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Analysis of Risk-Management Practices and Legal Issues in College Natatoriums in Taiwan

Richard Hsiao

Water-related events are the most popular year-round activities in Taiwan. Aquatic facilities deliver value to users and the community when they are well planned and designed and meet the public's expectations for health and safety. The focus of this research was to investigate and analyze the operation of college natatoriums, the risk-management practices employed by these institutions, and associated legal concerns. The purpose of this study was to provide first-hand information about risk management in general aquatic-center settings in Taiwan. The findings of this study represent 58 aquatic directors at college swimming facilities across Taiwan. The results of the study will help college aquatic directors formulate policies relevant to their aquatic centers, so that they can avoid the common mistakes that lead to lawsuits and eventually bring the concept of risk-management implementation to aquatic centers in Taiwan.

Key Words: aquatic risk management, swimming facilities, swimming pool maintenance, water safety, aquatic legal issues, swimming pools

In Taiwan, an island country southeast of China, water-related activities are the most popular year-round physical activity, with swimming being the most popular recreational sport among the general population. During the summer, hundreds of people spend their vacations either in swimming pools or at ocean beaches or lakes. University pools, centers for holding aquatic-related activities such as swimming, water polo, scuba diving, water aerobics, and water fitness, are believed to be in the most reasonable position to provide water safety education and swimming classes for both children and adults. University pools also provide Taiwan's general public a good place to spend their time and satisfy their needs for instruction, leisure, and recreation. Many parents take advantage of the opportunity for their children to learn to swim by sending them to a public or private college natatorium.

As a result of the popularity of water-related activities in Taiwan, it is not surprising that the country has a high incidence of drowning. According to the World Lifesaving Organization's 1990 statistical data on drowning, Taiwan has the third highest drowning-accident rate in the world, following only the Bahamas and Russia (Database of Citizen's Sport in Taiwan, 2003).

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Drowning has always been a concern at school facilities. The drowning-accident rate in Taiwan increased by 11% during the year 2000 over that of 1999 (Chiu, 2000). Most accidents have been associated with the lack of risk-management plans and failure to provide instruction in swimming (Chiu).

In addition, the trend of constructing new swimming pools, driven by the curriculum expansion in progressive schools, as well as the demands being placed on school boards by taxpayers to build and provide access to swimming pools and other recreational facilities, is likely to continue in Taiwan. Unfortunately, the increase in aquatic construction and the demand for pool time by citizens, ranging in age from infant to senior, will most likely increase the risk of potential injuries including drowning.

The number of aquatic incidents that result in lawsuits has prompted institutions to create, apply, and evaluate their risk-management policies. Although risk management is not a magic formula for eliminating incidents, it can serve to reduce the number and severity of aquatic incidents. Many accidents at aquatic facilities are unpreventable, and no matter how hard we try, patrons will still suffer injuries in the facilities. Because we cannot eliminate all injuries that occur in the facilities, the key to reducing exposure to risk is to minimize the number of preventable injuries and diminish the severity of the accidents that do occur.

Van der Smissen (2003) stated,

It is not possible to have “risk-free” physical activity. The young, especially, tend to explore the limits of adventurous activity, substantially increasing the fear of liability among many providers, including public agencies, nonprofit associations, and commercial for-profit enterprises. Insurance companies are also fearful of certain types of participants, their parents, coaches, and spectators. (p. 323)

Today, aquatic managers realize how important risk-management practices are but often encounter difficulties in putting such policies into practice. Typical difficulties include, but are not limited to, old aquatic facilities, lack of knowledge by professionals, the lack of risk-management plans, and inexperienced staff.

Aquatic directors must be aware of safety and legal issues that surround what appears to be a harmless activity. This awareness does not shield them from lawsuits. To succeed, aquatic directors must always be mindful of environmental safety, facility management, and potential risks, while regularly and thoroughly inspecting their facilities. Aquatic directors need to investigate and implement new risk-management practices to reduce potential risks. These improved risk-management practices will provide the most reasonable solutions for constantly emerging problems.

Purpose of the Study

Recently, drowning incidents have raised significant concerns in Taiwan, especially during the summer, and risk-management implementation has become increasingly important. Because of the high rate of accidents that occur with water-related activities, especially in college natatoriums, the purpose of this study was to

investigate and analyze the operation of college natatoriums (including public and private college and university swimming pools), the risk-management practices employed by these institutions, the reduction of injuries and drowning accidents, and associated legal concerns.

Research Questions

My research questions were as follows:

- What are the use, accident, and litigation statuses of Taiwanese swimming facilities?
- What risk-management practices are commonly employed by the college natatoriums in Taiwan?
- What institutional demographic factors are most closely associated with risk management in college natatoriums in Taiwan?
- What are the three most important and three most difficult risk-management concerns of aquatic directors?
- What is the relationship between incidents of accident or injury and lawsuits in college natatoriums in Taiwan?

Assumptions of the Study

The following assumptions served as the basis for the conduct of this study:

- The aquatic directors would understand the questions in the survey questionnaire, completing and returning it at a high rate.
- The aquatic directors would provide accurate information concerning risk-management practices performed at their swimming facilities.
- Risk-management practices are necessary to protect long-term swimming pool operations in Taiwan.
- The names of the college aquatic directors, contained on the Web site of the Department of Higher Education in Taiwan, were assumed to be accurate.
- The lists of public and private college swimming pools in Taiwan's telephone directory and on the Web site of the National Council on Physical Fitness and Sport were accurate.
- The aquatic directors would perceive the survey items as I intended.

Limitations of the Study

The study had the following limitations:

- The results pertain only to aquatic directors in Taiwan and do not necessarily apply or generalize to another country's swimming pools.
- In light of the fact that much of the comparative literature review collected studies based in the United States, I might not have identified and included in the survey questionnaire all relevant risk-management-practice issues likely to affect swimming pools in Taiwan.

