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ABSTRACT

This publication, covering a broad spectrum of sports safety problems, is designed as a source of information for those who plan, organize, administer, or evaluate various physical education and recreational activities, athletics, or sports. In the first section, the prevention of sports injury is stressed with attention to different age groups and sexes. Some of the topics discussed are unsafe acts, qualified supervisors, effectiveness of injury control factors, safe equipment, maintenance of surfaces and facilities, enforcement of rules, and the acceptance of degrees of risk. The second section deals with preconditioning, equipment, training, supervision, and specific safety criteria in skiing, trampolining, skin and scuba diving, and boating. The topic of the third section is athletic training and emergency care. This section includes discussions of athletic facility safety, medical practices in sports, and emergency care practices for spectators at athletic and sports events. The fourth section discusses the legal liability of physical educators with regard to curriculum and negligence, the school's and coach's legal responsibilities in athletics, the legal rights and responsibilities of team physicians, the legal aspects of adult physical fitness programs, and exemptions from civil liability for physical educators while giving emergency care. (CD)

# SELECTED PROBLEMS IN SPORTS SAFETY



American Alliance for Health, Physical Education, and Recreat

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# Introduction

This publication covering a broad spectrum of sports safety problems is designed as a source of information for those who plan, organize, administer or evaluate various physical education and recreational activities, athletics or sports. Great emphasis should be placed on the safety aspects of all programs involving physical activities and it is therefore significant to present a broad perspective so that those individuals involved can make valued judgments and accept responsibility regarding participant and spectator as well.

In the first section, the prevention of sports injury is stressed with attention to different age groups and sex. Some topics discussed are unsafe acts, qualified supervisors, effectiveness of injury control factors, safe equipment, maintenance of surfaces and facilities, stringent enforcement of rules and the acceptance of degrees of risk.

The second section deals with individual preconditioning, equipment, progression, supervision and specific safety criteria in skiing, trampolining, skin and scuba diving and boating.

Training rooms, locker and shower rooms, indoor courts and outdoor playing fields are covered in the third section. Programs in sports medicine, medical services for athletes, the athletic trainer, preventive measures and comprehensive emergency care for spectators at athletic and sports events also are considered.

The fourth section portrays the legal responsibility as regards the nature of supervision, suitability of activities, instruction, equipment, facilities and travel policies. Rights and responsibilities of team physicians and legal aspects of adult physical fitness programs with concern for space, temperature and humidity are described while exemption of physical educators from liability while rendering emergency care is presented.

It is hoped that this publication will prove a valuable asset to teachers, teachers in training, administrators, coaches, athletic trainers, physicians and other professional groups and that high quality activity programs will emerge for the benefit and enjoyment of all age groups.

# Accident Prevention Theory

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# Prevention of Sports Injury: A Problem Solving Approach*

The prevention of sports injuries may be thought of in terms of the many types of problems presented by the universality of sport. Sport as a specialized form of play is a part of life and not a phenomenon of any time or place. The role which it has played in different cultures varies, and the forms which it takes may change, but the essence remains the same, giving rise to problems of control which are common to all times and places. We live in a time and a place where we have developed considerable interest in the solution of these problems. To some we have satisfactory answers, but to others we can make only an inadequate response. Let's see what the situation is at the moment.

An accident is an unpredictable event only in the sense that the person or persons involved in it do not expect it to occur at that particular time. If the epidemiologist is given enough information about the circumstances of any given event involving people in motion, he can estimate the possibility of various accidental occurrences, and how often they may be expected to take place over a given period of time. The National Safety Council does this regarding the expected fatalities due to motor vehicle accidents on holiday weekends. Usually they come pretty close to the mark. As the result of experience in many fields they can say further that about 300 unsafe acts which would cause an accident take place before one actually occurs, and that there are about 29 accidental injuries for each disabling injury, and about 100 disabling injuries for each accidental death.

In other words, for safety to be effective it is not enough to try to prevent one death; 900,000 unsafe acts must be prevented in order to do this. Multiply this by the approximately 40,000 motor vehicle deaths now occurring in the United States annually and it is clear that the problem of automotive safety is complex. Driving an automobile is one of the most popular forms of recreation today, although it could hardly be called physical activity of a high order except for automobile racing.

In recreational pursuits which involve physical activity, and especially in sports, we perform thousands of unsafe acts. The very character of sports and

*Reprinted from *JOHPER*, April 1971.

games, since they are intensified and often competitive physical activities, gives assurance that the risk of accident is greater than in the usual activities of daily living. Accidents, for example, are not only the major cause of death among both males and females aged 15 to 24 (accounting for 62% of the deaths in males and 37% in females), but are a major cause of disability in this age group. The National Health Survey shows that at the present time about 7 million young people of these ages suffer nonfatal injuries requiring a visit to a physician one day of disability, or both, each year. One-fourth of these injuries occur at home and almost as many in school buildings and on school premises. A great proportion of these accidents occur in games and sports since they are a major preoccupation of young people in this age group.

The range of individual and group sports and physical recreation activities has broadened considerably in the last few decades. New sports seem to appear every year. Surfing, scuba diving, water skiing, snowmobiling, sports parachuting, and sky diving have all blossomed out as mass participation sports in the past 15 years. Older sports such as snow skiing, boating, volleyball, bowling, ice skating, and automobile racing have experienced tremendous growth. Important in the overall surge has been the fantastic increase in the participation of girls and women in every one of the sports mentioned. The Athletic Institute estimates that in 1965, 57 million persons rode bicycles; 40 million played volleyball; 39.3 million went boating; 39 million bowled; 37 million camped; 34.2 million fished; 25 million roller-skated; 22.5 million played 12-inch softball; 20 million each ice-skated, played table tennis and billiards, and engaged in shooting sports; 10 million played shuffleboard; 9 million pitched horseshoes; 8.75 million water-skied; 8.5 million played tennis; 8 million engaged in target archery; 7.7 million golfed; 6 million played handball; 4 million snow-skied; and 3 million played 16-inch softball. Engaged in competitive sports at the school and college level in 1967 were over 2.7 million baseball, 1.1 million basketball, 1.2 million football, and 200,000 soccer players, in addition to 250,000 wrestlers and 725,000 participating in track and field sports. The National Federation of State High School Athletic Associations states that in 1969 almost 3.5 million participants took part in 28 sports which were sponsored by its member schools.

Accidents, injuries, and fatalities occur in every one of these sports. Drownings in recreational swimming amount to several thousand each year and drownings in boating activities account for another thousand. The occurrence of serious injuries is apparently so high in both water-skiing and snow-skiing as to make them comparable to some of the so-called contact sports such as football, wrestling, ice hockey, and basketball. In sky-diving and sport parachute jumping the injury rate is apparently very low but the fatality rate quite high.

### Necessary Knowledge For Sport Safety

The first step in accident prevention in a particular sport is gathering information about the occurrence of accidents in the activity and identification of the causes of these accidents. If this information is to be useful it must be reasonably accurate and complete. This is where the difficulties start with recreational sports.

Take the occurrence of accidents in snow-skiing as an example. One resort area may report that in the past five-year period, 1,052 persons have been treated for injuries at the small emergency hospital which they maintain at the foot of the main ski slope. Of these, only 185 persons suffered fractures. They estimate that during the ski seasons of this period 35,000 persons used their

facilities for skiing. One might conclude from this that snow-skiing must be a relatively safe sport. Probably it is, but for whom and under what conditions?

Where did the figure of 35,000 persons come from? Was this the number of persons who registered at the lodge or the number who bought tickets for the ski tow, or was it based on a sampling of the number of cars parked in the parking lot? How many had season tickets for the tow and how many bought individual tickets on more than one day? How many days of snow suitable for skiing were there in each of the five seasons? How many hours during the day was the tow operating? Were they predominantly young or old, men or women, experienced skiers or novices? How many took instruction and how did their experience compare with those who did not, and with experienced skiers? How many used their own equipment and how many rented?

When it comes to the injuries themselves, even more pertinent questions need to be asked. How many persons were injured who did not report to the first aid station for help but went home instead? How did their accidents occur? What type of equipment were they wearing? Did the binding release during the fall or perhaps even before the fall?

Questions like these are being asked by the National Ski Safety Research Project and by other investigators. Material is accumulated painstakingly, requiring an enormous amount of time, personnel, and patience. Much of the data which have been painfully accumulated have had to be discarded because they were in a form which defied meaningful analysis. It is doubtful whether the cost necessary to do such study properly could be justified in terms of what one might expect to accomplish by it.

This leaves the information that certain types of injuries are seen characteristically in certain recreational sports, and that their occurrence is rare, moderately frequent, or quite common. From the nature of the activity and from the experience of the individuals involved we can deduce the mechanisms of injury responsible and attempt to develop performance or skills which will minimize or eliminate these mechanisms. Where it is not possible to do this adequately we may try to develop protective or safety equipment. We can also establish rules and safety regulations aimed at eliminating the hazards or procedures which create these risks.

Our first consideration of the problems posed by accident prevention in sports generally might be directed toward those who supervise sports. The administrator of a sports program may be a high school principal, a college athletics director, a director of a local program of Little League baseball, a community recreation supervisor, the manager of a national sports team, the president of a professional sports team, or perhaps the chairman of an Olympic committee. His direct approach toward the problem of injury control is to hire coaches, trainers, and physicians who understand the reasons for the occurrence of sports injuries and know how they may be prevented as well as treated.

He is immediately faced with a secondary problem of how to identify such individuals. Many persons engaged in coaching do not have this knowledge. The majority of coaches have not been trained in physical education. Unfortunately, even many of those with a degree in physical education have only a rudimentary knowledge of these problems. Fully qualified athletic trainers probably do not greatly exceed in number the membership of the National Athletic Trainers Association — less than 1,500. The number of physicians who are familiar with the factors which produce sports injuries, not to mention preventive measures, is still pitifully small, but is being increased rapidly by the

surge of interest in postgraduate courses in sports medicine. The teaching of this specialty has not made significant inroads into the medical schools as yet. The administrator must make do with whom he can find, and hope that someone on his team has the requisite knowledge. If he is wise, he will see that his team is able to take advantage of opportunities to increase their perhaps meager store of information.

Once the administrator has established his team and given them support in their approach to injury control, he finds that he and they may be handicapped by the limitations imposed by the school year, the traditional season, conference regulations, lack of adequate financing, the proliferation of sports, inadequate facilities, and more problems, all of which can be related directly or indirectly to injury control. High school football programs encounter such problems as inadequate time for proper conditioning of the players from the opening of school until the first scheduled game; state and conference rules forbidding early starts and participation in summer camps where the school's coaches participate; the beginnings of winter sports overlapping the latter part of the football season; overcrowded practice fields; a continuing crisis in the athletic department budget caused by failure of attendance at games to match increases in expenditures; etc. Each of these problems has a possible solution, but it must be developed in reference to the particular situation.

As noted, the coach may enter his job without formal preparation in the area of injury control. He learns from experience, from other coaches, from trainers and physicians, and possibly from clinics or courses. He must rationalize his goals and his teaching methods with his objectives in injury control. Some techniques of play which offer promise of success may be too dangerous for the athlete. The price of winning should never be the health or welfare of an athlete. Failure to keep abreast of developments may cause neglect of safety precautions.

The trainer, if one is involved, should have the professional preparation which enables him to understand the sources of injury in sports and the means of their prevention. He and the coach should share the responsibility for the training and conditioning of the individual or the team. He must coordinate his efforts closely with those of the team physician to help bring about that cooperation between coach, physician, and trainer which is so important to the success of an injury control program. His knowledge of the use of protective equipment, including the use of taping and bandaging, should be superior.

Ideally the sports physician should encompass the whole range of information relating to injury control. As sports medicine comes of age as a specialty, this ideal begins to be approximated. From a practical viewpoint at the moment the team physician may represent any level of information in this regard from the least to the best informed. He is prized chiefly for his interest in sport and athletes and for his availability. It can never be possible to have a physician in attendance at every sports competition, even in the so-called contact sports. The important thing is to have a medical adviser or consultant who is available or accessible when needed, and who has sufficient interest in the program to know what is needed and when, even though he is not able to attend as much as he or the team might wish. The physician can gain much from practical experience in the sports situation, since his academic background should have already supplied him with much basic information which he can apply to this experience.

The individual engaged in a recreational sport, generally speaking, has no administrator, coach, trainer, or physician to guide him. He must take the responsibility for determining whether he is physically fit to participate,

whether and to what extent he needs to condition himself, what learning of sport skills is required, what equipment he needs and what its quality should be, what facilities are safe for his use and under what conditions, and how he will prepare himself to deal with the emergency of an injury. The problems posed for the individual participating in an unsupervised sport are enormous. The only wonder is that injury and fatality rates in these reports remain as relatively low as they do.

## The Athlete and Accident Prevention

The second consideration in injury control is the athlete himself. Physical examinations, including the important laboratory tests, are a necessity for competitive sports today in order to eliminate the unfit and to identify the physical problems which may be correctable to allow safer participation. There are many practical difficulties in achieving such examinations en masse on an annual basis. The availability of physicians, the cost, the time necessary, and the willingness of athletes and their parents to comply with such requirements are the principal obstacles. Probably more gains have been made in this area than in any other area of injury prevention, because of the determination of sports administrators and physicians.

The prospective athlete who is physically immature poses a threat of injury not only to himself but possibly to others. Certain physical defects may be disqualifying for some sports but not for others. The athlete who has already suffered an injury and has not been completely rehabilitated may be prone to reinjury. In the younger age groups classification by height and weight as well as by age may be important in injury prevention. The assessment of the athlete's motivation toward sport and his emotional reactions to it may also be important in injury control. The role of training and conditioning of the athlete is an important one in injury control. Acclimation to the heat, humidity, and barometric pressure of his external environment is essential to prevent serious illness and injury. Muscles which are inadequately conditioned may be strained or ruptured. Joints which are poorly protected by weak muscles may be disrupted. The individual's life may be endangered by a failure of strength or endurance at a critical moment. Poor training practices such as crash dieting and dehydration may cause serious illness and may expose the individual to injury by causing a decrease in strength and increase in reaction time.

The problems posed by the need for better training and conditioning cannot all be solved until we have more complete knowledge of what training regimes are best for each sport, more properly prepared persons to supervise these training programs, more time to carry them out, and better facilities in which they can be worked out. Motivating the athlete toward the proper and necessary amount of training and conditioning will always be a problem in some cases. As competition increases it is not always the most skillful person or team who is the most successful, but the one who is best prepared. If all athletes could learn this lesson the problems of training would be much less.

Faddism, superstition, and an excessive regard for traditional practices are characteristics observed among athletes. These may cause serious interference with proper training practices and may foster an unreasoning resistance to change. The introduction of better training practices based on physiological principles, the prescription of certain techniques of play based on the occurrence of frequent and serious injury, and the introduction of every new item of protective equipment are usually met by determined resistance from athletes, if

not outright rejection. This must be expected and can be successfully combated only by patience and firmness on the part of the sports supervisors.

**The Nature of the Sport**

The third major consideration in injury control in sports is the nature of the sport itself, including the regulations that govern it. Every sport poses some hazard of injury. In contact sports, the acceleration of the players determines to some extent the number and seriousness of injuries. In motor-driven sports, the greater the speed, the greater the likelihood of injury, and the greater the chance that any injury might be fatal. In non-contact sports where the individual is self-propelled the occurrence of injury may be related to speed if gravity is allowed to act with minimal friction encountered, as in snow skiing.

Important in each sport is the environment in which it is practiced: on land, on the water, under the water, or in the air. Each medium poses its own particular hazards. The degree of hazard depends on the level involved. On land one may go from the risks of caving several hundred feet below the surface of the earth to the top of a mountain 26,000 feet above sea level; in the air, from the lower atmosphere up to 70,000 feet to make a parachute jump; or in water, from the surface down to 400 feet in sport diving. In order to recommend proper precautions, equipment, and other safeguards, the sports physician must be familiar with all the risks to which man may be exposed in these extremes of earthly environment.

The objects used in games and sports — balls, rackets, boats, gliders, etc. — each pose particular hazards to the sportsman in both their correct and incorrect usage. These risks must be studied, analyzed and provided for as far as possible. The impact of animals, birds, and other living creatures encountered in sports activity or used as a regular part of sports participation must also be taken into account.

The methods of practice of sports change over the years, giving rise to a greater or lesser occurrence of injuries. American football has changed so much and so many times since its origin less than a hundred years ago that it is now hardly recognizable as the same game. The dangerous mass tactics of the turn of the century were abolished only to be succeeded by the present hazardous practice of butt blocking and tackling.

The influence of the rules of sports in injury control must be taken into account. In the beginning, rules are promulgated in order to give the game a substantial form which is reproducible and which can produce a contest which offers a fair advantage to each contestant or side. Gradually rules are added whose principle object is the safety of the players. Due to the tendency of players to play up to the limits of the letter of the rules, rather than observing the spirit; more rules have to be added. Finally, as in the case of football, a lengthy book of rules and interpretations taxes the memory of any official. In rugby, however, where the spirit of the rules prevails, these regulations can be written down on a few pages.

Since the rules are enforced and interpreted by officials, the actions of the officials cannot be ignored as factors in injury control. Loose application of the rules in a contact sport may lead to violent action and many injuries. Strict enforcement may prevent many unnecessary traumas. The variables involved include the training and other qualifications of officials; pressures exerted by players, coaches, and spectators on the officials; and the willingness and ability of players to deceive the officials.

In the practice of those recreational sports where competition is not the primary object, the governing bodies establish codes which they urge participants to observe as safety measures. In some instances these codes may be enforced by federal, state, or local regulations or by the operators of the facilities used by the participants. The difficulties of enforcement of such regulations or codes are obvious when there is a disproportion between users and enforcers and when the areas to be covered are vast. It is quite surprising, nevertheless, to note the effect of the existence and enforcement of regulations on boating by the United States Coast Guard.

**Protective Equipment**

A fourth consideration in injury control is the use of protective equipment in sports. In contact sports such as American football and ice hockey, the use of protective equipment by the players is maximal. However, in soccer and rugby, both equally vigorous contact sports, its use is minimal. In sports such as golf and tennis there is no need for protective equipment, although the player may wear a glove by choice. Protective equipment may vary from the electrically heated suit of the sky diver to the wet suit of the scuba diver, to the flameproof clothing of the automobile racer. It may be as simple as the wrist band of the archer or as elaborate as the new hydraulic helmet of the football player. It may be as durable as that helmet, or may be discarded after every application, as the tape which a trainer wraps on the ankle.

Protective equipment must satisfy certain requirements in order to be effective:

1. Its specifications must approach maximum protective requirements for the part to be protected as closely as possible.
2. It must be sufficiently durable to withstand repeated use without significant decrease in the protective factors.
3. It must be properly fitted so that it covers adequately and stays in place under usual conditions of use.
4. It must not be so bulky or heavy that it impairs the normal and necessary free movement of the athlete.
5. It must not create a hazard to other contestants.
6. It must be replaced when it is so worn that it has lost a significant amount of its protective factors.

A distinction must be made between equipment used for protection and that used for treatment. Casts and rigid splints are treatment devices and should not be used in contact sports. Prosthetic devices fall in the same category except under very special circumstances.

In seeking the best protection we may overshoot the mark and produce something which may become a cause of injury itself. It now appears that the hard shell football helmet which protects the head relatively well even from severe shocks is responsible for a rising curve of fatalities and permanent disabilities due to head and neck injuries from butting and spearing. One cannot help drawing the analogy between the football player and the knight in a full suit of armor. The knight disappeared from the scene just as the art of the armorer had reached the full flower of perfection.

The introduction of good protective devices into sport has never been an easy matter. Almost without exception, both players and coaches resist the introduction of every new piece of equipment. The history of baseball equipment from the introduction of the first glove down to the batting helmet provides an

excellent series of examples. Part of this resistance is due to tradition, part to a natural desire to remain unencumbered, part to a desire to be easily recognized by the spectator, and part to the fear of being thought unmanly. We are going through a difficult period of transition to the wearing of a helmet by the professional ice hockey player, where all these factors are operative. The helmet is mandatory in high school and college hockey and soon will be for the professionals as well.

In such sports as rugby, Gaelic football, hurling, and others where tradition proscribes all but a minimum of protection, the players themselves introduce a compensatory factor of safety in the way they play the game and react quickly to avoid injury. We have not fully explored the possibilities of this approach in the contact sports as a more desirable alternative to a steady increase in covering every body surface and orifice with some type of protective device.

### Acceptable Degrees of Risk

The atmosphere in which competitive sports operate today must be considered as an important aspect of injury control. Here the most important factor is the question of the necessarily different approach to amateur and professional sports. The professional may have a small fortune at stake, depending on his ability to appear regularly and perform to the best of his ability; a greater disregard for the possibility of serious injury and even permanent disability may be expected, and can even be justified. Sandy Koufax continued to pitch at the height of his career with an arm that required continuous treatment between games to ensure his effectiveness. On the other hand, nothing can justify the abuse to which the arms of young pitchers with no exceptional talent are subjected in the minor leagues of professional baseball; they are used until they can no longer function, and then the player is discarded.

It is inevitable that amateur sport be corrupted by such practices, since the amateur and his coach wish to emulate the success of the professional and therefore fall easily into an acceptance of his practices. As the goals of amateur sport tend to approach professional goals so as to be almost indistinguishable from them, this spirit of disregard for injury and its effects creeps in. "Never mind all these fancy ideas about treatment," is the watchword. "Just give me a shot of something so that I can't feel the pain and let me back in there."

The professionalization of baseball, football, basketball, soccer, and ice hockey has brought a violence into these games which is exciting to the spectator but is a potent factor in bringing about serious injury. Since it seems unlikely that there will be any reversal of this trend in the near future we must accommodate ourselves to it. For the sake of the younger generation of athletes, we must continue to endeavor to keep amateur sport free of this type of spirit.

