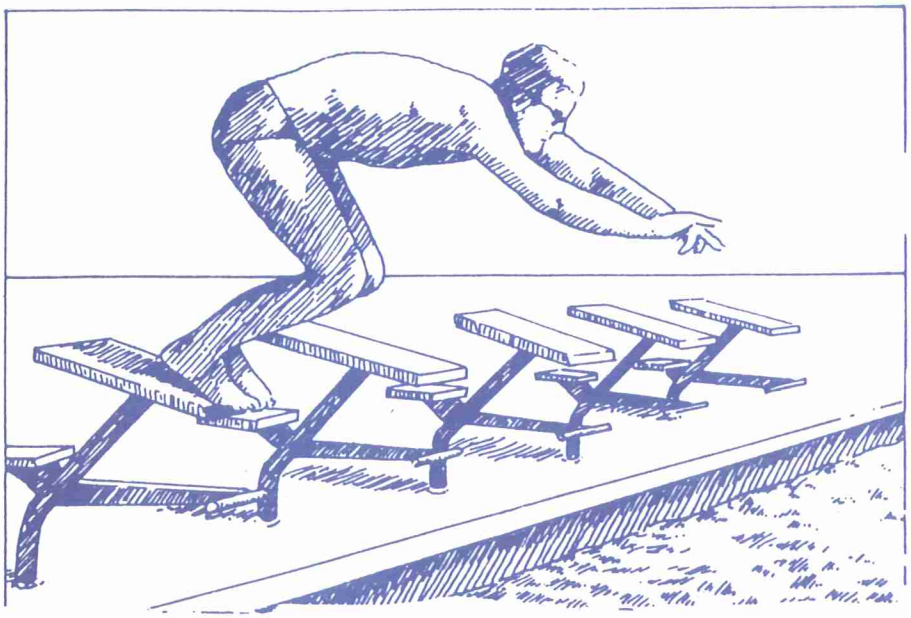

Improper Dives from Starting Blocks Cause Injuries

BY D. J. HUNSAKER

Alert: For decades starting blocks have been utilized at the shallow end of swimming pools without injury to users. Recently, however, patterns of injury have developed in three separate groups and for three separate reasons. . . .

The specter of a catastrophic tragedy has begun to hover over thousands of competition length swimming pools in the United States. Monday, the 21st of February, 1983, Keven Tricarico, the high point swimmer on the varsity team at Northeastern University, dove from the starting blocks at the school swimming pool and broke his neck (dislocation of spine and damage to spinal cord) when he hit the bottom of the pool. The accident which turned this athlete into a quadraplegic was not the result of horseplay or "show boating." It occurred when he was practicing a new technique for a racing dive . . . under the supervision of his swimming coach.

Dangers of new dive

It seems to be more than a coincidence that the accident to Kevin Tricarico occurred shortly after the appearance of an article in *Swimming World* (February, 1983) magazine extolling the advantage of the "pike" dive which was accompanied by detailed instructions of how to practice the dive. These instructions, accompanied by a series of photographs, recommended that the swimmer dive out over a rope held approximately 4 to 5 feet above the water and then pike down inside of a floating hula hoop or inflated bicycle inner tube.

The suggestion in the article that the swimmer tuck his chin into the chest at the start of the entry exposes the top of the skull to the pool floor . . . the worst case situation upon impact.

Although the photographs reveal that the subject is diving into deep water, no where in the article is there a warning that this dive should not be practiced and executed in shallow water.

It is understandable that most coaches and swimmers will associate the new racing dive with the shallow water because the conventional racing dive has been used for decades in shallow water and with no significant incidence of cervical injury. It is also understandable that a coach would want to teach the technique to his team and that he would attempt this exercise at the starting blocks mounted at the shallow end of his or her pool.

The pike dive

Unfortunately, this accident was not an isolated freak incident. Rather, it has joined a growing list of similar tragedies occurring across the nation. It is now being recognized that there is an increasing number of cervical injuries to persons diving from starting blocks into the shallow end of swimming pools. These accidents have begun to occur among competitive swimmers as well as recreation swimmers and swimming class students. In each group, these accidents can be traced to several causes.

The cervical injury resulting in paralysis to competitive swimmers seems to be happening because these swimmers are attempting to learn a relatively new racing dive technique called a "pike" or "hole" dive. The dive itself seems to be controversial with regard to its actual benefits . . . whether it is really faster or only perceived as such. The midair body acrobatics involved in the proper "pike" diving configuration allows the swimmer to dive deep and then propel back to the surface imitating the undelation of a porpoise.

When the dive is practiced in deep water, there is little hazard. In many instances, however, the starting blocks of the pool are located at the shallow end. The swimmer and his or her coach do not realize that the apex of the "pike" dive configuration can easily develop an underwater plunge path that will cause impact with the pool bottom in 3½ feet to 4½ feet of water. Depending on the actual angle of attack of the swimmer's head, neck and body at the point of impact, the result is damage to the C-3 to C-5 cervical vertabrae . . . and quadraplegia.

Tragedy of imitation

The tragedy of a broken neck is not limited to competitive swimmers diving off of starting blocks into shallow water. There are now reports of recreation swimmers and swimming class students injuring themselves by diving from starting blocks *that have been left in place after the swim team is finished using them*. In a number of facilities, the policy in recent years has been to leave the starting blocks in place, most, if not all of the year. When this is done, the blocks may take on the role of play devices much the same as the diving board at the deep end of the pool.

It is now being discovered that non-competitive swimmers will be attracted to the "thrill" of imitating the competitive swimmers. The potential for a catastrophic injury is increased if the "copy cat" diver is imitating the dramatic acrobatics of swimming stars on television.

The diving study

A recent study of diving accidents resulting in cervical injuries was funded by the National Swimming Pool Foundation and developed by the Arthur D. Little research organization. The research project, which was carried out under the direction of Richard S. Stone, Ph.D., found that there is unacceptable risk to diving deep into shallow water. This study also supports the findings reported in the ABC 20/20 television segment telecast in the summer of 1982 that revealed a high incidence of cervical injuries experienced by people *diving* from the water's edge into above ground swimming pools. These pools had an average depth of between 3 feet and 4 feet. When a person dives off of a starting block (regulation height is 30 inches above the water surface maximum) into the shallow end of a competition length pool, he or she is increasing the hazard significantly when compared to the risk involved in diving from the water's edge into an above ground pool. The Arthur D. Little study, therefore, is applicable to dives from starting blocks into shallow water even though this was not the primary thrust of the research project.

Protect the novice

The history of the sport of swimming shows that competitive swimmers can utilize a conventional shallow racing dive with little risk of injury. The danger is now becoming apparent that an inexperienced novice recreation swimmer or swimming class student may climb up on a starting block 2½ feet above the water and unwittingly plunge to the bottom of the shallow end of the pool . . . with the result being a catastrophic accident. Because of this hazard the use of starting blocks should be restricted to only competitive swimmers for whom they were developed.

Swimmers, coaches and aquatic professionals must be warned of this insidious hazard that exists in thousands of swimming pools. The current popularity of the "pike" dive has greatly increased the potential for such a life changing accident . . . both by the competitive swimmers and the recreation swimmers who try to emulate the athletes.

Conclusion

When an accident occurs it can affect many people besides the victim and his or her family. The swimming coach, swim instructor and lifeguard are all affected plus the architect who designed the pool, the contractor who built the facility and, of course, the owner, whether it be a school, municipality, institution or a private proprietor.

The first step in preventing more of these accidents is publicizing the hazard and educating all of the parties who are affected or can be affected. □