- Because swimming litigation rarely occurs in Taiwan, it is possible that the Taiwanese aquatic directors surveyed are not fully aware of the implications of not complying with risk-management concerns included in the survey questionnaire.

The Significance of the Study

This study was designed to investigate the risk-management practices of aquatic directors in Taiwan. Providing first-hand information about risk management in general swimming pool settings in Taiwan is particularly needed because of recent increases in the incidence of drowning. The information that the study provides can bring the concept of risk-management implementation to swimming pools in Taiwan and can help aquatic directors formulate policies relevant to their swimming pools and avoid the common mistakes that lead to injuries, drownings, and even lawsuits.

Review of the Literature and Background

The following literature review provides an in-depth analysis of the rate of aquatic incidents both in Taiwan and in the United States. Approaches to the study of risk management complete the foundation essential to study in this area. The differences in risk and risk management, the importance of risk management, the conceptual framework of my model of risk-management practice, legal consideration in college swimming facilities, a review of court cases, and some liability concerns related to facility management are discussed in the following sections.

Rate of Aquatic Incidents

The National Electronic Injury Surveillance System (NEISS) is a national probability sample of hospitals in the United States and its territories. The NEISS provides reliable statistical data on the injury rate in swimming pools. Patient information is collected from each NEISS hospital for every emergency visit involving an injury associated with a consumer product. From this sample, the total number of product-related injuries treated in hospital emergency rooms nationwide is estimated (NEISS, 2005). The U.S. Consumer Product Safety Commission/NEISS's data (2006) indicated that there were an estimated 2,200 children under age 5 treated in U.S. hospital emergency departments for injuries related to swimming pools between 2000 and 2005.

In 2006, there were 3,308 unintentional drownings in the United States, an average of nine people per day (Centers for Disease Control and Prevention, 2006). Drowning is the second-leading cause of injury-related death among children under the age of 15 years (Centers for Disease Control and Prevention). A survey of aquatic skills and behaviors found that men not only have greater exposure to aquatic settings but also spend more time in higher risk aquatic activities during which submersion incidents might occur (Howland, Hingson, Mangione, Bell, & Bak, 1996), resulting in a drowning rate for men four times higher than that for women (Gilchrist, 2000).

As in the United States, accidental drowning is a very frequent type of unintentional injury in Taiwan, and it is the second-most common cause of unintentional death among adolescents (Wang, 2001). Approximately two people die from drowning or swimming-related accidents every day, with the typical age range of victims being 15–24 years (Wedar Health Net, 2003). In Taiwan, over 400 people drown each year; the most typical age group of drowning victims is 7–25 years (National Fire Agency of the Ministry of the Interior R.O.C., 2004). According to the Taipei County Government Fire Department (2003), 122 drownings occurred in Taipei during 2002, and 111 occurred in 2001. Most of the accidents occurred in school swimming pools, with the highest frequency of accidents occurring during July, August, and September. Figure 1 indicates the distribution of drowning cases occurring during each month in 2002.

Although few cases of drowning are found in organized classes in the United States, drowning has always been a concern in school facilities. According to Johnson (2002), the primary causes of drowning during aquatic classes are oversized classes, mixed abilities in classes, and a lack of continuous direct supervision by teachers. A secondary cause is the failure of schools to provide lifeguards in aquatic classes.

According to Fawcett (2001), less than 20% of aquatic directors hold appropriate certifications such as CPO (certified pool operator), AFO (aquatic facility operator), CPR (cardiopulmonary resuscitation), first aid, or lifeguard training. It is surprising that 28.8% of the surveyed aquatic directors said that they did not have any aquatic experience before taking their jobs as aquatic directors. Only 10.6% of aquatic directors in Fawcett's study have the certifications listed, and 11% reported no certifications at all. Aquatic directors play a role as gatekeepers of aquatic standards and credentials. If they cannot obtain the necessary certifications and required knowledge for aquatic management, should we trust them to manage aquatic centers and expect them to provide a safe aquatic environment for us?

Sports and activities that take place in water are usually considered high risk. Aquatic professionals including aquatic directors need to be aware of accident and fatality rates in sport and physical activity in general, as well as in aquatic activities. They must recognize that as the number of serious injuries increases, so does the potential for lawsuits (Clement, 1997).

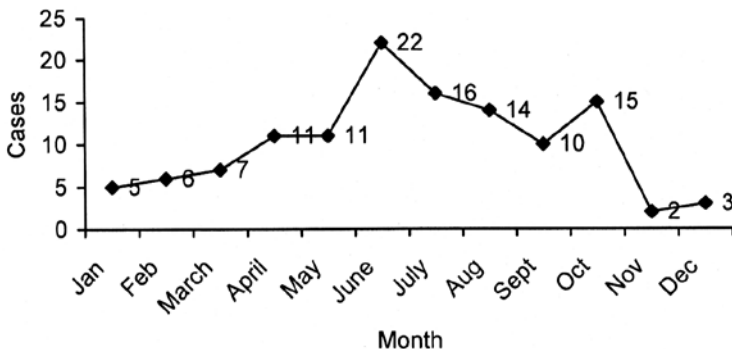


Figure 1 — Drowning cases in metropolitan Taipei in 2002.

The three areas of focus in this review of relevant literature, each being applicable to swimming-related litigation and risk management, were the difference between risk and risk management, the basic elements necessitating that swimming pool management be concerned with liability, and legal considerations relating to swimming pools and a review of American court cases.

The Difference Between Risk and Risk Management

The first section of this review pertains to the contrast between risk and risk management. This section addresses the definitions of and differences between risk and risk management, the importance of risk management, and risk-management theory.