### Safety Education

How may the effectiveness of injury control in sport be increased by an intensive process of safety education? Governmental agencies are already involved at the national, state, and local levels. The National Parks Service, the Federal Aviation Agency, and the United States Public Health Service through its Division of Accident Prevention are especially active in recreational safety programs. The safety record of the National Parks Service, which has to deal with tens of millions of campers every year, is an outstanding example of what can be done through safety education. They bring their message of safety to the public through a nationwide advertising campaign and continue it for those who enter

the parks with educational approaches at the points of entry and at the sites of camp activities. They employ pictures, films, posters, pamphlets, signs, and the park rangers themselves to bring the educational message directly to the camper. The Coast Guard program of small boat safety is excellently conceived and operated with the limited personnel available.

National nonprofit public service agencies such as the American Red Cross and the National Safety Council carry on extensive and intensive year-around safety campaigns for recreational sports. They combine with other groups in organizations such as the National Council for Aquatics. They have cooperated in the establishment of such regional agencies as the Water Safety Councils.

The voluntary associations established by the interest groups in various sports such as the National Rifle Association, National Ski Association, National Ski Patrol, Power Boating Association and many others carry out not only educational programs in safety, but instructional programs in skills without charge or at modest costs. The National YMCA and YWCA carry out such activities in many recreational sports. The American Association for Health, Physical Education, and Recreation continues to be a leader in this field through its national office and its state associations.[1]

Manufacturers of recreational equipment have played a limited role in safety education so far. Through the Athletic Institute, however, they have sponsored an expanding program of public service in safety education free of commercial bias. Lifetime Sports Foundation and other similar enterprises set up by individual manufacturers have so far devoted themselves principally to the subjects of sport skills and physical fitness. These, however, make up important aspects of recreational safety as we have seen.

Schools and colleges have assumed some responsibility in this area. However, their major concern has been the teaching and development of team and individual sports for the purpose of sponsoring competitions, with little emphasis on the lifetime aspects of recreational physical activity. The greatest attention is given to this subject in colleges where major programs in physical education and recreation are offered. Even there, the emphasis may be more on learning and teaching skills rather than on the principles and practice of safety.

Why is it that with the expenditure of all this time, effort, and money there is only uneven success in safety education for physical recreational activity? Should we or can we do more within reason? How can we improve on what we are doing? Before attempting to answer these questions, let us look at a recent study which suggests that we still don't know how to educate people effectively for safety.

The health department of Rockland County, New York recently completed a three-year study to test the effectiveness of a health education program for parents in reducing the rate of accidental injuries to children. This project involved a study group of 4,041 homes which, at its mid-point, housed 4,614 children under age seven. The control group consisted of 4,063 homes with 4,106 children in the same age group. The suburban housing developments in which each of the groups lived were separated by a limited access parkway, but the physical environment and socio-economic levels were fairly uniform.

In the study group, the parents were subjected to an intensive program of health education designed to encourage the practice of accident prevention, while in the control group no such effort was made. Data were collected on all

[1]AAHPER changed its name in 1974 to the American Alliance for Health, Physical Education, and Recreation.

injuries which required medical or dental attention from private physicians, dentists, and local hospitals for three-month periods for a year before the educational period, during the year and a half of education, and for six months after it. There was no significant difference between the records of the two groups in any of the three phases of the study. Actually the occurrence of injuries in the study group went above that in the control group in five different reporting periods. There were no differences in the types of accidents, severity of injuries, or periods of hospitalization. Although many strongly motivated young parents in the study group were still enthusiastic about accident prevention at the conclusion of the program, the lack of results indicates that either the educational techniques employed were ineffective or it may not be possible to influence accident rates effectively merely by safety education.

**Action For Increased Sport Safety**

Where does this leave us with regard to recommendations to promote greater safety in physical recreation activities for the future? No single approach to this subject can be expected to be fruitful on the basis of previous experience. We must plan to put greater emphasis on those factors which our analysis has indicated contribute to the total safety effort. There must be an intensification of current efforts by governmental agencies, non-profit public service organizations, voluntary associations, and educational institutions. Above all, the individual must be asked to assume a greater degree of responsibility for his own welfare in his participation in physical recreational activities.

We must seek the continued development of larger, better, and safer recreational facilities through public and private means. We must persuade manufacturers of equipment used in recreational pursuits to exert greater efforts in the development of product safety. We must urge the review and, if necessary, the revision and codification of rules and regulations by the voluntary associations and governing bodies connected with each recreational activity to emphasize safety. If it seems advisable we must seek the passage of local, state, or federal ordinances to promote safety in this field. We must encourage research in the study of recreational injuries by seeing that sources of grant support are available to those seriously engaged in such efforts. We must make qualified instructors available in sufficient numbers and their services available at reasonable costs to teach the skills which help to prevent or to minimize injuries. Educational institutions must play a larger role in this respect than they have in the past.

Finally, every educational technique which we have at our disposal must be brought to bear on the individual to influence him correctly in the selection of activities suitable to his age and physical condition, in the proper self-preparation for the recreational outlet which he will seek, and in seeking medical assistance promptly for any injuries which may be received as the result of his activities.

Health and safety are prized by us all. We know that it is difficult, if not impossible, to maintain good health without vigorous activity. This involves risks against which we can protect ourselves only incompletely. Our problem is to balance what we may gain in one way with what we may lose in another. If our solutions are imperfect our efforts must nonetheless be unremitting.

William F. Stier, Jr.
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# Organized Athletic Competition For Elementary School Pupils*

## INTRODUCTION

The question of whether children not yet at the secondary level of education should be allowed and/or encouraged to partake of the entire spectrum of organized athletic competition is controversial in today's society. The fact that such physical activities can be provided by school authorities or by nonschool organizations is of secondary importance. Rather, the concern is with the physical activities themselves, the surrounding circumstances and the result of participation in such activities. Authorities and parents have split as to their position on this sometimes violent, always pertinent, issue.

Although some school administrators, teachers and parents react favorably and align themselves behind such programs as interschool athletic competition, the issue is certainly far from impotent.[1] In fact, the topic of athletic participation for elementary students has been under investigation for over 30 years, with the result being a discernible shift not only in the position taken by the recognized experts in the field, but also in the emphasis given to the concept.

The American Association (now Alliance) of Health, Physical Education and Recreation Committee on Athletics for Children recommended in 1952 that interschool varsity competition sponsored by either the schools or by nonschool agencies be disapproved for children below the ninth grade.[2] Some bodies of authorities on child care did not align themselves with AAHPER's approach. In 1954 the Educational Policies Commission stated its belief that participation in sound athletic programs contributes materially to the physical, emotional, social and moral development of children and that such experience should be part of the education of all children and youth.[3] Numerous other policy statements have been issued by other professional groups, educational as well as medical, and the statements have gravitated toward the conservative side of the spectrum.[4]

In light of the increased concern in respect to the seemingly increasing participation in such activities for children, a committee was formed to repre-

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sent AAHPER and the Society of State Directors (Health, Physical Education, and Recreation) to reexamine the problems of athletic competition at this age level. The committee undertook a nationwide survey (questionnaire) of elementary schools in urban and rural areas to determine the extent and nature of competitive athletic programs for boys of elementary school age. Girls were excluded because a review of existing literature indicated that the problems associated with athletic competition at that time were not relevant to females at this age level due to the disparity of the numbers of such programs in existence. The survey indicated that there were enough programs in existence for boys to warrant further investigation as to the effects of organized athletic competition among young children.[5] An additional indication that such activity was in existence can be found in an earlier report by Schneider, who concluded that 44 percent of the 523 urban areas (above 10,000 population) investigated had interschool, interplayground or interagency athletic competition for boys beginning in the third, fourth, fifth or sixth grades.[6]

## REVIEW OF RELATED LITERATURE

Since highly organized athletic competition is in existence for today's elementary youth, it is appropriate to review the literature to determine whether such activity is shown to have an appreciable effect upon the individual child in respect to physiological effects or physical growth; social and emotional growth and adjustment; and potential injury.

### Physiological Aspects

Seham and Seham concluded, in their study dealing with 6- to 15-year-old youngsters who rode the bicycle ergometer until near exhaustion, that although nausea followed, dilatation of the heart was not noted, and all subjects recovered completely in a few hours.[7] In a similar study, Morse and his colleagues had boys aged 10 to 17 years run on a treadmill until exhausted. The study revealed that the older boys possessed greater ability to sustain exhausting exercises than did the younger subjects.[8] That the working capacity of young boys indicated an increase almost linearly with age and in changes in the body size was concluded by Adams and his associates whose subjects ranged from 6 to 12 years of age.[9] Rowe, in his investigation of growth comparisons of nonathletes with athletes, and Fait, who conducted a more recent analytical investigation of the effects of athletics, indicated that in the early pubertal years a boy's growth may be affected adversely by interscholastic sports of six months' duration or more.[10]

A study which fails to substantiate the above conclusion is that of Shuck who reported that the growth trends of seventh, eighth, and ninth graders who participated in sport activities did not differ from youngsters who failed to participate.[11] However, he did indicate an apparent retardation in growth of seventh and eighth grade boys who were involved in 17 games during a season in contrast to those involved in only 12 games.

Relinquishing the attempt to investigate the cause or effect type of relationship between participation and physiological characteristics, two investigators revealed that participants were anatomically and physiologically advanced over nonparticipants of the same chronological age.[12] This included skeletal maturity. Those who do not relinquish an opportunity to voice their opinion on the

"cause or effect" position are Clark and his colleagues who conclude that there is an apparent selective factor at work which not only attracts the big, strong and mature individual into athletics but which insures his readiness for such activity over the less liberally endowed youngster.[13]

An animal investigation revealed that the body benefits from a regimen consisting of vigorous exercises.[14] This is in apparent agreement with Rarick, who worked not with lower animals but with human subjects.[15] It is important to note that the pertinent questions of "how much is optional or what is excessive" is not adequately treated in the two above-mentioned studies.

Steinhaus found that long bone growth could be retarded somewhat by excessive weight-bearing during the growing years.[16] This is possible even while growth in the bone diameter may be stimulated by the same apparent cause.

**Sociological Aspects**

As children grow older, proficiency in gross motor activity assumes greater importance, as evidenced by the prestige value placed upon skillful performance by the child's peers. In studies by Bowen and Sperling, it was determined that the self-confidence and social approval gained by the individual skilled in motor activities may be a valuable asset in personality development and social adjustment.[17] A study which substantiates the conclusions of the above studies was that of McCraw and Tolbert who state that "boys achieve their popularity through participation in ... athletics more than any other factor...."[18]

Rarick and McKee found that students who were superior in physical skills (gained through participation) had more satisfactory scholastic adjustment than those who were inferior.[19] In regard to the emotional effects on participants in such activities as Little League baseball, in comparison to those who do not participate, Skubic utilized the Galvanic Skin Response to conclude that youngsters who participated were no more stimulated by competition in league games than they were by participation in games in physical education classes.[20] However, the investigator emphasized the point that this study delved into only one phase of the total problem of competition (i.e., the immediate effects of competition on emotionality).

Evidently this preceding study was mistakenly understood by some as "proof" that such participation was beneficial and in fact essential for correct psychological development, for a year later Johnson thought it necessary to clarify in the *Research Quarterly* the purpose and objectives of Skubic's study.[21] He suggests that we must interpret with great caution all studies related to such highly complex and poorly understood subjects as personality and emotion. The conclusion reached by Skubic only indicates that there was or was not a change in skin conductivity but does not hint at the psychological significance lying behind it.

Seymour found that participants scored slightly higher on personality traits and received significantly higher social acceptance rating from peers.[22] Saly, however, concluded that there was no significant difference regarding the areas of personality included in his study.[23] An interesting study by Schendel revealed that on the ninth grade level, the participants were exhibiting greater qualities of leadership and social initiative; possessed more of the qualities which lead to status; were more sociable; exhibited a greater sense of personal worth; had less self-doubt and fewer complaints; and were more conventional in their responses to social situations than the subjects in the nonparticipants group.[24]

Biddulph linked athletic ability and participation to social adjustment while Brace linked these qualities with social status.[25] Similarly, Bretsch, Flowtow, McCraw and Tolbert have shown an apparent relationship between social status or acceptance and athletic ability or participation.[26] Popularity and its direct relationship with athletic ability and/or participation has been cited by Tuddenham.[27] Stogdill and Zeleny revealed an apparent positive relationship between athletic ability and the choosing of friends.[28] Austin and Thompson differed, however, and indicated that in the sixth grade, "skillful in games" was no better than sixteenth on a list of criteria for choosing friends.[29]

Mere ability in contrast to actual participation has been the center of numerous studies but the following investigations concern themselves with superiority in the acquisition of physical ability and skills and the relationship, if any, with social adjustment. Bowen, Coleman and his associates, Smart and Smart, and Wellman claim an apparent positive relationship.[30] Jones cites evidence that strength in itself is a significant factor in an adolescent's social adjustment.[31] Physique and body size have been shown to have a demonstrable effect upon adjustment and social status as well as leadership.[32]

Another investigation dealt with physicians who were also fathers of youngsters involved in Little League play. The survey showed that 64 percent felt that participation favorably affected the emotional adjustments of their sons.[33]

Conversely, some negative findings of athletic competition at this age level are revealed in the study by Giddings who found that children demonstrated disturbed and restless sleep following highly competitive contests.[34] Similarly, Skubic revealed that one-third of the parents (having sons who are participants) claim that their children become so excited following competition that their eating pattern was adversely affected.[35]

Participants in Little League and Middle League baseball achieved scores in standardized inventories of social behavior and attitudes which did not differ significantly from those of nonparticipants. On the scales of social acceptance, however, the participants were determined to be more favorably accepted by their peers.[36] A more recent study dealing with behavior adjustment showed no significantly improved adjustment in first, second and third graders who had been deficient in adjustment and motor ability or skill. The six weeks' program had significantly affected their motor ability.[37]

**Potential Injury Problems**

The number of injuries per student hour of participation (all sports) was highest among senior high students involved in athletics and lowest at the junior high level.[38] It is significant that when the ratios for seventh and eighth grade boys were compared for the three types of physical activity available to students — class, intramurals and athletics — the differences were negligible.

Authorities have warned of the potential dangers due to injury or permanent damage done to some part of the adolescent's body.[39] Sixty-nine percent of the orthopedic surgeons questioned in one study indicated the susceptibility of the prepubertal years in respect to the joints which are considered to be unusually vulnerable to injury.[40] The elbow, in particular, has been the subject of several inquiries as has the total subject of bone injury.[41] Shaffer states that orthopedists are not currently in agreement that specific types of injuries to bones occur more frequently in athletics than in informal play.[42]

## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

It is evident from the review of literature that there exists no conclusive evidence to substantiate the belief that strenuous (competitive or social) physical activity is detrimental to boys below the high school level to an extent that would warrant its exclusion from the educational scene. In fact, there is evidence which indicates that vigorous physical activity for boys can be beneficial. However, it must be understood that there exists no data concerning the long-range effects of competitive athletics for youth.

Studies which have been cited in the review of literature must be scanned with care as athletes tend to be drawn from the larger, early maturing, fast growing boys. Bias may be built-in before the study is conceived.

The determining factors in regard to the immediate and long-range effect upon the elementary age child rest with the circumstances surrounding the physical activity, the nature of the activity itself and the individual characteristics of each of the participants.

As many questions remain unanswered on effects of physical activity upon the elementary age student, it is recommended that each specific program, and the activities which comprise same, be individually evaluated as to the potential output in any given situation. Unless the physical activity can be provided under exemplary supervision, both medical and educational, such activity should not exist. Activities should be provided which emphasize the positive values of physical activities for the individual participant. This requires consideration of physical maturity, physique, motor development, and psychological and sociological maturity.

## FOOTNOTES

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# High School Football Injuries Study*

"An Epidemiologic Study of High School Football Injuries in North Carolina—1968-1972" was directed by Frederick O. Mueller and principal investigator was Carl S. Blyth. The investigation was supported by a U.S. Public Health Service Grant from the Environmental Control Administration, and the final report was funded and distributed by the U.S. Consumer Product Safety Commission.

Because the data collected and conclusions reached by the investigating team are of major interest to AAHPER members, we include below the Summary and Recommendations chapter of the Final Report.

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It was the purpose of this study to demonstrate the effectiveness of applying epidemiologic methods in determining the extent of the problem of high school football injuries in North Carolina. An attempt was also made to interrelate certain variables associated with the problem of risk in athletics and to provide a descriptive baseline of data on high school football injuries upon which to design and evaluate further analytic and experimental study.

The study was of a prospective nature in that each student athlete participating in football in any of 45 sample schools was included in the collection of data on demographic items related to the host and environment. The data source was direct interview of the injured players from this population. The interview forms, which were completed prior to the first football season covered — 1968, provided information of two types. Information on the host (the student athlete) was obtained during the first two weeks of the summer practice session. Most information on the event, including game and injury data, was obtained by a staff of field investigators using direct interview techniques.

During the football season of 1968, a pilot study was performed. It had three purposes: (1) to determine if the interview items were yielding the desired information, (2) to provide a training opportunity for interviewers, and (3) to establish a workable schedule for interview visits to participating schools.

During the study years 1969-1972, data were obtained from 8,776 student athletes at 43 schools. Of this number, 4,287 were injured, representing a crude incidence rate of 488 per thousand participants.

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At the close of the season, and after relevant information had been collected, the raw data were classified, coded, and placed in computer-acceptable form for analysis. Following a description by tabulation of the players (both injured and non-injured), game situations, and injuries, selected statistical evaluation techniques were employed to look at certain relationships between selected groups. The analytic method used most often consisted of testing the significance of differences in proportions using the chi-square test. It was decided, a priori, to employ a significance level of .05 for statistical tests applied to comparisons involving specified groups of the population.

The principal findings are summarized here.

**Distribution of Injuries**

1. The most common types of injury to high school players are sprains, contusions, fractures, pulled muscles, strains, lacerations, and concussions.
2. A greater frequency of fractures, concussions, and lacerations were found than ever reported in the past.
3. The most frequent injured part of the body was the knee (19.3%), and the ankle (15.3%).
4. The head and neck received slightly less than 9% of all injuries sustained.
5. The knee received the greatest number of contusions.
6. Almost 35% of the student athletes injured were disabled for seven days or more.

**Environmental Variables**

1. Injuries were most frequent in the 1A and 2A classification schools (population of 0-500 students).
2. September was the month in which most injuries occurred (36.0%).
3. Fifty-one per cent of all injuries occurred in practice.
4. The second quarter of the game accounted for the highest percentage of game injuries (27.2%).
5. Of the total number of youths injured who received treatment, 4.4% did not receive it until at least four days after the injury occurred.

**Host Variables**

1. Players 18 years of age had the highest injury rate.
2. There is a distinct correlation between age and injury, in that injury risk increases with increased age.
3. No differences were found between the black and white youths' injury experience at football.
4. Varsity level players risk a significantly greater chance of injury than do junior varsity players.
5. Players with greater experience at football risk a significantly greater chance of injury than do players with less experience.
6. Student athletes with a history of football injury sustain injury at a significantly higher rate than their associates with no history of prior football trauma.

**Activity at Time of Injury**

1. During practice activities, exclusive of scrimmage, the various tackling drills were the most hazardous activities accounting for 33.8% of the injuries.
2. The one-on-one tackling drills were the type where youths were injured most frequently.

3. Defensive play was responsible for the greatest proportion of game and scrimmage injuries (44.4%).
4. Athletes sustained more serious injuries when blocking, tackling, and receiving blocks and tackles in the open field.

**The Agent of the Injury**

1. Injuries caused by a blow from an object accounted for 31.2% of all injuries sustained.
2. The helmet was the object causing the most injuries to players (12.1%).
3. Almost 5% of the injuries sustained were of a type related to torsion or twisting and involved no contact at all.
4. Only 20.1% of the injuries sustained in the study were of a type caused by collision between players classified to no other injurious agent.

**Coaches' Background and Experience**

1. The age of the head coach was important when considering injury prevention. As the age of the coach increased, the injury rate of his team steadily decreased.
2. The number of years a coach had played football did not seem to affect his team's injury rate, but a coach who had college playing experience in his background was associated with teams that had lower injury rates.
3. Football coaches with the least amount of coaching experience were associated with teams that had the highest injury rate when compared to teams whose coaches had more experience.
4. Advanced degrees were an asset to football coaches when injury rates were considered.
5. A large percentage of football coaches in this study were not aware of the proper methods of administering liquids and salt during preseason practice.
6. The full speed tackling drills were the most hazardous in producing injuries.
7. More than half of the total concussions were associated with players who were using improper blocking or tackling techniques.

**Injury Data Related to Type, Condition and Fit of Protective Equipment**

1. The Southern Athletic helmet and shoulder pads were associated with the highest rate of injury.
2. The condition and fit of the football helmet did not seem to affect the risk of injury.
3. The Bell Toptex helmet was associated with a high injury rate.
4. There was no significant difference in injury rates of different type helmet mounts.
5. It is evident that there is a reduction in the rate of knee and ankle injuries to players wearing soccer shoes when performing on well-maintained fields.
6. Schools following a limited contact practice program were associated with lower injury rates.

**Recommendations**

Organized interscholastic athletics are an integral part of the educational program at almost every school level. As an extracurricular function, interscholastic athletic activities have had a phenomenal development in

number and diversity during the last 25 years. They have had their greatest development in the secondary school but have also become prominent at the junior high and elementary levels, especially in the upper grades. There is general agreement among educators today on the potential value of such activities to the total educational program.

With this growing interest in sports, particularly football, and their inclusion in the programs of more and more schools, it becomes increasingly apparent that additional consideration must be given to the inherent danger to participants in this activities. Athletics are hazardous. In sports requiring vigorous activity injuries are certain to occur. However, persons responsible for medical supervision of all co-curricular athletic activities should exert every effort to assure that the potential for injury is kept to the absolute minimum commensurate with the value and benefit of participation. The potential for injury prevention in high school football is great. There is currently available adequate hard data upon which to implement sound countermeasures to protect the student athlete from harm. Some of these include, but are not limited to:

1. Physicians should limit drastically the number of boys who are participating at "marginal" levels of physical well-being.
2. Physicians, coaches, and others responsible for athletic programs and as consumers of athletic protective equipment must take a firm stand in demanding safer equipment. This would include requiring manufacturers to provide soft external padding of all helmets and shoulder pads to limit the injuries from blows delivered by these items.
3. Those responsible for the conduct of interscholastic football must initiate action to ensure that the game is played only on well-maintained turf surfaces in quality soccer shoes.
4. Game officials must give appropriate emphasis to and accept their responsibility for the protection of the student athlete. No new rules are needed. What is needed is more stringent enforcement of those rules currently "on the books."
5. "Live contact," particularly tackling and blocking drills, should be limited to the extent consistent with the instruction of youths in fundamental game skills.

