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ATHLETIC TRAINING
THE JOURNAL OF
THE NATIONAL ATHLETIC TRAINERS ASSOCIATION, INC.
Volume 21, Number 1, Spring 1986

Features

10
CEU QUIZ
Michael Sitler, MS, ATC
Nasal Septal Injuries

15
Terry J. Whieldon, MS, ATC, RPT
Sacroiliac Dysfunction in Runners
Thomas W. Winiewicz, RPT

20
Factors Affecting the Gastric Emptying of Athletic Drinks
Gary Lee Harrelson, ATC, LAT

22
Consideration in Planning Small College Athletic Training Facilities
Eric A. Forseth, MS, ATC

26
The Use of Proprioceptive Neuromuscular Facilitation Techniques in the Rehabilitation of Sport-Related Injury
William E. Prentice, PhD, ATC, LPT
Elaine F. KoIma, MA, ATC, RN

32
Iliotibial Band Friction Syndrome
Daniel W. Olsen, PT, ATC

36
Use of Finger Acupressure in Athletics
James B. Gallaspy, ATC
Mark W. Maneval, PhD

40
Athletic Participation Following Giving Blood
Rod Walter, MS, ATC
Vaughn Christian, EdD

43
Athletic Training Burnout: A Case Study
Joe H. Gieck, EdD, ATC, PT

Departments

Abstracts
Association Activities
Book Reviews
Calendar of Events
Committee Forum
Current Literature
Editor-in-Chief Comments
Editor-in-Chief Comments

In This Issue

Members Certified in 1985
Conference & Clinical Symposium Cassettes
Constitution of the NATA, Inc.
Code of Ethics

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Editor-in-Chief Comments

I would like to wish everyone a Happy New Year and challenge you, the membership, to do an even better job in 1986 of promoting the field of athletic training/sports medicine through education and greater public awareness. There will be positive changes in the Journal in the future which will keep the membership abreast of the latest advances in our profession. I trust you will contribute to help this promise become a reality.

Congratulations! . . .
And best wishes for a productive term of office to NATA’s President Elect, Jerry Rhea.

“Trainer” or “Athletic Trainer” — 1986 New Year’s Resolution . . .
Please refer to yourself as an “athletic trainer” to your colleagues, coaches, physicians, and the general public.

New Release . . .

Testing . . .
For the latest information on drug testing see the Drug Education report in Committee Forum on page 69.

Letter to the Editor-in-Chief

December 27, 1985
I would like to comment on “High Voltage Galvanic Stimulation” by David J. Ralston (ATHLETIC TRAINING, Winter 1985). Rather than shedding light on the vast array of
continued on page 80

From the Editor

Thanks to all those who recently expressed interest in serving as members of the Editorial Board. The response from the membership was tremendous and, as a result, the decision on who to add was a difficult one. It was encouraging to note the number of individuals willing to give of their time and effort in support of the Journal. Thanks again . . .

A reminder to contributors to Athletic Training to retain copies of all manuscripts, figures, photographs, etc., submitted for publication. Occasionally unfortunate circumstances result in items being lost in the mail or misplaced. If contributing authors remember to retain copies of all materials submitted for consideration, the difficult task of rewriting a manuscript can be avoided. Thanks for your cooperation.

DK

Brochure Requests
Requests for the brochure entitled “Careers in Athletic Training” should be sent to the National Office at 1001 East 4th Street, Greenville, N.C. 27834. Single brochures are supplied upon request at no charge. NATA officers and committees, schools having an approved athletic training curriculum, and those having an apprenticeship program are furnished multiple copies of the brochure at no charge.

Support Our Advertisers — They Support You . . .
Dear NATA Members:

It was my recent privilege to attend the Trainer of the Year banquet in Cincinnati, Ohio. I would like to take this opportunity to publicly congratulate Charlie Henry, Jerry Nowesnick, Jack Baynes and Fred Zamberletti as this year’s recipients. It was a very impressive ceremony that was well attended by the athletic representatives from the Cincinnati area.

Our officers have recently received a great deal of communication from the National Commission for Health Certifying Agencies. We are in the process of renewing our membership with this fine organization. I would like each of you to know that Paul Grace is now a highly respected member of the NCHCA’s Board of Directors. He has done an outstanding job working with the commission and has done a great deal to raise the image of our Association in the Washington area. I believe that history will show our association with the NCHCA was a turning point in raising the image of the Athletic Trainer in this country, Although many have worked diligently to achieve this goal, Mr. Grace is to be commended for his excellent representation for our profession.

The Board of Directors met in Las Vegas on February 9 and 10, 1986, and considered many issues that will be addressed at your next district meeting. It was brought to my attention that some of the preliminary correspondence for the Annual Meeting and Clinical Symposium had incorrect dates for our upcoming meeting in Las Vegas. Please check your calendar and note that the dates for the Annual Meeting and Clinical Symposium are June 9 through 12, 1986, as stated in my last message to the members.

District Eight has done a great job of working with our Convention Committee and organizing an excellent calendar of events for our meeting. I hope that each of you will be able to attend and participate in this outstanding program.

I look forward to seeing you in Las Vegas and at as many of the District Meetings as I will be able to attend.

Bobby Barton, ATC
**Tentative Schedule**

1986 NATA, INC. CLINICAL SYMPOSIUM & WORKSHOP  
MGM GRAND HOTEL, LAS VEGAS, NEVADA  
June 9-12, 1986

**Monday, June 9, 1986**  
PRE-CONVENTION WORKSHOP - 9:00 a.m. - 12:00 Noon

1. 3rd Annual AOSSM Workshop  
   Shoulder Injuries in Athletes

**SCHERING SYMPOSIUM** - 2:00 p.m. - 5:00 p.m.  
Legal Aspects of Athletic Training  
**Moderator:** Richard Ball, Attorney

**Tuesday, June 10, 1986**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session 1</th>
<th>Session 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:45 a.m.</td>
<td>Opening Remarks</td>
<td>Constant Passive</td>
</tr>
<tr>
<td>9:00 - 9:45 a.m.</td>
<td>Basic Principles of</td>
<td>Motion: History &amp;</td>
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<tr>
<td></td>
<td>Electricity as Related</td>
<td>Rationale for use</td>
</tr>
<tr>
<td></td>
<td>to Modalities</td>
<td>MARK HOWARD, ATC</td>
</tr>
<tr>
<td>9:45 - 10:30 a.m.</td>
<td>BILL PRENTICE ATC, RPT</td>
<td></td>
</tr>
<tr>
<td>10:30 - 11:00 a.m.</td>
<td>Keynote Speaker:</td>
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<tr>
<td></td>
<td>BILL CHAMBERS, ATC</td>
<td></td>
</tr>
<tr>
<td>11:00 - 1:00 p.m.</td>
<td>VISIT EXHIBITS</td>
<td></td>
</tr>
<tr>
<td>1:00 - 2:00 p.m.</td>
<td>National Business Meeting</td>
<td></td>
</tr>
<tr>
<td>2:00 - 3:00 p.m.</td>
<td>LUNCH</td>
<td></td>
</tr>
<tr>
<td>3:00 - 3:30 p.m.</td>
<td>Legal Aspects</td>
<td>High Performance Training</td>
</tr>
<tr>
<td>3:30 - 4:30 p.m.</td>
<td>VISIT EXHIBITS</td>
<td>DEBBIE KNIGHT, ATC</td>
</tr>
<tr>
<td>4:30 - 6:00 p.m.</td>
<td>District Meetings</td>
<td>Transitions for Rehab to</td>
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<td>Weight Room to Playing Field</td>
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<td>PHIL TYNE</td>
</tr>
</tbody>
</table>

**Wednesday, June 11, 1986**

**Session 1**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 - 10:15 a.m.</td>
<td>Anatomy &amp; Biomechanics</td>
</tr>
<tr>
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<td>of the Lumbar Spine</td>
</tr>
<tr>
<td></td>
<td>RUSS CAGLE, ATC</td>
</tr>
<tr>
<td>10:15 - 10:45 a.m.</td>
<td>VISIT EXHIBITS</td>
</tr>
<tr>
<td>10:45 - 12:00 Noon</td>
<td>Functional Biomechanics</td>
</tr>
<tr>
<td></td>
<td>of the Lumbar Spine</td>
</tr>
<tr>
<td></td>
<td>ARTHUR WHITE, MD</td>
</tr>
<tr>
<td>12:00 - 1:00 p.m.</td>
<td>LUNCH</td>
</tr>
<tr>
<td>1:00 - 2:00 p.m.</td>
<td>Comparison of McKenzie</td>
</tr>
<tr>
<td></td>
<td>Extensions &amp; Williams Flexion</td>
</tr>
<tr>
<td></td>
<td>Exercises</td>
</tr>
<tr>
<td>2:00 - 3:15 p.m.</td>
<td>JOHN MILLER, ATC RPT</td>
</tr>
<tr>
<td>3:15 - 3:45 p.m.</td>
<td>Arthroscopic Surgery: An update,</td>
</tr>
<tr>
<td>3:45 - 5:00 p.m.</td>
<td>PHILLIP McFARLAND, MD</td>
</tr>
<tr>
<td>5:00 - 6:00 p.m.</td>
<td>VISIT EXHIBITS</td>
</tr>
</tbody>
</table>

**Thursday, June 12, 1986**

**Session 1**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session 1</th>
</tr>
</thead>
</table>
| 9:00 - 10:15 a.m. | A Clinical View of Causes & Cures for  
|              | Achilles Tendonitis           |
| 10:15 - 11:30 a.m. | Knee Bracing: Update on Design & Effectiveness |
| 11:30 - 12:00 Noon | 1987 CONVENTION PREVIEW    |
|              | COLUMBUS, OHIO                |
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Nasal Septal Injuries

Michael Sitler, MS, ATC

Following nasal trauma, all too frequently after the external nose has been examined for injury, the internal structures are either not evaluated or are examined haphazardly. Unfortunately, with such an approach, septal trauma is not identified and the potential for inadequate restoration of nasal function and possible complications exists. The athletic trainer must therefore examine both the internal and external structures of the nose following trauma, and be capable of recognizing deviations, dislocations, hematomas, and abscessed injuries of the septum.

Sports participation has been associated with nasal trauma (1,11,13,16). The contact sports of boxing and wrestling, as well as soccer, have particularly been identified as sports where injuries to the nasal complex are prone to occur. Nasal trauma can result in injuries to the internal and external nasal structures which can be presented as isolated or compound entities. Following nasal trauma, evaluation of the nasal complex is appropriate. Unfortunately, all too frequently once trauma to the external nose has been ruled out, examination of the internal structures is haphazardly conducted or completely overlooked (10). Not until complications ensue is a pertinent examination of the internal nose performed and the specific nature of the injury identified. Internal examinations in such instances frequently result in the identification of a nasal septal injury (9).

In order to evaluate the injured nasal septum, the athletic trainer must be knowledgeable of nasal anatomy and of the various septal injuries that can occur. To facilitate the athletic trainer’s knowledge and examining skills regarding nasal septal trauma, this article will focus on specific injuries to the septum and examination protocol for evaluating the injured nose.

Nasal Anatomy

Before a discussion on specific injuries can be presented, an understanding of nasal anatomy is necessary. Perhaps the easiest approach, anatomically, is to divide the nose into external and internal structures. The external nose can be compared to a three-sided pyramid. Skeletally, the external nose (Figure 1) is comprised superiorly of the two nasal bones and the frontal process of the maxillae. Inferiorly, the external nose is comprised of a group of cartilages (lateral nasal and minor and major alar cartilages). The lateral nasal cartilage is situated between the nasal bone and the alar cartilages. The nostrils and the tip of the nose are shaped by the major alar cartilage (3).

The primary structures to the internal nose are the septum and lateral walls. The septum, which is two to four millimeters in width, divides the internal nose into two passages, provides support to the external nose, and is instrumental in the development of the facial skeletons (4,12,15). As with the external nose, the distal half of the nasal septum is composed of cartilage (quadrangular), while the proximal half is bones (Figure 2). The quadrangular cartilage is continuous, superiorly, with the external lateral cartilages. Posteriorly, it articulates with the ethmoid, vomer, and maxillary bones. Distally, the quadrangular cartilage is separated from the alar cartilage by a membranous septum. This anatomical arrangement results in a very flexible distal nose, which probably prevents many cartilaginous fractures from occurring at the tip (10).

The proximal half of the septum is skeletal (Figure 2). Anatomically, it is comprised of the vertical plate of the ethmoid, the heavy vomer, and minimal portions of the palatine and maxillary bones (7).

Mechanisms of Nasal Trauma

In general, there are two mechanisms of trauma which result in injury to the nasal complex, lateral and compression blows. Compression injuries are usually of a more severe nature; however, most nasal trauma demonstrates an element of both mechanisms (10). With a lateral blow, a fraction of one or both of the nasal bones occurs with displacement contralaterally (9). Generally when the external nose is deviated, the underlying septum is reciprocally displaced and/or fractured (8).

With a compression blow, multiple fractures to both the nasal complex and the anterior maxillae are possible. Nasal complex trauma involving the septum can result in injury to both the cartilaginous and the boney components of the septum.

Complications Following Nasal Trauma

Following trauma to the nasal septum, adjacent blood vessels can be torn (5). When the mucosa remains intact, blood is trapped in the space between the septum and the overlying mucopherchondrium, resulting in the formation of a septal hematoma. With a septal hematoma, the underlying septum is devoid of its blood supply and a destructive process potentially exists. Avascular tissue can survive for about 72 hours at 86.8°F without insult to its structure (15). However, after this point in time, a destructive process ensues where reabsorption of cartilage and bone or replacement by fibrous tissue occurs (9). The destruction of the septum is felt to occur due to avascularity and the activity of tissue collagenases during the absorption phase of the hematoma (15). A hematoma can become bilateral when a fracture line in the nasal septum is present, allowing for the blood to escape to the contralateral side (5).

A secondary complication to an injured septum is a septal abscess. Even though this entity is felt to be uncommon, serious sequelae can occur (14). When a

Mr. Sitler and Dr. Welch are with the Department of Physical Education, Sports Medicine Division, at the United States Military Academy, West Point, NY. Lt. Col. Guiry is the Chief Dentist of Professional Activities at the Berlin Dental Activity.
septal abscess is neglected, septal and lateral cartilage
destruction takes place which results in structural and
cosmetic deformities. Of greater consequence, is that
septal abscesses can progress to thrombosis or meningitis
(15). Septal abscesses can develop within 48 hours post
trauma, and are the result of bacteria invading a septal
hematoma (5).

**Evaluating the Injured Nose**

As presented, septal trauma can have devastating
effects on the nasal complex. Complications following
septal trauma can not only affect the passage airway
and breathing, but also, in extreme situations, can be
life threatening. Fortunately, adequate treatment can
allay many complications, for once the nature of the
injury is understood, restoration of the problem can be
instituted. A prerequisite to treatment, however, is a
thorough nasal examination.

Analysis of the extent and nature of septal trauma
should be approached in an organized and systematic
manner. Initially, an accurate history of the mechanism
of trauma, when the injury occurred, and the location
and type of pain encountered should be completed (12).
Patient complaint of airway obstruction, epistaxis, and
the presence of ecchymotic formations should also be
noted.

A physical examination of the external and internal
nasal structures should follow (15). Palpation of the
external nose should include close attention to the nasal
bones and the lateral and alar cartilages for point
sensitivity, crepitation, and abnormal motions. Internal
examination will include specific evaluation of the
nasal septum for trauma. The internal examination
requires the use of a light and a clear passageway.
During the examination, special concern should be
given to any sites of bleeding, for a mucosal laceration is
usually present (15). Bleeding from either nostril can be
produced by the edge of a fragment of bone or cartilage,
which would indicate a fracture (9). Inspection of the
septum should also include consideration for the presence
of a septal hematoma, which is characterized by a
widening of the nasal septum (15). Septal hematomas
can further be identified by a fluctuant blue or red
discoloration which can be depressed with a cotton-
tipped applicator.

Clinically, abscessed septums are characteristically
identified by a fluctuant purulent blister (10). On
palpation, localized pain, as well as a noted increase in
body temperature will exist. Special attention should be
made in searching for the presence of an abscessed
septum, since its sequela can be of great magnitude.

During the examination, the nasal septum should be
examined for angulation which would indicate septal
deviation and/or dislocation. Typically, these deform­
ities result in a narrowing of one air passage with
compensatory contra-lateral passageway widening (6).
Bilateral comparison of the two passageways provides
the easiest means of examining for these deformities.
As an example, the following case report is presented.

**Case Report**

A college age male complained of nasal pain after
an episode of direct trauma to his nose. External
examination revealed no evidence of external
nasal fracture. However, upon examining the
internal nose, a septal hematoma was noted on the
left septal wall which was easily identified by the
fluctuant blister present (Figure 3). He was then
sent to Keller Army Hospital to be examined by a
physician. Initial treatment by the physician
consisted of aspiration of the purulent hematoma
(Figure 4), followed by surgical incision of the
mucosal membrane (Figure 5). Through the inci­
sion, visualization of the underlying septal carti­
lage was possible as well as observation of the
extent of the mucosal detachment from the septal
cartilage. Final surgical procedures included the
implementation of a drain (Figure 6) for 48 hours,
with subsequent incisional suturing. The patient
had an uneventful healing course.

**Compounding Nasal Septal Trauma**

Frequently, septal trauma is not isolated to a single
entity, i.e., septal deviation (10). More than one entity
can exist concurrently, as is demonstrated when a
septum is deviated and a secondary septal hematoma
forms. Examination of the injured septum, therefore,
should not be limited to what is superficially obvious,
but continued until all of the pertinent structures have
been evaluated. This will allow for a more accurate
assessment of the total injury, thereby eliminating the
shortcomings of tunnel vision examinations. As an
example, during the last 12 months approximately 45
patients have reported to our Sports Medicine Section
with nasal trauma. Of these 45, 13 had fractures of the
nasal bone with four possessing deviated septums in
addition to their nasal fractures. Four additional
patients who reported to the section were determined to
have isolated deviated septums, while two other indi­
viduals had both deviated septums and septal hema­
tomas. Of the 45 patients reporting with nasal trauma,
only one individual was determined to have a nasal
fracture and a septal hematoma.

Diagnostically, roentgenogram examination can be
an important adjunct in the evaluation of the injured
septum. There are, however, limitations to its use which
must be understood or misinterpretation of the actual
injury can result (12). Roentgenogram examination does
not adequately identify the soft tissue (cartilage)
component of the septum or clearly establish the nasal
pyramid structures (9). In a study by Becker (2) false-
negative x-rays were found in 47 percent of the cases
reviewed, which clinically were determined to be nasal
fractures. In view of this finding, it would appear that
x-ray examination alone is not a sufficient means of
evaluating septal trauma (9).

**Conclusion**

At the present time, except for contact sports where
face masks are utilized, minimal safety equipment is
available in athletics to reduce the incidence of septal
trauma. Only in the sport of boxing is a nose cage
available, which when used, protects this very promi­
nent part of the face. Utilization of the nose cage in
other activities is not considered feasible, because of its
bulkiness and size. Since septal trauma does occur, it is
of great importance that those individuals responsible
for evaluating nasal trauma be competent in recognizing
and evaluating septal injuries. Only through accurate
assessment of the injury can the proper course of
treatment be employed and the unnecessary compli­
cations of secondary sequela be avoided.

**References**

1. Barrs D, Kern E: Acute Nasal Trauma, Emergency Room
Care of 250 Patients. The Journal of Family Practice 10:
225-228, 1980.


Spring 1986 • Athletic Training 11
Figure 1  External Nose


### NASAL SEPTAL INJURIES

Michael Sitler, MS, ATC

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

To participate in this program, read the material carefully and answer the questions in the test. Mark the answers you select by placing an X in the proper square. Then tear out the test sheet, fill in your name, address and other information, and mail with $12 for processing to: Hahnemann University, School of Continuing Education, Broad and Vine, Philadelphia, PA 19102.

The NATA National Office will be notified of all members with passing scores over 70%. CEU credit will be issued to each member’s record at that time. Participation is confidential.

<table>
<thead>
<tr>
<th>Questions</th>
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| 1. The nasal septum  
a. is two to four millimeters in width  
b. provides support to the external nose  
c. both a and b above  
d. none of the above |   |   |   |   |   |
| 2. The quadrangular nasal septum cartilage posteriorly  
a. is continuous with the external lateral cartilages  
b. is separated from the alar cartilage by a membranous septum  
c. articulates with the ethmoid, vomer and maxillary bones  
d. a and c above  
e. all of the above |   |   |   |   |   |
| 3. Which of the following mechanisms of trauma which result in injury to the nasal complex cause fractures of the anterior maxillus?  
a. compression blows  
b. lateral blows  
c. both a and b above  
d. none of the above |   |   |   |   |   |
| 4. Which of the following statements is/are true regarding septal hematomas?  
1. This occurs when the mucosa is intact and blood is trapped between the septum and the overlying mucopherchondrium.  
2. When this is present, the underlying septum is devoid of its blood supply.  
3. This may cause destruction of the septum.  
4. It can become bilateral when a fracture line in the nasal septum is present.  
a. 1,2,3  
b. 1,3  
c. 2,4  
d. 4 only  
e. 1,2,3,4 |   |   |   |   |   |
| 5. Nasal septal abscess can progress to  
1. otitis media  
2. thrombosis  
3. pneumonia  
4. meningitis  
5. none of the above | a. 1,2,3  
b. 1,3  
c. 2,4  
d. 4 only  
e. 1,2,3,4 |   |   |   |   |   |
| 6. In examination of the individual with septal trauma, one should look for  
1. crepitation of the nasal bones  
2. abnormal motion  
3. ecchymotic formations  
4. bleeding from the nostrils  
5. none of the above | a. 1,2,3  
b. 1,3  
c. 2,4  
d. 4 only  
e. 1,2,3,4 |   |   |   |   |   |
### Questions

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*(Make copies of this page.)*
Sacroiliac Dysfunction in Runners

Terry J. Whieldon, MS, ATC, RPT
Thomas W. Winiewicz, RPT

Anatomists have classified the sacroiliac articulation as a diarthrosis or synovial joint. The synovial characteristics include a joint cavity containing synovial fluid, cartilage covering the bony surfaces, a joint capsule consisting of an outer fibrous layer and an inner synovial membrane, ligaments connecting the bones, and articular connections allowing movement between bone surfaces.

During normal running gait, posterior ilium rotation occurs with heel strike. The ilium rotates anteriorly from mid-stance phase to toe-off and remains rotated until heel strike occurs again on the same side. The opposite ilium rotates reciprocally.

Abnormal running mechanics result in abnormal pelvic rotation. This abnormal rotation may cause an ilium to wedge and lock on the sacrum, resulting in sacroiliac dysfunction and pain.

Evaluation techniques allow differentiation between lumbar discogenic problems, lumbar facet irritation, and sacroiliac dysfunction. Specific techniques determine abnormal ilium rotation.
A muscular contraction technique is described which has reduced or alleviated complaints of unilateral hip and low back pain in athletes. The application of the proper technique is related to objective tests demonstrating an abnormally posterior or anterior rotated ilium with associated sacroiliac dysfunction.

