant information relative to the injury mechanics and evaluation tests are entered into the particular athlete's file. The rehabilitating athlete's file can house notes regarding girth or range of motion measures, improvements in strength and flexibility, or anything else that the athletic trainer thinks is pertinent. Notes are recorded in paragraph fashion in English — thus no specific computer language is required.

This approach of information storage is easy to sustain and has been a method of preserving accurate records. These files can be kept permanently in the computer or printed for conventional storage. Either way, the files can be referred to for future reference as needed. We are currently using a terminal located in our Athletic Ticket Office, but are planning to install one in the training room to make the process a little easier. The terminal itself cannot print a paper copy, but it can be used to give the print command to the computer to accomplish this task.

Our athletic training staff and team physicians are very pleased with this process and would recommend it for athletic trainers who have computer facilities available. +



**Figure 1:** This terminal has a standard typewriter keyboard and has the capacity of presenting 12 lines of the computer program at any one time. Each line can contain up to 80 letters, punctuation marks, or numbers.



**Figure 2:** The telephone receiver as it rests on its coupler. This coupler is portable but in this case is sitting on the terminal.

CEU Credit Quiz

# The Diagnosis And Management Of Ankle Ligament Injuries In The Athlete

Jay Cox, MD

Edited by: Don Kaverman, ATC

Injuries to the ligaments of the ankle joint are a common occurrence in athletic participation. A sprain of a ligament is defined as an injury that stretches the fibers of the ligament. The fibers may be partially or completely disrupted. More than 300 ankle sprains are treated each year at the United States Naval Academy so classification of the injury is important. There are two basic types of injuries to the ligaments of the ankle joint involving either the medial or lateral structures which are best classified according to the method of injury.

The first and more serious type of sprain is the injury to the medial structures that is caused by pronation and eversion of the foot combined with an internal rotation of the tibia on the fixed foot (Figure 1). In common terms the foot twists outward. This results in a tear of the deltoid ligament, anterior tibiofibular ligament, and interosseous membrane.<sup>1</sup> It frequently occurs in football when the foot is firmly planted on the ground and another player falls against the lower leg, or in soccer when the foot strikes another player or the ground instead of the ball. An isolated medial ligament tear from an outward twist is an uncommon injury because there is usually a fracture involved with this mechanism of injury. This fracture can involve the distal fibula, the medial malleolus, the posterior aspect of the tibia, or a combination of these. There can also be a fracture of the fibula far above the level of the ankle joint accompanying the rupture of the medial ligament and the interosseous membrane. This fracture may be missed in a routine ankle roentgenogram, so it is important with this mechanism of injury to include the entire fibula on the film.

The second type of ankle injury involving the lateral ligaments comprises approximately 85% of all ankle sprains.<sup>2</sup> This injury results from supination and inversion of the foot with external rotation of the tibia on the fixed foot (Figure 2). In common terms the foot twists inward. This causes a progression of tears in a predictable sequence.<sup>3-5</sup> The first structures to tear are the anterolateral capsule, the anterior talofibular ligament, and the anterior tibiofibular ligament. As the inversion force progresses, the calcaneofibular ligament is torn. The posterior talofibular ligament stabilizes against posterior displacement of the talus and is rarely injured except in cases of complete dislocation of the ankle. It is preferable to classify these lateral ligament injuries as single or double

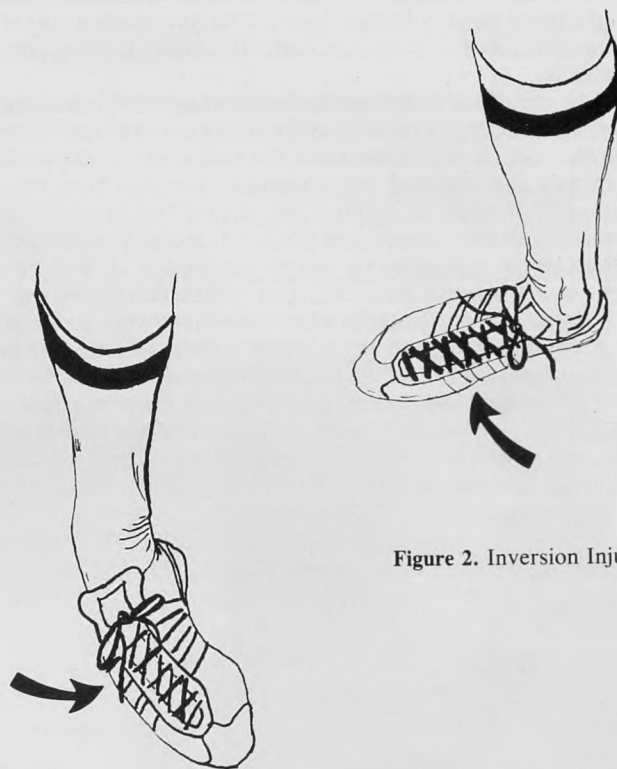


Figure 1. Eversion Injury

Figure 2. Inversion Injury

ligament tears rather than referring to mild, moderate or severe sprains. A single ligament tear involves only the anterior talofibular ligament. A double ligament tear involves the anterior talofibular ligament and the calcaneofibular ligament.

The injury to the lateral ligaments is usually seen in jumping sports such as basketball or volleyball, because the foot naturally falls into plantar flexion when a player jumps. Ordinarily the dorsiflexors bring the foot back into a more neutral position as the foot nears the playing surface, but when a player lands off balance or on another player's foot before the dorsiflexors have acted the inversion injury occurs.

Dr. Cox is at the Naval Regional Clinic, U.S. Naval Academy, Annapolis, Maryland 21402.



## Diagnosis

### History

It is most important to obtain a history of the mechanism of the injury. The patient will usually be able to describe the direction of movement of the foot and ankle. He can usually describe the foot as twisting inward or outward. The patient may also give the history of having heard a "pop" or "snap" in the ankle. The location of the pain and the occurrence of swelling is important. It is also important to know if the individual had a previous injury of this ankle. The patient may describe a feeling of "instability" or "weakness" in the ankle. This information will give the examiner an idea of the structures involved, the extent of disruption, and also if this is an acute or a recurrent injury of the ankle.

### Examination

If the injury is seen within the first few hours, it is easier to make a diagnosis from the clinical examination. The area of swelling and the point of maximum tenderness can indicate the ligaments involved. In medial injuries, swelling and tenderness occur primarily over the deltoid ligament below the medial malleolus and over the anterior aspect of the ankle where the anterior tibiofibular ligament and the interosseous membrane are torn. In lateral injuries it is sometimes difficult to differentiate between a single and a double ligament tear near the origin or in the substance because the anterior talofibular and calcaneofibular ligaments are very close in their origin on the fibula. The insertions are more easily palpated on the talus or calcaneus, thus the examiner can occasionally get some idea of the involvement of the individual ligaments if they are torn in this area. If the injury is not seen within the first few hours, generalized swelling and tenderness on both medial and lateral aspects may make the diagnosis very difficult.

The anterior drawer maneuver is helpful in assessing the stability of the anterior talofibular ligament. The patient is examined in a sitting position with the knee flexed to relax the calf muscle. The heel is then gently brought forward in the sagittal plane (Figure 3). With a tear of the anterior talofibular ligament, the talus and foot can be moved anterior to the ankle. The anterior drawer test may also be performed by resting the heel on the floor and gently pressing backward on the distal tibia. An effect similar to the talus sliding forward in the ankle mortise may be elicited.

Determining laxity of the calcaneofibular ligament by inversion stress maneuver is difficult in the acutely injured ankle (Figure 4). If the ligaments are completely ruptured instability may be obvious. However, in most cases the ankle is swollen and inversion is extremely painful.



Figure 3. Anterior Drawer Test



Figure 4. Inversion Stress Test

## Roentgenographic Evaluation

### Standard Roentgenograms

Routine views of the ankle should be obtained in all cases of severe ankle injuries to rule out the possibility of fracture. These roentgenograms should include anterior-posterior, lateral, and oblique or "mortise" views to show the talus in respect to the distal tibia and fibula. In pronation-eversion injuries in which the medial deltoid ligament is injured, a high fibula fracture is possible, and views of the entire tibia and fibula should be obtained. Diastasis of the distal tibia and fibula in these eversion injuries is determined by measuring the distance of the talus from the medial malleolus on the mortise view and comparing this distance with the opposite, uninjured ankle.

### Stress Roentgenograms

After routine roentgenograms have ruled out the possibility of fracture, stress views can be obtained. If the injury is seen within the first few hours, it may be possible to obtain stress roentgenograms without benefit of anesthesia, but some type of anesthesia is usually necessary to obtain an accurate evaluation. Local injection of xylocaine may be used, but a peroneal nerve block at the neck of the fibula is more satisfactory. Stress roentgenograms of both ankles are obtained in two planes. A lateral view is taken while performing the anterior drawer test to elicit any forward shift of the talus. A shift of more than 3 mm. in comparison with views of the opposite uninjured ankle indicates a tear of the anterior talofibular ligament.

Another popular method of determining the degree of lateral ligament injury is the measurement of the tilt of the talus in the mortise view on inversion stress. Since dorsiflexion in an acute ankle sprain is painful, the films are obtained with the ankle in a relaxed position of slight plantar flexion. The patient should be seated with the ankle resting on the roentgenographic table so that the hip and knee are flexed. This position helps to relax the surrounding musculature. Manual inversion stress is applied to the lateral aspect of the fifth metatarsal. The degree of talar tilt in the uninjured ankle is compared with the degree of talar tilt in the injured ankle. A talar tilt difference of more than 10° between the two ankles is significant. In a large series of ankle sprains at the United States Naval Academy, a talar tilt of over 20° indicated complete tears of the anterior talofibular and calcaneofibular ligaments. A talar tilt of 10° or less indicated a tear of the anterior talofibular ligament. The grey zone is that area between 10° and 20° in which there may be a combination of anterior talofibular and calcaneofibular ligament tears.

### Arthrography

Occasionally arthrography may be necessary to obtain a definitive diagnosis. Dye is inserted into the ankle joint anterior. In a pronation-eversion injury associated with a tear in the interosseous membrane, the dye will leak superiorly between the tibia and fibula to indicate the tear. In the inversion injury dye leakage anteriorly into the subcutaneous tissue indicates an anterior capsule tear associated with a tear of the anterior talofibular ligament. Injection of dye into the peroneal sheath is an excellent method for classification of lateral injuries into single and double ligament tears.<sup>6</sup>

### Differential Diagnosis

Rotational injuries of the ankle can be accompanied by injuries other than tears in the ligaments or fractures of the tibia or fibula. These injuries include the following:

1. **Transchondral fracture or osteochondral fracture of the talus.**<sup>7</sup> This diagnosis is seldom made initially unless it is clearly seen on roentgenograms. It must be suspected if symptoms persist after the normal healing time for ligamentous injuries.

2. **Fracture of the base of the fifth metatarsal.** There are two different types of fractures and the treatment and prognosis of each is very different. The first is an avulsion fracture at the base of the metatarsal at the insertion of the peroneus brevis tendon. This frequently accompanies an inversion ankle ligament sprain. Occasionally this does not require immobilization and prognosis is excellent. In a young athlete the apophysis can be mistaken for a fracture. It is important to know that the apophysis at the base of the fifth metatarsal is longitudinal whereas the avulsion fracture is a transverse fracture.

A similar method of injury may result in a fracture of the diaphysis or proximal shaft of the fifth metatarsal and is a much more serious injury than the avulsion fracture. This requires much longer immobilization and frequently results in delayed union or even non-union.

3. **Sprain of the midfoot ligaments.** This may also result from a twisting injury of the ankle or foot. The injury can usually be differentiated from a sprain of the ankle ligaments by the location of the pain, tenderness and swelling.

4. **Subluxation or dislocation of the peroneal tendons.** This subluxation of the tendons occurs over the lateral malleolus of the ankle and is frequently missed in athletes. The injury is caused by rupture of the retinaculum holding the peroneal tendons behind the fibula. It usually occurs with the ankle in dorsiflexion and the foot in eversion. The patient presents many of the same symptoms as with an ankle sprain, and only a high degree of suspicion leads to this diagnosis.

#### Treatment

**Medial Ligament Injuries (eversion sprain):** It is very important to make the diagnosis of the eversion injury even though it comprises only 15 percent of ankle sprains. The injury is quite serious because of the tear in the interosseous membrane and diastasis of the distal tibia and fibula. Healing and return to full activity are much slower than with the more common lateral ankle sprains and therefore aggressive treatment is mandatory. This injury should be treated with cast immobilization for a period of at least four weeks and preferably six weeks. A cast is not applied for the first 48 hours to allow ice application and compression to decrease the swelling. If there is diastasis of the ankle mortise because of the rupture in the interosseous membrane, surgery may be necessary to remove any interposed segments of the medial deltoid ligament and to repair the capsule and medial ligaments. Occasionally internal fixation may be required to close the diastasis. Rehabilitation following this injury is prolonged, and it is usually three or four months before the athlete is ready to return to full activity.

**Lateral Ankle Ligament Injuries (inversion sprain):** Initial care of all ankle ligament sprains focuses on protecting the injured ligaments from further injury and controlling the bleeding and soft tissue swelling. These injuries should be treated immediately with ice, elevation and compression. Oral anti-inflammatory medications can be used to reduce inflammation around the injury site. The use of this medication does not decrease the length of time for healing, but reduces the pain and swelling. Injection of xylocaine, enzymes or steroids is not generally recommended. During the first 48 hours the definitive method of treatment is selected.

Surgical repair of torn lateral ankle ligaments will produce the best long term results, but is usually reserved for the young athletic individual who must place prolonged and frequent stress on the ankle. Brostrom<sup>8</sup> has shown that 97 percent of individuals treated by surgery will have no functional instability. He has also shown that the results of nonoperative treatment of ankle sprains have proven to be very satisfactory with functional instability present in only 20 percent of cases treated by tape or cast.

Nonoperative treatment is usually selected because of the high degree of success. The three methods available are cast immobilization, taping, and a type of "cast-brace." The most frequently used method for treatment of severe lateral ankle ligament sprains in a physician's office is cast immobilization for at least four and possibly six weeks. When daily care is available in a controlled situation with athletic trainers and physical therapy facilities, a preferred method of treatment is daily hydrotherapy and taping. This method consists of ice whirlpool for 20 to 30 minutes followed by open tape application for the first few days. After three or four days, contrast hydrotherapy is followed by closed taping. The tape is always applied with the foot in the maximum amount of dorsiflexion and eversion that the patient can tolerate (Figure 5). During taping the knee should be flexed to 90° to relax the gastrocnemius muscle. The goal is to immobilize the ankle in such a way that the ends of the torn ligaments are brought into contact. If the ends of the ligaments are not reapproximated, the resulting gap will be bridged by scar tissue and the healed ligament will be longer than normal. The patient is instructed to use crutches, and partial weight bearing is allowed. Occasionally galvanic stimulation is used along with intermittent compression. As the pain and edema decrease an exercise program is begun. Crutch walking is continued until the individual can walk without pain or a limp. Daily taping is discontinued after three weeks, but the ankle is taped or wrapped for all athletic participation for at least four months.