During the last decade, an increased awareness of the problem of football injuries has been evident. Injuries to stellar professional performers have highlighted this awareness.

Interest in research into the prevention of these injuries has had a parallel growth. Much of this interest, however, has been restricted to many small fragmented attempts to consider the extent of the problem. Unfortunately, these research efforts have suffered from lack of comparable populations, sample designs, injury definition, classification, and many other factors. The greatest need to be fulfilled before the prospects of football injury prevention are to be realized to the fullest without detrimental effects on a great many athletic activities is the establishment of a "Sports Trauma Institute" through which efforts could be made to coordinate research ventures, provide adequate medical specialist consultation, and disseminate research findings to the athletic community. Such an institute, with adequate support, could provide opportunities for stimulating research application to learn a great deal more about the extent, character, and nature of injuries resulting from participation in many sports activities, other than football alone. Gymnastics, ice hockey,

trampolining, diving, lacrosse, and wrestling are examples of just a few areas where the potential for prevention of injuries is even more ill-defined than that of football a decade ago.

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# Nature and Incidence of Traumatic Injury to Women in Sports*

What are the five most common injuries that women receive in sports and with what frequency do they occur? This is a difficult question, as there have been very few articles written on injuries to women in sports. Yet it is important that we try to answer it, for, with the upsurge in women's participation in sports, new areas of interest have developed in conditioning, injury prevention and management. Women physical education instructors are demanding more training in these areas. But before practical athletic training for women can be included in a college curriculum, there has to be an understanding of the nature of injuries women sustain in sports.

As an athletic trainer, certified by the National Athletic Trainers Association, I have worked in the Division of Sports Medicine on a two-year surveillance of injuries to women participating in intercollegiate competition at the University of Washington in Seattle. The Division of Sports Medicine is directed by an orthopedic surgeon and is staffed by four certified athletic trainers who are also registered physical therapists, four research athletic trainers, a statistician and several orthopedic residents. Its major responsibilities are service, education and research.

The service responsibility consists of providing complete medical care for 750 male and 250 female athletes, 200 ballet dancers and the university students referred from the student health service. The medical care consists of supervising conditioning programs and administering first aid, definitive treatment and rehabilitation. In addition to serving as a women's trainer, I also act as physical therapist for the student body.

In the area of education, the staff teaches a course in athletic training in the Department of Physical Education. Workshops are given for the benefit of high school and college physical education instructors, nurses and student athletic trainers; seminars are held for team physicians. Members of the staff supervise student athletic trainers, physical therapy students, medical students and orthopedic residents.

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Because the Division's ultimate aim is injury prevention, research is carried out and results published or presented at national meetings. Research is difficult because of the lack of published material on women's athletic injuries; hence, the problems are not well defined.

During the past two years, I studied women's injuries for three competitive sports club teams. The three sports, chosen for the greatest potential for injury, were field hockey, basketball and track and field. The five most common injuries occurring to women competing in those sports were sprains, muscle strains, tendonitis, contusions and patellar (knee) problems. Although the patellar of kneecap problem is specific to one area of the body, whereas the other types of injuries are not, we feel that this problem is in a category by itself.

A sprain is an injury to a ligament, resulting from overstress, which causes some damage to the ligament fibers or their attachment. Sprains occurred most frequently at the ankle but were also common at the knee, fingers or thumb. Women in basketball were most often sidelined for sprained ankles.

A muscle strain is an overstretching or overexertion of some part of the musculature, be it tendon, muscle fiber or where the muscle joins the tendon. Causes of muscle strains include lack of conditioning, lack of warm-up before vigorous activity and musculature imbalance. Shin splints, which are ill-defined in most of the literature, are a strain or inflammation of a lower leg muscle. Muscle strains, including shin splints, were most often seen in track and field.

Tendonitis is an inflammation in the muscle, the tendon or the sheath surrounding the tendon. The cause is usually unaccustomed overuse, but may be also attributed to a stretch-type injury, a direct blow or an infection which produces an irritation in the tendon or tendon sheath. Tendonitis occurs commonly to women early in the season before they are adequately conditioned. Women, particularly in track, often suffer from inflammation of the tendon of one or more muscles across the ankle. Because the street shoes that women wear have higher heels than the low built shoes in which they compete, the tendon is stretched farther than its accustomed length during athletic participation and becomes irritated.

Contusions are the result of a direct blow, causing bruising of the skin and underlying tissue. They are accompanied by pain, hemorrhaging and discoloration. Contusions occured most often in field hockey where the ball or stick traumatized many of the players' shins, thighs, hands or faces.

The fifth common problem in women's sports involves the knee. It is not, however, the torn cartilage often seen in men's sports. Women have a greater tendency towards subluxation or dislocation of the kneecap than do men for several reasons. Women have a wider pelvis, which creates a knock-kneed tendency when running or standing. The quadriceps muscles, which are the big muscle group on the front of the thigh, pull from their attachment on the front of the shin to the hip when contracting. The line of pull passes to the outside of the patella rather than through its center as it usually does in men. The result is a kneecap which tries to drift laterally when the quadriceps muscles contract. It is not true, however, that all women must therefore have this injury; there are a few more predisposing factors: 1) The patella slides in a groove between the condyles at the distal end of the femur. If the groove between the condyles is shallow or the lateral condyle is flattened, the patella has a greater tendency to slip laterally out of the groove each time the quadriceps muscles contract. 2) If the patella is abnormally flattened on its undersurface, the possibility of subluxation or dislocation is increased. 3) A previous knee injury which was not

fully rehabilitated may produce an asymmetrical pull of the quadiceps muscles, creating a tendency for the patellar drift.

Another type of patellar problem to college-age women is the softening or degeneration of the undersurface of the patella. This is called chondromalacia and its patterns of development are similar in many respects to those of the dislocating or subluxing patella. It occurs in athletes and nonathletes, commonly in both knees. The difference between the athlete and the nonathlete is that the athlete continues to participate despite the pain, although favoring the knee, and the nonathlete limits her activities to a tolerable level. Eventually both require medical care, the athlete because she is at the point where the pain makes competition intolerable, and the nonathlete because she has gradually favored her knee to the point where climbing stairs is out of the question.

How do women's injuries differ from injuries sustained by men? Actually, the injuries are similar but the frequency patterns differ. Men receive a greater number of injuries because of their participation in body contact sports, such as football or wrestling. The incidence of head, neck and upper extremity problems in women is very low because they do not participate in such sports. Women do not compete on the rings in gymnastics, which is the apparatus contributing to a great number of shoulder problems in men athletes. Because there are a greater number of men participating in sports than women, the frequency of injury is deceiving. Men practice proportionately more times per week and have longer competitive seasons and more games per season. Therefore, it may seem that men have more injuries, but it is not truly comparable unless placed in perspective.

Another variable factor that formerly influenced injury statistics was the sports club philosophy under which women's teams operated. Because all teams were open to everyone who wanted to participate, the skill level was generally low. Much of the season was devoted to teaching the sport. There was no cutoff point for accepting new members, and latecomers missed the preseason conditioning. Attendance was not mandatory. These facts, coupled with the knowledge that there were few participants, should put the low number of injuries in perspective.

For the purposes of the surveillance study, any athlete missing or not able to participate fully in a practice or game because of an injury sustained in that sport was counted as injured. Not included were athletes who missed practice because of injuries sustained during other forms of recreational activities or because of illness.

In field hockey there were three injuries one year with an average of 17 participants and seven injuries the next year with 19 participants. The two-year average injury rate of the field hockey season (29.5 games and practices per season) was .28 injuries per participant. There were five basketball injuries one year with an average of 17 participants and seven injuries the next year with 12 participants. The two-year average injury rate of the basketball season (34 games and practices per season) was .44 injuries per participant.

In track and field there were five injuries one year and eight injuries the next year with the number of participants nine and eight respectively. The seasonal injury rate for track exceeded that of the other two sports, with an average of .78 injuries per participant in an average season of 31.5 meets and practices. The injury rates do not reflect the varying lengths of the seasons of these sports although they do take into account the number of participants.

In order to express these figures so as to adjust for both factors, one can base the rate upon the number of injuries per 10 participants per 100 exposures, which would approximate 2½ seasons. Using injury rates calculated in this manner, field hockey sustained 9 injuries, basketball 13, and track and field 25. It is important to keep in mind that our injury information was based on rather few participants and hence, relatively few injuries. Therefore, these injury rates, while reasonable estimates, should be expected to vary from year to year and from place to place.

In summary, the five most common injuries seen in women's sports at the University of Washington in field hockey, basketball and track and field were sprains, strains, tendonitis, contusions and patellar problems. Because women are not involved in true contact sports, they incur fewer time-loss injuries than do men. A comparison of the incidence of injury in men's and women's sports can be made based on the number of injuries per participant per amount of exposure time. However, one must take into consideration the skill level of the athletes and the amount of time spent in preseason and off-season conditioning.

Because the study revealed that the incidence of injury in track and field appears to be higher than in basketball or field hockey, greater effort is being made at the University of Washington to establish a preseason conditioning program for women who participate in track, to reduce the number of time-loss injuries resulting from strained muscles and tendonitis. Other women's teams, such as tennis, crew and basketball, are initiating preseason conditioning programs with good results. This is one step towards prevention of injuries supported by the results of the study. Hopefully more research will be done in this area so that sports will become safer for participants.

# Sports Safety

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# A Preseasonal and Year-Round Skiing Fitness Program*

From then on, the idea could only grow. By 1941, 4,887 skiers had been helped by 4,000 patrolmen belonging to 180 ski patrols throughout the United States. Due to the National Ski Patrol's program of "Safety and Service," accident prevention, treatment, transportation, proper trail design, safety signs, and safety education quickly became an integral part of the American ski scene.

America's efforts during World War II were also advanced through the cooperation of the Ski Patrol, which in 1940 became actively involved in strategic winter home defense, acting as a volunteer civilian agency. Dole also fought for an American ski troop which was eventually realized in April 1941 and named the 87th Mountain Regiment, later to become the famed 10th Mountain Division. In addition to forming the division, Dole and the National Ski Patrol were responsible for recruiting and processing the many thousands of mountaineers and skiers of the 10th who spearheaded the final United States drive in Italy from the Apennines to the Alps.

The end of the war was marked by the release of pent up energy and enthusiasm in America, which were strongly evidenced on the ski scene. During the 1946-47 ski season, every ski slope in the United States was catering to capacity crowds. Ski patrolmen were anxious to get back to the slopes. Everywhere, patrols were regrouping and membership figures soon reached pre-war proportions. Growth and development of the National Ski Patrol System continued, as new ideas and practices flourished. Ski safety conferences, area classifications, and other procedures, all with "safety and service" for the skier as their primary purpose, were implemented rapidly.

Now, more than 30 years after its founding, the NSPS is the largest winter rescue organization in the world. Membership figures in 1970 exceed 22,000 registered members in approximately 800 patrols through the United States. Membership can be attained only by meeting rigid admissions standards. Training programs include American Red Cross advanced first aid instruction, toboggan handling, and winter rescue techniques. The training program prepares the skier for proficiency tests used to select the qualified for admission to the patrol. There are several patrol classification levels, each level being

*Reprinted from *JOHPER*, November-December 1970.

reached by improvement of skills as well as additional training and proficiency testing. Each year, there is a mandatory refresher course for all registered patrolmen who wish to keep their membership active. These courses are designed to maintain regular skills and invite development of new ideas and methods.

The success of skiing in the United States owes much to Charles Minot Dole and the National Ski Patrol System. Over the years, their innovations and recommendations have made significant contributions to the safety and general well being of American skiing. From its birth, the patrol's philosophy has been "safety and service." The members of the National Ski Patrol receive nothing but thanks for their time and effort, but their gratification is realized in knowing that they have made their sport safe.

Skiing safety depends largely on one's fitness for skiing. What an instructor tells his students about skiing, equipment, and fitness carries double weight if he himself is knowledgeable and physically fit.

Fitness for skiing involves more than physical conditioning. Skiers and instructors often give too little consideration to selection and functioning of equipment, especially skis and safety bindings. Perhaps instructors should spend more time on such topics during pre-ski fitness sessions or during short rest periods while giving instruction on the slopes. Often beginning skiers purchase equipment without knowing the correct size and kind of skis, or how their releases let them out when it is time to be let out.

Some ski instructors need to rethink their ideas about falling as part of learning. Too often falling is regarded as a disgrace, and the beginner tenses in an effort not to fall. If there were less embarrassment about falling there would be less tension and thus less likelihood of injury in falling.

Controlled skiing for both the novice and expert demands good instruction, hours of practice, and good physical conditioning. This conditioning is aimed at developing strong legs and thighs, strong flexible ankles and knees, excellent balance and coordination, a sound heart, and a properly functioning respiratory system.

Try to do the ski fitness workout described below at least three times a week. Try not to stop between exercises; the program must be continuous. When you are able to complete the beginning level in less than 15 minutes, move to the intermediate and advanced levels. If the advanced level is too difficult, drop back to the intermediate, adding five repetitions of each exercise except running and wall sits until you are unable to complete the program in 15 minutes. You may then wish to try the advanced level again. If you are able to complete the advanced level in less than 15 minutes, add five repetitions to every exercise but running and the wall sit; add five more repetitions every time you are able to get your time below 15 minutes.

*Running.* Run or jog continuously for one-half mile (beginning level) or one mile (intermediate and advanced).

*Chair step ups.* Stand facing a chair or bench. Step onto the chair with the left foot. Bring up the right foot so that you are standing on the chair. Step down with the left foot, then bring the right foot down to the starting position. Half way through the total repetitions for your level, change feet to lead with the right foot. Beginning — 25; intermediate — 50; advanced — 100.

*Parallel side to side jumping.* Hold feet and knees together, with knees bent. Jump at least two feet to one side, then back to the starting position. Beginning — 10; intermediate — 20; advanced — 30.

*Burpee.* Men do this exercise for agility to a count of six; women do a four count, omitting 3 and 4. (1) From a standing position, squat down, placing hands in front of feet. (2) Put weight onto hands, keeping arms straight. Thrust both legs backwards, so that you support yourself on hands and feet. (3) Keeping your body straight, lower your body by bending your arms until your chest touches the floor. (4) Push body back up to position 2. (5) Bring both feet up together to return to position 1. (6) Return to standing position.

*Knee to shoulder hopping.* Standing on your left foot, try to place your right knee against your right shoulder, pulling it up with your hands. Rhythmically hop from left foot to right foot, exchanging knees. Completion of left plus right knee raise equals one repetition. Beginning — 10; intermed. — 20; advanced — 30.

*Wall sit.* Without a chair, sit against the wall as if you were sitting in a chair. Your head and back should be flat against the wall. Hips and knees both form 90 degree angles. Hands are at sides, not on thighs. Beginning — 30 seconds; intermed. — 1 min.; advanced — 2 min.

If you are practicing for the ski patrol, expecially for bringing the basket down, do wall sits with your feet in a snow plow position and your hands against the wall at a 45 degree angle from the body. Hold the 90 degree positions, but push your body away from the wall so that only hands and wrists touch the wall.

*Curling sit up.* Lie on back, legs apart, knees bent, feet flat on floor, hands joined behind neck or straight out behind you. Raise the head by placing the chin on the chest and rounding the shoulders. Inhale; curl up to a sitting position. Exhale; return to starting position. Beginning — 5; intermediate — 10; advanced — 20.

**Stretching Exercises**

Skiers may wish to do these additional stretching exercises to get themselves in shape for the slopes. The number of repetitions should be in accordance with your ability and age.

*Achilles stretch.* Stand facing the wall, feet together, hands flat against the wall about face high. Without moving hands, move the feet backwards until the body is straight and heels barely make contact with floor. Push down with heels until they are flat on the floor. Repeat, moving the heels backwards an inch at a time until they fail to touch the floor.

*Curling toe touch.* Stand with back against the wall and heels about 4 inches from the wall. Slowly lean forward, keeping legs straight and buttocks against the wall, until your hand touches your toes. If this is too easy, move heels closer to the wall.

*Toe balance – touch and squat.* Stand as high as possible on tiptoes, with arms straight in front of you at shoulder level. Keeping your legs straight, keep your balance while you lean forward until your fingers touch your toes. Squat down so that your heels are flat on the floor and arms again in front at shoulder level. Return to starting position on tiptoes without losing your balance.

*Inner leg stretching.* Stand with your legs wide apart. Keeping legs straight, bend forward and place your hands on the floor about three feet from your feet. Slowly bend your elbows until they rest on the floor. Do not move your hands forward once you start to bend your elbows.

## HINTS FOR SAFER SKIING

If you haven't had a medical examination for over one year, then do so. Pay special attention to blood pressure and weight. If your doctor suggests diet and an exercise program, don't try to make that comeback overnight. It may be a year or more since you exercised, so take it easy.

Don't wait until too late to begin an exercise program. Exercise and diet won't help if you start the day before your first ski lesson or run. Plan ahead and start several weeks before the season starts.

Although isometric exercises have their place in physical conditioning, they are not the best for skiers. They tend to tighten the muscles too much. Although they give strength and bulk to the muscles, they do little towards suppleness. In falling you need flexibility, not big muscles.

You do need stamina and endurance, so run, swim and skip rope. To begin with, walk a mile, then run part way, then run only, then increase it to two miles, then three. You may wear out some tennis shoes but life will be a little easier and healthier. If possible, run out of doors. Find a route which takes you uphill as well as down, switch sometimes to sprint runs of 50 yards, alternate 50 yard sprints and 50 yard trots. Try running a mile to a time limit — your time limit, not that of some track champion.

At the beginning of your ski lesson take time to check your safety releases. Do this with your boots and skis on. Make sure your boots fit snugly into your bindings. Check the forward and lateral releases.

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# Clues to Safety on the Trampoline*

"Would you use the trampoline in your school?" "Is this piece of equipment safe?" "Do the hazards associated with the trampoline outweigh its benefits?" These are questions asked about the inclusion or omission of this apparatus in physical education programs.

Thousands of trampolines are currently in operational use throughout the United States at all school levels. The hazards akin to the trampoline represent no greater threat to the safety of the student than the sports of football, basketball, or soccer — when they are used in a professional manner in an educational setting. Rebound tumbling has one of the lowest accident frequencies of physical educational activities at schools.[1]

It is inevitable that accidents will occur on the trampoline, and to expect 100 percent accident free use would be unrealistic. However, fundamental bounces and progressions generally taught in school programs can be a safe and worthwhile experience. A note of caution is interjected to accent *fundamental bounces and progressions.* The element of risk sharply increases when somersault turns are introduced. Forward and backward somersaults are not elementary stunts and should be reserved for the skilled or competitive performer seeking specific coaching.

The substance of controversy is related to the catastrophic neurological injuries which have occurred. The seriousness of accidents which can happen on this equipment cannot be denied. Five devastating cases were reported in the medical literature describing individuals who suffered severe injuries on the trampoline.[2] All but one of the injuries resulted from backward somersaults imperfectly executed, and three occurred in commercially operated centers, at a time when "jump centers" were flourishing. Commercial rebound centers have dwindled so that casualties are rarely heard about, and attempts by the National Safety Council to monitor this activity have ceased.[3] In each case reported by the medical journal, injuries occurred involving an informal setting or an attempt to execute a backward somersault. This implies there are two factors which are important elements involving serious injuries, namely: (1) well-supervised and organized progressions in the presence of a qualified instructor, and (2) careful attention to instruction for those individuals performing somersaults.

*Reprinted from *JOHPER*, April 1966.

Other studies verify the relatively safe record of trampoline activity. A recent report on safety in physical education involving 1,400 children at the junior and senior high level at 96 secondary schools cites football, basketball, and soccer in rank order by gross accidents.[4] Incidents of trampoline accidents were not listed or mentioned throughout the document. The National Safety Council cites four minor injuries in a total of 910 accidents in a California school district in two years, 1956-57 and 1959-60 and no accidents during 2,160,000 bounces involving 1,400 children at another school. Zimmerman's survey of accident experiences of 167 purchasers of trampolines who had obtained their equipment at least five years prior to her investigation, points out that in 100 accidents (60% of the total in the study), the performer landed on the bed. Other annotations of the study indicated: (1) injuries increased in severity as age level advanced, and (2) a vast majority of accidents were minor in nature requiring one to eight days for recovery time.[5] The similarity of cases reported by Zimmerman and the medical journal indicates that serious injuries happened when performing somersaults and "flips." Severe injury hazards appear to pinpoint the canvas bed area coupled with faulty performance in executing somersault maneuvers.

**Implications for the Instructor**

Acknowledging a rather limited survey of the accident picture of trampolines in schools, two elements stand out among other factors. Instructors should recognize that the trampoline bed itself is the most dangerous area for serious injuries associated with devastating spinal shocks, and an important cause of serious injury involves the execution of somersaults or "flips." These two elements should be foremost in planning and conducting a trampoline unit of instruction. Proper progression and carefully selected basic stunts and landing techniques are paramount in preventing back injuries. Attention should be given to the simplest moves, including the knee, front, and back drops. Somersaults and/or "flips" should be reserved for those individuals seeking advanced skill instruction with the gymnastic club or competitive team. The desired outcomes of leg strength, agility, coordination, and balance can be developed through fundamental routines excluding full transverse rotatory or flip actions.

