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WINNER OF ELEVENTH ANNUAL STUDENT WRITING CONTEST

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Reminder

If you have moved or plan to move, please contact the National Headquarters in Dallas, Texas—not the Journal office. Your personal file and correct mailing address is handled there.

Closing

Good luck and much success as we begin another fall season. Stay healthy.

Sincerely,

SY (SSSA)

Letters to the Editors

I was surprised and pleased to read the editorial in the Summer issue by Ronald Sendre in the Student Athletic Trainer Forum. I, too, was a diversified student and involved with many Red Cross activities and functions on campus. It is important for students to be supported in their activities outside the training room and on campus because they reflect well on the program and give lay people the chance to be exposed to/learn about athletic trainers. I did a five year internship under Gwen Hoffman at the University of South Florida, juggling those last two years with medical school, and became certified during my second year of school. Student trainers become physical therapists, physician's assistants, nurses, doctors, dentists, teachers, and other educational or paramedical professionals. Their dedication and perseverance make them into community leaders. With these people going out into the world, hopefully some day in the future I won't have to answer the question, "So what is a trainer?"

Sincerely,

Cathy O'Connor, MD, ATC
Surgical Resident
Baystate Medical Center
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A Health Commitment to Athletes at Northeastern Illinois University, Chicago

Guest Editor: Dennis J. Keihn

College athletes are normally thought to be some of the healthiest individuals in our society. After all, we think that if they were not healthy, they could not compete. This is generally, but not universally, true; most athletes are very healthy, but there are a surprising number of undiagnosed or undetected problems that may unfavorably impact on some athletes' performances on the playing field or in the classroom. More ominously, there are rare conditions that, if they were left undiagnosed, would put the athlete's career or even his/her life at risk.

There are many young athletes among the tens of millions of individuals in this country that do not receive adequate medical care. These athletes come to a college or university with a desire to participate in intercollegiate athletics having received little or no medical attention for a number of years. Universities have the opportunity and the obligation to become health care providers for their athletes.

In addition to obvious humanitarian concerns, the athletes are major representatives of the university to the public and therefore should not be subject to exploitation of their health. This is similar to the academic exploitation that has occurred all too often, where students are used for their athletic abilities while their academic needs are neglected. A responsible institution owes its athletes an environment where they can flourish - and a part of this environment should be an opportunity to maximize their personal health. Along with this moral responsibility there may be legal obligations. Although there is no legal precedent of an athlete successfully suing an athletic department for negligence in preseason screening procedures, successful suits have been brought forth in professional athletics in cases where athletes were allowed to play before they had adequately recovered from injuries or illness. In another case somewhat related to athletics, a physician was successfully sued for not stress testing a patient before he began an exercise program when a stress test was obviously warranted.

At Northeastern Illinois University a mandatory comprehensive screening program for athletes has been established. In order to perform these thorough physical evaluations the Human Performance Laboratory, Athletic Department and Schwab Rehabilitation Center have collaborated in the implementation of a mandatory comprehensive screening program. This pre-participation program includes a full musculoskeletal exam by a physical medicine specialist, cardiac stress test, blood chemistry with lipid profile, complete blood count, urinalysis, pulmonary function test, isokinetic strength test, vision acuity, tonometry, peripheral vision, and audiometry tests for all athletes. This evaluation will be repeated as needed for returning athletes and administered to all new athletes in subsequent years. Many of the student athletes have never undergone a majority of these procedures and the evaluation serves several purposes: It detects currently undiagnosed health problems; it serves as baseline measurement of health status that can then be compared with any changes due to injury or changes in health status during the season or later in life; it alerts the coaching and athletic training personnel to deficiencies or areas where additional conditioning is needed; it educates the athlete about lifestyle changes that may help to protect his/her future health; in addition, the information gathered is assimilated into a specialized data base and these evaluations provide graduate students in the Exercise Science and Cardiac Rehabilitation program with practical experience in the assessment of an athletic population.

The Human Performance Laboratory screening procedures start with blood laboratory tests. A lipid profile is performed for early detection of and reduction of heart disease risk. Numerous studies have pointed out that atherosclerosis has already progressed in many college-age individuals and a baseline cholesterol test is recommended to find those at highest risk so that dietary intervention and modification can be instituted. No cases of severe hypercholesterolemia were found in athletes evaluated this year, however over 30% of the athletes had cholesterol levels above the level recommended for older adults. A complete blood count is also performed. Based on this, one case of moderate anemia, which decreases endurance capacity, especially in females, was found. Substance abuse, including alcohol and steroids, is a growing problem with young people and it may be manifested by increased liver enzymes in the blood, even at an early age. Thus, this test can serve as a warning to the athlete and coaches about needed behavioral changes.

The stress test is a major part of the overall examination. First of all, it gives the coach and the athlete a measurement of cardiovascular fitness. This gives an indication of athletic potential in endeavors where this type of endurance is paramount and an indication of how much conditioning is needed. The stress test electrocardiogram usually detects several types of abnormalities that can be acutely life-threatening for young athletes. Deaths of young athletes due to cardiovascular causes are generally due to undiagnosed abnormalities of the coronary arteries or abnormally thick heart muscle walls. These abnormalities can be detected at rest or during exercise. Young people are also not immune to hypertension, which is routinely detected during the test. Although hypertension may not be acutely threatening to young people, medical and dietary treatment will lessen the negative effects of this condition later in life, so the earlier the detection, the better. Three individuals with abnormalities were detected by our screening; one case of hypertension and two cases of abnormal heart rhythms. They were referred to our consulting cardiologist for further evaluation before they were allowed to join their respective teams. A number of others had borderline readings which were followed.

A complete examination by a physical medicine specialist is done to diagnose unnoticed minor injuries and to suggest rehabilitation modalities. Several medical conditions were detected including a rotator cuff tear and chondromalacia patella, which, if undetected, could eventually impair athletic performance. In addition, Cybex isokinetic muscle testing of the thighs is routinely done. This testing procedure gives the coach and athletic trainer an accurate indication of the athlete's muscular strength and the balance between muscle groups. This can predict the susceptibility to injury in the knee joint. Further Cybex testing is done with athletes with injuries in other joints in order to assess healing and suggest further rehabilitation. We observed three minor cases of instability in athletes' knees that needed rehabilitation and numerous cases where major strength imbalances between muscle groups were present. These athletes were advised to change their strength training regimens to correct these problems.

continued on page 275

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President’s Message

Dear Members,

CELEBRATION seemed to be the theme of this year’s convention in Dallas. It will be remembered as one of the best for years to come. The stage was set by the National and Local Convention Committee. Fred Hoover, Tim Kerin, et al., and the hard work of Ross Bailey and Cash Birdwell helped make this year’s symposium a great success. Furthermore, with the help of Bill Schmidt and Gatorade, bus transportation was provided for an estimated 2000 members to the new National Office building dedicated in honor of Otho Davis. That evening the celebration continued at the convention center with a huge, fantastic barbecue and dance that was once again sponsored by Gatorade.

The Board of Directors emerged from their meeting with a feeling of great accomplishment. On June 25 and 26 we returned to Dallas along with the NATA Ad Hoc Long Range Planning Committee, Bob Behnke from PEC, Paul Grace from Certification, and Bobby Barton from Public Relations. The purpose was to conduct a long range planning session that was orchestrated by Gary LaBranche of the Lawerence-Leiter and Company from Kansas City, Mo. Many positive things came from this meeting including a timetable for the hiring of a full time executive director to be introduced to the membership in June, 1990. There is not enough space to discuss all of the results and plans of this session. However, through your newsletter and your Director more information will be provided to you in the upcoming months.

As I have stated previously, we are going through a significant period of transition. This has been a difficult, but successful year and the future for the NATA is bright. A special thanks to Mary Edgerley and all of the National Office staff both in Greenville and Dallas for their hard work through a tough year.

Wishing you all of the best for the upcoming year.

Sincerely,

Mark J. Smaha, ATC
DOUG MAY

Since beginning his professional career more than 16 years ago as head athletic trainer at Mississippi State University, Doug May has taken the opportunity to experience what it's like to work in high school, college and in clinical settings. Currently enjoying his second year as head athletic trainer at The McCallie School, a secondary day and boarding school in Chattanooga, Tennessee, May brings a diversified background with him to the NATA Board of Directors, where he has represented District Nine since 1986.

A soft-spoken, deliberate administrator with a sound work ethic and a reputation for careful thought before making important decisions, May, 41, embodies the spirit of volunteerism that he credits for fueling the NATA's dynamic growth during the 1980s.

"I firmly believe the NATA gains strength by involving as many people as we can in the organization," May said. "I think everyone should feel strongly enough about their professional organization to be involved. Even though we'll soon have a full-time professional staff in our new Headquarters in Dallas, the NATA will always rely on volunteers."

May, who received his master's degree in physical education from Tennessee Tech University in 1974, returned to the state nine years later to become head athletic trainer at the University of Tennessee at Chattanooga. In 1988, he accepted an invitation to join The McCallie School, where two-thirds of the 675 students participate in sports.

"It's enjoyable working with the kids here," May said. "And it's challenging. Just about everyone participates in some type of sports activity. We have teams that compete in football and basketball at five different levels, ranging from 7th grade to varsity."

As one might expect, the versatile May doesn't have time to teach at McCallie, but he spent considerable time in the classroom as a college instructor. It began in 1973 during his three-year stay at Mississippi State, where he taught in the physical education department. After taking a year away from the training room in 1976 to buy and manage a hardware store, May returned as instructor and head athletic trainer at Mississippi University for Women.

As a first-time candidate for the NATA presidency, May commended current and former NATA leaders who have nurtured the organization from its infancy in the 1950s through the rapid period of growth and development in the 1980s.

He noted that an important transition period is forthcoming when Otho Davis steps down next summer after 19 years as NATA Executive Director.

"The first two or three years with a new full-time executive director will be an important and challenging task for the President of the NATA," May said. "We're going to be setting the stage for the future, cutting the pathway for the 1990s."

Asked about his forecast for membership growth, May said he expects the trend of 10 percent annual growth to continue. Equally important, he said was continued development of athletic trainers' improving self image.

"I see athletic trainers feeling better about themselves, their skills and the contributions they make to athletics," May said. "As we feel more confident about ourselves, we'll earn recognition inside and outside the sports world for providing quality health care to athletes."

May began his distinguished service as a volunteer for the athletic training profession in 1980, when he was elected by members of the Southeast Athletic Trainers Association (SEATA) to serve as secretary/treasurer. During that time, he served one year as president of the Mississippi Athletic Trainers Association. SEATA members elected him to be their President in 1984, a position he retained until joining the NATA Board of Directors in 1986.

Like everyone elected to serve on the NATA Board of Directors, May dedicated countless hours of preparation to arrive at decisions that resulted in new national headquarters; a full-time professional staff by next summer; and a new corporate sponsor, McNeil Laboratories.

May, who has proven to be as popular with the membership as he is dependable, is enthusiastic about the future, specifically with regard to recognition and respect for the profession. In particular, he cited recent action by the Board of Directors that enabled the Board of Certification to become an independent corporation.

continued on page 216
From the moment he began his two-year term as NATA President in June, 1988, Mark Smaha was challenged to guide the Board of Directors through its most exciting, and perhaps most tumultuous, period in history. Ponderous decisions regarding new national headquarters, a full-time professional staff, and an independent Board of Certification were only a few of many that required firm conviction and a steady hand at the rudder. By all accounts, Smaha was equal to the task.

A member of the Board of Directors from 1982 through June 1988, Smaha capably blended administrative experience with well-honed leadership instincts to help bring the NATA to a level of success many would not have imagined five or 10 years ago. While highly regarded for honesty and integrity, and well known for his candor and “can do” work ethic, Smaha seeks a second term as NATA President with new-found wisdom.

“We had a challenging year between the summers of 1988 and ’89,” Smaha said. “But I came away from our 40th annual clinical symposium in Dallas feeling very good about the NATA and what we’ve been able to accomplish. I feel good about what we’ve achieved and I’m optimistic about where we’re going.”

A resident of Moscow, Idaho, Smaha, 43, served since 1978 as head athletic trainer at Washington State University. The school increased his responsibilities this spring and named him “Director of Athletic Medical Services.” Smaha, who supervises athletic health care for 450 athletes, also serves as Clinical Supervisor for 25 student trainers enrolled in the NATA curriculum program.

Smaha has received three commendations from the President of the University for “outstanding service” in life threatening emergencies since coming to Washington state 11 years ago.

After earning NATA certification in 1973, Smaha assumed the head athletic trainer position at Interlake High School in Bellevue, Washington. That experience made him more aware of the need for quality athletic health care in America’s 20,000 high schools. In 1975, Smaha became head athletic trainer at the University of Idaho, where he also supervised the internship program for student trainers.

Smaha was a strong supporter for the NATA’s nationwide high school injury surveillance studies, which began in 1986 and ended this summer. He credits the NATA research committee and some 300 high school athletic trainers who participated in the study for providing data that revealed the number and severity of injuries in high school sports. He believes those research findings provided the fuel for the NATA’s public education program, which in turn contributed to increasing NATA membership and growing demand for athletic trainers. As a result, Smaha pledges to work with the Board of Directors to consider new research programs.

Smaha was in favor of the recent decision to make the Board of Certification (BOC) an independent organization. He said it will add credibility to the credentialing process and provide protection for both the NATA and the BOC.

Licensure has also been a frequent topic of discussion throughout Smaha’s presidency. While commending NATA members in Idaho for helping get a bill passed in their state this year, he reported that the NATA is currently seeking new ways to assist state regulatory efforts. Smaha noted that in June, the Board of Directors asked the licensure committee to develop new model legislation.

Another topic of interest that Smaha said is sure to receive the Board’s attention pertains to continuing education units.

“The number of people attending NATA District Meetings is increasing,” Smaha said. “But the number of registrants isn’t always reflected in the attendance at the clinical sessions. We intend to take measures to ensure our members earn their CEUs.”

On one other front, Smaha and the Board have cleared the way for the Professional Education Committee to upgrade standards, which is expected to help gain accreditation from one or more of the nation’s leading health care organizations.

Looking back over his first year in office, Smaha said, “We’ve had many accomplishments, but I think the Board members’ landmark achievement occurred during the long range planning meeting held in late June of this year. We identified specific goals and strategies there that will have a
powerful and positive effect on the NATA now and throughout the 1990s. We have a sound plan of action and a clear vision of where we're headed from here."

Now that the NATA has newly refurbished headquarters in Dallas, Smaha said plans are under consideration to incorporate an Athletic Trainers' Hall of Fame in the building. While construction of the project is still several years away, Smaha said, "We must honor the men and women who have dedicated so much of themselves to make our profession what it is today."

Since becoming President, Smaha attended almost all District Meetings where, among other things, he participated in workshops entitled "Counting Down to 1990." Earlier in his career, he lectured for five years at Cramer Corporation Student Workshops. Through the past two decades, he has lectured frequently at Washington State and at the Northwest Athletic Trainer Clinical Symposium, most often on drug abuse and head/neck injuries.

Smaha was elected Vice President of the NATA for the traditional one-year term in 1986. Other services he has provided to the profession included his term as secretary/treasurer for the Northwest Athletic Trainers Association from 1979-82, NATA Placement Committee member in 1978, and Liaison Representative to the Canadian Athletic Trainers Association from 1985 to 1988.

Born and raised in Garwin, Iowa, Smaha graduated from Garwin High School in 1964. He received his baccalaureate degree from Iowa State University and a master's degree from Marshall University, where he worked both as assistant and head athletic trainer.

An avid runner, skier, racquetball player and scuba diver, Smaha is married to the former Jackie Laws, who received NATA certification in 1978 and currently serves as athletic trainer and orthopedic technician at Palouse Orthopedic and Sports Medicine Center near their home.

Mark and Jackie have two children, Holly Gabrielle and Ryan Christopher.

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DOUG MAY from page 214

"By standing alone, the Board of Certification will earn distinction on its own merit," May said. "That, in turn will help us get the recognition and respect we need from other health care organizations. We've made outstanding progress in recent years, but our continued development relies in part on our status in the health care field. We must continually work to earn recognition."

May praised the Professional Education committee for taking pro-active measures to earn greater recognition from larger health care organizations, chief among them The American Medical Association. And he expressed enthusiasm about what he called "the renewed efforts by state organizations to attain regulation of the athletic training profession."

"We've taken steps recently to provide added assistance to states seeking regulatory action," May said. "In June, we asked the licensure committee to review the previous model for state regulation. I think the Board will be dedicating more attention to this issue during the next few years."

May was elected Vice President of the NATA for the traditional one-year period in 1988. He particularly enjoyed his volunteer service this spring at the United States Olympic Committee's training center in Colorado Springs, Colorado.

Among his other contributions to the profession, May twice lectured at annual meetings of the Mississippi Association of Coaches; and served as co-director and lecturer for 10 years at student trainer workshops at the University of Southern Mississippi. May is a national member of the Fellowship of Christian Athletes, and a member of the Honorary Professional Physical Education Fraternity Phi Epsilon Kappa.

After earning his undergraduate degree at the University of Mississippi, May became an assistant trainer under Don Fauls at Florida State University, where he stayed for two years, until beginning work toward his master's degree. A consistent jogger, Doug was born in Meridian, Mississippi and attended Meridian High School.

A man of Christian belief, Doug May has been teaching Sunday School in Chattanooga for the past five years. He and wife Cissy have two children, Stacey, 15, and Warner, 11.

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216 Athletic Training • Fall 1989
The Use of Instruction and the Behavioral Approach to Facilitate Injury Rehabilitation

Mary Turner DePalma, PhD
Bernie DePalma, MEd, RPT, ATC

ABSTRACT: Athletic trainers need to know how to facilitate a successful rehabilitation experience. We maintain that the behavioral approach, or the utilization of short-term realistic goals, is both severely underestimated and severely underutilized in the field of injury rehabilitation. We present the use of instruction and the fundamental components of the behavioral approach (e.g., that long-term goals should be supported by short-term, moderately difficult, specific, and realistic daily subgoals) and discuss the ways in which they are important to rehabilitation. The behavioral approach in rehabilitation needs to be studied directly; however, the goal-setting research suggests that it may be viable for use in rehabilitation.

Athletic trainers need to know how to facilitate a successful rehabilitation experience. The athlete can dream of returning to competition, but dreams are different from goals. “Goals are dreams acted upon.” (1). We maintain that the behavioral approach, or the utilization of short-term realistic goals, is both severely underestimated and severely underutilized in the field of injury rehabilitation. We present the use of instruction and the fundamental components of the behavioral approach and discuss the ways in which they are important to injury rehabilitation.

The behavioral approach is implemented in many different contexts. For example, an individual who endeavors to build a home must use the behavioral approach. Small, short-term daily goals are completed toward the realization of the larger goal, the finished home. Naturally, the foundation of the house is prepared before the roof is put on. The partitions for the rooms are completed before the drywall is installed. The successful completion of each subgoal is vital to the attainment of the overarching goal.

This behavioral approach is not new. [We highly recommend excellent reviews on this subject by Locke et al. (8), and Locke and Latham (6).] It is common-sensical, and it is being used in rehabilitation right now. However, to maximize all that the behavioral approach has to offer requires an understanding of its fundamental components by both the athletic trainer and the injured athlete.

THE THEORY

Short-term Subgoals versus Long-term Goals

The most fundamental component of the behavioral approach is the distinction between short-term subgoals and long-term goals. Injured athletes often set long-term goals with no focus on what to do in the present. For example, a gymnast with an anterior cruciate ligament repair might expect to miss eight to twelve months of competition. When asked what goals she has set for herself, she may respond, “To return to competition next season.” This athlete must be assisted with the preparation of daily short-term goals that will lead to the successful completion of the long-term goal. Subgoals should be a response to this question: What can she do today, this hour, this minute to return to competition next season?

Specific Subgoals

Another important component of the behavioral approach is that subgoals be extremely specific, rather than general or random. [Locke and Latham (6) use the phrase “sharply focused.”] Let us suppose that an athlete is well into a rehabilitation program for the anterior cruciate ligament and has reached the point where it becomes appropriate to begin quadriceps strengthening. One possible instruction to the athlete might be to work Monday, Wednesday and Friday on the leg press machine, and perform knee extensions on the NK table. Further instructions might be to perform stationary cycling and step-up exercises on Tuesday and Thursday.

One way to maximize the benefits of the behavioral approach, however, would be to teach the athlete about the different types of exercises that will strengthen the quadri-
ceps. Test the athlete on those machines and then instruct him/her to perform knee extensions on the NK table or Nautilus; perhaps, four sets of ten repetitions at a specific weight that has been determined to be pain free for that athlete. Provide the athlete with daily, weekly, and monthly goals for that specific exercise. Additionally, the athlete should perform three sets of ten repetitions on the Nautilus or Universal leg press machine at a specific weight that has been determined to be pain free for that athlete. Again, provide the athlete with daily, weekly, and monthly goals. Weight is to be increased appropriately when the athlete's subgoal has been attained. After determining the athlete's aerobic capacity, the Tuesday and Thursday workout might be presented as thirty minutes of cycling at 2kp, 50 RPMs, followed by three minutes of step-ups on a six-inch step, all performed pain free.

Realistic Subgoals
The third major consideration of the behavioral approach is that each goal be realistic in nature. In other words, it should be challenging and yet attainable. Studies have shown that specific, moderately difficult goals lead to better productivity than easy and/or nonspecific goals, such as "do your best" (5). Work by McClelland (9) on achievement motivation has shown that "optimal" challenges will increase motivation. An optimal challenge is one that is not so difficult that failure is a certainty, nor so easy that success is a certainty. The reinforcement and support that one receives from successfully completing a task will be greatest for those tasks that are optimal challenges.

Reinforcement
Because goal-setting and goal-attainment are so integrally tied to athletics, injuries can be both physically and psychologically painful. How can athletic trainers contribute to returning a normal psychological balance to the athlete's life? The behavioral approach incorporates the long-term goal of returning to competition and short-term subgoals that will increase the probability of achieving the long-term goal. Thus, the behavioral approach to injury rehabilitation can provide an experience for the athlete similar to that experienced prior to the injury. It restores the opportunity for hard work, sacrifice, immediate feedback, interaction, satisfaction, pride, and reward, as each short-term subgoal is accomplished.

A primary driving force in the success of the behavioral approach is the constant reinforcement obtained from achieving subgoals. An athlete who has frequent, small successes can feel good about him/herself and can derive the motivation or incentive to continue working toward the larger goal. Alternatively, an athlete who continually fails to meet short-term goals may become demoralized. So much of the emphasis in injury rehabilitation is placed on the physical components that psychological components (e.g., reinforcement, support, motivation, and demoralization) are sometimes overlooked.

Remain Flexible
During the recovery process, it is important that both the athlete and athletic trainer remain flexible in their goal-setting. If a goal proves to be too difficult for the athlete, it should be restructured so that it can be accomplished. Most importantly, instead of viewing this as the athlete's failure to meet a goal, it should be viewed as an instance where the subgoal was inappropriate. Likewise, if a subgoal appears not to challenge the athlete, it should be reviewed and altered so that it will become challenging.

Finally, the possibility of a plateau should be explained to the athlete. The athlete must be forewarned that at some "sticking point", he/she may either experience an inability to increase performance, or a sudden failure to reach subgoals that had already been attained in the rehabilitation program. If the athlete is forewarned of this possibility, the impact of the plateau will be minimized. During this plateau, the athlete and the athletic trainer must remain flexible, and revise subgoals.

Summary
To summarize, the athletic trainer and injured athlete must fully understand the following:
1. Long-term goals should be divided into short-term goals.
2. Subgoals should be extremely specific.
3. Subgoals should be moderately difficult, yet realistic.
4. Reinforcement is obtained from achieving subgoals.
5. Remain flexible in goal-setting.

OTHER CONSIDERATIONS
The goal setting procedure is certainly not alien to the athlete. Coaches design practices to achieve short-term goals which propel athletes closer to attaining their long-term goals. Since athletes are already somewhat familiar with the behavioral approach, it should be possible to utilize the goal-setting technique in the rehabilitation process.

Questions, Answers, Instruction
Let us assume that a particular athlete has the desire to return to competition and commits to his rehabilitation program. At the earliest possible time (optimally before surgery), the athletic trainer should review for the athlete what has happened to him in the course of his injury and surgery, and instruct the athlete on what he can expect to happen at each stage of the recovery process. In addition, the athletic trainer should make every effort to have the newly injured athlete talk with an athlete who has successfully completed the rehabilitation program and has recovered from a similar injury using the program. In our experience, we have found this to boost the confidence of the athlete, showing that the program is practical, viable, and successful.

In addition, the athletic trainer must convey to the athlete a complete understanding of the behavioral approach that will be used for his/her rehabilitation. Instruction must include detailed explanations of the long-term rehabilitation program, the short-term rehabilitation program, and most importantly, the procedure of setting short-term subgoals with specific time parameters. Two questions should be addressed: What is the behavioral approach?, and, How will the athlete use it?

Athlete's Input
Together, the athlete and the athletic trainer should develop a program for rehabilitation. The athlete's input is a very important factor (7). The athlete should be made to feel a vital part of his/her rehabilitation, not a puppet on a string. The athlete should feel some measure of control over his/her present and immediate future. This can serve to increase his/her commitment toward the developed program.

Calendar
The individualized rehabilitation program should be in a written format and accompanied by a realistic, specific timetable for the accomplishment of each subgoal. This can best be achieved by providing the athlete with a calendar on which the daily subgoals and objectives are written along with space provided for recording exactly what was achieved (e.g., the amount of weight lifted and the sets and repetitions, the distance or time jogged, the distance or time...
Alienation
A particularly stressful experience for the athlete is a feeling of alienation from the team. Athletic trainers can help the athlete cope with this by scheduling rehabilitation when the team is present, in other words, at the usual pre-practice or practice time. The athlete maintains the regular schedule of dedicating specific hours of the day to his/her sport.