In our clinic several runners were treated with complaints of non-specific low back and/or buttock pain unilaterally. Often these runners described a treatment history including non-steroidal anti-inflammatory drugs, prescription sport orthotics, electro-stimulation, acupuncture, and extended periods of rest. All of these treatment programs were successful as long as the athlete refrained from running. Once the athlete returned to a running program, the primary complaints of low back and/or buttock pain returned in a period of several days. The subjective history and objective signs which these runners presented would appear to indicate a dysfunction of the sacroiliac joint.

Anatomical Review

The bony pelvis constitutes the base of the trunk. The bony pelvis supports the abdomen and links the vertebral column to the lower limbs. Three bony components and three joints comprise the osteo-articular ring known as the pelvis (10). (Figure 1)
The three bony components are:
1. The two iliac bones (ilia), paired and symmetrical;
2. The sacrum, unpaired but asymmetrical, solid piece of bone resulting from a fusion of the five sacral vertebrae.
The three joints are:
1. The two sacroiliac joints between the sacrum and the iliac bones.
2. The symphysis pubis, linking the iliac bones anteriorly.

Von Luschuka was the first in 1854 to consider the sacroiliac articulations as true diarthrodial joints (14). Numerous authors (1,3,4,12) have described the connections between the sacrum and the ilia as true joints with synovial membranes. Up to early adult life, Sachin (12) agrees with the diarthrodial classification, but thereafter motion almost always decreases or disappears with the sacroiliac joints becoming amphiarthrodial or completely ankylosed. This loss of motion may be related to the common finding of arthrosis in the sacroiliac joint (2). It commences before the end of the third decade and is more severe on the iliac, fibrocartilaginous side of the joint. Bowen (2) demonstrated in all cases studied, marked degenerative arthrosis on the iliac side of the sacroiliac joint was the rule by the end of the fourth decade.

The sacrum appears to be a wedge-shaped bone fitting tightly between the two ilia. This design would appear to dictate stability, allowing very little movement to occur at the sacroiliac joint. When viewed in the frontal plane, the superior aspect or base appears wider than the inferior apex (6). According to Solonen (14) the sacral articular surfaces are wedged only in the upper aspect formed by the first sacral segment and half of the second. Below this point the sacral surfaces appear vertical, flaring out at the distal aspect. This arrangement locks the sacrum against the ilia and prevents sliding. (Figure 2)

When viewing the sacral articular surface laterally, the surface appears crescent shaped, forming an inverted “L” with a superior and inferior arm (6, 14). The sacral articular area lies on the lateral aspect of the first three sacral segments (8).
The sacral surface has two primary elevations, a cranial on the lateral aspect of the first sacral segment, and a caudal which appears less prominent (15). Generally the sacral surface appears convex while the iliac articular surfaces are reciprocally concave shaped (6).

A unique difference in the structure of the articular cartilage on the iliac and sacral sides of the sacroiliac joint was documented by Bowen (2). Typically, the iliac articular cartilage appeared to be fibrocartilaginous. The sacral articular cartilage appeared to be of the hyaline type and approximately three times as thick as...
the iliac articular fibrocartilage.

The stability afforded by the reciprocal convex-concave sacroiliac relationship is reinforced by numerous ligaments which cross the sacroiliac joint. This unique joint, like the acromio-clavicular joint, has no muscles to move it, so it must depend solely on its support from the capsule and ligaments that surround it (4). Dorsally, cranially, and caudally the ligaments of the sacroiliac joint are the strongest ligaments of the human body (7).

The capsular ligament completely surrounds the sacroiliac joint and its fibers are continuous with the periosteum, except in the caudal extent (15). The intrinsic ligaments include the anterior, superior and inferior sacroiliac, the intermediate sacroiliac (deep, oblique, and transverse), and the posterior sacroiliac (transverse, longitudinal, and oblique) (9). The extrinsic ligaments include the sacrospinous, sacrotuberous, and the iliolumbar (9).

Figure 1: Anterior view of the two iliac bones, sacrum, pubic symphysis, and sacroiliac joints

Figure 2: Posterior view of the two iliac bones, sacrum, and sacroiliac joints

Figure 3: Specific bony landmarks, the posterior superior iliac spines.

Figure 4: Specific bony landmarks, the anterior superior iliac spines.

Figure 5: The straight leg raising test

Figure 6: The standing flexion test

Figure 7: The sitting flexion test

Figure 8: The long sitting test, phase 1

Figure 9: The long sitting test, phase 2

Figure 10: Posterior Ilium correction technique

Figure 11: Anterior Ilium correction technique
Physiological Motion

Several concepts have been proposed regarding motion which occurs at the sacroiliac joint. Movement of the female pelvis at the sacroiliac joints during childbirth is normal. Explanation of how this movement occurs during childbirth or in general is controversial.

Kapandji (10) describes nutation and counter-nutation of the sacrum. Nutation is a complex motion of the sacrum analogous to nodding of the head. During nutation, the sacrum rotates about an axis at the second sacral segment with the sacrum and coccyx moving posteriorly. Nutation is limited by the sacrotuberous, sacrospinosus, and anterior sacroiliac ligaments.

During counter-nutation, the sacrum again rotates about an axis at the second sacral segment with the sacrum and coccyx moving inferiorly and anteriorly. Counter-nutation is limited by both the anterior and posterior sacroiliac ligaments.

Weisl (16) describes two theories of sacral motion. The theory of pure linear displacement with the sacrum sliding along the axis of the caudal portion of the articular facet and a theory based on rotational movement occurring with the axis of rotation lying 7-12 cm inferior and anterior to the sacrum.

Flexion and extension of the spine appear to correlate with sacrum movement. With forward trunk flexion the sacrum also appears to backward bend. With backward trunk extension the sacrum appears to forward bend.

In the supine position with the hips extended, the traction force of the flexor muscles causes the pelvis to tilt anteriorly while the tip of the sacrum is pushed anteriorly. When the hips are flexed, the traction on the hamstring tendons tends to tilt the pelvis posteriorly relative to the sacrum (10).

Colachis (4) described a method in which pins were placed in the pelvic bones and changes of the various geometric positions in space with changes in the anatomic position of the body could be accurately measured. The two positions which seemed to place the greatest stress on the sacroiliac joint were the straight leg raising position and the flexion of one thigh with the extension of the other thigh position. Also, significant movement was demonstrated as the subjects performed forward trunk flexion from the standing position.

During normal gait, movement at the sacroiliac joint occurs (4,6,10). The ilium on the weight bearing side rotates posteriorly at heel strike and remains in this position during midstance phase. The ilium rotates anteriorly from midstance phase to toe-off and remains anteriorly rotated until heel strike on the same side occurs again.

At heel strike, force is transmitted through the femur to the acetabulum. Since the acetabulum is anterior to the axis of rotation of the ilium, posterior rotation of the ilium occurs.

At mid stance and toe-off, an anterior rotation of the ilium occurs due to a downward pull on the ilium exerted by the passive stretch of the hip flexors.

A sacral component of pelvic motion also occurs during the stance phase (6). As body weight is transferred to the lower extremity, the sacrum moves in caudal and ventral direction in relation to the ilium on the weight bearing side.

Mechanisms of Injury

Trauma to the sacroiliac joint may occur during athletic activities such as hurdling or punting a football (6). Also, if a change in terrain forces an abnormal heelstrike during running, or if an abnormally forceful heel strike occurs during long or triple jumping, the sacroiliac joint may be injured. The runners described incidents such as running off a curb, stepping into a pothole, twisting an ankle, stumbling down a stair, or running for prolonged periods on a severely crowned road.

Abnormal running mechanics, either acutely or chronically, may cause improper sequencing between heel strike, stance phase, and pelvic rotation. This results in abnormal anterior pelvic rotation on the sacrum. Since the sacrum lies within the pelvic bones and is wider anteriorly than posteriorly, the pelvic bones (ilia) will tend to spread upon the sacrum. When the ilia reach their limit of motion, the ilia wedge and lock (5).

Examining the Athlete: Subjective

The examination of these runners with non-specific back and/or hip pain unilaterally begins with a complete medical history. Most serious runners have had numerous significant injuries throughout their careers such as chondromalacia patella, Achilles tendonitis, posterior tibial tendonitis, or stress fractures. These problems usually present themselves after periods of intense training or extended mileage. Beginning runners as well as veteran runners suffer from these running injuries, and others, brought on by a lack of knowledge regarding proper treatment and training techniques. It is important to relate any previous injuries to modifications in running gait which may have relieved the primary source of pain but initiated secondary hip or back pain.

Frequently, a specific incident such as stepping in a pothole, mis-stepping off a curb, or twisting an ankle will have brought on the acute pain. In other cases the athlete will describe a history of increasing pain as running mileage increased. In this situation changes in running shoes, abnormal wear patterns on the shoes, orthotic devices, running terrain, and types of flexibility exercises performed should be evaluated. Any unusual findings are then correlated with the onset and duration of the unilateral low back or hip pain, hopefully uncovering a mechanism of injury.

Questioning the runner regarding the extent of pain experienced during activities of daily living may help incriminate the sacroiliac joint as the point of dysfunction. An increase in pain after prolonged periods of sitting, such as while driving or sitting in an office, is not common to sacroiliac dysfunction but rather to lumbar disc involvement. Pain after prolonged sitting is related to the interdiscal lumbar pressure being at its maximum position with slight trunk flexion (11).

Frequently, walking will aggravate a sacroiliac dysfunction as does lateral trunk flexion toward the involved side (6). Pain will be experienced during the stance phase of gait. Also, pain while descending stairs incriminates the sacroiliac joint. Subjective "heaviness" "deadness and dullness of my leg" are common complaints (8). Turning over in bed, getting up on an examination table, or stepping up with the affected leg produces twinges of pain with a sacroiliac lesion (8).

Examining the Athlete: Objective

The sacroiliac joint lies in an area to which pain is very frequently referred from the lumbar spine and hip. The examiner must exclude lumbar discogenic problems, lumbar facet irritation, lumbo-sacral conditions, hip pathology, and serious diseases of the sacroiliac joint before focusing on the malalignment of the sacroiliac.
The sacroiliac joint should not be examined in detail until all related joints and neurological tests have been completed.

The objective examination begins with a standing postural screening. Abnormalities of the cervical, thoracic, and lumbar spine are noted including scoliosis, increased lumbar lordosis, decreased lumbar lordosis (flat back), kyphosis, and shoulder symmetry. The amount of genu varus, genu valgus, knee recurvatum, and abnormal pronation of the feet is documented. Also, leg lengths must be evaluated to determine an anatomical or functional difference.

Specific bony landmarks including the posterior superior iliac spines, iliac crests, and anterior superior iliac spines are palpated while standing. Their relative levels indicating anterior or posterior ilia rotation is noted. (Figure 3 and Figure 4)

The lower quarter screening examination should be completed next to rule out referred pain from related joints. The examination would include the thoracic spine, lumbar spine, and both hip joints regarding active range of motion, passive range of motion, resistive movements, deep tendon reflexes, and neurological evaluation. Specific tests include:

1. Straight leg raising: lumbar disc involvement (Figure 5)
2. Active trunk movements: flexion, extension, and side bending
3. Hip flexion: evaluate ilio-psoas, L1 and L2 nerve root innervation
4. Knee extension: evaluate quadriceps, L3 and L4 nerve root innervation
5. Heel walking: evaluate dorsiflexors, L4 and L5 nerve root innervation
6. Great toe extension: evaluate extensor hallucis longus, L5 nerve root innervation
7. Toe walking: evaluate gastroc-soleus, S1 and S2 nerve root innervation
8. Piriformis stretching
9. Femoral nerve stretching
10. Sitting trunk rotation: evaluate thoracic function

If all related joints and tests appear negative, three specific tests - STANDING FLEXION, SITTING FLEXION, AND LONG SITTING - will be employed to evaluate the functioning of the sacroiliac joints.

The STANDING FLEXION TEST is specific for motion of the ilia and the sacrum (6). The evaluator’s thumbs are positioned under the posterior superior iliac spines. The athlete will bend forward as far as possible with the evaluator observing the movement of the posterior superior iliac spines. The posterior superior iliac spine which moves more cranially is considered the involved side. The “blocked” sacroiliac joint moves solidly as one, while the sacrum on the painless side is free to move through its small range with the lumbar spine (8). (Figure 6)

The SITTING FLEXION TEST is specific for motion of the sacrum within the ilia (6). The evaluator’s thumbs are again positioned under the posterior superior iliac spines. While sitting with the knees flexed to 90 degrees, the athlete will bend forward as far as possible between the knees. As before the posterior superior iliac spine which moves more cranially indicates the involved side. (Figure 7)

The LONG SITTING TEST is used in conjunction with the two previous tests to determine the presence of an anterior or posterior ilium (6). The athlete lies on a treatment table supine while the relative positions of both medial malleoli are noted. The evaluator applies traction to both lower extremities and re-evaluates the positions of the medial malleoli. Next, the athlete flexes the knees and hips, placing both feet flat on the examining table. The athlete then extends both hips, raising the pelvis 6-8 inches off of the examining table. The athlete returns to the resting position with hips and knees extended and again the positions of the medial malleoli are evaluated. The athlete is now asked to assume a sitting position with both knees extended. The athlete supports himself with both arms behind, so as not to stress the low back or pelvis. The malleoli are now observed for changes which occurred while moving from the supine to long sitting positions. (Figure 8 and Figure 9)

The change in leg length occurs when the position of the acetabulum moves with rotation of the ilium (6). The posterior ilium causes the acetabulum to move both superiorly and ventrally. While supine the superior change accounts for the apparent shortening of the involved leg. While long sitting, the ventral change accounts for the apparent leg lengthening. The anterior ilium causes the acetabulum to move both inferiorly and dorsally. While supine the inferior change accounts for the apparent lengthening of the involved leg. While long sitting, the dorsal change accounts for the apparent leg shortening.

After the subjective and objective evaluations have been completed, the findings should indicate the involved soft tissue and joints. If sacroiliac dysfunction is indicated by abnormal pelvic rotation, appropriate referred pain patterns, and discomfort with incriminating movements, specific treatment programs should be initiated.

**Treatment**

A muscular correction technique as described by Erhard and Bowling (6) will be employed to unlock the ilium from the sacrum and restore normal movement at the sacroiliac joint.

**THE POSTERIOR ILIUM:** (Figure 10)

1. Position the athlete supine.
2. The involved extremity rests just over the side of the treatment table.
3. The evaluator stands on the involved side facing the athlete.
4. Stabilize the athlete’s non-involved hip with the evaluator’s hand closest to the athlete’s head.
5. The involved hip is extended as far as possible with passive knee flexion.
6. The evaluator’s other hand is placed just above the athlete’s knee, involved side.
7. The athlete will now flex the involved hip against unyielding resistance by the evaluator.
8. Maintain the isometric contraction for 3-5 seconds.
9. When the athlete relaxes, the evaluator will “take up the slack”, pushing the involved hip further into extension.
10. Repeat this contract-relax technique 4-6 times.
11. Re-evaluate to determine if clinical signs have changed.
12. If needed, repeat technique.

**THE ANTERIOR ILIUM:** (Figure 11)

1. Position the athlete supine.
2. The evaluator stands on the involved side facing the athlete.
3. The athlete will flex the hip and knee, involved side as far as possible.
4. The evaluator places his hands under the ischial tuberosity and over the anterior iliac spine, involved side.
5. Maintaining the hand positions, the evaluator places his chest against the athlete’s lower leg, and passively flexes the involved hip and knee.

6. The athlete now attempts hip extension against unyielding resistance from the evaluator.

7. Maintain this isometric contraction for 3-5 seconds.

8. When the athlete relaxes, the evaluator will “take up the slack” pushing the involved hip into greater flexion while simultaneously producing a posterior ilium rotation with the hands, downward pressure on the anterior superior iliac spine and an upward pull on the ischial tuberosity.

9. Repeat this contract-relax technique 4-5 times.

10. Re-evaluate to determine if clinical signs have changed.

11. If needed, repeat techniques.

Discussion

Anatomists have classified the sacroiliac articulation as a diarthrosis or synovial joint. Bowen (2) summarized the synovial characteristics as: 1) a joint cavity containing synovial fluid, 2) cartilage covering the contiguous bony surfaces which are not attached to each other, 3) a joint capsule consisting of an outer fibrous layer and an inner synovial membrane, 4) the bones have ligamentous connections, and 5) the articular connections allowing movement between contiguous surfaces.

During normal gait, posterior ilium rotation occurs with heel strike. The ilium rotates anteriorly from midstance phase to toe-off and remains rotated until heel strike occurs again on the same side. The opposite ilium rotates reciprocally.

Abnormal running mechanics result in abnormal pelvic rotation. This abnormal rotation may cause an ilium to wedge and lock on the sacrum resulting in sacroiliac dysfunction and pain.

Evaluation techniques allow differentiation between lumbar discogenic problems, lumbar facet irritation, and sacroiliac dysfunction. Specific techniques determine abnormal ilium rotation.

A muscular contraction technique was described which has significantly reduced or alleviated complaints of unilateral hip and low back pain in athletes. The application of the proper technique is related to objective tests demonstrating an abnormally posterior or anterior rotated ilium with associated sacroiliac dysfunction.

Case History

This patient was a 35 year old white male. His major complaint was left hip and lateral thigh pain. The patient described a history of chronic left hip and thigh pain for approximately 12 months. Treatment including rest and anti-inflammatory medications brought about only temporary relief. The lower quarter screening ruled out referred pain from other related joints. Supine positioning revealed unequal leg lengths. The standing and sitting forward flexion tests indicated the left sacroiliac joint to be an area of dysfunction. The long sitting test revealed that the left lower extremity appeared to lengthen moving from supine to long sitting positions. This indicated a posterior rotation of the left ilium.

A muscular correction technique was used to rotate the left ilium into a more normal position. A treatment program of whirlpool and ultrasound with phonophoresis using hydrocortisone was begun on the right lower extremity. It was recommended that the patient purchase new running shoes due to the amount of wear demonstrated on his current shoes.

After four treatments the patient experienced no complaints of pain while treadmill running. He was instructed to gradually increase his mileage on an every other day basis. Currently he is running pain free.

References


Factors Affecting The Gastric Emptying of Athletic Drinks

Gary Lee Harrelson, ATC, LAT

This paper examines the effects of ingesting commercially available electrolyte drinks on gastric emptying, specific to water absorption in the small intestine. A solution having an osmolity of 200 to 210 mOsm/l, a temperature of roughly 5°C, ingestion of solution volumes not greater than 600 ml, and the athlete’s workload remains less than seventy percent of his/her maximum aerobic capacity should not affect gastric emptying. The ideal solution is determined by the activity the athlete is engaged in and whether hyperthermia may be incurred. If a commercially prepared drink is used, the drink should be diluted with two times the amount of water. However, no drink reviewed was observed to empty the stomach quicker than water, except in the isolated case that reported a weak salt solution increasing gastric emptying.

Fluid Ingestion

Fluids are ingested during athletic competition for a number of reasons; these include: to lower core body temperature, to help minimize the chance of hyperthermia and circulatory stress, to replace body water and electrolytes lost as a result of sweating, and in some instances to attempt to prevent glycogen stores from becoming depleted by consuming drinks high in carbohydrates. Costill’s (3) work has shown that losses of as little as 2% of body water under conditions of heat stress and prolonged exercise can impair circulatory and thermoregulatory function. Unfortunately, fluid ingestion during exercise can replace only a portion of the water lost to sweat. This was proved by a study involving a two-hour treadmill run in which men lost body fluids at a rate of 1.67 l/hour but could only replace 0.82 l/hour via oral ingestion (10). Furthermore, thirst should not be used as a guiding factor when attempting to rehydrate. Costill (3) reports that unlike that of animals, man’s thirst exhibits a time lag between fluid losses and the desire for replacement. It has been found that after voluntary dehydration, man will voluntarily maintain a 4% water deficit of his body weight for many hours after dehydration (10).

Volume and Osmolity

The rate at which an ingested solution can be made available to the body is controlled by the rate at which it empties from the stomach (6). The chemical composition of a solution largely governs this rate of gastric emptying, which in turn affects the availability of the fluids to the body (4), and since solutions differ in their chemical make-up, this will affect the rate of gastric emptying. If the purpose of ingesting these drinks is to off-set rapid fluid losses, then the gastric emptying of the solutions will be of primary importance in determining their effectiveness (4,6).

Gastric emptying appears to be regulated by a receptor in the duodenum responding to osmotic gradients created by the solution (9). Hence, the osmolity of a solution ingested will greatly affect the gastric emptying rate of that solution. Costill’s (11) research shows, that the most ideal osmolity of a solution for emptying the stomach is around 200 to 210 mOsm/l. Unfortunately, this is substantially less than most of the commercial products available. Thus, the solutions with a high osmolity (hypertonic solutions) will tend to empty more slowly from the stomach and will tend to be more filling for the individual who has to rehydrate rapidly (11).

Furthermore, not only will the osmolity of the solution affect gastric emptying, but also the quantity of the solution ingested, whether it is a commercial drink or water. Costill and Saltin (2) have reported that the gastric emptying rate is greater with a volume between 400-600 ml. This work was based on a study dealing with intragastric pressure and the way these pressures affect this duodenal receptor. Their study did not show an increase in gastric emptying with volumes larger than 600 ml. However, it was hypothesized that volumes greater than 600 ml would slow gastric emptying due to increased painful levels of intragastric pressure which will inhibit gastric motility, thus slowing gastric emptying.
Sugars and Salt

The major solute of the available commercial athletic drinks are simple sugars (carbohydrates). They are the primary factor in determining gastric emptying of the solution because these solutes raise the osmolarity of the solution the greatest. In addition, these drinks also contain various salts which will affect the overall rate of gastric emptying (4). A study done by Coyle, et al. (4) comparing the gastric emptying rates of three commercially available drinks to that of water showed that the volume of water emptied was greater when compared to the other three. However, it was determined that this was not statistically significant in two cases. In the drinks containing 4.6 g of carbohydrate per 100 ml of water the volume emptied was per milliliter significantly less per ml than that of water. The other two commercial drinks contained 2.5 g of carbohydrate per 100 ml of water. According to this study, indications are that solutions exceeding concentrations of approximately 2.5 g of carbohydrate per 100 ml of water will require a progressively longer period of time to empty from the stomach (10,11). However, the solution with the slowest gastric emptying rate emptied the greatest amount of carbohydrate into the system because of its high carbohydrate concentration. The actual amount of usable energy these drinks contribute through their carbohydrate supplement is small, and the extent these ingested sugars aid performance is uncertain (4). In some instances, the main reason for adding sugar to the solution is to provide a carbohydrate supplement that can be utilized quickly (2,11). Not only does sugar delay gastric emptying and water absorption but drinks high in carbohydrate concentration will draw fluid required for sugar digestion into the gastrointestinal tract, further dehydrating the athlete (10).

Costill (11) states that he has not observed any drink that empties from the stomach faster than water. Hunt (8) has demonstrated a faster rate of emptying with a weak salt solution, but high quantities of salt will slow gastric emptying just as sugar does (1).

Temperature of Solution and Exercise

There are two other factors that can affect gastric emptying, temperature of the solution and exercise. It was found that roughly 50% of a 5°C solution empties from the stomach within 15 minutes after ingestion, while only 27% was emptied with a solution at 35°C during the same time frame (2). This shows that the colder the solution, within reason, the quicker the solution will empty from the stomach.