**Values of Trampolining**

Trampoline activity contributes to the dynamic fitness components of the individual, since the execution of basic rudimentary routines involves the participant's mental, physical and emotional equipment covering a full range of bodily movement. The Zimmerman survey cites the most frequently named outcomes as coordination, balance, conditioning, rhythm response, muscular strength, confidence, control, and courage. Naval aviation training personnel utilized the trampoline to help develop a "sense of re-location" or a quality of awareness on the part of the aviator that he is inverted when flying upside down.[6] Two studies have shown statistically significant leg strength and agility increment through basic trampoline jumping.[7]

An important value of this activity is found in its contribution to the student's kinesthetic sense (or position sense). Body control in the air, timing and rhythm in various maneuvers, and general motor ability are all involved. Scott indicates that rebound tumbling can be used to teach concentration on the kinesthetic feelings of many different movements.[8] The kinesthetic value has important implications for teaching children with low levels of neuro-muscular coordina-

tion. McCants' study demonstrated that general motor performance can be improved among mentally retarded children through trampoline activities.[9]

The sensation of kinesthesia is experienced immediately in various aerial manipulations. This unique attribute of rebound tumbling can be effectively exploited to help improve coordination. In addition, trampoline tumbling provides an exciting method of motivating students who are skeptical about participating on heavy apparatus, such as the rings, parallel bars, or horizontal bar. Also, trampoline activities have been successfully used to guide obese elementary level boys and girls into a program of gymnastics.

**Safety Aspects**

The pattern of safe trampoline techniques depends upon (1) careful attention to basic progression and (2) alert supervision and spotting. An understanding of proper jumping and landing techniques is necessary before basic stunts are introduced to the class. Direct supervision and spotting by placing individuals at key points around the trampoline will help minimize accident hazards. Drills should be utilized to encourage students to watch the performer at all times. There should also be instruction on the proper use of the spotter's hands in the event of a mishap.

In addition to the direct presence of the instructor, a minimum group of four spotters is essential to lessen the possibility of falling off the equipment. Trampolines should always remain locked when not in use.

**Focus on Three Basic Stunts**

Basic progressions usually include the knee, front, and back drops. These particular exercises, although elementary, present specific vulnerability to spinal trauma and should be taught slowly with caution against acute cervical and thoracic hyperflexion or hyperextension.

The *knee drop* should proceed from the lead-up stunt of simple controlled center bed jumping and the all-fours drop. This exercise should not be taught until the student gains the kinesthetic feel of bouncing in a firm position contrary to the relaxed state. The performer should experience a clear image of landing with the center of gravity directly over the knees without spinal hyperextension.

The *front drop* may also follow the all-fours drop. Particular care should be exercised to avoid "diving" or leaning forward with this exercise. The center of gravity should be focused over the base of support with landing made simultaneously on all four points: (1) thighs, (2) abdomen, (3) forearms, and (4) hands. The beginner may tend to hyperextend after leaving the bed from the feet causing a shift in weight center and a subsequent non-coincident landing. Accenting a slight piking position at the initial take-off from the feet will help minimize the possibility of spinal hyperextension.

The *back drop* should be introduced without bouncing. The slightest extension of the head and neck combined with the tendency of hip flexion and leg elevation may cause the novice to rotate quickly in a backward somersault action. It is vital for the student to learn head flexion while lifting the legs 80 to 90 degrees before back drop bouncing is practiced. Traveling on the bed should be avoided. On-the-trampoline spotting is an excellent technique to assist teaching the back drop.

Some physical educators prefer to include the trampoline program after ground tumbling instruction. This sequence is indeed a prudent procedure.

Tumbling activity permits the instructor to note those students who may need extra attention from a basic agility standpoint. Students are also oriented to body tumbling moves similar to acrobatic stunts on the trampoline. Forward/backward rolls, cartwheels, and handsprings of various types are excellent lead-up activities to a trampoline unit.

[1]National Safety Council, *Rebound Tumbling*, a report prepared by the Public Safety Committee, National Safety Council, Chicago, Illinois, March 1961, p. 2.

[2]William G. Ellis and others, "The Trampoline and Serious Neurological Injuries," *Journal of the American Medical Association* 174:79-82 (November 1960).

[3]Letter from John P. Fleming, director, Public Safety Department, National Safety Council, Chicago, Illinois, December 28, 1965.

[4]New York State Department of Education, Division of Health, Physical Education and Recreation, Bureau of Physical Education, *Safety in Physical Education for Junior and Senior High School Boys*, Albany, New York, 1963.

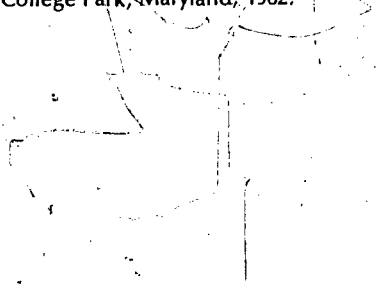
[5]Helen Zimmerman, "Accident Experience With Trampolines," *Research Quarterly* 27:455 (December 1956).

[6]Harold C. Lowe, Editor, *Gymnastics and Tumbling*, United States Naval Institute, Annapolis, Maryland, 1950, p. 11.

[7]Clifford D. Brees, *The Effects of Trampoline Training Upon the Jumping Performance, Agility, Running Speed, and Endurance of High School Basketball Players*, unpublished master's thesis, University of Wisconsin, Madison, Wisconsin, 1961; and Dorothy J. Allen, *A Comparison of the Effect of Trampoline Exercise and Jump Rope Activity on the Strength of the Hip, Knee, and Ankle Muscles*, unpublished master's thesis, University of Washington, Seattle, Washington, 1962.

[8]M. Gladys Scott, *Analysis of Human Motion*, Appleton-Century-Crofts, New York, 1963, p. 341.

[9]Robert G. McCants, *The Effects of a Selected Trampoline Program on the General Motor Performance of a Group of Mentally Retarded Children*, unpublished master's thesis, University of Maryland, College Park, Maryland, 1962.



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# Safety in Skin and Scuba Diving

All activity has some aspects of danger. The risks that are part of sport diving can be limited through proper training. A certification course in basic scuba can help to develop the skills and attitudes that will lead to a safe and enjoyable diving experience. Sport diving can be divided into two categories — skin diving and scuba diving.

Skin diving is any form of breath-hold diving. As long as the diver is only using air from a breath at the surface he is a skin diver. An exposure suit and other types of special equipment can be worn.

Scuba is derived from self contained underwater breathing apparatus. The scuba diver carries his air supply with him. Compressed air, not pure oxygen, constitutes his breathing supply. With a few exceptions, safety rules apply to skin and scuba diving in the same way.

There are several sources of statistics dealing with diving accidents. It has been shown that there are trends in diving mishaps. Others show that the increase in the number of certifications and the decrease in the number of diving fatalities indicate that diving is getting safer. The agencies responsible for diver training can be credited with the fine safety record that now exists.

Much can be learned from reports on diving accidents and fatalities. The near-misses can provide much valuable information on how to prevent recurrence of mishaps. This kind of information should be shared with all instructors. Unfortunately, at the present all information is jealously guarded by those few who have access to it. There should be a central clearinghouse for use by those who could relate the problems to the causes and thereby help to develop programs of safe diving.

Is diving dangerous? Compared to freeway driving, the dangers are few. However, there are dangers in diving and some of them may be present before the diver even enters the water — lack of knowledge or poorly maintained equipment. Diver training can play a significant role in preventing accidents. Areas of diving safety that merit consideration are:

Medical Aspects — physiological and psychological
Standards and Techniques — skill and knowledge levels
Equipment — its use, maintenance and design
Continuation Training — advanced programs and clubs
Environmental Conditions — surf, aquatic weed, caves, ice

## Medical Aspects

Because diving is physically demanding, the diver should be in top physical as well as mental condition. Stress in a land type activity may result in fatigue or minor discomfort. This same stress in the water could result in a fatality. Therefore, any physical, medical or emotional problem that may hinder maximum performance can be considered to be a contraindication to safe diving. A thorough medical examination given by a diving oriented doctor is highly recommended. Such an examination might possibly detect obvious medical problems that would not be conducive to diving. A medical history form and the results of the physical exam should show the prospective diver to be free of any circulatory, respiratory, or other diseases that might be detrimental in diving. Consideration should be given to the following:

The heavy smoker
Chronic bronchitis
Asthma
History of tuberculosis — possible blebs
Previous pneumothoras — a collapsed lung
Diabetes
Epilepsy
Previous heart attack
Sinus and or ear problems
Previous diving illness — bends or embolism
Recent severe concussion

Some of the above illnesses are the kind one can "live with." The person who feels it necessary to dive might be able to get a doctor's permission to do so. The individual has assumed some responsibility here. However, the scuba instructor has the option of refusing to train any person who has medical factors that are contraindication to safe diving. Such persons should be discouraged from participating in diving. Certain temporary problems such as colds and sinus problems should also be considered as dangerous for diving on a particular day. The diver should be in top-notch condition from a medical standpoint.

Physical fitness is also essential to safe diving. A person who has recently completed a basic scuba class is more ready to dive than one who has not been in the water for six months. Divers should continue their physical training in order to be ready for diving. Diving is the best way to train for diving; however, running and other forms of activity may be a second best.

## Standards and Techniques

Agencies involved in diver education have minimum requirements for creating a safe diver. This minimum varies from about 24 to 32 hours of training which includes lecture, pool and open water work. Whatever the minimum requirements, the objective is to develop the skills and knowledge necessary for safe diving. A recent trend is to look for certain levels of performance of skills and demonstration of knowledge and attitudes. These levels progress from simple to more complex aspects of diving eventually leading to safe and enjoyable diving under a variety of aquatic situations. Surf, kelp, currents, etc. can be handled by the well trained diver. All pool training should relate closely to open water work. The diver should condition himself to the open water environment (no pool edges to grab, solve problems where they occur, become entirely familiar with his gear, etc.). Numerous exposures to the actual diving environment are necessary to develop competency in the water.

There has been a leveling of the differences among the various certifying agencies. The agencies agree on procedures in most major areas of concern and most of the instructors are certified by several agencies. The key to aquatic training now boils down to instructor integrity. The training, teaching ability and performance of the instructor is a major factor in the safe training of the diver. The instructor not only teaches skills and knowledge but becomes important in developing the proper attitude towards diving. The instructor sets the example. In the final analysis the instructor must vouch for the diver's mental readiness for diving in a safe manner. Mental maturity is important, particularly in the youngster who wants to dive. A young person may be able to perform the skills but must be judged for mental readiness with even more consideration than the adult. By putting together the skills, knowledge and attitudes necessary for safe diving and employing the technique of "diving ahead," the diver will provide for the most pleasant experience possible. "Diving ahead" refers to taking all approaching factors into consideration, relating these to possible patterns of action, then acting in the most prudent manner for the situation. Between opportunities for diving, the diver can set up hypothetical situations and give thought to how to react to such situations. This will help put the diver one step ahead in emergencies that might arise. Knowing what to do will help to prevent panic.

**Equipment**

Equipment malfunction has not been a major factor in diving fatalities. However, misuse or lack of knowledge of how to use equipment properly can lead to problems. There are some design features that can facilitate handling by the new diver. The details of these features can best be worked out through a cooperative effort between manufacturers and instructors. Such cooperation will add considerably to safety in diving.

Some safety factors that instructors discuss in relation to equipment are:

- More extensive use of submersible pressure gauges and sonic reserves to add to the J valve
- Emphasis on the buoyancy compensator as a diving tool rather than a "life vest." The connection of the buoyancy compensator to the air supply is a step in the right direction.
- The problem of certain types of "quick release" — buckles that fail either to hold or release as expected
- The need for a better means of ditching the weight belt
- The necessity for special and/or additional training with certain pieces of equipment
- The problem that greater capacity air supplies (tanks) can lead to more bend cases.

Proper use of equipment will lead to greater safety. Equipment should be designed for ease of use related to safety.

**Continuation Training**

The diver coming out of the basic scuba class has the tools to become a diver — if he dives. Experience in a variety of diving conditions is a necessary part of becoming a diver. Some students have most of the qualities to be considered divers as they complete their basic class. Others require a repeat of the basic skills and all need continuation training.

Most certifying agencies provide additional training through advanced courses and speciality programs such as cave diving, salvage, etc. Clubs are organized by the YMCA and other interested groups. Clubs can offer formal training as well as social activities for the whole family. They also serve as a place to find qualified diving buddies and organized dive trips.

### Environmental Conditions

The diver must be trained to handle the conditions of his local environment. In some areas surf, current, kelp and marine animal hazards must be considered. In other areas the problems of limited visibility or diving under ice or in caves must be faced. Each diving area will have normal conditions complicated by adverse weather, boat traffic, night diving, etc. The diver should be aware of all possible hazards and take all necessary precautions for safety. If there is any question as to safety conditions, the dive is best delayed for another day.

Much can be done to eliminate dangers in diving. However, there are still fatalities — why? Here are some considerations:

Panic — due to some new experience or general lack of training
Failure to ditch the weight belt — poor release or financial considerations
Lack of fitness for diving — medical or physical
The buddy system — its misuse
Failure to consider safety — stupidity

Factors that are special to skin and scuba diving are:

The dangers of hyperventilation
Carotid sinus reflex and ill-fitting equipment
Hypothermia — cold and fatigue
Decompression sickness — the bends
Air embolism
The squeezes — ears, lungs
Drowning — the end result

### Conclusions

Diving certainly has its hazards — the untrained beware. Training has as its prime objective — to offer a safe experience. This training must take into consideration medical and physical fitness, skill levels, knowledge, proper use of equipment, the environment, and continuing education in diving. A safe and enjoyable experience in diving is possible through proper training and attitude towards diving. Be trained — stay in training.

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# Recreational Boating Education

Boating safety education traditionally has focused on the adult boating population. However, as with so much in today's world, the traditional approach no longer is sufficient to meet present needs.

Recreational boating has become one of the most popular and diverse of the recreational activities in which people participate. Technology changes have produced boats which are well within the budget of many Americans and the result has been a virtual population explosion on the nation's waterways. Along with the increased numbers have come changes in the types of boats people use, the makeup of the population using the water and an increased concern for the safety and welfare of the users as well as for the environment which must bear the weight of increased use.

The actions of recreational boaters, primarily because of their increased numbers, have become an area of concern for those people charged with maintaining a safe and desirable water resource. The U.S. Coast Guard estimates that in 1974 over 8 million boats were in operation and more than 50 million persons were involved. The annual rates of boating fatalities between 1961 and 1974 range from 16.9 to 21.4 fatalities per 100,000 boats. Property damages due to boating accidents in 1974 were reported to exceed 9 million dollars and, of course, fatalities do not indicate the many who suffer injuries in accidents.

A review of the conditions and causes of boating accidents indicates that approximately 50 percent of the occurrences were the fault of the operator of the boat. Approximately 40 percent of the fatalities and more than 50 percent of the injuries which occurred in 1974 were attributable to the fault of the operator. A further breakdown points to such factors as improper loading, no proper lookout, improper maintenance and excessive speed as leading causes of injuries and fatalities.

While the figures appear to be rather grim, the nature of the causes of accidents indicates that many of the occurrences are preventable. In 1972, the authors, after reviewing statistics such as those listed above, observing operator behavior on the water, and reviewing educational efforts, decided that a significant portion of the boating population was in need of knowledge about boat operation.

In reviewing current boating education programs in operation in 1972 it was found that most were volunteer efforts (i.e., relying on people to take a boating

education course on their own), and that the great majority of these volunteer efforts involved the adult population. Of the educational programs in operation, it was found that those concentrating on school-age populations consisted primarily of providing information through booklets and pamphlets or, in some instances, appearances by police, government personnel and interested citizens to show films and speak to classes and assemblies. In other instances volunteer groups such as the Power Squadron and Coast Guard Auxiliary conducted courses in conjunction with physical education classes. However, it was found that the net result of these efforts left most of the school-age population without any educational experience with boating.

**ASCSA Program**

Based on these findings, the authors approached the U.S. Coast Guard with a concept of boating education that would deal primarily with the secondary school-age population. The initial work involved the development of educational materials on an experimental basis. In 1974, the initial work completed, the Houston/Tulsa Project was initiated through a grant program from the U.S. Coast Guard to the American School and Community Safety Association (ASCSA). The grant program, a three-phase effort, has as its objectives: the development of a certificate program in boating education for teachers; the development and implementation of a certificate program for secondary school students completing a boating education course; and the conducting of workshops to train and certify teachers to provide an initial impetus for the program. The project is scheduled for completion in the summer of 1976 during which time workshops will be conducted by ASCSA in various parts of the country.

The development of this recreational boating education project is designed to provide students with a formal program of instruction by trained, professional teachers as part of the physical education curriculum. The ASCSA program consists of a combination of classroom and on-the-water activities. The development of the program has involved the active participation of education, industry and government and the results have been rewarding.

Recreational boating can remain a safe sport with minimal laws and regulations. Although some regulations are necessary, responsible and educated behavior is the main ingredient in making recreational boating a safe sport. Now, more than ever, we must recognize the need for responsible behavior — a heightened awareness of our responsibility to each other, to our natural surroundings, and to ourselves. Through education we can and must accomplish this.

# Athletic Training and Emergency Care

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# Athletic Facility Safety*

Athletic facility safety is the elimination of all potential hazards from those buildings and grounds used for athletic and physical education programs to prevent unnecessary injury from befalling the unwary and vulnerable athlete.

To present an orderly routine for checking their safety, we have divided athletic facilities into three areas:

## TRAINING ROOMS

Every school may not have the ideal training room, but every school can certainly have a clean and safe one. Whatever the size, most of the following aspects apply.

### Electrical Aspects

Have all electrical equipment, particularly whirlpools, all wiring, receptacles and switches checked periodically by a competent electrician for any problems. Usually a maintenance man working for the school can do this. If the trainer has the chance to plan and to supervise the construction of a new training room, he should make sure that all electrical specifications are considered and followed up by the architect, contractor, the factory representative, and himself working together as a team.

When purchasing a new piece of equipment, see that its installation is checked by the factory representative to assure its proper operation. Obviously, all appliances should carry the Underwriters' Laboratory stamp of approval.

When planning a training room, provide enough receptacles to prevent overloading the circuits. Each should be properly grounded. Also, have all outlets from four to five feet high on the wall or suspended from the ceiling to a level just over the head. This will keep the electric cords off the floor to eliminate running over them with a machine or stepping on them.

Periodically check all cords and plugs for fraying or loose wires. Repair any broken or partially defective appliances immediately or remove them from use while waiting for the repair to be made. Do not put off needed repair until there is more time or more money.

Familiarize yourself completely with specific operating instructions for all appliances in the training room. Never let an athlete operate the equipment alone — not even the seemingly uncomplicated task of turning on or adjusting a

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whirlpool. If there is some unfamiliar equipment in the training room, store it away until you learn how to use it. Never use the trial-and-error method to figure out how to use something. Make sure all appliances are turned off and that all settings are returned to zero when not in use.

**Plumbing Aspects**

See that all drains are trapped to prevent sewer gas from entering the room. Adequately placed floor drains are essential to cleanliness and safety. In the planning or remodeling of the training room, include a small, two or three inch curb around the hydrotherapy area to keep the excess water out of the rest of the floor area. Do not use separate rubber hoses to fill the whirlpool from the water source. The hot water hose can get too hot to hold onto while filling the tanks. Instead, have a mixing valve installed for filling purposes.

If the urinal plumbing is connected directly to the shower plumbing, it causes a sudden cutback on cold water when the urinals are flushed. Anyone taking a shower at the same time is vulnerable to a spray of scalding water. Hang warning signs on the wall over the urinals if this situation applies. Again, if the trainer is in on the planning stages of a facility, he might be in a position to eliminate this problem.

Make sure all drinking fountains located in low-lying places inside or out are protected against becoming contaminated by sewer backup. A few years ago, just such a contaminated drinking fountain brought on a hepatitis epidemic that forced an entire collegiate football team to cancel its remaining schedule.

**Miscellaneous Training Room Aspects**

Never keep combustibles in the training room. Check all aerosol cans, keeping in mind that some tape removers might be combustible. Don't store lighter fluids or carbon tetrachloride in the training room; use only non-flammable items. If you keep oxygen in the training room, display a no smoking sign.

Adequate ventilation is necessary to circulate all offensive odors out of the training room. It helps the sick athlete to recover from nausea or the effects of heat, also.

Furniture used in the training room should be well constructed, particularly the training and taping tables so that the heavier athlete can stand on them safely.

**Cleanliness**

The training room should have plenty of covered waste receptacles with plastic liners that should be emptied daily. Sweep and wet-mop the floors every day with a good disinfectant. Wax them once a month, and keep the sinks clean at all times. Wipe the tables thoroughly with a good germicide-disinfectant after every taping and treatment session. Some of the cleaning duties may not be done regularly by a custodian; in which case, the trainer or coach will have to do it. Cleanliness cannot be put off. Time will just breed contamination.

**Whirlpools**

The whirlpool very easily could become a carrier of disease. Empty the water and clean the tank at least every hour operational period, using the same disinfectant-germicide used on the tables. Do the same after treating a patient with an infection. For that matter, anyone using the whirlpool should be clean

and free of as much bacterial forming elements as possible. The athlete should bathe completely before entering the whirlpool, especially when receiving the treatment after practice. Finally, check its thermometers periodically to make sure they are accurate

### Heat & Cold Modalities

Use enough towels when applying moist steam-type packs. Too little thickness between the steam pack and the skin can cause a serious burn. Be extremely careful when using two consecutive heat forms such as applying analgesic balm to the skin after a hot steam pack. Burns and burns with blisters can occur when skin, especially of the fair-skinned individual, made sensitive by the first application of heat cannot tolerate the second application.

The same caution applies to the use of cold. It is safer to use ice routinely (preferably over a layer of wet elastic wrap) on the skin for 30 minutes and off for about 15 minutes before applying ice again for another 30 minutes. This procedure should eliminate the danger of damage to the skin tissue from frostbite, while still maintaining the effectiveness of the cold.

Alert all athletes to use only a new tongue blade for applying lubricants or analgesic balm. The transfer of highly communicable infections, such as fungus, yeast, and staph, is definitely very possible by using the same applicator more than once.