An alternate method of treatment that allows the same early mobilization and weight bearing as daily taping is one of several cast-brace techniques. Plaster or synthetic cast material can be applied as the upper section with a plastic insert to cover the foot and ankle. Orthoplast<sup>®</sup> and other synthetic materials have also been used to make a type of cast-brace (Figure 6).



Figure 5. Closed Taping



Figure 6. Cast Brace



In a controlled series of treatment for single and double lateral ankle ligament sprains by either plaster immobilization or taping and early motion, the end results have been uniform with regard to stability.<sup>8,9</sup> However, tape and early mobilization is considered to be a better method since it results in less muscle atrophy, earlier return of full ankle motion, earlier return to activity and more comfort for the patient. The same is probably true for the cast-brace technique.

The functional method of treatment is becoming more popular since there is experimental evidence that range of joint motion will actually stimulate healing of torn ligaments of that joint.<sup>10,11</sup> Evidence indicates that exercise stimulates and influences the strength of ligaments.<sup>12</sup>

At the United States Naval Academy the management of acute single lateral ligament tears is nonoperative. Daily hydrotherapy and taping is used unless the individual is unavailable for daily treatment. In that instance a plaster cast or orthoplast brace is used. Recently the orthoplast brace has been used more frequently than daily taping. The advantage of daily taping is the compression effect on the edema of the ankle.

For acute double lateral ligament tears, nonoperative treatment is the usual method of choice. However, for a highly competitive athlete who is not in the middle of his competition, it may be advised that surgical repair be performed so that he has a 97 percent chance of full stability of the ankle.

### Rehabilitation

In both lateral and medial ankle ligament injuries, crutches are discontinued **only** when the patient is able to walk without pain or a limp. Rehabilitative exercises are of prime importance in the prevention of recurrence. At the Naval Academy we have instituted a self-directed exercise program using thick-wall rubber surgical tubing.<sup>13,14,15</sup> Thirty-six inches of 3/16 inch tubing is used for this program. This tubing provides dynamic resistance for actively exercising the anterior and lateral compartment musculature of the leg. Because the posterior compartment musculature is usually very strong, the emphasis on strengthening is placed on the anterior and lateral musculature.

In using the rubber tubing to perform guided resistance exercises to strengthen the dorsiflexors and evertors, no specific number of repetitions is assigned the patient. The individual is encouraged to carry the tubing and exercise frequently during the day. Resistance can be varied by adjusting the tension on the loop. To exercise the anterior compartment dorsiflexors, the loop is anchored around a piece of furniture and around the forefoot. With the knee in extension the ankle is moved actively through the range of motion against resistance (Figure 7). Strengthening the peroneal



Figure 8. Tubing Exercise For Ankle Evertors



Figure 9. Free Weight Exercises For Ankle Dorsiflexors And Evertors

evertors requires anchoring one tubing loop with the opposite foot and another around the forefoot of the involved side. The foot is moved in an up and out direction (Figure 8).

A common method of strengthening the musculature of the anterior and lateral compartments of the lower leg is to use free weights attached to the foot (Figure 9). By dorsiflexing the ankle the anterior compartment musculature is strengthened and by everting the foot the peroneals are strengthened.

An excellent method of exercise is the use of the isokinetic devices for strengthening this musculature. The use of the stationary isokinetic cycle is utilized early to develop and strengthen the musculature of the entire lower extremity. Upper body strengthening exercises may be used during the whole period of treatment, even when the ankle is immobilized.



Figure 7. Tubing Exercise For Ankle Dorsiflexors



**Figure 10.** Tilt Board For Stretching Triceps Surae Muscle Groups

Stretching exercises are necessary for the tight posterior calf muscles and are best performed by having the patient stand on a "tilt board" to allow prolonged gradual relaxation of the triceps surae musculature (Figure 10). Another method of allowing this prolonged gradual relaxation is to have the individual stand with their forefoot on a book as they lean forward against a wall.

Later in the progression of the rehabilitation a "balance board" is used. This helps to restore the motion and strengthen the musculature around the ankle joint. The last step in the rehabilitation is to add functional exercises such as jogging, running and agility drills.

Following a severe ankle injury protective strapping or bracing should be employed for several months to prevent recurrence and to allow complete healing of the ligaments. In an acute injury of the ligaments of the ankle the proprioceptive fibers in the ligaments and joint capsule are torn and therefore are no longer functional. The use of tape, ankle braces, ankle wraps, and high-top shoes provides some protection from reinjury.

### Chronic Ligamentous Instability

A chronic functional instability of the ankle may result from untreated or poorly treated lateral ankle ligament injuries. Patients with chronic instability give a history of frequent ankle sprains on minor inversion stress. Clinical evaluation frequently reveals an anterior drawer sign representing the "stretched out" or absent anterior talofibular ligament. Inversion stress gives some indication of the amount of laxity of the calcaneofibular ligament. Stress roentgenograms can be performed easily in these patients since no pain is involved in the stress maneuvers. Arthrograms are of little value in chronic instability.

The simplest method for management of chronic instability is taping for athletic competition combined with a rehabilitation program. Since the majority of recurrent sprains occur during athletic participation, the patient is taught to wrap the ankle for these high risk periods. High-top shoes or an ankle strap also help to prevent reinjury. Orthoplast stirrups have been used with great success in these chronic cases.

Although tape does loosen during activity, even loose tape, straps, ace bandages, high-top shoes, and "braces" are effective in preventing recurrent sprains. The mechanism by which this occurs is not known, but it may be related to proprioceptive "feedback." The normal proprioceptive nerve fibers are absent in the scar tissue of a healed ligament, so these protective devices may activate the fibers above and around the ankle to initiate contraction of the ankle evertors and dorsiflexors when stress occurs.

Rehabilitation should focus on flexibility in the posterior calf musculature. Patients should be advised to stand on tilt boards or to perform other methods of stretching the gastrocnemius and triceps surae. They are taught strengthening exercises for the ankle dorsiflexors and ankle evertors. It should be emphasized that a chronically unstable ankle is not cured by wrapping, taping, bracing, and exercises, but it is effectively managed.

To eliminate the problem of functional instability, surgery is recommended.

### Summary

Soft tissue injuries to the ankle are a frequent occurrence in the young, active athlete. The mechanisms of injury are such that either medial or lateral sprains occur. Significant medial sprains respond well to a six-week period of cast immobilization. Lateral sprains vary in severity. A comprehensive history and physical examination augmented by stress testing and arthrography will best determine the severity of the injury. A structured, supervised program of hydrotherapy, taping, and dynamic muscle strengthening will usually compensate for whatever residual laxity persists. However, in the young athletic individual, surgical repair or reconstruction may be necessary.

### References

1. Guise ER: Rotational ligamentous injuries to the ankle in football. *Am J Sports Med* 4:1-6, 1976.
2. O'Donoghue DH: Treatment of ankle injuries. *Northwest Medicine* Vol 57: 1277-1286, 1958.
3. Brostrom L: Sprained ankles. I: Anatomic lesions in recent repairs. *Acta Chir Scand* 128:483-495, 1964.
4. Rubin G Witten M: The talar tilt angle and the fibular collateral ligaments. *J Bone Joint Surg* 42A:311-326, 1960.
5. Staples US: Ruptures of the fibular collateral ligaments of the ankle. Result of study of immediate surgical treatment. *J Bone Joint Surg* 57A:101-107, 1975.
6. Black HM, Brand RL, Eichelberger, MR: An improved technique for the evaluation of ligamentous injury in severe ankle sprain. *Am J Sports Med* 6:276-282, 1978.
7. Berndt AL Harty M: Transchondral fractures (osteochondritis dissecans) of the talus. *J Bone Joint Surg* 41A:988-1019, 1959.
8. Brostrom L: Sprained ankles V: Treatment and prognosis in recent ligament ruptures. *Acta Chir Scand* 132:537-550, 1966.
9. Cox JS Brand RL: Evaluation and treatment of lateral ankle sprains. *Physician Sports Med* 5:51-55, 1977.
10. Clayton ML, Miles JS, Abdulla M: Experimental investigation of ligamentous healing. *Clin Orthop* 61:146-153, 1968.
11. Tipton CM, James SL, Mergner W, et al: Influence of exercise in strength of medial collateral knee ligaments of dogs. *Am J Physiol* 218:894-902, 1970.
12. Tipton CM, Matthes RD, Maynard JA, et al: The influence of physical activity in ligaments and tendons. *Med Sci Sports* 7:165-175, 1975.
13. Quillen WS Rouillier LH: Management of acute ankle sprains with rapid pulsed pneumatic compression and cold. To be published in *J Orthop Sports Phys Ther* 2:187-190, 1981.
14. Quillen, W.S.: An alternative management protocol for lateral ankle sprains. *J Orthop Sports Phys Ther* 2: 187-190, 1981.
15. Regan K, Underwood L: Surgical tubing for rehabilitating shoulder and ankle. *Trainer's Corner in Physician and Sports Med* 9:1, Jan 81. +



# CEU Credit Quiz

## The Diagnosis and Management of Ankle Ligament Injuries In the Athlete

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Questions		a	b	c	d	e
1. Ankle sprains which occur when the foot is twisted outward result in a tear of the 1. deltoid ligament 2. anterior tibiofibular ligament 3. interosseous membrane 4. anterior talofibular ligament	a. 1, 2, 3 b. 1, 3 c. 2, 4 d. 4 only e. 1, 2, 3, 4					
2. An isolated medial ligament tear from an outward twist is a common football injury.	a. True b. False					
3. Which of the following statements is/are true of the ankle sprain which is caused by the foot twisting inward? 1. This is the most common type of ankle sprain 2. The anterolateral capsule is one of the first structures to tear 3. A single ligament tear involves only the anterior talofibular ligament 4. This injury commonly occurs in jumping sports such as basketball or volleyball	a. 1, 2, 3 b. 1, 3 c. 2, 4 d. only e. 1, 2, 3, 4					
4. From a clinical examination point of view, it is easiest to make a diagnosis of an ankle injury a. twelve to twenty-four hours after the incident b. within the first few hours of the incident						
5. In pronation-eversion injuries in which the medial deltoid is injured, views of the entire tibia and fibula should be obtained.	a. True b. False					
6. Subluxation or dislocation of the peroneal tendons a. frequently accompanies an inversion ankle ligament sprain b. is caused by rupture of the retinaculum holding the peroneal tendons behind the fibula c. presents many of the same symptoms as that of an ankle sprain. d. b & c above e. all of the above						

		a	b	c	d	e
7. Which of the following statements is/are true regarding the treatment of patients with medial ligament injuries?	a. 1, 2, 3 b. 1, 3 c. 2, 4 d. 4 only e. 1, 2, 3, 4					
1. Cast immobilization is required for 4-6 weeks						
2. A cast is not applied for the first 48 hours						
3. If a diastasis of the ankle mortise is present, internal fixation may be required for closure						
4. Rehabilitation following this injury is prolonged						
8. The most frequently used method for treatment of severe lateral ankle ligament sprains in a physician's office is	a. taping b. application of a "cast-brace" c. cast immobilization					
9. For acute double ligament tears, surgical repair may be advisable for the highly competitive athlete.	a. True b. False					
10. With reference to chronic ligamentous instability, which of the following statements is/are true?	a. 1, 2, 3 b. 1, 3 c. 2, 4 d. only e. 1, 2, 3, 4					
1. Arthrograms are of greater diagnostic value for this problem than are stress roentgenograms.						
2. Clinical evaluation frequently reveals an anterior drawer sign representing the "stretched out" or absent anterior talofibular ligament.						
3. Strengthening exercises are the best mode of treatment for functional instability.						
4. High-top shoes or an ankle strap help to prevent reinjury.						

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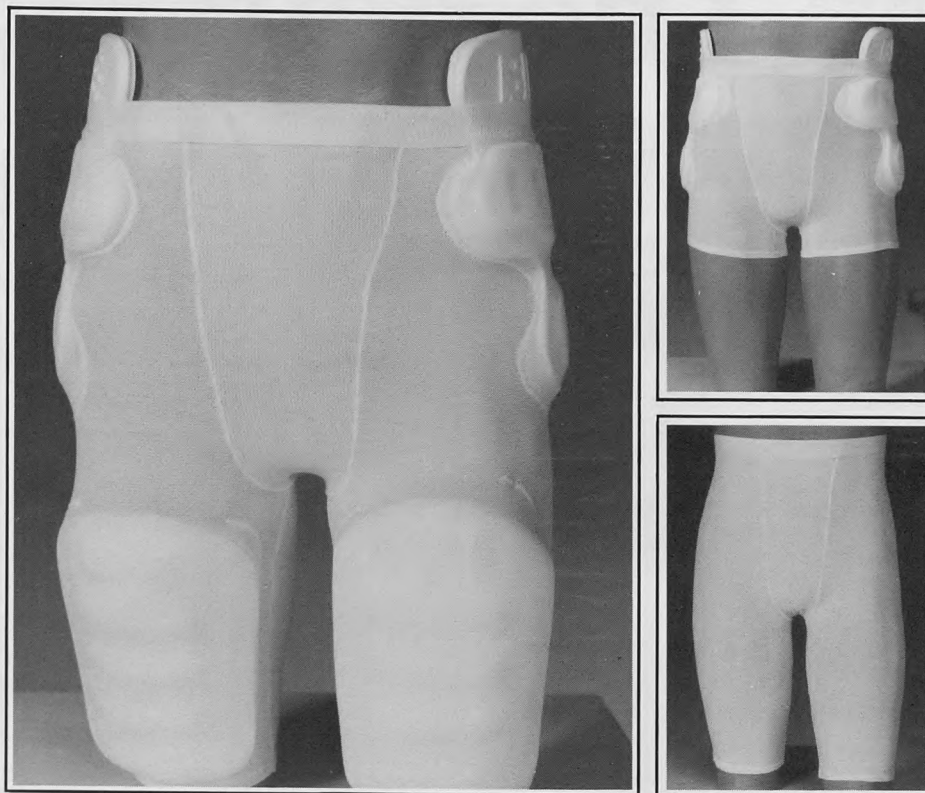
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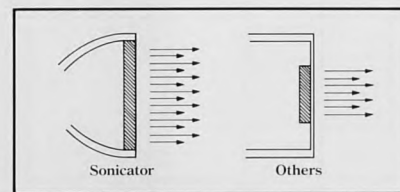
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## Case Report

# Third Annual NATA Student Writing Contest Honorable Mention

## Use of the Semi-rigid Support for Sprained Ankles

Donna J. Turner

Lack of proper care for a sprained ankle can increase the amount of time loss from practice and game play for the athlete. Much has been done to improve the techniques utilized in dealing with sprained ankles. One such method used to hasten the return of an athlete to action is the wearing of a semi-rigid ankle support. In the case of one female basketball player, this type of treatment was found to be beneficial.