A number of studies have been conducted dealing with the effect of exercise on gastric emptying (2,6). They are all in agreement that exercise has no effect on gastric emptying as long as the workload remains less than 70% of one’s maximum aerobic capacity. Costill (2) noted that there was no change in gastric emptying during prolonged exercise as long as one’s aerobic capacity remained less than 70%. However, during short-term, high-intensity exercise that is greater than 70% of one’s aerobic capacity, there is an effect on slowing gastric emptying. Therefore sugar intake should be minimized. The combination of both sugar and high-intensity exercise may combine to block gastric emptying (2).

Ideal Beverage

The question that can now be examined is: what is an ideal beverage for athletes? To answer this one must look at the activity in which the athlete is engaged. In events where great water loss or hyperthermia may be incurred, a drink should be selected on its ability to quickly empty the stomach; however, in events where hypoglycemia could be a problem (usually in events more than two to three hours in duration) the need for carbohydrates is increased but must be carefully balanced against the need for fluids (7).

If a commercially prepared drink is used, it should be diluted with two times the amount of water suggested (12). Costill (11) has suggested adding 2.5 g of glucose per 100 ml of water and a small amount of electrolyte. The osmolarity of the solution would not be greater than 200 mOsm. One may also add 0.2 g of salt per 100 ml of water to the 2.5 g of glucose, which will result in an osmolarity of 209 mOsm/1. Even by adding the 0.2 g of salt to the solution the osmolarity will still be in the range where gastric emptying is not inhibited.

Summary

This paper has examined how gastric emptying can be inhibited by the consumption of athletic drinks. As indicated, a number of factors can contribute to the slowing of gastric emptying. A high osmolarity of the solution, which is incurred by adding sugar and electrolytes sufficient enough to produce a solution osmolarity greater than 210 mOsm/1, will slow gastric emptying. In addition, the ingestion of solutions with volumes greater than 600 ml will slow gastric emptying but gastric emptying can be enhanced with a cold solution, around 5°C. Exercise has little effect on gastric emptying as long as the workload is not greater than 70% of one’s aerobic capacity. Commercial drinks should never be used at full strength; rather they should be mixed with two times the amount of water. An important point to be remembered is that the needs of athletes vary depending upon the sport in which they are engaged. Athletes participating in events that require the rapid replacement of water should avoid solutions diluted with sugar.

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Consideration in Planning Small College Athletic Training Facilities

Eric A. Forseth, MS, ATC

Professionals in athletic training continue to grow in prestige and numbers. Along with this growth has come the increased need and opportunity to design and plan athletic training facilities. Not only is this opportunity an important one considering the state of the economy, but also it imposes a tremendous responsibility for the administrators of athletic training programs. When the finances are available for building new athletic training facilities, the athletic training administrator should be prudent and thorough in designing and planning a cost effective, functional athletic training facility.

Pre-designing and planning a cost effective, functional athletic training facility is just as important as the building process itself. At times these preliminary planning stages are omitted or casually covered to get on with the building process. In the long run, casual planning can prove to be a costly mistake. Thorough planning will help avoid costly remodeling or dissatisfaction with a partly functional athletic training facility.

Desirable Design Situations
1. Working hand in hand with an architect will help the athletic training administrator express individual program needs.
2. Obtaining a knowledgeable architect that understands facility intricacies in athletic training is invaluable because of the advice he can provide about building details with which the athletic trainer may not be familiar.
3. Selecting an architect who is open to suggestions, and has had previous experience in designing athletic training facilities, may help assure efficiency and satisfaction in the planning process and subsequent building stages.
4. Each college situation will call for individual attention just as each classroom calls for individual instruction. Different situations will manifest budgetary constraints, building size, etc., and these factors in turn govern the feasibility of building and remodeling athletic training facilities. Suggestions offered in this article may only apply to institutions that are restricted to a moderate construction budget for building a new athletic training facility.

Significance of the Problem
Colleges and universities continue to build and remodel athletic training facilities. Meticulous planning may not only avoid future difficulties in operating a space efficient athletic training facility, but may also save money if thorough planning is utilized. The money saved may provide funds for future resources and services.

Discussion
Considerations in pre-planning an athletic training facility should be thoroughly reviewed before the building process is undertaken. Coates (4) suggests that the planning process include the following factors in facility design:
1. Program needs - number of sports and type of sports should be considered (i.e. contact versus non-contact) to determine the amount of square footage needed.
2. Enrollment factors - projected institutional enrollment and the stability of the number of participants in athletics will help determine the long range goals of an athletic training facility.
3. Academic objectives - space needed for athletic training instruction in physical education courses.
4. Available finances - a cost per square foot figure from the architect can estimate the size of training facility that can feasibly be built under individual economic contraints.
5. Communication with the architect - early communication with the architect will open up a dialogue to point out specific program needs and help assure that the final product is a functional athletic training facility (4).

Various authors have commented on the size of athletic training facilities. The literature has been anecdotal in that few suggestions have been offered on how to save space in variably sized athletic training facilities. A linkage of citations has occurred concerning what to consider when planning athletic training facility size while at the same time having a minimal amount of information on space efficiency (3, 9, 13).

Wise utilization of space is an important variable in planning athletic training facilities for several reasons. A pre-existing or established size facility may already
limit the amount of space that is available. The projected size of an athletic training facility may be limited due to various factors such as a modest construction budget. Penman suggests an approximate amount of 100 square feet for each taping or treatment table (9). A decreased amount of space may be preferred for bulk items (such as tables) to increase the flexibility of support services (i.e. treatment modalities). Wise space utilization in any of these instances can possibly increase the functioning effectiveness of an athletic training facility.

Storage space for supplies and equipment and the amount of space needed for tables are major variables in evaluating athletic training facility size. To save space, accommodate a number of athletes at one time, and prevent congestion, extended taping tables should be located near the entrance to the facility (3). Ezersky et al. also suggests that storage space be located in an area adjacent to treatment and taping areas. This obvious link between storage and service areas can become a problem if space is limited (6).

Another variable to consider in space efficiency planning is the amount of space equipment requires in service areas. Several purposes are filled when a planner considers the space required for equipment. The size and amount of equipment helps determine the space that will be needed on which to place the equipment. A long range purchase plan (i.e. for future modality purchases) should be developed to allow optimal space between functions when additions arrive. Identifying future needs helps in allocating the space needed for equipment. Bulky equipment needs to be considered first to assure adequate space for later equipment additions. Flexibility is necessary to leave space for upgrading or adding to present inventories (4).

Hydrotherapy area considerations concerning space and utility details are a necessary component of athletic training facility planning. The number and size of whirlpools will dictate the size of the hydrotherapy area. It is difficult to add drains, electric receptacles, floor tile, and plumbing and assure a clear view for supervision (from an office window) of a hydrotherapy area if the amount of initial space is inadequate. Planning for a certain amount of space is important to consider for rough plumbing to be installed in the hydrotherapy area (9).

Design Suggestions

There is no magic formula to planning athletic training facilities. Planning can be a tedious process in the preliminary stages but the rewards of pre-planning can be seen in the final facility product. An undersized or oversized athletic training facility can be avoided if pre-planning considerations include program needs, enrollment factors, academic objectives, available finances and dialogue with the architect.

Thorough consideration in the utilization of space will open up prime square footage that can be used for increasing the versatility of an athletic training facility. Extended tables with underneath cabinets (Figure 1) or corner cabinets stacked vertically lend themselves to optimal space utilization, while at the same time being cost efficient. With the status of the economy and high interest rates, the money saved in decreasing building costs may well be utilized for other priority purchases.

Storage cabinets should be located in an area adjacent to treatment and taping areas. Cabinets stacked vertically (Figure 2) in a corner can avoid the use of prime facility space to allow for peak load traffic. An extended opening 6" wide by 7' high can be used for backboard and scoop stretcher storage.

Figure 1: Extended, padded bench 36" high by 14' long by 48" deep for taping and treatment.

Figure 2: 7' high stacked corner cabinets with 6" wide by 7' high adjacent space for backboard and scoop stretcher storage.

Figure 3: Wide angle lens shows open space in a 30' by 30' facility.
A checklist of equipment establishes a possible
guideline for future purchases. Prioritizing this list and
working hand in hand with the business manager may
lead to long range purchase plans for individual athletic
training facilities.

The following represents a basic equipment checklist
for a moderately sized small college athletic training
facility:
1. Two taping tables
2. Two treatment tables
3. Extended taping/treatment table
4. Full body whirlpool
5. Extremity whirlpool
6. Sink
7. Hydrocollator
8. Intermittent compression unit
9. Ultrasound/muscle stimulator
10. Storage cabinets
11. Crushed ice machine
12. Weight scale
13. File cabinets
14. 10' by 10' office
15. Desk
16. Isokinetic rehabilitation
17. Refrigerator/Freezer
18. Paraffin bath
19. Supply cabinet with countertop
20. Galvanic unit (1, 6, 7, 8)

The hydrotherapy area should be an integral part of
each athletic training facility. Quarry tile, proper slope,
and elevated drains will prevent water build-up on
neighboring surfaces. Ground fault interrupters (Figure
6) and a clear view of the hydrotherapy and other areas
will help prevent possible legal liability problems (Figure
7).

Conclusion and Recommendations

Planning a small college athletic training facility
should be a thorough process of considering 1) pre-
planning factors and 2) objectives relating to space
efficiency, possible equipment and operating a function-
al hydrotherapy area.

Building a new athletic training facility is a privilege
that carries a responsibility. Administrators of athletic
training programs need to familiarize themselves with current trends and consider long range goals. Athletic training facilities that are functional today may become outdated tomorrow if careful consideration is not taken in planning. Be sure to cover all bases with the architect, building supervisor and other administrators to assure the best possible facility for your personal situation.

(The author wishes to thank Dr. Edward Coates and Dr. William Moore for their help in compiling and editing this article and Jeff Schwartz for photographs.)

References


Certificate and Plaque Order Form For NATA Certified Athletic Trainers

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Certification Number ___________________________

Certification Date ___________________________
The Use of Proprioceptive Neuromuscular Facilitation Techniques in the Rehabilitation of Sport-Related Injury

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PNF is an approach to therapeutic exercise which may be extremely useful in the rehabilitation of sport-related injury. The neurophysiologic basis of PNF involves the stretch reflex, which ultimately produces either facilitation or inhibition of agonist and antagonist muscle groups. Certain principles form the basis for the specific techniques and patterns used in PNF. The PNF techniques are best utilized for the purpose of developing deficiencies in strength, flexibility and coordination in response to demands which are placed on the neuromuscular systems.

Proprioceptive neuromuscular facilitation (PNF) is an approach to therapeutic exercise based on the principles of functional human anatomy and neurophysiology. PNF utilizes proprioceptive, cutaneous, and auditory input to produce functional improvement in motor output. It can be a vital element in the rehabilitation process of many sport-related injuries. PNF techniques have been recommended for increasing strength as well as flexibility and range of motion (4, 6, 9, 10, 14). This discussion should serve as a guide for the sports therapist using the principles and techniques of proprioceptive neuromuscular facilitation as a component of a rehabilitation program.

The Neurophysiologic Basis of PNF

The therapeutic techniques of facilitation were first used in the treatment of patients with paralysis and in the treatment of neuromuscular disorders. Most of the principles underlying modern therapeutic exercise techniques can be attributed to the work of Sherrington, who first defined the concepts of facilitation and inhibition (12).

An impulse traveling down the corticospinal tract or afferent impulses from peripheral receptors in the muscle cause an impulse volley, which results in the discharge of a limited number of specific motorneurons as well as the discharge of additional surrounding (anatomically close) motorneurons in the so-called subliminal fringe area. An impulse causing the recruitment and discharge of additional motorneurons within the subliminal fringe is said to be facilitatory. Conversely, any stimulus which causes motorneurons to drop out of the discharge zone and away from the subliminal fringe is said to be inhibitory. Facilitation results in increased excitability, and inhibition results in decreased excitability of motorneurons (8). Thus, the function of weak muscles would be aided by facilitation and muscle spasticity would be opposed by inhibition (5).

Sherrington attributed the impulses transmitted from the peripheral stretch receptors via the afferent system as being the strongest influence on the alpha motor-neurons. Therefore, it should be possible for the sport therapist to modify the input from the peripheral receptors and thus influence the excitability of the alpha motor-neurons. The discharge of motorneurons can be facilitated by peripheral stimulation which causes afferent impulses to make contact with excitatory neurons, resulting in increased muscle tone or strength of voluntary contraction. Motorneurons can also be inhibited by peripheral stimulation which causes afferent impulses to make contact with inhibitory neurons, thus resulting in muscle relaxation and allowing for stretching of that muscle (12). Consequently, the implications of the term, proprioceptive neuromuscular facilitation, may well be misleading and inappropriate in describing a technique of stretching. Therefore, PNF should be used to indicate any technique in which input from peripheral receptors is used for the purpose of either facilitation or inhibition (5).

The principles and techniques of PNF which will be described are based primarily on the neurophysiologic mechanisms involving the stretch reflex.

Basically, the stretch reflex involves two types of receptors: (1) muscle spindles which are sensitive to a change in length as well as the rate of change in length of the muscle fiber, and (2) Golgi tendon organs which detect changes in tension.

Stretching of a given muscle causes an increase in the frequency of impulses transmitted to the spinal cord.
from the muscle spindle, which in turn produces an increase in the frequency of motor nerve impulses returning to that same muscle, thus reflexly resisting the stretch. On the other hand, the development of excessive tension within the muscle activates the Golgi tendon organs whose sensory impulses are carried back to the spinal cord. These impulses have an inhibitory effect on the motor impulses returning to the muscle, thus causing that muscle to relax.

There are two neurophysiologic phenomena which help explain facilitation and inhibition of the neuromuscular systems.

The first is known as autogenic inhibition, and is defined as inhibition which is mediated by afferent fibers from a stretched muscle acting on the alpha motorneurons supplying that muscle, thus causing it to relax. When a muscle is stretched, motorneurons supplying that muscle receive both excitatory and inhibitory impulses from the receptors. If the stretch is continued for a slightly extended period of time, the inhibitory signals from the Golgi tendon organs eventually override the excitatory impulses, therefore causing relaxation. Since inhibitory motorneurons receive impulses from the Golgi tendon organs, it would appear that while the muscle spindle creates an initial reflex excitation leading to contraction, the Golgi tendon organs send inhibitory impulses which last for the duration of increased tension (resulting from either passive stretch or active contraction) and eventually dominate the weaker impulses from the muscle spindle. This inhibition seems to protect the muscle against injury from reflex contractions resulting from excessive stretch.

A second mechanism known as reciprocal inhibition deals with the relationships of the agonist and antagonist muscles. The muscles which are contracting to produce joint motion are referred to as agonists with the resulting movement called an agonistic pattern. The muscles which are stretching to allow the agonist pattern to occur are referred to as antagonists. Movement which occurs directly opposite to the agonist pattern is called the antagonist pattern.

When motorneurons of the agonist muscle receive excitatory impulses from afferent nerves, the motorneurons which supply the antagonist muscles are inhibited by the afferent impulses (1). Thus, contraction or extended stretch of the agonist muscle must elicit relaxation or inhibit the antagonist. Likewise, a quick stretch of the antagonist muscle will facilitate a contraction of the agonist. PNF relies heavily on the synergistic actions of these agonist and antagonist muscle groups for facilitating or inhibiting motion.

A final point of clarification should be made regarding both autogenic inhibition and reciprocal inhibition. The motorneurons of the spinal cord always receive a combination of inhibitory and excitatory impulses from the afferent nerves. Whether these motorneurons will be excited or inhibited depends on the ratio of these two types of incoming impulses.

Several different approaches to therapeutic exercise based on the principles of facilitation and inhibition have been proposed. Among these are the Bobath Method (2), Brunnstrom Method (3), Rood Method, and the Knott and Voss Method, which they called proprioceptive Neurumuscular Facilitation (Knott and Voss, 1968).

While each of these techniques is important and useful, the PNF approach of Knott and Voss probably makes the most explicit use of proprioceptive stimulation (11).

### Rationale for Use

PNF is a positive approach to injury rehabilitation which is aimed at what the patient can do physically within the limitations of his/her injury. PNF is perhaps best utilized for the purpose of developing deficiencies in strength, flexibility and coordination in response to demands which are placed on the neuromuscular systems.

The body tends to respond to the demands placed on it. The principles of PNF attempt to provide a maximal response for increasing strength, flexibility and coordination. These principles should be applied with consideration of their appropriateness in achieving a particular goal.

It is well accepted that continued activity during a rehabilitation program is essential for maintaining or improving strength or flexibility. Therefore, an intense program should offer the greatest potential for recovery.

The PNF approach is wholistic integrating sensory, motor, and psychological aspects of a rehabilitation program. It incorporates reflex activities from the spinal levels and upward, either inhibiting or facilitating them as appropriate.

The brain recognizes only gross joint movement and not individual muscle action. It also follows that the strength of a muscle contraction is directly proportional to the activated motor units. Therefore, to increase the strength of a muscle, the maximum number of motor units must be stimulated in order to hypertrophy the remaining muscle fibers (6, 7). This "irradiation" or overflow effect can occur when the stronger muscle groups help the weaker groups in completing a particular movement. This cooperation leads to the rehabilitation goal of return to optimum function (1, 7). The following principles of PNF should be applied to reach that ultimate goal.

### Basic Principles of PNF

Margret Knott in her text on PNF (7) emphasized the importance of the principles rather than specific techniques in a rehabilitation program. These principles are the basis of PNF which must be superimposed on any of the specific techniques. Application of the following principles may assist in promoting a desired response in the patient being treated.

1) The patient must be taught the PNF patterns learning the sequential movements from starting position to terminal position. It is essential for the sports therapist to keep instructions brief and simplistic. The patterns should be used along with the techniques to increase the effects of the treatment.

2) When learning the patterns it is often helpful to have the patient look at the moving limb. This visual stimulus offers the patient feedback for directional and positional control.

3) Verbal cues are used to coordinate voluntary effort with reflex responses. Commands should be firm and simple. Commands most commonly used with PNF techniques are "push" or "pull" which asks for an isotonic contraction, "hold" which implies an isometric contraction, and "relax".

4) Manual contact with appropriate pressure is essential for influencing direction of motion and facilitating a maximal response since reflex responses are greatly effected by pressure receptors. Manual contact should be firm and confident to give the patient a feeling of security. A movement response may be facilitated by hand positioning over the muscle being contracted to facilitate an increase in strength.
UPPER EXTREMITY PATTERNS

**D1 FLEXION**
- Shoulder—Flex.
- Add.
- Ext. Rot.
- Forearm—Sup.
- Wrist—Radial Flex.
- Fingers—Flex.

**D2 FLEXION**
- Shoulder—Flex.
- Abd.
- Ext. Rot.
- Forearm—Sup.
- Wrist—Radial Ext.
- Fingers—Ext.

**D2 EXTENSION**
- Shoulder—Ext.
- Add.
- Int. Rot.
- Forearm—Pron.
- Wrist—Ulnar Flex.
- Fingers—Flex.

**D1 EXTENSION**
- Shoulder—Ext.
- Abd.
- Int. Rot.
- Forearm—Pron.
- Wrist—Ulnar Ext.
- Fingers—Ext.

**Figure 1** - Diagrammatic representation of the upper extremity patterns.

5) Proper mechanics and body positioning of the sports therapist are essential in applying pressure and resistance. The sports therapist should stand in the diagonal, with knees bent and close to the patient such that resistance can easily be applied throughout the range. (Figure 3).

6) The amount of resistance given should facilitate a maximal response which will allow smooth, coordinated motion. The appropriate resistance depends to a large extent on the capabilities of the patient. It may also change at different points throughout the range of motion. Maximal resistance may be used with those...
techniques which use isometric contractions to restrict motion to a specific point or it may also be used in isotonic contractions throughout a full range of movements.

7) Rotational movement is a critical component in all of the PNF patterns since maximal contraction is impossible without it.

8) Normal timing is the sequence of muscle contraction which occurs in any normal motor activity resulting in coordinated movement (7). The distal movements of the patterns should occur first. The distal movement components should be completed by no later than halfway through the total PNF pattern. To accomplish this, appropriate verbal commands should be timed with manual commands. Normal timing may be used with maximal resistance or may also be used without resistance from the sports therapist.

9) Timing for emphasis is used primarily with iso-
tomic contractions. This principle superimposes maximal resistance, at specific points in the range, upon the patterns of facilitation allowing overflow or irradiation to the weaker components of a movement pattern. Thus the stronger components are emphasized to facilitate the weaker components of a movement pattern.

10) Specific joints may be facilitated by using traction or approximation. Traction spreads apart the joint articulations while approximation presses them together. Both techniques stimulate the joint proprioceptors. Traction increases the muscular response, promotes movement, assists isotonic contractions and is used with more flexion antigravity movements. Traction must be maintained throughout the pattern. Approximation increases the muscular response, promotes stability, assists isometric contractions, and is used most with extension (gravity assisted) movements. Approximation may be quick or gradual and may be repeated during a pattern.

11) Giving a quick stretch to the muscle prior to muscle contraction facilitates a muscle to respond with greater force through the mechanisms of the stretch reflex. It is most effective if all the components of a movement are stretched simultaneously. However, it must be remembered that this quick stretch may be contraindicated in many orthopedic conditions since the extensibility limits of a damaged musculotendinous unit or joint structure may be exceeded, thus exacerbating the injury.

Techniques of PNF

Each of the principles described above should be applied to the specific techniques of PNF. These techniques may be used in a rehabilitation program either for the purpose of strengthening or facilitating a particular agonistic muscle group or for stretching or inhibition of the antagonistic group. The choice of a specific technique will be dependent on the deficits of a particular patient. Specific techniques or combinations of techniques should be selected on the basis of the patient problem.

Strengthening Techniques

The following techniques are most appropriately used for the development of muscular strength, endurance, and coordination. Repeated contraction is useful when a patient has weakness at either a specific point or throughout the entire movement pattern to correct imbalances which occur within the range. The patient moves isotonically against maximal resistance repeatedly until fatigue is evidenced in the weaker components of the motion. When fatigue of the weak components becomes apparent a stretch at that point in the range should facilitate the weaker muscles resulting in a smoother more coordinated motion. Again quick stretch may be contraindicated with some musculoskeletal injuries. The amount of resistance to motion given by the therapist should be modified to accommodate the strength of the muscle group. The patient is commanded to “push” as hard as possible using the agonist throughout the range.

Slow-reversal involves an isotonic contraction of the antagonist followed immediately by an isotonic contraction of the agonist. The initial contraction of the antagonist muscle group facilitates the succeeding contraction of the agonist muscles. The slow reversal technique can be used for developing active range of motion of the agonists and normal reciprocal timing between the antagonists which is critical for normal coordinated motion. The patient should be commanded to “push” against maximal resistance using the antagonist and then to “pull” using the agonist. The initial antagonistic “push” facilitates the succeeding agonist contraction.

Slow Reversal-Hold facilitates the succeeding agonist contraction.

Slow Reversal-Hold-Relax technique begins with an isotonic contraction of the antagonist followed by an concentric contraction of the agonist muscle combined with light pressure from the sports therapist to produce maximal stretch of the antagonist. This technique is appropriate when range of motion is decreased due to an increase in muscle tension on one side of a joint and may be used with either the agonist or antagonist.

Slow Reversal-Hold-Relax technique begins with an isotonic contraction of the antagonist followed by an isometric contraction of the agonist muscle combined with light pressure from the sports therapist to produce maximal stretch of the antagonist. This technique is appropriate when range of motion is decreased due to an increase in muscle tension on one side of a joint and may be used with either the agonist or antagonist.