Present Tense
The athletic trainer should also stress the need for an orientation toward the present. Rehabilitation should be undertaken on the basis of “What can I do at this moment to attain today’s subgoal?” and “What can I do today to get back to competition at the appropriate time?” This present orientation can help eliminate rumination over the future with such questions as “When will I return?”, or, “Will I ever return?” A positive attitude is very important in rehabilitation. Focus on what the athlete wants to do, not on what he/she wants not to have happen.

Feedback
It is vital that the athlete be made aware that the accomplishment of each subgoal is a signal that the healing process is succeeding (10). It is the responsibility of the athletic trainer to provide positive feedback to the athlete as each subgoal is accomplished.

THE RESEARCH
According to Dishman and Gettman, “Therapeutic exercise programs typically experience a dropout rate in excess of 50% during the first six months of involvement” (3). Fisher, Domm, and Wuest have begun applying Dishman’s work to the area of injury rehabilitation adherence, but acknowledge that their generalization may not be appropriate because Dishman’s work pertains to exercise program adherence and not specifically to rehabilitation program adherence (4). For example, Dishman’s work shows that the leaner and lighter individuals are more likely to adhere to an exercise program (2). We are not yet convinced that this generalization would also apply to injury rehabilitation.

Fisher et al. report that “In most cases, however, the quality of the [rehabilitation] program is not the major factor in successful rehabilitation - people are: Often they drop out of even the best-conceived programs.” The authors later report that support from significant others was the most successful factor in differentiating rehabilitation adherers from non-adherers. Support from significant others is not a dispositional (personality) variable; instead, it can be incorporated directly into a rehabilitation program. This support is a major component of the behavioral approach, and comes directly from the athletic trainer.

The distinction between dispositional (personality) variables and situational (programmatic) variables is one we feel is especially important. We do not feel it would be prudent at this time, given the limited amount of research in the area, to view injury rehabilitation success as primarily a dispositional process, underestimating the programmatic influences. The fairly extensive goal-setting literature seems to indicate that programmatic design may be vital (6,8). In other words, while the jury is still out on this controversial issue, it would be best to capitalize on the situational influences that research has shown to be important. Consistent with Dishman’s process approach (2), the behavioral approach to rehabilitation postulates an interactive relationship between disposition and situation.

There is a great deal of anecdotal evidence to support the use of the behavioral approach in rehabilitation. In applying the goal-setting literature (6,7,8) to the field of injury rehabilitation, we can think of no apparent reason why injured athletes would respond differently to the use of goal-setting procedures than non-injured individuals. However, the efficacy of the program espoused here needs to be tested directly.

CONCLUSION
This paper is designed to disseminate preliminary information about an injury rehabilitation program. The instructional aspect of the program may ease the emotional pain from injury. Goal-setting and goal-attainment in the rehabilitation process replace the loss of goal-setting and goal-attainment associated with competition. The ability to systematically set and attain goals may separate the athletes who will return to competition within their prescribed timeframe from those who will not, and may be one potential determinant of the likelihood of rehabilitation adherence.

Incorporating this approach into a physical rehabilitation program should allow for a well-balanced program that treats the mind and the body simultaneously, adding the power of the mind to the treatment program. Athletic trainers who use the behavioral approach for injury rehabilitation may be making dreams come true.

References

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Questions

1. The most fundamental component of the behavioral approach to injury rehabilitation is the distinction between short-term subgoals and long-term goals.
   a. True
   b. False

2. The development of specific subgoals in a rehabilitation program for an athlete with an anterior cruciate ligament injury might include:
   a. Teach the athlete about quadriceps strengthening exercises.
   b. Test the athlete on the machines to be used.
   c. Provide daily, weekly and monthly goals for each exercise.
   d. Instruct the athlete that her goal is to return to competition next season.
   a. 1,2,3
   b. 1,3
   c. 2,4
   d. 4
   e. 1,2,3,4

3. In the behavioral approach to injury rehabilitation, goals should be
   a. challenging.
   b. attainable.
   c. non-specific.
   d. a & b only
   e. a, b, & c

4. The behavioral approach to injury rehabilitation provides an experience for the athlete that is quite different from that prior to the injury, which results in higher motivation and incentive.
   a. True
   b. False

5. Goals during the recovery process should be restructured or altered if they are
   a. too difficult for the athlete.
   b. not challenging enough.
   c. both of the above
   d. neither of the above
### Questions

6. The athletic trainer should handle a plateau during the recovery process by
   1. explaining what a plateau is and what the athlete might expect.
   2. remaining flexible during the plateau.
   3. revising subgoals during the plateau.
   4. forewarning the athlete, so that the impact of the plateau will be minimized.
   a. 1,2,3
   b. 1,3
   c. 2,4
   d. 4
   e. 1,2,3,4

7. The optimal time for the athletic trainer to review with the athlete his/her injury and the expected stages of recovery is after surgery.
   a. True
   b. False

8. In planning an athlete's injury rehabilitation using the behavioral approach, the athletic trainer should
   1. provide a detailed explanation of the long-term rehabilitation program.
   2. explain the procedure of setting short-term subgoals.
   3. seek the athlete's input into the program.
   4. provide the athlete with a written calendar of daily subgoals and objectives.
   a. 1,2,3
   b. 1,3
   c. 2,4
   d. 4
   e. 1,2,3,4

9. The sense of alienation from the team that may be experienced by an athlete in a rehabilitation program can be dealt with by scheduling rehabilitation when the team is present, during the usual practice time.
   a. True
   b. False

10. When undertaking a behavioral approach to injury rehabilitation, the athletic trainer should
    a. stress the need for orientation to the present.
    b. give the athlete positive feedback.
    c. both of the above
    d. neither of the above

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Athletic Participation After Cardiac Transplantation: A Case Study

Tim Finnecy, MEd, ATC
Brent C. Mangus, EdD, ATC

ABSTRACT: This paper will acquaint the athletic training profession with many implications of having an athlete participate in collegiate athletics after cardiac transplantation. Because heart transplant recipients may be high school and college age students, athletic trainers must understand this student-athlete's situation. This athlete has a different cardiac physiology; concomitantly, there are pharmacological requirements not normally encountered by the athletic trainer. The legal complications of this athlete must be examined and, if possible, resolved. And, finally, there are special precautions and medical procedures which must be taken to ensure the health and safety of this athlete.

The participants of the 16th Bethesda Conference established a basic set of criteria for cardiologists to follow when advising cardiac patients of their activity level and/or participation in athletic competition (6). The conference participants outlined most of the cardiac abnormalities cardiologists see in their practices including those of school age children and categorized the activities that the patient may participate in safely. However, the participants did not address the issue of total cardiac transplantation and a return to competitive athletics for any age athlete.

This specific situation, that being an athlete returning to participate in competitive soccer at a Division I school after transplantation, occurred at the University of Nevada, Las Vegas, just prior to the 1987-88 school year. A 21-year old male was recruited and reported to the University to play soccer approximately one year after total cardiac transplantation. The unique problems associated with obtaining medical clearance for competition and his special needs during the season are the basis for this case study.

PRESENTATION OF CASE

This highly-talented white male had played competitively on top division national soccer teams in both Canada and Great Britain (he held dual citizenship in Great Britain and Canada). With his natural talent, strong competitive nature, and proven soccer ability, his soccer future looked extremely bright. Then in 1984, at age 19 he contracted a cold which exhibited the normal cold symptoms for which he was treated symptomatically. As time progressed, other non-cold related symptoms developed such as the development of Raynaud's phenomenon (5). These symptoms became more prevalent with time and, eventually, occurred not only during daily activities but also during total bed rest.

In January 1985, he was diagnosed as having viral-based myocarditis. At this time, his ejection fraction (blood ejected from the heart) was measured at 22%. The prescribed treatment at that time was rest, Prednisone, and other steroidal medication. During the following 18 months, his ejection fraction fluctuated from 37% to just below 12%. During this time, when the symptoms decreased, he was periodically allowed to resume normal activities including soccer. As the symptoms varied on a daily, weekly, or monthly basis, activity levels and rest periods were dictated by the severity of the symptoms.

As the symptoms became worse he was transferred to a hospital which specializes in cardiological disorders in Ontario, Canada. After a number of tests, the hospital staff advised against heart transplantation citing improvement.

Because he and both parents were citizens of Great Britain they turned to the medical community in Great Britain for possible solutions to his problem. During the first week of July, 1986, he flew to London, where he was admitted to Papworth Hospital and he received his donor heart on July 7, 1986.

Surgery was uneventful, and cardiac rehabilitation was initiated on the fourth day post-transplantation. Rehabilitation activities began with walking the length of the room and progressing to walking up a few steps to riding five minutes on a bicycle ergometer with no resistance. By the third week, treadmill walking at 3 mph for five minutes was initiated with a continuous progression of all exercises throughout the rehabilitation program. No upper-body conditioning was allowed until the sternum was completely healed. Supervised by the physical therapy staff, rehabilitation was completed approximately two months after transplantation. At that time, he was advised to resume his normal lifestyle. For approximately one year after transplantation, he trained and played with a Canadian amateur soccer team.

He arrived at UNLV in the fall of 1987 in excellent physical condition. Therefore, he was able to participate in the preseason practices as would any player. He quickly earned a starting position. He averaged 80 out of 90 minutes per game which was as much or more playing time than the other starting players on the team. He also led the team to two consecutive NCAA playoff berths before his eligibility ended. His future plans include continuing to play competitive soccer either here in the United States, Canada or overseas.

Following is an overview of the athlete's unique heart physiology that the UNLV training staff had to gain a better understanding of the athlete.
understanding of before he began practice and competition in 1987. Also discussed here are the medication needs and the legal aspects that had to be confronted at the same time.

**HEART PHYSIOLOGY**

There are two types of heart transplantation: heterotopic and orthotopic. In a heterotopic transplant, the donor heart is positioned next to and typically to the right of the remaining native heart (3). The recipient in this procedure actually lives with two hearts, the donor heart being the only one denervated. The orthotopic technique, which is the more common technique (4), was used on this athlete. During the orthotopic procedure, much of the native right atrium remains to assist the physician in making a supportive attachment for the donor heart. The donor heart is placed in the position previously occupied by the native heart, and the remaining portion of the native atrium and donor heart are sewn together (3).

When the donor heart is harvested, all extrinsic nerves are severed, and the heart becomes denervated, however, the intrinsic conduction system of the donor heart remains operational. In many cases, the remaining native right atrium still contains the original sinoatrial node (SA node) which continues to fire and produce the necessary electrical impulse for the cardiac muscle. However, the electrical impulse cannot cross suture lines; thus, the impulse is lost. It is the firing of the donor heart's SA node which now causes the heart contraction. This becomes apparent when reading an EKG from a transplant patient because often there are two P waves: one from the original SA node depolarization and another initiating from the donor heart. The P wave from the donor heart is followed by the normal Q,R,S waves and is now considered the pacemaker of the heart. Thus the non-functional P wave may appear anywhere in the normal P,Q,R,S complex.

Since the heart is denervated, the extrinsic nervous function of the heart is different. Although there is some controversy over nervous regeneration, the more traditional and accepted theory is that severed nerves do not regenerate, and thus the heart has no nervous intervention (3). Because of this lack of nervous tissue, the heart must rely on other methods to increase its cardiac output during exercise. One such method is the natural increase of adrenaline released by the body into the circulatory system during the onset of exercise. Once the circulating adrenaline level has reached the appropriate level, the heart rate increases (2,3). Another method that Astrand (1) points out results in a moderate increase in heart rate when the working muscles demand an increase of blood flow during exercise.

The heart rate will also decrease in an atypical manner after exercise (7,8). Here again, heart rate depends on the circulating adrenaline levels and the peripheral circulation. As the adrenaline level in the blood returns to normal, the heart rate decreases. Usually, this will take a longer period of time than in a normal athlete with an intact cardiac nervous system which systematically decreases the heart rate.

Heart transplant patients may also require the backup services of a cardiac pacemaker which is unusual in the United States. However, the surgeon who performed this transplant implanted a cardiac pacemaker. The pacemaker usually is calibrated by the transplant surgeon and may not, as in this case, require any special precautions if the athlete chooses to participate in contact sport. Care must be taken when microwave, electrical stimulation, or similar therapy units are used in the training room as these machines can alter the set calibration of the implanted pacemaker, causing the pacemaker to activate at a heart rate too high or too low for the individual's needs.

**PRESCRIPTION MEDICATION NEEDS**

The post-cardiac transplant patient must utilize a number of prescription medications immediately following transplantation. The number, amount, and type of drug changes as time progresses and the athlete returns to a more normal lifestyle. However, the cardiac transplant patient will always require prescription drugs for anti-rejection purposes and to maintain a blood chemistry to ensure a therapeutic environment for the heart.

Currently, this athlete takes 375 mg Cyclosporin twice a day, 5 mg Prednisone once a day, 100 mg Persantine four times a day, and 50 mg Imuran once a day. He still had to participate in the UNLV athletic department drug testing program. However, he is allowed to participate while using these drugs as they are essential to maintain life.

The Prednisone, Cyclosporine, and Imuran are all immunosuppressant agents, and their main function is to counteract rejection of the transplanted heart. The Persantine is used to thin the blood. Typically, in heart transplant patients, the daily dosage of Prednisone is double the dosage indicated in this case. A side effect of Prednisone is myopathy, thus the daily dosage was lowered to diminish the chances of this possible side effect in this athlete (2).

**LEGAL ASPECTS**

In this situation, the legal factors to be considered were quite different from what the athlete and the University had previously experienced. Because the athlete was considered a Canadian citizen, he was allowed to get written clearance before participation from his cardiologist in Canada. His Canadian physician examines him approximately every six months and must clear him before the start of each season. The athlete was also required to pass the regular team physical examination excluding any cardiac examination. The University team physicians at that time prepared written documentation that they were not in any way to be held responsible or liable for his cardiac care. And, finally, the athlete was required to sign a specially-written waiver designed by the UNLV legal counsel, freeing the University system, the institution, or any of its employees from any legal implications concerning the pre-existing heart condition.

According to Weistart (9), in order for a team physician's liability for an athlete with a cardiac defect to be reduced, there needs to be a formal standard set. The medical community has set standards for athletic and activity participation for individuals with cardiac abnormalities at the Bethesda Conference (6). The medical community has not yet set a standard for athletic participation after cardiac transplantation. A formal standard would have been very helpful in this particular case.

The cardiac transplant athlete's participation in athletics at any institution must be evaluated by the athletic training staff, the legal counsel and the physicians providing the medical care for the institution's athletic teams. If appropriate measures are taken, there should not be liability questions or problems if an accident should occur.

**References**


continued on page 248
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ABSTRACT: All injuries that occurred in the 1985 Northern Open Wrestling Tournament were documented. Of the 341 wrestlers entered, 32.25% (n=108) sustained an injury. Injuries occurred in 20.82% (n=129) of the 629 matches that took place. Analysis of the data using a one way Chi-square revealed that injuries were not evenly distributed among the ten weight classes. However, no pattern of injury incidence was found. The frequency of injuries for each body area are as follows: Face 31.7% (n=41); legs, 25.5% (n=33); arms, 22.4% (n=29); head and neck, 11.6% (n=15); trunk, 8.3% (n=11). Mild injuries occurred 39.5% (n=51) of the time while 52.7% (n=68) were judged to be moderate in severity and 7.7% (n=10) were classified as severe injuries. A one way Chi-square analysis revealed that although wrestlers were not more susceptible to injury after they had completed several matches, injury patterns changed after each wrestler competed in more than one match. Moderate and severe injuries were more frequent later in the tournament than were mild injuries.

College wrestlers represent a population of athletes who compete under circumstances not common to athletes in other sports. One aspect unique to wrestling involves competing in several matches with limited rest. Undoubtedly, the restrictions on weight, coupled with the frequency of competitions, pose special problems for this population.

Previously, wrestling injuries have been documented in longitudinal studies (5,6,7). The purpose of these early studies was to document the types of injuries that wrestlers sustain. Recently, cross sectional injury studies have been conducted to document injuries sustained by wrestlers competing in specific tournaments held over several days (2,3). The present study examined whether wrestlers competing in successive matches during the same day are susceptible to the same frequency and injury patterns as those previously reported. (2,3)

A recent ruling by the NCAA has made the subject of injury rates of college wrestlers particularly relevant. In an effort to promote parity in college wrestling, the NCAA has ruled that teams may have only 21 competitive wrestling days (4), defined as “any day which the team competed with another member institution.” No limit was placed on the number of contests member institutions could have. Since the number of days, not contests, was limited one probable implication of such action is that some coaches will try to compete in several matches during the same day. Traditional college wrestling tournaments enable a wrestler to compete in several matches during the same day. These traditional tournaments may be replaced by tournaments that require one day to complete. This would force college wrestlers to compete many times during the same day with limited rest.

As an athlete becomes fatigued, biomechanical and physiological changes, e.g., decreased reaction time, relaxation, and response to stimulus (1) take place in the muscles of the athlete. These changes can influence the incidence of athletic injuries.

The purpose of this study was to document all wrestling injuries that occurred in one day and to classify these injuries according to weight class, body area, severity, time of occurrence and skill level of the injured wrestler. By this documentation, it was hoped that a determination could be made as to whether a wrestler is more susceptible to injury after he has completed several matches in the same day.

METHODOLOGY

The Northern Open Wrestling Tournament was held on November 30, 1985 at the University of Wisconsin, Madison and was conducted under the competition guidelines established by the NCAA. Since this is an open tournament, no limit was placed on the number of wrestlers each school entered and no team score was kept. The wrestlers competing in the tournament were predominantly from Division 1 schools in the Midwest. This tournament had a double elimination format, i.e., each wrestler continued to compete until he had lost two matches. A wrestler could have competed in as many as seven matches or as few as two matches during this tournament.

Participants were allowed at least one hour of rest between matches, and wrestling occurred on twelve mats simultaneously. Wrestlers rarely had more than one hour and fifteen minutes between matches. The terms “match” and “round” are synonymous here, since each wrestler competed in only one match per round.

Athletic injury was defined as an incident causing the official to call an injury time out or causing an injured wrestler to seek aid from an athletic trainer or physician during or following the tournament. The first level of injury recording took place at the mat with the help of six student athletic trainers. When an injury occurred, the mat number, wrestler’s name, weight class, school, type of injury, and the number of matches in which he had competed were recorded.

The second level of injury recording occurred at the athletic training area set up for the tournament. Both an orthopedic surgeon and I were available to evaluate injuries that were not apparent during the matches. The same type of information recorded by the students was recorded here.

The final level of injury recording was through the visiting athletic trainers. Seventy-five percent of the competing wrestlers had a team athletic trainer present at this tournament. Each was contacted by phone five days after the tournament. Information was obtained on any injuries that were not detected by the medical staff and additional information was obtained on injuries previously recorded.

Even with the help of visiting athletic trainers, injury severity was difficult to classify. In seven of these cases, injury severity was determined by the number of days the injured wrestler was unable to practice or compete. An injury was considered mild if the athlete was able to...
TABLE 1

Total Injury Data

<table>
<thead>
<tr>
<th>Weight Class</th>
<th>WRESTLERS</th>
<th>MATCHES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Injured</td>
</tr>
<tr>
<td>118 lbs.</td>
<td>32</td>
<td>11</td>
</tr>
<tr>
<td>126 lbs.</td>
<td>27</td>
<td>13</td>
</tr>
<tr>
<td>134 lbs.</td>
<td>37</td>
<td>5</td>
</tr>
<tr>
<td>142 lbs.</td>
<td>38</td>
<td>18</td>
</tr>
<tr>
<td>150 lbs.</td>
<td>37</td>
<td>8</td>
</tr>
<tr>
<td>158 lbs.</td>
<td>36</td>
<td>9</td>
</tr>
<tr>
<td>167 lbs.</td>
<td>39</td>
<td>15</td>
</tr>
<tr>
<td>177 lbs.</td>
<td>33</td>
<td>11</td>
</tr>
<tr>
<td>190 lbs.</td>
<td>32</td>
<td>7</td>
</tr>
<tr>
<td>Hwt.</td>
<td>32</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>341</td>
<td>108</td>
</tr>
<tr>
<td>Mean</td>
<td>34.1</td>
<td>10.8</td>
</tr>
</tbody>
</table>

complete without regard to the injury. Moderate injuries were those that caused the athlete to seek treatment before he could continue. This treatment could be in the form of an ice application to control swelling or the use of tape to support the injured area. An injury that caused the athlete to withdraw from the tournament, to undergo surgical treatment, or to miss extensive competition time (greater than two weeks) was considered severe.

All injuries were classified by body area, severity, round of occurrence, weight class, and whether the wrestler won or lost the match. Skill levels of the injured wrestler and his opponent were determined also. The skill levels of the wrestlers were determined by their initial seeding and their final placement in the tournament. Rate of injuries for each body area was obtained by dividing the total number of injuries that occurred. The injury frequencies for matches was computed by dividing the total number of injuries by the total number of matches wrestled. The injury frequencies for the tournament were computed by dividing the number of injured wrestlers by the total number of wrestlers entered in the tournament. The percent of incidence of injury for each round was determined by dividing the total number of wrestlers competing in each round by the number of injuries recorded.

A Chi-square one way analysis was employed to determine if any of the distributions in the data were not random. A significant value would signify that the distributions were not due to chance alone, and would be investigated.

RESULTS

Of the 341 wrestlers (representing 26 teams) entered in the competition, 108 sustained a total of 129 injuries while competing in 628 matches. Two injury frequencies were computed; one for injuries for matches wrestled and one for injuries for athletes competing. Approximately 32% of the wrestlers suffered an injury and injuries occurred in approximately 20% of the matches. The incidence of injury to each weight class is found in Table 1. The injury frequencies in each weight class were examined, no trends in overall injury frequencies were noted.

The incidence for injury for each round is found in Table 2. Injuries did not occur at greater rate after the wrestler competed in several matches (x² (df=4 N=129) = 7.30, p<.05).

Table 3 summarizes the injury frequencies by round, body area and severity. The highest percentage of mild injuries occurred in the first round, 19 or 37 (51%). The average time of occurrence for mild injuries was 1.92 matches. The rate of moderate injuries, 21 of 68 (31%), occurred in the third round. Average round of occurrence for moderate injuries was 2.5 matches. Severe injuries occurred at an equal rate, 3 of 10 (30%), in the first and second rounds. The average time of occurrence was 2.11 matches.

Injuries could occur in one of five body areas: face, head and neck, arms, trunk, and legs. The rate of injury ranged from 31.7% (41 of 129) for facial injuries to 8.5% (11 of 129) for injuries occurring to the trunk.

Frequency for mild injuries was greatest in the facial region; 85% (33 of 41). Head and neck region accounted for the highest frequency of moderate injuries, 80% (12 of 15). Severe injuries occurred with the greatest frequency, 12.5% (4 of 32) in the legs.

As noted in Table 3, the pattern of injury severity changed as the tournament progressed. In round 1, 51.3% (19 of 37) injuries were mild in nature. The percentage of mild injuries decreased throughout the tournament until no mild injuries were noted in round 5. Moderate and severe injuries increased from a low in round 1 of 48.7% (18 of 37) to a high of 100% (5 of 5) in round 5. Severe injuries decreased from 2.3% (3 of 129) in rounds 1 and 2 to 7% (1 of 129) in rounds 4 and 5. However, the percentage of severe injuries in each round did increase as the tournament progressed from a low of 8% in round 1 (3 of 37) to a high of 20% in round 5 (1 of 5).

The knee and shoulder joints sustained the highest incidence of injuries in this tournament. The frequency of knee injuries was 16% (21 of 129) while shoulder injuries occurred in 12% (16 of 129) of all injuries recorded.

When a wrestler sustained an injury, he usually (72.8% of the time) lost the match, but injury severity was not related to losing the match. The injury rate of place-winning and non-place-winning wrestlers was also examined. A place-winning wrestler might be expected to possess greater skill and to tire at a slower rate and, therefore, be less susceptible...
to injury than a non-place-winning wrestler. It does not appear, however, that the skill level of the wrestlers played a major role in the number of injuries, since injury rates for place-winners (33.3%) and non-place-winners (31.3%) were no different. This shows that sustaining an injury did not determine whether or not the wrestler became a place-winner. The frequency of injuries per match were different for place-winning and non-place-winning wrestlers. Place-winning wrestlers sustained injuries in only 8% of their matches, while non-place-winning wrestlers sustained injuries in over 11% of their matches.

DISCUSSION
Kersey and Rowan (3) noted that 31.2% of the 353 wrestlers competing in the 1980 NCAA championships sustained an injury. Injuries occurred in 22.3% of the matches they observed. The incidence of injuries for the 1980 NCAA championships ranged from 11.8% (heavy-weight) to 42.4% (118 lbs and 190 lbs).

The injury frequencies for the specific body areas in the Northern Open are similar to the 1980 NCAA championships (3), the 1976 Olympic trials (2), the 1981 Ohio Open, and the Big 10 championships (8). In all tournaments, the head, face and neck region suffered the greatest number of injuries.

It appears that a college wrestler is not exposed to a greater risk of injury after he has already competed in several previous matches; however, it appears that the athlete is at greater risk of sustaining a moderate injury after competing in several matches during the same day. A greater percentage of injuries were more severe if they occurred in a wrestler who had already wrestled several matches. It is clear that there is still only limited knowledge in the area of wrestling injuries. If wrestling is to continue to remain a safe, popular sport, further studies are needed to assess the effect of several matches on the same day on the injuries sustained.