### Case Presentation

A nineteen year old female physical education major injured her right ankle during preliminary try-outs for the women's varsity basketball team. The student was playing the position of guard when the accident occurred. While running backward she came down in the plantarflexed position and the continuing movement of the ankle was one of inversion.

Immediately after the injury there was pain and notable swelling. The swelling was apparent over the anterolateral ankle ligaments and distal fibula of the right ankle. Upon palpation, tenderness was exhibited about the anterolateral ankle ligaments and the distal fibula. The active range of motion of the right ankle was approximately 20 degrees for dorsiflexion and 35 degrees for plantarflexion while there was approximately 30 degrees for dorsiflexion and 45 degrees for plantarflexion of the left ankle.

Joint instability was noted by a positive anterior drawer test.<sup>2</sup> Lateral instability was also noted during a talar tilt test.

After the initial evaluation, ice was applied to the swollen ankle, held on with an elastic bandage, and the ankle was elevated.

The athlete was then taped for the purpose of compression and support. Crutches were given for use to keep weight off the injured ankle and the player was sent to the campus health center. The health center referred the patient for x-rays and then to an orthopedist.

The orthopedist diagnosed a grade II sprain, involving both the anterior talofibular and calcaneofibular ligaments, and decided the best treatment in this case was to immobilize the joint. A short leg walking cast was applied for three weeks. The reason for immobilizing the injured body part is to prevent the ankle from inverting or everting while the initial

stages of the healing process progress. It also prevented any additional trauma to the anterolateral ligaments. The walking cast allowed the athlete to maneuver much easier than if she were in a nonwalking cast. She also was able to attend practice and work on general ball handling and shooting.

No swelling or tenderness was apparent at cast removal. The active range of motion was 30 degrees for dorsiflexion and 40 degrees for plantarflexion. The athlete was then fitted with an orthoplast stirrup brace, (figure 1), which was recommended for use during all waking hours.

The system of using an orthoplast brace is versatile and can be applied to both new injuries and chronic problems. The brace consisted of strips of orthoplast lined with moleskin approximately three to four inches wide. The orthoplast is dipped in hot water, which makes it malleable, and then applied to the ankle. An elastic bandage is wrapped around the strips to mold the orthoplast like plaster to the malleoli. It hardens in a few minutes and subsequently retains its shape. Two sponge pads are placed in the malleolar depressions, and moleskin is applied to the inner surface.

During use, the stirrup was held in place with an elastic bandage or additional taping as required. It fits easily into a sneaker, and permits a normal range of dorsiflexion and plantarflexion but functions to protect against excessive inversion.



*Miss Turner is a senior physical education major at Ithaca College in Ithaca, New York 14850, where she is student athletic trainer.*

Toe raises with both legs working together were permitted the day following cast removal. At practice she continued work on her shooting and ball handling skills, and also went through a series of functional tests. The first ones being toe raises on the injured ankle alone, jumping 15 times on the same ankle, and walking around the perimeter of the gymnasium.

Manual resistive exercises to the ankle were indicated two days after the cast was removed. Resistive exercises were done for inversion, eversion, plantarflexion, and dorsiflexion.

Five days after cast removal, the athlete began thirty ankle circles, both clockwise and counterclockwise while wearing a 4.5 lb. weight boot. Ankle eversion exercises with the boot were also done.

One week after the cast was removed, the athlete was able to do toe raises with the injured foot alone. This was allowed as long as there was no pain involved. At this time the athlete was tested on specific work on functional activities. Since she had already been walking around the gymnasium, she progressed to figure eights, cutting, side shuffling, and carioca. She was able to successfully complete the various functional activities with no pain and no signs of favoring the injured ankle. At this time she returned to practice, where she was permitted to participate in all of the drills. She was restricted from a full court scrimmage as it was felt she was not quite ready for the fast pace of competition.

In less than two weeks after the cast was removed, the athlete was able to add the 4.5 pound bar to the weight boot for use when doing the exercises. At this time ankle plantarflexion and dorsiflexion exercises were permitted. The athlete's ankle was getting stronger so she was allowed to complete a full practice period.

Minimal swelling occurred following the practice sessions so she was allowed to continue practicing to tolerance. Prior to and immediately following practice the athlete would have a cold pack treatment for 20 minutes. Use of ice prior to practice allowed for slow stretching and exercise without the pain element involved. Ice after practice helped to decrease the bloodflow into the ankle therefore limiting the amount of swelling that might have occurred.

Two and one-half weeks following cast removal, it was noted that the exercises with the weight boot and bar fluctuated sporadically. This lack of uniformity in progress was most likely due to overuse during certain days. When this happened the athlete decreased the amount of exercise and practice participation.

The athlete wore the brace constantly at practices and in

the first 14 games of an 18 game season. The athlete continued to do exercises throughout the entire season. The strength of the ankle increased so that she was able to switch from wearing the brace to having her ankle taped.

#### Discussion

The splint is adaptable to many sports and is also durable. It has been used as the initial and subsequent management in more than 300 cases of all degrees of ligamentous injury. It has also been used as the initial management of stable malleolar fractures and to permit early removal of plaster in other fractures. It allows a protected return to function so that return to full participation is possible more quickly than when taping of the injured ankle is used. It is particularly valuable in lateral sprains and can be applied at any stage in the injury.<sup>3</sup>

Although early healing may restore structural integrity, ligamentous strength returns only after reorientation of collagen fibers and undoubtedly requires a certain amount of stress and protected function. Protected function is extremely important during this period. The orthoplast stirrup is ideal as it allows enough mobility for participation in most athletic events and yet protects the healing and reorganizing ligamentous tissue. It provides for muscular function which prevents atrophy and allows joint mobility. It has also been found that wearing the stirrup will not interfere with jumping ability or speed.

#### Summary


With the use of the ankle support and the rehabilitation exercises the athlete was able to return to full practice sessions in two weeks. The ankle support hastened the period of rehabilitation and shortened the amount of time loss from practices. This female athlete was able to return to activity wearing the brace much sooner than she would have with an ankle taping. Use of this brace for players known to have chronic ankle sprains could mean less time loss injuries over the course of a season.

#### References

1. Garrick JG, Requa RK: Role of external support in the prevention of ankle sprains. *Medicine and Science in Sports.*, 5:200-203, 1973.
2. Hoppenfeld S: *Physical Examination of the Spine and Extremities.* New York: Appleton-Century-Crofts., 1976.
3. Stover CN: A functional semi-rigid support system for ankle injuries. *The Physician and Sportsmedicine.*, 7:71-78, 1979. +

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## *Code of Ethics*

### PREAMBLE

One outstanding characteristic of a profession is that its members are dedicated to rendering service to humanity. Also, they are committed to the improvement of standards of performance. In becoming a member of the athletic training profession, the individual assumes obligations and responsibilities to conduct himself in accordance with its ideals and standards. These are set forth in the Constitution and By-Laws, and are emphasized in the CODE OF ETHICS. Any athletic trainer who does not feel that he/she can or does not deem it necessary to comply with the principles set forth in the CODE should have no place in this profession.

The members of the athletic training profession must adhere to the highest standards of conduct in carrying out their significant roles in athletic programs at all levels. It is for this reason that the Board of Directors of the National Athletic Trainers' Association has continually revised the CODE which has been in effect since June, 1957.\*

In approving the Code, the Board of Directors recognizes and believes that unless the standards and principles that are set forth in this document are accepted in good faith and followed sincerely, it will not be effective in continuing to improve the contributions of the profession and its members to athletics and sports-medicine.

Ethics is generally considered as conduct in keeping with moral duty, and making the right actions relative to ideal principles. Let it be understood that all members of the National Athletic Trainers' Association will understand and apply the principles set forth in this code and make every effort to do the right thing at the right time to the best of their ability and judgment.

### PURPOSE

The purpose of this CODE is to clarify the ethical and approved professional practices as distinguished from those that might prove harmful or detrimental, and to instill into the members of the Association the value and importance of the athletic trainers' role.

### OBJECTIVES

The stated objectives of the National Athletic Trainers' Association in its Constitution are:

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

### ARTICLE I

#### BASIC PRINCIPLES

The essential basic principles of this CODE are Honesty, Integrity and Loyalty. Athletic trainers who reflect these characteristics will be a credit to the Association, the institution they represent and to themselves.

When a person becomes a member of this Association, he/she assumes certain obligations and responsibilities. An athletic trainer whose conduct is not in accordance with the principles set forth in the following sections shall be considered in violation of the CODE.

- Section 1     **Athletics in General:** An athletic trainer shall show no discrimination in his/her efforts while performing his/her duties.
- Section 2     **Drugs:** The membership of the National Athletic Trainers' Association does not condone the unauthorized and/or non-therapeutic use of drugs. The Association recognizes that the best and safest program is comprised of good conditioning and athletic training principles.
- Section 3     **Testimonials and Endorsements:** In any endorsement in which the athletic trainer's name and/or reference to the athletic training profession is included, the wording and illustration, including any implications of the endorsement shall be such that no discredit to the training profession may be construed. (Any endorsement that is not in keeping with the highest principles and standards of the athletic training profession shall be considered unethical.) The NATA name, logo, trademark and/or insignia may not be used in any testimonials and/or endorsement service products, programs, publications and facilities, by individual members or groups of members of the Association.
- Section 4     **Sportsmanship:** Members of this Association shall not condone, engage in or defend unsportsman-like practices.
- Section 5     **Fellow Athletic Trainers:** Any athletic trainer who by his/her conduct or comments, publicly discredits or lowers the dignity of members of his profession is guilty of breach of ethics.
- Section 6     **Membership:** It is unethical for a member to sponsor a candidate for membership in the National Athletic Trainers' Association who does not know the candidate and his/her qualifications.



- Section 7 **Solicitation of Patients for Fee:** It is unethical for a member that is actively engaged in the profession, and/or teaching in an approved Education Curriculum to solicit or use any form of advertising for the purpose of acquiring for fees, "outside" patients. (See definition of actively engaged.)
- Section 8 **Misrepresentation:** It is unethical for a member to misrepresent his/her membership status and/or classification.

## ARTICLE II

### EDUCATIONAL PREPARATION & CERTIFICATION

Any certified member of this Association must be considered an educator if he/she is involved with the professional preparation of students pursuing National Athletic Trainers Association Certification through any of the approved certification routes.

- Section 1 **Educational Standards:** The athletic trainer-educator must adhere to the educational standards and criteria set forth by this Association.
- Section 2 **Selection of Students:** The athletic trainer-educator is responsible for the selection of students for admission into a professional preparation program, must insure that policies are non-discriminatory with respect to race, color, sex, or national origin.
- Section 3 **Publication and Representation:** Publication and representation of the professional preparation program by the athletic trainer-educator must accurately reflect the program offered.
- Section 4 **Evaluation of Students:** Evaluation of student achievement by the athletic trainer-educator must be done in a prudent manner.
- Section 5 **Recommendation for Certification:** It is unethical for a member to knowingly recommend a candidate for the national certification examination who has not fulfilled all eligibility requirements as specified by the Board of Certification.
- Section 6 **Confidentiality of National Certification Examination:** It is unethical for any member to reproduce in written form, or reveal in any other manner, any part of the written or oral-practical examination for the purpose of aiding certification candidates in passing the examination.

## ARTICLE III

### ENFORCEMENT

- Section 1 **Reporting of Unethical Conduct:** Any member of the Association who becomes aware of conduct that he/she considers unethical and that he/she believes warrants investigation, shall report the incident(s) in writing to the President and the Executive Director of the Association, who in turn will initiate investigation through the Ethics Committee. He/she shall include in the communication all pertinent data.
- Section 2 **Investigation and Action:** In accordance with the By-Laws of the Association, the Ethics Committee investigates reported incidents of unethical conduct and if, in the judgment of a majority of the committee members, it finds that the accused person has violated the National Athletic Trainers Association Code of Ethics, it communicates its decision to the accused and to the Board of Directors in writing and recommends to the Board one of the following disciplinary actions:
1. *Letter of Censure:* Copies to immediate supervisor and District Director.
  2. *Period of Probation:* (This shall be determined by the Board of Directors.) During the period of probation the member shall not be eligible for any of the following:
    - a) Hold an office at any level in the Association.
    - b) Represent NATA in the capacity of liaison with another organization.
  3. *Initiate Procedure for Cancellation of Membership*
- Section 3 **Action by the Board of Directors:** The decision of the Board of Directors in Code of Ethics is final, except that if the decision is to initiate cancellation of membership, this shall be done as prescribed in Article VI, Section 1 and 2 of the Constitution.
- The National Athletic Trainers' Association definition of "ACTIVELY ENGAGED" is as follows: A person must be an employee on a salary basis, not a fee for service or vendor contract basis, of an accredited educational institution (public, private or parochial elementary or secondary school or a degree granting college or university) or of a professional athletic organization for the duration of the institution's school year or the professional athletic organization's season and who performs the duties of athletic trainer, and is recognized as such, as a major responsibility of his or her employment. NATA approved Clinical Instructors whose responsibility is teaching or supervising in an NATA approved athletic training curriculum is considered an Actively Engaged Athletic Trainer.



Chris Patrick  
University of Florida  
Chairperson, Ethics Committee

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# Developmental Asymmetries of the Weightbearing Skeleton and Its Implications in Knee Stress and Knee Injury

(A Continuing Report)

Karl K. Klein

This article is an extension of a previous publication<sup>1</sup> related to the problem of minor lateral asymmetries (short leg syndrome) and the incidence of knee injury in sports. This information covers an additional 140 cases for a total of 440 cases measured, evaluated, and programmed for Progressive Resistive Exercise in the Rehabilitation Laboratory at the University of Texas. By and large the injuries were sustained in the contact sports.

With the known information that the High School age athlete has a knee structure that has its poorest muscular support mechanism between: the quadriceps-hamstrings ratio (10-5) as compared with the college age player ratio (10-6), significantly looser collateral ligaments resulting in about 2<sup>0</sup> (34%) more lateral movement at the knee joint, as well as about 51% more anterior cruciate looseness than found in college players the greater injury potential is obvious<sup>2</sup>. But all of this information may or may not be directly related to the continued high incidence of knee injury to the short leg side. It is my observation that the problem also relates to the mechanics of movement that produces the injury. The College Football player is as susceptible to knee injury when lateral asymmetry exist.