PNF Patterns

The PNF patterns are concerned with gross movements as opposed to specified muscle actions. The techniques identified above may be superimposed on

Athletic Training • Spring 1986
any of the PNF patterns. The techniques of PNF are 
composed of both rotational and diagonal exercise 
patterns which are similar to the motions required in 
most sport, and normal daily activities.

The exercise patterns are three component movements 
which include flexion/extension, abduction/adduction, 
and internal/external rotation. Human movement is 
patterned and rarely involves straight motion since all 
muscles are spiral in nature and lie in diagonal 
directions.

The PNF patterns described by Knott and Voss 
involve distinct diagonal and rotational movements of 
upper extremity, lower extremity, upper trunk, lower 
trunk and neck. The exercise pattern is initiated with 
the muscle groups in the lengthened or stretched 
position. The muscle group is then contracted moving 
the body part through the range of motion to a shortened 
position.

The upper and lower extremities each have two 
separate patterns of diagonal movement for each part of 
the body which are referred to as the D1 and D2 
patterns. Both D1 and D2 patterns are further sub-

Figures 1 and 2 represent diagrammatically the PNF 
patterns for the upper and lower extremities respectively. 
The patterns are named according to the proximal 
 pivots at either the shoulder or the hip. Tables 1-4 
describe specific movements in each pattern for upper 
and lower extremities as well as upper and lower trunk. 
Figures 3-6 provide examples of patterns for the 
extremities and the upper and lower trunk.

### Table 1
#### Upper Extremity Patterns

<table>
<thead>
<tr>
<th>Pattern</th>
<th>D1</th>
<th>D1</th>
<th>D2</th>
<th>D2</th>
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<tbody>
<tr>
<td>Shoulder</td>
<td>Flexion</td>
<td>Extension</td>
<td>Flexion</td>
<td>Extension</td>
</tr>
<tr>
<td></td>
<td>Adduction</td>
<td>Abduction</td>
<td>Adduction</td>
<td>Adduction</td>
</tr>
<tr>
<td>Scapula</td>
<td>Elevation</td>
<td>Depression</td>
<td>Elevation</td>
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<tr>
<td></td>
<td>Protraction</td>
<td>Retraction</td>
<td>Protraction</td>
<td>Protraction</td>
</tr>
<tr>
<td>Forearm</td>
<td>Supination</td>
<td>Pronation</td>
<td>Supination</td>
<td>Pronation</td>
</tr>
<tr>
<td>Wrist</td>
<td>Radial</td>
<td>Flexion</td>
<td>Ulnar</td>
<td>Extension</td>
</tr>
<tr>
<td>Finger &amp;</td>
<td>Flexion</td>
<td>Extend</td>
<td>Flexion</td>
<td>Adduction</td>
</tr>
<tr>
<td>Thumb</td>
<td>Abduct</td>
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### Table 2
#### Lower Extremity Patterns

<table>
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<th>D2</th>
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</thead>
<tbody>
<tr>
<td>Hip</td>
<td>Flexion</td>
<td>Extension</td>
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<td>Extension</td>
</tr>
<tr>
<td></td>
<td>Adduction</td>
<td>Abduction</td>
<td>Adduction</td>
<td>Adduction</td>
</tr>
<tr>
<td>Knee</td>
<td>Flexion</td>
<td>Extension</td>
<td>Flexion</td>
<td>Extension</td>
</tr>
<tr>
<td>Ankle</td>
<td>Dorsi</td>
<td>Plantar</td>
<td>Dorsi</td>
<td>Plantar</td>
</tr>
<tr>
<td>&amp; Foot</td>
<td>Inversion</td>
<td>Eversion</td>
<td>Inversion</td>
<td>Eversion</td>
</tr>
<tr>
<td>Toe</td>
<td>Extension</td>
<td>Flexion</td>
<td>Extension</td>
<td>Flexion</td>
</tr>
</tbody>
</table>

The neck patterns simply involve flexion and rotation 
to one side with extension and rotation to the opposite. 
The patient should follow the direction of the movement 
with the eyes. (Figure 7).

### Summary

The principles and techniques of PNF when used 
appropriately with specific patterns can be an extremely 
effective tool for rehabilitation of sport-related injury. 
They may be used as a method of strengthening weak 
muscles or muscle groups as well as for improving range 
of motion about an injured joint. Specific techniques 
selected for use should depend on individual patient 
needs and may be modified accordingly.

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*continued on page 80*
Iliotibial Band Friction Syndrome

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Iliotibial Band Friction Syndrome (ITBFS) is an overuse syndrome (8, 9, 10, 11, 15) that was first publicized in the American literature by Renne (12), in 1975. It is caused by friction between the I-T band and the lateral femoral epicondyle during running and other activities that involve repeated flexion and extension of the knee (see Figures 1 and 2). It was found to be the sixth most common overuse syndrome in runners, in a study by Clement (2).

The majority of cases of ITBFS are found in distance runners (11, 15). Other activities which have been reported to cause ITBFS are downhill skiing, circuit training, weight lifting and jumping sports (11), and cycling (9). Our discussion will be limited to runners.

Although Brody (1) has said that ITBFS usually occurs in novice runners, a study by Sutker et al. (15) would appear to contradict this statement. In their series, Sutker et al. found that only 23% of their injured population had been running for less than one year. The remainder had been running for over one year and the majority of them had been running 20 to 40 miles per week for at least three years. In addition, Sutker et al. found that 23% of those in their series had never run at least five miles.

Interestingly, Sutker et al. (15) reported that ITBFS affected women less frequently than men. They proposed that women were affected less often for the following reasons: tendency toward valgus alignment, less prominent femoral epicondyle and more subcutaneous fat.

Etiology

The most frequently cited etiological factor in ITBFS is training errors (9,10,15), with increased mileage being the most frequent offender (15). Sutker et al. (15) also implicated emphasis on speed work and Noble (9) related that the condition is aggravated by downhill running and also that overstriding on flats may be a contributing factor.

Excessive internal rotation of the tibia on the femur causes increased tension in the I-T band (8), thereby making it more susceptible to friction. Hyperpronation will cause increased lower extremity rotation (14) and therefore theoretically increases susceptibility to ITBFS. However, Sutker et al. (15) reported that less than 20% of those in their series had pes planus (pronated) foot structure. They had speculated that a cavus (supinated) foot structure may result in greater varus stress at the knee, but were unable to comment on that as a specific factor in the population.

Another etiological consideration is that of tibial alignment. Empirically, one would expect a varus alignment to be a predisposing factor in the development of ITBFS. Indeed, Sutker et al. (15) found most of their series to have either a varus or neutral alignment of the tibia. Brody (1) stated that the symptoms may occur when a runner fails to repair a worn outer sole on his running shoe (thus increasing varus position) and subsequently his symptoms disappear when the sole is repaired. Sutker et al. (15) and Noble (10) have noted that runners who consistently run on the same side of the road develop ITBFS on the downside leg, or in other words, the leg that is forced to function in a varus position. It should be noted that in at least one series, no correlation was noted between varus/valgus alignment and those suffering from ITBFS (12).

Another etiological consideration is that of lateral femoral condyle (and particularly the epicondyle) size. Noble (8) stated that an excessively prominent lateral femoral condyle was a predisposing factor in the development of ITBFS. However, Renne (12) was unable to demonstrate this factor on x-ray.

Flexibility is another factor which needs to be considered. Noble et al. (10) implied that tightness of the I-T band is a common etiological factor. They stated that “Once the iliotibial band has been implicated as a cause of lateral knee pain, stretching the band and the tensor fasciae latae has been known to be an effective means of alleviating symptoms and preventing their recurrence.”

Signs and Symptoms

The athlete usually presents with lateral knee pain. Renne (12) states that there is point tenderness over the lateral femoral epicondyle. Orova (11) described the pain as being located 1-2 fingerbreadths above the lateral joint line. Noble (9) stated that pain is usually above the lateral joint line, but that it may also radiate to a level below the joint line. He also feels that tenderness over the lateral femoral epicondyle is not necessarily sufficient to differentiate ITBFS from other extra-articular causes of lateral knee pain, e.g. popliteus tendinitis or bicipital tendinitis.

The pain of ITBFS is often felt during distance running, and once present, usually occurs at a fixed distance which, according to Sutker et al. (15) may be as...
little as a half-mile or may take up to ten miles to develop. Contrary to their observations, this author has experienced disabling pain in as little as 100 yards in the acute stage of ITBFS. In addition to the pain felt while running, the condition is also aggravated while ascending and descending stairs (15). It is seldom aggravated by walking, squatting, jumping or sprinting (15). The reason sprinting does not cause pain may possibly be explained by Mann’s (7) observation that a sprinter makes ground contact in approximately 35° of knee extension and the knee does not extend beyond that angle. Since pain (and therefore friction) occurs at 30° of flexion (9), sprinting does not irritate the inflamed I-T band. Other sports activities which involve non-continuous running such as tennis or squash are likewise not affected by ITBFS (11).

Generally, varus stress does not reproduce the pain of ITBFS (8,12). However, Orova (11) stated that approximately 10% of his patient population experienced pain when varus stress was applied and the knee was flexed from 45° to full extension.

In Sutker’s et al. series, no patient reported any history of direct trauma or twisting of the knee. Also, with ITBFS, there is not effusion in the knee (15).

**Diagnostic Tests**

In Sutker’s et al. series (15) diagnosis was made primarily by localizing tenderness to the lateral femoral epicondyle and ruling out other causes of lateral knee pain. Noble (9) related that the diagnosis of ITBFS may be confirmed by a compression test. In this test, the knee is flexed to 90° and pressure is applied to the lateral femoral epicondyle or slightly proximal to it. The knee is then gradually extended. “At 30° of flexion the patient will complain of severe pain over the lateral epicondyle which is the same pain he gets when he is running.” (9)

Klyop (4) described two provocation tests similar to Noble’s compression test. In the first test, the patient is seated. The examiner applies pressure over the lateral femoral epicondyle. The patient then actively flexes and extends the knee, with the examiner maintaining pressure (Figure 3). The second test Klyop described he felt to be even more provocative. In this test, the patient lies on his unaffected side while the affected leg is elevated 20° and the above test is repeated (Figure 4). “This puts tension on the iliotibial band by contracting the tensor fascia lata and the gluteus maximus” (4).

Renne (12) related that in his series, the pain was reproduced by having the patient support all his weight on the affected leg. According to Last (5) this brings the I-T band into prominence. In a small number of patients in Renne’s series a small “creak” was noted over the epicondyle, with flexion and extension of the knee. Noble (8) also found that pain was usually elicited with full weight bearing and with the knee in 30° of flexion.

Klyop (4) gives some very valuable advice to the examiner in that he advocates having the patient run to, but not beyond, the point of pain prior to examination. He relates that this aids the examiner in localizing the patient’s pain, whereas exercising beyond the point of pain makes localization difficult.

**Treatment**

Articles dealing specifically with ITBFS (4,8,9,10,11,12,15) have listed a multitude of treatments. As Sutker et al. (15) have pointed out, no single treatment method appears to work better than any other and not all methods are acceptable for every patient. Perhaps the most effective treatment of ITBFS would be total cessation of running, combined with various therapeutic modalities, e.g. ultrasound and oral anti-inflammatory agents. However, as anyone who has dealt with runners can attest, this is quite often unacceptable. A reasonable compromise would be the reduction of distance combined with the aforementioned therapeutic agents and use of cryotherapy post-activity.

Considering that training errors often cause ITBFS (9,10,15), some changes in training would appear necessary. Among these are decreased mileage as noted above, change in terrain including a reduction in the number of hills, as well as a decrease in speed work (12). Also, as Noble (12) has noted, decreasing the stride length may help in dealing with this condition. Additionally, since the athlete is being asked to reduce his distance, supplementing his aerobic training with other activities such as swimming (with minimal, if any, kick) would be a prudent adjunct.

Another area that needs to be addressed is that of flexibility. As Noble et al. (10) have pointed out, once it is ascertained by Ober’s test (Figures 5 & 6) that the I-T band is tight, stretching of the I-T band and the TFL has been shown to be an effective means of treatment (Figures 7-10).
FIGURE 3. A provocative test (for ITBFS) is done by having the seated patient actively flex and extend the knee while applying pressure at the lateral femoral epicondyle.

FIGURE 4. A more provocative (diagnostic) test is done with the patient lying on the unaffected side and repeating the above test with the leg elevated 20°. This puts tension on the iliotibial band by contracting the tensor fascia lata and the gluteus maximus.

FIGURE 5. Ober's Test - The patient lies on her unaffected side. The leg is abducted and extended with the knee flexed to 90° (a). The abducted leg is released (b). If the I-T tract is normal, the leg will adduct to the table (c).

FIGURE 6. The subject is simulating a very tight I-T tract, in the Ober position.

FIGURE 7. The patient lies on her side with the affected (pictured here as the right) leg on top (a). The affected knee is held in extension (b) and the leg is extended at the hip so it hangs over the table edge (c). Gravity passively adds the leg as far as possible and stretches the iliotibial band.

FIGURE 8. The patient stands with both knees in full extension and extends and adducts the affected leg (left) as far as possible (a). The trunk is then flexed laterally as far as possible toward the unaffected side (b).
When biomechanical faults are noted, they should be corrected. Sutker et al. (15) mentioned the use of orthoses in their series, and Noble (2) alluded to the use of orthoses for correction of biomechanical faults, as well. It is beyond the scope of this paper to detail treatment with orthotics. However, the interested reader is referred to Sgarlato (13), Subotnick (14), or Wallace (16).

Other treatments that have been proposed include: the use of lateral heel wedge when Ober’s test is positive (10), steroid injections (8,11), and surgery (8,9). Noble (8,9) is the only individual who has reported performing a surgical procedure for ITBFS in the literature reviewed here. In his series of 221 cases of ITBFS, nine required surgery (9). His procedure involved a 2 cm transverse incision of the I-T band posteriorly with the knee in 30° of flexion. Eight of those cases had returned to running at the time Noble’s article was written. Most were able to start running within 2-5 weeks post-surgery (8).

In dealing with running patients who present with ITBFS, it may be helpful for the athletic trainer to offer specific graduated guidelines for returning the athlete to training. Two sets of guidelines that we have used in our clinic are those proposed by James (3) and Lutter (6). One final point should be made. As Klyop (4) has so adequately noted, isotonic or isokinetic knee exercise throughout the full range of knee motion should not be performed by an individual who has symptomatic ITBFS. If the athletic trainer feels that strengthening of the involved extremity is necessary, multiple angle isometrics may be utilized, as well as short arc exercises that avoid a position of or near 30° of knee flexion.

Discussion and Summary

As the popularity of distance running both as a sport and as a training method continues to increase, it is necessary for the athletic trainer to be familiar with conditions that affect those involved in distance running. One such condition, ITBFS has been presented here.

From a prevention standpoint, avoidance of training errors is the most important preventative measure. Again, avoidance of excessive mileage would appear to be the single most important factor. Other factors to be considered from a prevention standpoint include adequate flexibility of the I-T band, and recognition and subsequent correction of obvious biomechanical faults.

Using a good history and evaluation to localize this condition, it will be possible for the trainer to provide knowledgeable treatment principles and procedures to aid the athlete in returning to full, pain-free function.

References


continued on page 93
Use of Finger Acupressure in Athletics

James B. Gallaspy, ATC
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For the past several years isolated articles have appeared in various professional journals concerning the use of acupressure and acupuncture for the relief of pain and certain types of infirmity associated with athletic injuries (2, 6, 12, 14, 17). The purpose of this article is to expand this body of information and acquaint the athletic trainer with several innovative acupoints that can be stimulated by finger pressure to control pain and trauma.

Traditional medicine in the western world all too frequently incorporates the dogma of drug use in modifying and controlling pain. The concept of drug use to alleviate associative problems has consequently become ingrained in our society (6, 15). A recent study (16) cites that popular magazines and television commercials are structured to reinforce the prevailing social attitudes to accept drug and pill use in the public sector. The question that arises is are we reinforcing this phenomena in the training room when a possible alternative exists and is available for our use?

Arnheim and Klafs (10) state that relatively short sport seasons make any physical incapacity of an athlete a crucial factor. The anxiety created in this situation can cause athletes, trainers, coaches, and even sport physicians to overact in ways that may be harmful. For example, they may advocate taking too much of a drug or taking it more often than indicated with the thought that “if a little bit is good, then more is better.”

From a legal standpoint the dispensing of drugs and pills to an athlete by a trainer is for the most part not clearly defined by law (10). Generally speaking, the giving of medicinals by a member of the athletic staff to any athlete depends on the philosophy of the particular school district, the extent of the trainers’ background, the general working relation of a physician with the team, and the scope and care that is permitted by the team physician (10). This is true for both prescription and non-prescription drugs, including aspirin and across-the-counter cold remedies. These facts mandate that athletic trainers and coaches must be extremely careful in the dispensing of medicinals to help control minor aches and pains sustained by their athletes.

Today a possible alternative exists that can be incorporated as a treatment method by trainers and coaches. This method is not intended to substitute for traditional therapy, but may be used as a viable supplement.

In recent years innovative physical therapists, physicians, and athletic trainers have begun to turn their attention toward several concepts derived from Chinese medicine. Once such concept is acupressure. The validity of this type of treatment protocol in athletics has been criticized but the fact that acupressure can be documented for 5,000 years cannot be overlooked (2).

There are many theories about how acupressure and acupuncture work. Several explanations ranging from distraction, counter-irritation, placebo effect, or neural gates have all been espoused. However, recent studies at the University of Toronto (14) seem to indicate that a neurochemical called endorphine may be produced by the acu-technique that permits pain relief by the body’s natural chemical system.

Regardless of how acupressure works, its application in the sports medicine field is appreciable and valid. What follows are a few basic acupressure instructions and points that can be helpful in reducing pain in common athletic injuries.

The Essentials of Acupressure

Posture

The posture of the athlete is of little consequence. However the athlete should be relaxed and comfortable (5).

Degree of Pressure

Generally it is felt that hard pressure should be applied to all athletes unless there is acute pain and/or swelling (5).

Locating Acupoints

Once the acupoint is located the athlete should experience point tenderness, soreness, numbness, a feeling of swelling and/or heaviness. The trainer should press against the point and massage in small circular movements, about two or three cycles per second. It is preferable to apply pressure bi-laterally (5).

Treatment Periods

Treatment should range from one to five minutes in length. Treatment sessions can be performed once a day, whenever a problem arises or whenever you wish to do it. (5).

Special Conditions

Avoid working on skin surface where there is a contusion, scar, or infection. Stop treatment if symptom is being aggravated or if no relief is observed (5).
Common Athletic Disorders and Their Accompanying Acupressure Points

Asthma
To help alleviate exercise induced asthma (EIA), one of the most common inducers of asthmatic attacks in athletics, two acupressure points can help the trainer. (See Figures 1 and 2 for instructions.)

Headache
Stress, heat exhaustion, over-exercise, concussion, neck strains, and congestion all can help cause headaches in athletes. Cavon (4) suggests aspirin is one of the most widely misused drugs. Consequently trainers must understand its use and side effects. Two excellent acupoints exist that can be stimulated to control headache symptoms in your athletes. (See Figures 3 and 4 for the instruction and location.)

Muscle Cramps
Severe, persistent, involuntary contractions of a group of muscles are fairly common among athletes (6). Although proprioceptive neuro-muscular facilitation is a proven method of choice (11), the trainer can also stimulate the acupoint at the midpoint of the nose and lips. (See Figure 5.)

Dizziness
A player returns to the sidelines with his “bell rung,” instead of ammonia capsules, try the acupoint yintang between the eyebrows. (See Figure 6.)

Low Back Pain
In sports, back problems are relatively common (10). Strains of the psoas, erector spinae group and quadratus lumborum account for a large majority of back problems (7). However, most cases of low back pain in athletics are not due to serious pathology. The acupoint Bladder 23 can help ease the pain cycle of low back pain. (See Figure 7.)

Shoulder Pain
The shoulder joint and surrounding soft tissue play a major role in American sports. Arnheim (10) claims that injuries to the joint and the soft tissue are quite common. Depending on the type and location of the shoulder injury, two acupressure points may help the trainer to reduce pain. (See Figures 8 and 9.)

Thirst
Although the point that is stimulated is not an acupuncture point, athletes can bite the tip of the tongue to relieve thirst. The resulting saliva accumulation can be swallowed to slacken an athlete’s initial quench for water before the regularly scheduled water breaks. (See Figure 10.)

Does Acupressure Really Work?
Clete Boyer, former infielder for the New York Yankees, who later played in Japan, claims that shoulder, arm, and back injuries that would have bothered him for weeks in the States, were relieved by acupuncture and pressure in two or three days in Japan (12). Boyer’s report echoes the sentiments of many ex-U.S. players now living and playing in Japan.

Cooper reports (6) that the technique used to treat muscle cramp by pinching the upper lip has worked in over 90% of the cases it was used on.

Hanzhao Xian, a visiting Chinese doctor at Cortland College’s Sports Medicine Program (17) also reports a 90% success rate in treating certain sports related ailments.

In summary, the evidence exists both empirically and from documentation in the literature that acupressure does in fact work and works well. It is hoped that Sports Medicine personnel will explore this avenue as a means of increasing their expertise in the science of treating sports related injuries.
HEADACHE  
(Figure 4)  
Large intestine 11 is located at the external elbow crease when the arm is flexed at 90°. Again use thumb to press hard while the subject is seated. This acupoint is most effective in controlling headache.

MUSCLE CRAMPS  
(Figure 5)  
Governing 26 is located just above the middle of the philtrum. The trainer should pinch the point between his thumb and index finger. This method should stop muscle cramps in 20 to 30 seconds.

LOW BACK PAIN  
(Figure 7)  
Bladder 23, used to ease low back pain is located 1.5 inches lateral to the distal end of the second lumbar disc. The subject should be in a prone position as the trainer uses the thumbs to press hard toward the spine.

DIZZINESS  
(Figure 6)  
This point is located between the eyebrows. Subject should be seated as the trainer uses thumb and index finger to pinch hard.

SHOULDER PAIN  
(Figure 8)  
For injuries to the glenohumeral region, the acupressure points large intestine 15, located on the anteroinferior part of the shoulder, can reduce pain. Use the thumb to press hard. Subject should be seated.

SHOULDER PAIN  
(Figure 9)  
Gall Bladder 21 can help reduce pain in the acromioclavicular region of the shoulder. To locate this point locate the same vertical line as the nipple or the anterior portion of the body. Next, find the trapezius muscle bulge of the shoulder. Place the thumb directly over the acupoint with the fingers anterior to the thumb. Pinch and release for approximately one minute.

THIRST  
(Figure 10)  
The athlete uses the front teeth to bite the tip of the tongue. Instruct athlete to swallow the resulting saliva accumulation.
References


Brochure Requests

Requests for the brochure entitled “Careers in Athletic Training” should be sent to the National Office at 1001 East 4th Street, Greenville, N.C. 27834. Single brochures are supplied upon request at no charge. NATA officers and committees, schools having an approved athletic training curriculum, and those having an apprenticeship program are furnished multiple copies of the brochure at no charge.