### Effective Organization

Every training room should be well-organized. It should contain only items that are clearly and properly marked. This is particularly true of all bottles and containers. Keep all prescription items, drugs, and extremely dangerous items in locked cabinets.

Medical bags, stretchers, and clothing items, left lying around, become stumbling blocks. Also, the training room can easily become a convenient storage room for some of the staff's equipment and belongings. This only invites more contamination and stumbling accidents for the student-athletes. Instruct all the athletes at the beginning of each year to ask the trainer for assistance when in need of something. Never permit them to look into the cabinets or to help themselves. Definitely enforce the rule that no one but the trainer or the team physician opens the medical kits. Aside from destroying the arrangement of supplies in the cabinets or medical kits, the athlete very easily could endanger his health by taking the wrong medication. Horseplay, foolishness, or any immature actions should never be tolerated in the training room, and there should be no doubt in anyone's mind as to who is in charge of training room operation.

## GYMNASIUMS, LOCKER-SHOWER ROOM & ADJOINING HALLWAYS

### Cleanliness & Hygiene

Routinely clean all gymnastic and wall mats. Clean wrestling mats thoroughly with a very good germicide-disinfectant at least once just before the practice or match. If the wrestling area is used for many classes and intramurals, clean it a second time during the day. Have the wrestlers carry their shoes to the wrestling room, and put them on inside the room to prevent bringing in organisms from

the hall. Also, the person cleaning the mats should clean his shoes regularly before cleaning the mats. Clean all floor areas in the gym, locker room, and halls efficiently at least once a day. Do not permit athletes to share their individual equipment (towels, socks, jocks, etc.). If you provide enough equipment, there should be no reason for sharing. A team cannot afford to have an outbreak of skin infections.

Give each athlete a laundry bag in which he can store his own socks, supporter, shirt, and shorts. Each athlete turns his in daily, and exchanges it either for another or waits until the laundry returns the same one for the next practice.

Sharing towels can lead to problems. The acne-faced player using the same towel as several others could spread infection. The people with colds sneezing into the towel could pass infectious organisms on to other unsuspecting athletes.

Using plastic water bottles for drinks during games or practices is fine as long as the athletes don't mouth the tube. Individual water bottles are better, or individual paper cups work fine if disposed of after one drink. These ideas are all better than sucking a towel or drinking from a single ladle in a bucket.

Footbaths, proved to contribute to athlete's foot, have fallen from use in most schools. The reasoning behind the footbath is good; but the solution becomes diluted after a short time because those using it are either going to or coming from the shower, and leave bacteria-laden body drippings in the bath.

Areas containing weight-training equipment should be carefully supervised to assure proper instruction for those younger athletes with little or no experience in using the heavy equipment and to prevent horseplay and showboating.

It is common practice to serve drinks in the locker room for the participating teams. Paper cups are the best way to do this. If the players use soft-drink cans, they must take care not to throw the "lift-top tabs" on the floor where a barefooted athlete can cut himself on them. For the same reason, do not serve drinks in glass bottles which can be knocked over easily. If bottles happen to be delivered, watch that the athletes do not throw the bottle caps on the floor. Better still, remove the caps before the team returns to the locker room.

### Indoor Court Safety

Survey the set-up of the bleachers, tables, chairs, spectators, photographers, television cameras, and crowd control restraining ropes. Stanchions holding the ropes up may have rather sharp edges protruding. Check to see if the stanchions are too close, or if the edges are unprotected with sponge.

The walls at the end of basketball courts should be padded adequately to prevent collision injuries. The goal posts should remain padded until the final gun sounds the end of the game. Raised basketball floors can be treacherous. Think about adding extensions to the edge of the court so that the drop off will gradually slant down to the other floor level.

## OUTDOOR PLAYING FIELDS

All fields — practice or game, good or bad — should be somewhat level and free of holes, stones, glass, tin cans, old boards, or anything that could have been left lying on the field after some other activity.

## Sideline Obstacles

Any objects that have to be positioned near boundary lines should be well marked and padded for protection against collision injuries. Guy lines are a definite hazard. All other things not needed so close should be positioned safely away from the scrimmaging areas. Even leaving the blocking sleds too close to scrimmaging activities could be a hazard.

Check out, too, what type of fence surrounds the baseball or football field. If the fence is not over head high, and the fence-wire extends above the top rail, make sure the top rail covers the wire. A snow fence breaks very easily if an athlete falls hard against it; but if he were to fall where the steel post is, the impact against the post could cause a potentially serious injury.

Protect the athlete by making sure that he has enough room to follow-through out of bounds. The action seldom limits itself to the dimensions of the court or field. The athlete, running full speed and fully concentrating on the long-thrown ball, is not aware of the potentially dangerous elements facing him as he leaves the playing surface.

## Field Marking

The safest way to line the field is also the most expensive: a water-based, latex paint. An inexpensive grade of this paint will do the job. The next safest method is to use pulverized stone or calcite. This is less costly than paint but still more expensive than lime. There is a safe way and a dangerous way to use lime, but even the safer way is not entirely free of danger. Some state high school associations, including Ohio's, do not recommend the use of any kind of lime. The safer type of lime is the kind that has been slacked. Natural limestone (calcium carbonate) is processed by heating which causes calcium oxide. The heated calcium oxide is then put into water. This is called slacking, and its result is called calcium hydroxide or autoclaved-hydrated-slacked lime. The slacking process removes most of the caustic substance in the natural limestone. Unslacked lime causes severe burns because the heat is still present. Slacked lime has a moderately strong alkaline base which can still cause burns to more sensitive areas such as the eyes. If you must use limestone because of financial pressure, use slacked lime not exceeding 5% calcium oxide.

All yard-line markers or field flags should be made of soft, pliable material with no sharp edges. Football sideline chains also must be free of protruding objects which could cause severe lacerations. Anyone asked to handle the chains should be instructed to drop the chains and get out of the way when the play comes to them on the sideline. For this reason, it is not a good idea to allow injured athletes to hold the chains.

## Field Care

One thing that never seems to make sense is the way so much money, time, and effort is spent on the game field used only four or five times all year, and how little of the same care is spent on the practice fields which are used almost every day. Hard, dry, barren fields definitely contribute to injury. If possible, watering during the worst days would help to soften the ground. Planting new grass in the off-season pays off the next season. On the other hand, grass too high is a hazard; it should be trimmed regularly.

Other outside areas in need of good supervision are the shot-put, discus, hammer and javelin facilities. Practice may have to be held at different times for

the people participating in these events. Better still, have the facility completely off by itself. The pole vault pit area should be constructed according to the safest standards.

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# Medical Practices in Sports*

Sports medicine may be defined today as including four main subdivisions: medical supervision of athletes, medical supervision of adapted physical education, prescription and supervision of therapeutic exercise, and use of exercise as a means of disease prevention. The traditions of medical practice along these lines are ancient, extending back at least to 600 B.C., but the formalization of sports medicine as a specialty is modern, originating in Europe in the second quarter of the present century. Prior to the advent of specific medicinal therapy and the introduction of safe and effective general anesthesia in the nineteenth century, physicians relied heavily on prescriptions of exercise as well as other non-specific measures. Modern control of infectious disease and advances in surgery have now made chronic degenerative diseases the chief threat to human life. This, and the tremendous world-wide increase in a multiplicity of sports activities, have prompted both the renewed interest of physicians in physical exercise as a preventive and therapeutic tool and concern for the treatment of sports-related illness and injury.

In practicing sports medicine, the work of the physician is inseparable from that of the coach, the athletic trainer, the physical therapist, the physical educator, the exercise physiologist, the sports psychologist, and other persons with related interests such as engineers, sociologists, and some even more highly specialized persons. An important key to the successful practice of this specialty, therefore, is the ability to work as a member of a team whose size will vary according to the exigencies of the situation.

## ORGANIZATION OF MEDICAL SERVICES FOR ATHLETES

### Physician and Hospital Care

The organization of medical services for the care of athletes in the United States is generally extremely informal and inefficient. The lack of specialty training in sports medicine is one reason for this, since it is difficult to identify physicians who have the qualifications for providing high quality medical supervision for athletes. An equally important reason is the tremendous scope of sports, which involves persons of all ages in formal and informal programs extending through every season of the year. If, for example, it was conceded

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that it would be desirable for everyone who is involved in a vigorous or hazardous sport activity to have a physical examination once yearly, there simply is not enough medical manpower to do the job, even if all practicing physicians devoted full time efforts to this task.

What organization there is tends to focus around high school, college, and university team sports, professional sports, and special interest sports groups such as Little League Baseball, the American Association for Automotive Medicine, and the United States Olympic team. Organizations such as the American College of Sports Medicine, and its Canadian counterparts, the Canadian Association of Sports Sciences and the Canadian Academy of Sports Medicine, the Committee on the Medical Aspects of Sports of the American Medical Association, and the Sports Medicine Committee of the American Academy of Orthopedic Surgeons have nothing to do directly with the organization of these services. They have offered in the past, and continue to offer, guidelines, suggestions, and encouragement for such organization, but have no control over the actual provision of services.

At the high school level, arrangements for the medical examination and supervision of athletes are ordinarily made by the school's athletic director, or sometimes by an individual coach. In some states, county and local medical associations play a part in securing physicians to serve high school sports teams or in arranging the allocation and rotation of physicians for this purpose. Formal contracts for the provision of such medical services are rarely written, each party depending instead on an oral understanding of their responsibilities. In relatively few instances is a salary or retainer fee paid. For the most part, the physician providing the service attends games or practices without a fee, but is paid for medical services rendered to sick or injured athletes.

Most state high school athletic associations have a formal requirement for an annual physical examination for each participant in interscholastic sports. There is no requirement for examination of those who participate only in intramural sports. This responsibility falls generally on the family physician. Although millions of cards or papers certifying to such an examination are filled out and signed by physicians annually, there is good reason to believe that many of these examinations are not actually performed. In some cases, especially football, all members of the team are examined by one or a team of physicians on a particular day just prior to the beginning of a regular season of play.

If a college or university has an organized health service for its students, it often becomes the responsibility of this service to provide medical supervision for the intercollegiate athletes. However, sometimes a physician or group of physicians not connected with the health service may be invited to care for the school's athletes, either as a group or on a team basis. Different physicians may take the responsibility for different teams, depending on their interests and previous experience. Contractual arrangements between the college or university are usually more formal, with either a salary or retainer fee paid. In the case of many small colleges, however, the physician donates the time he spends coming to practice and games and receives income only for actually providing medical care.

The physicians in college health services who take care of the athletes ordinarily have other duties there as well which involve other students. There are very few physicians in the United States who are employed full time for sports medicine alone. Rather there is a tendency to spread the work among several physicians, even though there might well be enough to occupy all the time of

one of them. When the team physician is not a member of the college health service, he is usually hired by the athletic department or its equivalent, which in some cases is the physical education department. In such a case he is invariably only part time and conducts a private practice off-campus.

Hospitalization for ill and injured athletes may be provided in the college infirmary, if there is one, or in the affiliated university hospital. In the latter case, specialists on the staff of the university hospital may become involved in the athlete's care. There are instances, however, where a university hospital exists but the hospitalization of athletes is in another community hospital. This is ordinarily the case when the physician is not a college or university employee.

Outpatient care may be rendered in the college health service, infirmary, or hospital. In many instances, the team physician will have a small office in the athletic department facilities, in or near the training room, where he may examine athletes and perform simple treatments. These offices are ordinarily open only during games or regular practice times.

The organization of medical services for professional athletes depends on the level of play. At the very highest levels — NFL-AFL football, NHL ice hockey, and NBA and ABA basketball — services are generally well-organized. At the lowest levels, such as in class A baseball, junior A ice hockey, and semi-professional football, they may be non-existent. In the former case, some teams have full time physicians and highly paid consultant specialists. In the latter case, the player is forced to look after his own needs, depending on the service of a family physician, even though his team may provide some insurance coverage for his expenses.

Although there is an increasing number of sports clubs in the United States, relatively few of them make reregular arrangements for medical supervision of their members. Golf clubs, which often provide facilities for tennis, squash, swimming, and other sports, may make an arrangement with a physician who will be called in the event of an emergency, but a more substantial relationship is unlikely. One golf club has organized its physician members and club employees as an emergency medical team and endeavors to provide emergency service for stricken members or their guests on a moment's notice, but this is an exception. Clubs of other special interests such as hunting, fishing, fencing, boating, and horseback riding, frequently have physicians on their rosters but seldom have any organized medical program.

Organized out-of-school sports activities for young persons such as Little League Baseball, Biddy Basketball, Pop Warner Football, Silver Stick Hockey, and so on, usually have a requirement of an annual physical examination, supposedly provided by the family physician. Judging from the numbers of young persons involved, there are many more cards signed than examinations given. Ordinarily only the football leagues require physician attendance at games. Much of the medical services for all these sports, including the AAU age-group programs, are provided casually by physician-fathers of participants.

The United States Olympic Committee has a subcommittee on Medical and Training Services. This subcommittee has selected the physicians, nurses, trainers, and other therapists who have accompanied our teams to the Pan-American and Olympic Games. These persons all volunteer their services, but all their traveling and living expenses are paid while they are with the teams. A limit to the number of physicians who may be a part of the official party is set by the International Olympic Committee and is based on the number of athletes participating on each national team.

## The Athletic Trainer

The athletic trainer plays a very important role as an ancillary to the medical profession in the United States in the supervision and care of athletes. The professional organization which sets standards for the qualification and practice of athletic trainers is the National Athletic Trainers Association, which was founded in 1950. It enrolls the great majority of those persons who consider athletic training to be their profession, whether they practice it full time or part time. In 1970 it established standards for certification which are based on training and experience. As a means of qualifying trainers for this certification, the Association approved educational programs for the preparation of trainers at eight collegiate institutions by 1972, with additional applications for approval under consideration.

The basic requirements for certification can be met by four categories of persons, each with slightly different backgrounds. A common requirement is a baccalaureate degree. Also, two to five years experience as an active trainer or apprentice under an NATA approved trainer is also required. Advanced degrees beyond the baccalaureate are not required, but all classes of trainers are encouraged to qualify for degrees in allied health and education fields. A certifying examination on the basic principles of athletic training, composed and scored by a recognized national testing organization, is given several times a year in different parts of the United States.

Membership classes in the NATA are now described as certified, active, inactive, student, associate, advisory, allied, honorary, and retired. A member must spend two years in the active status before he is eligible for certification. Associate memberships are open to persons working in the field of sports medicine who are not trainers or team physicians. Advisory memberships are open to team physicians. Allied memberships are open to persons whose business interests are related to athletic training and sports in general. Only active and certified members have a vote in NATA affairs.

In May, 1971, the state of Texas became the first governmental unit to license athletic trainers.[1] The statute creates a Texas Board of Athletic Trainers consisting of three members, two of whom are to be licensed athletic trainers, except for the initial appointees, and one to be a physician licensed in Texas. Members are to be appointed by the governor with the advice and consent of the senate for a term of six years, except for the initial appointees, one of whom is appointed for two, and one for four years. The Board is empowered to "establish guidelines for athletic trainers in the state and prepare and conduct an examination for applicants for a license."[2]

To qualify for a license the candidate must possess one of the following qualifications:

(1) have met the athletic training curriculum requirements of a college or university approved by the board and give proof of graduation; or

(2) hold a degree in physical therapy or corrective therapy with at least a minor in physical education or health which included a basic athletic training course, hold a valid teaching certificate for the State of Texas, and have spent at least two academic years working under the direct supervision of a licensed athletic trainer; or

(3) have completed at least four years beyond the secondary school level, as an undergraduate or graduate student, as an apprentice athletic trainer under the direct supervision of a licensed athletic trainer. These must be consecutive years of supervision, military duty excepted.[3]

A "grandfather" clause specifies that "Any person actively engaged as an athletic trainer on the effective date of this Act [September 1, 1971] shall be issued a license if he submits proof of five years' experience as an athletic trainer within the preceding 10-year period, and pays the license fee required by this Act."[4] Section 8 (effective date January 1, 1972) states that "No person may hold himself out as an athletic trainer or perform, for compensation, any of the activities of an athletic trainer as defined in this Act without first obtaining a license under this Act."[5]

Since the membership of NATA as of June, 1971, was only a little over 4,000, it is obvious that not every high school with an active sports program, of which there are over 40,000, has the services of a professionally qualified trainer. In conjunction with the Cramer Chemical Company, the NATA has developed a program (largely a correspondence course) for the education and qualification of high school students as trainers. They work under the direction and supervision of high school coaches and team physicians. Many of these young men, and today even some women, go on to become student trainers working under professional trainers in colleges and universities. One must certainly question the qualifications of students trained in this fashion, but the record overall for a number of years does not show that there have been any serious problems.

In many high schools the coach, or one of his assistants, also serves as trainer for the team. Some are well qualified for this role since they have good educational backgrounds and improve their knowledge by attending clinics, seminars, and courses in athletic training. Others are poorly qualified educationally and make no effort to correct their deficiencies. In the state of Nebraska, there is a program, initiated by a subcommittee on athletic injuries of the Nebraska State Medical Society, to train other high school faculty members as athletic trainers. School nurses have been involved in the emergency care of athletes in high schools only to a very limited extent, and the potential of these persons for better medical supervision in sports has not been adequately explored.

The relationship between the team physician, or other private physician, and the athletic trainer is a difficult one, for several reasons. As an initial matter, the four-sided relationship between coach, athlete, trainer, and physician is an awkward one to maintain since all are operating on different levels of knowledge and are united chiefly by a common interest in sports. Where problems of disability and competition are concerned, all, in theory, are motivated by a desire to do what is best for the athlete. The interpretation of what is best may differ with each of the four, and yet there are matters which cannot be decided by a majority vote. Discussion should take place, but in the end the opinion of the physician must prevail. Where it does not agree with one or all of the others, antagonisms may arise. Coaches have a tendency to think in terms of what is best for the team, the school, or even for the security of their own jobs. Trainers, many of whom have been coaches themselves, tend to side with the coach. Athletes themselves frequently take the short rather than the long view of their problems.

The trainer carries out preventive and rehabilitative treatment for athletes under direct or standing orders from the team physician. Since the standing orders are generally a matter of unwritten past communications, it is inevitable that misunderstandings arise from what the physician may see as an abuse of authority by the trainer and what the trainer sees as inadequate guidance from the physician. Some trainers do exceed their authority as far as treatment and the administration of medications is concerned, but they are fortunately in the minority. Probably the greatest potential hazard in the treatment situation is the

use by unqualified trainers of physical therapy equipment, the operation and effects of which they do not completely understand. Ostensibly they are using it merely as an agent of the physician, but sometimes he knows as little about its operation as the trainer. It is surprising that more serious incidents do not occur.

## SPORTS SAFETY: COMMON INJURIES AND PREVENTIVE MEASURES

Every type of human movement creates some potential for injury from an intrinsic or extrinsic source; the more rapid and vigorous the movement, the greater the potential for injury. Since sport is characterized by movement that is frequently forceful and rapid, and since that movement may be at the same time opposed by similar movements of others to bring about physical contact between the participants, either deliberately or accidentally, the potential for injury is proportionately high. When one further considers that sport takes place not only on the ground, but in the air and underground, and on and below the surface of the water, and that the excursions involved may also include the use of motorized vehicles reaching speeds up to 600 m.p.h. it is quite apparent that sport participation can be very dangerous.

The National Safety Council has estimated that one accidental death occurs for every 100 disabling injuries, one disabling injury for each 29 accidental injuries, and one accidental injury for each 300 unsafe acts. Since the practice of sport is replete with unsafe acts, the approximately 900,000 unsafe acts statistically necessary to produce one accidental death is frequently attained. To attempt to remove all danger from sports would be to make them joyless, since the feeling of exhilaration they produce is inextricably connected with the danger involved. The task of the persons who attempt to modify these unsafe acts so as to minimize the danger of accidents, injuries, disabilities, and deaths is a difficult one, not only from the conceptual standpoint, but also because these actions may curtail some of the thrills sought by participants and spectators alike. They therefore tend to resist these intrusions, while at the same time avowing their interest in safety.

Many types of accidental injuries are common to many sports, such as the fractured forearm due to a fall on the ground, the concussion sustained from a blow on the head, or the ankle sprain due to the sudden and unexpected inversion of the foot. Each sport, however, has its characteristic injuries, and the popular description of the injury may take its name from the sport in which it is common, such as tennis elbow, surfer's knees, or rider's strain. One of the important tasks of the sports physician is to study the occurrence of injuries in each sport so that he may make recommendations for minimizing their recurrence and their effects. Repetitive actions are typical of sports, and, indeed, the development of sports skills depends on the ability to reproduce effective patterns of motion consistently. From this standpoint the occurrence of certain types of injuries is predictable, which is one advantage those interested in injury prevention have.

By a study of the actions in a particular sport, the sports physician can develop conceptually a likely table of injuries for that sport. This list must be tested against the actual experience accumulated in a great number of participations in order to determine the relative incidence of each injury. It is in this area that we are most lacking accurate information. The sport of American football has been

more closely studied than any other with regard to the actual occurrence of injury. Yet our knowledge of the factors involved and the means of interpreting the particular studies to the universe of the game is still fragmentary. A current study of high school football being conducted by scientists at the University of North Carolina, and one of the best designed and conducted from an epidemiological standpoint, already indicates that ideas which physicians had derived from previous studies, relating especially to the occurrence of concussions, may have been quite erroneous.

The occurrence of injury and the nature of injuries sustained at the different levels of sports competition, as for example in ice hockey, appear to differ according to the age groups involved, from the youngest Pee-Wee leagues to the professional leagues. We know some of the factors involved, but there are very few studies of ice hockey injuries which have been published to verify and support the conceptual approach to injury control. There are many factors which militate against good record-keeping of injuries in each sport, especially in those individual sports practiced chiefly in a recreational setting. Other factors which have some influence on injuries and illness in sports are the nature of the coaching which the athletes receive and the officiating at competitions.