Risk is a peril or the possibility of exposure to harm (Farmer, Mulrooney, & Ammon, 1996). Theoretically, measuring risk is straightforward. Taking into consideration the population data, the exposure data, and the injury data, the calculations for determining risk are quite simple. There are three general methods of measuring risk: relative risk, probability of occurrence, and relative exposure rate (Mitchell & Feigley, 2002). The term *risk* refers to a possible loss or other adverse event that has the potential to interfere with a public entity's financial stability or ability to fulfill its mission.

Risk management was born of necessity—human, legal, and political. A risk-management program must serve three entities: the customer, the employee, and the organization. A good safety and risk-management program is good public policy. Risk management should be part of the training of each employee in the recreation and sports work environment.

Clarke (1998) states that *risk management* is a term coined by experts to encompass all the strategies one can consider for dealing with such risk. Clement (1997, 1998, 2004) stated that risk management is the identification, evaluation, and control of loss to property, clients, employees, and the public, and it is a proactive approach designed to reduce the risk of injuries. Aquatic directors should be mindful of risk-management strategies in order to prevent, reduce, or transfer the risk of unpredicted accidents and liability related to swimming pools.

Importance of Risk Management

Risk management is designed to encourage an integrated approach to managing risks in an organization and is built around a common language and approach. Aquatic directors and members of boards should be able to make informed and balanced decisions ensuring the most effective use of resources at an acceptable level of risk by using risk-management strategies. Applying risk management means adopting a systematic approach to how professionals view the environment, identifying issues that face them, and developing strategies to address significant risks. Not all risks are significant; the relevance and nature of risks can and do change. Risk management helps professionals identify important risks, determine how they should address them, and determine how best to allocate resources in relation to these risks.

Participation in sports has always involved risk, and the inherent physical challenges have always been considered “part of the game.” Just as the philosophy and idealism of sports have changed, so have the consequences of the risk of playing sports. In order to fully understand the extent of the importance of risk management,

one needs to examine recent data on sport-related injuries, especially in aquatic areas. During 1998, youth 5–14 years old accounted for most injuries in swimming pools (40.1%). The same age group constituted 40.8% of diving injuries. Young adults 15–24 years old accounted for 31.2% of diving or diving-board injuries and 20.7% of swimming pool injuries (NEISS, 2000). From these statistics, it is easy to understand why risk management is a very important component of sport management.

Conceptual Framework: Hsiao's Model of Risk-Management Practice

In an earlier work, I (Hsiao, 2005) wrote that risk-management practices require a systematic examination of the environment, with identification of potential loss and legal liability. The conceptual framework used in this study is a four-step systematic approach I developed, the A.D.I.E. model of risk-management practice (Hsiao). The four steps are risk assessment, risk diagnosis, risk intervention, and risk evaluation. In my earlier publication, I provide a fundamental concept for aquatic directors to apply to the operation and management of aquatic settings. Aquatic directors, using this model, might more systematically apply the concepts of risk management to their swimming facilities and eventually reduce potential risk in the aquatic setting.

The first step of this model is risk assessment, which involves trying to figure out if potential risk is involved. An aquatic director, for example, would first identify and assess the problems and causes of accidents and ensure that his or her staff is following standard procedures in operating the facilities in their assigned areas, including the locker room, spa area, Jacuzzi, and swimming pool.

In the second step, risk diagnosis, aquatic directors should collect enough data to make sure that they can determine cause and contributing risk factors using previous data. They need to be able to define characteristics of risk and make sure that they can provide a good solution for accidents or incidents, if and when they occur.

Implementing the third step, risk intervention, will provide a safer environment to protect customers. When accidents happen, causes and solutions can be more readily identified by using risk intervention. In other words, when risk occurs, aquatic directors should use good judgment in order to make an immediate decision to intervene to try to minimize the risk. Daily operational checklists should be on file, and the emergency-action and risk-management plans should be practiced regularly.

The fourth step is risk evaluation. In my opinion, aquatic directors need to monitor the process of aquatic activities, measure all outcome indicators, and analyze and evaluate all causes of outcomes in order to seek the proper way to transfer, reduce, or eliminate the potential risk. Documentation is required in all four steps and should be kept on file for future reference.

The center of this model, the fundamental concept of risk management, plays a key role as the conceptual framework. Why? Aquatic directors, through this center-oriented concept, can extend their risk-management practices through the four steps—risk assessment, risk diagnosis, risk intervention, and risk evaluation—and using their own risk-management knowledge, skills, competencies,

critical thinking (judgment), collaboration ability, and communication skills can more effectively control and manage inherent risk. Figure 2 demonstrates the whole concept and details of the A.D.I.E. model of risk-management practice I developed and designed (Hsiao, 2005).

The purpose of risk management is to make the aquatic environment as safe as possible for participants and help aquatic directors effectively minimize potential risk by employing accepted risk-management practices.

Liability in Swimming Facilities

Most swimming pool environments and hazards are highly dynamic, changing day to day and even minute to minute. Consequently, risk management in aquatics must be regarded as an ongoing process, requiring a considerable time commitment by trained staff and a focus on a regimen involving continuous monitoring and evaluation.

The management of risk in swimming pools recently became a very important issue in Taiwan as a result of the high frequency of drowning accidents or incidents in 2001 and 2002 (Taipei County Government Fire Department, 2003). Swimming and aquatic activities have long been recognized by the aquatic profession and the court system in the United States as hazardous, requiring close, direct supervision and careful instruction and administration. All aquatic activities, including instruction, competition, recreation, fitness, and therapy, require supervision by a teacher or coach and a certified lifeguard. Safe aquatic supervision includes eight basic components: knowledge of standard of care, supervisory competency, planning, participant abilities, safe environment, warnings and instructions, emergency management, and lifeguard support. These eight components of aquatic supervision represent the minimum standards for aquatic facility and program supervision (Johnson, 2002).