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Case Report

Athletic Participation Following Giving Blood

Rod Walters, MS, ATC
Vaughn Christian, EdD

Frequently, coaches and athletic trainers are questioned regarding the effects of “giving blood” on athletic performance. An answer based upon a scientific basis should be given to explain what effects “giving blood” may have and thus prevent any possible accidents consequential to the loss of blood.

A concern to be addressed regarding decreased blood levels is heat stress. Acclimatization, or the process of adjusting (4) physiologically to different climates, must be understood. The exercising unacclimatized individual loses salt and water resulting in a decreased plasma volume and subsequently lowers one’s blood pressure (3). Consequently, the athlete has increased susceptibility to heat related illnesses.

The sweating mechanism may shut down to preserve fluids. The body temperature increases and the athlete may suffer a heat stroke.

As the athlete becomes acclimatized, the sodium retrieval system is increased and sodium content decreases from 100 mEq/L to lower levels of 20 mEq/L for the conditioned athletes. This supports the fact that acclimatized athletes need much less salt.

In the prevention of heat related illnesses, intake of copious amounts of water is of key importance. Thirst is not a sufficiently reliable indicator. Losses of four to five percent of body weight can result in twenty to thirty percent decrease in the athlete’s work capacity. Acclimatization does preserve salt, but does not prevent dehydration. A full bladder requiring emptying every 40 to 60 minutes is ideal as this is indicative that ample intake is occurring. (3)

The concern for the athlete “giving blood” should then be to maintain increased intake of water. Provided water is taken in and the athlete is in good physical condition, no added dangers are in sight following “giving blood.”

References

NATA Sound/Slide Show
Available on Videotape

A videotape version of the NATA sound/slide presentation entitled, “Athletic Training: In The Public Interest,” is available for purchase to members through the NATA office in Greenville, North Carolina.

The nine-minute sound/slide presentation was commissioned by the Association to help acquaint more people with the athletic training profession. The three projector slide show was presented for the first time in the business meeting at the 36th annual NATA clinical symposium in San Antonio.

“Athletic Training: In the Public Interest” illustrates the critically important role played by NATA athletic trainers today in a diverse and expanding sports community. The well-rounded educational background of NATA certified athletic trainers is outlined in the audio-visual presentation. It emphasizes injury prevention, an often underestimated aspect of health care where athletic trainers are particularly valuable to athletes of all ages.

Since its production, “Athletic Training: In the Public Interest” has been presented to a variety of audiences, including school boards, parent groups, state legislators and others interested in learning more about the importance of this allied health care profession.

The sound/slide presentation is available to NATA members for the cost of its reproduction, handling and postage. It may be ordered in one of three video formats: three-quarter inch, VHS or Beta Two (please note which format). All NATA members who interact with the public are encouraged to send a check or money order with the order form for $30 to the NATA, 1001 East Fourth Street, Greenville, NC 27834. Allow three to four weeks for delivery.

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CONGRATULATIONS!
Our Association's president, Dr. Bobby Barton, has been named as chairman of an ad hoc committee for the formation of an international sports trainers association. Dr. Bob Behnke, past chairman of our Licensure Committee, also serves on the committee. The Australian Sports Medicine Federation and the World Congress of Sports Medicine invited Dr. Barton and Dr. Behnke to be the two representatives from the U.S. in the development of the proposed international association. Two very good choices!

CELEBRATION!
We pause to congratulate ourselves and designate the new year as one for celebrating our 30th Anniversary.

The first issue of The Journal of the National Athletic Trainers Association (later called ATHLETIC TRAINING) was printed in September of 1956 when the Association was seven years old. Page one of that issue had a lead-in from our first editor, Arthur Dickinson, of Arizona State, Tempe, Arizona. Mr. Dickinson so succinctly stated the reasons for an Association publication, so prophetically described its goals, that we are re-printing those first words here. They remind us of where we were and hopefully make us mindful and thankful of where we are.

WHY THE JOURNAL?
With this writing, the Journal of the National Athletic Trainers Association begins what is hoped will be a publication offering service to its organization education and information to other members of the athletic environment and a contribution to the professions. It is not brought forth with the idea of shaking the journalistic world to its very foundations. The editors of Life, The Journal of the American Medical Association, the Research Section, and so innumerable others have their hands up into the silly hours of the morning worrying about competition. It will not even be a source of income to the profession. Is there then, a need for such a publication? Definitely yes!

First, there is a need for an exchange of ideas and techniques. A profession that pauses to sit down may as well lay down, for it is a dead profession. Through the Journal, research and invention from one athletic trainer can be made known to the entire membership, and the growth of professional knowledge will directly benefit the most important product in America — the young men.

Second, the Journal will be able to disseminate information of professional interest to the athletic trainer from a multitude of sources. For example, a study of heavy resistance exercise at the University of Iowa can benefit the athlete in the NFL. The editors of Life, The Journal of the American Medical Association, the Research Section, and so innumerable others have their hands up into the silly hours of the morning worrying about competition. It will not even be a source of income to the profession. Is there then, a need for such a publication? Definitely yes!

*More congratulations — this time to Woodsy Owl who celebrates his 15th Anniversary in 1986. The Woodsy Owl program was originally designed to reach a target audience of children in grades K-6. The goal was to improve environmental awareness at an early age and to develop good outdoor habits that would carry over into adult life.

*And congratulations to our President Elect, Jerry Rhen, the best-dressed Certified Athletic Trainer in the NFC Western Division!

1986 is International Youth Year.
1986 is the Journal's horn-tooting year! To be continued ...
Case Report

Athletic Training Burnout: A Case Study

Joe H. Gieck, EdD, ATC, PT

The following is a case study of burnout of an athletic trainer. This individual had 25 years of athletic training experience, 16 1/2 at his present position. Upon examination of his situation he exhibited 55 examples as related to an article in the literature on athletic training burnout. This individual neglected his own stress management and had a part-time job outside of athletic training. The final breakdown resulted when the school wanted him to assume the equipment manager’s duties and establish a curriculum program. At present he is under the care of a psychiatrist and was on the brink of hospitalization.

Lack of control of his job situation was evident as the athletic director cut his budget thus adding friction to their already poor relationship. The athletic trainer felt powerless, became depressed, and felt “to hell with all of it.” He had no positive feedback by any of the coaches or administration, no one ever said, “nice job.”

His job was a low paying one despite his 16 1/2 years. His job burden was already high with the added insurance forms and other tasks taking away from his productive time. He began to feel isolated with no one to turn to for supportive conversation. Meeting the needs of others drained him as he lost the day to day satisfactions of the job. He was worn out by the end of the day. Toward the end he dreaded going to work, kept in his anxieties and stresses and could not vent them.

The athletic trainer tried to delegate authority as best he could but he had no assistant, no funds were not available for one. His personality changed and he became anxious, sarcastic, pessimistic, withdrawn and exhibited violence especially at home. He exhibited outbursts of hostility and other inappropriate responses. The violence culminated one night with him putting his fist through a bedroom door.

Personal habits changed. He gained weight, became irritable, lost the ability to sleep as well as the spontaneity of sex. His score on the Stress Prone Personality Test indicated a stress overload. He began to have interpersonal conflicts with coaches as to the athlete’s responsibility toward treatment and rehabilitation. He felt caught between protecting the athlete and getting him ready to play. He had too many bosses to serve: Athletic Director, Coach, MD, Athlete.

Exercise is often a stress reliever. However, this was performed as duty and not as recreation. He usually jogged alone, without the satisfaction of exercise. His routine would be three miles, six days a week with one mile on Sunday. He would get up at 4:00 am so he could get to the stadium and job to be ready to open the training room by 6:15 am.

Diet was a factor as he did not eat breakfast and had coffee and doughnuts about 9:00 am. His only hot meal was at night; the times varied because of practices and family routines. Sleep was further a problem as he could not deal with the stress and could not think things through; he just wanted to say again “to hell with it.”

As with many sports there is no ending. Most sports operate year round. There was always the constant pressure of the year round seasons. Denial of stress was the thing he chose. His worries were indwelling. He took no time to think clearly.

There were so many demands on his time. All coaches and athletes demanded time; he had no flexibility in his schedule and couldn’t say no to any of them.

Through working with a minister and reestablishing important values, the athletic trainer hopes to pursue an active outside life, one in which he can give and accept love and regain positive feelings about himself.

In this instance the themes running through the breakdown of the athletic trainer were basically his lack of control of his own situation, job responsibilities and hours, outside EMT duty, the lack of the ability to say no when he was overloaded, but most importantly the neglect of his own stress management.

With the lack of control he felt powerless and isolated. Many job responsibilities, often unrelated to athletic training, took away productive time. Perceived pressures and lack of any positive feedback by staff or athletes further added to his stress.

By neglecting his stress management he lost any ability to defuse the situation. His exercise, diet, sleep and family habits were poor, thus adding to his anxiety. He did not manage his time effectively nor plan for stress modifiers.

It is hoped that athletic trainers will gain further insight into stress management by this case study.

The athletic trainer has since changed jobs and is now employed in a sports medicine clinic complete with low stress and normal hours.

Dr. Gieck is Head Athletic Trainer and Curriculum Director of the Master’s Program in Athletic Training at the University of Virginia, Charlottesville.
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The Boss

Roy Alston

Before attending the University of Arkansas, I attended a small private college. Upon graduation from high school, I received a scholarship to attend this college to be one of the trainers. There was no certified athletic trainer on staff, and I was ready to change a very poor athletic training program into something quite respectable. There I was a freshman in college trying to change minds of men who had been there for years and were quite content with the manner things were then being run. Well, as I’m sure you've guessed by now, the result was a very disappointed student trainer. The coaches made it clear they were intent on improving the field, facilities, uniforms, etc., but not the athletic training program. It was the last on the list of priorities.

After the Fall semester, I decided to attend the University of Arkansas, work under a certified athletic trainer and pursue an athletic training career. Before I left the small college, one of the head coaches gave me a piece of advice I’ll never forget. He said, “No matter how much you don’t like the boss’s decision, he is still the boss!” At the time he gave me this advice, I didn’t understand it fully, nor did I know how much it would help me in the future.

One summer, I worked for a man who had a plaque that sat on his desk. The plaque said, “Rule 1: The boss is always right. Rule 2: If the boss is ever wrong, see rule one.” On the lighter side, this is what the head coach was saying.

My Boss

During my first day at the University of Arkansas, I was like a small boy in a toy store. I was overwhelmed! I had gone from one end of the spectrum of athletic training programs to the opposite end of the spectrum. I was now a part of one of the most successful athletic programs in the country. Even more specifically, I was now working under one of the finest trainers in the country.

I feel fortunate to be working under Mr. Dean Weber, ATC. He is not only a first-rate trainer, but a fine man as well.

My boss basically demands two things. First, he demands loyalty, and secondly, he demands you to follow instructions.

Loyalty means there is only one chief and a lot of little braves. My boss is never too old to learn a better way of doing things. He always has an open door policy and is willing to listen to new ideas. You simply show respect and try to convince him another way is better. Ultimately, however, if there is ever a difference of opinion between the head trainer and the student trainer, rest assured the head trainer’s opinion will prevail. The head trainer is the one hired by the institution, and he is the one who must carry any blame. I respect that and feel that is the way it must be.

Next, because he is the boss, following instructions is imperative. For the most part, a student trainer knows what his or her duties are. The student trainer should do those duties without being asked or told. Also, as the student trainer gets to know the head trainer’s way of doing things, the student trainer will learn to anticipate what needs to be done.

No boss frowns more quickly on someone who does a job poorly or worse, not at all. The student trainer should always take pride in his or her work. If the job is sweeping the floor, give it 100%. No boss is likely to give someone more responsibility if that person cannot handle the simplest of tasks. My head trainer has never asked anyone to do anything that he hasn’t had to do at one time or another.

Chanelling Your Energy

Finally, how do I channel this abundance of energy positively? Following are some suggestions I believe to be helpful.

Mr. Alston is a student trainer at the University of Arkansas, Fayetteville, Arkansas.
Have patience. To be patient is to be enduring, and to endure is to “hang in there.” No freshman quarterback takes a snap that first day of Spring practice and instantly becomes a success. Rather, he must learn the coaches’ philosophies. He must learn the offense, which is new. The offensive unit must get used to his voice commands and audibles. He must get used to the placement of the ball during a snap by the center. However, with time and experience, his skills develop into that offensive leader that is needed. The same is true with any student trainer. From time to time, Head Coach Lou Holtz would say, “Nothing is ever as bad as it seems, nor is anything ever as good as it seems.”

Know your limitations. Nothing will get you in trouble faster than giving an athlete false information. The athletes will respect you for saying, “I don’t know. You’d better ask the head trainer.” Trainers are not expected to know everything. That is why we have team physicians.

Continue to grow intellectually in the field. Have the initiative to study materials on your own. Take advantage of various publications (i.e. textbooks, journals, newsletters, etc.). Also, take advantage of your supervising athletic trainers. They are certified because they are knowledgeable and competent in the field. So much of education is gained just through watching and listening. Get to know your team physicians and observe them in their diagnosis procedures.

Develop a good rapport with the athletes. Treat all athletes the same. With this job, there is no room for grudges. When you’ve developed this sincere rapport, the athletes will trust you for their complete well-being, and in turn, they will do just about anything that you ask of them.

“Distinguish the things that differ.” Get your priorities in order. Determine and know in life what is really important. I am firmly convinced a successful life is based on priorities.

Finally, set both short and long range goals for yourself and go after them with all you’ve got. Always give your job, schoolwork, and family your very best. If you cannot give something your best, it isn’t worth doing. Always strive for excellence. Remember, the most important aspect of striving to achieve goals is not whether the goal is attained, but rather, what one becomes by trying to attain the goal.

**Conclusion**

I honestly believe that these suggestions can help prevent a lot of unhappy feelings and disappointments. Soon, we as student trainers will have the tremendous responsibility of determining the course of action for the National Athletic Trainers’ Association. To continue to improve this great organization, doesn’t it make sense that we begin laying the foundation now by learning from our resources and preparing for the challenges which lie before us?

**GUIDELINES**

The following guidelines must be met for submission of papers or material to the “Student Trainer Corner.” These are essentially the same rules governing the “Student Writing Contest.”

1. Author must be an undergraduate student member of NATA.
2. Topics must relate to athletic training. (case reports, experimental reports, suggestions, new ideas, tips and/or specifics for a given problem)
3. Articles should be no more than 2 to 3 pages in length, double spaced.

If you wish to submit a manuscript or an item for the Student Corner, please send to: Deloss Brubaker, United States Sports Academy, Mobile, AL 36689-0650.

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**Book Reviews**

*Phil Callicutt, ATC, EdD*

**Federal Law Enforcement Training Center**

Glyno, Georgia 31524

**Women, Sport, and Performance: A Physiological Perspective**

Christine L. Wells, Ph.D.

Human Kinetics Publishers, Inc.

Box 5076, Champaign, IL 61820

1985

329 Pages, illustrated

Price: $20.00

We have needed a text which focused entirely on the perspective of women in the phenomenon of sport. Many texts in recent times have devoted small sections to this important area of concern for the athletic trainer. As professionals we have desired and deserved an unabridged work. Dr. Christine L. Wells has written an excellent addition to the body of knowledge.

The text is divided into five parts consisting of sixteen informative chapters. Part one, Difference Between the Sexes, answers the pressing questions of sexual differences as they relate to body composition, metabolic differences, muscle tissue, strength, and motor performance. Part two addresses exercise and the menstruating woman, examining such areas as sport and menarche, participation during menstruation, amenorrhea and anorexia nervosa. Part three explores exercise and the nonmenstruating woman, covering controversial topics such as exercise during pregnancy and exercise during menopause. Part four examines the interesting and current topic of nutrition, weight control, and exercise for women. Dr. Wells does an excellent job explaining this subject area where many misconceptions exist. Part five studies the role of women as athletes and stresses the topics of adaptation of training, athletic injuries, and a profile of the female athlete.

I strongly recommend this text for anyone who has a genuine interest in gaining knowledge in the field of women, sport, and performance.

*continued on page 73*
Heat Stress.
One injury you needn’t ever treat again.

Gatorade
THIRST QUENcher
An Important Message from Gene Gieselmann
Athletic Trainer of the
St. Louis Baseball Cardinals

Dear Fellow Trainer,

Of all the injuries that can befall an athlete, probably the most insidious—and potentially dangerous—is heat stress. As head trainer of the St. Louis Cardinals baseball team, I’m keenly aware of this. Summer temperatures in St. Louis sometimes soar above 100°F often accompanied by extremely high humidity. Players having to perform day after day under such conditions are exceptionally vulnerable to dehydration, which can result in heat cramps, heat exhaustion, and in some cases, severe heat stroke. Even a partial loss of body fluids can impair an athlete’s performance, cutting down on physical and mental efficiency.

Yet, while heat stress may be one of the most devastating sports injuries, fortunately, it’s also one of the most preventable. It requires that athletes be well hydrated at all times, to keep their bodies cool and properly functioning—a responsibility that rests primarily with a team’s trainer.

In the Cardinals organization, we’ve found that nothing accomplishes this task better than Instant Gatorade® Thirst Quencher. For years we’ve been providing ballplayers with unlimited quantities of Gatorade before, during and after games and practices. And, consequently, there has been a marked drop in the number of players who have suffered from heat injuries.

Interestingly, a lot of pros don’t have to be told to drink Gatorade. They know through experience that it works—many having used it since they were kids.

As one who is responsible for keeping highly paid professionals in top performing condition, I heartily recommend the use of Instant Gatorade and I’m not alone. Many other teams in all sports, at every level, have made Instant Gatorade an essential part of their athletic programs.

Gatorade:
Number One Because It Works

It’s no mere coincidence that Instant Gatorade Thirst Quencher is number one among athletic trainers all over America.

Instant Gatorade is scientifically formulated to quickly replace the fluids and electrolytes your players lose during rigorous games and workouts, while reducing waterlogging, cramping and bloating.

Instant Gatorade also contains glucose to provide energy reserves and enhance endurance. Its pleasant flavor encourages your athletes toward greater fluid consumption and rehydration. The Cardinal players really enjoy drinking it.

Gatorade:
Better Than Water, Soft Drinks, Fruit Juices

While some trainers elect to use water, Instant Gatorade Thirst Quencher provides more benefits. Instant Gatorade is isotonic—balanced with the fluids in the body for rapid replacement of electrolytes. Water isn’t. Instant Gatorade provides a readily available source of energy, has a pleasant taste—for greater consumption. Water doesn’t.

Instant Gatorade Thirst Quencher contains less sugar than most soft drinks and fruit juices, thus promoting quicker hydration. It replaces lost body salts, is more compatible with body fluids, is more easily absorbed.

First Choice of America’s Athletic Trainers

The list of trainers and trainers associations endorsing or recommending Instant Gatorade is as long as it is prestigious. It’s the “Official Sports Beverage of the Professional Baseball Athletic Trainers Society” and the “Recommended Thirst Quencher of the Professional Football Athletic Trainers Society.” And the “Official Sports Beverage of the National Basketball Trainers Association.”

Instant Gatorade, in fact, is used by more trainers, coaches and athletes than any other sports beverage in America. It works for the St. Louis Cardinals; it’ll work for you.
Spring
Spring is the time for getting back into shape after a long winter layoff and adhering to a training program that grows more rigorous each day. Spring, then, is an ideal time to make Instant Gatorade Thirst Quencher an essential part of an athlete's regimen. In the Cardinals organization, we use it right from the start at spring training in February. It keeps our players in top form through the workouts, the practices and the long season ahead.

Instant Gatorade, in fact, is the "Official Sports Beverage of Major League Baseball." And any other team that values the peak condition of its athletes.

Summer
Summer brings the high heat and humidity that can be perilous to my athletes' performances—and health. For any sport, any activity, Instant Gatorade is number one under the sun, to quickly replace fluids, to help protect against the danger of heat stress.

Instant Gatorade helps my players go longer, farther under the most trying hot-weather conditions. Maybe that's why it's the preferred electrolyte-replacement drink used in many marathons, triathlons, and 10K races and is an "Official Supplier to The U.S.A. Track and Field Team."

Fall
After our season winds down, football and soccer take center stage. It means heavy workouts in heavy protective gear that inhibits the body's ability to cool off.

Instant Gatorade is formulated to help rehydrate an athlete's body, keep it cool under the stress of strenuous activity and to restore its natural mineral balance. Instant Gatorade is standard equipment for the pros, as well as for athletes in every sport, in every sphere of competition.

Winter
Winter is the most deceptive season of all. Because even though it may be cold out, an athlete still loses vital body fluids through perspiration. And even worse, is less aware that it's happening.

What's more, indoor sports like basketball are usually played in hot, dry arenas. Realizing this, the pros have made Instant Gatorade the "Official Sports Beverage of the National Basketball Association." To replace vital minerals and electrolytes lost during play.

No matter what the season, the sport, the environment, the level of play... Instant Gatorade is the most popular sports beverage today.

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To order Instant Gatorade Thirst Quencher, please contact your local retail sporting goods or team dealer.

For information on the Gatorade dealer nearest you, or to receive a Free Gatorade Product Catalog, call toll-free: 1-800-428-6000.

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For more than 15 years, Instant Gatorade Thirst Quencher has been important to winning teams and top performers everywhere. Chosen by coaches and trainers as indispensable for team effectiveness. Used by athletes in all sports, at every level of play.

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In Memoriam

Frank J. (Doc) Kavanagh
January 30, 1899 - December 10, 1985

The NATA has lost another of its founding fathers with the passing of Frank Kavanagh. Born in County Cork, Ireland and educated at St. Vincent College, Castle Knock, Dublin, he immigrated to this country and started his athletic training career at the New York Athletic Club. He was athletic trainer at Union College from 1920 to 1922. He moved to St. Lawrence University and was there until 1936, then served as Head Athletic Trainer at Cornell University until retirement in 1967.

Mr. Kavanagh showed special interest in player safety. He helped design and patent a football helmet that was used in the 1950’s by colleges and professional teams. He also designed and patented a hockey and lacrosse shoulder pad that is currently being marketed today.

Cornell University inducted him in their Hall of Fame in 1979. Likewise, St. Lawrence honored him in 1983. Mr. Kavanagh was an athletic trainer for the 1936 United States Olympic Team in Berlin. He was also chosen as Head Trainer for the All-America Game from 1961 through 1965.

He is survived by his wife, Pauline. Memorial donations may be made to Cornell Catholic Community, Anabel Taylor Hall, Cornell University, Ithaca, New York 14853.

The membership feels the loss of this pioneer. His inventiveness, compassion, and faithfulness were standards for us all to follow.
A 52 year association with Jayhawk athletics ended with the passing of Dean Nesmith. During the 46 years he served as trainer, several professional and world class athletes have benefitted from his touch.

Born in Belleville, Kansas, he entered The University of Kansas in 1932 and lettered in football in 1933-35. He joined the New York Yankees professional football team for one year and then returned to KU as a graduate student. The next year he was named Head Trainer and served in that capacity until 1983. He was a legend at The University of Kansas; the legislature of the state honored him for his service and his portrait hangs in Allen Fieldhouse on campus. As one writer put it, “In an age of computer-aided athletic training, Deaner was a holdover from the era of leather football helmets. To his players, he conveyed an equally old fashioned sentiment. He cared.” As a testimony to the caring he was inducted into the KU Athletic Hall of Fame and a scholarship for football players was established in 1980 and is given annually in his name.