<table>
<thead>
<tr>
<th>Round</th>
<th>Injuries</th>
<th>Wrestlers</th>
<th>Percent of Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>n</td>
<td>in each round</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>35</td>
<td>341</td>
<td>10.2%</td>
</tr>
<tr>
<td>2</td>
<td>42</td>
<td>340</td>
<td>12.3%</td>
</tr>
<tr>
<td>3</td>
<td>32</td>
<td>356</td>
<td>12.5%</td>
</tr>
<tr>
<td>4</td>
<td>15</td>
<td>168</td>
<td>9.0%</td>
</tr>
<tr>
<td>5+</td>
<td>5</td>
<td>114</td>
<td>4.3%</td>
</tr>
</tbody>
</table>

TABLE 3
Injury Breakdown by Round, Body Area and Severity

<table>
<thead>
<tr>
<th>BODY AREA</th>
<th>Head/Neck</th>
<th>Arms</th>
<th>Trunk</th>
<th>Legs</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Round 1</td>
<td>Mild</td>
<td>17</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Round 2</td>
<td>Mild</td>
<td>10</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>2</td>
<td>3</td>
<td>8</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Round 3</td>
<td>Mild</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>2</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Round 4</td>
<td>Mild</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Round 5</td>
<td>Mild</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>41</td>
<td>15</td>
<td>29</td>
<td>11</td>
<td>33</td>
</tr>
<tr>
<td>PERCENT (%)</td>
<td></td>
<td>31.7</td>
<td>11.6</td>
<td>22.4</td>
<td>8.5</td>
<td>24.8</td>
</tr>
</tbody>
</table>

References
The Management of Severe Recurrent Ankle Sprains in a Starting High School Football Running Back

Gerald Edward Rishel, MA, ATC
Mark Chadwick Wilson, LPT
James David Brodell, MD

ABSTRACT: The management of acute ankle sprains is evolving toward standardization as physicians and athletic trainers appreciate the rapid recovery and early return to competition associated with the so-called “functional” approach. Only a small percentage of athletes develop recurrent disability from an unstable ankle. For the high-demand athlete with recurrent ankle instability, an aggressive rehabilitation/training program and proper external protection (taping or brace support) may not solve the problem. Several surgical reconstructive procedures are available which serve to reinforce or substitute for the nonfunctioning lateral collateral ligament complex. The Elmslie Procedure, Chrisman-Snook modification is the preferred operative method for the athlete because it reconstructs both the anterior talofibular and the calcaneofibular ligaments, thus, re-establishing ankle joint and subtalar joint stability.

Ankle sprains are one of the most commonly encountered athletic injuries seen by a physician and athletic trainer (3,8,10,21). An early, aggressive, functional approach to these soft tissue injuries provides for rapid recovery (10,12) and proper protection allows a reasonably quick return to athletic activity (4,11,16). However, a small percentage of athletes develop recurrent disability from ankle instability due to ligament insufficiency (4,20). The orthopaedist then has several surgical methods available for reconstructing the lateral collateral ligaments. Little has been written about a preferred operative procedure and the subsequent rehabilitation and training protocol for the high-demand athlete with an unstable ankle. Also, there is a paucity of information regarding the proper timing of surgery as it relates to a return to competition. This paper, through a case report and review of the literature, addresses these issues.

CASE REPORT

A starting sixteen-year-old high school junior running back experienced a severe inversion injury of his right ankle during the 1985 pre-season scrimmage activities. This injury was superimposed on a two-year history of recurrent sports-related ankle sprains. He was initially managed with a compression wrap and elevation and was kept non-weight-bearing with crutches for several days. Early range of motion was followed by an aggressive reconditioning program with a gradual increase in function, and the patient resumed full athletic activity after two weeks.

Despite an ongoing exercise program and regular taping for all practices and games, recurrent ankle instability continued to be a major problem for the entire 1985 season. Physical examinations consistently showed point tenderness over the anterolateral aspect of the right ankle as well as pain on inversion stress testing. Inversion and drawer testing demonstrated increased laxity compared to the opposite normal side. X-rays of the right ankle revealed an old avulsion fracture from the medial malleolus, chronic periosteal reaction along the lateral margin of the distal tibia, and a slight distal tibiofibular diastasis (Figure 1). Stress X-rays showed a talar tilt of 14° on the right ankle and 4° on the left ankle (Figure 2 A&B).

Figure 1. An oblique X-ray of the right ankle shows changes consistent with multiple previous sprains.
Figures 2A & B. The increased talar tilt on the right compared to the normal left side suggests chronic ligamentous laxity.

Figure 3. A long incision is made just behind the lateral malleolus. The peroneus brevis is the donor tendon used in most reconstructive procedures. (Reproduced by permission from Goldstein, LA and Dickerson, RC: Atlas of Orthopaedic Surgery, Ed. 2, St. Louis, 1981, the C.V. Mosby Company.)

On January 22, 1986, this patient underwent a reconstruction of the lateral collateral ligaments of his right ankle using the Elmslie Procedure, Chrisman-Snook modification (22). The procedure went well technically, and cast immobilization lasted eight weeks. A superficial area of poor wound healing was managed by local measures. Subsequently, twelve weeks of rehabilitation was instituted which included eight weeks of clinical work and four weeks of sport-specific skills. The overall program emphasized motion, strengthening and proprioception and was followed by a graded increase in activity. The sports skills were practiced on the high school track. In May, the patient participated in normal pre-season conditioning; in August, he participated fully in organized pre-season drills. The
DISCUSSION

Although there is controversy in the literature, it is our belief that the vast majority of acute ligamentous injuries of the ankle can be handled with a nonoperative approach. Even a grade III lateral collateral ligament tear, without distal tibiofibular diastasis, can be effectively managed with an immediate program designed to minimize swelling and maximize motion (3,4,6,7,8,10,17). Following a proper rehabilitation and training program, athletes usually do not have subsequent difficulty with pain and/or instability (2,4).

The high-demand running and cutting athlete with a history of previous severe ankle sprains and recurrent functional instability, however, represents a completely different clinical situation. Ankle sprains are usually inversion injuries which stretch or tear the lateral ligament complex. The anterior talofibular portion is always involved, but it is unlikely that stress-induced tilting of the talus under the tibia can occur unless the calcaneofibular component is also ruptured (18,22). The loss of the calcaneofibular ligament may also result in subtalar instability, the excessive inward tilting of the calcaneus under the talus (18,22). The combination of ankle and subtalar instability can cause substantial functional disability, described as the ankle “giving way”, during seemingly benign conditions such as walking on flat terrain.

Repeatedly stressed lateral collateral ligaments lost their stabilizing capacity (4,6,8,14,19,20). Non-operative methods, such as rehabilitation and/or taping or bracing, are usually not effective in stabilizing such a joint. A recent report (14) suggests that scarred, elongated ligaments can be shortened surgically and successfully reattached to the fibula. However, one of us, (JDB) finds it difficult to see these stretched-out ligaments, much less repair them. Indeed, most operative efforts in the United States, which attempt to re-establish ankle stability, are reconstructive in nature and involve harvesting nearby non-vital tendon tissue (usually peroneus brevis) for use in reinforcing the adjacent nonfunctional lateral ligaments (Figure 3).

The athletes who do best with reconstructive surgery are those who have a history of ankle “giving-way” episodes, consistent physical findings and the absence of pathological conditions which might stimulate ligament laxity such as an occult talar osteochondral injury or loose bodies (7,18,20,22). Many orthopaedists (7,8,18,20) feel that stress X-rays, which show a tibia-talar tilt of 5° to 10° greater than the normal side, are also helpful in making the diagnosis of ligament insufficiency. Aside from subtle physical findings (20), there is no satisfactory current method for assessing the subtalar contribution to the problem.

Three reconstructive surgical procedures have come into widespread use in the United States and each has a high short-term success rate (5,23). The Evans Procedure (13) calls for the entire distal portion of the peroneus brevis tendon, left attached to its distal base of the fifth metatarsal insertion, to be placed and secured into the distal fibula through a drill hole (Figure 4). Although this procedure is technically simple, there are numerous disadvantages. Using the entire brevis tendon compromises foot balance and strength (14,20,22). Also, a major post-reconstructive sprain could potentially disrupt the entire area, thereby leaving no readily available local autogenous tendon tissue for a repeat surgical reconstruction (20,22). The Evans transfer does not replace either the anterior talofibular or the calcaneofibular ligaments but acts along a resultant of the two. In fact, a recent study (15) suggests poor long-term results with at least a 50% incidence of recurrent instability and the development of ankle osteoarthritis.

The Watson-Jones Procedure uses one-half of all of the brevis tendon routed from the base of the fifth metatarsal through the fibula and talus (Figure 5). As mentioned earlier, an ankle prone to excessive inversion has thinning and weakening of both the anterior talofibular and the calcaneofibular ligaments. It is questionable how effectively this procedure stabilizes the heel since, like the Evans Procedure, it is the lateral portion of the foot which is anchored and not the calcaneus.

Because the calcaneofibular ligament is almost always involved with significant functional instability, there has been increasing attention paid to the subtalar component of the problem. The Elmslie Procedure, Chrisman-Snook modification uses one-half of the brevis tendon passed through the fibula. Recently it has been shown (2) that one-half of the tendon is strong enough to act as a ligament substitute. The tendon is then brought posteriorly and is buried into the calcaneus (5) [Figure 6]. Because both the anterior talofibular and the calcaneofibular ligaments are reconstructed, tibiotalar and subtalar stability are re-established. The evolving knowledge that the peroneus brevis muscle is not a vestigial structure and that subtalar instability contributes to functional disability makes the Elmslie reconstruction the procedure of choice in athletes (4,19,20,22).

In the case of our sixteen-year-old running back, the post-operative recovery period utilized exercise techniques familiar to athletic trainers (8,11,12,16,17). Specifically, a twelve-week progression through five phases of rehabilitation was utilized (3,10) [Table 1]. Included in the rehabilitation was a four-week training period emphasizing the development of sport specific skills progressing from jogging to running to figure-of-eights and then to increasingly sharp cutting maneuvers.
TABLE 1
(All Drills are Cumulative)

<table>
<thead>
<tr>
<th>Phase</th>
<th>Objective</th>
<th>Weeks</th>
<th>Exercise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre</td>
<td>Post Surgical</td>
<td>8-0</td>
<td>- Upper body and contralateral leg strengthening</td>
</tr>
<tr>
<td></td>
<td>Cast</td>
<td></td>
<td>- Maintenance of motion ipsilateral knee and toes</td>
</tr>
<tr>
<td>I</td>
<td>Out of Cast</td>
<td>1-2</td>
<td>- Whirlpool and ice</td>
</tr>
<tr>
<td></td>
<td>Decrease Pain</td>
<td></td>
<td>- Active ankle ROM exercises</td>
</tr>
<tr>
<td></td>
<td>Decrease Swelling</td>
<td></td>
<td>- Gentle towel and slant board stretching</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>II Increase ROM Early Strengthening</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2-4</td>
<td>- Passive assist ROM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Towel sweeps without weights progressing to sweeps with weights</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Isometric strengthening progressing to manual resistance in a pain-free ROM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Stationary bike with two legs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Basic gait training</td>
</tr>
<tr>
<td>III</td>
<td>Aggressive Strengthening Endurance</td>
<td>4-7</td>
<td>- Calf raises without weights</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Calf raises with weights</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>- Theraband® resistive exercise</td>
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<td></td>
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<td>- BA®s board® for ROM</td>
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<td></td>
<td>- Lateral step-ups</td>
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<td></td>
<td></td>
<td></td>
<td>- Stationary bike one leg</td>
</tr>
<tr>
<td>IV</td>
<td>Continued Strengthening Proprioception</td>
<td>7-9</td>
<td>- Pool exercises</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>- BA®s board® with weights</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Cybex® - All planes</td>
</tr>
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<td></td>
<td></td>
<td>- Heiden board</td>
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<td></td>
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<td></td>
<td>V Sports Skills Proprioception</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9-12</td>
<td>- Straight ahead jog</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Straight run</td>
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<tr>
<td></td>
<td></td>
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<td>- Figure 8's</td>
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<td>- Cuts</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Cariocca</td>
</tr>
</tbody>
</table>

References for Rehabilitation: 3, 4, 7, 8, 10, 11, 12, 16, 17, 21

There is very little information in the literature about how quickly a high-demand athlete can return to competition after ankle ligamentous reconstruction (20). Based on our experience with this case and others, we believe this can be accomplished safely after five or six months. It would seem logical to operate on an athlete at the immediate end of one season in preparation for the next in order to maximize healing time, but there are various factors which must be considered.

An “angry” ankle may take a few weeks to quiet down after the season so that swelling and inflammation is less during the surgical approach. Academics may have taken a back seat during the season and a period of catch-up may make early surgery impractical for the student. Other personal and family factors may have to be included in deciding when to have surgery performed. Indeed, every case is different and the athlete must properly progress through a rehabilitation and training program prior to his return to competition. Finally, biomechanical factors may deserve consideration.

Some experts (1, 7, 9) feel that full athletic activity should be delayed for one year since it takes at least this long for a reconstructed ligament to revascularize properly and to reorient healing collagen along the lines of function. This has been especially true of anterior cruciate ligament reconstructions in the knee (1, 7, 9). The ankle, a joint with more inherent architectural stability, is different than the knee, however. The reconstructive surgical procedure on an ankle is less complicated than on the knee. The tendon is placed through soft tissue and bone which should heal more quickly. Post-operative external immobilization, such as bracing or taping, is more effective because of the smaller size of the ankle joint and the much smaller injury lever arm. For all of these reasons, we believe a reconstructed ankle can return to full competitive athletics faster and more reliably than the reconstructed knee.

**SUMMARY**

This case examined our experience with a 16-year-old football player with recurrent ankle sprains due to lateral ligament insufficiency. Conservative measures failed to reestablish ankle stability, so a surgical approach was utilized. The choice of an operative procedure may be based on various factors, including whether or not the patient is a high-demand athlete. In the sports setting, the Elmslie Procedure-Christman-Snook modification seems to offer several advantages, including a more anatomical reconstruction of the lateral ligaments. The importance of a post-operative high quality rehabilitation-training program cannot be over-emphasized.

**Acknowledgement**

Special thanks to S. A. Kindelberger for her assistance in the preparation of this manuscript.

**References**

ABSTRACT: Is there a relationship between athletic trainers' learning styles and their performance on the NATA certification exam? A "Learning Styles Inventory" was administered to 165 subjects. There was no relationship between performance on the exam and learning preference; however, there was a relationship between grade point average, and performance on the written part of the examination. The majority of athletic trainers were independent learners, kinesthetic learners, and preferred written as opposed to oral exams. Athletic training education at the university level should include: 1) utilization of "hands-on" activities as a part of classroom learning; 2) opportunities for independent learning; 3) strategies for improving reading comprehension; 4) written and oral examination, and 5) mentor evaluations of clinical work.

METHODS AND PROCEDURES

The "Learning Styles Inventory" (henceforth LSI) developed by Babich and Randol (1) was used. Validity and reliability of the LSI were determined through split half, correlation coefficient and internal consistency tests (1). The LSI is comprised of 35 questions arranged on a Likert scale. It measures three types of learning preferences: 1) personal, which includes auditory language, visual language, and kinesthetic learning; 2) social, including group or independent learning; and 3) examination, oral or written.

Paul Grace, Chairman, NATA Board of Certification, gave permission to distribute the LSI at the culmination of the January 17, 1988 exam. Participation in the study was voluntary. Proctors at 14 of the 16 sites agreed to assist by offering each subject an LSI packet as they turned in their examination. Inside the packet were instructions regarding returning the LSI and a photocopy of the subject's exam scores. NATA membership numbers were used to match the subject's LSI with his her scores, therefore, names of the subjects were not revealed.

Of the 372 subjects who accepted a copy of the LSI, 165 responded to the survey. Within three weeks, 102 of these subjects supplied a photocopy of their exam scores, establishing a total usable n of 102.

RESULTS

Regarding learning preference, most athletic trainers were independent learners (63%), preferential to written as opposed to oral exams (58%), and kinesthetic learners (60%). Regarding exam preparation, most subjects (73%) spent the majority of their study time in a reading mode.

The January 1988 certification exam yielded the following means: written 76.2; oral 65.9; simulation 72.0 (recorded as percent of 100). Regarding exam performance, subjects who preferred written examinations scored significantly higher (p<.05) on the written section of the certification exam than subjects who preferred oral exams. The reverse of this, however, was not true. Subjects who preferred oral exams performed no better on the oral section of the certification exam than subjects who preferred written exams. Subjects with 3.5 or higher GPAs scored significantly higher (p<.05) on the written section of the exam than subjects with GPAs lower than 3.5. No relationship was found between GPA and score received on the oral-practical or simulation sections of the NATA certification exam.

DISCUSSION

There was no relationship between exam scores and the following independent variables: 1) personal learning style; 2) social learning style; 3) preference for oral examinations; 4) type of educational program attended (curriculum or internship); and 5) number of clinical hours worked (Tables 1,2).

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listening to lectures (6). Athletic training students in this study regarded listening to lectures as their least preferred learning mode.

Kinesthetic learners have a tendency to learn best from experience and self-involvement. They require a variety of stimuli, and attempt to touch or manipulate learning material (1,5,12). Since athletic training students have a high preference for kinesthetic learning, "hands on" activities should comprise a part of athletic trainers' undergraduate and graduate education. The classroom instructor should put emphasis on activities that promote active participation by the student. This may include but not be limited to palpation of anatomical landmarks; assessment of active and passive range of motion; muscle, ligament and nerve tests; rehabilitation techniques; and practice in the use of therapeutic modalities.

Individuals who demonstrate an independent learning preference tend to learn best and get more accomplished when they work and learn by themselves. Independent learners value their own opinions more than the opinions of others (1,5,12). These results indicate the need to employ independent learning tasks such as reports, take home assignments and research as a part of undergraduate and graduate education for athletic trainers.

Since students spend the majority of their study time reading in preparation for the certification exam, athletic training instructors may assist students by inviting reading experts, such as educational psychologists, to speak to reading in preparation for the certification exam, athletic training students have a high preference for kinesthetic learning, "hands on" activities should comprise a part of athletic trainers' undergraduate and graduate education. The classroom instructor should put emphasis on activities that promote active participation by the student. This may include but not be limited to palpation of anatomical landmarks; assessment of active and passive range of motion; muscle, ligament and nerve tests; rehabilitation techniques; and practice in the use of therapeutic modalities.

TABLE 1
Scores Received on Each Section of the Exam Compared with Gender, GPA, Program Type and Number of Clinical Hours (Mean ± SD)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Written</th>
<th>Oral</th>
<th>Simulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>48</td>
<td>76.0±12.2</td>
<td>66.8±13.0</td>
</tr>
<tr>
<td>Male</td>
<td>54</td>
<td>75.5±12.4</td>
<td>68.1±12.9</td>
</tr>
<tr>
<td>G.P.A.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4.0-3.5</td>
<td>24</td>
<td>79.3±11.4</td>
<td>66.5±12.9</td>
</tr>
<tr>
<td>3.4-3.0</td>
<td>49</td>
<td>77.5±11.6</td>
<td>67.8±13.7</td>
</tr>
<tr>
<td>2.9-2.5</td>
<td>29</td>
<td>69.6±12.1</td>
<td>67.2±13.8</td>
</tr>
<tr>
<td>Program Type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curriculum</td>
<td>44</td>
<td>77.0±10.5</td>
<td>69.0±14.2</td>
</tr>
<tr>
<td>Internship</td>
<td>58</td>
<td>74.5±14.1</td>
<td>65.9±13.4</td>
</tr>
<tr>
<td>Supervised Hrs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>800-1200</td>
<td>11</td>
<td>77.6±12.1</td>
<td>68.8±11.8</td>
</tr>
<tr>
<td>1201-1600</td>
<td>16</td>
<td>75.7±12.6</td>
<td>68.9±11.9</td>
</tr>
<tr>
<td>1601-2000</td>
<td>26</td>
<td>74.8±13.0</td>
<td>68.5±13.7</td>
</tr>
<tr>
<td>Over 2000</td>
<td>49</td>
<td>75.5±12.5</td>
<td>65.7±14.1</td>
</tr>
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</table>

TABLE 2
Mean Score Received on Each Part of the Exam Compared with Learning Styles (Mean ± SD)

<table>
<thead>
<tr>
<th>Learning Style</th>
<th>N</th>
<th>Written</th>
<th>Oral</th>
<th>Simulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual</td>
<td>21</td>
<td>77.3±13.0</td>
<td>67.4±15.4</td>
<td>73.5±11.0</td>
</tr>
<tr>
<td>Auditory</td>
<td>20</td>
<td>76.8±13.5</td>
<td>67.8±15.3</td>
<td>67.6±10.1</td>
</tr>
<tr>
<td>Kinesthetic</td>
<td>61</td>
<td>75.3±12.2</td>
<td>67.0±12.7</td>
<td>67.9±11.9</td>
</tr>
<tr>
<td>Independent</td>
<td>64</td>
<td>77.2±12.6</td>
<td>67.3±14.3</td>
<td>69.7±11.2</td>
</tr>
<tr>
<td>Group</td>
<td>38</td>
<td>72.7±12.4</td>
<td>66.6±12.6</td>
<td>66.7±12.1</td>
</tr>
<tr>
<td>Written Pref.</td>
<td>59</td>
<td>78.8±11.4</td>
<td>67.6±15.7</td>
<td>70.0±11.1</td>
</tr>
<tr>
<td>Oral Pref.</td>
<td>43</td>
<td>72.3±12.6</td>
<td>67.7±12.0</td>
<td>66.7±12.1</td>
</tr>
</tbody>
</table>
A Survey of Oral Injuries in Female College and University Athletes

Robert M. Morrow, DDS
Tina Bonci, BS, MS, ATC

ABSTRACT: Information concerning the number and types of dental injuries occurring in college and university level female athletes as a result of participation in a variety of sports is notably lacking. Athletic trainers at 726 institutions were asked to report dental injuries occurring in their female athletes during the 1987-88 academic year. Dental injuries occurring in basketball, volleyball, soccer, softball, field hockey and lacrosse participants were classified and reported by 389 respondents. Basketball had the highest dental injury rate followed by soccer, field hockey, lacrosse, volleyball and softball. Mouthguards were used in oral injuries; however, they appeared to be more effective in reducing dental (tooth) injuries than soft tissue injuries. Dental injury rates for all six sports exceeded that commonly reported for football. Field hockey and lacrosse, sports where mouthguard use is required, still pose significant risk for the participant. The basketball injury rate was significantly higher than that in the other five sports. Soccer and field hockey injury rates were significantly higher than those for volleyball and softball. The results from the survey support the recommendation to wear a mouth protector while participating in sports whether or not mandated by rules.

SURVEY METHOD

In August 1987, we mailed the four-section survey form and a letter of explanation to athletic trainers at 726 institutions (9). We asked the athletic trainers to use the initial form to record oral injuries among female athletes during the year. Reportable injuries in each sport by category included: lip laceration, chin/tongue laceration, chipped tooth, broken tooth, displaced tooth, lost tooth, and fractured jaw. We mailed a duplicate form and letter requesting the total injury information for the year to the same institutions in May of 1988. The resultant data were tabulated and subjected to statistical analyses. Any injury in the classification was to be reported.

RESULTS

Of the 726 institutions polled, 389 (53.5%) responded. We received 160 responses from Division I schools, 82 from Division II, and 138 from Division III. Results also included six National Association of Intercollegiate Athletics schools and three respondents not identified by division. Table 1 gives a breakdown by sport of the 21,564 participants reported in the survey.

Fewer athletes reported wearing mouthguards in soccer (8.3%), basketball (6.3%), softball (1.2%), and volleyball (0.4%), than in lacrosse (91.0%) and field hockey (90.2%). The difference is undoubtedly due to rules requiring the use of mouthguards in these sports.

The highest injury rate occurred in basketball (7.5%), and the lowest rate occurred in softball (1.5%); however, softball participants reported several of the more serious injuries. The basketball injury rate was significantly higher than that of the other five sports. Soccer and field hockey injury rates were significantly higher than those for volleyball and softball (p<0.001, Z test for differences in proportions, 2 tailed).

DISCUSSION

The basketball oral injury rate of 7.5% was the highest and reflects a significant risk to the participant. This is particularly true if the rate is applicable over four years of participation. Even after the soft tissue injuries with usual uneventful healing are eliminated, the dental injury rate remains at 2.0% which exceeds that reported in football players (2). The lower football oral injury rate is undoubtedly due to the use of the mouthguard in combination with the helmet face guard. In one report, the helmet face...
guard eliminated about one-half of the oral injuries in high school football players (1). While important for football and perhaps other helmet wearing sports, a face guard will probably not be a factor in basketball, soccer and volleyball. The football injury rate exemplifies what can be achieved; however, there is no implication that similar oral injury reductions will necessarily occur in other sports with mouthguards alone. Most oral injuries in basketball and soccer were soft tissue injuries. While 43 of the soft tissue injuries reportedly occurred in mouthguard wearing players, only four dental injuries occurred in the mouthguard wearing group. This suggests that current mouthguard designs are more effective in preventing dental hard tissue injuries than soft tissue injuries.

The volleyball oral injury rate of 1.6% is approximately three times the dental injury rate commonly reported for football players who wear mouthguards. The field hockey injury rate of 2.8% is also significant, since mouthguards are required in this sport. The figures lead us to believe that the oral injury risk prior to implementation of the rule must have been quite high. The three fractured jaws reported in mouthguard wearers is a dramatic indication of the need for effective mouth protection in this sport.

The softball data is particularly interesting: first, in the number of participants (4,278); and secondly, that the 1.6% injury rate included five fractured jaws, the most for the six sports. Only 50 of the 4,178 participants wore mouthguards, though the 1.6% oral injury rate is about three times that of male football players (<0.5%). Jaw fractures are significant injuries and a further study of softball injuries could indicate vulnerable positions or situations where the jaw fractures tend to occur. Thus, appropriate protective measures could be implemented.

The 43 injuries sustained in 1,893 lacrosse participants occurred mostly in mouthguard wearers. Here again, mouthguards apparently have not resulted in oral injury reduction to the extent that they have in football.

Most athletic trainers believe mouthguards to be beneficial in field hockey and lacrosse. This may be influenced by the rules requiring mouthguard use in these sports. Ninety percent of the field hockey players and 91% of the lacrosse players reportedly wore mouthguards. While this is a significant usage rate, it does not reflect full compliance. Perhaps colored mouthguards required for football in 1990 would facilitate rule enforcement in these sports. An impressive 62% believed that mouthguards would be beneficial in basketball and 46% for soccer. This may be subsequently increased by our data indicating a significant basketball injury rate. The other sports did not receive many mouthguard endorsements, though injury rates in these sports exceeded those for football.