Studies by Bender<sup>3</sup> and Klein<sup>4</sup> have demonstrated that the problem of significant leg strength imbalance is positively related to the incidence of knee injury in football but little emphasis has been given to the muscle strength imbalance and the short leg syndrome as a potential cause of injury. There are indications that a high correlation relationship does exist when both sets of data are reviewed: i.e. 80% of the knee injury cases reported in one five year study of 515 College Football<sup>5</sup> players were injured on the weak leg side, also a study of 300 post operative injury knee cases 79.6% were injured on the short leg side<sup>6</sup>!

The remainder of this discussion will be limited to the problem of Lateral Postural asymmetries, the developmental processes and additional data since the 1978 report!

*Mr. Klein is Professor, Department of Health Physical Education and Recreation, The University of Texas at Austin; Coordinator of the Rehabilitation Laboratory; Certified Corrective Therapist and a Fellow of the American Corrective Therapy Association, The American College of Sports Medicine; and a retired member of the National Athletic Trainers Association.*

Major lateral postural asymmetries develop during the period of growth and may be recognized early in life thus eliminating young people with significant problems from participating in certain sports. Minor asymmetries are rarely recognized unless pain and/or stress indicate a problem to the attention of those concerned with the individual's health and welfare. Many times the potential athlete will attempt to hide or ignore the problem but lack of good function will be noticed by the coach or teacher. The prevalence of lateral asymmetries (short leg syndrome) has been shown in many studies<sup>7,8,9,10</sup> and others but has been rarely mentioned in Sports Medicine literature.

The technique for measurement and correction of lateral body balance was reinvestigated by Klein and Buckley<sup>11</sup> on growing children. Sixty-two percent (62%) of the children completely corrected their lateral asymmetry problem in a period of 4-6 months with the use of the heel lift procedure. The control group increased in lateral asymmetry during the same period of time. These study findings conformed to the evidence presented by Redler<sup>10</sup>.

Rose<sup>12</sup> reporting on the effect of lateral asymmetries on injury potential in the field of sports emphasized "that abnormalities in the musculo-skeletal structure of young athletes should be caught early." Those with significant abnormalities should be discouraged from continued participation, especially in contact sports.

The basic measurement procedures for making determinations of lateral postural imbalance has been described in the literature so will not be reviewed here. Sources for the technique of measurement are listed in the references.<sup>7,10,11</sup>

Observing the gait patterns of people with lateral asymmetry may be noted in the movement of the leg, ankle and foot. Common observations are: "Slue footed" movement of the foot on the short leg side, ankle pronation as the foot is placed on the ground. This ankle pronation factor actually forces the foot outward. The accompanying knee action will be forward, producing a valgus position which results in an excessive external Tibia torsion. This movement pattern is the basic mechanism for injury especially in cutting and turning in a direction opposite to the "toe out" foot. The neurological basis for this short side foot action is an effort to balance the body as the foot "steps in the hole" created by the shortness.

The additional 140 cases collected since the first two reports<sup>1,6</sup> continues to produce similar results, thus data for the

440 cases being reported here has been collected over a nine year period; 375 post operative and 65 post injury. Table 1 illustrates the composite findings.

**Table 1**

Knee Injury Relationship to the Short Leg Syndrome — 440 cases								
Short Leg				Sacral Base Level		Long Leg		
Post R	op. L	Post R	Inj. L	P. Op. 5 (L)	Post R	op. L	Post R	Inj. L
122	161	16	42		53	34	2	5
<hr/>								
283 (64.2%)		58	13.2%	5(1.1%)	87	(19.8%)		7 (.02%)
<hr/>								
P.O.	P.I.	341	(77.5%)	P.O. 5 (1.1%)	94 (21.4%)			
Range Lateral Imbalance To Short Leg Side ¼-1"					Range Lateral Imbalance To Long Leg Side ¼-1"			
(op=operative) (inj. = injury) (R = right) (L = left)								

The percentages presented in this composite study is very similar to the data gathered during each of the previous years and strongly indicates that the factor of Lateral Postural Asymmetry is a potential factor in resulting knee injuries in sports.

The pattern of movement: toeing out ankle pronation, everted foot and valgus knee on the short leg side creates chronic strain on the medial ligament of the knee and undue stress on the sacroiliac develops<sup>11</sup> — the basic mechanism for injury is established. This is described as the retarded leg syndrome by Fahey.<sup>13</sup> Correction of the lateral asymmetry and ankle pronation by mechanical procedures i.e. heel lift and/or heel-sole lift and ankle prosthesis (rear foot orthotics) will markedly improve the mechanics of movement. A concentrated practice of running and cutting with "toe-in action" will reduce injury potential.

Through preventive concepts as expressed by Rose and corrective procedures, injuries that result from skeletal asymmetries could be significantly reduced. Why don't you look into this matter with your athletes?

## References

1. Klein KK: Developmental asymmetry of the weightbearing skeleton and its implication on knee injury, *Athletic Training* 8:2:68-69, 86, June 1973.
2. Klein KK: *The Knees-Growth, Development, and Activity Influences*, ed 2. Austin, Texas, The Pemberton Press, 1971.
3. Bender JA: Factors affecting the occurrence of knee injuries. *J. Assoc. Physical Mental Rehabilitation* 18:5:130, 1964.
4. Klein KK, Allman FL Jr.: *The Knee in Sports*, Ch. 3, ed 2. Austin, Texas. The Pemberton Press, 1971.
5. Klein KK: Muscular strength and the Knee. *The Physician and Sports Medicine*. December 1974.
6. Klein KK: Developmental Asymmetries of the Weightbearing Skeleton and its Implications in Knee Stress and Knee Injury, *Athletic Training* 13:2:78-80, Summer 1978.
7. Pearson WM: Early and high incidence of mechanical faults, *J. of Osteo.* XLI:5:18-23, May, 1954.
8. Green WT: Discrepancy in the leg length of the lower extremities. American Academy of Ortho Surgery Institute. Course Lectures VIII, (JW Edwards, Co., Ann Arbor, Michigan 1951).
9. Beale MC: A review of the short leg problem, *J American Osteo Association* 50:109, October 1950.
10. Redler I: Clinical significance of minor inequalities of leg length. *New Orleans Medical Surgical Journal* 104:8:308-312, February 1952.
11. Klein KK, Buckley JC: Asymmetries of growth in the pelvis and legs of growing children: summation of a three year study 1964-67, *American Corrective Therapy Journal* 22:2:53-55, March-April 1968.
12. Rose KD: Congenital anomalies of the low back, National Athletic Tr. Association J., April 1962 (Reprint from *Medical Times* October 1961).
13. Fahey JF: Retarded leg syndrome. *The Medical Post*, June 15, 1971. +

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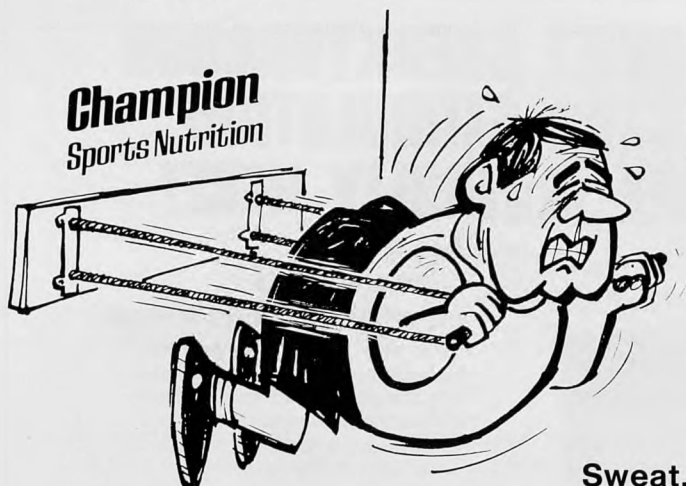
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# Anterior and Lateral Compartment Syndrome In a College Football Player

Beth Ayn Deutsch, MEd, ATC  
Thomas F. Fashouer, MS, ATC

A nineteen year old college football player awoke to stiffness over the proximal head of the fibula. He reported the pain after the third day of double session practice during pre-season. He felt pain and noticed the leg getting weaker as practice progressed. He said that he felt the leg give way, but he could walk off the pain. The athlete was examined by the training staff and treated with ice, compression and elevation. He returned after lunch and was unable to fully dorsiflex his foot. The athlete also complained of numbness along the lateral aspect of his right foot. He was put on crutches and treated with cryotherapy for the remainder of the afternoon. The athlete was examined that evening in the training room. Suspecting an anterior compartment syndrome, he was taken to the local hospital emergency room immediately.

Upon examination he was found to have tenderness all along the lateral aspect of the lower leg. There was decreased sensation in the first web space and all along the dorsum and lateral part of the right foot. He was unable to dorsiflex his toes or foot.

The athlete had an emergency anterolateral compartment syndrome fasciotomy. A portion of the muscle was found to be dead and was excised. The distal portion of the peroneal longus tendon was then sutured to the peroneal brevis tendon.

### Signs, Symptoms and Treatment

The anterior and lateral compartments contain the anterior tibial, extensor hallucis and extensor digitorum longus muscles, which are tightly covered by the anterior fascia. A compartment syndrome is caused by a rapid swelling of the muscle within a closed compartment. The swelling may be caused by trauma to the area, by any overuse of unconditional muscles, or by a local infection.

The initial symptom is severe pain over the anterior and lateral aspect of the lower leg. The skin over the compartment becomes red and glossy, with a feeling of tension and tightness over the space. The area will be very tender and will feel hard to the touch. The final symptom will be a drop foot. This is caused by the muscle's inability to contract within the swollen compartment.

The initial treatment consists of application of ice without compression. If the swelling does not subside and the symptoms improve, then the treatment will most likely be surgical.

### Implications for the Athletic Trainer

A compartment syndrome is a medical emergency and must be treated immediately. This condition must not be confused with shin splints, muscle cramping or contusion. If any of these conditions do not respond promptly to treatment, then a compartment syndrome should be suspected. Be aware of patients who complain of constant, boring, aching pain that is more severe on use but does not subside with rest. Any lower leg injury that has symptoms of loss of function and loss of sensation must be evaluated by a physician immediately. Without prompt medical treatment this condition may result in a permanent drop foot. Athletes with lower leg injuries who are sent home for the evening should be warned if pain persists or numbness and a loss of function occurs, to seek treatment at a local emergency room. They must not wait to see the trainer the following day.

### Comment

The anterior compartment syndrome can possibly become a lifelong debilitating injury if not treated immediately. According to O'Donoghue<sup>4</sup> "The muscles go on to ischemic necrosis, often called 'Volkmann's ischemia of the leg', with swelling, edema, extravasation of red blood cells, destruction of blood cells and replacement of muscle tissue by fibrous scar. The result is a firm, inelastic, noncontractile muscle group. This can be extremely disabling and defies reconstructive treatment."

The anterior compartment syndrome is a rare occurrence in sports and many of us as trainers may never come across it at all. This syndrome need not be caused by a direct blow to the lower leg as is generally believed, as this case study shows. It is important that the signs and symptoms of an anterior compartment syndrome be known to all. As trainers we represent the primary health care that our athletes perceive.

### References

1. Galstad, LA: Anterior Tibial Compartment Syndrome. *J of NATA* 3:139-142, 1979
2. Kennedy, JC: Major fibial compartment syndromes following minor athletic trauma. *Am. J of Sp. Med.*, 8:201-203, 1979
3. Latin, RW and Kauth, WV: Lower leg compartment syndromes: A case report. *J. of NATA* 2: 78-80, 1979
4. O'Donoghue, DH: *Treatment of Injuries to Athletes*, Wm. B. Saunders Company, Philadelphia, Pennsylvania, 1970.
5. Pearl, AJ: Anterior compartment syndrome: A case report. *Am. J of Sp. Med.*, 9:119-120, 1981
6. Waddell, JP: Anterior tibial compartment syndrome: *Can. Med. Assoc. J.* 3: 653-55, 1977 +



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# Abstracts



John Wells, ATC, PT, PhD  
Mars Hill College

"Patella Pain and Quadriceps Rehabilitation — An EMG Study," Wilde, John J., et. al., *The American Journal of Sports Medicine*, 10:12-15, January/February, 1982.

Practically any physician who deals with patellar malalignment syndromes on a regular basis soon recognizes idiosyncrasies of quadriceps muscle and knee joint function peculiar to these disorders. The protective mechanism which patients with these syndromes learn in order to avoid further pain and symptoms of instability usually impair their rehabilitation program. Eighteen patients with patellofemoral compression syndrome, patellar subluxation or dislocation, and/or chondromalacia due to extensor mechanism malalignment were grouped together for the study of rehabilitation techniques only. Cine-electromyography of the vastus medialis obliquus, vastus medialis, vastus lateralis, and rectus femoris were recorded with surface electrodes over the central mass of each muscle. The subjects were tested while performing maximum effort isometric quad sets at 10 to 20 degrees of flexion and straight-leg raising at 8 to 12 inches. The subjects performed the quad-sets and straight-leg raising in supine and seated position with the hip in external rotation, internal rotation, and neutral position. The tests were also performed in the various positions with and without a 5 lb. weight applied to the ankle. The results demonstrate that ten to twenty degrees of flexion reduce the effective muscle effort of the vastus group to an average of  $\frac{1}{4}$  of the muscle effort demonstrated in full extension. Sitting, rotation of the hip, or the addition of 5 lbs. to the ankle did not enhance the muscle effort of the vastus group or rectus femoris in full extension. No consistent pattern or dominance of activity was observed among the vastus medialis oblique, vastus medialis, or the vastus lateralis group in any specific position of testing. Maintenance of full extension of the knee was the major factor responsible for maximal activity in the vastus group under all exercise conditions. This study emphasizes the need to eliminate extensor lag as early as possible because slight flexion does not allow for development of adequate muscle tone and strength. Therefore, extensor lag is an indication of general quadriceps weakness and is not due to selective atrophy of the vastus medialis obliquus as previously believed.

George Salvaterra

"An Electromyographic Analysis of the Effectiveness of Heat or Cold and Stretching for Inducing Relaxation in Injured Muscle," Prentice, William E. *Journal of Orthopedic and Sports Physical Therapy*, Winter, 1982; 3:133-140.