The field of physical education and sport carries with it an unquestionably higher risk of injury than most other areas of a school's curriculum, especially in aquatic activities. The relative ease with which one can institute a lawsuit and the high likelihood of some form of settlement, regardless of the relative strength of the case, has led to increasing professional concern over issues related to risk management and liability. Furthermore, although no amount of planning or preparation can guarantee freedom from injuries and subsequent lawsuits, a thorough understanding of the legal process and the elements of risk management can significantly increase one's chances of success when such a situation arises.

Most litigation involving aquatics emanates from the injury of a participant, the injured plaintiff alleging negligence on the part of the institution. Negligence in such cases is defined as conduct that falls below the standard established by law for the protection of others against unreasonable risk or harm. In order for negligence to exist, four elements must be present: The defendant must owe the plaintiff a legal duty of care, the defendant must breach that duty, the defendant's breach of duty must be the proximate cause of the plaintiff's injury, and the plaintiff must incur actual loss or damages. If the defendant's institution can demonstrate that even one of the elements does not exist, there can be no negligence (Dobbs, 2000).

Although policies and procedures must be established and enforced for the effective employment of programs and for the health and safety of participants,

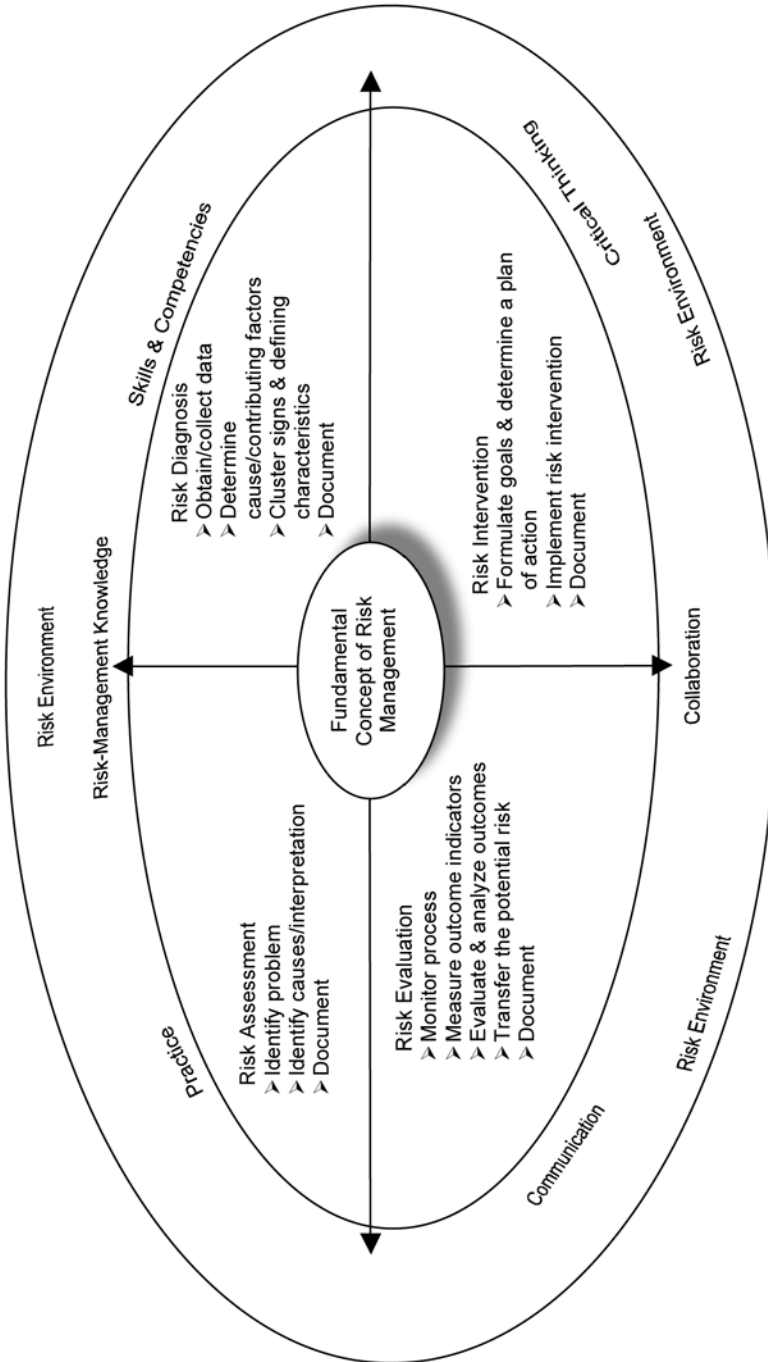


Figure 2 — Assessment–diagnosis–intervention–evaluation model of risk-management practice.

participants cannot perceive rules and regulations as too restrictive or controlling. Swimming pool administrative personnel can work together to promote aquatic programs that are educationally inviting and legally defensible, but maintaining the delicate balance between participant autonomy and institutional jurisdiction remains challenging.

Legal Consideration in College Swimming Facilities and a Review of Court Cases

The concepts of law and the legal systems are similar in the United States and Taiwan. This part of the literature review examined relates American court cases to highlight the importance of risk management and legal considerations in the management of swimming pools. I provide an in-depth review and apply the results of the legal cases to the operation of aquatic facilities.

In Taiwan, most citizens do not understand the nature and inherent complications of civil litigation, meaning that they do not clearly understand their rights and what circumstances warrant filing a lawsuit. In most cases, once an accident has happened, the Taiwanese either do not know how to file a lawsuit or they just negotiate themselves with the other party. Citizens eventually settle cases with some form of financial compensation. Compared with the United States, where most people not only know their legal rights but will also fight for and defend those rights, the Taiwanese are not especially litigious. Based on this, it is not difficult to identify the cultural differences between these two nations. For purposes of this research, I undertook a review of cases using Westlaw (2003), an established legal search engine. I hope that the decisions obtained from these American cases can be used to address the relevant issues in the management of swimming pools in Taiwan.