**CONCLUSIONS**

Clearly, football is not the only contact or "collision" sport. Participation in basketball particularly, but also soccer, volleyball, and softball by either sex is attended by a risk of oral injury. Wearing a mouthguard while participating in basketball is recommended and might be a prudent course in other sports as well. The survey indicates that current mouth protectors are more effective in reducing dental injuries (that is to the teeth) than they are in preventing lacerated lips, cheeks, or tongues. It has been pointed out, however, that while soft tissue injuries may heal uneventfully, dental injuries often require expensive restorative procedures.

Participants in field hockey and lacrosse remain subject to significant oral injury risk through mouthguard wear is mandated. Improved mouthguards, designed to meet the unique requisites of these and other sports and vigorous efforts to encourage their use, remain a high priority.

Certainly further research is needed to identify sports with a significant oral injury risk. Analysis of specific risks and determining how and when oral injuries occur would be an important prerequisite in developing an effective injury prevention program.

**Acknowledgement**

We wish to express our appreciation for the splendid support offered by athletic trainers throughout the country. The survey would not have been possible without their assistance.

**References**


**TABLE 1**

<table>
<thead>
<tr>
<th>Sport</th>
<th>Number of Participants</th>
<th>Wore Mouthguards</th>
<th>% of Oral Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basketball</td>
<td>5,156</td>
<td>324</td>
<td>6.3%</td>
</tr>
<tr>
<td>Volleyball</td>
<td>4,384</td>
<td>18</td>
<td>0.4%</td>
</tr>
<tr>
<td>Softball</td>
<td>4,178</td>
<td>50</td>
<td>1.2%</td>
</tr>
<tr>
<td>Soccer</td>
<td>3,181</td>
<td>261</td>
<td>8.2%</td>
</tr>
<tr>
<td>Field Hockey</td>
<td>2,772</td>
<td>2,501</td>
<td>90.2%</td>
</tr>
<tr>
<td>Lacrosse</td>
<td>1,893</td>
<td>1,720</td>
<td>91.0%</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 2**

<table>
<thead>
<tr>
<th>Sport</th>
<th>Lip Laceration</th>
<th>Chin/ Tongue Laceration</th>
<th>Chipped Tooth</th>
<th>Broken Tooth</th>
<th>Displaced Tooth</th>
<th>Lost Tooth</th>
<th>Jaw Fracture</th>
<th>TMJ (Sprain)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basketball</td>
<td>207</td>
<td>78</td>
<td>57</td>
<td>10</td>
<td>24</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Soccer</td>
<td>51</td>
<td>39</td>
<td>8</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lacrosse</td>
<td>22</td>
<td>11</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
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<tr>
<td>Field Hockey</td>
<td>39</td>
<td>20</td>
<td>4</td>
<td>7</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Volleyball</td>
<td>30</td>
<td>31</td>
<td>8</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Softball</td>
<td>26</td>
<td>20</td>
<td>8</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>
EDITOR'S NOTE: I wish to acknowledge and thank all those students who participated in the Eleventh Annual Student Writing Contest. Unfortunately, not everyone can be a winner, but in reality you are all "winners" for you have learned a valuable lesson in written communications. The winning paper is presented here, but others who worked diligently on contributing papers and deserve recognition and congratulations include:

1st Runner-up
- Diedre Leaver
- East Carolina University

2nd Runner-up
- Hideyuki "E" Izumi
- Ohio University

3rd Runner-up
- Debbie Mormann
- University of Minnesota

4th Runner-up
- Jane Siebenmorgen
- West Valley College

Honorable Mention:
- Phillip Page, LSU
- Anthony Gambill, Indiana State Univ.
- Connie Johanson, Indiana State Univ.
- Robert Cullen, Indiana State Univ.
- Anthony Hart, Indiana State Univ.
- Elizabeth Marchina, Indiana State Univ.
- Julie Bowman, Indiana State Univ.
- Darlinda Smith, Indiana State Univ.

ABSTRACT: The retardation of muscle atrophy is an exciting application of electrical muscle stimulation (EMS). This modality is highly valued for the treatment of acute musculoskeletal injuries but may be under-utilized in many settings. In recent literature there is support to verify the effectiveness of EMS as a method of reducing post-immobilization atrophy. To achieve the best results, physiological principles of electricity and muscle action must be understood and exercised in the application of EMS. This applies to both setting parameter levels and the physical application of electrodes. Proper use of the EMS on an immobilized athlete will aid in decreasing the recovery time necessary to return that athlete to safe and effective competition.

As athletic trainers, our scope of practice includes the prevention, treatment and rehabilitation of athletic injuries. Until recently, injury prevention and treatment have been more emphasized than rehabilitation, both in our classrooms and places of employment. This is unfortunate because an athletic trainer, skilled in rehabilitative techniques, becomes a more valuable asset to his/her athletes. There are many rehabilitative tools available in athletic training settings that can effectively speed an athlete’s return to safe and effective competition. The electrical muscle stimulator (EMS) commonly found in training rooms across the country is one such modality. Due to the ability of the EMS to reduce pain, edema and muscular spasms, this device is often the primary method of treatment for many musculoskeletal injuries. However, to use the EMS solely for treating acute injuries is leaving its true potential untapped. Research now indicates that if properly utilized, EMS may reduce the effects of post-immobilization atrophy.

RESEARCH
The efficacy of EMS to increase muscular strength has been the subject of debate amongst researchers and clinicians for over a decade. Research is continually being conducted to conclusively end this controversy. At first, it appears that much of this research is contradictory, but upon further investigation, some important trends can be observed.

The Russians were the first to receive notoriety on this subject for their claims of appreciable strength gains using high voltage EMS (6). The implications of these findings brought about great excitement in the world of sports medicine. Although Western researchers have tried, they have not been able to duplicate the lofty results of the Russians. Studies have been performed comparing EMS to conventional forms of strength training, as well as combining electrical stimulation with these conventional forms of contraction. Results have varied, with some producing little...
or no improvement over isometric exercise in non-injured individuals (8, 1). While other tests have even found isometric exercise resulting in a higher degree of quadriceps femoris strength development than did EMS (7).

Most research involving healthy muscles has yielded these unequivocally negative results. There are however, numerous studies showing just the opposite when atrophied or weaker muscles are examined. A study involving the abductor digiti quinti muscle illustrates this point (9). This muscle, located in the foot, is unique because it is a healthy but normally atrophic muscle, due to the wearing of shoes. This situation mimics that of muscle groups about an immobilized joint. A regimen of hour long sessions of electrical stimulation was introduced five days a week. At the end of a four week period, a strength increase of over 100% was observed (9).

Investigating the use of EMS alone and in combination with isometric exercise was the focal point of another recent study. It was found that quadriceps strength increased when EMS was initiated concurrently with the performance of isometric contractions. The greatest benefit was noted for weaker muscles (5). This again indicates the promise EMS shows for use in strengthening atrophied muscle groups.

Positive results have also been found in studies more specific to immobilization atrophy. During a three week casting period for a knee sprain, both quadricep and hamstring groups received five treatments per week of electrical stimulation. This resulted in a significant increase in girth measurements and muscular strength (9), which demonstrates the potential of EMS in returning an injured athlete to competition more quickly.

Direct evidence is also available to support electrical stimulation as a method of atrophy retardation. The atrophic effects of post surgery immobilization were compared between two groups. One group received electrical stimulation with simultaneous isometric contractions, while a second only performed the isometric contractions. After the six week immobilization was completed, some positive results were noted. The group which received the EMS had a significantly smaller loss of isometric muscular strength. This group also showed a larger cross-sectional area of the quadriceps muscles and a higher level of enzyme activity than did the group which only performed isometric contractions (13). Both of these outcomes are indicators of trained muscle fibers (11).

PARAMETER PROTOCOLS

When only atrophic or weakened muscles are studied, research substantiates the claims that EMS reduces the effects of atrophy. To effectively employ EMS for this purpose entails selecting different parameter levels than those utilized for the more conventional uses of EMS. It is also necessary to find the EMS unit best suited for the retardation of atrophy, as not all models are capable of achieving positive results.

The principles for selecting the correct machine and parameter levels follow the same tenets as does conventional strength training. Achieving maximal strength gains involves eliciting maximal muscular contractions for the duration of the workout session. To accomplish this, the electrical current introduced to the athlete should be as comfortable as possible. This allows the intensity to be set at a higher level and produce stronger contractions. Comfort is related to the amount of current flow. In general, to make the stimulation more comfortable, introduce as little extraneous electrical current as possible.

A high-frequency alternating current type of machine is the suitable choice for retardation of atrophy (1, 6). Due to the nature of its current, this type of EMS unit helps to achieve a stronger contraction and, therefore, better results.

To obtain optimal results, it is also beneficial to find a unit that allows you to adjust parameters such as waveform, frequency and surge. This also ensures that the machine is capable of being utilized for other applications such as the reduction of edema and pain.

The waveform is the "shape" of the electrical current. It determines the amplitude, duration and direction of the waveform and is directly related to patient comfort (Figure 1). Although no one waveform is the most comfortable for everybody, changing waveforms greatly affects patient comfort (2). As the duration of the waveform increases, more electrical current will flow. While if the amplitude is higher, a stronger contraction will occur for a given current level. Generally speaking, a waveform with less duration and more amplitude is the most tolerable for a given intensity level because less electrical current is being transferred to the patient for a given amplitude. Experimentation is usually necessary to find the most comfortable waveform for each athlete.

Frequency is the number of waveforms present in one second and is measured in hertz (Hz). In some electrical stimulation units this rate is preset, while in others it is adjustable from 10 Hz to 10,000 Hz. An increase in frequency results in an increase in comfort because more waveforms are present in one second. This necessitates the waveforms having less duration, thus reducing the amount of current flow (Figure 2). The generally accepted setting is approximately 5,000 Hz (10). Again, this parameter can be varied to bring about the highest level of patient comfort.
Frequency of the pulses dictates the type of contraction that will occur. The range for this parameter, measured in pulses per second (pps), is usually 1 pps to 150 pps. Clearly defined pulsating contractions characterize the range of one to ten pps. From 15 to 25 pps, the contractions are less distinguishable and more powerful due to summation. Summation is the result of one twitch beginning before the previous one ends (Figure 3). This allows an addition of the amplitudes to occur. Above 30 pps tetany is achieved. The contractions are indistinguishable from one another and maximal summation has occurred. A tetanic contraction is the type of contraction desired for the retardation of atrophy because that is maximal summation. Due to this summation, the strongest contractions possible, without introducing more electrical current, are produced. The optimal range appears to be 40 to 60 pps (10). This range is well into tetany and maximal summation has occurred. At a higher rate, muscles would fatigue more quickly. With no corresponding increase in the strength of contraction, this would obviously be ineffective.

Intensity controls the amount of current and thus the force of contraction. One study found that contractions of at least 91% of isometric maximal voluntary contraction (IMVC) were necessary to produce the desired results (12). Researchers now accept levels of approximately 50-60% IMVC to be conducive for atrophy retardation (5,10). In many clinical situations it is impractical to determine IMVC. The protocol in these cases is to increase intensity to patient tolerances (10). This level may need to be increased during the session due to accommodation.

The duty cycle enables you to set a length of time for contraction (on time) and a time for recovery (off time). This parameter, is an important consideration because fatigue should not be the limiting factor in contraction levels. Electrically induced contractions are almost identical to voluntary contractions (5), and as a result, the same physiological principles for phosphagen system recovery in a voluntary contraction must hold true for an EMS induced contraction.

Complete phosphagen depletion occurs in 20-30 seconds, with recovery to 90% of maximum occurring in approximately two minutes (3). This ratio is about one to five. This corresponds to the classical Russian protocol of 10:50:10 seconds (6). Most research seems to substantiate this one to five ratio, with a 5 to 15 second on time (5,6,10). This time frame prevents total depletion of the phosphagen system and a quicker recovery time. It has been this author’s experience that the on time should be closer to five seconds during the first few sessions and then increased towards the 15 second ceiling as the athlete progresses. This allows the athlete to accommodate to the EMS, particularly after surgery when pain and edema may be present.

The main difference between the two contraction types involves the synchrony of motor unit firing. Under voluntary conditions different motor units respond to the stimulus alternately or asynchronously. This enables the muscle fibers to rest between contractions. Under conditions of electrical stimulation, all of the muscle fibers contract for each stimulus received. This, while helping to strengthen the muscle more quickly, also fatigues the muscle at a faster rate. For this reason, the duty cycle is an important consideration for the effective use of EMS for atrophy retardation.

The surge, or rise time, indicates how long it will take the intensity to reach its maximum level. To correctly set this parameter, two factors must be taken into account. The first consideration is patient comfort. It is most comfortable to have the current rise as gradually as possible, particularly at high intensity levels. This will help avoid the painful sensations that occur if the intensity is raised too quickly from zero to a high level. The goals of treatment must also be addressed. If the on time is five seconds, and the surge time is four seconds, there will be little time spent contracting at maximal levels. Obviously, this is very inefficient. Therefore, a balance must be reached between patient comfort and an effective treatment.

The final parameter to be considered is treatment time. Two half-hour sessions, three to five times a week, seem to bring about the best results (1,4,10). This is consistent with accepted protocols for strengthening muscle groups with free weights which is appropriate because of the similarity between these two types of contraction. Using the EMS for longer periods of time is not only impractical because of time restraints, but hasn’t been proven to produce better results. The minimum time that is suggested for incurring any noticeable improvements is 10 contractions of 15 seconds, in each of two sessions, three to five times a week (5,10).

These parameter levels (Table 1) while based on research and physiological principles are only guidelines and need not be followed verbatim. If the rationales behind these guidelines are understood, it will allow the athletic trainer to create new, more flexible protocols specific to an athlete and his or her injury.

### APPLICATION PROTOCOLS

Once it is determined that an athlete will have to be immobilized due to an injury, it is necessary to establish whether EMS to retard atrophy is indicated. Atrophy begins to occur within 48-72 hours of muscle inactivity. Theoretically, if immobilization is going to last longer than 48 hours, the athlete is a candidate for EMS. However, this is not an overly practical nor necessary approach. In two days, the levels of atrophy are going to be negligible and strength levels will quickly return to normal upon resumption of activity. Most research looks at the changes that occur over at least four weeks (4,5,9,13). Therefore EMS would be definitely indicated for these people. Although EMS is indicated for longer periods of immobilization, we have had great success in using EMS with athletes who have undergone knee meniscectomies and were only partially immobilized for as short a period as a week. Each athletic trainer will have to develop his own policy for the use of EMS until more research has been conducted and validated.

The next consideration is when to initiate the treatment. On our meniscectomy patients we introduce EMS before surgery and then again, one day post surgery and have achieved positive results. By utilizing EMS, we were able to return these athletes to competition one to two weeks sooner than we had previously. On athletes who have undergone more serious trauma, such as knee ligament injuries, a lower intensity protocol is usually recommended. As the athlete progresses we increase the level and intensity until the previously described guidelines are reached.
surgery, inducing a strong contraction may cause extreme pain due to the disruption of muscle tissue. In such cases, it may be appropriate to wait until the initial side effects (pain and edema) of the injury or surgery have subsided. It is important to keep this delay to a minimum as more atrophy will be incurred during the waiting period. Good clinical judgement is the best procedure to follow.

Placement of the EMS electrodes is essential to the success of the treatment. The correct positioning is known as a bipolar arrangement (5,10). One pad is placed as close to the origin and one as close to the insertion of the muscle as possible. This will allow the greatest stimulation along the entire length of the muscle. If a cast is applied to the injured limb, it may be necessary to cut a hole near the origin and the insertion of the muscle groups. This can be arranged with the physician before a cast application. It has recently been suggested that both the agonist and the antagonist muscle groups should be stimulated (9). To keep the agonist/antagonist ratio consistent, we commonly follow this procedure with our athletes.

If an athlete is in some form of a removable splint or brace, it is much easier to place electrodes, but it also becomes necessary to stabilize the limb to prevent joint motion. To accomplish this on our meniscectomy patients, we had the athlete sit on a treatment table with the back against the wall. A pillow was positioned under the knee to place the joint in a comfortable position, about 5-10 degrees of flexion. The leg was then firmly taped to the table around the ankle to prevent extension of the knee. Experimentation will be necessary to determine the best method of fixation in each clinical setting. This will be dependent upon the muscle groups affected and existing resources.

CONCLUSION

Through research, electrical muscle stimulation has been proven to be an effective method of retarding atrophy due to immobilization. By applying sound physiological principles, the EMS parameter levels may be set to maximize the positive effects of these treatments. This results in returning our athletes to safe competition more quickly than was previously possible.

The athletic training profession has developed to the point where we are constantly inundated with new technology. It is important that we are able to decipher fact from empty claims, and apply this knowledge to benefit our athletes. Because of budget and space considerations it is exciting that a familiar modality may serve more purposes than we were originally aware. It is our challenge to maximize these uses to provide our athletes the finest quality care possible.

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Answers to Summer issue puzzle -

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Twelfth Annual NATA Student Writing Contest

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

1. This contest is open to all undergraduate student members of the NATA.

2. Papers must be on a topic germane to the profession of athletic training and can be case reports, literature reviews, experimental reports, analysis of training room techniques, etc.

3. Entries must not have been published, nor be under consideration for publication by any journal.

4. The winning entry will receive a $200.00 cash prize and be published in Athletic Training with recognition as the winning entry in the Annual Student Writing Contest. One or more other entries may be given honorable mention status.

5. Entries must be written in journal manuscript form and adhere to all regulations set forth in the “Guide to Contributors” section of this issue of Athletic Training. It is suggested that before starting students read: Knight KL: Writing articles for the journal. Athletic Training 13: 196-198, 1978. NOTE: A reprint of this article, along with other helpful hints, can be obtained by writing to the Writing Contest Committee Chairman at the address below.

6. Entries must be received by March 1. Announcement of the winner will be made at the Annual Convention and Clinical Symposium in June.

7. The Writing Contest Committee reserves the right to make no awards if in their opinion none of the entries is of sufficient quality to merit recognition.

8. An original and two copies must be received at the following address by March 1, 1990.

NATA Student Writing Contest
Deloss Brubaker, EdD, ATC
Knollwood Center for Specialized Medicine
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THE MANAGEMENT OF SEVERE RECURRENT ANKLE SPRAINS from page 233


ATTENTION NATA MEMBERS

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The iron status of female athletes has recently become a concern, as low serum iron variables have been found in these athletes. The purpose of the present investigation was to determine whether female runners who consume modified vegetarian diet are predisposed to iron deficiency. On the basis of a questionnaire completed by female distance runners, two groups of regularly menstruating females were selected to be subjects in this study. One group consumed a diet based upon the basic four food groups, including red meat. The other group consumed a modified vegetarian diet including milk, eggs, fish, poultry, and very little or no red meat. Each subject performed an incremental, maximum lactate production test on a treadmill to determine aerobic capacity. The results of the present investigation were consistent with the previous research which has shown athletes to have various degrees of iron deficiency, but not iron deficiency anemia. The effects of iron deficiency without anemia have only recently been studied. Although the development of more severe anemia is of importance to an athlete, additional information now suggests that iron deficiency without anemia can reduce endurance capacity and lead to excess lactate production.

John Wells, HSD, LPT, ATC


Imagine how much easier wound care and its documentation would be if every wound could be measured simply, accurately, and uniformly. Standardized wound measurement would allow us not only to compare a wound with other injuries, but also with itself from day to day or week to week. Such comparisons could yield rates of change that would help us evaluate the effects of treatments, drugs, and disease on healing. A research study of pressure sore treatment at Stanford University Hospital led to the development of a wound measuring instrument. The plastic-coated, disposable device was designed to simulate a right-handed, Cartesian coordinate system of X, Y, and Z axes. The simple mathematical formulas used to calculate the wound volume or wound surface area allow the tool to measure a variety of regular or irregular shapes. In clinical trials the instrument has proved safe and correlates well with standard methods of measurement. Before actually measuring the volume or the area of a wound with the gauge, position the patient with the wound uppermost, as far away from the mattress as possible. Control for any undermining by measuring the wound in one of two ways. During healing, the volume of a wound crater enlarges as necrotic tissue is sloughed off. To avoid misleading documentation, chart whether or not the wound contains necrotic tissue. Include the wound's size, location, condition, and any treatment given along with your volume measurement in the patient's chart.

Brandi Schober
UNC-Asheville


Gravity inversion, the free-hanging vertical suspension of one's body by the ankles using "inversion boots," or supported hanging on an oscillating table, has been used primarily for three reasons: 1) as traction for temporary relief of spinal compression; 2) to induce neuromuscular relaxation; and 3) as an exercise modality. Little is known about the physiologic responses to either passive inversion or exercise in the inverted position. Nineteen young men were familiarized with the inversion equipment and the testing protocol, including the exercises to be performed. After the pretest, the experimental group underwent a five week inversion training program. The chronic responses to loading (posttest) were compared between groups using one-way ANCOVAs with repeated measures using the pretest values as covariates for each of the four dependent variables. Considering the physiologic responses of the four dependent variables, and responses observed herein, passive inversion cannot increase and was too small to reflect the same metabolic stress as standard physical exercise.

Betsy Nadler
UNC-Asheville


Reconstruction of the ACL insufficient knee has become more popular in recent years due to the new attitude that society has taken toward physical fitness, exercise, and recreational sports participation. This was a prospective study of 41 patients with acute and chronic ACL insufficiency who had their knee reconstruction with GORE-TEX PTFE ACL prosthesis. The surgical procedure in our series included an examination of the knee under anesthesia, diagnostic arthroscopy with appropriate meniscal surgery, followed by miniarthroscopy implantation of the appropriately sized GORE-TEX ACL prosthesis. Postoperatively, the patients were splinted for 5 days until their pain allowed them to begin a passive and active assisted range of motion program with progression to full weight bearing as rapidly as possible. Complications included graft failure, instability, sterile effusion, screw removal, and infection. Based on our objective and subjective evaluations, the early results of this study show that the GORE-TEX PTFE ACL prosthesis appears to provide a satisfactory method of reconstruction for patients with acute and chronic ACL insufficiency, with 87% of the patients achieving satisfactory results at 2 years.

John Wells, HSD
UNC-Asheville

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A Tip From The Field

Knee Taping to Eliminate Skin Irritation

Brian J. Toy, MS, ATC

Athletic taping is a common practice in our profession and most athletic trainers realize its importance and effectiveness in preventing and treating athletic injuries. Usually, athletic taping is taught in conjunction with the application of a foam underwrap-type material which is placed between the athletic tape and the skin. Applying tape directly to the skin without foam underwrap offers better support to the injured body part. Our athletes have experienced less slippage and loosening of the supportive tape when it is applied in this manner.

One problem with taping directly to the skin is skin irritation caused by the adhesive backing of certain types of supportive tapes. This especially is true in the knee region where supportive tapes such as Elastikon® and other high tensile tapes are utilized. Some athletes who received daily knee taping for medial and/or lateral collateral instabilities developed an abnormal amount of skin irritation in the thigh and calf regions. Using Lite Flex® as an underwrap has solved the problem for us.

MATERIALS AND METHODS

After shaving from mid calf to mid thigh, the athlete stands with the affected knee in a position of 20° flexion. Tape adherent is then applied to the shaved area. Single strips of 3” Lite Flex tape are then applied directly to the skin until the entire shaven area is covered. These strips overlap each other by one half (Fig. 1).
As evidence of its strong commitment to the educational preparation of the sports medicine professional, HEALTHSOUTH Rehabilitation Corporation has established a scholarship fund to assist individuals with formal academic training in their chosen area of sports medicine expertise.

Scholarship funding is available to Certified Athletic Trainers entering their final year of a Physical Therapy program or to Physical Therapists entering their final year of an Athletic Training program. Each Scholarship recipient will receive $5,000 to be applied towards their degree program. As a condition of the scholarship, recipients will be obligated to accept employment, for a period of two years, in a HEALTHSOUTH Sports Medicine Facility under its normal compensation and benefits package.

Scholarships are granted annually for fall Semester/Quarter. Applicants should submit applications by May 15 in order to be considered.

For information and a scholarship application, please contact:

William E. Prentice, PhD, ATC, LPT
Director, Sports Medicine Education
HEALTHSOUTH Rehabilitation Corporation
214 Fetzer CB #8700
University of North Carolina
Chapel Hill, NC 27599-8700

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Following the application of the Lite Flex taping base, 3" Elastikon is used to offer support for medial and lateral collateral ligaments of the knee (Fig. 2). Finally, 3" Lite Flex tape is used to anchor the Elastikon strips (Fig. 3).

I have used this taping procedure for medial and lateral instabilities of the knee for the past three years and have found it to be very effective in decreasing skin irritation. There appears to be less slipping of the supporting tape when compared to using a foam underwrap. In addition, the athletes received less skin irritation because of direct contact with the Lite Flex taping base. Our athletes also prefer the use of Lite Flex as anchor strips over the supporting tape job, citing the product’s lightness and non-bulking properties as reasons. We have found the use of Lite Flex as a taping base to be effective with not only knee taping but with tape jobs applied to other body parts such as the elbow and wrist.

ATHLETIC PARTICIPATION AFTER CARDIAC TRANSPLANT from page 225


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PULMONARY MEDICINE

Exercise Induced Asthma

It is estimated that 12 million Americans have asthma (appr. 5% of the population), 8 million are under the age of 17, some 2.1 million have chronic asthma, and boys outnumber girls 3 to 1. Asthma is a very serious and disabling disease, with 4,000 people dying each year from the disease. It ranks second overall in causes of disability for people under 45 years of age. Also, about 8 million days are lost each year from school and work due to asthma and its effects. An asthma attack may leave a person breathless and can develop into a condition in which the person cannot breath at all. Without immediate medical care, death can occur.

Asthma is a disease in which the bronchial tubes, which carry air into the lungs, cease to function effectively. Usually, during an attack, three things will happen: 1) the muscle around the tube will tighten, causing the tube to become narrow; 2) the tissue lining will swell; and 3) the lining begins to produce a flow of mucus, which will constrict the tube space even more. The disease can have many forms, from those who wheeze occasionally, to those who experience mild cases once or twice a month, to those who are often hospitalized.