Many coaches have no hesitation in teaching techniques which may endanger the safety of the athletes if they have reason to believe that such tactics may help to win games. A striking example is the use of the helmeted and face-masked head as an offensive and defensive weapon in American football. Although the protection offered the head by the better protective equipment available today is superior, it is designed to protect only against the incidental and necessary contact which will arise in the game. It is not, nor can it be with present technology, designed to withstand with impunity the forces generated by driving it directly into an advancing opponent. Even more vulnerable is the neck, which must absorb, without any protection, the major portion of the impact which is not absorbed by the helmet.

Rules have been adopted against the deliberate practice of "spearing" an opponent with the headgear, but their enforcement depends on the judgment of officials that the intent was deliberate. As a consequence, the offense is seldom penalized. In fact, as the study of game movies by the North Carolina investigators has demonstrated, eighty per cent of the observable infractions of all types are not penalized in American high school football. The three officials at the high school game and the five officials in the college game cannot see all aspects of every contact made between the twenty-two players, since they have other simultaneous responsibilities which relate to the movement of the ball. With the hard shell plastic helmet we have improved head protection, but we have at the same time increased the number and type of soft tissue injuries caused by the contact of this hard object with other parts of the body.

The rules of a sport are originally designed to make play consistent and reproducible as well as to set reasonable limits for competition in time and space. As each sport develops, rules are written to ensure, in so far as possible, safer playing conditions for the contestants. Some of these relate to mandatory use of protective equipment, such as helmets and mouth guards. Changes in style of play (trap blocking in American football), sports technology (synthetic turfs), age groups involved in organized competition (Little League Baseball), and other factors require rules changes in the interests of safety. There is an inevitable gap between the beginning of these changes and the change in rules to accommodate them. Rules committees are chiefly composed of active

coaches and therefore tend to react to what coaches want rather than to what knowledgeable and experienced promoters of safety may recommend.

The development of protective equipment for all sports has not kept pace with engineering technology generally. Although manufacturers conduct their own laboratory tests of this equipment, and there is usually some period of field testing preceding the general introduction of new protective items, there has been relatively little unbiased testing done by independent investigators. Only in the case of the football helmet can one find any extensive literature describing research on its protective qualities. One problem is to secure funds for such testing and evaluation at the present time.

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[1]Tex. Rev. Civ. Stat. Ann. art. 4512d (1972).
[2]*Id.* § 5(c).
[3]*Id.* § § 9(1)—(3).
[4]*Id.* § 16(a).
[5]*Id.* § 8.

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# Four Minutes from Comprehensive Cardiac Care*

The crowd of football fans rises with a roar as a pass is intercepted. But high up in the upper stands one middle-aged man slumps in his seat, clutching his chest. His distress is noted by one of the security guards stationed nearby to watch the crowd. The guard flicks on the portable two-way radio provided for him and is instantly in touch with Base Communication Headquarters in the Press Box atop the other side of the stadium. A few seconds later, down underneath the stands, a doctor, a nurse and a First Aider hurry out of the Main First Aid room and jump on a small three-wheeled vehicle equipped with an orthopedic stretcher and emergency equipment. The waiting driver takes off and in moments is gunning up the winding ramps of the stadium. Precisely 68 seconds after the security guard's signal, the emergency crew is dismounting at the exit in the upper deck of the grandstand nearest the patient. Two minutes later, with the doctor and nurse still giving manual chest compression, the patient is being carried into a small but completely equipped First Aid room underneath the stands.

The oxygen-powered Heart-Lung Resuscitator is waiting, and with only two five-second pauses, automatic chest-compression and ventilation to the lungs is inaugurated on a synchronized 5-1 ratio. A portable, battery-operated defibrillator is ready to shock the patient's heart back into a regular rhythm if necessary, and the electrocardioscope traces the heart action. In a total time of just over three minutes, the heart-attack victim is under care in facilities equal to the special Cardiac Care Units in many leading hospitals.

Such a drama might have taken place almost any Fall weekend at Tulane Stadium, an 80,000-capacity bowl where the Tulane University football team plays its home games. It is also the home field of the New Orleans Saints of the National Football League, the site of the annual Sugar Bowl football game every New Year's Day. From August until January every year, Tulane plays host to crowds ranging from 15,000 to 80,000, on some 15 Saturdays and Sundays. University officials do not take this responsibility lightly.

The Athletic Department of the University, headed by Dr. Rix Yard, Director, and G.J. de Monsabert, Business Manager, has long worked closely with the New Orleans Chapter of the American Red Cross to provide sufficient First Aid facilities to treat the inevitable illnesses and accidents bound to occur among

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nearly three-quarters of a million people in the course of the long football season. But the heart-attack death of a spectator during the 1969 Sugar Bowl game spurred a complete reorganization and enlargement of medical services at the stadium.

**Doctors Plan Comprehensive Emergency Cardiac Care**

Dr. Charles L. Brown, Jr., Internist and Chief of Staff at Southern Baptist Hospital met in the Spring of 1969 with Dr. Yard, Dr. Peter Riehl, Director of Health Services at Tulane, and Dr. Lawrence O'Meallie, Medical Advisor to the New Orleans Red Cross Chapter to discuss a revolutionary expansion of medical services at Tulane Stadium.

Dr. Riehl had recently been impressed by a report on the heart-lung resuscitation service inaugurated at the University of Nebraska in 1967. "We decided," reported Dr. Brown, "that the First Aid facilities at Tulane Stadium should not only include the most advanced Heart-Lung Resuscitation equipment, but also a defibrillator and all other necessary adjuncts required for cardiac emergencies. Beyond this, we had to devise a system whereby a patient anywhere in the stadium could be brought to the HLR equipment in four minutes or less.

**Three-Wheel Mini-Ambulance Specially Designed**

"While the most advanced cardiopulmonary resuscitation equipment is readily portable," Dr. Brown continued, "we were concerned about the difficulties of getting it through the crowds, and the disadvantages of treating a victim in the middle of an excited crowd watching a game. Dr. Yard called our attention to a Cushman truckster, a three-wheel gasoline powered vehicle used for transporting equipment within the stadium."

"After a series of experiments with the electric cart driven by a university employee who knows every ramp and passage of the huge stadium like the palm of his hand," said Dr. Yard, "we were satisfied that a First Aid team could reach any section of the stadium in two minutes or less. We ordered an 18-horsepower vehicle, and had it modified to carry a standard orthopedic stretcher. With its single front wheel, this mini-ambulance could easily make the 180° turns on the narrow ramps leading to the upper stands."

Satisfied with their ability to get to a patient anywhere in the vast reaches of the stadium in less than two minutes, the doctors decided they could provide the best possible treatment for severe cases by bringing the patient back to one well-equipped mini-hospital. In contrast with the two temporary First Aid stations handling such lesser cases as heat prostration, over-indulgence, sprains and abrasions, the Central First Aid Station is a permanent, air-conditioned room equipped to provide initial treatment for any serious illness or injury.

The most prominent equipment to meet the eye are the Heart-Lung Resuscitator with connecting oxygen tanks, and the battery-operated defibrillator, used in critical cases to shock a faltering heart back into regular rhythm. This also contains an electrocardioscope, a pacemaker, and synchronizer, for monitoring the patient's condition or providing other emergency equipment. "Dr. O'Meallie and I were thoroughly familiar with Travenol Laboratories' HLR 50-90 Heart-Lung Resuscitator and their Monopulse 807B Defibrillator," said Dr. Brown. "These are in regular use at Southern Baptist Hospital, and we find them highly satisfactory. But to make sure of our recommendation, Dr. O'Meallie carefully checked out competitive equipment at the next hospital convention. The Travenol products were our final recommendation — but who was going to pay for them?

### Equipment Donated to Local Red Cross

"We told John Mecom, president of the Saints corporation, of our problem and our goals," Dr. Brown continued. "The purchase was arranged through the Saints foundation, and the equipment turned over to the local Red Cross, under the direction of Mr. Keith Bruner."

Mr. Bruner and Mr. Donald Partridge, Red Cross Safety Programs Director, worked with Dr. Yard and his staff on a new instant-communication system, coordinating the Red Cross with the New Orleans Police Department, the Pendleton Security Agency, and the professional ushering service to cover every section of the stadium at every game. "Each of these groups has a trained radio relay man on duty at the Communication Center in the Press Box," explained Mr. Bruner. "Each group has its own wave length, and is in touch with representatives on duty as spotters in various parts of the stadium. All are trained as radio operators. There is a trained radio relay man on duty at each of the three First Aid Stations as well."

### Doctors, Nurses, First Aiders, Boy Scouts Volunteer Services

Mr. Partridge spoke of the medical and paramedical personnel involved. "At all the games, we have at least two doctors, seven nurses and six First Aiders on hand. In the Central First Aid Station, where the cardiac care equipment is kept, are the two doctors, three nurses, (all of whom have had specialized training in heart-lung resuscitation) and two First Aiders. They volunteer for this duty, and we have received wonderful cooperation from them all.

"One of us from the Red Cross is there at all times, and additional physicians who are attending the game can be paged by code number if they are needed.

"Of course, most of the cases handled during any afternoon are minor. On these, a nurse and a First Aider go to the site of the accident. The mini-ambulance is reserved for more serious cases — but it has made as many as 15 trips during the course of a game."

### Patients Picked Up and Brought to Station Within Two to Four Minutes

"They are averaging only two and a half minutes up and back, anywhere on the west side of the stadium," added Mr. Bruner, "and only a little longer on the other side and the furthest end zone. We've never had a round trip that took as long as four minutes.

"Most of the people treated are released shortly afterward. But if a patient does not feel well enough to go back to his seat, private limousines are provided to drive the patient to his car or his home. For more serious cases, where the physicians decide a hospital admission is warranted, two ambulances are standing by."

"Mr. Bruner and I agree," said Dr. Yard, "that by gearing our efforts to handle even the most critical cases, we can handle the usual flow of minor treatments far more efficiently."

### Avoiding Ambulance Trips During Traffic Peaks

Dr. Brown pointed out that in a serious case, such as a cardiac infarction, it is often better to keep the patient under treatment in the Central First Aid Station. "Patients can be kept there safely for several hours. The traffic problem is acute just before and for quite a while after a game, and what ordinarily would be a few minutes' drive to Southern Baptist Hospital could take a half-hour at peak congestion periods, even with police clearing the way. This is a major reason

why we wanted comprehensive cardio-pulmonary equipment available within the stadium."

"The fact that we have these facilities has been well publicized," said Dr. O'Meallie, "and of course the spectators see the mini-ambulance and crews at work. For people with a known heart condition, merely the assurance that this equipment is there and so readily available gives a sense of security that is definitely helpful. And if we do have an infarction case, we can keep the patient quiet, under excellent care, during the critical four-hour period. He is away from the crowd, in a quiet and comfortable hospital room. He can be transported to the hospital at the most opportune time, and if necessary the portable defibrillator, with its ancillary equipment, can go with him in the ambulance, and right into the Cardiac Care Unit at the hospital."

**City-Wide Extension of Service Planned**

"We are constantly training new crews of nurses and First Aiders in HLR Heart-Lung Resuscitation," concluded Mr. Keith Bruner. "And we retrain each crew every three months, to be sure to keep them at peak efficiency. Dr. O.J. Bienvenu, Jr., Louisiana Heart Association, and Dr. O'Meallie volunteer their services in the training. After the football season, this equipment will be moved to Red Cross Headquarters, where it will be available as part of our Safety Programs and Disasters services. It will, for example, be ready for use in the Main First Aid Station at the Old City Hall during Mardi Gras, and at Rivergate Convention Hall during all major conventions held in New Orleans."

The doctors, and the Tulane University and Red Cross officials, all concur in recommending a comprehensive cooperative program such as this for all educational installations and civic governments faced with some degree of responsibility for the safety of the general public at any large gatherings. Tulane exhibited their unique program at the American College of Cardiology convention in New Orleans in late February of 1970. It was hailed as an ideal First Aid Station for stadiums, convention halls and so forth, and included all of the equipment and materials now in use at the Main First Aid Station at Tulane Stadium.

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# Our Spectators — Let's Care For Them

In 1969 during the Sugar Bowl game at the Tulane University stadium, a spectator died of a heart attack. The death encouraged Dr. Rix N. Yard, Director of Athletics, and some of his associates to work with the New Orleans Chapter of the American Red Cross to provide better emergency first aid facilities for the fans who attend the 80,000 capacity stadium. As a result of their efforts, no spectator is more than four minutes away from comprehensive cardiac care. In 1970 the *NACDA Quarterly* (National Association of College Directors of Athletics) featured an article by Dr. Yard regarding the procedures used at Tulane for emergency treatment of spectators. (This article appears on pp. 60-63.) I urge everyone associated with the administration and management of a facility that hosts athletic contests or meetings of almost any size to read the article.

Most of us are not concerned with the administration of a Sugar Bowl football game, an Indianapolis "500", an NCAA Championship Basketball Tournament or other events of that magnitude. But many of us are responsible for hosting high school and college athletic contests might help other school and community organizations with their numerous responsibilities such as commencement high school and college athletic contests might help other school and community organizations with their numerous responsibilities such as commencement activities, county fairs, political rallies, concerts and the many related programs held in arena and convention centers.

Because of the nature of many of our athletic contests we have made provisions to have an athletic trainer and/or team physician in attendance. This indicates an obvious concern for the welfare of our athletes. Since we encourage and/or permit spectators at most athletic events, it is my contention that we have an obligation to the welfare of the spectators at these events. I am referring to the obligation of a host to a guest — not the legal obligation to a spectator for a safe environment. Some specific emergency situations that have occurred at athletic events and/or school activities which demand immediate action are:

1. The spectator who falls going to or from his bleacher seat
2. The heart attack victim
3. The spectator who suffers from heat prostration
4. The epileptic seizure (I witnessed this at a high school baccalaureate service.)
5. The child who is upset as a result of too many hot dogs and soft drinks

6. The injury caused by the flying bottle, foul ball or the umbrella in the eye
7. The person struck by lightning (I witnessed this at a state high school golf tournament.)

Many more situations are identifiable as having occurred at high school or college athletic events. In anticipation of these happenings and to serve as a better host, the following ideas may serve as a beginning for an organized effort for emergency treatment at your stadium, gymnasium, arena or auditorium.

1. Discuss the problem with your athletic trainer and team physician.
2. Coordinate the efforts of your ushers and security personnel (walkie-talkie contact is a must in most situations).
3. Provide emergency ambulance service at all events.
4. Have a stretcher available to remove a person from a bleacher or gymnasium-auditorium seat. In some situations a golf cart has been accommodated to carry a stretcher. This is true in the Sugar Bowl and many university football stadiums for the removal of injured players from the field. Why not have the vehicle, or a similar one, to transport someone within the facility to a first aid room or ambulance?
5. Many schools and communities have groups interested in becoming involved with a project of this nature. Check with the Boy Scouts and Girl Scouts, veterans groups, volunteer health agencies and professional groups in your community.
6. Have a dry run. Whatever procedures you develop for emergency care of your guests, it will be necessary to have a practice for your personnel. Stage an injury or heart attack and permit your personnel to develop their skills in a practice situation. As a coach I attended clinics by Woody Hayes and have heard him refer to a quote of Louis Pasteur—"Chance favors the prepared mind." By having practiced the procedures in a dry run, your staff will be better prepared to handle the real situation if it happens.

The need for better guest treatment is a problem for all facility managers whether they be high school or college athletic directors or managers of a community facility. A school, community, league or conference approach may be the answer to your facility; regardless of the approach, get the plans started. I am confident that your efforts will be well received and your fans will appreciate your thoughts for their well-being.

# Legal Responsibility

Howard C. Leibee
University of Michigan, Ann Arbor

# Legal Liability*

## ASPECTS OF CURRICULUM DEVELOPMENT

### The Courts and the Curriculum — General Statements

Most states have state-adopted courses of study prescribed by law or by state boards of education regulation; in other states, there is a meager prescription at the state level as to content of courses. However, practically every state has some statutory requirements as to subjects to be taught in the public schools and those not to be taught. When the curriculum has been fixed by state law or by a state board of education regulation, parents cannot compel a local board to modify the state standards for their children; nor can local boards avoid minimum standards established by state law or regulation. As a separate subject, physical education is required by law in 17 states and as a regulation in 31 states, although the requirements vary considerably as to time and years and what constitutes physical education. In the absence of a state prescription or regulation, local school boards have discretionary powers as to whether or not a course is to be offered and at what grade level(s).

In the absence of a state-adopted or locally prescribed course of study or syllabus, teachers have discretionary authority in the outline of their courses. The law protects boards of education in regard to discretionary acts but does not protect school personnel for same. It is well to point out at this time that if you teach in a state in which there is a state-adopted course of study or in a school system in which there is a locally prescribed course of study or syllabus, it would be judicious for you to confine your course-content to the prescription — and not commit an ultra vires act. If injury or wrongful death were to result, any protection you might have through "save harmless" or respondeat superior doctrine, or in education-association insurance would be forfeited by you.

To determine whether a state law or regulation regarding a course of study has been violated; or to determine whether a local school board's act re a course of study has been outside the authority granted the board; or to determine whether the constitutional rights of a pupil have been violated — legal action must have been initiated. The majority of litigation occurs following an injury or wrongful death to a pupil and therefore fails under tort law — of which negligence is a basic element.

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*Reprinted from *Annual Safety Education Review* (Washington, DC: AAHPER, 1968), pp. 42-49.

## Negligence in the Law

Negligence law in the fifty states varies among the jurisdictions in regard to the imposition of liability on school districts, and school officers, agents, and employees. Governmental immunity of school districts continues to dominate the law, although 11 states have "bombed it out," the most recent being Minnesota, Nevada, Iowa, and Utah. Although numerous differences exist in the treatment of cases from jurisdiction to jurisdiction, there is little difference in the words used to define the duty owed by school personnel to their pupils. It is quite well settled that a teacher owes to his pupils a duty of exercising what the particular jurisdiction defines as "ordinary care." This term has been defined as the degree of care which a reasonably prudent and careful person would exercise under the same and similar circumstances. The failure to exercise ordinary care amounts to negligence, and if this negligence is found by the trier of the fact to be a proximate cause of injury to a pupil who is not vulnerable to a defense, such as contributory negligence or assumption of risk, the pupil may obtain a money judgment for the tort of the teacher. Failure to act on the part of a teacher may also be negligence.

Let us, therefore, examine actions which have been initiated against physical education programs, their modus operandi, and personnel involved in such programs and review what the courts have had to say.

## The Physical Education Curriculum — General

There has been no question concerning the attitudes of the courts with respect to the support of physical education as a part of an educational need. As early as 1910, the Supreme Court of Minnesota said, "The physical and mental powers of the individual are so interdependent that no system of education would be complete which ignored bodily health." Additional support has been given by high level courts in Colorado (1920); California (1921); Vermont (1925); Arizona (1927); Texas (1929); Montana (1930); Pennsylvania (1938); and Illinois as recently as 1945. The essence of the supporting holdings has been that the physical development of the child must go hand in hand with his mental development and that attention must be given to physical exercise for the child.

## The Physical Education Curriculum — Specific Areas

*I. Suitability of Activities*

In a 1966 Missouri case, a high school student sustained injuries in a wrestling class. He sued the school district, its superintendent, and the physical education instructor for $35,000, charging each with negligence. He accused the district of failing to select and employ a competent superintendent "to control the wrestling and employment of competent teachers" and of failing to eliminate wrestling from the curriculum. The case reached the Supreme Court, which held that wrestling was a proper activity and dismissed the action against all defendants.

A number of years ago an appellate court expressed its disapproval of the headstand as a suitable exercise for elementary school girls. The court expressed this disapproval by saying, "Perhaps our notions on the subject of education are outmoded but the view that exercises such as these form a necessary part of education impresses us as absurd." I know of no further litigation on this question. My guess is that present day courts would reverse the opinion, although it is possible that such a case might be tried in a court in which the presiding judge had flunked physical education in high school or college, or

who had been the last player to be chosen when choosing up sides, or who had a "Hutchins attitude."

Among other activities which have been before our courts in a question of suitability have been the roll-over-two for girls; playing touch football in a gymnasium; the "elephant;" the "break-up" of a pyramid; apparatus stunts; boxing; trampolining; and field ball.

From a number of cases in which a principal issue was "Should this activity be included in a physical education program?," the courts have established for us a number of guidelines. These are (and I am quoting from case law)—

1. "It is a matter of common knowledge that some students show much more aptitude for athletics than do others."
2. "Some pupils find games and stunts of any kind very difficult."
3. "Students of the same age have different capacities for physical education."
4. "Some forms of exercise are considered entirely proper for boys while too strenuous or otherwise undesirable for girls."
5. "It is the duty of teachers employed by school districts to take all these factors with others into consideration in determining the kind of instruction to be given a particular boy or girl."

In view of these guidelines, we must constantly bear in mind that a particular exercise may be inherently dangerous; however, if it is found that the injured pupil was mentally alert and physically fit to take part in the exercise; that he had been properly and adequately instructed as to how to act and conduct himself in performing the exercise; that the exercise was in the prescribed curriculum and was not of an unreasonable nature; and that the instructor had exercised care commensurate with the dangers involved, the courts will not permit recovery for injury. While it does not lie within the province of a jury to determine whether a certain subject should be taught in school, a jury of laymen has a high potential in controlling a curriculum in that it determines whether or not an individual has been negligent — which negligence resulted in injury or wrongful death to a pupil — with resultant damages being awarded for the reason that following the awarding of damages school administrators have "thrown out" many suitable and desirable activities such as trampolining. Shuffleboard could be a dangerous activity if some "BB Brain" were conducting it. In addition to the question of suitability, the courts have been asked to rule on the question of "Does an activity violate the constitutional rights of a student?" (This occurs mainly in the area of dancing.) Courts have upheld the right of schools to include dancing in the physical education curriculum but have denied boards of education the right to expel pupils for their refusal — in obedience of their parents' command — to take part in dancing activities. In 1962, an Alabama court held that a student on the basis of religious principles was not required to participate in exercises which would be immodest in ordinary apparel, nor was she required to wear a prescribed outfit. The court maintained that the pupil was obligated to attend a course in physical education and such requirement did not violate the constitutional rights of the pupil. The court said in part, "Physical education programs have long been conducted in the public educational systems of this country and should not be abandoned because an individual or group of individuals takes offense at the manner although it is not in accord with current community standards of morality and decency."