The following cases provide a picture of how potential risk harms aquatic programs and facilities, as well as reemphasizing the importance of risk management and legal considerations. Most of these cases were direct results of negligence, inexperienced staff, lack of training, or poorly organized aquatic classes. U.S. case law was applied to Taiwan's swimming pools because the study of aquatic incidents or accidents and the use of risk-management practices in the United States are similar to those in Taiwan. The cases provide an in-depth analysis in the area of risk management in aquatics.

Negligence in Management. *Patena et al. v. The University of Akron*, 2002 WL 576095 (Ohio App. 80 Dist. 2002), involved Patena, a high school student, who suffered a severe knee injury while participating in a diving evaluation at the Ocasek Natatorium on campus, given by her coach, Medvedeff. Lack of a risk-management plan and the coach's unawareness of the student's individual physical condition resulted in a suit against the university and its diving coach filed by Patena's parents. Eventually, the court of claims dismissed the diving coach, Medvedeff, as a liable party on the basis that only state agencies were proper party defendants in the original action in the court of claims. The court entered a judgment finding that the coach was not acting outside the scope of his employment at the time that the high school student was injured. Medvedeff was entitled to immunity, the appellant's assignment of error was overruled, and the judgment of the court of claims was affirmed. It is not difficult to see the importance of risk management in relation to

the circumstances of this case. If the institution had had a risk-management plan in place, the diving coach would have been more clearly aware of the individual student's physical condition and the injury might have been avoided.

In *Cassio v. Creighton University*, 446 N.W.2d 704 (Neb. 1989), Cassio went swimming in the university's swimming pool. After putting on appropriate scuba gear, which consisted of a compressed-air tank, a mask, a mouthpiece, and a regulator, he swam laps for 30–45 minutes. After that, he moved to the deep end of the pool where he began doing breathing exercises, repeatedly submerging and coming up again. Only one lifeguard was on duty while Cassio was in the pool. At about 4:45 p.m., the lifeguard's supervisor came in and they talked for about 10 minutes. While they were talking, their attention was directed to the deep end of the pool by Kevin Croft, who had been working out with weights in the vicinity of the pool. He had seen a girl, whose identity is unknown, walk past the deep end of the pool, look down, and then step back and put her hand to her mouth. Having discovered Cassio at the bottom of the pool, they removed him and noticed a pink champagne-like froth coming from his mouth. Cassio's face was cyanotic. CPR was attempted, paramedics arrived, and Cassio was taken to the hospital, where he was pronounced dead.

The plaintiff's petition alleged several acts of negligence on the part of Creighton University relating to the operation of its pool. Creighton University, in turn, answered by alleging that the suit was barred by the Nebraska Recreation Liability Act and that Cassio was contributory if negligent and had assumed the risk in diving without a partner. At the close of the plaintiff's case, leave was granted to strike the specific acts of negligence originally alleged and to simply state that Creighton University was negligent in "failing to properly life guard its swimming pool while Cassio was in the pool." After the verdict in favor of the plaintiff, Creighton University filed a motion for a new trial. In this motion, Creighton University contended, among other things, that the trial court erred in admitting evidence of, among other things, violation of the ordinances because violation of the ordinances had not been specifically pleaded. The trial court sustained Creighton University's motion for a new trial.

In *Olivia Kahn v. East Side Union High School District et al.*, 31 Cal. 4th 990 (Cal. 2003), a 14-year-old filed suit, through her mother as guardian *ad litem*, against the school district and her swimming coach after she broke her neck executing a practice dive from a starting block into a 3.5-ft-deep (1 m) racing pool on school-district property. Kahn, a novice swimmer on her school district's junior varsity swim team, claimed her coach, a district employee, failed to instruct her on how to safely dive into a swallow racing pool. The suit alleged that the injury was caused in part by the failure of the coach, a district employee, to provide the swimmer with any instruction in how to safely dive into a shallow racing pool. It also alleged lack of adequate supervision and, further, that the coach breached the duty of care owed to the swimmer by insisting that she dive at the competitive swim meet despite her objections, her lack of expertise, her fear of diving, and the coach's previous promise to exempt her from diving.

After filing their answer, defendants moved for summary judgment. The trial court determined that the school district and coach were entitled to judgment as a matter of law and granted summary judgment in their favor, finding that, under the doctrine of primary assumption of risk, they could not be liable unless they had

elevated the risks inherent in competitive swimming or had behaved recklessly. The swimmer's motion for a new trial was denied, and she appealed. The appellate court affirmed the grant of summary judgment on the theory that the doctrine of primary assumption of risk barred the swimmer's claim. In a split decision, the court concluded that shallow-water diving was a fundamental part of competitive swimming and that such diving presented a danger that is an inherent risk of the sport.

Facility Liability. In the case of *Robison et al. v. The State of Kansas*, 43 P.3d 821 (Kan. App. 2002), the plaintiff brought a personal-injury action against the state, the secretary of state, the Department of Social and Rehabilitative Services, and a community college after he slipped and fell in a wet hallway between a locker room and swimming pool located in a state hospital. The plaintiff was not enrolled as a member of the community college swimming class but attended the class for rehabilitation purposes and had arranged to use the pool as a guest of a swimming student. The court found that the swimming pool, in a state hospital, was public property, and, thus, the plaintiff's personal-injury claim was barred under the recreational-use exception of the Federal Tort Claims Act. The swimming pool was used by a hospital, a college, and for other circumstances.

In *Anderson v. Claiborne City Rec. Club*, 812 So.2d 965 (Miss. 2002), it was difficult to determine who should have been held responsible for the tragedy involving the death of 6-year-old Alisha Anderson. A swimming pool owned by the Claiborne County Recreation Association/Claiborne County Recreation Club, Inc., was closed, and the entry gate was locked. Through a hole in the chain-link fence, Anderson was able to climb through and enter the pool, where she accidentally drowned. The judge found that the "duty of care" should apply to the trespasser, who must refrain from willful and wanton conduct. Even though Anderson's death was ruled her own fault, Claiborne County Recreation Club's management might have avoided this tragedy by repairing the hole in the fence. From these cases, we can easily see the importance of effective risk management.