Professionally, he served as chairman of the board of the National Collegiate Trainers Association in 1952-53. He was trainer for the 1960 U.S. Olympic basketball team in Rome. He was a student of the profession and pioneered the use of ice for treatment of injuries and many other techniques and rehabilitation procedures. He was honored by the NATA in 1971 by being elected to the Helms Hall of Fame.

He is survived by his wife Laura; a son, Dr. Leslie Nesmith; a daughter, Ida Tilden; eight grandchildren and three step-grandchildren. Memorial contributions may be made to the First Presbyterian Church in care of Warren McElwain Mortuary, 120 W. 13th Street, Lawrence, Kansas.

“Deaner” was a legend. He symbolized the best in our sometimes insensitive society. A dedicated man who cared.
Earl J. “Bubba” Porche
October 22, 1922 - June 15, 1985

Earl J. “Bubba” Porche, former Head Athletic Trainer for 36 years for Tulane University, passed away on June 15, 1985 at the age of 62. He suffered a massive heart attack while attending a friend’s wedding in Niagara Falls, Canada. He died quickly, painlessly, just the way he had hoped, friends say.

Bubba Porche was more than a friend or trainer. He was an institution. He was always a source of strength when things weren't going well. He was intensely loyal to his university; Tulane University was his life. His many friends, former athletes, associates, staff members and all others connected with Tulane University Athletic Department will sorely miss Bubba. Many say they may find someone to take his place, but they will never find anyone to replace him. Bubba Porche was indeed an institution.

During his many years at Tulane University, Bubba received numerous awards. He was named to the National Athletic Trainers Association Hall of Fame in 1978 and to the Louisiana Hall of Fame and Tulane Hall of Fame in 1982.

Native of Marshall, Texas, Bubba came to Tulane from the Navy in 1946 as assistant trainer and student. He completed study for his degree in three years and was named head trainer two weeks after graduation by football Head Coach Henry Frnka. He had been promoted to Assistant Athletic Director for facility utilization just prior to his death.

In addition to his duties at Tulane, he had served as Head Trainer at the Blue-Gray Game, Trainer for U.S. track team that competed in three meets in Europe during the summer of 1976, and was trainer at the Pan-American Games in 1971.

It was felt by many that Bubba Porche was a very special person. He touched thousands of lives while he was at Tulane and the world was just a little bit better off than it would have been had he not made his presence felt to the athletes and the rest of us. The athletes at Tulane University have lost a friend, a father, a guidance counselor and a man for all men. Many feel reassured that God looked down among the people and called Mr. Porche home.

The 1985 Tulane football media guide is dedicated to his memory and memorial scholarship fund has been established in his name.

Bubba Porche was married to the former Juanita Hill. He is survived by two sons, Bubba and Bill, two stepsons, Mike and Harold Hill, his mother, Cora Pope, a sister, Mae Williams of Marshall, Texas and two grandsons, Robbie and Brian.
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Association Activities

David G. Yeo, DPE, ATC
Montgomery County Community College
Blue Bell, PA 19422

Jack Rockwell, RPT, ATC, Director of the Santa Rosa Sports Medicine Center, CA, received the annual United States Gymnastics Federation Service Award in appreciation for his outstanding contributions in the area of sports medicine and athletic training. The award is given annually to a person other than a coach or athlete who has contributed his or her services over the years to the sport of gymnastics. Mr. Rockwell has served since 1979 as physical therapist/athletic trainer for the USGF national men’s and women’s teams, and accompanied the teams to Montreal for the World Gymnastics Championship in November, 1985.

The sixty-year-old Rockwell, a graduate of the University of Kansas, is a former Executive Secretary of the National Athletic Trainers Association (1968-1971), and a member of the NATA Hall of Fame.

This past summer, several members of the NATA served as athletic trainers for the USA team at the XV World Games for the Deaf in Los Angeles. The following athletics trainers spent three weeks at the U.S. Olympic Training Center in Colorado Springs and two weeks in L.A. with approximately 175 deaf athletes representing the U.S. The athletic training staff included Rick Zappala, Hofstra University, Barry Deuel, Medical Circle P.T. and Sports Medicine, T. J. Byrne, Pepperdine University, Jack McNeeley, Cleveland State University, Roberta Simmons, Bucknell University, and Mary Piechota, Lafayette College. Also working with these athletic trainers were Dr. William Derrick, Appalachian State University, long time NATA member and friend, Dr. Don Cooper, Oklahoma State University, and Dr. Charles Ross of Des Moines, Iowa.

The World Games for the Deaf are an international competition held every four years since 1924. In this year’s games, the USA team won 108 medals, including over 40 gold medals. It was an exciting experience for our athletes to represent themselves so well in their country.

* * *

Steve Antonopoulos, Denver Broncos Head Trainer, has seen the successful completion of the first year of operation of a sports medicine center in Denver. The facility is a satellite unit of a local hospital. What makes this center special is that the Denver trainers and their management received approval from the NFL to open the health care facility under the team name, calling it the Denver Broncos/St. Luke’s Hospital Sports Medicine Center. Antonopoulos and local physicians serve as consultants. The Center helps fill the need of secondary school athletes, and serves as an extension of the Broncos’ community relations effort. The Center is the first of its kind in the NFL, having gained the approval on a three-year trial basis from the NFL licensing committee.

* * *

Bill Misner, an associate member of NATA, set a new American age group record for the 20-mile run by covering the distance in 2 hours, 17 minutes. The record, for male masters age 45-49, trimmed 38 seconds off the previous mark. Misner’s record run came in the finals of the Shadle Park 20-mile Challenge in Spokane, Washington in October 1985.

* * *

Requirements and procedures for a certified athletic trainer to volunteer time to one of our Olympic Training Centers can be obtained from Bob Beeten, 1750 East Boulder Street, Colorado Springs, Colorado 80909-5760, telephone: (303) 632-5551. ©

TRAINER OF THE YEAR
1985 Award Winners

Standing: Charlie W. Henry (left)
High School Division
Jerome D. Nowesnick (right)
Junior College Division

Seated: Fred J. Zamberletti (left)
Professional Division
Jack Baynes (right)
College Division

Spring 1986 • Athletic Training 55
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The National Athletic Trainers Association is pleased to announce the following members who became certified in 1985. Congratulations to each of you.

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- Rosie Salinas
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- Andrea Sotnick
- Steven Stearn
- Ellen Straut
- Susan Svensen
- Melissa Taliefero
- Anthony Viggiano
- Edward Wantz
- Jeffrey R. Weiss
- Christine Wells
- Cynthia Wetherell
- Laura Window
- Thomas Wray

### District 3

- Cathleen Allegro
- Karen Baker
- Carolann Barasch
- Timothy Bane
- Leslie Bartuschky
- Karen Birdsong
- Eve Boe
- Dawn Bushwell
- Batman Caron
- L. Foston Chandler
- Laura Coleman
- David Cotner
- Damon Cramer
- Jacqueline Davis
- Elizabeth Fawcett
- Ann Marie Flatley
- David Fleming
- J. Wayne Gatwood
- Henry Gavroy
- James Griffin
- Lori Hale ski
- Beverly G. Harris
- Susan Jeron
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- Linda Murray
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- Michael Polasecek
- Wendeline Poppy
- Theresa Pugh
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- Gary Terle
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- Matthew Rex Barnard
- Barbara Beals
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- Patricia Billingslea
- Gary Boy
dood
- Paul Bodenbach
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- Derek A. Brock
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- Carol Comley
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- Ettore Damiani
- Perry Denby
- Hale Deniz
- John Doberty
- Michael Duchaj
- Joseph Durcher
- Shari L. Eger
- Annette Ennes
- Betty L. Erbach
- Erin M. Erickson
- Thomas Essig
- Marie-Elizabeth Finamore
- Edmund Flattery
- Sandra Folman
- Jeffrey Franciosi
- Dwight Fraze
- Daniel Gailes
- Margaret Gallagher
- Judy Gazdag
- Larry Goldbach
- Linda Gills
- Margot Gluck
- Kathryn Gun
- Deborah Harder
- Kenneth Martin
- Stephanie Hatlesat
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- Heidi Heck Bayer
- Susan Hefflin
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- Marken Houten
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- Sherman Israel
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- Lisa K. Johnson
- James Johnston
- Peter Just
- Mary Kopp
- Charles Kirkman
- David Kleemeyer
- Mary Knecht
- Marina Koks
- Naomi Kurnia
- Phillip Loessch
- Susan Lombardi
- Jowanda Lucine
- Laura Lutes
- Fred Lutz
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- John Marquis
- Terri Mason
- Stephen Mayo
- Anthony McCormick
- Charles T. Mehm
- Darly Miller
- Mary Lynn Morley
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- Mary Myer
- Andrew Yonk
- Sandra Naylor
- Britta Nielsen
- Carl O’Connell
- Raymond Ogren
- Dianne Patnaude
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- Darrell Perry
- Randy Pinkowski
- Martha Pitts
- Joyce Pontious
- Beth Pouk
- William Quinn
- Margaret Rauch
- Wayne Robakowski
- Karen Sadowski
- James Sangen
- Patricia Schenkel
- Gretchen Schlicht
- Susan Schmidt
- Jon Schroeder
- Chuck Schulthe
- Alfred Schreiber
- Mary Ann Seewert
- Catherine Sellers
- Patrick Sexton
- Jane Shimon
- Gary Simmons
- Chris Stenley
- Robert Snyder
- Andrew Solt
- Mary Stover
- William W. Swenson
- John T. Swenson
- Julia Swenson
- Ellen Swets
- Mary Sterle
- Todd E. Steere
- Angela Sich
- Linda S." Schlesinger
- Susan E. Taylor
- Betty Tillman
- Patricia Torcbney

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- Chris Bartok
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- Evelyn Bosarge
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- Donald R. Brown
- Gary Danielson
- Karin Dehnbretti
- Patty Dingess
- Bruce Fischbach
- Kim Griffin
- Theresa Graven
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- Daniel Krueger
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- Sharron L. Kuch
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- Timothy McGee
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- Greg Morris
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- Doak Ostergard
- Lauren Qual
- Randell S. Quist
- Robert E. Ryan
- John K. Schroeder
- Julia Schultz
- Ellen Schuster
- Mary Sperle
- Todd E. Steere
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- Linda Smith
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- Rebecca S. Luce Allen
- Miguel Benavides
- James P. Beat
- Jimmy Carlson
- Jeffrey Davis
- Jane Foster
- Christopher Hall
- Clayton Holmes
- Esteban Melendez
- Robert H. Moore
- Theron L. Morrow
- Derrl Ohnheiser
- Ted Ostrander
- Pamela D. Rast
- P. Jan Rowdan
- William Schneider
- Rick Shaw
- J. Daniel Wheat

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NATA Annual Meeting and Clinical Symposium
Philadelphia, Pennsylvania
June 8-11, 1980

8001 KEYNOTE ADDRESS “The Loss of Innocence” James E. Nixon, MD

8002 “Athletic Nutrition” Angelo Bentivegna, PhD

8003 “An Update on the Field of Biomechanics: A Review Course” Peter Cavanaugh, PhD

8004 “Hip and Upper Leg Trauma and Stress Injuries” Bates Noble, MD

8005 “Anatomy of the Foot and Ankle” Vincent J. DiStefano, MD

8006 “Biomechanics as it Relates to Lower Extremity Injuries” Harold D. Schoenhaus, DPM

8007 “Biomechanical Footwear Balancing” Alan K. Whitney, DPM

8008 “Common Padding and Strapping Used in Foot Injuries” Raymond A. Rivel, DPM

8009 “Biomechanical Considerations in Running” Peter R. Cavanaugh, PhD

8010 “Posterior Gleno Humeral Subluxations” Joseph P. Zawadsky, MD

8011 “The Versatile Airstirrup and Its Use in Ankle Injuries” Cornelius A. Stover, MD

8012 “The Evaluation of Injuries to the Eye” Irving M. Rabar, MD

8013 “Handling Prescription Drugs: A Panel Discussion” Chris Patrick, ATC, Tim Kerin, ATC, Richard Lebovitz, Esq.

8014 “The Physiology of Tissue Injury & Repair” William Bensford, PhD

8015 “Emergency Medicine: Do We Fit?” Pepper Buruss, ATC, LPT

8016 “Implications of Tissue Injury & Repair in the Rehabilitative Process” John C. Spiker, ATC, LPT

8017 “Educating Athletic Trainers in the Eighties: A Panel Discussion” Kenneth Clarke, PhD, Gary Deforge, PhD, ATC, Paul Zeek, ATC, Richard Malacrea, ATC, LPT

8018 “Anatomy of the Central Nervous System and Cervical Spine” Carl Schneck, MD

8019 “Epidemiology — Head and Neck Injuries” Kenneth S. Clarke, PhD

8020 “Pathomechanics of Head and Neck Injuries” Albert H. Burstein, MD

8021 “Central Nervous System Lesions” Leonard A. Bruno, MD

8022 “Cervical Spine Injuries” Joseph S. Torg, MD

8023 “Field Management of Athletic Head and Neck Injuries” Joseph J. Vegso, MS, ATC

8024 “DMSO in Athletic Training” Dr. Stanley Jacobs

8025 “Acupuncture, Neuroprobe, & T.E.N.S. in Athletic Training” Dwight E. Aultman, III, ATC, LPT

8026 “Understanding Strength Training: A Key to Athletic Success” Patti Whiteside, ATC

Professional Preparation Conference
Palo Alto, California
February 6-8, 1981

PA 8101 “Legal Considerations In Athletic Training and Sports Medicine” Richard Ball, Attorney

PA 8102 “Musculoskeletal Injuries In The Adolescent Athlete” Donald Schroeder, MD

PA 8103 “Clinical Evaluation of Acute Ankle, Knee, and Shoulder Injuries” James Glick, MD

PA 8104 “Diagnosis and Management of Anterior Cruciate Injuries” George Hewson, MD

PA 8105 “Rehabilitation of Surgical Knee Injuries—Surgical Arthroscopy” Jim Wiesh, ATC, RPT

PA 8106 “Rehabilitation of Surgical Knee Injuries — Anterior Cruciate Repair” Joseph Webb, ATC, RPT

PA 8107 “Rehabilitation of Surgical Knee Injuries—Lateral Retinaculum Release” Sue Anthony, ATC, RPT

PA 8108 “Conventional Uses of Therapeutic Modalities” Don Chu, ATC, RPT, PhD

PA 8109 “Flexibility and Injury Prevention” Leon Skeie, ATC

PA 8110 “Prevention of Head and Neck Injuries” Lindsy McLean, ATC, RPT

PA 8111 “Evaluation of Low Back Injuries” Michael Go, ATC, RPT

NATA Annual Meeting & Clinical Symposium
Fort Worth, Texas
June 7-10, 1981

8101 “Enigmatics of the Anterior Cruciate Ligament” Vincent J. DiStefano, MD

8102 “Non-Operative Soft Tissues of the Knee” J. Pat Evans, MD

8103 “The Athlete’s Foot” Jack H. Henry, MD

8104 KEYNOTE ADDRESS Tom Wilson, ATC

8105 “Initial Transportation Of A Severely Injured Athlete” T.C. Skip Cox, ATC

8106 “The Use of Effective Therapeutic Massage In The Treatment of Athletic Injuries” Becky Bludau, ATC

8107 “The Use of E.G.S. As A Diagnostic & Treatment Tool For Athletic Injuries” Bernie La Rue, ATC

8108 “Conditioning In Pre-Season Practice” Bobby Lane, ATC

8109 “Acupuncture” Jim Montgomery, MD

8110 “Gambling Problems in Collegiate Sports as It Relates To The Athletic Trainer” Hale McMenamin, NCAA

8111 “Licensing Of The Athletic Trainer” Texas Advisory Board of Athletic Trainers

8112 “Physiological Consequences of Deconditioning and Retraining” Robert Patton, PhD

8113 “Hamstring Injuries” Ken Locker, ATC

8114 “Hand Injuries” Dennis Hart, ATC

8115 “Evaluation of Knee Injuries” John Gunn, MD

8116 “Basic Treatment of Myofascial Strains and Sprains” Wayne English, DO

8117 “Arthroscopic Knee Surgery” Thurston Dean, MD

8118 “High School Budget Problems” Doug Gibbons, ATC

8119 “Ankle Injuries” J. Pat Evans, MD

8120 “Toe Injuries” Dean Weber, ATC

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Professional Preparation Conference
Denver, Colorado
February 5-7, 1982

NATA Annual Meeting & Clinical Symposium
Seattle, Washington
June 13-16, 1982
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### Southwest Athletic Trainers’ Association
**District VI**
*July 25-28, 1984*  
*Waco, Texas*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Presenters</th>
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<tbody>
<tr>
<td>SW 8401</td>
<td>“Laser and Pain Control”</td>
<td>Lynn Laird, LPT</td>
</tr>
<tr>
<td>SW 8402</td>
<td>“Rehabilitation of the Anterior Cruciate Ligament”</td>
<td>Pat Forbis, ATC, LAT</td>
</tr>
<tr>
<td>SW 8403</td>
<td>“The Acute Knee”</td>
<td>Ron Yamamoto, MD</td>
</tr>
<tr>
<td>SW 8404</td>
<td>“Low Back Injuries”</td>
<td>Howard Berg, MD</td>
</tr>
<tr>
<td>SW 8405</td>
<td>“Treatment of Low Backs”</td>
<td>Lynn Laird, LPT</td>
</tr>
<tr>
<td>SW 8406</td>
<td>“Achilles and Patella Problems”</td>
<td>Jerry Gurkoff, MD</td>
</tr>
<tr>
<td>SW 8407</td>
<td>“Ankle Injury Evaluation and Rehabilitation”</td>
<td>Joseph Butts, MD</td>
</tr>
<tr>
<td>SW 8408</td>
<td>“The Shoulder and Elbow in Baseball”</td>
<td>Patrick Pollard, ATC, LAT</td>
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<tr>
<td>SW 8409</td>
<td>“Student Trainer Program at Duncanville, Texas”</td>
<td>David Burton, ATC, LAT</td>
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<tr>
<td>SW 8410</td>
<td>“The Eyes in Athletics”</td>
<td>Craig Hughes, MD</td>
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<tr>
<td>SW 8411</td>
<td>“Tips from the Top of Texas”</td>
<td>Michael Green, ATC, LAT</td>
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<tr>
<td>SW 8412</td>
<td>“The Foot and Ankle”</td>
<td>Doug Boyd, ATC, LAT</td>
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<tr>
<td>SW 8413</td>
<td>“Hands and Wrist Injuries”</td>
<td>Eddie Lane, ATC, LAT</td>
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<td>SW 8414</td>
<td>“State Licensure for Texas”</td>
<td>Albert Wilson, ATC, LAT</td>
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<tr>
<td>SW 8415</td>
<td>“Protective Padding”</td>
<td>John Zerr, ATC, LAT</td>
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<tr>
<td>SW 8416</td>
<td>“The First 30 Years of SWATA”</td>
<td>Dennis Hart, ATC, LAT</td>
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### Eastern Athletic Trainers’ Association
**Districts I & II**
*January 13, 14, 15, 1985*  
*Grossinger, New York*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>EA 8501</td>
<td>“A Team Physician’s Responsibility”</td>
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### Mid-America Athletic Trainers’ Association
**District Five**
*March 15-17, 1985*  
*Lincoln, Nebraska*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Presenters</th>
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<tbody>
<tr>
<td>DF 8501</td>
<td>“The Shoulder in Baseball: Injury Analysis and Rehabilitation – A Panel Discussion”</td>
<td>Mike Walsh, MD, Dan Blanken, PhD, Guy Shelton, ATC, RPT</td>
</tr>
<tr>
<td>DF 8502</td>
<td>“Electrical Modalities”</td>
<td>Sandy Rennie, RPT</td>
</tr>
<tr>
<td>DF 8503</td>
<td>“Operative Knee Arthroscopy”</td>
<td>Brian Briggs, MD</td>
</tr>
<tr>
<td>DF 8504</td>
<td>“Interviewing Techniques”</td>
<td>Tom Mauer</td>
</tr>
<tr>
<td>DF 8505</td>
<td>“Eye Injuries”</td>
<td>Donald Ackfeld, MD</td>
</tr>
<tr>
<td>DF 8506</td>
<td>“Oral Injuries”</td>
<td>Robert Smith, DDS, MSD</td>
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<tr>
<td>DF 8507</td>
<td>“Elbow Injuries”</td>
<td>Robert Cochran, MD</td>
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<tr>
<td>DF 8508</td>
<td>“Diabetes and the Athlete”</td>
<td>Kris Berg, EdD</td>
</tr>
<tr>
<td>DF 8509</td>
<td>“Sports Podiatry: Biomechanical Analysis of the Runner, Evaluation and Treatment of Specific Injuries”</td>
<td>Paul Coffon, DPM</td>
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</tbody>
</table>

### Rocky Mountain Athletic Trainers’ Association
**District Seven**
*March 15-17, 1985*  
*Flagstaff, Arizona*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>RM 8501</td>
<td>“Drug and Alcohol Rehabilitation”</td>
<td>Kenneth Richardson</td>
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<tr>
<td>RM 8502</td>
<td>“Drug and Alcohol Rehabilitation — Family Programs, Process and Systems”</td>
<td>Dennis Gilbert</td>
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<tr>
<td>RM 8503</td>
<td>“Athletes and Anabolic Steroids”</td>
<td>Edward Percy, MD</td>
</tr>
<tr>
<td>RM 8504</td>
<td>“‘Pro’ Drug Testing — ‘Con’ Drug Testing”</td>
<td>Troy Young, ATC, Steve Antonopulos, ATC</td>
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<tr>
<td>RM 8505</td>
<td>“On-Site Drug Detection”</td>
<td>Jim Longfield</td>
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<tr>
<td>RM 8506</td>
<td>“Pharmaceutical Agents in Drug Abuse”</td>
<td>Robert Voy, MD</td>
</tr>
<tr>
<td>RM 8507</td>
<td>“Legal Ramifications in Alcohol and Drug Abuse Amongst Athletes”</td>
<td>Rick Ball, Attorney</td>
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<td>The following date will be open to re-exam candidates only: November 23, 1986 — Deadline for receipt of applications is October 13, 1986.</td>
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<td><strong>January 19, 1986 — Deadline for receipt of applications is December 2, 1985</strong></td>
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<td><strong>March 16, 1986 — Deadline for receipt of applications is February 3, 1986</strong></td>
<td><strong>July 13, 1986 — Deadline for receipt of applications is June 2, 1986</strong></td>
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<td>Boston, MA</td>
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*Changed from previous listing*

**Drug Education**

The following item appeared in THE NCAA NEWS December 18, 1985, page 15

**Drug tests halted**

A New Jersey school board's policy of requiring all students at a Bergen County high school to be tested for drugs has been ruled in violation of constitutional protection against invasion of privacy and illegal search and seizure.

The New Jersey State Superior Court ruled that the screening, by urinalysis as part of comprehensive physical examinations, is unconstitutional, The New York Times reported December 11.

The school board contended that a medical examination for all students to identify users did not have to satisfy standards of "probable cause" or "reasonable suspicion" for constitutional searches.

The board argued that the screening for drugs was no different from its regular testing of urine for symptoms of diabetes or other ailments. Judge Peter Ciolino held, however, that the school was trying to control student discipline under the guise of a medical procedure.

Five students at Becton Regional High School in East Rutherford had challenged the policy through the American Civil Liberties Union.