This study examines the use of heat or cold therapy, in conjunction with either static or a technique of PNF stretching, to determine which combination of these techniques will

elicit the greatest amount of relaxation in muscle as indicated by changes in levels of EMG activity. Fifty subjects, consisting of both male and female students, ages 18 to 32 years, were randomly assigned to one of five treatment combinations: treatment 1, cold and PNF stretching; treatment 2, heat and PNF stretching; treatment 3, cold and static stretching; treatment 4, heat and static stretching; and treatment 5, control group. Each subject was tested on 2 consecutive days with a 24-hour period between sessions. A preexercise EMG recording was taken. The subject performed a strenuous exercise task on a Universal Knee Machine. The subjects were asked to do no stretching or exercise during the next 24-hour period. During the second session, a pretreatment EMG recording was taken using exactly the same techniques as the preexercise EMG recording. Each subject was then given one of the five treatment conditions. The cold treatments, using ice packs and the heat treatment, was done immediately following the heat or cold treatments. The static stretching position of stretch was held for a period of 10 seconds, followed immediately by a 10-second period of relaxation in which the experimenter released passive pressure on the leg. This sequence was repeated three times. The specific PNF technique used can be referred to as the slow-reversal-hold method. A significant difference ( $P < .05$ ) was found between the means of the preexercise readings and the pretreatment readings, indicating that the exercise had produced an increase in electrical activity. Also, in each treatment the mean of the pretreatment EMG recordings was greater than the mean of the post treatment EMG recordings, indicating that each of the treatment methods, including the control group, had some effect on reducing the level of electrical activity in the muscle. Of all possible combinations, only treatment 3, cold and static stretching, was significantly different from treatment 5, the control group. In addition, none of the other three treatment groups appeared to be significantly different from the control group. This finding indicates that, of the four treatment combinations used in this study, the cold and static stretching group was more effective in reducing the level of electrical activity than any of the other methods.

D.A. "Bru" Brubaker

"Intra-articular Steroids in the Treatment of Rotator Cuff Tear: Reappraisal by Arthrography," Weiss, Joseph J., *Archives of Physical Medicine and Rehabilitation* 62:555-557, November, 1981.

Rotator cuff tear is the name given to a rent in the supraspinatus tendon just prior to its insertion into the greater tubercle of the humerus. Conservative management of such a tear consists of heat, range of motion exercises, anti-inflammatory drugs and steroid injections. This study differs from previous investigations of the role of intra-articular steroids in its use of arthrography prior to injection therapy. Arthrography established: 1) that the condition of being treated was rotator cuff tear and 2) that the steroid being injected was entering the glenoid cavity and not extravasating into subcutaneous or muscular tissue. The group studied consisted of 6 men and nine women, ranging in age from 44 to 65 years. Symptoms of pain and/or immobility had been present from 5 to 18 months. The results of this investigation indicate that intra-articular steroids are beneficial in the treatment of rotator cuff tear and that previous disappointing results have been due to mistaken diagnosis or inaccurate intra-articular injection. In patients receiving intra-articular steroids at the time of arthrography, freedom from pain persists for a sustained period. It appears that the medication reverses a chronic local inflammatory response occurring at the site of the tear. With movement pain free, and the number of uninvolved tendon fibers sufficient to meet the demands of rotation and elevation, the patient returns to usual activities.

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# Splinting of Finger Injuries

Joe H. Gieck, EdD, ATC, RPT  
Frank C. McCue III, MD

The hand is involved traumatically in most all sports; injuries to the fingers are probably the most neglected in sports. As many athletes have "jammed" fingers during the season, finger injuries come to be accepted as part of the game and will be fine once the season is over. This unfortunately is not the case as evidenced by the many stiff fingers that result from this attitude. The key to proper care of hand injuries, as in all injuries, is early accurate diagnosis and prompt and proper treatment. Conservative treatment in the form of splinting is often all that is needed, but initial evaluation is first necessary.<sup>1</sup>

As the fingers are not normally held in full extension, they should not be splinted in full extension when injured. The exception to this is with mallet finger deformities, boutonniere deformities, and in some proximal interphalangeal (PIP) volar plate injuries. Stable fractures, dislocations, and ligamentous injuries may be thus splinted and the individual allowed to continue with competition in many instances.

Splinting material consists of 3/4" aluminum finger splints covered with moleskin, or plastic Orthoplast® material. One problem with aluminum, which is lighter and less bulky, is that it can bend during intense competition. The splints are most commonly worn on the volar surface, but may be applied dorsally in those cases where touch is important.

Mallet finger injuries should be splinted at 180° or slight hyperextension for 6-8 weeks plus an additional 6-8 weeks during competition. Care should be taken not to position the distal interphalangeal joint (DIP) in extreme hyperextension or sloughing of the dorsal skin may occur. Care should also be taken not to let the DIP drop into flexion when changing the splint or the extensor tendon re-stretches and the finger will have to be splinted for an additional 6-8 weeks.

Collateral ligament injuries without laxity or volar plate involvement should be splinted for three weeks in 30° of flexion with early motion at 2 weeks. The splint is worn during competition for an additional 4-6 weeks, or taped to the adjoining finger.

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Dislocations of the DIP and PIP joints are splinted in 30° flexion for 3 weeks and protected for another 3 weeks. Phalangeal fractures are splinted for 4-6 weeks with additional 3 weeks protection.

Fractures of the joint surfaces, DIP and PIP are splinted in 30° flexion for 9-11 weeks with joint motion beginning at 3 weeks. More extensive injuries to the volar plate often results in a pseudoboutonniere deformity therefore the PIP joint should be splinted in extension for 5 weeks, and protected during competition for an additional 3 weeks. However, joint motion should begin at 3 weeks. A true boutonniere deformity should hold the PIP in extension for 6-8 weeks with the DIP and metacarpalphalangeal joints (MP) free of restriction. It should also be protected for an additional 6-8 weeks.

MP fractures are splinted for 3 weeks in 30° flexion. Early motion is begun at 3 weeks and splinting maintained an additional 4-6 weeks during competition.

Avulsion of the flexor digitorum profundus (FDP) results in a painful swollen finger, usually the ring finger. This is often called sweater finger as the athlete grabs a jersey and sudden violent extension of the DIP avulses the FDP. Early surgical repair is indicated and splinted for a total of 6 weeks. Protected motion may begin at 3 weeks, and competitive splinting for a total of 12 weeks. The last few weeks the adjacent fingers may be taped together. Lack of proper care results in a stiff DIP which may have to be fused at a later date.

Injuries of the ulnar collateral ligament of the thumb with complete tear and/or fracture may require surgical repair if instability is present. However taping to prevent abduction and extension of the MP may allow the athlete to compete until the conclusion of the season. Incomplete tears are splinted for protection for at least 5-6 weeks in competition. In all cases where early motion is begun, gentle flexion and extension motion is encouraged. The use of ice with acute swelling or warm whirlpool often facilitates motion while attempting to regain motion.

At all times the athletic trainer should carry splints for the initial treatment of these finger injuries. Often dislocations and other injuries are allowed to return to competition without protection which results in a stiff joint; one that constantly reminds the athlete and the athletic trainer of the neglect at the time of the injury.

### References

1. McCue FC, Bauger H, Kuland D, Gieck J: Hand and Wrist Injuries in the Athlete. *The American Journal of Sports Medicine*, Vol. 7 #5, 1979.
2. Gieck JH: Conservative Treatment and Rehabilitation of Athletic Injuries to Soft Tissue of the Hand. *The Journal of NATA*, Vol. 6 #2, Summer 1971. +

### CONSERVATIVE TREATMENT AND SPLINTING OF FINGER INJURIES

Injury	Constant Splinting	Begin Motion At	Additional Splinting During Competition	Joint Position
Mallet Finger	6-8 wks.	6-8 wks.	6-8 wks.	Slight DIP Hyperextension
Collateral Ligament Sprains	3 wks.	2 wks.	4-6 wks.	30° flexion
DIP & PIP Dislocations	3 wks.	3 wks.	3 wks.	30° flexion
Phalangeal Fractures	4-6 wks.	4-6 wks.	3 wks.	N/A
DIP, PIP Fractures	9-11 wks.	3 wks.	3 wks.	30° flexion
Pseudoboutonniere	5 wks.	3 wks.	3 wks.	20° - 30°
Volar Plate Injuries				
Boutonniere Deformity	6-8 wks.	6-8 wks.	6-8 wks.	PIP in extension DIP, MP not included
MP Fractures	3 wks.	3 wks.	4-6 wks.	30° flexion
FDP Repair	5 wks.	3 wks.	3 wks.	Depends on Repair

# SMOKELESS TOBACCO

You may already know about the many health hazards of smoking. You've also heard the saying, "Don't start smoking; if you do smoke — stop!" Because of this warning, many people have decided to switch to smokeless tobacco (snuff and chewing tobacco) as a "safe" alternative. But, smokeless tobacco habits are not safe. **Both snuff dipping and tobacco chewing can harm your health.** By using smokeless tobacco products, you are constantly placing a pinch of snuff or a "chaw" of leaf or plug tobacco between your cheek and teeth. Consider the following facts:

1. The habit of holding tobacco in one location when sucking on the quid can damage your oral tissues by the direct contact with tobacco and its juice. This practice often produces a white, leathery-appearing area in the mouth called "leukoplakia." Leukoplakia can look like either a smooth, white patch or a thick, hardened, and wrinkled lesion. **Leukoplakia is considered to be pre-cancerous.** Three to five percent of diagnosed leukoplakias have the potential to become oral cancers.

2. Studies show that all forms of smokeless tobacco contain high concentrations of certain carcinogens (cancer-causing agents). Some of these carcinogens are formed during the curing and processing of tobacco. This information is supported by the recent Surgeon General's Report and extensive studies which conclude that smokeless tobacco is associated with an increased risk of cancer of the oral cavity, pharynx, larynx, and esophagus.

3. Damage to the periodontal tissues (gum and bone which support and anchor your teeth in the jaw) has been observed at the place where tobacco is held in the mouth. This damage is associated with the repeated, direct, and prolonged contact of the tissues with irritating tobacco juices. This irritation could cause your gums to recede from your teeth, exposing the roots and making the teeth more sensitive to heat and cold. Your teeth could also lose their gum and bone support, thus increasing the damage by periodontal (gum) disease. In this condition, teeth can drift from position, loosen, and eventually be lost.

4. Smokeless tobaccos contain high levels of abrasive grit and sand which are not completely removed during curing and processing. Due to the grit, tobacco chewers and dippers experience more tooth abrasion (wearing of the tooth's biting surfaces). This unnatural wear of the tooth's surface may require treatment if the degree of abrasion is severe.

5. Various amounts of sugar (especially sucrose and glucose) are added to smokeless tobaccos during the curing process to improve taste. High sugar consumption is strongly related to dental caries (tooth decay). When sugar mixes with the plaque on your teeth, acids are formed which decay the tooth enamel. Therefore, the potential for caries does exist.

According to medical authorities, diabetic patients should also be aware that the use of highly sweetened chewing tobaccos could result in poor control of their diabetes.

6. In reference to overall health, all forms of cured tobacco contain nicotine. Nicotine is a dependence-producing drug. There is a risk, therefore, that dependence for nicotine will develop in tobacco chewers.

Nicotine can also change a number of normal body functions. For example, it causes increases in heart rate and blood pressure and can lead to an irregular heart beat. Important blood vessels that move oxygen-rich blood to the entire body are constricted. Athletes should be aware that athletic performance may therefore be affected by the use of smokeless tobacco.

7. Like smokers, chewers and dippers also have socially unacceptable traits. Bad breath and discolored teeth and the constant need to spit can be offensive to others.

## Remember:

SNUFF DIPPING AND TOBACCO CHEWING ARE NOT SAFE ALTERNATIVES TO SMOKING. You can help preserve your general and oral health by eliminating the use of tobacco in **any form**. Cigarette packages warn you of smoking hazards. This warning should have a new partner: Don't use snuff or chew tobacco. If you do — stop!" Your health is worth it.

## Glossary of Terms:

**Carcinogen** — any cancer-producing substance.

**Chaw** — a golf-ball size wad of leaf or plug tobacco on which the chewer sucks.

**Chewing Tobacco** — the placing of leaf tobacco (sold in a pouch) or plug tobacco (sold in a brick) in between the cheek and gum.

**Dependence** — a state of psychological or physical need resulting from the periodic or continuous use of a drug.

**Leukoplakia** — white, thickened patches of oral tissue which can become cancerous.

**Nicotine** — a poison present in tobacco which can cause dependence and which produces a stimulant effect on some body functions.

**Oral Cancer** — uncontrolled and discolored growth of abnormal cells of the mouth.

**Periodontal Disease** — a group of diseases that affect the soft tissues (gums), the periodontal fibers which hold the teeth in place, and the bone surrounding the teeth.

**Plaque** — a soft, sticky, colorless layer of harmful bacteria and their byproducts that is constantly forming on the teeth.

**Quid** — a small portion of any smokeless tobacco which is held in the mouth for dipping (snuff) or chewing (leaf or plug).

**Snuff Dipping** — the placing of a pinch of powdered tobacco (sold in cans) between the cheek and gum.

**Tooth Abrasion** — the wearing down of the teeth due to friction or improper chewing.

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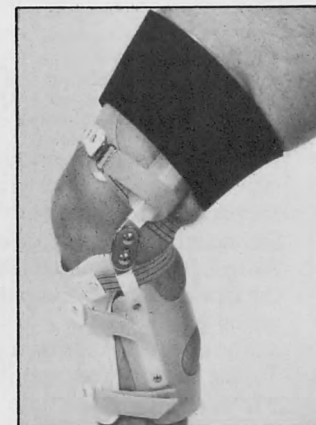
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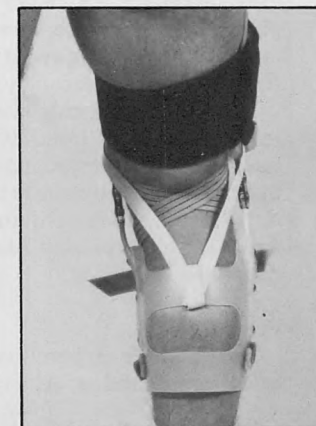
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# The Measured Effect of Taping, Joint Range of Motion, and Their Interaction, upon the Production of Isometric Ankle Torques

Ron D. Fischer

## Introduction

The appropriateness of taping an athlete's ankle has been debated for years. Numerous aspects of this question have been examined<sup>1,4,5,6,7,10,11,12,13,14,15,17,18</sup>. Taping adds support to the ligamentous structures of the ankle<sup>4,14,15,18</sup>, is superior in support to wrapping<sup>11,12</sup>, and substantially loses support during exercise<sup>4,11,12,15,18</sup>. Ankle sprains are fewer among those with wrapped or taped ankles<sup>5,7,16,17</sup>, and among those injured, significantly fewer days of disability occur in the taped group as compared to either the wrapped or unprotected group<sup>7,16</sup>.