Negligence in Swimming Class. An action for wrongful death was brought on behalf of a student who drowned while attending a swimming class at Western Illinois University. On October 26, 1967, James C. Ashmore, then 22 years of age, was a student at the university. At the beginning of a university swimming class Ashmore and 10 other members of the class were instructed to swim three lengths of the swimming pool, each length being approximately 75 ft. After these instructions, Ashmore entered the pool and began swimming. Approximately 30 minutes later, he was found at the bottom of the pool, and shortly thereafter was pronounced dead. The record contained no explanation as to why the instructor and the lifeguard failed to see the deceased struggle and go down. He apparently sank from sight within seconds after entering the pool. Although the instructor was supposed to be grading each student's individual swimming performance, Ashmore was not missed by either the instructor or the lifeguard during the 30-minute class period. Only after the class was dismissed did a student notice the deceased student lying at the bottom of the pool. No evidence was introduced to show that Ashmore was guilty of any contribution to the negligence. Eventually, an award was ordered on behalf of the deceased in the amount of \$12,000 (*Ashmore v. The Board of Governors of State Colleges and Universities*, WL 14966 [Ill. Ct. Cl. 1971]).

In *Trotter v. School Dist.*, 218.733 N.E. 2d 363 (Ill. App. 2000), a student's father brought a wrongful-death action against a public school district and a teacher after the student's drowning death during a required physical education swimming class. The swimming coach sponsored a student club that consisted of experienced swimmers. The students were not lifeguards but acted as an "extra set of eyes." When the drowning happened, a student guard attempted to get a life buoy or flotation device, but it was tangled. This raised an additional complaint from the plaintiff. In this case, the plaintiff alleged a failure to maintain the equipment in the pool area and generally alleged that the failure was willful and wanton. The evidence failed to indicate for how long the buoy and ring had been tangled. The swimming coach testified that he checked the pool equipment, and had the buoy been tangled he would have untangled it. Moreover, no evidence indicated that the condition of the buoy proximately caused Nathaniel's drowning. One student attempted to use a shepherd's crook, but Nathaniel was unable to grab it. The judge agreed that the defendant was not entitled to immunity for the alleged willful and wanton supervision of the student but certified questions on issue for interlocutory appeal, granted the defendant's motion for summary judgment in part, and denied the plaintiff's motion to file a second amended complaint.

Method

The primary objectives of this study were to investigate and analyze the operation of college natatoriums (including public and private college and university swimming pools), the risk-management practices employed by these institutions, and associated legal concerns in aquatic centers in Taiwan. I expect that the results of the study will provide an in-depth understanding of risk-management practices for aquatic directors in Taiwan. To achieve these goals, a self-developed swimming pool risk-management survey was administered and sent out via e-mail and standard post to aquatic directors of college natatoriums in Taiwan.

The survey questionnaire, using the conceptual framework of my A.D.I.E. model of risk-management practice (Hsiao, 2005), was designed to yield data on the risk-management practices of aquatic directors in six areas: facilities and equipment, maintenance, emergency care/medical, participant forms, participation education, and staff training. The 50-item survey was distributed to 58 college swimming facilities in Taiwan (R.O.C. Yearbook, 2003; National Council on Physical Fitness and Sport, 2004; Government Information Office, 2004). Directors were asked to indicate the level of risk-management implementation at their facilities.

Participants

There are 121 universities in Taiwan, with only 58 equipped with swimming pools. Therefore, a population of 58 aquatic directors of college swimming facilities in Taiwan was selected to participate in this study. Aquatic directors in Taiwan were identified by consulting the 2003 directory of schools (Department of Higher Education of Ministry of Education, 2003).

Instrument

Based on my A.D.I.E. model of risk-management practice (Hsiao, 2005) and a review of the risk-management and legal-issue survey questionnaires from Carr (1994), Lin (2002), Kim (1996), and Steimling (1997), I developed a 50-item questionnaire as the instrument used in this study. I revised three questions from a risk-management survey by Cooper (1995). Use of a Likert scale of 1–5 was based on Kim's survey, and the idea of the five most difficult and most important questions was formulated based on Carr's survey. The survey was designed to assess the extent to which aquatic directors comply with, rather than how well they understand, risk-management plans. The survey items measuring litigation awareness were (a) whether lawsuits had been brought against the swimming facilities, (b) whether swimming facilities were concerned with possible liability when a participant is injured, and (c) whether swimming facilities have a waiver, disclaimer, or consent form that has been approved by legal counsel. The survey questionnaire provided a measure for determining whether aquatic directors believe they might be liable for unsafe practices or damages. In addition, institutional demographic factors were identified that relate to risk management, such as age, gender, status of institution, number of daily participants, years of aquatic director's experience, and frequency of accidents or injuries.

Validity

After compiling the questionnaire, I sent copies to 10 randomly selected participants for pretest to ascertain the clarity of the questions. An item analysis was conducted to determine the validity of each single item of the survey (decided by Cronbach's $\alpha < .05$). One item (Question 35: Does your swimming pool hold regular staff meetings and training sessions for discussions of issues and updating of staffs' credentials?) was deleted from the survey ($\alpha = .087$). To further determine survey validity, a face-validity test was conducted with specialists in the area of risk management.

Content validity related to written tests in educational settings, questionnaires, or other written instruments with which a comparison with a standard could be made was not possible to ascertain. The primary concern with content validity is the extent to which the items or questions are capable of accurately measuring the desired information (Berg & Latin, 1994). The survey was submitted to a number of risk-management specialists in the United States in 2005. The specialists were encouraged to provide recommendations regarding the wording of the questions and give additional input to increase validity of the survey questionnaire.