About one half of the people who suffer from asthma also have allergies and usually have suffered from this since early childhood. This type of asthma is intrinsic. The intrinsic asthma types will also suffer from sensitivities in the environment, many will grow tolerant to it in latter years. The other half of the asthmatics have extrinsic asthma. They are not allergic, but just simply have sensitive airways. With these people the asthma is usually caused by exercise. This is commonly termed exercise-induced asthma (EIA). (1)

There are many athletes who suffer from EIA and are very successful in their activities and sports. In earlier years it was thought that asthma sufferers should only observe from the sidelines. Changes in this belief began occurring around 1970 due to advances in asthma research. It was especially evident in the 1984 Olympics; out of 597 U.S. athletes, 67 were found to have EIA. Out of those 67, 41 medals were won in 14 different sports. This alone was proof that asthmatic athletes can compete successfully with other people.

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There are many athletes who suffer from EIA and are very successful in their activities and sports. In earlier years it was thought that asthma sufferers should only observe from the sidelines. Changes in this belief began occurring around 1970 due to advances in asthma research. It was especially evident in the 1984 Olympics; out of 597 U.S. athletes, 67 were found to have EIA. Out of those 67, 41 medals were won in 14 different sports. This alone was proof that asthmatic athletes can compete successfully with everyone else. Two of the most famous athletes who suffer from asthma are: Jackie Joyner-Kersee, a 1984 and 1988 Olympic Gold Medalist in Track and Field and Nancy Hogshead, a 1984 Olympic Gold Medalist in Swimming.

EIA can be controlled and treated very successfully in many individuals. For example, exercise in a warm, humid climate is less likely to induce bronchospasm than in a cold, dry environment. Breathing slowly through the nose will reduce risk of EIA by warming and humidifying the air in the nose and by reducing hyperventilation.

Medications that control asthma may be useful. These medications must be prescribed by a physician and caution must be taken to ensure that the medications prescribed are not on any banned substance list.

Recent studies observed other factors that increase the difficulties caused by hyperactive airways. Included in these studies revealed that foods ingested two hours before exercises can provoke EIA and exercise-induced anaphylaxis in some individuals. (1) The symptoms may include swelling, angioedema of the face, palms, and soles, as well as choking, nausea, hypertension, diarrhea, fatigue, itching, respiratory stridor, headaches, and erythema of the skin. The foods usually associated most often with these reactions were shrimp, celery, and peanuts. Individuals can also experience the same conditions if aspirin is taken before exercise.

Some asthmatics react to sulfites in foods which are used to keep food fresh and presentable. Labels should be thoroughly read in order to avoid ingesting sulfites. At many grocery stores, restaurants, and cafeterias, which have salad bars, persons with asthma should inquire if sulfite has been used on the vegetables.

Asthma can be treated and controlled successfully with the effort of the athletes, parents, physicians, athletic trainers, nutritionists, and coaches. Developing a strategy of 1) using proper medications to improve bronchodilation and to reduce mucous secretions and inflammation of the large and small airways; 2) identifying the allergens and physical (environmental) factors that contribute to pulmonary responses; and 3) learning to control or eliminate these factors. (1) Using these tactics, many athletes will no longer have to watch from the sidelines. They can compete very successfully.

If someone around you happens to experience an attack:

1. The person will usually have an inhaler around for such attacks, if so help them use it. If it has been left somewhere, help them by getting it. If you know about their asthma in advance, it would be helpful to keep an extra inhaler for them in an easily obtainable place.
2. Have them sit down and encourage them to relax.
3. Offer reassurance.
4. Stay calm. An asthma attack makes a person anxious, even desperate, and these emotions can worsen the attack.
5. If the attack continues despite medication, get medical help immediately. This is a medical emergency. (2)

More information can be obtained about asthma by contacting The National Jewish Center for Immunology and Respiratory Medicine in Denver, Colorado. They maintain a toll-free line with nurses on duty from 8:30 am to 5:00 pm (Mountain time) to answer questions specifically about asthma. The number to call is 1-800-222-LUNG.

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Clinical/Corporate
The Clinical/Corporate Athletic Trainers Committee conducted a survey this past Spring. If you have not completed the survey, please complete and forward to Bob Gray by December 31, 1989. If you need a copy of the survey, send a self-addressed legal size envelope with a 25¢ stamp to:

Bob Gray, ATC
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Journal
The Journal office gets its mailing labels from the National Headquarters. Labels for NATA members are produced from the membership roster as maintained and updated by the Membership Office. NATA Members who do not receive a Journal should contact the Membership Office to check on their address of record. If an address change was made just prior to a Journal being mailed, it's possible that the change did not get to the Membership Office in time to have a correct label produced. If the member did not authorize Second Class mail forwarding with the post office, then that issue was probably thrown away when received at the post office. After a member has checked with the Membership Office at National Headquarters and determined that the address change was not received in time for a correct label to be produced, hence an issue was missed, then the member can purchase the back issue from the Journal office as long as the supply lasts.

Journal Replacement Policy
The Policy for handling claims for missing Journals due to address change is based on the stipulation that the notice of change of address be received at National Headquarters at least 30 days prior to publication, in order for the member to receive a gratis replacement Journal. If the member did not meet the “30 day” requirement, or did not authorize the post office to forward Second Class mail, then the responsibility for not having received the Journal rests with the member and a minimum replacement charge is made. New members and Reinstated members do not receive back issues published before their membership was validated. New members will receive the first issue published after NATA membership is in effect. Reinstated members (previously deleted due to nonpayment of dues) will receive the first issue published after confirmation of reinstatement is issued from the Membership Office.

NATA members who do not receive their Journals should check with the Membership Office at the National Headquarters.

Volume 24 Number 3 — Fall 1989 • Athletic Training 253
Headquarters to determine if the membership roster reflects an incorrect address.

**Professional Education**

**Sayers “Bud” Miller Distinguished Athletic Training Educator Award**

Nominations are being received for the annual Distinguished Athletic Training Educator Award to be presented by the NATA Professional Education Committee in recognition of excellence in athletic training education:

I. **Qualifications**

To be nominated for the award, educators must have the following qualifications:

1. Current member of the National Athletic Trainers Association, Inc.
2. Minimum of ten years of outstanding service in the area of athletic training education and research.
3. Recognized excellence in the field of athletic training education.
4. Evidence of quality in publications and public speaking on topics in athletic training/sports medicine.
5. Membership in professional organizations concerned primarily with the field of athletic training.
6. Evidence of quality in publications and public speaking on topics in athletic training/sports medicine.

II. **Nomination Procedures**

1. The candidate's current personal resume which includes:
   a. academic background
   b. employment background
   c. published research and other publications (journal articles, books, etc.)
   d. course work taught (during past five years)
   e. classroom teaching innovations
   f. course work/curriculums developed
   g. professional memberships
   h. positions on state, district, or national level of the National Athletic Trainers Association, Inc.
   i. positions on state, district, or national level or related sports medicine professional organizations
   j. consultant work
   k. speaking engagements on community, state, regional, and national levels
   l. community service

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**Research & Injury**

**CALL FOR ABSTRACTS**

**INDIANAPOLIS, JUNE 1990**

Each year during our National Convention, members are continually sharing ideas, procedures, techniques, innovations in and for the profession of athletic training. Most of these conversations are among small groups of members and much of the information exchanged would be highly meaningful for the larger group. Many of these ideas have been developed through systematic data collection and observations made by the athletic trainers in the performance of their responsibilities. The accumulation of this information represents an important form of applied research.

With this in mind, the NATA Research and Injury Committee will offer a Free Communications Section and a Poster Presentation at our National Meeting in Indianapolis, June 1990. In order to provide organization to these sessions, the Committee is issuing a CALL FOR ABSTRACTS from the NATA membership. The titles of the projects to be presented will be available to members prior to the convention so that they will know which topics will be discussed and at what time during the session. All selected abstracts will be published in the Summer edition of Athletic Training.

REMEMBER: Your abstract should be of the informative type and should contain:

A. Sentence stating the specific objective of the project.
B. Brief statement of methods.
C. Summary of results/implancements.
D. Statement of Conclusion/recommendations.

All submitted abstracts are sent to a sub-committee consisting of members of the NATA Research and Injury Committee. Each member of this group will independently review and rank each abstract submitted without benefit of the author's name or affiliation. Final selection of the abstracts for presentation are determined by the review committee's order of merit and the amount of time allotted for Free Communication Sessions at the Annual Symposium. Each presenter will have fifteen minutes in which to deliver his/her topic. Notification will be made in plenty of time for the preparation of your topic.

The response to these sessions has been excellent. We encourage each member to participate in these information exchanges. So please submit your abstract soon and we look forward to seeing you in Indianapolis.

---

**ATTENTION NATA MEMBERS**

Contact the National Headquarters in Dallas, Texas (telephone: 214/637-6282) for Association matters OTHER THAN those relating to the Certification Office, which will continue operations in Greenville, North Carolina (telephone: 919/752-1725) until further notice.

The Journal production office may be reached at telephone 919/355-5144.
CALL FOR ABSTRACTS — NATA FREE COMMUNICATION
NATIONAL CONVENTION — INDIANAPOLIS, JUNE 1990
APPLICATION

Instruction for Completion of Free Communication Abstract

Please read all instructions before preparing abstract. Carefully develop your abstract so that it will be within the boundaries of the space provided on the application. Members may submit more than one abstract but no member will present more than one.

DIRECTIONS: Mail one clearly typed original and 10 clear photocopies prior to January 15, 1990. Photocopy the application and complete, within the boundaries, as indicated.

1) Type title of paper or project in all capital letters, flush left.
2) Indent 3 spaces on a new line and type the name of all authors, with the author that will make the presentation listed first. Type last name then initials (without periods) followed by comma; continue with other authors, if any, ending with colon.
3) Indicate presenting author’s affiliation on the same line following authors.
4) Double space and begin typing text of paper flush in a single paragraph with no indentations. Do not justify right margin.
5) Be sure to use clean typewriter or printer ribbon.

Below the boundaries:
6) Type the mailing address of the presenting author only.
7) Indicate that presenting author is a member of NATA.
8) Indicate whether your preference is Oral Presentation, Poster Presentation, or either format.

Presenting Author’s Full Name ____________________________
Presenting Author’s Address: ________________________________

Telephone Number: Home ( ) __________________________ Work: ( ) __________________________

Presenting Author’s Membership Classification: ____________ Membership Number ____________
Required Audio-Visual Needs: ____________________________

Prefer: Oral Presentation ____________ Poster Presentation ____________ Either ____________

Send to: Russ Cagle, ATC
Research and Injury Committee — Free Communications
Willamette University/Athletic Department
Salem, OR 97301
Association Activities

David G. Yeo, DPE, ATC

One of the highlights of the NATA each year is the presentation of the recipients of scholarship awards and distinguished honors at the NATA Convention in June. It gives the Association great pride and pleasure in recognizing prominent leaders within the profession for their dedicated service and loyalty over the years. Similarly, it is a privilege to congratulate outstanding students for their excellent performance in athletic training programs. To these established professionals and future leaders the Journal extends sincere thanks and congratulations. The competence, diligence, sacrifice and commitment the awards represent serve to inspire others within the profession.

Because so many individuals are worthy of these special awards, sincere thanks and praise go to George Sullivan, Chairman of the NATA Honor Awards Committee, Frank George, Chairman of the NATA Grants and Scholarships Committee, and the NATA Board of Directors for their extensive review and careful deliberation of the nominations for the awards.

NATIONAL ATHLETIC TRAINERS' ASSOCIATION
HALL OF FAME, 1989

Larry J. Gardner, District 6
Fred G. Kelley, District 1
Charles Martin, District 9 (posthumously)
Chris Patrick, District 9
James "Al" Wilson, District 6
Paul Zeek, District 6

25-YEAR AWARD RECIPIENTS, 1989

Cash Birdwell, District 6
Paul Branson, District 6
Roger Bryant, District 1
Jack Curran, District 3
Allen Eggett, District 6
Richard Irvin, District 10

Carl Krein, District 1
Thomas Pike, District 1
Gordon Stoddard, District 4
Roy Don Wilson, District 6
Logan Wood, District 6

PRESIDENT'S CHALLENGE CUP AWARD

J. Pat Evans, M.D.
Dallas, Texas

HONORARY MEMBERSHIP AWARDS, 1989

Robert J. Albo, M.D., Piedmont, CA
John P. Albright, M.D., Iowa City, IA
Champ Leroy Baker, M.D., Columbus, GA
Richard T. Ball, Phoenix, AZ
James A. Bowden, M.D., Waco, TX
Mary Edgerley, NATA Office
Harriet Franklin, NATA Office, (posthumously)
John C. Longest, M.D., Mississippi State, MS
Robert J. Pierce, M.D., Irving, TX
Robert M. Stoltz, M.D., Valparaiso, IN
William C. Warner, M.D., Jacksonville, MS

1989 Scholarship Awards

Eddie Wojecik: 1989 Achievement Award
Mark Anderson, University of Virginia

Undergraduate Scholarship Awards
Heather Bonella, Utah State University
Michael G. Gall, Ohio State University
Dawn E. Estensen, University of Texas at El Paso
Tedd A. Emmer, Kent State University
Christine K. Bollman, Texas Tech University
Kyle B. Kiesel, Keanary State College
Karin Gravere, Boston University

Robert H. Gunn Scholarship Award
Lori R. Sample, Southwest Texas University

Sayers J. Miller, Jr. Scholarship Award
Andrew N. Brice, East Carolina University

Protek Toe Products Postgraduate Scholarship Awards
Michael S. Ferrara, Pennsylvania State University

Evelyn & Harold W. Mundy Postgraduate Scholarship Award
Stephanie L. Dunn, Illinois State University

Richard Vandervoot Memorial Scholarship Award
Robert J. Cullen, Indiana State University

Edward Block Memorial Courage Postgraduate Scholarship
Christine L. Williams, Purdue University

Ralph Salvo Memorial Postgraduate Scholarship
John S. Cornell, Old Dominion University

Postgraduate Scholarship Awards
Bridget R. Beebe, Northeastern University
Paul A. Peterson, Ithaca College
Greg L. Whitmore, Central Washington University
Kirstin A. Morgado, California State University at Fresno
Michael W. Bean, Southwest Missouri State University

Chuck Cramer Scholarship Award
Deanna Crites, West Virginia University

Frank Cramer Scholarship Award
Mary L. Gwalak, Canisius College

William F. X. Linskley Scholarship Award
Christopher J. Joyce, Bridgewater State College

William E. Newell Scholarship Award
Alan D. Freedman, Appalachian State University

NATA Curriculum Award
Andrea M. Miller, Washington State University
Jeffrey L. Souie, University of Nebraska

Otto Davis Postgraduate Scholarship Award
John A. Plemens, Samford University

Del C. Humphrey Postgraduate Scholarship Award
Rachel L. Kelly, Lockhaven State University

G. E. "Moose" Detty Postgraduate Scholarship Award
Kay E. Kellerhals, University of Illinois

1989 Annual Student Writing Contest
Michael A. Chiar, California State-Fullerton
Sayers J. Miller, Jr. Distinguished Athletic Training Educator Award
Rod Compton, East Carolina University

Rod Compton Receives NATA Distinguished Athletic Training Educator Award
Rod Compton, Head Athletic Trainer and Sports Medicine Director at East Carolina University, was presented the Sayers J. Miller, Jr. Distinguished Athletic Training Educator Award at the NATA Awards Banquet in Dallas in June. Compton joins previous elite winners William E. "Pinky" Newell, Phil Donley, Joe Gieck, Robert Behnke and Carl Krein in receiving one of the Association’s most prestigious awards.

Compton received a Bachelor of Science degree in Health and Physical Education from Ohio University in 1969 and a Master of Education degree in Health and Physical Education from Bowling Green State University in 1970. He has been the Sports Medicine Director and Head Athletic Trainer at East Carolina University since 1970, and has been the Sports Medicine Curriculum Director for the widely-acclaimed ECU program since 1974.

Compton designed and developed the undergraduate sports medicine curriculum at ECU in 1974, one of the first NATA curriculums in the country, and he developed the
Custom Ankle Support...

- Professionally applied athletic tape (various sizes and strengths customize each procedure).
- Professionally applied arch support—according to individual needs.
- Strong, lightweight, porous cloth fabric tape.
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- Professionally applied heel locks—may vary with individual needs.
- Underwrap applied if desired.

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state and national basis give cause for this prestigious and well-earned recognition. Our sincere thanks and congratulations are extended to Rod, as well as our best wishes for continued achievements.

Rod Compton has truly excelled as an athletic training educator. His demand as a speaker, the respect he draws as a teacher and trainer, and his continuing contributions on a graduate program in Sports Medicine at ECU in 1982. He is a regular lecturer in sports medicine courses for the North Carolina State Department of Public Instruction, conducts various workshops for city and regional organizations, and teaches various courses for the State of North Carolina Student Trainers’ Clinic. Among his contributions to athletic training education are numerous publications, including five chapters in *Athletic Training and Sports Medicine* by the American Academy of Orthopaedic Surgeons.

Some of Compton’s major presentations have been for the NATA annual meeting and clinical symposium, NATA program directors meetings, the University of Virginia sports medicine conference, the East Carolina University School of Medicine, the Mid-Atlantic Athletic Trainers’ Association, and local television networks. Compton originated and has directed the annual ECU Sports Medicine Conference which has been conducted since 1970.

Compton was the Editor-in-Chief of the NATA Journal from 1972-79, and served on the Program Directors Council. He served on the North Carolina Governor’s Sports Medicine Advisory Committee, was chairman of the North Carolina Committee for Athletic Trainer Licensure, and has been the Director and President of the North Carolina Society for Certified Athletic Trainers. He was directly involved in developing standards of CPR education for the State of North Carolina. He has just been appointed as co-chairman of the NATA’s new Physician/Athletic Trainer Advisory Council.

Compton was instrumental in designing and developing the new ECU Sports Medicine/Physical Education Building which opened in August 1989. This three-story, 82,000 square foot injury treatment and rehabilitation center includes a state-of-the-art human performance lab, biomechanics lab, sports medicine suite, 5,000 square foot strength training center, computerized rehabilitation and evaluation equipment, auditoriums and classrooms. It is a unique structure, unlike any facility in the country.

Sports Medicine Team Visits Soviet Union
George Borden, ATC, Director of Sports Medicine for Virginia Commonwealth University, and Tom Loughran, M.D., Medical Director of the VCU Sports Medicine Center, recently completed a ten-day visit to the Soviet Union where they presented a sports medicine program in Moscow and Leningrad.

They were guests of the USSR Sports Committee, a part of a unique exchange program between the two countries, the first of this type involving the US and USSR. Borden and Loughran conducted 3-day seminars, attended by noted Olympic and national team doctors as well as by sports therapists. Loughran spoke on the role of the team doctor and orthopedic surgeon in North America. Borden spoke on the role and function of the athletic trainer/therapist, and demonstrated various taping techniques, bandaging, and the fabrication of protective injury pads.

It marked the seventh trip to the Soviet Union for Borden. He has served as the sports medicine liaison for many Soviet National Teams that have toured North America. He was scheduled to work the 1980 Olympic Games in Moscow, and worked the US men’s volleyball team that attended the 1986 Goodwill Games in Moscow. Borden and Loughran are tentatively planning to return to the Soviet Union for an expanded sports medicine program.

1989 Ohio Trainer of the Year Awards
The Ohio Athletic Trainers Association recently announced the recipients of their 1989 Trainer of the Year Awards. From left to right the winners were: Bill Tessendorf, Head Athletic Trainer for the Cleveland Browns Football Team, was the honoree in the professional/clinic division. The high school winner was Springfield South High School’s Head Athletic Trainer, Mike Willets. The college winner was Tony Ortiz, Head Athletic Trainer at Wright State University in Dayton.
When your athletes train and compete, they lose more than water. And Gatorade® Thirst Quencher gives them more. Gatorade combines fluids, electrolytes, and carbohydrates in a formula that helps keep athletes hydrated and helps enhance their athletic performance.

**Rehydration.**
During intense exercise, sweat loss can exceed 2 quarts per hour. Unless these fluids are replaced, dehydration will occur and heat illness becomes more likely (1). Dehydration reduces blood volume, compromising blood flow to muscles and skin. Sweat rate decreases and body temperature rises. These impairments in cardiovascular and thermoregulatory function increase the risk of heat illness and reduce exercise performance. To counter the risk of dehydration, fluids must be replaced rapidly. Research confirms that the levels of carbohydrates and electrolytes in Gatorade stimulate fluid absorption (2). Not even plain water is absorbed faster than Gatorade (3). By consuming Gatorade before, during, and after exercise, athletes can speed fluid absorption, counter the effects of dehydration, and maintain cardiovascular and thermoregulatory function during exercise (1).

**Energy.**
Gatorade also provides carbohydrate as energy for working muscles. During training or competition, muscles draw heavily upon muscle glycogen stores as an energy source. As glycogen levels decline, muscles rely more on blood glucose (4). The 6% blend of sucrose and glucose in Gatorade is as effective as any carbohydrate—including glucose polymers—in maintaining your athletes' blood glucose levels, providing energy to their working muscles, and improving their athletic performance (1).

It's been researched. It's a fact. Gatorade performs.

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**References:**

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continued on page 298
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Book Reviews

Phil Callicutt, EdD, ATC

The Stanford Health & Exercise Handbook
Stanford Alumni Association & Stanford Center for Research in Disease Prevention
Leisure Press
Department 513, Box 5076
Champaign, IL 61825-5076
1989
208 pages
Price: $10.95 (paper back)

Experts from one of the world's leading institutions have cut through the mass of fitness information bombarding consumers today and produced a straight-forward approach to fitness. Specialists from the Center for Research in Disease Prevention and the Sports Medicine Department at Stanford University have created a book that provides fitness consumers with more than an individualized exercise program.

The handbook summarizes recent research findings which are often not printed in their entire form when reviewed in newspapers or on TV. The authors help the reader understand the true health benefits of exercise. They go an additional step and explain the different kinds of exercise, and reveal how exercise improves muscular strength, endurance, aerobic fitness, flexibility, and body composition.

This handbook provides a fitness self-assessment to enable the readers to measure their own fitness levels. It also presents guidelines for establishing individual exercise programs and covers important related topics such as motivation, injuries, stress management, diet, and blood pressure.

There is also an excellent 120 minute videotape which can be purchased for a total price of $44.95, this price includes the book and the video. In the companion video, renowned fitness specialists team up with world-class athletes to introduce the concepts and practical tools found in the textbook.

This book is well written and is easy to follow. It has a wealth of solid, well researched information concerning one of our nation's hottest topics: physical fitness. You will not find a better source of information on this subject at any price.

Sports Massage
Dr. Jari Ylinen and Mel Cash
Century Hutchinson
Distributed by David & Charles, Inc.
North Pomfret, VT 05053
1989
165 pages, Illustrated
Price $19.95

There have been many books written on massage, but to date there have been none covering the specific area of sports massage. Athletic Trainers need to understand the specific approach of sports massage so they can enable athletes to remain active and perform well. This text deals with the techniques and basic routines as well as the treatment of specific injuries which are related to various sports.

The authors have divided this complex topic of sports massage into twenty well written chapters accompanied by a large number of pictures and illustrations. Dr. Ylinen and Mr. Cash have made a concerted effort to provide the reader with concise and detailed pictures and illustrations.

The opening chapter introduces the reader to the use of massage in the field of sports. After this first basic chapter you are in for a treat! The second chapter deals with the effects of sports massage. This chapter gives the rationale and benefits of massage. Chapters three through six explore general and basic...
EDITOR’S NOTE: It has been brought to my attention that some of the information reported in my review of Sports on Trial (as it appears in the Summer issue of the Journal of the National Athletic Trainers Association) was in error. Mr. Richard Ball, Sports Unlimited, Phoenix, AZ, was kind enough to call this to my attention. The following is an excerpt from Mr. Ball’s letter.

“The video tape which is sold by the Athletic Institute for a price of $39.00 is only the 60 minute version. This version was developed as a preview tool to introduce people to the mock trial workshop that incorporates the longer version. While it is certainly informative, it was never intended as a free standing educational piece.

“The two hour version cannot be purchased. It is only available on loan in conjunction with an agreement to present the mock trial workshop, during which there is a mixture of live witness presentation along with selected segments from the videotape.

“The mock trial workshop can be arranged for by a school district, professional association, or other interested organization in one of two ways. The American Orthopedic Society for Sports Medicine has a package of materials which provides suggestions for organization and presentation of the workshop, and has copies of the two hour version of the videotape available on a loan basis for that purpose. The other alternative is to contact my office and arrange for my presentation of the workshop. In conjunction with the mock trial, I usually do a follow-up session on sports injury risk management. The importance of using the material in a workshop setting is that 1) the program can then be tailored to the particular group for whom it is presented and 2) there is an opportunity for the observers to ask questions and receive clarification about the issues which are raised during the mock trial. If the material is used in a genuinely educational fashion, I think it is important for participants to understand how they can use the information to improve their program or their personal approach.”

I hope my error has not caused any inconvenience to the NATA or the membership. Please accept my apologies for this dilemma. I would like to thank Mr. Richard Ball for bringing this information to my attention.

CHAMPIONS AT ANY PRICE
Ross Laboratories
Division of Abbott Laboratories, USA
Columbus, OH 43216
Color, 1/2” VHS, 22 minutes

This is the fourth videotape I have reviewed that addresses the issue of anabolic steroids and athletics. Like the others, Champions at any Price concentrates on the adverse side effects that accompany the use and abuse of anabolic steroids. However, Champions at any Price goes beyond the introductory educational information and expands on the behavioral and psychological changes that can occur from anabolic steroid use.