The effects of tape on motor performance are inconclusive. Taping has no affect upon agility time and sprint capacity<sup>13,14</sup>, while reducing verticle jump and standing broad jump ability<sup>10,13</sup>. Examination of lower leg muscle function with respect to the practice of ankle taping suggests that the preventative taping of ankles does not impair the development of maximum dynamic torque<sup>1</sup>, and that the peroneus brevis may even function for a longer period at the end of the gait swing phase<sup>6</sup>. The literature, however, contains no information concerning ankle taping and its relationship to maximal isometric torque produced throughout the ranges of ankle motion.

The purpose of this study was to compare the effects of joint range of motion (JROM), three adhesive taping techniques, and their interaction (JROM and tape) upon the production of isometric torque in the ankle motions of plantarflexion, dorsiflexion, inversion, and eversion. The taping techniques and control were also examined in an unexercised and an exercised condition.

## Procedure

Two college upperclassmen involved in intramural athletics volunteered as subjects. One subject (#1) was male and the other (#2) was female. Both subjects reported that their ankles had been asymptomatic of joint trauma during the past year.

A control condition of no tape and three taping techniques were examined. The three ankle taping techniques were: closed basketweave with two heel locks both medially and laterally (BWHL); closed basketweave and two figure-8's (BW8's); and closed basketweave with a combination of two heel locks both medially and laterally and two figure-8's (BWHL8's).

Muscular strength in the form of torque was collected using the Cybex II Dynamometer\* with a single channel recorder.

*Mr. Fischer graduated with a B.S. Degree in Physical Education with an athletic training emphasis from Oregon State University in May 1982. He has been a student athletic trainer for five years as well as a research assistant in the Human Performance Laboratory for two years.*

Plantarflexion and dorsiflexion torque measurements were taken while the subject was seated with the knee extended and the hip flexed (Figure 1). Care was taken to make sure the axis of rotation of the ankle was matched with that of the machine, and the thigh adequately stabilized.

To allow for measurement of inversion-eversion torque the Cybex II Dynamometer was fitted with a special Inversion/Eversion Adapter.\* (\*Cybex II Dynamometer: Cybex Division of Lumex Inc. Bay Shore, New York.) Care was taken to stabilize the foot and knee into the positions outlined in the instruction manual provided with the Inversion/Eversion Adapter<sup>3</sup>. This included appropriate placement of the axis of rotation, maintenance of a 90 degree angle between the foot and leg, and finally, stabilization of the knee at an angle less than 125 degrees so that the length/tension relationship would not be affected (Figure 2).



Figure 1. Shows the testing position required for measuring plantarflexion-dorsiflexion torque.



Figure 2. Shows the testing position required for measuring inversion-eversion torque.



Upon entering the laboratory the subject was taped with one of three taping techniques, except for the control condition of no tape. Tape adherent, lubricated lace pads, pre-wrap, and 1½ inch tape were applied with the tape anchored to the skin. After each application of tape was complete the tape was allowed to set for five minutes while the equipment was adjusted. The subject was first positioned to enable measurement of torque in plantarflexion and dorsiflexion. Maximum dorsiflexion was defined as zero degrees in the recording of joint range of motion. Isometric torque measurements were taken every six degrees throughout the total range of motion for both the plantarflexors and the dorsiflexors.

Specific commands were given and a one minute rest interval was allowed so as to control the subject variability due to the factors of motivation and fatigue. Before testing began the subject was instructed to perform a maximum voluntary contraction on command. The command "plantarflex" was given to initiate contraction, with the contraction being terminated after approximately two seconds with the command "relax." About 5-10 seconds rest was then provided before the command "dorsiflex" was given. The ankle range of motion was then increased 6 degrees through adjustment of the Cybex II shaft according to the dial located on the shaft. This procedure is similar to that reported by Hutton and Miller<sup>9</sup>. The total JROM was determined by having the subject maximally dorsiflex and plantarflex.

Once plantarflexion-dorsiflexion torque measurements were complete the subject was positioned for the measurement of inversion-eversion torque. Maximum eversion was defined as zero degrees in the recording of joint range of motion. The commands "invert" and "evert" were used to initiate contraction. The rest of the procedure is consistent with that described previously for plantarflexion and dorsiflexion.

Since the effects of exercise are known to loosen the tape it was also felt appropriate to have two conditions per taping technique and control. These conditions are identified as "unexercised" and "exercised." The unexercised condition consisted of performing the torque measurements immediately after the tape had set for 5 minutes. The exercised condition consisted of 5 minutes basketball warmup and 10 minutes of one-on-one basketball. This form of exercise requires the stops, starts, jumping and lateral movement necessary to require the ankle to move in both the plantarflexion-dorsiflexion and inversion-eversion motions.

An F-test of the mean variance of each taping technique and control was used to verify the validity of an ANOVA. The torque values of both subjects were combined in a two-way ANOVA in order to test the three hypotheses in question. Eight separate conditions were analyzed. The difference between mean torque values for each taping technique and control was analyzed using a dependent t-test for the significantly different condition.

## Results

Torque measurements (ft-lbs) were obtained over 48 degrees of plantarflexion-dorsiflexion JROM for subject #1, as compared with 72 degrees of motion for subject #2. Inversion-eversion torque measurements for subject #1 covered a total of 54 degrees of JROM, while subject #2 was able to produce torque measurements over 96 degrees of motion. Although subject #2 had a range of motion 24 degrees (plantarflexion-dorsiflexion) and 42 degrees (inversion-eversion) greater than subject #1, these torque measurements could not be included for statistical analysis using a two-way ANOVA. By defining zero degrees at the extreme of the JROM the data is compatible even though the total JROM is not the same. The results from the two-way ANOVA are presented in Table 1.

The two-way ANOVA clearly establishes that joint range of motion does affect the production of torque for all eight conditions at the .01 level of significance. Examination of the

Table 1

Two-way Analysis of Variance (ANOVA)

Source	Condition	Criteria	Movement	F-calc
JROM	Unexercised	Torque	Plantarflexion	10.5*
			Dorsiflexion	5.6*
			Inversion	10.9*
			Eversion	5.8*
JROM	Exercised	Torque	Plantarflexion	12.2*
			Dorsiflexion	7.1*
			Inversion	13.7*
			Eversion	18.4*
Taping Technique Conditions	Unexercised	Torque	Plantarflexion	0.5
			Dorsiflexion	0.7
			Inversion	8.5*
			Eversion	1.2
Taping Technique Conditions	Exercised	Torque	Plantarflexion	0.0
			Dorsiflexion	1.1
			Inversion	2.5
			Eversion	1.5
Interaction of Taping and JROM	Unexercised	Torque	Plantarflexion	0.1
			Dorsiflexion	0.1
			Inversion	0.3
			Eversion	0.1
Interaction of Taping and JROM	Exercised	Torque	Plantarflexion	0.3
			Dorsiflexion	0.1
			Inversion	0.5
			Eversion	0.2

(\*significant at 0.01 level)

Table 2

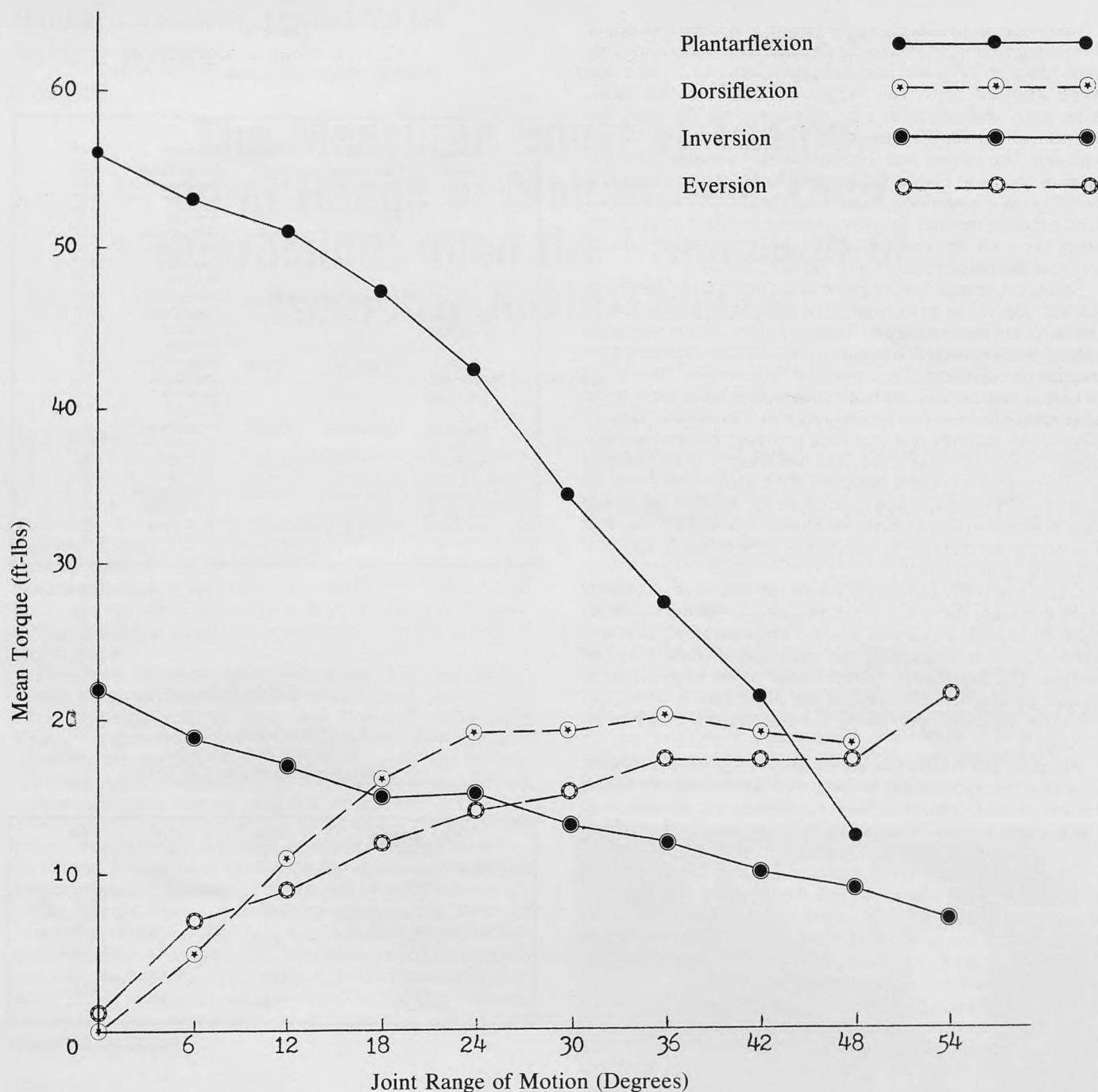
Dependent t-test of Taping Technique Means for the Inversion-Unexercised Condition

Taping Technique	Mean	S.D.	t-calc
Control vs. BWHL	14.85 9.40	4.5 4.0	3.08*
Control vs. BW8's	14.85 14.50	4.5 4.8	0.20
Control vs. BWHL8's	14.85 11.60	4.5 2.6	1.84

(\*significant at the 0.05 level)

two-way ANOVA results concerning taping technique conditions reveals that torque measurements were not significantly different at the .01 level for 7 of 8 conditions. Only the inversion-unexercised condition allows us to conclude that the effect of taping on the production of torque is not equal with regard to the taping techniques, in comparison to each other and/or the control. Further analysis of the data utilizing a dependent t-test of the taping technique mean values at the .05 level of significance suggests that it is the BWHL taping technique which is significantly different from the control (Table 2). The two-way ANOVA also makes it clear that there is no interaction effect between JROM and taping technique on the production of torque for any of the eight conditions at the .01 level of significance.

A graph of mean torque values for all sixteen observations at every six degrees of JROM are presented in Figure 3. Mean Z-scores for each unexercised condition are graphed in Figure 4, while mean Z-scores for each exercised condition are graphed in Figure 5.



**Figure 3.** Mean Torque Values vs. JROM. Depicts the mean torque value ( $n = 16$ ) every six degrees for the motions of plantarflexion, dorsiflexion, inversion, and eversion. Zero degrees JROM is defined as maximum dorsiflexion or eversion.

### Discussion

The torque values reported in this study follow the same pattern as those described by A.V. Hill<sup>8</sup> and H.H. Clarke<sup>2</sup>. The plantarflexion and inversion torque patterns exhibit a descending strength curve over the range of motion. This indicates that in positions of greatest stretch (length) the torque (tension) is the greatest, and the torque decreases as the muscle length decreases. This relationship can be clearly seen in the graph of Mean Torque Values vs. JROM (Figure 3), and the Mean Z-score graphs for all conditions of plantarflexion (Figures 4a and 5a) and inversion (Figures 4c and 5c).

The dorsiflexion and eversion torque patterns follow an ascending strength curve. This is also comparable to Clarke's<sup>2</sup> results and follows the same muscular length-tension relationship. Torque increased as the muscular length increased. This is also apparent on examination of the Mean Torque Values vs. JROM graph (Figure 3), and the Mean

Z-score graphs for all conditions of dorsiflexion (Figures 4b and 5b) and eversion (Figures 4d and 5d). The Mean Z-score graphs (Figures 4 and 5) normalize the data and allow the different taping techniques to be visually compared in their action on torque production. As indicated by Clarke<sup>2</sup>, dorsiflexion strength leveled off towards the extremes of plantarflexion (Figures 4b and 5b). Clarke reasoned that the dorsiflexors have a poor mechanical advantage during extreme plantarflexion. The fact that the length-tension relationship in this study is congruous to that found by previous researchers lends external validity to the data obtained in this study.

The results of this study are in agreement with the conclusion of Abdenour et. al.<sup>1</sup> that taping has no significant effect on the production of torque. This also suggests that preventative ankle taping does not impair the maximum production of isometric torque.



A number of factors may account for the significant difference in the inversion-unexercised condition. The decrease in torque found in the inversion-unexercised BWHL condition could be due to the fact that preventative ankle taping is aimed at limiting excessive inversion motion. Fumich et. al.<sup>4</sup> reports that the greatest absolute degrees of restriction with tape prior to exercise occurs in the plantarflexion, plantarflexion inversion, and inversion neutral motions. The results of Abdenour et. al.<sup>1</sup> study showed that only the inversion range of motion of a power contraction was statistically different. Taping techniques utilizing the heel lock have been reported to retain greater support<sup>11</sup>, and this added resistance may result in a decrease in torque production in the motion of inversion.