Reliability

To test reliability for the measure of the variables in the survey questions, the revised survey was examined using the Cronbach's alpha reliability test. The survey items were found to be highly reliable (Cronbach's $\alpha = .89$) from the pretest. Nunnally and Bernstein (1994) suggested that for research purposes, a reliability of .80 is adequate. Cicchetti (1994) suggested the following reliability (*r*) significance

guidelines for research: $r < .70$, unacceptable; $.70 \leq r < .80$, fair; $.80 \leq r < .90$, good; and $r \geq .90$, excellent. The survey was finalized with a total of 15 demographic and general items, 35 risk-management items, and a most-to-least-important ranking question.

Data Collection

I e-mailed or mailed the 50-item survey directly to the 58 aquatic directors, asking them to indicate the level of risk-management implementation in their swimming facilities. All survey variables were expressed as general risk-management principles. It was not expected that these variables would be important in Taiwanese swimming facility operation in any prespecified way. Rather, the variables simply measured performance on a range of risk-management practices to provide a descriptive analysis of the status of Taiwanese swimming facility management. The return rate of the survey questionnaire was 89.6% from the entire sample, which actually represented the entire population.

Data Analysis

Salant and Dillman (1994) stated,

Coding the questionnaires means expressing in terms of numbers all responses that will eventually be analyzed. For the vast majority of surveys, we recommend that people develop a master list or codebook in which to keep track of all the codes used in the survey, including the ones that appear on the questionnaire and those that are added after data collection. (p. 180)

I adopted Salant and Dillman's suggestion for coding survey questionnaire data because a codebook not only serves as a list and number of all the variables but also labels them and identifies which values are legitimate.

Once all data were collected, descriptive statistics were calculated for each factor on the demographic data and general information sections of the survey, for the five most important and most difficult risk-management concerns, for the trend of incidents of accidents or injuries and lawsuits, for the composite scores for each item on the survey, and for the composite scores of each conceptual area (e.g., facilities and equipment, general practices). Spearman correlation coefficients were computed to measure the relationship between the variables (Lehmann, 1975) identified by Taiwanese aquatic facility directors as being important in managing risks.

Results

Research Question 1 was What is the use, accident, and litigation status of the facility? Table 1 shows the percentage distributions for the demographic and general information items in the survey. Because 52 respondents provided answers for all survey items, N was uniform at 52. The median value was computed to show the central tendency.

Table 1 Percentage Distributions for Institutional Demographics

Variable		% (N = 52)	Median value
Daily participation of males	≤350	5	475
	351–400	25	
	401–450	5	
	451–500	25	
	501–550	5	
	551–600	20	
	601–650	0	
	651–700	10	
Daily participation of females	≥701	5	405
	≤350	45	
	351–400	15	
	401–450	5	
	451–500	25	
	501–550	10	
	551–600	0	
	601–650	0	
Number of accidents/injuries	651–700	0	1
	≥701	0	
	0	35	
	1	25	
	2	20	
	3	15	
Trend in number of accidents	4	0	Decreasing
	5	5	
	Increasing	30	
	Staying the same	30	
Past lawsuits	Decreasing	40	No
	No	85	
Number of suits	Yes	15	0
	0	85	
	1 or 2	15	
	3 or 4	0	
Length of operation	5 or more	0	10
	0–5 years	10	
	6–9 years	35	
	10–13 years	30	
	14–17 years	10	
	≥18 years	15	

Table 1 shows that only 10% of the college natatoriums had more than 500 female participants daily, whereas 40% of the college natatoriums had more than 500 male participants per day.

From the group of respondents, 35% reported that no accidents or injuries had occurred, and 5% indicated that five accidents or injuries had occurred. Thirty

percent of the participants reported an increase in accidents and 40% reported a decrease in accidents from the previous year. Fifteen percent of the college natatoriums involved in the study had been the subject of at least one or two lawsuits, and 85% had not been the subject of any lawsuit. The data also indicated that about 55% of college natatoriums had been in operation for more than 10 years.

Research Question 2 was What risk-management practices are associated with college natatoriums in Taiwan? Table 2 indicates the strongest Spearman correlations between all items. The arbitrary value of .4000 was used to distinguish “strong” correlations and “weak” correlations by Kruskal’s interpretation.

Table 2 shows the correlations on all questions; for example, we can see the correlations between Q2 and Q3 and between Q2 and Q8 (Spearman correlation = .904 and .712, respectively).

Research Question 3 was What institutional demographic factors are most closely associated with risk management in college natatoriums in Taiwan? Table 3 shows the results of the bivariate pairings of each institutional demographic variable with each risk-management variable. We can see that there is statistical significance of the Spearman correlations at the $p < .05$ level, and all of them indicated strong correlation at the arbitrarily determined .4000 criterion level. For example, the demographic variable of length of time in present position is highly correlated with Q18 (Does your natatorium have a medical doctor on the premises? Spearman correlation = .524), and the aquatic director’s age is highly correlated with Q22 (to inform participants in specific terms of the dangers inherent in the activity; Spearman correlation = .456).

Research Question 4 was What are the top three most important and top three most difficult risk-management concerns of aquatic directors of institutional natatoriums? To answer this question, Table 4 shows the results from different college natatorium aquatic directors’ ranking of the top three most important and top three most difficult risk-management practices in their natatoriums. The most important risk-management practices were Survey Questions 26 and 2 (both questions had the same frequency of rankings). Survey respondents also ranked Question 2 as the second-most important risk-management concern. Question 18 was identified as

**Table 2 Spearman Correlation Coefficients
From the Survey Questions**

Question	Associated variable	Coefficient
Q2	Q3	.904**
Q2	Q8	.712**
Q3	Q7	.723**
Q3	Q13	.753**
Q4	Q27	.718**
Q7	Q8	.745**
Q10	Q11	.898**
Q15	Q16	.843**
Q18	Q29	.707**
Q23	Q24	.736**