There have been countless efforts to educate the public on the immediate and long-term health risks associated with steroid use. While this is important, it is imperative that behavioral and psychological alterations that are secondary to the use and abuse of steroids be discussed as well. Over the years, the concerns for health risks have far outweighed any concern for the behavioral modifications that the athlete might go through. Although Champions at any Price does not go into great detail on this topic, it does shed some light as to how and why
“ARTU, the Ankle Reflex Treatment Unit by Universal is one of the most significant pieces of equipment available for treating foot and ankle injuries. It is highly effective in treating pain, edema, stiffness and many other ankle and foot pathologies. Treatment sessions are shorter, and fewer sessions are required to complete rehabilitation. Without question, I have seen the quality of patient care and the efficiency of my practice improve as a result of implementing ARTU into treatment programs.” Robert A. Donatelli, MA, PT, Physical Therapy Associates, Atlanta, Georgia.

ARTU treats a full range of surgical and non-surgical foot and ankle pathologies including sprains, post-operative soft tissue repair and post-trauma immobilization. Cryotherapy, passive range of motion and massaging action, which can be used independently or in any combination, provide consistent therapy, treatment to treatment.

Controlled temperature of 41 degrees F., is ideal for reducing blood flow and restricting swelling. A textured footplate controls movement through 36 degrees of dorsiflexion and plantar flexion, 24 degrees of inversion/supination and eversion/pronation. And because the foot is not secured to the plate, the patient can comply to the range of motion at his or her own pace. Broad surfaced rollers massage the dorsal area of the foot/ankle complex and posterior ankle and leg tissues to aid in the removal of injury by-products and swelling.


“My foot felt a lot less swollen after using ARTU and I experienced greater mobility. The cooling effect helped to relieve my pain and the massaging action was very relaxing to my foot.” Patient, Physical Therapy Associates, Atlanta, Georgia.

For more information and a FREE video demonstration, call 800-553-7901 today.
Calendar of Events

Jeff Fair, ATC, EdD, CCT

OCTOBER


11 Applied Research Ethics National Association Annual Meeting, Boston, MA. Contact Joan Rachlin, 132 Boylston Street, Boston, MA 02116.

12-13 “The History and Current Status of IRBs: A Retrospective and Planner,” Boston, MA. Contact Joan Rachlin, 132 Boylston Street, Boston, MA 02116.

29-November 3 First IOC World Congress on Sports Sciences, Colorado Springs, CO. Contact Mary Margaret Newsom, U.S. Olympic Committee, Dept. of Education Services, 1750 East Boulder Street, Colorado Springs, CO 80909.

NOVEMBER


4-5 Shoulder Rehabilitation in Sports, Philadelphia, PA. Contact Center for Sports Physical Therapy, P.O. Box 1003, Berwyn, PA 19312.

6-7 “People as Products: Legal, Ethical and Social Issues in Reproductive Technology and Other Procedures Involving the Commercialization of Bodily Products”, Boston, MA. Contact PRIM&R, 132 Boylston Street, 4th Floor, Boston, MA 02116.

11-12 Updated Concepts of Isokinetic/Eccentric Exercise, Atlanta, GA. Contact S.T.E.P., Inc., 3091 Maple 1 Drive, Suite 114, Atlanta, GA 30305.

DECEMBER

1-3 Knee Ligament Rehabilitation, Atlanta, GA. Contact Knee Rehabilitation Institute, P.O. Box 1003, Berwyn, PA 19312.


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 CALENDAR to Jeff Fair, Ed.D., ATC, 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.

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Dr. Robert Brashear, Tennessee's longtime team physician, received numerous awards in recognition of his contributions to the field of sports medicine.

Dr. Brashear's introduction to the athletic training profession took place in 1929 when he began serving the University of Tennessee as athletic trainer, a post he held until 1937. At that time, he became the Vols' team physician, serving until his retirement in 1976.

He was instrumental in the formation of the National Athletic Trainers Association, which twice honored him for his contributions to the profession. In 1953 he became the Association's first Honorary member and then in 1984 Dr. Brashear received the President's Challenge Cup, which is the most prestigious award in sports medicine.

Another significant honor was bestowed on Dr. Brashear in 1967 when the East Tennessee Chapter of the National Football Foundation and Hall of Fame selected him for its Contribution to Amateur Football Award. He also received a citation as an honorary football letterman from Vol coaches in 1965.

The recognition he received from the Hall of Fame said in part: "He has served many years as an advisor to the national trainers' organization and as a clinic speaker for NCAA-sponsored events."

The renowned orthopedic specialist, a native of Mississippi, grew up in Memphis and moved to Knoxville after graduation from UT medical college. He was a partner in the Knoxville Orthopedic Clinic and a professor of orthopedic surgery at UT Hospital.

Dr. Brashear, an early advisor to NATA, told a newspaper reporter in 1981, "The development of NATA was the greatest single thing that happened in college athletics in my lifetime."
In Memoriam

Michael Mario Lorenzi

May 8, 1965—November 17, 1988

Mike Lorenzi was a third year student athletic trainer at Southwest Missouri State University when he suddenly became extremely ill. Within a few days he collapsed and died from a thrombolic pulmonary embolism. Mike was a native of St. Louis, Missouri and a senior biology major. He had planned to graduate in May 1990 and pursue graduate study in exercise physiology.

Mike was a very knowledgeable and compassionate student athletic trainer and a warm and giving person. Thus, an award for the most improved student athletic trainer of the year has been established in Mike’s name.

He was a member of the National Athletic Trainers Association, Missouri Athletic Trainers Association, and the Student Athletic Trainers Association at Southwest Missouri State University.

Mike was very special to both his athletes and peers. His presence will be greatly missed.
In Memoriam

John “Jack” Williamson

January 4, 1909—September 8, 1988

John “Jack” Williamson, former head athletic trainer at University of California, Berkeley, died in Napa, California from a sudden illness. He was 79 years of age.

Born in Petersburg, Illinois, Jack began his 40 year career as an athletic trainer in 1930 at Northwestern University at Chicago. He moved to Berkeley in 1942 to become the head athletic trainer at the university.

In 1948 Williamson was the head trainer for the United States Olympic team at London. Following the Olympics he was the trainer for the first U.S. Athletic team to perform behind the Soviet iron curtain in Eastern Europe. He accompanied many U.S. teams on world tours under the auspices of the U.S. State Department.

During 1948 he was named trainer of the year by the American Football Trainers Association.

Jack was a commissioner of the Alta, California fire department and was an honorary member of the Big “C” Society at UC Berkeley.

Following retirement from Cal, Jack pursued the outdoor life - hiking, backpacking and playing golf - at Alta, a northern California community.

Williamson is survived by his widow, Marbry, his daughter, Marbry Anne Todaro of San Luis Obispo, his son Craig of Napa, a sister, Majorie Sutfin of Portland, Oregon, and five grandchildren.
Guide to Contributors

Athletic Training, the Journal of the National Athletic Trainers Association (NATA), Inc., welcomes the submission of manuscripts which reflect the current interest of persons engaged in or concerned with the progress of the athletic training profession. Manuscripts should conform to the following:

SUBMISSION POLICIES
1. Submit one original and three copies of the manuscript and artwork to the editor.
2. We accept manuscripts for review with the understanding that they are original, have not been submitted to or published in any other journal, book, or edited work. Excludes assignments or otherwise conveys all copyright ownership to the NATA, in the event that each work is published by the NATA.
3. Material taken from other sources, including text, illustrations, or tables, must be accompanied by a written statement from the author and publisher giving Athletic Training permission to reproduce the material. Photographs of individuals must be accompanied by a signed photograph release form. Acceptance of manuscripts becomes the property of the National Athletic Trainers Association. For permission to reproduce an article, or part there-of, published in Athletic Training, send request to the Editor-in-Chief.
4. Published manuscripts and accompanying artwork cannot be returned. Unused manuscripts will be returned when submitted with a stamped, self-addressed envelope.
5. Manuscripts are reviewed and edited to improve the effectiveness of communication between the author and the readers, and to assist the author in a presentation compatible with the accepted style of Athletic Training. The author accepts responsibility for any major corrections of the manuscript as suggested by the editor. The initial review process usually takes from six to twelve weeks.
6. Athletic Training utilizes a double blind review process. Authors should take care that they are not identified in any way except on the first title and biographical sketch page.

STYLE POLICIES
7. Personal pronouns (I, we) and the active voice are preferred. Use the third person for describing what happened, "I" or "we" (if more than one author) for describing what you did, and "you" or the imperative for instructions.
8. Each page must be typewritten on one side of 8 1/2 x 11 inch plain paper, double spaced, with a one and one-half inch left margin and one inch margins elsewhere.
9. Manuscripts should include the following information organized in the order listed, with each section beginning on a separate page:
   a. Title page
   b. Biographical sketch
   c. 2nd Title
   d. Abstract
   e. Text (body of manuscript)
   f. References
   g. Acknowledgements
   h. Legend to illustrations
   i. Illustrations each on a separate page
   j. Tables each on a separate page
   k. 10. Titles should be brief within descriptive limits (a 16 word maximum is recommended). The name of the disability treated should be included in the title if it is the relevant factor; if the technique or type of treatment used is the principle reason for the report, this should be in the title. Often both should appear. The title page should also include the names, titles, and affiliations of each author, and the name and address of an author with whom correspondence is to be directed. Both the title and biographical sketch pages should be unnumbered.
   l. A brief biographical sketch of each author is requested.
   m. A second title page which includes only the title and with no reference to the authors next. Begin numbering the pages of your manuscript with this page as #1.
   n. A comprehensive abstract of 75 to 200 words must accompany the manuscript. This abstract should succinctly summarize the major intent of the manuscript, the major points of the body, and the author's summary and/or conclusions. To state in the abstract words to the effect of the significance of the information is discussed in the paper is unacceptable.
   o. Begin the text of the manuscript with an introductory paragraph or two in which the purpose or hypothesis of the article is clearly stated. Highlight of the most prominent work of others as related to the subject at hand is often appropriate for the introduction, but a detailed review of the literature should be reserved for the discussion section. The body or main part of the manuscript varies according to the type of article. Examples follow: Regardless of the type of article, however, the body must include a discussion section in which the material presented is discussed and related to other pertinent literature. Liberal use of headings and subheadings, charts, graphs, and figures is recommended.
   p. The body of an experimental report consists of a methodology section, a presentation of the results, and a discussion of the results. The methodology sections should contain sufficient detail concerning the methods, procedures, and apparatus employed so that others can reproduce the result. The results should be summarized using descriptive and inferential statistics and a few well-planned and carefully constructed illustrations.
   q. The body of a review of the literature article should be organized into subsections in which the major points of others is presented and summarized. Each subsection should have a heading and a brief summary, possibly one sentence. Sections must be arranged progressively to focus on the problem or question posed in the introduction.

The body of a Case Report should include the following components:
   r. Personal data (age, sex, race, marital status, and occupation when relevant — but not name), chief complaint, and history (surgery, laboratory, exam, etc.), diagnosis, treatment and clinical course, rehabilitation until and after return to competition, criteria for return to competition, and deviation from the expected (what makes this case unique). NOTE: It is mandatory that a rapidograph receive, along with the submitted manuscript, a signed release form by the individual being discussed in the case study and history section of the manuscript not be reviewed if the release is not included.

The reference section accompanying a manuscript should list all authors numerically and in alphabetical order. Citations in the text of the manuscript will take the form of a number in parentheses, (7), directly after the reference or name of an author being cited, indicating the number assigned to the citation. The list of references and citations should be in the following form: a) articles: author(s) list all with family names then initials, title of article, journal title (abbreviated as per Index Medicus and other volumes), inclusive pages, year. Issue number is required if each issue begins with page #1, but must not be used. b) books: author(s), title of book (underlined), city of publication (and state if the city is not major), publisher, year, inclusive pages of citation. Excludes reference to a journal, book, chapter in an edited book, and presentation at a meeting are illustrated below. Note lack of punctuation in authors names.


16. Good quality color photography is acceptable for accompanying graphics but glossy black and white prints are preferred. Graphs, charts, and tables should be of good quality and clearly presented on white paper with black ink in a form which will be legible if reduced for publication. Tables must be typed, not hand written. Photographs cannot be returned if the manuscript is published. Please refrain from putting paper clips on any photograph.

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Body composition was assessed with underwater weighing and skinfold methods. For those athletes with excess body fat, weight reduction was recommended to enhance their athletic performance.

Since the athlete is dependent on his/her sensory capabilities, it is imperative that these be thoroughly evaluated as part of an overall examination. These athletes are first and foremost students, and any sensory deficiency may hamper their performance in the classroom as well as their athletic ability. As a part of the health screening process, the athletes undergo audiometry, visual acuity, peripheral vision and glaucoma tests. Two cases of nearsightedness, one case of hearing loss, and one possible case of glaucoma were detected through the evaluation process. In addition, one tennis player was found to have decreased distance vision in his right eye, which could impair his ability to detect a ball being hit from that direction. Visual correction would enhance his play.

In conclusion, we feel that a process of thorough health evaluation of athletes is a benefit both to the athlete and to the institution. The athlete gains because his/her health is protected and enhanced as much as possible by the detection of any existing health problems and there may also be a greater confidence in the university by knowing that it has an interest in his/her overall well-being, not just in his/her athletic abilities. The university gains the appreciation of the athlete and a better knowledge of its athletic population while protecting itself as much as possible from the threat of future negligence litigation. All of this occurs in a learning environment - the athlete learns about him/herself while the process of evaluation is an educational benefit to the Human Performance Laboratory as the representative of the university. Thus, the universities' demonstrated interest in maintaining and enhancing athletes' medical condition serves to enhance athletic performance and is also an important recruiting tool.

Contributing authors:
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Associate Professor
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Acknowledgment
I would like to thank Paul Grace, Chairman, Board of Certification, and Robert Behnke, Chairman, Professional Education Committee, for their cooperation with this study.

References

STUDENTS' LEARNING STYLES from page 235

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BOOK REVIEWS from page 266

techniques and routines of sports massage. Chapter seven deals with the interesting concept of stretching and muscle energy techniques (MET).

Chapters ten and eleven address the contraindications and the correct use of massage. I like to call these chapters the DO’S and DO NOT’S. In these chapters the authors are openly cautioning us that sports massage is not the answer to all our sports medicine problems and situations. Chapters twelve and thirteen examine the treatment of acute injuries and give the reader some helpful advice and information on sports massage.

The different types of therapy and massage are covered in great detail in chapters fourteen through twenty. Acupressure, Lymph, and Zone therapies are covered, along with Shiatsu and Trigger points. The text ends with an excellent bibliography, glossary, and index. From the start I felt that the authors had a strong belief in the theory and application of sports massage. After finishing their book, I have a much better understanding of this sometimes controversial medium utilized in the treatment of sports related injuries and conditions.

This is a book which has a little something for everyone, whether he or she be an old “Brown Shoe” trainer like myself, or a new trainer just entering the profession for the first time. I am sure everyone will gain a new prospective on the subject of sports massage as I did after completing this excellent work.
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NCAA To Adopt Color Standards For Mouthguards

American Dental Association News

A new rule going into effect with the 1990 football season mandates that all National Collegiate Athletic Association football players wear colored intraoral mouthguards covering all maxillary teeth.

The popular white and clear plastic mouthpieces will no longer be acceptable equipment on playing fields, said Jim Gossett, head athletic trainer at Columbia University.

"The rule was enacted because the officials couldn't see if the players were wearing their mouthguards when they were clear or white," Mr. Gossett said. "All the NCAA-member teams agreed on this new rule. Everyone felt the mouthpieces are simple pieces of equipment, but very important to the athlete's safety."

He added that it is "pretty well documented" mouthpieces not only prevent dental injuries but also reduce the severity of concussions.

"The mouthpiece serves as a shock absorber," he explained. "We've seen a definite decrease in the number and severity of concussions in players wearing mouthpieces."

In college football a 5-yard penalty is levied against a team if any member of that team is seen on the field without a mouthpiece. Mouthguards have been recommended for collegiate football players since 1962. The provision making them mandatory equipment was added to the rule book in 1973.

Some players "don't like wearing the mouthguards and they don't wear them because they can get away with it," Mr. Gossett explained. "The officials get too caught up in the heat of the battle to concentrate on 22 players having mouthpieces in. You just can't see clear plastic all the way across the field. With a high-visibility mouthpiece it will be much easier for the officials to keep track."

The new colored mouthguards also should aid coaches in recognizing whether their players are wearing mouthguards during team practices.

Psychological Factors Related To The Occurrence Of Athletic Injuries

Journal of Sports & Exercise Psychology

This study reports data regarding gymnastics injuries. Examined were the number, severity, and location of injuries, events associated with injury occurrence, relationship in time between occurrence and competition, and the perceptions of causes. In addition, this study investigated the relationships between the psychological factors of trait anxiety, locus of control, self-concept and stressful life events, and the occurrence of athletic injuries. The subjects were 41 elite female gymnasts and five national level coaches. There was a high rate of injury (83%), primarily to the ankle region, with most injuries occurring during the floor exercises. The timing of injuries was related to the approach of competition. The data indicated that stressful life events were significantly related to both the number and severity of injuries. Significant relationships were not found between trait anxiety, locus of control, self-concept, and the injury measures.

The Surgeon General's Nutrition Recommendations For Most People

Contemporary Nutrition

Fats and cholesterol: Reduce consumption of fat (especially saturated fat) and cholesterol. Choose foods relatively low in these substances, such as vegetables, fruits, whole-grain foods, fish, poultry, lean meats and low-fat dairy products. Use food preparation methods that add little or no fat.

Energy and weight control: Achieve and maintain a desirable body weight. To do so, choose a dietary pattern in which energy (caloric) intake is consistent with energy expenditure. To reduce energy intake, limit consumption of foods relatively high in calories, fats and sugars, and minimize alcohol consumption. Increase energy expenditure through regular and sustained physical activity.

Complex carbohydrates and fiber: Increase of whole-grain foods and cereal products, vegetables (including dried beans and peas) and fruits.

Sodium: Reduce intake of sodium by choosing foods relatively low in sodium and limiting the amount of salt added in food preparation and at the table.

Alcohol: To reduce the risk for chronic disease, take alcohol only in moderation (no more than two drinks a day), if at all. Avoid drinking any alcohol before or while driving, operating machinery, taking medications or engaging in any other activity requiring judgment. Avoid drinking alcohol while pregnant.

Flouride: Community water systems should contain flouride at optimal levels for prevention of tooth decay. If such water is not available, use other appropriate sources of flouride.

Sugars: Those who are particularly vulnerable to dental caries (cavities), especially children, should limit their consumption and frequency of use of foods high in sugars.

Calcium: Adolescent girls and adult women should increase consumption of foods high in calcium, including low-fat dairy products.

Iron: Children, adolescents and women of childbearing age should be sure to consume foods that are good sources of iron, such as lean meats, fish, certain beans and iron-enriched cereals and whole-grain products. This issue is of special concern for low-income families.

CPR Manual

American Academy of Orthopaedic Surgeon's Report

The Academy now publishes a new manual, Save a Life: The ABC's of CPR, intended for anyone teaching CPR. A complement to the AAOS textbook, Emergency Care and Transportation of the Sick and Injured, the CPR manual contains approved technical material to prepare students for practical skills development and final CPR certification. Save a Life is based on the "Standards and Guidelines for Cardiopulmonary Resusitation (CPR) and Emergency Cardiac Care (ECC)" published in the Journal of the American Medical Association (JAMA), June, 1986; and on the "Instructor's Manual for Basic Life Support" and "Totsaver," published by the American Heart Association. Author Barbara W. Trez, EMT, has been a practicing
Put Safety Into Your Child’s Back-To-School Routine

Safe Kids

For most families, the first cool breezes of fall signal the hustle and bustle of back-to-school activities. It’s an exciting time for children, but it’s also a dangerous time, as routines change and they encounter new people and situations.

Each year, nearly 3,000 children nationwide die from motor vehicle-related incidents, and thousands more are injured. Most of these injuries involve motor vehicles and children on foot or on bikes, getting in and out of cars, or on and off school buses.

“Parents shouldn’t let safety get lost in the back-to-school shuffle,” said SAFE KIDS Campaign Executive Director Herta Feely. “Even though parents are busy, spending a little time at the beginning of the school year to teach and remind their children about basic safety skills can make a big difference in their back-to-school routine,” Feely said.

The following back-to-school safety tips are offered by the National SAFE KIDS Campaign, a long-term program to prevent childhood injuries — the number one killer of children.

Bikers

Children who ride bikes to school should wear a helmet every time they ride. Head injuries account for three-fourths of bike-related deaths. One in seven children under age 15 suffers a head injury in a bike crash.

Every day at least one child is killed and another 1,000 are seriously injured in bicycle crashes.

A recent study in Seattle found that bicycle helmets prevent most head injuries.

- Follow rules of the road. Children who ride bikes to school should be taught to follow the rules of the road that apply to all vehicles. Children are especially at risk in four situations: 1) riding out into the street without first looking for or yielding to traffic; 2) engaging in risky behavior and making false assumptions about other vehicles at intersections; 3) swerving suddenly, without signalling or looking for approaching traffic; 4) riding against the flow of traffic.

- Don’t ride at night. Children should not be allowed to ride home from school after dark. Nearly three times as many collisions between cars and bikes happen after dark.

- Young children should not ride. Because their coordination is not fully developed, children under 8 should not ride their bikes to school.

- Choose a safe cycling route. A safe cycling route to school may not be the same as a safe walking route. Streets with a steady flow of fast-moving traffic are not appropriate for young cyclists with limited traffic experience.

- Schools should provide cyclists with “safe areas”. To improve safety for cyclists, schools should place bike racks in areas where there are few motor vehicles and pedestrians. Avoid drop-off and pick-up zones around the school.

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- Abduction/Adduction Movements.

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Walkers

Elementary school children, especially those ages 5 and 6 on their own for the first time, are more at risk for injuries on their way to or from school. They often walk, and generally do not recognize or understand the potential dangers of darting into or crossing a street. Young children believe if they can see a car, the driver can see them. They have trouble judging if a car is moving toward or away from them.

“The biggest problem is in your youngest age group,” said Dean Childs, Director of Traffic Safety Services for the American Automobile Association. “The trip to school may be the first time a child ventures beyond his or her block on their own,” Childs said. “It’s probably one of the biggest changes in their lives.”

• **Select safest route to school.** Before school starts, parents should help their children select the safest route to and from school or to and from the bus stop. In general, look for the most direct route with the fewest street crossings.

• **Teach safe walking habits.** On the first day of school, parents should walk children to and from school or the bus stop to demonstrate safety skills including how to cross a street safely: stop at the curb, look left, then right again before crossing. Children should be taught to use sidewalks, pedestrian bridges and crosswalks when they are available. Walk facing traffic, on the left-hand side, when sidewalks are not available, and never jaywalk or cross a street in the middle of the block, or from between parked cars.

• **Cross at supervised intersections.** Whenever possible, children should cross intersections where there is a crossing guard or student safety patrol.

• **Avoid unsafe roadways.** Avoid busy roads with complicated intersections and no sidewalks.

• **Young children should not walk alone.** Children under the age of 8 should walk with an adult or older child to school. “A fifth-grader has a lot more experience in traffic than a first-grader,” Childs said. A fifth-grade student has also been exposed to traffic safety education in school.

• **Set a safe example.** Parents should reinforce safe behavior by setting an example every time they walk with their children.

  “Pedestrian safety is really an education effort on everyone’s part,” said Cathy Belter, a National PTA board member. “Schools and parent organizations can help by sponsoring safety programs for children.”

Passengers

Parents who drop off or pick up their children by car should not add to the traffic congestion in front of schools during these busy times.

• **Stay away from high traffic areas.** Make arrangements to meet your child away from high traffic areas around the school or in a designated pick up zone.

• **Follow the same-side rule.** Always pull over to the same side of the street as the school or bus stop so your child does not have to cross the street to enter or leave the car. In 1986, 6,000 children were injured and 45 were killed in school bus incidents. Children who ride the bus can have a safe trip to school by following these guidelines.

• **Avoid bus “danger zones”.** Children who ride the bus should stay away from the danger zones around a bus. These include the areas in front of and to the right-rear of the bus, where the driver may not see children.

• **Safe bus behavior is good behavior.** Horseplay on the bus should be discouraged so the bus operator can concentrate on driving. Parents should encourage

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For a free kids magazine about traffic safety write to: National SAFE KIDS Campaign, SK-2, 111 Michigan Ave., NW, Washington, DC 20011.

Jet Lag’s No Fun

Good Health Digest

Some travel trivia: People flying from west to east are more likely to suffer jet lag than those travelling from east to west.

But no matter in which direction you are travelling, you can take steps to lessen the effects of jet lag, according to the Clymer Health Clinic in Quakertown, Penn.

- Don’t overeat or drink alcohol. Opt for water and juices on the plane.
- Avoid cramped positions on the plane. Take regular walks in the aisles.
- Break up long flights with one-day layovers along the way.
- Allow plenty of time to rest and sleep upon arrival.
- Adopt local time and routines immediately. For a one or two day trip, however, try to maintain your home schedule.
- Walk outdoors on the first days after arrival. Exposure to sunlight may help reset your biological clock.

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The following agenda items were considered and actions taken by the NATA Board of Directors, at its meetings held at the Regency Hyatt Hotel, Dallas, Texas, commencing at four-forty o’clock p.m., on Friday, June 9, 1989 and terminating at eleven forty-five o’clock a.m., June 14, 1989, with Mr. Mark Smaha, President, presiding and with the following in attendance:

Mark Smaha, President
Odo Davis, Executive Director
Kim Zeitlin, Attorney
Charles Redmond, District 1
Joseph Goden, District 2
Terry O’Brien, District 3
Dennis Miller, District 4
John Schrader, District 4
Jerry Weber, District 5
Paul Zale, District 6
Mike Neshitt, District 7
Janice Daniels, District 8
Doug May, District 9
Dennis Sealey, District 10

I. APPROVAL OF INFORMATIONAL ITEMS:
The following reports containing no recommendations or requests for action were, in accordance with motion made by District 6, seconded by District 8 and carried 10-0, accepted as information:

Journal Membership
Memorial Resolutions
American Kinesiotherapy Association
American Orthopaedic Society for Sports Medicine
American Physical Therapy Association
Joint Commission of Competitive Safeguards and Medical Aspects of Sports
National Association of Intercollegiate Athletics
National Collegiate Athletic Association Football Rules Committee
National Strength and Conditioning Association
National Registry on Sudden Death in Young Athletes

II. NO ACTION—NO REPORT SUBMITTED:
The Board, as a point of information, was informed that no reports or no requested actions were received from the following:

Drug Education
History and Archives
Placement
Publications
American Academy of Family Physicians
American Alliance for Health, Physical Education, Recreation and Dance
American College of Sports Medicine
National Academy of Sports Vision
American Association of School Administrators
National School Board Association
Canadian Athletic Therapist Association
National Association for Girls and Women in Sports

III. REAPPROVAL OF MAIL AND PHONE VOTE APPROVED ITEMS:
Moved by District 9, seconded by District 3 and carried 10-0 that the mail and phone votes previously approved be again reaproved.