School officials said that 28 students, about five percent of the student body, had sought assistance for drug or alcohol abuse within the past academic year. Judge Ciolino said that the 28 who sought help made up an insufficient number to justify a search of all students through urinalysis.

**Placement**

The telephone number for the twenty-four hour PLACEMENT VACANCY NOTICES regarding job opportunities is (919) 752-1266. Two different notices are available: Graduate Assistantship notices may be heard on Monday, Wednesday and Friday from 9:00 in the morning until 5:00 in the evening Eastern time. General Employment notices can be heard at all other times. You might want to have a pen and paper available to record any positions if you are interested.

You also might want to make a recording of this notice with your personal tape recorder. This information will be updated on the first and fifteenth of every month.

A current Placement File is maintained by Craig Sink, Chairman of the Placement Committee. If you would like to have your resume included in this file send to Craig Sink, NCSU, Box 5187, Raleigh, NC 27650.

**Professional Education**

National Athletic Trainers Association
Approved Athletic Training Education Programs

*Revised September 1985*

Programs listed here are approved by the National Athletic Trainers Association. For detailed information, write to the program director whose name is given in parentheses in the listing. Two basic plans of education for athletic training are listed according to the following key:

Spring 1986 • Athletic Training 69
(1) Undergraduate Athletic Training Education Programs
(2) Graduate Athletic Training Education Programs

ARIZONA
UNIVERSITY OF ARIZONA (2)
Department of Exercise & Sport Sciences
Tucson, Arizona 85721 (Gary Delforge)

CALIFORNIA
CALIFORNIA STATE UNIVERSITY, FRESNO (1)
Department of Physical Education & Recreation
Fresno, California 93740-0001 (Ed Ferreira)

CALIFORNIA STATE UNIVERSITY, FULLERTON (1)
Department of Health, Physical Education & Recreation
Fullerton, California 92634 (Jerry Lloyd)

CALIFORNIA STATE UNIVERSITY, LONG BEACH (1)
Department of Physical Education
Long Beach, California 90840 (Keith Freesemann)

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE (1)
Department of Physical Education
Northridge, California 91330 (Thomas Weidner)

CALIFORNIA STATE UNIVERSITY, SACRAMENTO (1)
Department of Physical Education
Sacramento, California 95819 (Doris E. Flores)

DELAWARE
UNIVERSITY OF DELAWARE (1)
College of Physical Education, Athletics & Recreation
Newark, Delaware 19716 (Roy Rylander)

IDAHO
BOISE STATE UNIVERSITY (1)
Department of Physical Education
Boise, Idaho 83725 (Ron Pfeiffer)

ILLINOIS
EASTERN ILLINOIS UNIVERSITY (1)
Department of Physical Education
Charleston, Illinois 61920 (Dennis Aten)

ILLINOIS STATE UNIVERSITY (2)
Department of Health, Physical Education, Recreation & Dance
Normal, Illinois 61761 (William Kauth)

SOUTHERN ILLINOIS UNIVERSITY (1)
Department of Physical Education
Carbondale, Illinois 62901 (Sally Rouse Perkins)

UNIVERSITY OF ILLINOIS (1)
Department of Physical Education
Urbana, Illinois 61801 (Gerald W. Bell)

WESTERN ILLINOIS UNIVERSITY (1)
College of Health, Physical Education & Recreation
Macomb, Illinois 61455 (Larry J. Leverenz)

INDIANA
BALL STATE UNIVERSITY (1)
Department of Men's Physical Education
Muncie, Indiana 47306 (Michael Ferrara)

INDIANA UNIVERSITY (1,2)
Department of Physical Education
Bloomington, Indiana 47405 (John W. Schrader)

INDIANA STATE UNIVERSITY (1,2)
Department of Physical Education
Terre Haute, Indiana 47809 (Bob Behnke, undergraduate)
(Ken Knight, graduate)

PURDUE UNIVERSITY (1)
Department of Physical Education, Health & Recreational Studies
West Lafayette, Indiana 47907 (Dale Rudd)

IOWA
UNIVERSITY OF IOWA (1)
Department of Exercise Science & Physical Education
Iowa City, Iowa 52242 (Dan Foster)

KENTUCKY
EASTERN KENTUCKY UNIVERSITY
College of Health, Physical Education, Recreation & Athletics
Richmond, Kentucky 40475-0933 (Robert M. Barton)

MASSACHUSETTS
BRIDGEWATER STATE COLLEGE (1)
Department of Health, Physical Education & Recreation
Bridgewater, Massachusetts 02324 (Marcia Anderson/ Matthew Gerken)

NORTHEASTERN UNIVERSITY (1)
Department of Health, Sport & Leisure Studies
Boston, Massachusetts 02115 (Kerkor Kassabian)

SPRINGFIELD COLLEGE (1)
Department of Health, Physical Education & Recreation
Springfield, Massachusetts 01109 (Charles Redmond)

MICHIGAN
CENTRAL MICHIGAN UNIVERSITY (1)
Department of Physical Education
Mount Pleasant, Michigan 48859 (Ronald A. Sendre)

GRAND VALLEY STATE COLLEGE (1)
Department of Physical Education & Athletics
Allendale, Michigan 49401 (Douglas P. Woods)

WESTERN MICHIGAN UNIVERSITY (2)
Department of Health, Physical Education & Recreation
Kalamazoo, Michigan 49008 (Bob Moss)

MINNESOTA
GUSTAVUS ADOLPHUS COLLEGE (1)
Department of Health, Physical Education & Athletics
St. Peter, Minnesota 56082 (Gary D. Reinholdz)

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

MISSISSIPPI
UNIVERSITY OF SOUTHERN MISSISSIPPI (1)
Department of Athletic Administration & Coaching
Hattiesburg, Mississippi 39406-5105 (James B. Gallaspy)

MISSOURI
SOUTHWEST MISSOURI STATE UNIVERSITY (1)
Department of Physical Education
Springfield, Missouri 65804 (Gary Ward/Ivan Milton)

MONTANA
UNIVERSITY OF MONTANA (1)
Department of Health & Physical Education
Missoula, Montana 59812 (Dennis Murphy/Scott Richter)

NEBRASKA
UNIVERSITY OF NEBRASKA (1)
Department of Health, Physical Education & Recreation
Lincoln, Nebraska 68588-0618 (Roland E. LaRue)

NEVADA
UNIVERSITY OF NEVADA - LAS VEGAS (1)
School of Health, Physical Education, Recreation & Dance
Las Vegas, Nevada 89154 (A.G. Edwards)

NEW JERSEY
KEAN COLLEGE OF NEW JERSEY (1)
Department of Physical Education, Health & Recreation Union, New Jersey 07083 (Gary Ball)

WILLIAM PATTERSON COLLEGE OF NEW JERSEY (1)
Department of Movement Sciences and Leisure Studies
Wayne, New Jersey 07470 (Jim Manning)

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CANISIUS COLLEGE (1)
Department of Physical Education
Buffalo, New York 14208 (Pete Koehneke)

ITHACA COLLEGE (1)
Department of Health, Physical Education & Recreation
Ithaca, New York 14850 (Kent Scriber)

STATE UNIVERSITY OF NEW YORK AT BUFFALO (2)
Department of Physical Education & Exercise Science
Buffalo, New York 14214 (Terry Whieldon)

STATE UNIVERSITY OF NEW YORK AT CORTLAND (1)
Department of Physical Education
Cortland, New York 13045 (John Cottone)

NORTH CAROLINA
APPALACHIAN STATE UNIVERSITY (1)
Department of Health, Physical Education & Recreation
Boone, North Carolina 28608 (Craig Denegar)

EAST CAROLINA UNIVERSITY (1)
Department of Health, Physical Education, Recreation & Safety
Greenville, North Carolina 27834 (Rod Compton)

UNIVERSITY OF NORTH CAROLINA (2)
Department of Physical Education
Chapel Hill, North Carolina 27514 (William E. Prentice)

NORTH DAKOTA
NORTH DAKOTA STATE UNIVERSITY (1)
Department of Health, Physical Education, Recreation & Athletics
Fargo, North Dakota 58105 (John Schueneman)

UNIVERSITY OF NORTH DAKOTA (1)
Department of Health, Physical Education & Recreation
Grand Forks, North Dakota 58202 (Mark Healy)

OHIO
BOWLING GREEN STATE UNIVERSITY (1)
Department of Health, Physical Education & Recreation
Bowling Green, Ohio 43403 (Janet Parks/Chris Smalley)

MARIETTA COLLEGE (1)
Department of Sports Medicine
Marietta, Ohio 45750 (Paul Spear)

MIAMI UNIVERSITY OF OHIO (1)
Department of Health, Physical Education & Recreation
Oxford, Ohio 45056 (Patricia Troesch)

OHIO UNIVERSITY (1)
Department of Health & Sport Sciences
Athens, Ohio 45701 (Charles “Skip” Vosler)

UNIVERSITY OF TOLEDO (1)
Department of Physical Education & Exercise Science
Toledo, Ohio 43606 (Jim Rankin)

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

UNIVERSITY OF OREGON (2)
Department of Physical Education
Eugene, Oregon 97403 (Rick Troxel)

PENNSYLVANIA
CALIFORNIA UNIVERSITY OF PENNSYLVANIA (1)
College of Education
California, Pennsylvania 15419 (William B. Biddington)

EAST STRoudSBURG UNIVERSITY
Department of Professional Physical Education
East Stroudsburg, Pennsylvania 18301 (John Thatcher)

LOCK HAVEN UNIVERSITY (1)

Department of Health, Physical Education & Recreation
Albuquerque, New Mexico 87131 (L. F. “Tow” Diehm)

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CANISIUS COLLEGE (1)
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EAST STRoudSBURG UNIVERSITY
Department of Professional Physical Education
East Stroudsburg, Pennsylvania 18301 (John Thatcher)

LOCK HAVEN UNIVERSITY (1)
PLAN NOW TO ATTEND!!
NATA Professional Education Committee
ATHLETIC TRAINING
EDUCATORS WORKSHOP
June 8, 1986
MGM HOTEL - LAS VEGAS, NEVADA
FEATURED SPEAKER:
Lawrence M. Aleamoni, Ph.D.
Director, Instructional Research & Development
University of Arizona

TOPICS:
Dr. Aleamoni, a noted authority in instructional
methods and evaluation, will present a three-hour
workshop designed to assist the certified athletic
trainer in instructional improvement in the class­
room and clinical setting. Special topics include:
“Basic Principles of Learning and Motivation”
“Structuring Clinical Experiences in Athletic
Training”
“Performance Evaluation in the Clinical Set­
ing”
An Athletic Training Educators Panel featuring
a question and answer session on athletic training
education and certification is also planned.

REGISTRATION:
On-site registration will be held at 12:30 p.m.,
Sunday, June 8th, in the Metro 6 room, MGM
Hotel. The registration fee is $15.00. There will be
NO PRE-REGISTRATION.

FACTORS AFFECTING THE GASTRIC, from page 21
11. Round Table: Balancing Heat Stress, Fluids and Electro­
12. Unitas J, Dintiman G: Improving Health and Performance
Hall, 1979 p. 72. ©

BOOK REVIEWS, from page 46
Modern Principles of Athletic Training
Daniel D. Arnheim, D.P.E., A.T.C.
Times Mirror/Mosby College Publishing
St. Louis. MO.
1985
783 Pages, illustrated
Price: Approx. $30.00

Upon starting this review it was of great interest to
me to discover that Dr. Arnheim had published his sixth
edition of Modern Principles of Athletic Training, the
first edition hitting the book stores in 1963. In the latest
edition as in the previous five Dr. Arnheim has met his
objective of providing the profession with a concise well
written text covering the latest aspects of the art and
science of sports medicine and athletic training.
The sixth edition contains twenty-six chapter devoted
to specific explanations of the disease and injury process.
He also clearly covers advances in evaluation, manage­
ment, and rehabilitation. Additional topics explored
include computers, endorphins and enkephalins. There
are sections on strength and conditioning, as well as a
thorough discussion on women and children in sports.
There are four outstanding appendixes; the most
interesting one concerns the current topic of proprio­
ceptive neuromuscular facilitation (PNF) patterns with
accompanying photos.

Modern Principles of Athletic Training is well written
and will prove to be a welcome addition to everyone’s
professional book collection. I enjoyed the sixth edition
as I have the previous five. Dr. Arnheim’s books seem
to get better with time. For the beginning athletic trainer
on a limited budget or the established trainer with
resources, this is the book for you. ©

Public Relations
Falcon’s Rhea Named President of
National Athletic Trainers Assn.
For Immediate Release
Jerry Rhea, Head Athletic Trainer of the Atlanta
Falcons since 1969, was elected president of the National
Athletic Trainers Association, it was announced Decem­
ber 2.
Rhea, 50, who worked for eight years at the high
school level in Texas before coming to the National
Football League, received a majority of votes cast by the
9,100-member NATA. During his 17 years with the
Falcons, Rhea served terms as president and director of
the NATA’s District Nine, which covers seven states in the
Southeast.
Rhea said the NATA’s top priorities will remain the
same: active support for state legislation governing the
practice of athletic training; and a public education
campaign urging educators and parents to provide
more health care protection for the nation’s 5.6 million
interscholastic sports participants.
“One of the most important things the NATA can do
for athletes in this country is to help put a certified
athletic trainer in every high school,” Rhea said.
“Parents and educators who don’t have a qualified
health professional to care for their kids simply don’t
know what they’re missing.”
A native of Ennis, Texas, and father of one son, Rhea
was named Professional Trainer of the Year in 1978 and
1982. He received the highest distinction in his profes­
Sion in 1985 when he was inducted into the NATA Hall
of Fame.
Rhea will begin his two-year term as president next
June, succeeding Dr. Robert Barton, Head Athletic
Trainer at Eastern Kentucky University. Rhea and wife
Beverly reside in Tucker, Georgia. ©
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- Physical Exams
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ALFIE is used by high schools, junior colleges and universities to compile, interpret and monitor injuries, treatments, insurance claims and medical histories of their athletes. ALFIE is also used by the NATIONAL BASKETBALL TRAINER'S ASSOCIATION as the league's injury analysis system.

ALFIE is an IBM-PC or APPLE//e - APPLE//c compatible sports medicine system which will replace or reduce the task of most record-keeping chores. ALFIE was designed to be as "user friendly" and complete as possible. ALFIE was the first sports medicine program to introduce the concept of pre-entered variables that are stored in the computer's memory. This means no hassle of looking up and deciphering of codes.

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ARTICLE I - NAME

The name of this organization shall be the National Athletic Trainers’ Association, Inc.

ARTICLE II - OBJECTIVES

The objectives of this Association shall be:

1. The advancement, encouragement, and improvement of the athletic training profession in all its phases, and to promote a better working relationship among those persons interested in the problems of training.

2. To develop further the ability of each of its members.

3. To better serve the common interests of its members by providing means for a free exchange of ideas within the profession.

4. To enable members to become better acquainted personally through casual good fellowship.

ARTICLE III - MEMBERSHIP

Section 1

There shall be ten (10) classes of membership as follows:

1. Certified
2. Associate
3. Retired
4. Student
5. Affiliate
6. Advisory
7. Honorary
8. Retired Certified
9. Affiliate International
10. Affiliate International

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

Section 2

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

ARTICLE IV - ELECTION OF MEMBERS

Section 1

Application: Each applicant for any class of membership shall sign an application stating his/her desire and intention to become a member of the Association, to advance its best interests in every reasonable manner and to accept as binding upon himself or herself its Constitution and By-Laws.

ARTICLE V - DUES

Section 1

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

ARTICLE VI - SUSPENSION OF MEMBERSHIP

Section 1

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

Section 2

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

ARTICLE VII - VOTING POWER

Section 1

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

ARTICLE VIII - ORGANIZATION

Section 1

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

Section 2

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

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

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

Section 3

(a) President: The president shall be elected by a majority popular vote of the voting membership of the National Athletic Trainers’ Association, Inc. The Board of Directors shall be the nominating committee. Candidates must have served on the Board of Directors some time during the four years immediately preceding the meet-
(b) Vice President: The District Director from one of the ten districts shall be elected to the office of Vice President by the Board of Directors. One or more district directors may be nominated by members of the Board and election shall be by majority vote.

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

The term of office of the Vice President shall be one year and he/she may not serve more than two consecutive terms. The term of office shall begin at the business meeting of the Association at the Annual Meeting and Clinical Symposium following the election.

The term of the President shall be two years and he/she may not serve more than two consecutive terms. The term of office shall begin at the business meeting of the Association at the Annual Meeting and Clinical Symposium following the election.

The Vice President has no constitutional duties other than to assume the office of President or President-elect as prescribed.

Section 4
Removal of Officers: All national officers may be impeached and convicted on the following grounds: embezzlement, malfeasance in office, and actions contrary to or in violation of this Constitution and its By-Laws. Before impeachment proceedings can be instituted, a brief, containing the charges shall be drawn up and presented by a board member to the Board of Directors sitting in executive session. The aforementioned brief must then be adopted by a majority vote prior to the formal presentation of the charges. Impeachment of any officer shall require a two-thirds vote of the voting membership of the Association present at the annual meeting.

ARTICLE IX -- POWERS AND DUTIES OF OFFICERS

Section 1
The officers are the President, Vice-President, Board of Directors, and Executive Director.

Section 2
All powers and duties of officers are as prescribed in the By-Laws and Article VIII Section 3 of the Constitution.

ARTICLE X - COMMITTEES

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

ARTICLE XI - MEETINGS

Section 1
The annual business meeting shall be held each year at a time and place set by the Board of Directors.

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

Section 2
The Board of Directors may submit items of Association business to the voting membership for a vote by mail. Approval of items so submitted shall require a "yes" majority of a respondece of at least one-fifth of the voting membership of the Association.

Section 3
The Board of Directors shall meet at the National Convention and at any other time that the President determines it necessary to call a Board meeting.

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

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

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

ARTICLE XII - AMENDMENTS TO THE CONSTITUTION

Section 1
All proposed amendments to the Constitution shall be submitted in writing by a District Director and with approval of the membership of the district to the Executive Director at least nine (9) weeks prior to the annual business meeting. The Executive Director shall distribute copies of the proposal to all voting members at least six (6) weeks prior to the annual business meeting.

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

ARTICLE XIII - AMENDMENTS TO THE BY-LAWS

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

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

SPORTS-LYTES
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John Wm. Perry, MD
Medical Director
Kaye Barrett Droke
Founder-President

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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/herself 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, Inc. 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, Inc. will understand and apply the principles set forth in the CODE and make every effort to do the right thing at the right time to the best of their ability and judgement.

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, Inc. 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 interests 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. A 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, Inc. 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 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, Inc. 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 Trainers**

Any trainer who by his/her conduct or comments, publicly discredits or lowers the dignity of members of the profession is guilty of breach of ethics.

**Section 6 — Membership**

It is unethical for a member to misrepresent his/her qualifications.

**Section 7 — 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, Inc. 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 and 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 will in turn 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 judgement of a majority of the committee members, it finds that the accused person has violated the National Athletic Trainers’ Association, Inc. CODE OF ETHICS, it communicates 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, Inc. 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, Sections 1 and 2 of the Constitution.
LETTERS TO THE EDITOR, from page 2

electrical stimulators available, Mr. Ralston adds
further confusion by failing to realize that high voltage
galvanic stimulators do not have the same effects as
to true galvanic stimulators. Whether a unit is described
as low voltage, high voltage, low frequency, or high
frequency, with the exception of a true galvanic unit,
they are all TENS units. By definition, a TENS unit is a
transcutaneous electrical nerve stimulator utilizing
surface electrodes to stimulate peripheral nerves. Direct
current, also known as galvanic current, is an electrical
current that flows in one direction for a second or longer
and excites the muscle itself, not the peripheral nerve.
This type of current is necessary to stimulate denervated
muscle, but is quite uncomfortable to normally in­
nervated muscle. The high voltage galvanic stimulators
currently on the market incorporate a pulsed direct
current, and are no longer what is classically considered
as galvanic. The effects that Mr. Ralston refers to as
liquefication under the negative electrode and the acidic
reaction under the positive electrode refer to true
galvanic currents, not to the high voltage galvanic
stimulators that are commonly found in training rooms.
Therefore, our current knowledge reveals that polarity
is of very little importance, with the exception of the use
of HVGS for wound healing.

High voltage galvanic stimulation has been used in
the treatment of musculo-skeletal injuries for more than
five years. While I must agree with Mr. Ralston that
there is currently a paucity of pertinent literature on the
topic of HGVS, what literature there is should not be
overlooked. Seminars taught throughout the country by
Dr. Gad Alon, an educator and researcher on the topic of
HVGS, might also be of interest to your readers.

Francy Rubin, MS, RPT, ATC
Boulder Creek, California

References
1. Alon, G: High Voltage Galvanic Stimulation. Chatta­
nooga, TN, Chattanooga Corporation, 1981.
ation of pain suppressive effect of different frequencies of
peripheral electrical stimulation in chronic pain condi­
eters for minimum pain in the chronic stimulation of
1975.
5. Quillan, S. (Data presented at seminar on High Voltage,
Montreal, 1981). (C)

Attend the
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“Legal Aspects of Athletic Training”

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80 Athletic Training • Spring 1986
Academy of Pediatrics (AAP) questioned the effectiveness of voluntary labeling to warn consumers about the possible association between aspirin use and Reye Syndrome. A pilot study conducted by the U.S. Public Health Service this year to investigate the link between aspirin and Reye Syndrome revealed that a surprising number of the Syndrome's victims were adolescents who presumably took adult-strength aspirin without physician advice.

Speaking before the House Subcommittee on Health and the Environment, Albert A. Pruitt, MD, chairman of the AAP's Committee on Drugs and the chairman of the Department of Pediatrics at the Medical College of Georgia, said, "There is now more reason than ever to warn the public — especially adolescents — about the association between aspirin and Reye Syndrome."

"The study strongly indicates that aspirin can no longer be regarded as an appropriate medication for children or young adults with flu or with an illness which might be chicken pox," Dr. Pruitt said. "Because aspirin is largely self-medicated by young adults, it is important that the labeling read by the consumer be unambiguous on this point."

Dr. Pruitt pledged the Academy's full support of aspirin labeling which would provide current information about the relationship between aspirin and Reye Syndrome. Representative Henry A. Waxman (D-CA) has introduced H.R. 1381, the Emergency Reye's Syndrome Prevention Act, which would mandate aspirin labeling.

Although the specific cause of Reye Syndrome is not known, four previous studies also have linked its development to the use of aspirin in treating children and adolescents with such viral infections as chicken pox or flu. Reye Syndrome is characterized by a brief improvement in the child's condition, followed by severe vomiting, coma and convulsions. Permanent damage to the nervous system and death can result.

When the results of the USPHS study were reported, the nation's major aspirin manufacturers agreed to make label changes and to issue warnings that the drug should not be used to treat children or teenagers with chicken pox or flu. The AAP expressed its disappointment that the message about aspirin and Reye Syndrome is not getting to the consumer and questioned the effectiveness of voluntary labeling.

"We recognize the urgency of definitive action and would hope this hearing will serve as the necessary catalyst to encourage a suitable response by the industry," Dr. Pruitt said. "Ideally, we feel labeling can work without legislation. But as a practical matter, it may not."

Dr. Pruitt reported that several of the Academy's technical committees will be reviewing that data from the USPHS study, but suggested that further research in this area must be continued. The Public Health Service is considering a more complete follow-up study.