** $p \leq .01$ (two-tailed).

Table 3 Results of Bivariate Pairings of Institutional Demographic Variable With Risk-Management Variable

Factor	Question	Correlation	<i>p</i>
Age	Q22	.456*	.044
	Q23	.675**	.001
	Q24	.749**	.000
	Q28	.628**	.003
	Q34	.527*	.017
Length of time	Q18	.524*	.018
	Q28	.534*	.015
Years of business	Q23	.596**	.006
	Q28	.481*	.032
Risk-management plan	Q1	.645**	.002
	Q18	.454*	.045
	Q21	.514*	.020
	Q28	.490*	.028
Male daily use	Q14	.585**	.007
	Q19	.573**	.008
	Q20	.473*	.035
	Q23	.551*	.012
	Q24	.560*	.010
Female daily use	Q31	.551*	.012
	Q14	.678**	.001
	Q19	.540**	.014
	Q23	.463*	.040
Public or private	Q31	.607**	.005
	Q3	.472*	.036
	Q4	.586**	.007
	Q21	.530*	.016
	Q30	.517*	.020
	Q34	.603**	.005

**p* ≤ .05 (two-tailed). ** *p* ≤ .01 (two-tailed).

the third-most important risk-management concern. Question 18 received the same amount of responses for being both ranked as the first- and second-most difficult risk-management concern to practice, and Question 31 was the third-most difficult practice according to aquatic directors.

Research Question 5 was What is the relationship between incidents of accidents/injuries and lawsuits in college natatoriums in Taiwan? The statistical data indicated that the total incidents or accidents among 52 college natatoriums were 27 in the preceding 12 months, but they only involved three lawsuits. These data do not show enough evidence to prove the relationship between incidents or accidents and lawsuits. A longer time frame should be tracked and considered in further study to increase the reliability of the results.

Table 4 Most Important and Most Difficult Practice-Ranked Risk-Management Questions

Most important risk-management concerns	Most difficult risk-management concerns
1 (Q26): Does your natatorium require its personnel to regularly update first aid, CPR, and emergency-medical-care credentials and insist on continuous on-site presence of supervisory staff holding such credentials? (Q2) Does your natatorium keep inspection reports on file?	1 (Q18): Does your natatorium have a medical doctor on the premises?
2 (Q2): Does your natatorium keep inspection reports on file?	2 (Q18): Does your natatorium have a medical doctor on the premises?
3 (18): Does your natatorium have a medical doctor on the premises?	3 (Q31): Does your natatorium require participants to take a complete physical examination?

Discussion

This study provided an in-depth understanding of the concept of risk management, risk-management practice, and the relationships among demographic elements and risk-management questions associated with the management of aquatic directors in college natatoriums in Taiwan. From this study, it is not difficult to see the lack of risk-management practices in college natatoriums in Taiwan. Taiwanese college natatorium aquatic directors need to grasp the basic concepts and knowledge of risk management and sports law to provide safer and better aquatic environments for students at the college level. The concepts of risk management and risk-management practice should be introduced to college natatorium aquatic directors, and a system of risk management and risk-management implementation also should also be developed for all aquatic directors in Taiwan.

The findings of this study represented 52 aquatic directors at college natatoriums in Taiwan. It would be a worthwhile study to track all settled cases related to accidents or incidents and compare the case facts with demographic elements related to risk-management practices. Based on the findings of this research, there are several recommendations that could be considered for future research:

- Larger sample sizes should be considered to obtain a better understanding of the trends of swimming pool settings in Taiwan.
- Additional research should be conducted to determine the ways in which college aquatic directors have handled risk-management practices.
- The frequency of lawsuits against college natatoriums should be tracked, especially court cases associated with college natatoriums in Taiwan.
- The education of college natatorium staff members on risk management and legal considerations should be tracked.
- The legal literacy of college natatorium staff members should be developed and maintained through regular training.
- Sport litigation cases and all related cases should be filed and tracked.

- The most important and the most difficult elements of implementing risk management should be highlighted by establishing the concept of risk-management planning and the importance of risk-management implementation.
- The concept of risk management should be developed and included in sport-management and aquatic-facility curriculums in Taiwan.

This study provides a better understanding of risk-management implementation, the influence of demographic elements on risk-management practices, and considerations of aquatic directors at college natatoriums in Taiwan. The results draw a prospective picture and provide a clear direction for future study.

Conclusions

Aquatic facilities deliver value to users and the community when they are well planned and designed and meet the public's expectations for health and safety. On average 961 people have died in accidental drownings each year over the past 10 years in Taiwan. In Taiwan, the accidental drowning rate increased 11% between the years 1999 and 2000. The significance of this study was to provide first-hand information about risk management in general aquatic-center settings in Taiwan.

This study provided an in-depth understanding of risk-management implementation, the relationship of demographic elements and risk-management practices, and considerations of aquatic directors at college swimming facilities in Taiwan. The results drew a prospective picture, revealed a lack of risk-management practices and the accident and litigation status of aquatic facilities in Taiwan, and provided further understanding of the relationships between institutional demographic factors and risk-management practices.

In the future, it would be worthwhile to track all settled lawsuits related to accidents or incidents and to compare the case facts with demographic elements related to risk-management practices in Taiwan. Results of the study suggested that Taiwan's college aquatic directors need to have a fundamental concept and knowledge of risk management and sports law to provide safer and better aquatic environments for all participants. These fundamental concepts of risk management and risk-management practice should be introduced to Taiwanese college aquatic directors, and a system of risk management and risk-management implementation should be developed.

Risk-management programs are designed to enhance aquatic safety. The best way to implement risk management is to provide expanded safe practices at aquatic facilities and continue to provide practical risk-management education to all aquatic directors in Taiwan. Professional aquatic directors should not only recognize the importance of risk management and related legal issues but also either establish risk-management plans or diligently follow risk-management plans already instituted in their institutions—anything less invites litigation.

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