Close examination of the data reveals that the use of preventative taping does not inhibit maximum voluntary isometric torque in most ankle motions. The highest torque value obtained for each of the different contraction conditions (i.e. plantarflexion-unexercised) was most often found in connection with a taped ankle. Upon analysis of the results of the

#### Key for Mean Z-score Graphs

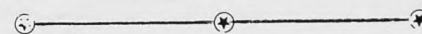
Control



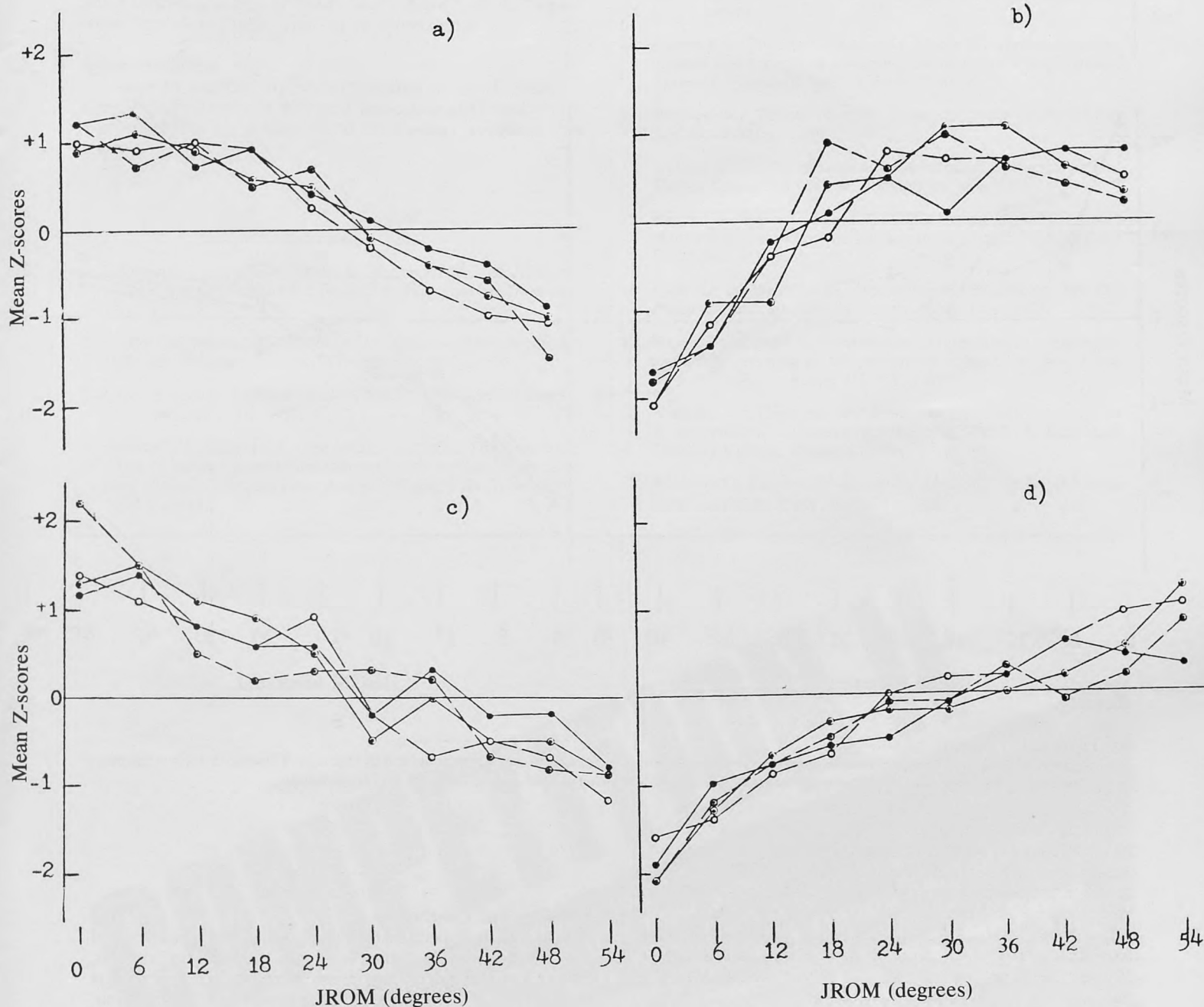
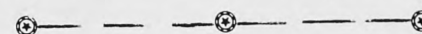
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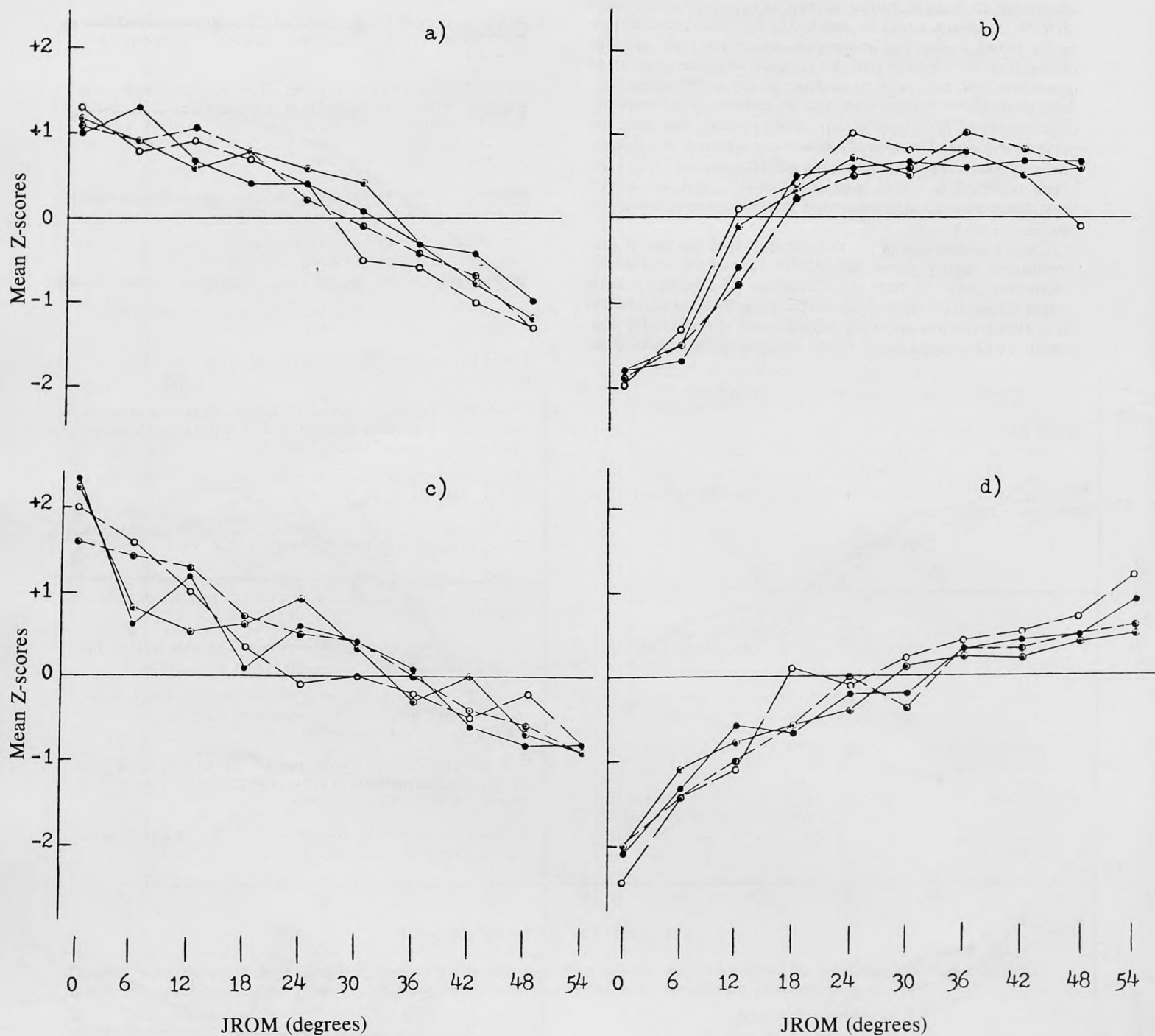
BW8's



BWHL8's



**Figure 4.** Mean Z-scores Unexercised Condition: a) plantarflexion, b) dorsiflexion, c) inversion, and d) eversion. This figure depicts the mean Z-scores of unexercised torque measurements ( $n=2$ ) every six degrees of JROM for each taping technique.



**Figure 5.** Mean Z-scores Exercised Condition: a) plantarflexion, b) dorsiflexion, c) inversion, and d) eversion. This figure depicts the mean Z-scores of post-exercise torque measurements ( $n=2$ ) every six degrees of JROM for each taping technique.

two-way ANOVA and the mean Z-score graphs it becomes clear that the exercise condition did not significantly effect the action of tape on the production of torque. The exercise condition was indistinguishable from the unexercised condition in all cases except the inversion-unexercised condition.

#### Summary and Conclusions

Two college upperclassmen were used to test the effects of joint range of motion, taping technique, and their interaction, on the production of maximum torque. Isometric torque measurements were taken in the motions of plantarflexion, dorsiflexion, inversion, and eversion. A Cybex II Dynamometer was used to obtain torque measurements every 6



degrees throughout the ankle range of motion. A two-way ANOVA revealed that JROM has a significant effect upon the production of torque at the .01 level of significance. This relationship follows the muscular length-tension relationship of increased torque production as muscular length is increased. There is no significant difference at the .01 level in the amount of torque produced whether the ankle is taped or untaped, except for the inversion-unexercised condition. Further analysis of this condition revealed that the BWHL taping technique was significantly different from the untaped ankle in the production of torque at the .05 level. Explanations for this finding were discussed. No interaction effect between joint range of motion and taping conditions on the production of torque was found at the .01 level of significance. The exercised condition was found to be indistinguishable from the unexercised condition with the exception of the inversion-unexercised condition.

The data collected in this study becomes valuable to the athletic trainer who uses tape as a preventative measure to reduce ankle injuries and their severity. The data supports the conclusion that taped ankles do not inhibit the production of ankle torque, and thus do not reduce athletic potential or the lower legs ability to prevent an injurious stress.

#### Acknowledgment

I wish to express my sincere thanks to Dr. Donald E. Campbell, Professor of Physical Education at Oregon State University, for his guidance and assistance throughout this study.

#### References

1. Abdenour, T, Saville W, White R, Abdenour M: The effect of ankle taping upon torque and range of motion. *Athletic Training*. 14(4): 227-228, 1979.
2. Clarke HH: *Muscular Strength and Endurance in Man*. Prentice-Hall, Inc. Englewood Cliffs, NJ, 1966, pp. 36-51.
3. *Cybox Inversion/Eversion Guide*. Cybox, A Division of Lumex, Inc. New York, NY, 1977.
4. Fumich RM, Ellison AE, Guerin GJ, Grace PD: The measured effect of taping on combined foot and ankle motion before and after exercise. *The American Journal of Sports Medicine*. 9(3): 165-169, 1981.
5. Garrick JG, Requa RK: Role of external support in the prevention of ankle sprains. *Medicine and Science in Sports*. 5:200-203, 1973.
6. Glick JM, Gordon RB, Nishimoto D: The prevention and treatment of ankle injuries. *The American Journal of Sports Medicine*. 4(4):136-141, 1976.
7. Hafner JK, Callahan WF, Crowley FJ, et. al.: A statewide study designed to determine methods of reducing injury in interscholastic football. New York Public High School Athletic Association and The Educational Council for School Research and Development. Albany, NY, 1968.
8. Hill AV: Dynamics of muscular activity. *Muscular Activity*. The Williams & Wilkins Co., Baltimore, MD 1926, pp. 3-7.
9. Hutton RA, Miller D: Length-torque measurements an integration of neuromuscular physiology and biomechanics. *J of Phys Educ & Rec*. 46(2): 81-87, 1975.
10. Juvenal JP: The effects of ankle taping on vertical jumping ability. *Athletic Training*. 7(5): 146-149, 1972.
11. Libera D: Ankle taping, wrapping, and injury prevention. *Athletic Training*. 7(3): 73-75, 1972.
12. Malina RM, Plagenz L, Rarick G: Effect of exercise upon the measureable supporting strength of cloth and tape ankle wraps. *Research Quarterly*. 34(2): 158-165, 1963.
13. Mayhew JL: Effects of ankle taping on motor performance. *Athletic Training*. 7: 10-11, 1972.
14. McCorkle RB: The effect of adhesive strapping on ankle action. Thesis. Springfield College, Springfield, MA, 1963.
15. Rarick GL, Bigley G, Karst R, et. al.: The measureable support of the ankle joint by conventional methods of taping. *J Bone Joint Surg (Am)*. 6:1183-90, 1962.
16. Ryan AJ: Taping prevents acute and repeated ankle sprains. *The Physician and Sportsmedicine*. pp. 40-46, Nov. 1973.
17. Simon JE: Study of the comparative effectiveness of ankle taping and ankle wrapping on the prevention of ankle injuries. *J Nat Athletic Trainer's Assoc*. 4(2):6-7, 1969.
18. Simpson, BJ: The measureable support given to the ankle joint by conventional methods of ankle taping. Thesis. Kansas State Teachers College, Emporia, 1966.
19. Snedecor G, Cochran W: *Statistical Methods*. 7th Ed The Iowa State University Press, Ames, IA 1980. +

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# Simple Rib and Kidney Protection

J. Terry Parker, ATC

In an attempt to stay within a set budget, this author has worked with various methods and materials in order to provide maximum protection for the athlete's injured rib(s) and/or kidney(s). After several years of trial and error, the following methods and materials have been found to provide maximum protection for a very minimum expense.



Figure 1

**Materials** (Figure 1)  
4 old knee pads (from football pants)  
1 plastic shoulder pad flap  
Tape adherent (optional)  
1 6" Ace bandage  
1 roll 3" elastic tape  
1 roll 1½" adhesive tape

### Methods

Before any protection is offered the athlete, the protective orthotic must first be made. This is best done by fitting the knee pads to the shoulder flap to offer the most protection on both sides (Figure 2). After the pads are fitted to the flap, they must then be secured with the elastic tape (Figure 3), making sure all edges of the flap are padded. After securing the pads, the orthotic is ready for application (Figure 4).



Figure 2

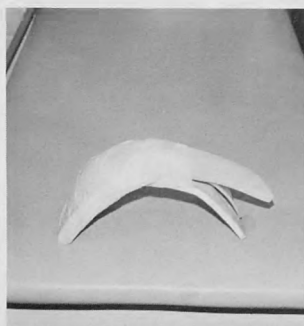


Figure 3



Figure 4



Figure 5

Next, fit the orthotic to the athlete's injured area(s). (Figure 5). Have the athlete or an assistant secure the orthotic to the injured area(s) while an adhesive strapping is applied to the skin (Figure 6). Afterwards, completely secure the orthotic with the Ace bandage (Figure 7) while the athlete raises his hands above his/her head as in the "hold-up" position. The Ace bandage may then be secured with adhesive strips or bandage clips (Figure 8); whichever proves to be most effective.