IV. MEETING MINUTES:
Moved by District 6, seconded by District 3 and carried 8-0-2, with Districts 2 and 4 abstaining, that the section encompassing pages 108-120, inclusive, of the February Board meeting minutes be approved.

V. CERTIFICATION:
Moved by District 6, secondly and carried and carried by a vote of 9-1, with District 2 abstaining, that the Certification of the member in question is held to be proper and also that the certification of those involved before him involving similar cases likewise be held to be proper.

VI. MAGNINNIS AND ASSOCIATES:
Moved by District 7, seconded by District 6 and carried 10-0 to accept the letter dated June 8, 1989 from Magninnis and Associates as information only.

VII. AUDIOVISUAL AIDS:
Moved by District 8, seconded by District 9 and carried 10-0 to approve the committee members as stated on the 1989-1990 committee roster for this committee.

Moved by District 9, seconded by District 3 and carried 10-0 to direct Mr. Tim Kerin of the National Convention Committee and the Chairman, Mr. Bob Gray, of the audiovisual Aids Committee to meet and attempt to resolve the issue concerning moving of the Media Review Room closer to the exhibit area at the National Convention.

Moved by District 3, seconded by District 9 and carried 10-0 to permit the Audiovisual Aids Committee to purchase video tapes and sound slide presentations and make them available to the membership for a rental fee to permit the Audiovisual Aids Committee members to purchase padded mailing envelopes to safeguard video tapes when they are being mailed to the membership and to open communication lines with the National Library of Medicine and the library’s computer-based Medical Literature Analysis and Retrieval System which would give the membership a data base of medical information covering nearly twenty years and over 5,000 journals, all of this subject to budget approval by the Executive Director.

Vili. CAREER INFORMATION AND SERVICES:
Moved by District 6, seconded by District 3 and carried 10-0 to accept this report for informational purposes.

IX. CLINIC/CORPORATE CERTIFIED ATHLETIC TRAINER:
Moved by District 6, seconded by District 2 and carried 10-0 that George Sullivan be directed to update and develop new criteria for evaluation of Hall of Fame candidates and submit them to the President for distribution to the Board by October 1, 1989.

Moved by District 5, seconded by District 2 and carried 10-0 that the Honor Awards Committee be asked to study the criteria for Honorary Membership and report to the Board by midyear.

XI. MINORITY ATHLETIC TRAINERS:
Moved by District 9, seconded by District 7 and carried 10-0 that Karen Middleton be accepted as a member of this committee.

XII. PHYSICIAN-ATHLETIC TRAINER ADVISORY COUNCIL:
Moved by District 9, seconded by District 6 and carried with District 2 abstaining, that Rod Compton be accepted as Co-Chairman of the Committee representing athletic trainers.

Dr. McCallum and Rod Compton appeared before the Board, with Dr. McCallum, as the newly appointed Co-Chairman of this group, briefly explaining to the Board his present plans in relation to the goals and functions of this group.

Moved by District 10, seconded by District 3 and carried 10-0 that Dr. McCallum formulate a working committee to begin the process of obtaining continuing education accreditation for that group.

Moved by District 6, seconded by District 2 and carried 10-0 that Dr. McCallum’s report be received for informational purposes.

XIII. SECONDARY SCHOOL PROFESSIONAL ATHLETIC TRAINERS:
Moved by District 9, seconded by District 7 and carried 10-0 that additional information be provided to the Board by October 1, concerning approval for sponsorship of Role Delineation Surveys by corporation members.

Moved by District 6, seconded by District 1 and carried 10-0 that the recommendation of Notification of Agenda Items deadlines to Committee Chairs and Liaison Representatives in September and one month prior to due date be accepted as information.

Moved by District 7, seconded by District 4 and carried 10-0 that the committee recommendations for the year 1989-1990 be accepted.

XIV. AMERICAN COLLEGE HEALTH ASSOCIATION:
Moved by District 6, seconded by District 3 and carried 10-0 to accept this report for informational purposes.

XV. AMERICAN TRAUMA SOCIETY:
Moved by District 9, seconded by District 10 and carried 10-0 to accept this report for informational purposes.

XVI. NATIONAL ATHLETIC HEAD AND NECK INJURY REGISTRY:
Moved by District 2, seconded by District 1 and carried 10-0 to approve Leslie Karen Ragan as liaison to this group.

XVII. AMERICAN ACADEMY OF PEDIATRICS:
Moved by District 6, seconded by District 1 and
carried 10-0 that this report be accepted for informational purposes only.

XXVII. PRESIDENT:

Moved by District 9, seconded by District 5 and carried 10-0 to direct the President and Executive Director to establish liaison with Division 1 of the NCAA for future dialogue.

XXIX. METROPLEX AMATEUR SPORTS ASSOCIATION:

Moved by District 1, seconded by District 8 and carried 10-0 that this correspondence concerning help toward building of additional Olympic facilities be accepted for informational purposes.

XXLE LEE MARTIN PRODUCTIONS:

Moved by District 6, seconded by District 3 and carried 10-0 that this correspondence concerning an existing new video tape concept be accepted for informational purposes.

XXI. LICENSURE:

Moved by District 5, seconded by District 6 and carried 10-0 that the resignation of Ed Crowley as Chairman be accepted.

Moved by District 1, seconded by District 5 and carried 10-0 that Dan Campbell be accepted as the new Chairman of this committee.

Moved by District 5, seconded by District 6 and carried 10-0 that the Chairman of this committee be directed to reevaluate the present model legislation concerning regulatory efforts that are underway on a nationwide basis and to recommend and develop new model legislation, this to include all areas in which the athletic trainer markets himself, together with this reevaluation a technical advice and review of legal counsel.

Moved by District 7, seconded by District 1 and carried 10-0 that Bruce McIntyre and Kim Zestlin be directed to write a policy or clarification for tax status for distribution from the Board of Directors. 

Moved by District 10, seconded by District 8 that the NATA develop a funding mechanism for state regulatory efforts. The motion was voted upon with it being indicated as Districts 1, 3, 4, 7, 8, 9, and 10 voting in the affirmative, Districts 5 and 6 voting against and District 2 abstaining.

Moved by District 5, seconded by District 3 and carried 10-0 that the Licensure report be accepted for informational purposes.

XXII. FINANCIAL REPORTS:

Moved by District 1, seconded by District 3 and carried 10-0 that the financial reports presented by Brooks McIntyre involving the financial status of the NATA be approved.

XXIII. INTERNATIONAL GAMES:

Moved by District 6, seconded by District 1 and carried 10-0 that the proposed changes in Article Nineteen of the International Games Committee be accepted.

Moved by District 5, seconded by District 1 and carried 10-0 that the motion as indicated as Districts 1, 3, 4, 7, 8, 9, and 10 voting in the affirmative, Districts 5 and 6 voting against and District 2 abstaining.

Moved by District 5, seconded by District 3 and carried 10-0 that the Licensure report be accepted for informational purposes.

XXIV. NATA FOUNDATION:

Upon indication by Mr. McIntyre that the financial figures concerning the NATA Foundation had been included in the figures involved in his general financial report, it was moved by District 6, seconded by District 4 and carried 10-0 that this portion of his report be accepted for informational purposes.

XXV. NATA GRANTS AND SCHOLARSHIPS:

Moved by District 3, seconded by District 10 and carried 10-0 that this report be accepted for informational purposes.

XXVI. NATA HALL OF FAME:

Mr. McIntyre, in answer to a question raised, indicated that the Hall of Fame as of April 20th, amounted to a figure of approximately $8,262.

Moved by District 6, seconded by District 9 and carried 10-0 that this report be accepted.

Moved by District 2, seconded by District 5 and carried 10-0 that the Board of Directors support the concept of the establishment of a Hall of Fame, including fund raising and selection criteria.

XXVII. PRESIDENT:

It was indicated that the two candidates for the election to the Office of President for the next term were Mark Smaha and Doug May.

Moved by District 6, seconded by District 3 and carried 10-0 to individually vote for qualified candidates for the Office of NATA President for the next term.

Moved by District 7, seconded by District 4 and carried 10-0 that the Executive Director be directed to produce a new ballot to ensure security and confidentiality of the voting process.

XXVIII. VICE PRESIDENT:

The name of Jerry Weber was placed in nomination for the Office of Vice President for the 1989-1990 term.

There being no further nominations, it was moved by District 6 and seconded by Mr. Weber to declare the slate elected. A vote indicated the results voting in the affirmative and with District 5 abstaining.

XXIX. NATIONAL CONVENTION:

Fred Hoover presented a brief informational report consisting of registration statistics, booth sales and present plans concerning arrangements involving future convention sites. It being further indicated that the National Convention Committee would subsequently submit a detailed written report, this report to also include recommendations for Board actions.

Moved by District 5, seconded by District 3 that the Board of Directors direct Convention Services to negotiate with Dallas an arrangement whereby the National Convention could be brought to Dallas on a four-year basis. Action on the motion indicated Districts 3, 4, 5, 6, 7, 8, and 9 as voting in the affirmative and Districts 2 and 10 voting in the negative.

XXX. SCHERING SYMPOSIUM:

Moved by District 7 and carried 10-0 that Steven Yule be instructed to coordinate and perhaps the general subject of Food Nutrition among any other topics that might be considered for next year's Schering Symposium.

XXXI. EXECUTIVE DIRECTOR:

Moved by District 7, seconded by District 7 and carried 10-0 that after consultation with Mr. Labranche the NATA develop a funding mechanism for the Office of Vice President.

Moved by District 6, seconded by District 9 and carried 10-0 that Dr. Davis be reappointed Executive Director for another term.

XXXII. EXECUTIVE COORDINATOR:

Moved by District 2, seconded by District 5 and carried 10-0 that after consultation with Mr. LaBranche the NATA develop a funding mechanism for the Office of Vice President.

XXXIII. NATA BOARD OF CERTIFICATION:

Moved by District 6, seconded by District 2 and carried 10-0 that Dr. Joe O’Connor’s report be accepted for informational purposes.

XXXIV. NATA BOARD OF CERTIFICATION:

Moved by District 6, seconded by District 9 and carried 10-0 that the appointment of Bruce Kola as Chairperson was effective as of August 1, 1989.

Moved by District 7, seconded by District 8 and carried 10-0 that Terrence J. Cummings be appointed a member of this committee.

Moved by District 7, seconded by District 10 and carried 10-0 that the report presented by Paul Grace concerning the Board of Certification be accepted for informational purposes.

XXXV CEU COMMITTEE:

Moved by District 1, seconded by District 7 and carried 10-0 that the CEU Committee be directed to investigate the feasibility of a proposal that the NATA establish a CEU Committee to handle approved CEUs at the NATA and National meetings and report to the Board at its midyear meeting.

XXXVI. CONTINUING EDUCATION:

Moved by District 9, seconded by District 8 and carried 10-0 to accept this report for informational purposes.

XXXVII PROFESSIONAL EDUCATION:

Moved by District 1, seconded by District 2 and carried 10-0 to approve items I through VII of the report as below indicated:

1. Grant NATA approval of the athletic training education programs at the following colleges/universities for an additional five-year period from June, 1989 to June, 1994:
   A. Appalachian State University (UG)
   B. Central Michigan University (UG)
   C. Gustavus Adolphus College (UG)
   D. University of Iowa (UG)

E. Southwest Missouri State University (UG)
F. California State University-Fullerton (UG)
G. Oregon State University (UG)

II. Grant NATA approval of the athletic training education programs at the following colleges/universities for an additional five-year period from June, 1989 to June, 1994:
   A. Indiana University (Grad)
   B. Indiana University (UG) with approval for 1988-1990 under the 1980 Guidelines and after the Program Director submits evidence of compliance under the 1988 Guidelines prior to June 1, 1990, approval for 1990 to 1994 is granted.
   C. Kansas State University (UG)
   D. San Jose State University (Grad)

III. Grant NATA initial approval of the athletic training education programs at the following colleges/universities:
   A. University of Massachusetts - Boston
   B. University of Illinois (Grad)
   C. Kennesaw State University (UG)
   D. San Jose State University (Grad)

IV. Not grant NATA initial approval of the athletic training education programs at the following colleges/universities:

   A. University of Massachusetts - Boston
   B. Georgia Institute of Technology (UG)
   C. Kennesaw State University (UG)
   D. San Jose State University (Grad)

V. Remove the probationary status of the following athletic training education programs effective June, 1989 as the result of demonstrated compliance with NATA Guidelines:
   A. California State University-Long Beach

   Guideline Violations:
   1. Section II.G.4 (Clinical Supervision). The athletic training program had exceeded the maximum eight to one student to clinical instructors ratio. 
   2. Section II.G.4 (Clinical Supervision). Students in the program were performing duties that would normally be assigned to a registered, qualified staff.
   3. Section II.E.4 (Curriculum). The program had not demonstrated the availability of adequate resources including personnel.
   4. James Madison University

   Guideline Violations:
   1. Section I.A.1 (Verification of Need). Only seven graduates had become certified during the past five years.
   2. Section I.B.2 (Resources). There were inadequate resources regarding additional personnel.
   3. Section II.3.3 (Curriculum Location). The athletic training education program did not have official administrative recognition as a major or minor.
   4. Section II.E (Curriculum Requirements). The program did not offer sufficient course offerings to constitute an academic major or its equivalent.
   5. Section II.C.1.a (Dean or Department Head). The program did not include a formal plan for continual evaluation of its educational programs.
   6. Section II.C.1 (Program Director). The program director was not certified as the Program Director.
   7. Section II.C.2 (Clinical Instructors). Some clinical instructors (i.e., two graduate assistants) were not certified.
   8. Section II.C.3 (Teaching Facility). The teaching facility was not adequately certified. (Two first-year graduate assistants were teaching A.T. courses and one was not certified.)
   9. Section II.F.1 (Subject Matter Requirements). The program did not include sufficient study units or learning experiences to allow sufficient opportunity for the development of NATA "Competencies."
   10. Section II.G.4 (Clinical Supervision). The clinical instructors were not readily accessible to the students.
   11. Section I.B.2.1 (Clinical Supervision). Clinical supervision was being provided by unqualified graduate assistants.
   12. Section II.B.2 (Resources). A formal plan for continual evaluation of all aspects of the program was not sufficient.

C. Southwest Texas State University

   Guideline Violations:
   1. Section II.G.4 (Clinical Supervision).
VI. Place the athletic training education programs at
D. Washington State University
for a period of one year effective June, 1989, as a

F. University of Illinois - (UG)
Guideline Violations:
1. Section II,G,2 (Resources). The program lacks provisions that assure continual communication between the Program Director and all affiliated clinical instructors with respect to scheduling of clinical experiences, evaluation of student progress, and other matters affecting the students' learning experiences.

2. Section II,G,3,c (Affiliated Clinical Settings). The program lacks provisions that assure notification of all affiliated clinical settings accompanying the notification.

3. Section II,G,3,c,d (Allied Clinical Settings). The program lacks a policy that assures that written documentation of all affiliated clinical settings will be forwarded with other specified materials at the time the program is submitted for NATA consideration.

4. Section II,G,4 (Clinical Supervision). The program has students accumulating directly supervised clinical hours prior to being admitted to the program. This creates a situation where the maximum eight students to one clinical instructor is not being observed.

C. Slippery Rock State College
1. Section II,G,3,d (Allied Clinical Settings). Students are accumulating clinical hours, within the 800 hour minimum, in allied clinical settings.

2. Section II,G,4 (Clinical Supervision). The program has no formal plan for organization and structuring of clinical experiences to ensure effective learning opportunities for all students in the clinical aspect of the program.

3. Section II,G,5 (Clinical Supervision). Review of the clinical experience revealed a lack of a formal plan for organizing and structuring the clinical experience which ensured effective learning opportunities for all students in the clinical aspect of the program.

A. Washington State University
Guideline Violation:
1. Section II,G,4 (Clinical Supervision). The program should not be counted from an affiliated clinical setting where the responsibilities are not being properly conducted. Students are left unsupervised and left to manage major sports and, in doing so, provide unsupervised services.

B. Texas Christian University
Guideline Violations:
1. Section II,G,2 (Structuring Clinical Experiences). Review of the clinical experience revealed a lack of a formal plan for organizing and structuring the clinical experience which ensured effective learning opportunities for all students in the clinical aspect of the program.

VII. Extend the probationary period for the following athletic training education program to June, 1990:
A. Northeastern University
The program is currently on probation for the following:

Guideline violations:
1. Section II,G,4 (Clinical Supervision). The program is not sufficiently organized and structured to ensure that necessary responsibilities are properly accomplished.

2. Section II,G,5 (Clinical Supervision). The clinical experience of students supervised by qualified clinical instructors is not being properly conducted. Students are left unsupervised and left to manage major sports and, in doing so, provide unsupervised services.
XXXVIII. GATORADE:
Bill Schmidt appeared briefly before the Board expressing his thanks for the opportunity of Gatorade to be of service to NATA, then requesting permission of the Board for his company to continue to help the education of the district members by being allowed to present additional courses at the district level. The Board, after subsequent discussion concerning the merits of this proposal unanimously agreed that Mr. Schmidt be given permission to pursue his proposal, working with both Mr. Davis and the various District Directors.

Moved by District 9, seconded by District 1 and carried 9-0 with District 6 being absent, that Mr. Schmidt be given permission to pursue his proposal. The Board, after subsequent discussion concerning the merits of this proposal unanimously agreed that Mr. Schmidt be given permission to pursue his proposal, working with both Mr. Davis and the various District Directors.

XL. CONTINUING EDUCATION:
Moved by District 1, seconded by District 10 and carried 10-0 that the recommendation of the committee concerning approval of .5 CEUs for the Cramer Board of Certification for their implementation with the indication that the Board supports this in concept.

Moved by District 1, seconded by District 10 and carried 10-0 that these video tapes based on subject matter, running time and producer be referred to the Board of Certification for their implementation with the indication that the Board supports this in concept.

XLII. McNEIL CONSUMER PRODUCTS:
Moved by District 6, seconded by District 5 and carried 9-0 that Mike Sims be appointed to the Ethics Committee representing District 6.

XLIV. EMERGENCY FUND
Moved by District 3, seconded by District 9 and carried 10-0 that Dr. Joe Gieck be asked to provide the Board of Directors with more details pertaining to his proposal for the establishment of an emergency fund.

XLV. ADJOURNMENT
The Board of Directors’ meeting adjourned at 11:45 a.m. on Wednesday, June 14, 1989.

A SURVEY OF ORAL INJURIES from page 237


The Business Meeting of the National Athletic Trainers Association, Incorporated, was convened at the Convention Center, Dallas, Texas, at eleven o'clock a.m., Mr. Mark Smaha, President, presiding.

PRESIDENT SMAHA: At this time I would like to call to order the Fortieth Annual Business Meeting of the National Athletic Trainers Association, Incorporated.

Ken Murray will give us the prayer and the Pledge of Allegiance to the Flag of the United States of America.

Whereupon, the rendering of the Pledge of Allegiance ensued.

MR. MURRAY: Let us pray.

Dear Lord, on this fortieth year of our meeting, we come to you thanking you that we have an opportunity to serve mankind through the care of athletes and to also be able to do something to help people.

Be with us now. Be with our Board, be with our Executive Director, be with our President. Give them strength and courage to be able to determine what our future will be and the peace of mind to be able to go through all of these problems we are going through mainly because of our constant growth.

Give us patience to handle these problems. In Thy Name we pray. Amen.

At this time, I would like to call on Mr. Brooks Mcintyre, our Certified Public Accountant, of South Carolina, to come forward and give you the Treasurer's report.

MR. BROOKS McINTYRE: My report will include the combined activity of NATA, Incorporated and of the NATA Foundation.

As of fiscal-year-end of April 30, 1989, our assets totaled $3,132,702. This is the first time we have gone over the $3 million mark in assets.

Liabilities totaled $1,091,547, which leaves us a fund balance or net worth of $2,041,255 on revenue for the year ended of $1,904,918, which is 11.5 percent over the prior year.

The organization generated a net income of $514,544.

That concludes my report.

PRESIDENT SMAHA: Thank you, Mr. Davis.

At this time, I would like to have Mr. Troy Young come forward and announce the recipients of the Twenty-Five-Year Awards to be presented at this time.

MR. TROY YOUNG: Mr. President, Mr. Executive Director, National Board of Directors and all of you in the audience, I would like to present to you at this time the Twenty-Five-Year Award recipients.

Whereupon, the Twenty-Five-Year Award winners, as their names were called, received their Twenty-Five-Year Award plaques.

Cash Birdwell, District 6
Paul Brannan, District 6
Roger Bryant, District 1
Jack Curran, District 6
Allen Eggett, District 6
Richard Irvin, District 10
Carl Krein, District 1
Thomas Pike, District 1
Gordon Stoddard, District 4
Roy Dun Wilson, District 6
Logan Wood, District 6

MR. YOUNG: Let us all jointly applaud these individuals for fulfilling the necessary requirements tantamount to earning these awards. (Applause)

PRESIDENT SMAHA: Thank you, Troy.

I would like to announce that the Hall of Fame, Honorary Membership and the President's Challenge Award will be presented at the Awards Banquet this evening.

The Hall of Fame Awards will be presented to:

Larry J. Gardner, District 6
Fred G. Kelley, District 1
Charles Martin (posthumously), District 9
Chris Patrick, District 9
James "Al" Wilson, District 6
Paul Zeek, District 1

The President's Challenge Cup Award will be presented to J. Pat Evans, M.D., of Dallas, Texas.

Honorary Membership will be awarded to:

Robert J. Albo, M.D., Piedmont, CA
John F. Albright, M.D., Iowa City, IA

Champ Leroy Baker, M.D., Columbus, GA
Richard T. Ball, Ph.D., CA
James A. Bowden, M.D., Waco, TX
Mary Edgerley, Dallas, TX
Harriet Franklin (posthumously), Lafayette, IN
John C. Longest, M.D., Mississippi State, MS
Robert J. Pierce, M.D., Irving, TX
Robert M. Stoltz, M.D., Valparaiso, IN
William C. Warner, M.D., Jackson, MS

PRESIDENT SMAHA: At this time I would like to introduce the Chair of the Membership Committee, James Rudd.

MR. JAMES RUDD: I would like to have the membership stand and observe a moment of silent prayer for our members who passed away during the past year.

A silent in-memory prayer then ensued.

PRESIDENT SMAHA: Thank you, Mr. Rudd.

MR. DAVIS: As you know, we are privileged to be able to receive corporate funding from some of our friends in the corporate sector.

At this time, I would like to have Mr. Jack Weakley of Johnson and Johnson come up to the microphone to say a few words.

Mr. Weakley, Mr. Zeitin, and I have been working in the past few months on the development of a new type of corporate sponsorship and foundation between the NATA and Johnson and Johnson. We will have an announcement regarding this matter before too long but at this time, I would like to have Mr. Jack Weakley say a few words.

MR. JACK WEAKLEY: (Johnson and Johnson):

Good morning. I would like to thank all of you for your interest and, as Mr. Davis just indicated, we have, over the past five to six months, been working very hard to come up with an agreement to continue our sponsorship of NATA and to continue with the aims of helping toward increasing your numbers and increasing health care, particularly at the high school level and to enhance your profession.

I think that if we can continue to work together to accomplish those goals, we will be better off and it will continue to be a mutually beneficial relationship.

So, once again, thank you for your support and I look forward to seeing you in the future. (Applause)

MR. DAVIS: Our second sponsorship concerning McNeill, has not arrived due to travel arrangements and weather conditions, and will not arrive until tonight. He will be addressing our Board of Directors possibly tomorrow morning and so we will have something on that at a later time.

Now, at this point, it gives me great pleasure to introduce you Mr. Bill Schmidt of Gatorade.

I might say that Bill and I started discussions a few months back. He wanted to do something special for each and every one of you this year and it is with great honor that I have been associated with Bill Schmidt and I hope that each and every one of you feel the same way—especially in relation to what he did for us on Sunday accompanying the tour of our new Headquarters facilities, the bus service that he arranged and the paper weights that were given to those in attendance and, of course, the hospitality that ensued.

Rising applause ensued as Mr. Schmidt approached the podium.

MR. BILL SCHMIDT [Gatorade]: Thank you very much.

Let me say we are proud to be associated with the NATA leadership as well as the membership of the NATA.
You have been established as a profession. As a matter of fact, those in the corporate sector realize that and to those of you that have not yet been to your new Hall of Fame, I am sure you will take that opportunity to present yourself there in the future.

Let me say that our organization is proud of how far you have come thus far.

Now, I never did have the opportunity of visiting your new Hall of Fame, but I have heard a lot about it and, to our understanding, your present Headquarters are considerably better than you have had them.

We are proud of our association, those of us involved with Gatorade, with the NATA. We are partners with you and we are ready to expand our involvement to continue to work closely with you and your staff people.

We are participating and assisting in your public relations goals as well. We would be remiss if we did not recognize your efforts to obtain new members for the outstanding and excellent job they have done in supporting and getting word out as to what athletic trainers are all about is concerned.

Again, you have come a long way and it is good to see that the word is now out about you in the corporate sector.

Likewise, we are also proud of the Membership Directory that we have published. I do not know how many of you have a copy of that. If you have not, it should be in your office within the next week or so. Again, you should also be very proud of that.