*II. Unequal Competition*

In a New York case (1961), a student who was kicked in the head by a fellow student while playing a supervised game of soccer was able to recover damages

on the ground of negligence where the evidence indicated that there was no attempt to match the participants on the basis of height or weight.

A similar problem was litigated in Oregon within the past few years on the grounds that the coach and administration of the school had permitted a 140-pound, 15-year-old, inexperienced boy to play interscholastic football against another high school whose team was heavier, more experienced, and rough. The plaintiffs lost.

The New York Supreme Court has held that a teacher was negligent in permitting eight inexperienced girls to compete for a ball in a game of line soccer. The court also held that the pupil sustaining the injury was not guilty of contributory negligence as the participation was involuntary. In another New York case, the court ruled in 1963 that it was negligence to divide boys in a physical education class — one line on one side of the gymnasium — assign them numbers at random, and have them compete in the kicking of a ball. The boys were not matched according to height, weight, age ability, and/or experience.

*III. Athletics*

The Supreme Court of Oregon recently ruled that a football coach is an expert, thus raising the standard of care required for football coaches in that state.

A high court in Washington ruled in 1961 that the statutes would allow recovery for the death of a student who died during an initiation ceremony for the high school letterman's society if the ceremony took place under the supervision of school officials.

A Louisiana Appellate Court ruling (1965) gives us an interesting guideline for junior high school football. In a case where a football game between two junior high school teams was a part of an established program of activity in the public schools and was approved, directed and supervised under the authority of the school board, the injured woman was an implied — if not expressed — invitee at the game. The court supported the plaintiff and noted that the game was played upon school property and was publicized in the newspapers. The grandson was a member of one of the teams and the grandmother who was injured was a guest with no provisions made for spectators — with no areas restricted or marked off and no one controlling the crowd.

Supreme courts in five states have ruled interscholastic athletics to be a proprietary function.

A state supreme court has held that members of athletic teams who are being transported in privately-owned cars to and from athletic contests are not "guests," and therefore, the drivers of such cars need only to be negligent — not grossly — in order for such players to recover.

*IV. Assistant (Student) Teachers*

A senior student in one of the state teachers colleges in New York was administering a fitness test to an applicant for admission. The student had recently completed a course in tests and measurements. During the test, the applicant sustained an injury to a knee. The high court held that the college owed the duty of reasonable care in administering the tests and that this care was violated by permitting a senior student — not certified to teach and lacking in experience — to give the test.

*V. Other Litigation*

A supreme court has ruled that permitting 48 boys to play basketball at the same time on a court 50' x 84' was a dangerous situation and has awarded damages to a plaintiff who was injured during the game.

A junior college physical education teacher was held liable for authorizing a student in his tennis class to take five other students home — after the class had been dismissed — in the student's car. The instructor knew the driver had a "souped-up" car and was a reckless driver. The court held that irrespective of whether the teacher had specific authority to provide such special transportation, if he undertook to do so as being essential to the continuation of the class, he had the duty to exercise reasonable care in connection therewith.

In a recent case (1964), a junior high school boy was awarded $1,215,000 for injuries received while his teacher was escorting another pupil, who had suffered a rope burn, to the school nurse, thus leaving the class unsupervised in the gym. The damage award was later reduced to $300,000 (process of remittitur).

## IN SUMMARY

1. If you have a state or local course of study, do not depart therefrom.
2. Be reasonably prudent and careful in your teaching.
3. The courts are more concerned about how an activity is conducted than the nature of the activity.
4. The activity must be suitable for a particular pupil.
5. All pupils should not participate in the same activity or to the same degree.
6. Private cars should not be used to transport pupils.
7. In class, competition should be equalized if at all possible.
8. Before you include an activity in your program, exercise the legal principle of foreseeability — good examples of this principle are the games buck-buck and capture the ball.
9. In general we may say that the courts are strong supporters of our programs.

I wish to close by saying that the courts do not expect our programs to be injury-free. Students are injured and will continue to be. What the courts do expect and will hold us responsible for are the injuries which would not have occurred had the physical educator been reasonably prudent and careful. The law demands this from all individuals — not just from school personnel. Develop your programs; try new ideas; and if you do not breach the duty you owe to a group of pupils or to any one pupil, you have nothing to fear.

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# School/Coach Responsibilities in Athletics: From the Gym to the Jury*

Certain newspaper stories have recently dramatized the problem of liability in athletics and physical education. One was about a football coach who asked a group of players to help him paint and erect goalposts. In raising the posts they hit a high tension wire which killed one player and injured several others. Another story concerns a 13-year-old boy who suffered paralyzing brain damage in a school playground fight. A superior court jury awarded the boy, described as having "an alert mind and a useless body," the largest verdict for personal injury to a single individual in U.S. legal history — $4,025,000.

There is more likelihood of liability today than ever before in our history. We know that the activities in which physical education teachers and coaches are involved are conducive to injuries. In 1970, over 552,000 interscholastic sports injuries on the elementary and secondary levels were reported. Add to this the fact that more children are participating in physical activities each year, and the picture becomes clear. With more participation and injuries yearly, increased litigation against physical education teachers and coaches seems inevitable. The mood of the courts is changing, and many state athletic associations have witnessed a new attitude regarding their rules and regulations. In past years the associations rarely lost a case when their authority was challenged. Recently, however, various associations have seen their rules invalidated and more student plaintiffs are winning lawsuits as they challenge rule after rule in the courts (2,3,4,6,7).

While every facet of athletics and physical education now seems to be vulnerable to lawsuits, several areas present particular problems. The most litigated trouble spots are supervision, instruction, unsafe facilities, defective equipment and transportation. I plan to mention some precautions we can take to help avoid expensive and damaging lawsuits, but one of the problems is that so many people believe they are immune from them.

As I read account after account of boys and girls who have been injured, I keep thinking that it could have been me who was responsible. I think of a 15-year-old boy in Monroe, North Carolina, who was helping in a track meet. He was

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measuring the shot put when one of the contestants, unaware that he was measuring, turned, threw the shot, hit him on the head and killed him. I thought as I read the article that it could have been me. A 13-year-old junior high school student in Burlington, North Carolina became ill during a physical education class and died a few minutes later. The doctor stated that the girl had a past history of such attacks that affected her physical condition; unfortunately, the teacher was unaware of these attacks. Again I thought, it could have been me.

And then I think of another outstanding case which occurred in New Jersey. A fine physical education teacher took an injured student to the school nurse. He warned the class not to do anything while he was out of the room. But a 14-year-old boy ignored the warning and was injured on a fall from a springboard. He became a paraplegic as a result of the accident. He sued the teacher and the school district of Chatham and was awarded damages of $1,000,216 (1,5). In comparison, the borough of Chatham spent approximately $1,800,000 on education for all students in that borough for the whole year.

Last year I spoke in the Midwest, talking about the problems we have when the shotput and javelin areas are too near the track. This year I was speaking again at a convention when a young man stood and told the audience to listen to what I was saying because, he said, "It could be you." He told how he came back from a meeting determined to check his facilities, but two weeks passed before he got to the area because he was too busy in court being sued for over $100,000. I think the first thing to remember is that it doesn't always happen to the other person. It could be us.

Another point to remember is check facilities and activities for safety before an accident takes place. After the Wichita State and Marshall University tragedies, my desk was flooded with materials from the Federal Aviation Agency and private charter companies and airlines, all trying to set guidelines for safe air travel. In North Carolina during my first year of teaching, about 25 children were killed when a school bus collided with an ice truck on a bridge because overhanging limbs prevented the bridge from being visible. The people of North Carolina became indignant and every bus route in the state was inspected the next week. It is difficult to estimate how many lives were saved by this inspection. But the real sadness is that the bus routes were not inspected before the accident occurred and that the inspection after the accident did not save one of the 25 lives. We should be aware of situations that might occur, try to prevent them and remember that it could be us.

**Supervision**

The first dangerous area is supervision. So many times teachers leave a classroom unsupervised. Perhaps they feel reasonably certain nothing will happen if they leave for only a few minutes. The tragic fact is that it only takes a split second for accidents to occur, and they usually do when the teacher is absent. A wise physical education teacher will leave other tasks for a more opportune time, if he is to assume responsibility for his pupils' safety. Pupils can answer the telephone for the teachers, salesmen can wait until later.

The court has made its feelings clear on the practice of unsupervised classes and has been unbending in its ruling. Administrators must adopt and enforce regulations regarding all situations in which teachers feel obliged to leave their students alone or be obligated to spend days in court.

## Instruction

Another dangerous area is instruction. Isn't it tragic that the professional teacher may now be forced to defend his actions in a courtroom before the well-meaning but often uninformed men and women who compose the jury? Is it really possible that such a jury, composed of people unfamiliar with physical education, could award a pupil $15,000 for a "roll-over-two" stunt? Can $35,000 really be given to a young boy for a wrestling injury because the teacher failed to anticipate the exact moment when that injury was about to happen? The physical education teacher is in a precarious position in many instances and usually deserves our sympathy, but too often the teacher is not blameless. In too many cases the teacher must assume the responsibility for negligent action during instruction.

I visited several teachers who were introducing tumbling instruction to novices. After a brief instruction period these teachers had their students attempt fantastically complex stunts with little regard for their safety. After 10 minutes of work on a forward roll one teacher had some of his students dive over six or seven classmates with a forward roll. That no one sustained a fracture or a broken neck was a miracle.

The court will not tolerate such incompetent instruction when injuries occur. Teachers who consistently insist on such advanced activities for unskilled youth should expect a day in court when children under their direction suffer serious injuries. It is much safer to begin with simple activities and gradually advance to more difficult ones. A wise teacher will thoroughly and patiently prepare his pupils for more advanced stunts and games. A realistic and positive approach is to warn pupils about the dangers of the activities they are about to undertake. If injuries occur, the court will give consideration to the fact that sufficient warning was made.

## Equipment and Facilities

The third area of concern is defective equipment and unsafe facilities. Several years ago, after our football season was over, I went to the equipment room with a sporting goods salesman who had sold us headgear. I complained about the unusual number of players on our team who had received head injuries during the past season and indicated that I would have to change to another type of headgear if the injuries continued. He asked if I had checked the knot in the top of the headgear. I had not. He said that if it is not tied, a player can sustain a head injury. To my amazement, I found that in every headgear belonging to a player who had received a head injury the knot was untied. From that day on our head injuries decreased dramatically as we required every player to check the knot before each practice and game. This is just one illustration of how a simple practice, when observed, can reduce needless injuries.

From time to time we discovered that the padding on our seven-man sled had worn thin — that our men were actually hitting the board itself instead of the padding. In another instance we practiced on a field that had a tremendous boulder in the middle of it. Careful inspection would have eliminated this potential hazard. While running on this same field our players had to avoid a right field foul marker left over from the baseball season. We made no attempt to move it until a hard running fullback was tackled out of bounds and suffered a painful neck injury when he collided with an iron pipe. Frequently we would find that the wire screen on our baseball field was defective and that a foul tip or

a wild throw would go through, causing the spectators sitting behind the backstop to scatter.

The dangerous defects we have observed are too numerous to list. The responsibility for making inspections and corrections of defective equipment and hazardous facilities needs to be delegated to a specific person. It is really a simple matter to check certain pieces of equipment, some daily, others weekly and still others monthly or yearly. The amount of inspection depends on the nature and type of equipment used. If you make a habit of checking these things regularly you will be amazed at what you will find. But even more surprising will be the number of accidents you will prevent. Keep a systematic record of inspections and use the information in a positive way. The routine inspection will pay off. I know it isn't as glamorous as devising a touchdown play, but the knowledge that you are protecting your players will be sufficient reward.

Several years ago I spoke in Houston and was pleased when I found, a few weeks later, that a member of the audience, upon returning home, had inspected his facilities. He found a glass door six feet from the bottom of the stairs that was dangerous if a student fell and tripped. So guards were put on the door. He found pegs at the end of the gymnasium for the students to hang their coats, placed at eye level, and they were only about eight feet from the base line of the basketball court. The pegs were taken out. He found that the trampoline was left out in the corner of the gym and that the students were free to jump on it at any time without supervision. They locked it up and used it only when an instructor was present. He found problems on the playground area, overlapping play fields, volleyball and basketball being played in the same area. Students were allowed to play in the gym as soon as they suited out without any supervision. He found rotten, loose boards in the stadium, parking lots without lighting — I could go on and on. But he did try to do something about his facilities.

Several years ago I attended a football game at a stadium in which the bleachers were in terrible condition. Footboards were loose or missing, and it wasn't by chance that three students fell through the bleachers during a game. One of them is still paralyzed from the waist down. I asked several administrators in three nearby cities who was responsible for the condition of their stadiums and bleachers. No one seemed to know. Each named someone else. One man said it was the duty of the coach, another pointed to the principal, while still others said it was the duty of the maintenance staff. Too many innocent spectators become the victims of others' negligence.

It is unbelievable but true that this area is considered unimportant by most school personnel. School board members, administrators, coaches and physical education teachers must insist upon adequate inspection policies to cover athletic equipment and facilities. Definite responsibility for periodic inspection is imperative. The fact that a facility is relatively new should not preclude inspection since defects can occur at any time. Regular and thorough inspection should include all facets of the athletic program, such as tennis courts, baseball backstops and bleachers.

Someone has said that the most important job today is raising our children. It is not a job for economic or emotional misfits, for frightened, inferiority-ridden adults seeking a safe, respectable and quickly attainable social and emotional status. Being allowed to teach children should be society's sign of final approval. It is not an impossible task if we pay attention to supervision, instruction, equipment and facilities before accidents occur. If we realize that accidents can happen to us, we can prevent needless injuries and untold suffering.

I found an interesting quote from Frederick A. Fielder in the *Wall Street Journal;* December 30, 1968.

> I can envision a subpoena being served on Mother Nature herself against a products liability claim that might arise from improper raw materials on this earth being used in a product that eventually failed or worked improperly. Hopefully that case would reach the highest court of all and be adjudicated in the manner it deserves. If not, we might just as well fold up our businesses, join the products liability plaintiffs on the other side of the bar and pray that there is enough each remaining to be divided amongst ourselves that we can enjoy our remaining nonproductive years in the manner we so richly deserve.

## SAFETY RECOMMENDATIONS

### Supervision

1. School boards should adopt policies prohibiting unsupervised physical education classes and athletic practice sessions for any reason.
2. Administrators should assign adequate supervisory personnel for groups engaged in physical activities. The number of supervisors should be determined by the nature and size of the group and the type of activity involved.
3. Administrators should supervise physical education and athletic programs as well as academic subjects.
4. Administrators should work closely with less qualified physical education teachers and athletic coaches. Special supervision should be provided until the teachers and coaches become qualified.
5. Administrators should provide supervision on playgrounds and in gymnasiums before school begins in the morning, especially if rough or dangerous activities are involved.
6. Administrators should adopt rules regarding lettermen club initiations. Dangerous practices should be eliminated and an advisor held accountable for conducting safe initiations.
7. All athletic contests involving physical contact should be scheduled on the basis of equitable competition in regard to size, skill and other controlling factors.

### Instruction

1. School boards should employ competent, qualified personnel for physical education and athletic programs. The standards for these important positions should be high.
2. School boards should conduct in-service training in tort liability and first aid for physical education teachers and coaches.
3. Physical education teachers and coaches should warn their students of all possible dangers inherent in the activities in which they participate.
4. Physical education teachers should follow adopted syllabi whenever possible. If a teacher deviates from an adopted program it should be based on sound reasons. Extra safety precautions should be taken.
5. Physical education teachers and coaches should not assign pupils to activities that are beyond their capability. Pupils should be assigned activities commensurate with their physical condition, size and skill.

6. Physical education teachers and coaches should give special consideration to excuses for illness and injury and not attempt to be medical specialists in judging students' physical condition.
7. Physical education teachers and coaches should prepare their pupils gradually for all physical activities and progress from simple to complex tasks in strenuous and dangerous activities.
8. Special care and training should be provided in gymnastics, tumbling and activities in which dangerous equipment is used.

**Equipment and Facilities**

1. School boards and administrators should set policies concerning periodic inspection of equipment and facilities. Duties must be clearly delegated and defined so that a specific person or department is responsible for the inspections.
2. Accurate records should be kept of all equipment and facility inspection. The records should include the inspector's name, date of inspection, condition of the equipment and facilities and recommendations for repair.
3. All activities involving the use of defective equipment or unsafe facilities should be curtailed or eliminated until the defects are corrected.
4. Special attention should be given to ropes, ladders, lockers and bleachers in the periodic inspection.
5. Safety rules should be adopted regulating the use of swimming pools; trampolines, springboards and other potentially dangerous equipment.
6. Athletic facilities should be maintained so that they are as safe as the academic classroom.
7. School officials should provide a safe environment for all spectators, officials and participants. Extra precautions should be taken when explosive situations may arise.
8. School officials should adopt safety rules regulating vehicular traffic on all playgrounds and other areas which pupils and spectators use. Periodic warnings should be made regarding any dangerous situation.
9. School officials should keep the sidelines at football, soccer, baseball and other athletic contests clear of unauthorized personnel. Special precaution must be taken in this area to protect spectators from injury.
10. A special official should be assigned during track meets to keep the weight areas safe.

**Travel Policies**

1. School officials should adopt safe rules and policies for all travel of athletic teams.
2. School officials should use commercial vehicles and competent adult drivers whenever possible.
3. When students provide transportation, only those who have safe driving records and cars free from defects should be selected.
4. School officials should insist that members of athletic teams go as a team and return as a team.

**General**

1. All school personnel should be familiar with tort liability as it relates to their specific responsibilities. This information should include the provisions of

the state statutes regarding tort liability as it applies to physical education and athletics.
2. School personnel should use sound judgment and common sense in working with pupils and spectators under their care.
3. The guiding principle for school personnel must be concern for students' welfare in all that is done.
4. Physical education teachers and coaches should instruct their students as they would have someone instruct their own children.

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# Rights and Responsibilities of Team Physicians*

I number among my friends many doctors who delight in needling me about ostensible shortcomings of the legal profession. I respond by pointing out that while lawyers were creating those magnificent documents, the Declaration of Independence and the Constitution of the United States, doctors were letting George Washington's blood to remedy his last illness.

In an effort to find cases involving team physicians and their liability, I did extensive research. Surprisingly, I found none. I then looked for textual authorities and legal articles to see if others might have discovered such cases. I found only two articles relating generally to the subject and neither of them cited any decisions, reported or otherwise, in suits brought against team physicians.

Still unsatisfied, I engaged a young lawyer to see if he might by independent research find reported lawsuits in this area. He found nothing. Finally, I called some colleagues at the Law Department of the American Medical Association in Chicago to see if they knew of any cases which had not found their way into print. They did not.

What does this absence of reported cases involving team physicians mean? First of all, it does not mean that there have been no such lawsuits, but it does mean they are a rarity. For if there were any frequency at all, one would expect at least some cases to be reported.

Why, may we ask, is there this apparent invulnerability to claimed malpractice? I think it is because a competitive sports team physician holds a unique position in the eyes and, if you will, the hearts of the athletes to whom he ministers and, indeed, of their parents as well. Team physicians are not rewarded economically; their primary interest is in helping youngsters. This awareness on the part of athletes and their parents plays a large role in protecting the physician from litigation. The professional athlete's livelihood depends upon a sound body. It is little wonder that he feels indebtedness to the team physician for guarding his well-being.

To assume that because there have been few lawsuits thus far this happy existence will continue is to blind oneself to two converging forces. First, there is a proliferation of medical malpractice claims against doctors in the ordinary practice of their profession. Second, there has been an increase in lawsuits

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brought by athletes against boards of education, school districts and, in the case of professionals, against the organizations responsible for fielding the sports team. There is no dearth of lawsuits in either of these two fields and there is reason to suppose that one bright morning a plaintiff's shrewd lawyer will note the presence and availability to suit of a team physician in a case where the attorney had originally contemplated suit only against the board of education, school district or professional organization. This is most apt to arise initially when a plaintiff's attorney finds that the board of education, school board or professional organization has inadequate insurance coverage and he must look to someone else for collection. Once there is a successful recovery, be assured that journals and service letters will spread the gospel, and the floodgates will open.

To illustrate my point, let me direct your attention to a case entitled *Gemignani* v. *Philadelphia Phillies National League Baseball Club, Inc.*, 287 F. Supp. 465 (D. Ct. Pa., Dec. 14, 1967). In that case, a father brought suit against the professional baseball team for the death of his baseball player son as a result of uremic kidneys. The precise question before the court was the application of a two-year statute of limitations. That is unimportant here. The significance for us is the vulnerability of the team physician who examined the player in March 1959 and found the symptomatic blood condition. Neither the team nor the physician treated the condition or advised the player or his family of its existence, according to the allegations. It was this failure which allegedly precluded early treatment and permitted the condition to develop into a terminal nature. The player was given an unconditional release from the team, was hospitalized a short time thereafter and died approximately one month later. In that case, suit was *not* brought against the team physician, but I submit to you that the team physician does have an obligation to disclose to an athlete any condition which may affect his health. Having undertaken an examination, the team physician and the athlete bear the relation of physician-patient. The team physician could have been, and perhaps should have been, sued if the allegations were correct.

The tort liability of public schools and institutions of higher learning for accidents occurring during school athletic events is developed at some length in an annotation appearing in 35 ALR 3rd at page 725. Included in the annotation are many cases relating to liability at the grade school, high school and college levels. The cases are many and the awards are high.

What magical garment shields team physicians from this multiple assault, I venture no guess beyond my original comments. I prophesy, however, that like all good things, it will not last. Some day soon a claimant will shout that the emperor has no clothes.

Let us look then to the law that governs the conduct of a team physician. In the absence of definitive case law specifically pertaining to team physicians, the general principles of law relating to a doctor's responsibilities and liabilities should apply. My conclusion in this respect is supported by Bergen (1) and Willis (5).