Figure 6



Figure 7



Figure 8

Mr. Parker is an athletic trainer with the Plano Independent School District, Plano, Texas 75074.

The author would like to thank Terry Crawford and John Duhe for their assistance in this paper. +



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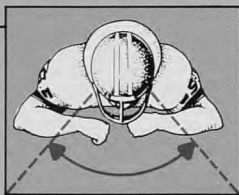
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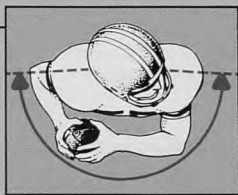
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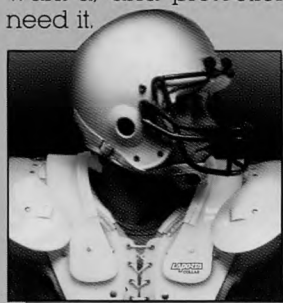
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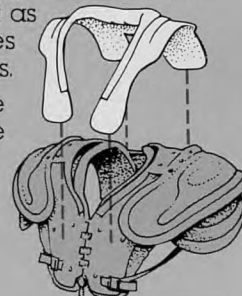


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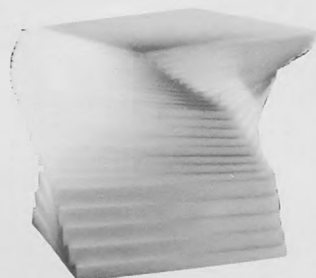
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# The Vegetarian Athlete

Esther Haskvitz, MEd, ATC

The vegetarian diet has become increasingly more popular in western society appealing to all sorts of individuals, including athletes. Little research has been done on the vegetarian athlete, so the topic must be approached through a review of the literature on vegetarian diets and a discussion of the nutritional needs of athletes.

## Vegetarianism

Vegetarianism is the consumption of a diet composed predominantly of plant foods. Vegetarian diets can be classified according to the types of animal foods left in the diet. The four basic types are: lacto-ovo, lacto, pure vegetarian, and vegan<sup>7,9,13</sup>. The lacto-ovo vegetarian consumes dairy products and eggs in addition to plant foods. The lacto vegetarian will eat only dairy products in addition to plant foods, while the pure vegetarian consumes plant foods only. A vegan is a pure vegetarian who also adheres to a specific philosophy and lifestyle that prohibits all forms of animal cruelty or exploitation<sup>19</sup>. In addition to the main four categories there are others which include vegetarians who eat fish or fowl in addition to plant foods, but may or may not permit eggs and dairy products.<sup>17</sup> Reasons for being vegetarian are generally philosophical, religious, or health-related.<sup>7,20</sup>

Most Americans have grown up on meat diets believing meat is necessary for protein intake and health.<sup>6</sup> However, many individuals and populations have practiced vegetarianism on a long term basis and have demonstrated excellent health.<sup>7</sup> Research has shown that vegetarians tend to have lower weights for their heights<sup>3,4,7,9</sup> and lower serum cholesterol levels<sup>7,17</sup> compared to nonvegetarians. They may also have a lower risk for developing heart disease due to less animal fat intake<sup>7,17</sup> and a lower rate of colon cancer due to the high fiber content of the diet.<sup>7,9,17</sup>

Although vegetarians eliminate meat from their diet, they do not eliminate protein, which is needed for body growth and repair. Proteins break down into amino acids, the form in which they are transported by the blood to the tissues.<sup>11</sup> Of the 22 needed amino acids, eight are not produced by the body, and all of them can be obtained by eating milk products,

eggs, meat and fish.<sup>15,17</sup> The essential amino acids that the body cannot synthesize are: isoleucine, leucine, lysine, phenylalanine, methionine, threonine, tryptophan, and valine. In addition, infants cannot synthesize histidine.<sup>15</sup> Vegetable protein also contains these essential amino acids, but any single vegetable protein source may be low in one or more of them. Cereal and grains are low in lysine. Legumes have ample lysine, but are low in methionine.<sup>2,9</sup> By careful combination of cereals and legumes all the essential amino acids can be included in the pure vegetarian diet.<sup>2,7,9,10,15</sup> The vegetarians that consume eggs and dairy products have no problem in obtaining the essential amino acids. The less restrictive the diet, the greater is the probability that all nutritionally requirements will be met.<sup>2</sup>

Of great concern to the pure vegetarian is a deficiency in vitamin B<sub>12</sub>, which can only be obtained through animal sources.<sup>2,10,16,17</sup> A deficiency in vitamin B<sub>12</sub> causes megaloblastic anemia and degeneration of the dorsal and lateral columns of the spinal cord. It can go undiagnosed because of false "normal" serum levels.<sup>15</sup> Because our vitamin B<sub>12</sub> stores greatly exceed our daily requirements, it would take several years to deplete the stores.<sup>16</sup> To avoid such a deficiency pure vegetarians need to drink fortified soybean milk or take vitamin B<sub>12</sub> supplements.<sup>2,9,17</sup> Lacto-ovo vegetarians rarely suffer from this deficiency because eggs and milk are high in this nutrient.<sup>7</sup>

Lacto-ovo vegetarians easily meet their needs for calcium and riboflavin from dairy products, but the pure vegetarian must consume regular and ample servings of dark green vegetables, legumes, fortified soybean milk and certain nuts and seeds to obtain sufficient amounts.<sup>2,9</sup>

Iron deficiency, which is also common with nonvegetarians, can be reduced by increasing iron absorption. A number of dietary factors effect absorption of food iron. Phytic acid, for example, reduces iron absorption while animal foods, particularly meat, enhance it. Ascorbic acid also increases absorption by maintaining iron in a reduced, more soluble form.<sup>10</sup> Vegetarians can enhance iron absorption by including a food high in ascorbic acid with each meal.

The amount of calories available for energy can be a problem with the pure vegetarian diet.<sup>7,10</sup> Poorly planned diets tend to be high in bulk with insufficient calories to meet energy needs. Dietary protein is metabolized to provide energy rather than to maintain tissue protein and other protein functions. This use of protein could lead to a protein deficiency disorder.<sup>9</sup>

The vegetarian diet should be planned using the same basic four food groups as in a meat eating diet.<sup>10,20</sup> Meats in the protein rich meat group can be replaced by increasing the intake of plant proteins from legumes, seeds and nuts. By combining cereals and legumes the essential amino acids can be obtained, while use of a variety of fruits and vegetables will ensure adequate vitamin and mineral supplies. If needed, an increased intake of whole grain breads and cereals can be



Miss Haskvitz is a graduate of the University of Virginia and is presently in Physical Therapy school at Texas Woman's University.



utilized to meet energy requirements. By drinking milk and eating eggs the lacto-ovo vegetarians are able to consume a diet as nutritionally sound as a meat-based one.<sup>7,10</sup> By eliminating all animal products, the pure vegetarian must also consume increased quantities of food that supply the nutrients provided by the deleted milk group. This can be accomplished by using a fortified soybean milk, increased consumption of green, leafy vegetables and an increased use of legumes, nuts and dried fruits.<sup>2,10</sup> Pure vegetarians should also provide vitamin B<sub>12</sub> by a supplement or the use of foods fortified with B<sub>12</sub>. They also need to maintain their energy intake.<sup>2,7,10</sup>

### Dietary Needs of Athletes

The diet of the athlete is basically the same as the diet for the non-athlete.<sup>1</sup> Among the misconceptions about the athlete's diet is the belief that substantial protein supplements are necessary to meet the demands of heavy exercise.<sup>14</sup> Protein, however, is not a primary or secondary fuel for muscular energy. Some additional protein may be needed for the synthesis of lean tissue during training, but these needs can be provided for with a diet of one gram of protein for each kilogram of body weight. There is no need to consume large amounts of protein supplements because the rate of protein synthesis is not increased by overloads of dietary protein.<sup>8</sup> Furthermore, dietary protein in excess of that needed for immediate synthesis is not stored as protein, but is burned for energy or converted to fat. The inability to store protein necessitates the provision of adequate daily dietary protein.<sup>11</sup>

The athlete must adjust his caloric consumption to meet his caloric expenditure. Calorie needs depend upon both the basal metabolic rate and the amount of physical activity above that level.<sup>1,12</sup> Calories are consumed in the form of carbohydrates, fats and proteins. Ideally, 55-60% of the calories should come from carbohydrates, 25-30% from fats and 15% from protein. As caloric expenditure increases, the need for protein is unchanged so that the additional calories needed for increased expenditure during exercise can be met by increasing carbohydrates and fat intake. Animal fats, however, should comprise no more than 50% of the total fat intake.<sup>12</sup>

The athlete's diet should be based on the basic four food groups. The recommended daily servings are: two servings each from the milk group and from the meat group, and four servings each from the cereal group and the fruit and vegetable group.<sup>18</sup> These servings will provide all the necessary nutrients, but the number of servings will need to be adjusted to the energy requirements of the sport. A diet designed in this manner should provide adequate nutrition for top physical efficiency and performance, maintenance of physical fitness and desirable body weights, and for optimal function of all organ systems.<sup>14</sup>

### The Vegetarian Athlete

No evidence exists that a vegetarian diet will help an athlete run farther, bike longer, or swim faster. There is also no evidence to the contrary. If a meatless diet gives an athlete a feeling of mental or physical well-being it may enable him to perform better.<sup>5</sup>

Except for the caloric requirement, the recommended diet for an athlete is basically the same as that of a nonathlete. Nutritionally, the vegetarian diet can be as sound as a meat eater's diet. Therefore, the vegetarian athlete, especially one who is lacto-ovo, should not face any more difficulties than meat eating athletes in regards to nutrition, even during heavy training. Even a meat eater can face nutritional deficiencies if a balanced diet is not maintained, although the vegetarian, by eliminating certain foods from the diet, is more vulnerable. The athlete who is well educated in sound nutritional practices should have no difficulties whether he is a meat eater or plant eater.

During times of heavy exercise the body requires more

carbohydrates for energy. The vegetarian may possibly be at an advantage in such situations. Because vegetarians consume larger quantities of carbohydrates than most meat eaters, they may possibly have larger carbohydrate stores. Research is needed to test this hypothesis.

An increase in protein consumption is not needed for exercise unless the athlete is actively increasing muscle mass. To meet the increased energy demands the excess calories are consumed in the form of carbohydrates and fats. The vegetarian diet is quite adaptable to such a caloric increase, because most calories are already consumed in that form.

Although vegetarianism and athletic participation are compatible, the vegetarian athlete may face some difficulties relating to his diet. Carbohydrate loading, the controversial practice involving depletion and supersaturation of carbohydrate stores before endurance competition, would be virtually impossible for the pure vegetarian. The problem arises during the glycogen depletion phase because there are no carbohydrate-free plant foods. Tofu, texturized soy protein, nuts and seeds contain mostly protein and fat, but they also contain carbohydrates.

The vegetarian college athlete, particularly one who eats only plant foods, may have difficulties with his diet if he eats on a dormitory meal plan. Not all colleges offer vegetarian menus and those that do usually serve eggs and dairy products. If the dormitory meals do not meet his nutritional requirements, he would need to supplement them to guard against dietary deficiencies. If the athlete eats at the training table the trainer needs to ensure that the athlete's nutritional needs are met as well as those of the meat eating players. The people providing the meals should be informed of the player's diet and ideally, they should be provided with vegetarian meal plans to follow to ensure that the athlete will be well nourished.

Often a high school student will become a vegetarian without support from family members who may also lack a knowledge of vegetarian meal planning. Counseling the athlete and family members responsible for meal preparation in proper nutrition and providing vegetarian menus may help the athlete maintain a balanced diet.

It is possible to be both a vegetarian and an athlete. Extra effort, however, is required in meal planning, particularly with a pure vegetarian diet. As long as the vegetarian athlete consumes sufficient calories for his energy expenditure, eats a variety of fruits and vegetables, combines cereals and legumes to obtain the essential amino acids, and takes vitamin B<sub>12</sub> supplements if he eats no animal products, he should have all the nutrients required for a healthy body and optimal athletic performance.

### References

1. : *Nutrition for Athletes — A Handbook for Coaches*. Washington, D.C., American Association for Health, Physical Education and Recreation, 1971.
2. : Vegetarian diets. *American Journal of Clinical Nutrition* 27:1095-1096, 1974.
3. Bergan J, Brown P: Nutritional status of "new" vegetarians. *Journal of the American Dietetic Association* 76:151-155, 1980.
4. Brown P, Bergan J: The dietary status of "new" vegetarians. *Journal of the American Dietetic Association* 67:455-459, 1975.
5. Burfoot A: Meatless runner. *Runner's World* 13(2):48-55, 1978.
6. Burfoot A: Vegetarian diets. *The Complete Diet Guide for Runners and Other Athletes*, Edited by Higdon H, Mountain View CA: World Publications, 1978.
7. Dwyer J: Vegetarianism. *New York State Journal of Medicine* 80:660-661, 1980.

8. Herman J: Athletes' protein needs. *The Complete Diet Guide for Runners and Other Athletes*. Edited by Higdon H, Mountain View CA: World Publications, 1978.
9. Jenkins R: Health implications of the vegetarian diet. *Journal of the American College Health Association* 24:68-71, 1975.
10. : Position paper on the vegetarian approach to eating. *Journal of the American Dietetic Association* 77:61-69, 1980.
11. Klafs C, Arnheim D: *Modern Principles of Athletic Training*. edition, St. Louis, CV Mosby Co. 1977.
12. Klinzing J: Carbohydrates, proteins, fats. *The Complete Diet Guide for Runners and Other Athletes*. Edited by Higdon H, Mountain View CA: World Publications, 1978.
13. MacLean W, Graham G: Vegetarianism in children. *American Journal of Diseases of Children* 134:513-519, 1980.
14. Marino D, King J: Nutritional concerns during adolescence. *The Pediatric Clinics of North America* 27:125-139, 1980.
15. : Vegetarian diets. *Medical Letter on Drugs and Therapeutics* 21(15):62-63, 1979.
16. : Vegetarian diet and vitamin B<sub>12</sub> deficiency. *Nutrition Review* 36:243-244, 1978.
17. Price J: Vegetarianism — food faddism or nutritious alternative. *Journal of Nursing Care* 13(6):8-12, 1980.
18. Smith N: *Food for Sport*. Palo Alto, CA, Bull Publishing Co. 1976.
19. Taber L, Cook R: Dietary and anthropometric assessment of adult omnivores, fish-eaters, and lacto-ovo vegetarians, *Journal of the American Dietetic Association* 76:21-29, 1980.
20. Zolber K: Producing meals without meat. *Hospitals* 49(12):81-82, 84-86, 1975. +

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