We will be updating that on a three-year basis.

This is a tremendous amount of money. (Applause)

Now, I might say that in view of his new found duties as President, I would like to introduce to you Mr. Cornell Green, Chairman of the Board of Directors.

Mr. GREEN (Broncos): On behalf of the Denver Broncos, we would like to start a $500 scholarship for the nominees at this time and would like to make this a yearly thing because we appreciate what you have done for us over the years.

Presentation of check and applause ensued at this point.

PRESIDENT SHAHA: At this point I would like to call on Paul Grace, Chairman of the Board of Directors, to come forward and present the Eddie Wojcicki Scholarship Award sponsored by the Mueller Companies.

MR. PAUL GRACE: The 1989 winner of the Eddie Wojcicki Achievement Award is Mark Anderson of the University of Arizona.

PRESIDENT SHAHA: Thank you, Mr. Grace. I would now like to, at this time, introduce you to a Past President of the American Orthopaedic Society of Sports Medicine, Dr. Gerald O'Conner.

DR. O'CONNOR: I understand that "Tow" is not able to be here today. However, I believe that Jack Redgren will accept this plaque in his behalf.

MR. JACK REDGREN: Thank you very much.

In behalf of "Tow", I would like to thank Dr. O'Conner and the American Orthopaedic Society for Sports Medicine for the recognition of "Tow" Diehm for this award.

Along with this personal recognition, the award includes $2,000 contribution made by AOSM to the NATA Endowment Fund. This donation is made with respect and in honor of his accomplishments in the sport training field and also in gratitude for the guidance and inspiration he has provided to young athletes everywhere.

Please join me in congratulating "Tow" Diehm.

Applause ensued.

PRESIDENT SHAHA: Thank you, Dr. O’Connor. At this time I would like to present to you a member of your organization, Joe Gieck, for some comments, if I may.

DR. JOE GIECK: A few years back, the Little League, Incorporated, asked the AOSM to produce an instructional course for its members dealing with the emergency medical issues. This was produced with the assistance of Cigna Insurance Companies.

Now, to reach all the coaches, managers and directors of Little League is an extensive undertaking and the AOSM knew it did not have enough members to carry out the task. The officers and directors of the NATA graciously volunteered the services of its members to act as instructors, along with the AOSM members, and for that we are grateful.

During the fall of 1989, each state should hold at least one organization meeting with the officers of NATA and the education community, the AOSM state representatives and the directors of Little League, Incorporated, to coordinate the logistics of the instructors’ course and the course to be given to the Little League officials. This course is a mandatory requirement for all Little League coaches. It is recommended that the instructors' course be given no later than January, 1990. At this time each instructor will be required to video tape and other materials and be assigned a site for presentation, as well as the name of the individual who will be the Little League coordinator for this site.

The instructor will then set a mutually convenient date and site to hold the clinic in your area.

It is important that the instructors follow the protocol and not edit/visualize the video tape presented by the Little League.

We need the full cooperation of both our Societies to carry out this project.

I would like to express a special thank you to Lindsay MeClan, for her extra time given to candidate selection; to Dean Weber for his work with the student trainer selection criteria and to Richard Ryan for giving us the opportunity to be the Committee Chairman during the past five years. It has been an experience which I enjoyed completely. We look forward to the extraordinary number of very gifted students in our Association who really appreciate the financial assistance they receive from the NATA.

I would like to extend my gratitude to the committee members consisting of Robert Gunn, Lindsay MeClan, Charles Moss, Bob Reese, Terry Kna, Ron Soder and John Anderson.

Now, with that, I would like to introduce to you the names of the Undergraduate Scholarship Award winners which are as follows:

Undergraduate Scholarship Awards

Heather Bonella, Utah State University
Michael G. Gall, Ohio State University
Dawn E. Estensen, University of Colorado at El Paso
Todd A. Ammer, Kent State University
Christine K. Bollman, Texas Tech University
Kyle B. Kinsel, Kansas State University
Karin Gravere, Boston University

Robert H. Gunn Scholarship Award

Lori R. Sample, Southwest Texas University
Sayers J. Miller, Jr., Scholarship Award
Andrew N. Brice, East Carolina University

Postgraduates Award

Michael S. Ferrara, Pennsylvania State University
Evelyn & Harold W. Mundy Postgraduate Scholarship Award

Shepard L. Dunn, Illinois State University
Richard Vandervoot Memorial Scholarship Award

Robert J. Cullen, Indiana State University
Edward Block Memorial Courage Postgraduate Scholarship

Linda L. Williams, Purdue University

Postgraduates Scholarship Awards

Bridget B. Beebe, North Carolina University
Paul A. Peterson, Ithaca College
Greg L. Whitmore, Central Washington University
Kirsten M. Mogstad, Utah State University at Florenti
Michael W. Bean, Southwest Missouri St. University

Chuck Farnham Scholarship Award

Leann Chris, West Virginia University

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Frank Cramer Scholarship Award
Mary L. Ovatta, Canissius College
William F. Jenkinson Scholarship Award
Christopher J. Joyce, Bridgewater State College
William E. Newell Scholarship Award
Alan D. Freedman, Appalachian State University
NATA Curriculum Award
Amy Z. Miller, University of Pittsburgh State University
L. Lou Souchie, University of Nebraska
Otho Davis Postgraduate Scholarship Award
John H. Torzewski, Boston College
Del C. Humphrey Postgraduate Scholarship Award
Rachel L. Kelly, Lockhaven State University
G.E. "Moose" Detty Postgraduate Scholarship Award
Kay E. Kellershals, University of Illinois
Bruce W. Russell, Hope College
1989 Annual Student Writing Contest
Michael A. Choate, Saint Augustine College
Sayers J. Miller, Jr. Distinguished Athletic Training
Educator Award
Rod Compton, East Carolina University
I know that the award winners are appreciative of their awards and we will know it will help them in the future.

Again, in closing, let me say it has been an extreme pleasure to serve as Chairman of this committee over the last few years. It has been a great honor and responsibility and I would like to thank you all for your help and cooperation. (Applause)

PRESIDENT SMAHA: At this time, I would like to have Mr. G. Miller, one of our District Directors, give us the report on the Board of Directors.

MR. MILLER: There is a report forthcoming from our Board of Directors.

PRESIDENT SMAHA: Due to the large number of attendees we have here, I am going to abbreviate the report and ask you to check the minutes of the District Directors.

PRESIDENT SMAHA: There is a lot of golf. (Laughter)

I would like to introduce some of our outstanding Chairmen who are going off of some of our outstanding committees this year. First of all, there is our hard worker, Fred Hoover. (Applause)

In honor of the outstanding growth and quality of work of the Board of Certification, the NATA Board of Directors has= approved this year the Board of Certification program. (Applause)

The Board of Certification has achieved major accomplishments over the past several years, including recognition of our examination by eighteen (18) states for purposes of licensure, interest expressed by many more, and recognition of the Board of Certification by the National Commission for Health Certification Agencies. The recognition of each of you as an accomplished health care professional is dependent on the strength of your credential and the success of the Board of Certification program.

In honor of the outstanding growth and quality of work of the Board of Certification, the NATA Board of Directors has approved the Board of Certification to be established with its own incorporated status and direct responsibility in areas such as certification staff and policies. In doing so, the NATA Board of Directors reaffirms in strong terms the administrative independence under which the Board of Certification has conducted an objective, impartial and rigorous program of which we are all proud. The details should be completed in the next month or so. Although the Certification Office is still in Greenville, it is our intention to move them to Dallas within the next year.

The special achievement of the Board of Certification has been earned through hard work of the Board of Certification, district representatives and Paul Grace, your Chairman. (Applause)

Now, the last item on the agenda is Janice Daniels, District Director of District 8. Janice Daniels, District Director of District 8 would like to generate some discussion with members of other districts regarding future projects of NATA in relation to collecting dues. (Applause)

I have a comment. I would like to move this to Dallas within the next year. (Applause)

MS. DANIELS: Thank you.

MS. DANIELS: If I may speak to this, let me further...
Further, as indicated, if it were automatic, it would, in turn, increase revenue, membership and might help us in progressing a more unified legislative effort.

With that, is there further discussion?

DELEGATE [District 3]: In our state, for example, we have only NATA certified members. Now, would this situation pertain just to the certified membership dues or would you try to include non-NATA certified athletic trainers? That would also have to be a consideration.

I am sure you can increase membership that way.

MS. DANIELS: I would say that your question would have to be thought through and worked out in relation to any serious change or proposal that would be considered along this line.

Are there any other further comments?

If not, I would like to thank the members who made their individual comments and I would like to have all of you think about it and, in turn, if you could give your Directors of your individual districts any feedback, we would appreciate that. (Applause)

PRESIDENT SMAHA: Ladies and gentlemen, thank you for attending this meeting.

Are there any other further comments?

If not, I would like to thank the members who made their individual comments and I would like to have all of you think about it and, in turn, if you could give your Directors of your individual districts any feedback, we would appreciate that. (Applause)

PRESIDENT SMAHA: Ladies and gentlemen, thank you for attending this meeting.

We are in a period of significant transition. I have traveled to your various District Meetings across the country and I appreciate your kindness and hospitality during my visits.

I think that the Board of Directors has done an outstanding job and has made great strides toward the betterment of our Association.

I would like to encourage you to address your concerns and issues to them so that they can be, in turn, discussed and report back to you.

With that, thank you very much for your attendance at this meeting and I will now adjourn this meeting at this point.

Whereupon, at twelve-seventeen o'clock p.m., the Business Meeting was adjourned.

NOTICE TO
NATA MEMBERS

The new National Headquarters in Dallas, Texas (telephone: 214/637-6282) will be handling Association business OTHER THAN Certification. Continue to contact the Certification office at the Greenville, North Carolina location (telephone: 919/752-1725) until further notice.

The Journal production office may be reached at telephone 919/355-5144.

 VIDEO REVIEWS from page 267

anabolic steroids could alter these facets of the athlete's life.

Champions at any Price also addresses an issue that many other videotape presentations fail to mention: NUTRITION. While it is important to establish the negative aspects of anabolic steroid uses and abuses it is equally important to give the athlete alternatives that will give him similar benefits without the harmful side effects. Champions mentions the importance of increasing caloric intake during training and the need for a well balanced diet to aid in the maintenance of lean muscle mass.

I found this to be the best video presentation dealing with the issue of anabolic steroid abuses that I have reviewed to date. Champions accentuates the immediate and long-term health risks and also explores the psychological and behavioral ramifications secondary to steroid uses and abuses. In addition to discussing the health and psychological risks, Champions gives the athlete an alternative to steroid use through proper nutrition.

My only suggestion is that Ross Laboratories could have gone into greater detail when dealing with the issue of nutrition. There are so many nutritional alternatives (supplementation, protein diets, high carbohydrate diets, etc.) at the athlete's disposal it would be beneficial to have further knowledge in this area.

Champions at any Price presents a strong message regarding the uses and abuses of anabolic steroids and how they affect the athlete's mind and his/her body and how proper nutrition can be a viable alternative to anabolic steroid use.

*Ross Laboratories, through Exceed, has published numerous pamphlets and books that deal with the issue of nutrition and the athlete. This information may be obtained, at a nominal charge, through your local Exceed representative or by writing to Ross Laboratories.
LETTERS TO THE EDITOR from page 209

Regarding my letter on precision and consistency for reference lists of Athletic Training articles, I have just discovered that the International Committee of Medical Journal Editors issued an updated "Uniform Requirements for Manuscripts Submitted to Biomedical Journals." In my letter of 10 April I stated that this work could be found in Annals of Internal Medicine 96: 766-771, 1982. The newest version, however, was published in Annals of Internal Medicine 108: 258-265, 1988. Kindly make this change so that it will reflect the most current information available.

Let me reiterate that I hope the substance of my letter is taken in the appropriate vein. I am interested in seeing our Journal make leaps toward increased credibility. Thank you for your contributions to its content and quality.

Sincerely,
Jeffrey A. Russell, MS, ATC
Director of Education and Research
Rehabilitation Services of Houston
Scurlock Tower
6560 Fannin, Suite 2040
Houston, Texas 77030

Re: The Certified Athletic Trainer as Mentor

Have you reflected on the lasting impact that the athletic trainers under whom you studied and worked had on your professional and personal actions? Our attitudes, viewpoints, and even taping and treatment methods are often those we learned from the trainers we worked with closest as young professionals. But now as certified athletic trainers ourselves, we cannot any longer assume the role of protege, but rather must serve in the role of mentor to our own understudies. Before the next generation of athletic trainers is ushered in, perhaps some reflection on our responsibilities is appropriate, particularly as advisors and role models.

The certified athletic trainer must portray the essence of the athletic training profession. To the student trainers, this can be demonstrated in a variety of ways. For example, the certified athletic trainer must keep abreast of all aspects of the sports medicine field. Memberships and active roles in our national and state organizations are the obvious starting points. The student must learn to value this activity through our attitudes and actions; training rooms are merely microcosms of the profession and should not represent a student’s total exposure to professional responsibilities. An attitude of “we” over that of “I” encourages the feeling that it is not what I can receive from my state organization that matters, but instead what it is that I can contribute to assist my state organization to flourish. The founding fathers of the NATA in 1950 certainly did not concern themselves with personal benefit. Certified athletic trainers should encourage students to join and participate in the national and state organizations in order to protect the profession against apathy and complacency in the future.

In addition, we must function as role models who demonstrate assertiveness in establishing better working conditions and better financial compensation. Student athletic trainers must watch and listen as their mentors hold firm against ever-increasing demands made by coaches and administrators to work more hours on an often minimally acceptable salary. Students need to see from their mentors’ techniques and strategies how to prevent the insidious problem of athletic trainer burn-out. Such unheard-of things as a lunch hour, a time-out to exercise, or even an occasional Sunday off must slowly become the rule rather than the exception. Athletic trainers are always in the midst of every coach’s “busy season” and often are taken for granted despite their highly specialized professional skills. Although the demands of the job make it exciting, significant role stress is inevitable. Student trainers need to know that the professional status of the certified athletic trainer is still evolving and that passivity is self-destructive. We remember.

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always, of course, that it is the artful and sensitive care of athletes that is our most important concern.

As role models, certified athletic trainers should have a contagious enthusiasm for continuing education and professional development. Attending professional conferences and subscribing to and regularly reading a variety of professional journals are integral aspects of acquiring and maintaining keen knowledge and skills in the athletic training field. The athletic trainer needs to work smarter rather than to work harder. Occasional "journal meetings" during which staff and/or students share and discuss readings in an assigned current journal could be an efficient use of time, while simultaneously confirming the importance of continuing education. Further, though, we must portray a healthy curiosity about the approaches and techniques we use in caring for athletes by attempting to conduct basic research regarding their efficacy. Since 70% of all certified athletic trainers have earned at least a master’s degree, a great many of us have the capability to perform such research.

In acting as academic advisors and job counselors for our student athletic trainers, it is important that we give them a realistic understanding of the current graduate school and athletic training employment opportunities. Understanding that the vast majority of available jobs are either in high schools or in sports medicine centers, proper preparation could be considered and planned early. A teaching credential, preferably in math or science, is imperative for the former, while a physical therapy assistant or exercise science credential is highly recommended for the latter. Also, sharing with our students that approximately 70% of all certified athletic trainers have earned a graduate degree would suggest to them to be competitive in the job market one is likely to need a master’s degree. Approximately 80% of NATA-curriculum graduates (B.S. level) enter graduate school in athletic training or a related field. Student athletic trainers need to be assisted in setting their academic and professional goals.

As the athletic training profession turns attention to itself through its extensive public relations program, we must stop to acknowledge that many people will be peering at our profession for the first time. It is essential, then, that our conduct be exemplary as we guide our student athletic trainers into the most promising era in the history of athletic training. Student athletic trainers acquire their professional behavior early and emulate their certified athletic trainer mentors. We must meet the challenge of acting as advisors and role models for our students.

Thomas G. Weidner, PhD, ATC
Director, Athletic Training Program
Cal. State Univ. - Northridge

Re: Dr. Robert Murray’s article, “Fluid replacement, gastrointestinal function and exercise”, (Athletic Training, 215-219, Fall 1988)

It seems somewhat improper to draw a parallel between the severe dehydration and electrolyte depletion of diarrhea due to bacterial endotoxin as in cholera and that due to exercise. To use that comparison as a justification for applying similar treatments to both conditions is a bit misleading. Please forward this comment through appropriate channels for a reply. Thank you.

Sincerely,
Thomas Byrnes, Jr., ATC
P.O. Box 725
Kirksville, MO 63501

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294  Athletic Training  • Fall 1989
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I appreciate the opportunity to respond to the concerns raised by Mr. Thomas Byrnes about the article "Fluid replacement, gastrointestinal function, and exercise," (Athletic Training, 215-219, Fall 1988).

Mr. Byrnes questioned the parallels between sweat-induced and diarrhea-induced dehydration. In brief, the fundamental principles that govern fluid absorption in the proximal small intestine hold true for the dehydrated athlete as well as someone dehydrated from a disease such as cholera. That is, fluid absorption is substantially stimulated by the presence of glucose, sucrose, sodium, and other osmotically active, actively transported solutes (1). The mode of fluid loss—sweat, or as profuse diarrhea—is not relevant; the fact is that similar treatments are used to rectify both conditions. The oral administration of a properly formulated carbohydrate-electrolyte solution stimulates fluid absorption in the small intestine, decreases urine production, helps maintain blood volume, and sustains the osmotic drive for thirst (2,3). For these reasons, the World Health Organization endorses the use of a carbohydrate-electrolyte fluid replacement beverage in treating disease-induced dehydration. Similarly, carbohydrate-electrolyte beverages are also recommended for use in athletic settings where countering the effects of dehydration and providing a source of metabolizable energy not only reduces the risk of heat illness, but also positively affects exercise performance (2,3).

Robert Murray, PhD

References


I am writing to complain about the CEU Credit Quiz contained in the Fall '88 Athletic Training, "Fluid Replacement, Gastrointestinal Function, and Exercise."

The author states in his summary that a 5% to 8% glucose or sucrose solution and dilute electrolytes will stimulate fluid absorption. However, Table 1 of the article shows that the maximum gastric emptying measured occurred with a saline solution, at 65% absorption, and with a 2.5% glucose solution, at 60% absorption. The absorption rate with a 5% glucose solution was only 31% (half of the rate with the 2.5% solution) and a 10% solution of glucose only emptied at a 5% rate. The information provided by the article's Tables seems to show that gastric emptying is increased by lower concentration of glucose solutions, below 2.5%, and that the highest rate of gastric emptying is with a non-glucose saline solution. This appears to contradict his (the author's) recommendation of a 5% to 8% glucose solution.

Then we turn to Table 2 of the article, which shows rates of solution absorption in the small intestine. This does show that low percentages of glucose improve absorption rates, when compared to saline solutions. It also shows that a 2.5% glucose solution has a lower absorption rate than lower concentrations of glucose at 1 to 1.6% solution.

To my personal reasoning, the rates of emptying and rates of absorption charted in the article's Tables confirm the theory that too high a concentration of glucose or sucrose will decrease gastric emptying and also decrease fluid absorption rates. Under the right conditions, this could cause dehydration and diarrhea.

In arguing against this possibility, Dr. Murray notes "the effectiveness of a carbohydrate-electrolyte beverage for purposes of combatting dehydration is well illustrated in the treatment of diarrhea disease such as cholera." He notes that with glucose added to the electrolyte solution "Fluid absorption is stimulated and the ingested solution is completely absorbed." However, Dr. Murray does not mention the percent solution of glucose used in the treatment of cholera. Also, I question the author's equating the use of glucose solution in the treatment of a disease state to the use of glucose solution in an exercise state. The variables involved, such as the bacterial enterotoxins that cause cholera, don't seem to be important to the author.

In reading the note on the author, I noticed that Dr. Murray is the group manager of the Quaker Oats Company Exercise Physiology Laboratory. Aren't these the same people that produce Gatorade? If this is the case, then I feel that this article has been written to bias the athletic trainer toward the use of higher concentration glucose sport drinks. And, since this article is presented as a CEU Credit Quiz, the potential for biasing athletic trainers toward high concentrated drinks (greater than 2.5%) is even more likely. It appears that the information has been skewed and the article written in such a way that it may incorrectly influence trainers toward the use of sport drinks which may not be in the best interest of their competing athletes.

Since the data in the Tables don't appear to coincide with the author's recommendation for the use of a 5% to 8% glucose solution, I don't see what he has based his recommendation on. To me, it appears that the lower (below 2.5%) solutions are more beneficial to gastric emptying and fluid absorption. Also, the 1984 Schering Symposium on Heat Illness in Athletes states that a 2.5% solution, or less, is more conducive to stomach emptying. Other studies and experience appear to agree with this finding.

My chief complaint in all of this is that our journal should be a vehicle for improving ourselves as athletic trainers, and improving our profession. The information presented, especially if used for a CEU Credit Quiz, should not be skewed toward one product or school of thought. It should be objective. I don't feel that this article was objective. I feel it was skewed toward one product and one school of thought in the summary of its findings. The data presented did not appear consistent with the recommendations made, and seemed to promote the use of a product without regard to the possible effect on the athlete.

We, as a profession, I am sure, are grateful to Gatorade and Quaker Oats for their support of athletic trainers and athletic training. However, our first and foremost responsibility as athletic trainers is to ensure that our athletes are in the best possible condition during competition. I don't feel that the information presented in this article could help me in this pursuit.

Sincerely,
Stephen F. Fuzie, PT, ATC
Delta Sports and Rehabilitation Center
Antioch, CA 94509

As Mr. Fuzie points out, gastric emptying rate slows as the caloric content of the ingested beverage rises, a relationship illustrated in Table 1 and described in the text of the article. It should be noted that although the general relationship between caloric content and gastric emptying remains in force among different subjects at rest and during exercise, absolute gastric emptying rates vary widely among individuals. For this reason, and because fluid absorption rate cannot be accurately predicted on the basis of gastric emptying rate, practical advice regarding beverage formulation cannot be derived solely from gastric emptying data.

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containing no more than 2.5% glucose during exercise. Recent research, however, has demonstrated that athletes can consume beverages containing up to 10% carbohydrate (as sucrose or glucose) without compromising gastric emptying rate, fluid absorption rate, or physiological homeostasis (1,2,4,5). In addition, consumption of a 2.5% CHO beverage is not associated with improved exercise performance (3). Finally, recent research also indicates that the gastric emptying rates of carbohydrate solutions may not be much different than plain water during exercise (4,5).

Consequently, to optimize fluid absorption and energy delivery and to maintain cardiovascular and thermoregulatory function, the current recommendation is that athletes consume beverages containing 5% to 8% carbohydrate (as sucrose or glucose) and sodium. Athletic trainers should keep in mind that the ingestion of beverages high in carbohydrate (i.e., >10% CHO) may reduce both gastric emptying and fluid absorption during exercise. For this reason, regular soft drinks, fruit drinks, and fruit juices are contraindicated for consumption during exercise.

Some of the conclusions contained in the article, "Fluid replacement, gastrointestinal function, and exercise", may well be at odds with previous recommendations regarding fluid replacement practices. Such changes are a natural part of the research process as recent laboratory findings refine and replace existing recommendations.

Robert Murray, PhD

References


While catching up on some reading in the Summer issue of Athletic Training, I was most intrigued by one contribution in particular; that of the crossword puzzle (page 154 of the Student Athletic Trainer Forum). As an educator, I have found this type of "mind game" to be a most effective teaching tool, particularly for the student trainer who must acquire an athletic training vocabulary. The crossword puzzle provides another means to challenge one's cognitive processes while at the same time making learning fun. I commend the creator of the crossword puzzle, and would like to see more contributions of this nature.

Now, without sounding as though I'm contradicting myself, I do have some concern about the appropriateness of this type of contribution to the Journal at all. If not for the fact that this entry appeared in the Student Athletic Trainer Forum, I might have been more disturbed. It seems, in our struggle to gain professional recognition in the scientific community, we may be defeating our purpose when we publish an entry of this nature and include a mish-mash of other organizational/informational items which might be better placed in the NATA Newsletter. How many crossword puzzles have you seen in the ACSM journal, JAMA, or even The Physician and Sports Medicine?

The Athletic Training Journal, in my opinion, should provide the membership with scientifically based literature representative of the research efforts of the Athletic Training community, including related research from other allied health care professionals. We need to preserve the quality of the Journal and not just fill the pages with print. As athletic trainers become more involved in the research process, a greater number of manuscripts will be available for publication, but why not take advantage of the NATA Newsletter as a means to include creative educational contributions such as the crossword puzzle, as well as other items containing a more organizational/informational substance.

Sincerely,
Jayne A. Willett, ATC, MA
Assistant Professor
California State University, Sacramento

This letter is sent to express my concern that the National Athletic Trainers Association, in choosing to include a crossword puzzle in the Summer 1989 issue of Athletic Training, is in danger of compromising the integrity of the Association. The NATA has for years suffered an identity crisis, trying to prove itself to sundry organizations that we athletic trainers are truly allied health care professionals. In my mind, the inclusion of things such as this in a scholarly journal gives rise to unwanted and unneeded criticism. In and of itself, the puzzle is a good way to "brush-up" the athletic trainer's knowledge of sports medicine jargon. However, this purpose would have been better served had the crossword puzzle been included in the NATA News.

I appreciate Athletic Training and find it to be an invaluable asset to furthering the cause of the NATA and providing state of the art information to help us give the best care to our athletes. This letter was in no way meant to cast disparagement upon the editorial staff, only to raise the question as to whether this type material published in our journal might tarnish our credibility in the medical and academic environments.

Sincerely,
William Lyle Myers
Graduate Assistant
Athletic Trainer
Georgia Southern College
Statesboro, GA 30460

ASSOCIATION ACTIVITIES from page 264

District 4

- Board of Directors for the 1989-90 Illinois Athletic Trainers Association:
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- Southeast Athletic Trainers Association Memorial Scholarships:
  - Undergraduate: Mary Tew, Livingston University
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