A team physician is subject to the same potential liability as would arise in the course of his care and treatment of his other patients. While an athlete may be held legally to have assumed the risk of injury in a sporting event in which he participates, he will not be held to have assumed the risk of negligent care by the team physician; nor will the athlete be held to have assumed the risks inherent in the sport if he were examined by a doctor and the doctor, through negligence, erroneously found no medical conditions making it inadvisable for him to participate in the sport.

A doctor ordinarily may not be held liable in the absence of testimony by other medical doctors affording evidential support to a finding by the jury that the doctor failed to conform to that standard of care required of medical doctors in the community. The courts have carved an exception to this rule in instances where the negligence is so blatant as not to require the ordinary proof; they have also made an exception in cases where a poor result ordinarily does not happen in the absence of negligence. This latter instance of the law raises a presumption of negligence called the doctrine of *res ipsa loquitur* (i.e., "the thing speaks for itself").

One technique used by plaintiffs' attorneys to establish a standard of care for the jury is the use of authoritative texts. The defendant is cross-examined to secure admissions with respect to proper treatment and care. There is a great amount of literature purporting to establish standards upon which a doctor may find himself impaled (2,3,4). Clever use of these books may make affirmative medical testimony unnecessary to establish the requisite standard of care.

The employment arrangements a physician may have with an athletic team vary. He may appear only during athletic contests and without remuneration. He may be under contract for payment with a professional football team and agree not only to be present during the contests and practice sessions but also to manage postgame treatment and rehabilitation of injured athletes. Even when a physician acts on a voluntary basis, he must exercise the care which a competent doctor exercises under similar circumstances.

A difficult problem arises when a team physician must decide whether an athlete injured during a game is in condition to continue to play in the game. An on-the-spot decision can be difficult, particularly when the emotions of the participants are high and the dejection of a benched athlete painfully apparent. Somewhat akin is the determination by the doctor after a preseason or pregame examination whether a player may participate. A judgment that a player is fit to participate can expose one to serious potential liability. It is recommended that a doctor, after a thorough examination, state only that his examination failed to disclose anything which would prevent the player from participating in athletics. The doctor should make no affirmative assertion as to the participant's fitness to play.

Although a physician was not sued in *Rosensweig* v. *State of New York*, 171 N.Y. 2d 912, Rev'd. 185 N.Y. 2d 521 (1959), one could have been and probably will be if a similar case arises again. Professional boxing in New York is controlled by the state and each fighter must be examined by a doctor of his choice from a panel of doctors chosen by the state. A fighter by the name of Flores, after a savage beating about the head, was TKO'd in a fight. Three weeks later he was examined by a panel doctor and allowed to fight again. In that fight, he again received a series of blows to the head, collapsed and once more lost the fight on a TKO. He was described as groggy immediately after the fight but appeared to be normal on examination 20 minutes later. Two days afterward an EEG was done. The interpretation was, "This is a generally good record. However, there is some slowing anteriorly. Impression normal record." Two weeks later in a rematch, he was caught with a perfect shot to the chin in the eighth round. He fell to the floor, hitting his buttocks first, then his shoulders and head. He took the full count, but was revived in the ring and went to his dressing room. There he fell into a deep coma from which he never regained consciousness. He died three days later.

Subsequent examination disclosed no massive hemorrhage, which ruled out the possibility of a single blow's causing his death. A jury awarded a verdict of

$80,000 against the state of New York for negligently permitting Flores to engage in a professional fight when it knew, or should have known, that he was not in proper condition to do so. The Court of Appeals reversed this decision on the grounds that the state was not liable for the alleged negligence of its panel of doctors and that the doctors were guilty of a mere error of judgment, not of negligence. The Court of Appeals decision was on a 4 to 3 basis, which reflects the iffy state of the law. If one judge had changed his view, the verdict of the lower court would have been upheld. If the evidence were only slightly stronger, a case of negligence rather than of faulty judgment would have been made. Finally, if the plaintiff's attorney had suspected that the state would be immune to liability, he would have sued the doctors. The next time a similar case appears in New York or elsewhere, be assured the suit will be brought against the doctors. A team physician was sued in *Mike J. Gaechter* v. *The Dallas Cowboys*, on December 30, 1971. The physician was charged with negligent orthopedic treatment. To my knowledge, this case is still unresolved.

Treatment of a patient by a doctor in the absence of consent, either express or implied, is an assault and battery and subjects the doctor to a lawsuit for damages. The doctrine of informed consent is one upon which many suits are currently based. Its real value to a plaintiff's attorney is that it obviates the need to establish negligence on the part of the doctor; more particularly, it avoids the necessity of producing competent medical testimony that the offending doctor has deviated from the appropriate standard of care. Everyone is familiar with this doctrine as it applies to private practice and to operative procedures conducted in hospitals. The doctrine has equal application to care and treatment of athletes injured in athletic contests. It is essential that written consents be obtained by the school or organization responsible for the team, authorizing care and treatment by the team physician in connection with any injuries sustained in a game or during practice. If attention is required beyond immediate emergency care, an additional consent should be secured. Such a consent, of course, must be an informed consent. The patient or the patient's parents must be fully informed of the nature of the treatment and the risks and hazards associated with it.

Any doctor who is under written contract with a team should review the contract carefully and should have a lawyer well versed in the defense of malpractice claims examine it for areas of vulnerability. The physician must know what his obligation is under the contract. If he is required to attend practice sessions and fails to do so without providing an adequate substitute, he is vulnerable to a charge of abandonment or breach of contract. When there is no written contract, it is well to make absolutely clear what he is expected to do. A letter from the physician, acknowledged by the school spelling out what he will and will not be responsible for is of great value.

I would be remiss not to discuss the question of insurance. The team physician should assure himself that the board of education or team organization has adequate insurance limits. Anything less than $1 million coverage I regard as inadequate today. Verdicts of $1.4 million and $1.7 million are commonplace. A serious injury, perhaps a paraplegic or quadriplegic, is not a rarity in football and occasionally in other sports. As long as the organization with which the team physician is associated has adequate insurance coverage, it appears in the present climate that neither the athlete nor his parents are disposed to bring suit against him. But if the team or organization which the physician is associated with has a serious claim with no insurance or inadequate limits, collectibility will require that the physician be joined in the lawsuit.

The physician's own malpractice limits should not be less than $1 million. The added expense of large limits over smaller limits is modest and well worth the peace of mind it will bring.

Not only is there an increased frequency of claims against doctors, there is also by judicial fiat an expansion of the area within which that frequency works. Current examples in Ohio will illustrate this point. In Ohio the statute of limitations begins from the time the patient-physician relationship ceases (*Wyler* v. *Tripi*, 25 Ohio 2d 164 (1971) ). In a case decided by the Supreme Court, *Melnoik* v. *Cleveland Clinic*, 32 Ohio 2d 198 (Dec. 15, 1972), an exception was engrafted on this rule. In that case, a metallic forceps and a nonabsorbent sponge were negligently left inside the patient's body after surgery. The Court held that where a discoverable foreign object is left in a patient's body, the statute does not begin to run until after the object is discovered or, by reasonable diligence, should have been discovered. In the Cleveland Clinic case, the forceps was left in the patient during abdominal surgery in 1958. The plaintiff was last seen at the Cleveland Clinic in 1958 also. The discovery was made when additional surgery was required in 1968. One can almost foresee that the Ohio Supreme Court will eventually embrace the discovery rule in all malpractice actions, rather than the current rule which starts the statute at the termination of the physician-patient relationship.

Another case will illustrate this trend. It had been believed that a doctor employed by an industrial company or by a professional team on a salary basis was entitled to the same immunity from suit afforded the company and its employees by the Workmen's Compensation laws of Ohio. Under these laws, an employee loses his right to bring a civil suit in exchange for the certain recovery of compensation under the Workmen's Compensation laws. In *Proctor* v. *The Ford Motor Company*, Sup. C. Docket No. 73-25, two company physicians were sued along with the Ford Motor Company, it being alleged that negligent conduct by the physicians worsened the plaintiff's injury for which he had already received compensation under the Workmen's Compensation laws. A motion for summary judgment filed on behalf of Ford and the doctors contended that such a suit did not properly lie against them. The trial court granted the motion for summary judgment in favor of the doctors and in favor of Ford. The Court of Appeals of Cuyahoga County reversed the judgment in favor of the doctors, on the ground that they were not entitled to the protection of the Workmen's Compensation laws, while it affirmed the judgment in favor of Ford. That case is now before the Supreme Court to determine whether a salaried doctor of an industrial employer (or any employer) is entitled to the protection of the Workmen's Compensation laws. I believe that the Supreme Court will find he is but caution again that this is an area where the courts appear to be increasing the exposure of doctors to civil suits.

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# Legal Aspects of Adult Fitness Programs*

To date the legal liability presentations in our literature and at our conventions have dealt primarily with children, youth, and college students. There are some legal cases involving adults, but none have been located which have reached the state supreme courts dealing with fitness programs, either adult or youth. Therefore, this article endeavors to synthesize principles of the law applicable to adult fitness programs. These principles are based on both case and statutory law. Approximately 1,200 cases have been reviewed relating to negligence in the fields of physical education, athletics, and recreation, as well as the statutes in the 50 states concerned with the tort liability of schools and municipalities.[1]

The critical aspect of any situation giving rise to a law suit is the *act* of the person conducting the activity. What did he in fact do and how did he do it, that is, with what expertise and degree of care was the act committed. There are three general principles concerning the act — the first relates to the leader, the second to the participant, and the third to the activity.

1. **The standard of care required is that of a reasonable and prudent professional.**

It is so frequently heard regarding the degree of care that one must act as a "reasonable and prudent person." *Ordinary care is not adequate.* A person who holds himself out to be competent by assuming certain roles is expected to perform with such *competence as required for the role.* The care required is thus situational. The participant must be protected from undue risk of harm through the manner of conducting the activity and the environmental conditions.

2. **The standard of care required is dependent upon the maturity and condition of the participant.**

The appropriateness of an activity to the size, age, skill, and physical condition of the participant is important, especially in fitness programs.

3. **No activity is inherently dangerous.**

No activities, except boxing, have been cited in the cases as inherently dangerous. It is always the manner in which the activity is conducted that makes it hazardous. This might be referred to as "people risks," rather than "activity risks," or *hazardous people*, rather than hazardous activities! Now, this is not to say that there may be greater opportunities for injury or that greater skill in performance must be executed to avoid injury in certain activities than in others,

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but it does mean that when an activity is appropriately engaged in, the objective of the activity is not injury to the participant and when due care is taken, normally there are not injuries.

Now, within the framework of these three general principles, let's look at some specifics related especially to fitness programs. These are divided into three major divisions: (1) the nature of supervision, (2) the selection of activities and conduct thereof, and (3) the environmental conditions.

### 1. The Nature of Supervision

The nature of supervision is one of the critical elements giving rise to law suits. What most of our articles and speeches do not distinguish adequately are the two types of supervision — specific and general. By "general" supervision is meant that an individual (leader, teacher) must be within the activity area, while "specific" supervision indicates that the leader must be with the individual(s) participating, that is, at the immediate location of the activity providing direct supervision. Now this is of great importance when you are dealing with a group of persons in a fitness program — obviously, you cannot be with each individual all the time. When *must* you be directly with the person engaging in activity?

There are two guidelines as to when specific supervision must be given. First, when you are introducing an activity you must stay with the participant until he is familiar enough with the activity so as to (1) appreciate the activity in terms of his own capacity to do the activity and (2) understand and adhere to the safety procedures established. These guidelines are important if you are to be able to use the defense of assumption of risk. It has often been said that a participant in sport assumes the risks; but, the cases within the last five years have emphasized that a person does *not* assume any risks of which he is *not* aware! This places the burden on the leader for appropriately communicating the risks involved and ascertaining whether the participant thoroughly understands.

Some have referred to this informing and subsequent participation as *advise and consent*. There is much more to this advising and consenting than appears on the surface. It is important that it be noted that *knowledge* of a risk is insufficient, that is, it is not sufficient to merely inform or warn of risks in an activity; there must be an understanding and *appreciation* of that risk.

This appreciation of risk works both ways, that is, the inexperience of a participant requires greater effort on the part of the leader, teacher, or coach to communicate the risks; and on the other hand, if a performer is young but experienced, he is held to assume those risks of which he is knowledgeable. For example, in one case the court held regarding an 18 year old who was a proficient performer that he must exercise the same judgment and discretion in care for his own safety as a person of more advanced years when on the trampoline. Similarly in another case the court said that the plaintiff was an intelligent young man who had played softball without protective eyeglass guards for several years and had proper warnings of dangers not only of the protective equipment but also the specific situation of the batting cage screen which would "give" when a ball hit it, and thus he assumed the risks of participation without using the protective equipment.

The appreciation of risks extends not only to children of young age but also to persons of less mental capacity, as was held in a case where a mentally retarded girl was held not to appreciate the dangers of deep water in a swimming area. *It behooves every leader to become a communicator par excellence.*

The second guideline of specific supervision is that if you note (1) any failure to adhere to rules and regulations or (2) any change in condition of the participant, then you must supervise more specifically until the situation is back to what might be called "normal." In the case of change in condition of the participant, a high level of professional ability is required to observe participant change while activity is under way. You must be able to spot this change and modify that person's activity accordingly.

For general supervision there are three guidelines. The first is that the leader giving general supervision must be located so that (1) he is immediately accessible to anyone who needs him and (2) he can oversee the entire program systematically, that is, he rotates to all parts of the activity area. *He must never leave the premises.* To do so opens up wide the door for law suits. If injury occurs, it is better to obtain the services of a person competent to take the injured to the proper authority than to leave the group with them actively participating and no one competent to assist should additional injury occur.

The second guideline is that a general supervisor must be alert to conditions which may be dangerous to participants, such as rowdyism, defective premises, lack of use of protective devices or safety equipment, and participants going beyond their capabilities. In all of these instances, the activity per se is not dangerous, but becomes so because of the foregoing situations. It is then up to the supervisor to take appropriate action for the protection of the participants. A professional should be able not only to identify dangerous conditions but also to anticipate such conditions and establish accident prevention procedures.

The third general supervision guideline is that one must know first aid and refresh oneself regularly. One must be able to react immediately and appropriately to emergencies — and one must know the type of emergencies likely, not merely hold a first aid certificate! Particularly in fitness programs of a rehabilitative nature, immediate emergency care may be essential for saving a life.

**2. The Selection and Conduct of Activities**

Here is where we get into that controversial area of *activity prescription*. Who determines the activity, the physician or the exercise specialist? Much of the controversy, it would appear, occurs because of the failure to distinguish the role of the two in cardiac rehabilitation programs.

In distinguishing roles and responsibilities, two guidelines appear. First, a physician must specify the intensity within which an individual may be exercised. Certainly this requires a physical examination which includes a progressive exercise test under a physician's direction, and then periodic monitoring of the individual's condition when the exercise is for the purpose of rehabilitation. Second, an appropriately trained exercise specialist must select and conduct the exercises within the intensity levels established by the physician. It is acknowledged that most physicians are not aware of the specific nature of physical activity and the strenuousness of the manner in which the activity is conducted. Also, it is not realistic to have a physician on the site at all times to give direction for activity modification; thus, the exercise specialist must be highly competent if he wishes the confidence of the physician. Many persons leading fitness programs do not have adequate knowledge of the structure and physiological functions of the body, of motivational techniques and understandings of emotional considerations, and the modification of activity in regard to the specific needs of individuals. The exercise specialist must be able to not only understand

the meaning of the exercise intensity established by the physician in terms of the condition of the individual but also understand the requirements of the activities and how to vary the demand requirements through modification and sequencing.

If the program being conducted is one of general fitness in contrast to a cardiac rehabilitation program, the condition or the participants will determine the role of the physician. For a so-called "normal" population under the age of 35, you would not need a progressive exercise test and specific guidelines established by a physician; however, should you note or have reason to know of any atypical or abnormal signs, then you must be alert to the necessity of possible appropriate medical advice. For example, you should work with a physician if you have a very obese individual, or if someone shows signs of unusual stress or fatigue during physical activity sessions. For persons over age 35, it is recommended that a progressive exercise test be administered.

While there are other aspects of the manner of conducting activity, these would appear to be the key for fitness programs.

### 3. The Environment

A number of aspects relating to the environment in which the fitness program is conducted have been touched upon, particularly the general supervisor's responsibility to be alert to defective premises, lack of use of protective devices or safety equipment, and adherence to safety procedures. The environment is also important as it affects the condition of the participant. The guidelines related to environmental elements may be summarized as follows:

1. Establish rules and regulations embodying safety procedures, and *enforce them.*
2. Provide protective equipment and safety devices, and be sure that they are in excellent condition. A piece of equipment in poor condition may be worse than none at all.
3. Inspect regularly for defective floors and grounds, such as rotten boards, boards which have become loose, and holes and debris on fields.
4. Control the heat and light in the room; if unable to do so, the activity must be modified accordingly.
5. Be aware of the proximity of persons to each other; if the size of the area is inadequate for the activity you wish to conduct, modify the activity.
6. Modify activities with high risk subjects when temperature and humidity are at high levels. Thermal balance, ambient temperature, and humidity present a hazardous environment for a risk population. Serious heat illness is preventable if proper care is taken.

The foregoing all require a competent professional leading fitness programs, but there is one final guideline which is of utmost importance. One may have obtained an excellent background in his college education — a sound physiology of exercise course, some motivational techniques and fundamental psychology, and student teaching which included assessment of physical conditions of individuals in relation to activity — but this is not enough. *It is essential that the exercise specialist keep abreast of the latest developments in the field of fitness and emergency care and utilize it in programming.* The standard of care required is that of a competent professional and this professional expertise must be current!

Is an exercise program more likely to get lawsuits — no; does it require higher degree of care than many other activities — yes! Perhaps the foregoing will help you in understanding the degree of care necessary to conduct a safe and enjoyable adult fitness program.

[1]Betty van der Smissen, *Legal Liability of Cities and Schools for Injuries in Recreation and Parks, Including Physical Education and Athletics*. Cincinnati: W.H. Anderson Co., Legal Publishers, 1968, supp. 1973.

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# Liability Exemption for Physical Educators

Injuries in physical education programs and athletics are common occurrences. Physical educators have always been concerned about their legal responsibilities regarding the administration of emergency care to the injured. This article will discuss some circumstances where a physical educator may be exempt from civil liability while giving emergency care.

In 1959, California passed the first good samaritan law in this country. It relieved physicians of civil liability when they provide care in good faith at the scene of an accident. Impetus for good samaritan legislation has come from medical societies which argue that physicians are discouraged from volunteering aid in an emergency because of the fear of malpractice suits.

Since 1959, all states have enacted good samaritan laws that remove civil liability when certain persons offer emergency aid. Some states have amended their good samaritan law to include a growing list of professions. Other states have extended the exemption from legal responsibility to all persons. Of importance here is in which states and under what circumstances may physical educators and coaches act as good samaritans.

Twenty-three states stipulate that any person, without regard for experience or training, is a potential good samaritan and therefore immune from liability. These states are:

Alaska
Arizona
Arkansas
Florida
Georgia
Hawaii
Indiana
Iowa
Minnesota
Montana
Nevada
New Jersey
New Mexico
North Carolina
Ohio
Oklahoma
South Carolina
Tennessee
Texas
Vermont
Virginia
West Virginia
Wyoming

*Note:* North Carolina law is applicable only at the scene of a motor vehicle accident.

Three states establish educational restrictions for inclusion as a good samaritan. These requirements may be met with facility by many physical educators. Kansas insists that its law shall apply only to persons who have successfully

completed an approved emergency service program. Missouri Statute 190.195 states that "Any person who has been trained to provide first aid in a standard, recognized training program may render emergency care or assistance to the level for which he or she has been trained..." Oregon limits good samaritan coverage to physicians, nurses and all persons who have completed an emergency medical assistance training program or American Red Cross first aid course or to an armed services medical assistant or corpsman.

In some states, exemption from civil liability while rendering emergency care is extended to certain occupational groups. Numerous physical educators may serve their communities in these supplemental occupational roles.

Good samaritans include:

- Rescue squad members: Alaska, Louisiana, Maryland, Nevada, Rhode Island, South Dakota
- Volunteer rescue squad members: New Jersey, Pennsylvania
- Volunteer fireman: Connecticut, New Jersey
- Emergency medical technician: Kentucky, New York, Virginia
- Ski patrol member: Maine, Maryland, New York, Pennsylvania
- Ambulance squad member: Arizona, Connecticut, Idaho, Louisiana, Maine, Maryland, Nevada, Pennsylvania

Existing statutes in 34 states require that a good samaritan provide aid without compensation. Kansas limits compensation only when a minor who has engaged in competitive athletics receives emergency care. The Oregon law does not apply where there is an expectation of compensation. The following states do not prohibit compensation to good samaritans: California, Delaware, Idaho, Maine, Michigan, Minnesota, Mississippi, Missouri, New Jersey, North Carolina, Pennsylvania, South Dakota, Utah and Washington.

The nature of the care provided by good samaritans is usually stated in statutes as emergency care or first aid. Yet, Vermont permits reasonable assistance and in Idaho, only Board of Medicine approved actions may be performed. Alaska law permits counseling and advice from any person.

Of all the 50 states, only Vermont has a law that requires a person to give reasonable care to another who is exposed to grave physical harm. A violation of this statute can result in a fine of not more than $100. This Vermont law is called positive legislation and is different from the negative good samaritan legislation in the other 49 states. This means that all the other states do not mandate good samaritan action but limit or remove liability for negligence from an accomplished act.

Aside from this discussion of good samaritan coverage, it should always be kept in mind that if a pupil is injured, the teacher or coach present has certain responsibilities. When immediate first aid seems indicated, the teacher should perform to the best of his ability. First aid knowledge that is expected of laymen and parents is required of teachers and coaches. In addition, teachers and coaches should not hesitate to call the school nurse, school physician, community rescue squad or local hospital for additional assistance when necessary.

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