The AAP testified only on the issue of effective labeling programs and not on the issue of further studies of the possible link between aspirin and Reye Syndrome. "When our children are at risk, they most certainly deserve the benefit of any doubt," Dr. Pruitt said.

**When You're Feeling the Heat**

*Good Health Digest*

Author-environmentalist John Hart points out that a healthy body engaged in vigorous exercise on a hot day can produce two quarts of perspiration an hour, but it takes eight to ten days of "training" to reach this point. Playing three sets of singles on the first hot day of spring, after a winter of indolence, is an invitation to disaster.

The symptoms of hyperthermia are pretty clear - nausea, faintness, a rapid or uneven heartbeat. You may continue to sweat, says Hart, but your skin may feel oddly cool. This, accompanied by a feeling of "distance" and indifference to your surroundings, constitutes a condition known as heat exhaustion. As body temperature continues to rise, sweating may stop, pulse quicken, breathing become labored. Convulsions may occur. But the key symptom is a sense of disorientation and confusion.

**Fat Reduction**

*Food & Nutrition News*

November/December 1985

Despite popular beliefs that body fat on some fat pad areas of the body — hips, thighs, knees — is more difficult to reduce by dieting, British researchers say not so! J. S. Garrow writes in a letter in *The Lancet*(Aug. 17, 1985) that he and his co-workers studied fat lability at 15 body sites to see how the fat losses of obese people related to the number of fat cells at those sites. They found that fat was lost by the obese subjects at the same rate from all sites measured.

**Psychological Stress Linked to Athletic Injury**

*Sport Psychology, 1985*

Collegiate football players (N=151) from three institutions were administered the 45-item Social and Athletic Readjustment Rating Search (SARRS) one week prior to the season in order to determine the degree of psychological stress they had experienced over the last 12 months. The SARRS is used to determine the amount of change that the athlete has experienced in his or her life, and high levels of this change are believed to be
stressful. Examples of such stressful events include death of a family member, argument with a coach, financial problems, and so forth. Prior research had shown such stress to be related to the occurrence of physical illness. The authors examined whether high levels of psychogenic stress would lead to a greater number of injuries for college football players, and to more severe injuries. To answer this question, the players were divided into two groups at the end of the season—those who had experienced an injury and those who had not. Injury records were determined from data accumulated by a national injury reporting service to which each of the three schools subscribed. Injured players did evidence higher life change scores on the SARRS than their noninjured counterparts. Additionally, the football players showing higher stress (as indicated by higher SARRS scores) incurred a greater frequency of minor and moderate injuries. However, stressed players did not suffer more severe injuries. The authors note that the origins of the injuries in competitive football are multidimensional, but that the degree of “off the field” stress experienced by the player may be a contributing factor.

**Exercise and Bone Loss in Young Female Athletes**

*Food and Nutrition*

*May/June 1985*

Recent interest in the possible adverse effects of prolonged low estrogen levels on bone mass in women after menopause is raising questions about how reduced estrogen status affects bone mineralization in young women athletes who have ceased menstruating (secondary amenorrhea). A recent study of 14 amenorrheic athletes and 14 eumenorrheic athletes (with normal menstrual cycles) investigated the effect of low estrogen levels on regional bone losses, and whether the greater frequency, duration and intensity of athletic training exerts a protective effect against bone loss in amenorrheic girls.

The two groups were matched for physical characteristics, training programs, percentage of body fat and nutritional intakes, including calcium from diet alone or with supplements. Only the number of miles run per week differed significantly—the amenorrheic group ran 41.8 mi/wk, the eumenorrheic group, 24.9 mi.

Bone mass was measured at two sites on the radius (outer bone of the forearm) and at the lumbar vertebrae. No marked deviations from the norm were shown in either bone mineral content or bone density of the radius in either group. The mineral density of the lumbar vertebrae was significantly lower in the amenorrheic athletes. No significant relation was found between mineral density of the vertebrae and either of the radial sites.

Such findings should call attention to the possibility of decreased bone density in some women athletes who have ceased menstruating for prolonged periods.
Calendar of Events

March
17-21 Back Isokinetic Education Course, La Crosse, WI. Contact Orthopaedic and Sports Physical Therapy, 505 King Street, Suite 001, La Crosse, WI 54601.
18-22 University of Hawaii Sports Medicine Course, Honolulu, HI. Contact Ms. Joy Lewis, Box CES-CCECS, 2530 Dole Street, Honolulu, HI 96822.
19-22 The Great Lakes Athletic Trainers Association 1986 Winter Meeting and Sports Medicine Symposium, Grand Rapids, MI. Contact Lee Kermode, 2317 Glen-eagle Drive, Kalamazoo, MI 49001.
20-26 National Intramural - Recreational Sports Association, Las Vegas, NV.

April
2-3 1986 Cleveland Clinic Foundation “Wellness and Health Promotion for the Health Professional,” Cleveland, OH. Contact the Center for CME, The Cleveland Clinic Educational Foundation, 9500 Euclid Avenue, Room TT3-301, Cleveland, OH 44106.
5-6 Basic Cybex/Isokinetic Course, La Crosse, WI. Contact Orthopaedic and Sports Physical Therapy, 505 King Street, Suite 001, La Crosse, WI 54601.
9-13 American Alliance for Health, Physical Education, Recreation and Dance, Cincinnati, OH.
18-19 Intermediate Cybex/Isokinetic Course, La Crosse, WI. Contact Orthopaedic and Sports Physical Therapy, 505 King Street, Suite 001, La Crosse, WI 54601.
18-20 The Comprehensive Care of the Recreational and Competitive Athletes, Pittsburgh, PA. Contact Evelyne A. Hallberg, Assistant Executive Director, AOSSM-70 W. Hubbary-ste. 202, Chicago, IL 60610.
20-22 Third Annual Scan Symposium, Palo Alto, CA. Contact Jeannette Harris, 440 East 62nd Street, New York, NY 10021.
21-23 Texas Emergency Care Symposium, Corpus Christi, TX. Contact 1986 Texas Emergency Care Symposium, P.O. Box 610717, Dallas, TX 75261-0717.
21-25 Back Isokinetic Education Course, La Crosse, WI. Contact Orthopaedic and Sports Physical Therapy, 505 King Street, Suite 001, La Crosse, WI 54601.
26-27 The Competitive Recreational Athlete/Run with Dr. Sheehan, Newark, OH. Contact Kathy Willey, Licking Memorial Hospital, 1320 West Main Street, Newark, OH 43055.

May
1-2 Ethics in Sports Medicine, Hartford, CT. Call Cecile J. Volpi, University of Connecticut Health Center, at (203) 674-3340.
2-3 Fifth Annual National Fitness Classic, Houston, TX. Call Steve Guback at (202) 272-3430 or Charlotte Boylan at (713) 680-3330.
5-9 Basic Cybex/Isokinetic Course, La Crosse, WI. Contact Orthopaedic and Sports Physical Therapy, 505 King Street, Suite 001, La Crosse, WI 54601.
8-10 20th Annual Convention of Canadian Athletic Therapists Association, Montreal, Canada. Contact Dr. David Paris, ATC, Department of Exercise Science, Concordia University, 7141 Sherbrooke Street West, Montreal, Quebec H4B 1R6.
14-18 American Academy of Podiatric Sports Medicine, Houston, TX.
15-18 NATA District 3 Meeting, Virginia Beach, VA. Contact District Secretary.
16-17 Ninth Annual Sports Medicine Symposium, Madison, WI. Contact Sarah Z. Aslakson, Continuing Medical Education, 465B WARP Bldg., 610 Walnut Street, Madison, WI 53705.
17-18 Pennsylvania Athletic Trainers Society 6th Annual Meeting and Clinical Symposium, Harrisburg, PA. Contact Elizabeth Rimpfel, Cumberland Valley High School, Mechanicsburg, PA 17055.
28-31 33rd American College of Sports Medicine Annual Meeting, Indianapolis, IN. ACSM, P.O. Box 1440, Indianapolis, IN 46206-1440.

June
9-12 NATA Annual Meeting and Clinical Symposium, Las Vegas, NV. Contact NATA, 1001 East Fourth Street, Greenville, NC 27834.
21-24 NHSACA National Athletic Training/Sports-medicine Training Seminar, Orlando, FL.

ATHLETIC TRAINING will list events of interest to persons involved in sports medicine, providing items are received well in advance of publication. Please include the name and address of the person to contact for further information. Send items for the CALEN-
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DAR to Jeff Fair, Head Athletic Trainer, Athletic Department, Oklahoma State University, Stillwater, OK 74078. Refer to the following dates to ensure your event will appear in the desired issue. ©

### 1986 STUDENT WORKSHOPS

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Speakers</th>
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<tbody>
<tr>
<td>June 1-4</td>
<td>University of Nebraska</td>
<td>Duke LaRue</td>
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<td>Lincoln, NE</td>
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<td>June 15-18</td>
<td>Fresno State University</td>
<td>Ed Ferreira</td>
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<td>Fresno, CA</td>
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<td>June 22-25</td>
<td>Arizona State University</td>
<td>Bruce Kalish</td>
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<td>Clarksville, TN</td>
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<td>Florida State University</td>
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<td>Northeast Louisiana University</td>
<td>Charlie Martin</td>
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<tr>
<td>June 29-July 2</td>
<td>University of Colorado</td>
<td>Dave Burton</td>
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<td>Kean College</td>
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<td>Lock Haven University</td>
<td>Dave Tomasi</td>
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<td>University of Wisconsin/Whitewater</td>
<td>Jane Sandusky</td>
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<tr>
<td>July 6-9</td>
<td>North Adams State College</td>
<td>Keith Frary</td>
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<td>Northern Illinois University</td>
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<tr>
<td>July 13-16</td>
<td>Eastern Kentucky University</td>
<td>Bobby Barton</td>
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<td>Richmond, KY</td>
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<td>University of Texas/Arlington</td>
<td>Pete Carlon</td>
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### Sites and dates for Coaches Clinics

<table>
<thead>
<tr>
<th>University of New Mexico</th>
<th>Albuquerque, NM</th>
<th>May 27-31</th>
<th>Dr. Leon Griffin</th>
<th>Scholes Hall</th>
<th>505-277-4041</th>
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<tbody>
<tr>
<td>Washburn University</td>
<td>Topeka, KS</td>
<td>June 15-19</td>
<td>Steve Ice, A.T.C.</td>
<td>Dept. of Athletics</td>
<td>913-295-6334, ext. 753</td>
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<tr>
<td>University of Oregon</td>
<td>Eugene, OR</td>
<td>June 16-20</td>
<td>Rick Troxel, A.T.C.</td>
<td>Physical Education Dept.</td>
<td>503-686-4105</td>
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<tr>
<td>University of Florida</td>
<td>Gainesville, FL</td>
<td>June 22-26</td>
<td>Dr. Ron Siders</td>
<td>302 Florida Gymnasium</td>
<td>904-392-0584</td>
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<tr>
<td>University of Georgia</td>
<td>Athens, GA</td>
<td>June 22-26</td>
<td>Donna Cooper, A.T.C.</td>
<td>Dept. of Athletics</td>
<td>404-542-5817</td>
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<tr>
<td>Montclair State College</td>
<td>Upper Montclair, NJ</td>
<td>June 22-26</td>
<td>Dr. Joan Schleece</td>
<td>Dept. of Physical Education</td>
<td>201-893-5254</td>
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<tr>
<td>Valparaiso University</td>
<td>Valparaiso, IN</td>
<td>June 22-26</td>
<td>Denise Criswell, A.T.C.</td>
<td>114 ARC</td>
<td>219-464-5236</td>
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<tr>
<td>Texas Tech University</td>
<td>Lubbock, TX</td>
<td>July 13-17</td>
<td>Dr. Ed Burkhardt</td>
<td>Dept. of HPER</td>
<td>806-742-3335</td>
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For more information, contact clinic coordinators at the above addresses and phone numbers.
1986 ADVANCED STUDENT TRAINER WORKSHOPS

Illinois State University
Normal, IL
June 22-25
Kathy Schniedwind

Kent State University
Kent, OH
June 22-25
John Faulstick

University of Northern Colorado
Greeley, CO
July 6-9
Dan Libera

Hope College
Holland, MI
July 13-16
Richard Ray

University of Texas/Arlington
Arlington, TX
July 13-16
Pete Carlon

Clemson University
Clemson, SC
Date to be determined
Fred Hoover

To be eligible for these workshops, applicants must have attended a previous Cramer Student Trainer Workshop (or a comparable workshop) and have a recommendation from their team physician.

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Twenty-five patients with A-C injuries were identified from clinical records and emergency logs of five area hospitals over a two year period. Seventeen patients had been diagnosed as Grade III A-C injuries, while eight had been classified as Grade II injuries. Nine of the patients were treated surgically and eight received nonoperative care. All patients completed a questionnaire regarding the results of their injury. All the patients were then tested on the Cybex II Isokinetic Dynameter. Peak torque strengths were measured in extension, flexion, internal rotation, external rotation, abduction, adduction, horizontal abduction, and horizontal adduction. Values were obtained at two speeds, 60° per second and 240° per second in each range of motion. In the eight patients with Grade II sprains, the average age at the time of injury was 26.4 years. All were treated by simple immobilization until symptoms subsided. Cybex testing showed a significant deficit of 24.3% in horizontal abduction when measured at the faster speed. All the other differences within this group were insignificant. The eight patients with Grade III injuries treated conservatively had an average age of 29.7 years. Horizontal abduction was actually 10.4% stronger on the injured side when measured at slow speed and 10.6% stronger when measured at the fast speed. Likewise, horizontal adduction was 14.6% stronger on the injured side compared to the uninjured side when measured at fast speeds. No significant relative weaknesses were found in the shoulders of this group. Nine patients with Grade III injuries had been treated surgically. The average age of this group was 30.7 years. The only significant difference when comparing injured to noninjured sides was in abduction at fast speed where there was an average 19.8% deficit. Like many others, our previous philosophy was that surgical repair was the treatment of choice for Grade III A-C injuries. We believed that lack of strength was one of the many reasons for that repair. However, the results of this study have shown that objective weakness as measured on the Cybex II cannot be used as a rationale for surgical repair of Grade III A-C injuries. Our data also seem to show that regardless of the grade injury or the treatment undertaken, rehabilitation and restrengthening of the shoulder play an important role.

Dave England


A pitcher’s shoulder is subjected to excessive stress during each delivery. Dynamic muscle balance around the shoulder and specific flexibility are necessary to assure proper synchrony and fluidity of motion, thereby keeping the level of stress to a minimum. The sequential goals of rehabilitation are to: 1) return to normal passive and active range of motion, 2) Reestablish synchrony of motion, 3) increase strength and endurance in integrated muscle action, and 4) progressively return to pitching. Achieving normal glenohumeral and scapulothoracic motion is an absolute necessity before strengthening programs are begun. Proper patterning of muscle action is an important prerequisite to a healthy pitching shoulder. Muscular balance in a dynamic sense is essential, for a minor muscle imbalance during throwing will result in a pattern of muscle substitution which leads to further imbalance. It is important not to start strengthening exercises until flexibility, synchrony of motion of the shoulder girdle complex, and distinct contractions in all shoulder musculature through a normal range has been achieved. Strengthening before the return of normal motion enhances abnormal patterns of movement which subsequently lead to a cycle of strength/motion loss. Once a pitcher has demonstrated complete flexibility and synchronous control of his shoulder girdle during the exercises, the pitcher may begin to throw and also use the cybex as a conditioning tool. Once a pitcher has demonstrated the ability to throw at previous performance levels without discomfort, he may return to competition. An off-season program for the apparently uninjured pitching shoulder is strongly recommended.

David E. Knoeppel


We have observed clinically from routine postoperative isokinetic strength testing that the hamstring muscle group undergoes less strength loss than the quadriceps group following knee surgery for a variety of pathologies. It appears that this has significance in the planning and implementation of postsurgical knee rehabilitation relative to the specific muscle groups that need rehabilitation. The subjects of this study were involved in a vigorous rehabilitation program which involved the quadriceps muscle group. The hamstring group was not exercised during either phase of the rehabilitation program. Documented findings are similar to those of other studies which have concluded without documentation that no formal rehabilitation hamstring strength is returned. The authors conclude that, following knee surgery, not all muscle groups need to be rehabilitated with equal emphasis, and further research into the causes of selective strength loss of various muscle groups acting on the same joint is warranted.

Brent C. Mangus
The word pain derives from Latin and Greek roots meaning "punishment." How pain and punishment are linked in early life can affect an adult's response to pain. A physician's reaction to a patient's pain can be colored by early life experiences as well. Too often when evaluating a patient with pain there is an attempt to distinguish between "real" pain and "psychogenic" pain. The distinction does affect how the pain is treated. "Is the pain real?" implies that "psychogenic pain" is not a legitimate complaint. However, all pain is equally real to the patient. The effects of emotions on the perception of pain is well known. Emotions can intensify the perceptions of pain. The pain continuum has three significant points. The discriminatory point at which any sensation is felt, the emotional point at which the sensation is identified as "pain," and the motivational point at which the pain is considered to be "intolerable." Emotional factors can lower the threshold of pain, interfering with the ability to ignore pain, or actually increasing the symptomatology of the pain. A patient's favorable response to a placebo is sometimes used as evidence that his or her pain is not "real." Knowledge of placebos should dispel this notion. Approximately one-third of our population are placebo responders. Too often, though, treatment of the patient with pain becomes a source of conflict for the physician. Physicians may get frustrated or even angry with patients whose pain persists despite all forms of treatment. The physician may respond unsympathetically to the "weak" patient who complains "excessively." A physician may underestimate the degree of suffering being experienced by a stoical patient. These overtones doom therapeutic efforts. Physicians tend to overestimate their patient's potential for addiction and underestimate the analgesic power of the physician-patient relationship. Excessive concern regarding addiction results in a high percentage of house officers overestimated patient's potential for addiction, and hence, undermedication. Ironically, undermedication may actually increase the potential for addiction by forcing the patient to remain in pain for a prolonged period of time, thus increasing the craving for every analgesic dose. A patient whose pain is inadequately treated will certainly never believe that his or her physician cares about him. On the other hand, confidence in the physician can do much to relieve both anxiety and pain. "Functional" pain or "psychogenic" overlay should not be a diagnosis of exclusion. The search for positive diagnostic elements can establish a basis for treatment. However, most patients can accept that tensions or worries are making their physical problem worse. They are often eager to discuss these personal matters — if the physician does not suggest that the medical complaint is not legitimate. It is therefore, essential that all physical treatments continue while an effort is being made to relieve sources of emotional pressure.

Tim Garl


Osgood-Schlatter disease is defined as a separation of the tibial tubercle apophysis from the proximal end of the tibia. This lesion may have a history of trauma, or may present without significant recognizable injury. Increased stress on the weak link of the adolescent knee extensor mechanism accounts for the symptoms experienced by those patients with this lesion. Radiographic examination is considered necessary in confirming this diagnosis in the adolescent with knee pain. Due to the prevalence of Osgood-Schlatter disease during the early adolescent years, at a time when musculoskeletal pain may be secondary to the inability of muscles to elongate at the same rate as bony growth, tightness of knee musculature must be checked. Treatment concentrates on: 1) decreasing the pain, 2) improving flexibility, and 3) return to function. Activities should be pain limited with instruction in continuation of a home program with ice massage following.

Mae L. Yahara

Question-Answer

Q. Some track coaches are suggesting to their female distance runners that they take additional calcium. What is your opinion of the medical need for this additional calcium intake?

A. Recent studies reveal decrease in bone density in female athletes who exercise to the point of amenorrhea. This appears to be the result of decrease in estrogen levels. This process is analogous to the osteoporosis of post-menopausal women. Other studies of these women suggest a daily intake of 1500 mg of calcium to achieve appropriate calcium balance. The average daily calcium intake in this country is 500 mg. It could be inferred from this that increase in calcium intake would be beneficial to certain athletes. This can be done through increasing intake of food substances of high calcium content, or by using commercial supplements. These supplements should only be prescribed and monitored by a physician after the athlete's diet has been evaluated by a dietician.

G. Scott Bowen, M.D.
Orthopedic Surgeon
Bowman Gray School of Medicine
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Journal Deadlines

In order to avoid confusion and delays on contributions to the Journal the deadlines for various sections are provided below.

The Editorial Board will review papers submitted on an individual basis, work with the authors and prepare the papers for publication.

The deadlines are:

<table>
<thead>
<tr>
<th>Journal</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring Issue</td>
<td>December 15</td>
</tr>
<tr>
<td>Summer Issue</td>
<td>March 1</td>
</tr>
<tr>
<td>Fall Issue</td>
<td>June 15</td>
</tr>
<tr>
<td>Winter Issue</td>
<td>September 15</td>
</tr>
</tbody>
</table>

Send material for "Announcements", "Case Reports", "Letters to the Editor" and miscellaneous items to:

Steve Yates, Editor-in-Chief
P.O. Box 7265-Sports Medicine Unit
Wake Forest University
Winston-Salem, NC 27109

Send manuscripts to:

Don Kaver
Athletic Department
Ferris State College
Big Rapids, MI 49307

Information on upcoming events for the "Calendar of Events" section should be sent to:

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

"Tips From the Field" and "New Products" should be sent to:

Barrie Steele
Training Room Bohler Gym
Washington State University
Pullman, WA 99164

Items for the "Student Trainer Corner" should be sent to:

Deloise Brucker
U.S. Sports Academy
PO Box 8650
Mobile, AL 36608

The following recommendations are offered to those submitting CASE HISTORIES:

1. The above recommendations for submitting manuscripts apply to case studies as well but only two copies of the case need to be sent to the Editor-in-Chief.
2. All titles should be brief within descriptive limits. The name of the technique treated should be included in the title if it is the relevant factor; if the technique or kind of treatment used is the principal reason for the report, this should be in the title. Often both should appear. Use of subtitles is recommended. Subheadings and subheadings are required in the above report but they are unnecessary in the very short report. Names of patients are not to be used, only first or third person pronouns.
3. An outline of the report should include the following components:
   a. Personal data (age, sex, race, marital status, and occupation when relevant)
   b. Chief complaint
   c. History of present complaint (including symptoms)
   d. Results of physical examination (example: "Physical findings relevant to the physical therapy program were...")
   e. Medical history — surgery, laboratory, exam, etc.
   f. Diagnosis
g. Treatment and clinical course (rehabilitation until and after return to competition) use charts, graphs when possible.
   h. Criteria for return to competition
   i. Deviation from the expected
   j. Result — days missed

4. Release Form

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

The following recommendations are offered to those submitting material to be considered for TIPS FROM THE FIELD:

1. The above recommendations for submitting manuscripts apply to Tips From the Field but only two copies of the field need to be submitted.
2. Copy should be typewritten, brief, concise, in the first or third person, and using high quality illustrations and/or black and white glossy prints.

The following guidelines must be met for submission of papers or material to the "STUDENT TRAINER CORNER."

1. Author must be a student member of NATA.
2. Topics must relate to athletic training: case reports, experimental reports, suggestions, new ideas, tips and/or specifics for a given problem.
3. Articles should be no more than 2 to 3 pages in length, double spaced.
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PROPRIOCEPTIVE NEUROMUSCULAR FACILITATION TECHNIQUES from page 31


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Spring 1986 • Athletic Training 93
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6. Avoid obesity.
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