American Association of Cheerleading Coaches and Administrators Annual Sports Injury Study

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Study Goals:

The goal of this study is to determine the incidence and risk of injury in cheerleading through analysis of existing cheerleading injury and participation data and through comparisons to other male and female athletic activities.

Data sources:

There are currently two primary sources of injury data publicly available, an annual study conducted by the National Center for Catastrophic Sports Injuries (NCCSI) and emergency room data collected by the Consumer Product Safety Commission National Electronic Injury Surveillance System (CPSC NEISS). These organizations address different degrees of injury and different populations of cheerleaders so their findings will be addressed in separate sections.

In addition to these sources, the National Collegiate Athletic Association (NCAA) recently released information on catastrophic injury claims and American Sports Data collects information on sports participation levels in the United States.

Summary:

In order to determine the "risks" of an activity and compare it to others, we need to look at the "probability" of injury. The actual risk associated with participating in athletics is determined by calculating the number of injuries sustained per athletic exposure, designated as "injuries per AE". For example, if ten athletes participate in ten practices, there would be (10 x 10 = 100) one hundred athletic exposures or opportunities for injury. If five injuries occurred during that time period, the injuries per AE would be .05 (5 injuries divided by 100 exposures).

While neither of the two NCCSI or NEISS data purport to give specific "per AE" figures, there are areas where injuries can be compared to participation to give a more accurate risk assessment. Contrary to erroneous media claims that cheerleading is more dangerous than ice hockey and football, the data presented in this study clearly demonstrates that the risk of injury from participation in cheerleading is low, and more in line with other sports such as baseball, soccer and track.

When factoring in participation and the extended season for cheerleading, there are ten high school sports – including girls' ice hockey, gymnastics and soccer - with a higher risk of catastrophic injury than for cheerleading, and seventeen high school sports with a lower risk of catastrophic injury. In pure catastrophic injury totals, football accounts for the large majority (63.5%) of all catastrophic injuries.

There are recent positive results in catastrophic injuries and in emergency room visits that point to an improvement in cheerleading safety.

One observation of these injury sources is that more detailed data is needed that will include “injuries per exposure”. Fortunately, the National Federation of State High School Associations (NFHS) has added cheerleading to their annual NFHS Injury Surveillance Study conducted by Dr. Dawn Comstock, Assistant Professor of Pediatrics at The Ohio State University College of Medicine. This study will collect injury data alongside participation data to provide comparable injuries per exposure as well as specific injury data to track trends over time. A similar study for other levels of cheerleading including college, all-star and youth recreation league cheerleading would be beneficial to minimizing the risk of participation.

Finally, it is important to recognize that these figures represent real people, and every effort should be made to provide an environment that minimizes the risks associated with the activity.

Results of NCCSI Data

The NCCSI Annual Report provides catastrophic injury data for high school and college sports. It relies on reported injuries and therefore may not include all such injuries for the various sports in the study. It does not include non-school participation such as youth recreational league football, club soccer, AAU basketball or non-school based cheerleading. However, with the limited scope of the study, it is possible to include participation figures provided by the National Federation of State High School Associations and the NCAA to develop a risk assessment denoted within the study as “injuries per 100,000 participants.”

Chart I: Risk of High School Catastrophic Injuries for the 26 year period of 1982-2008

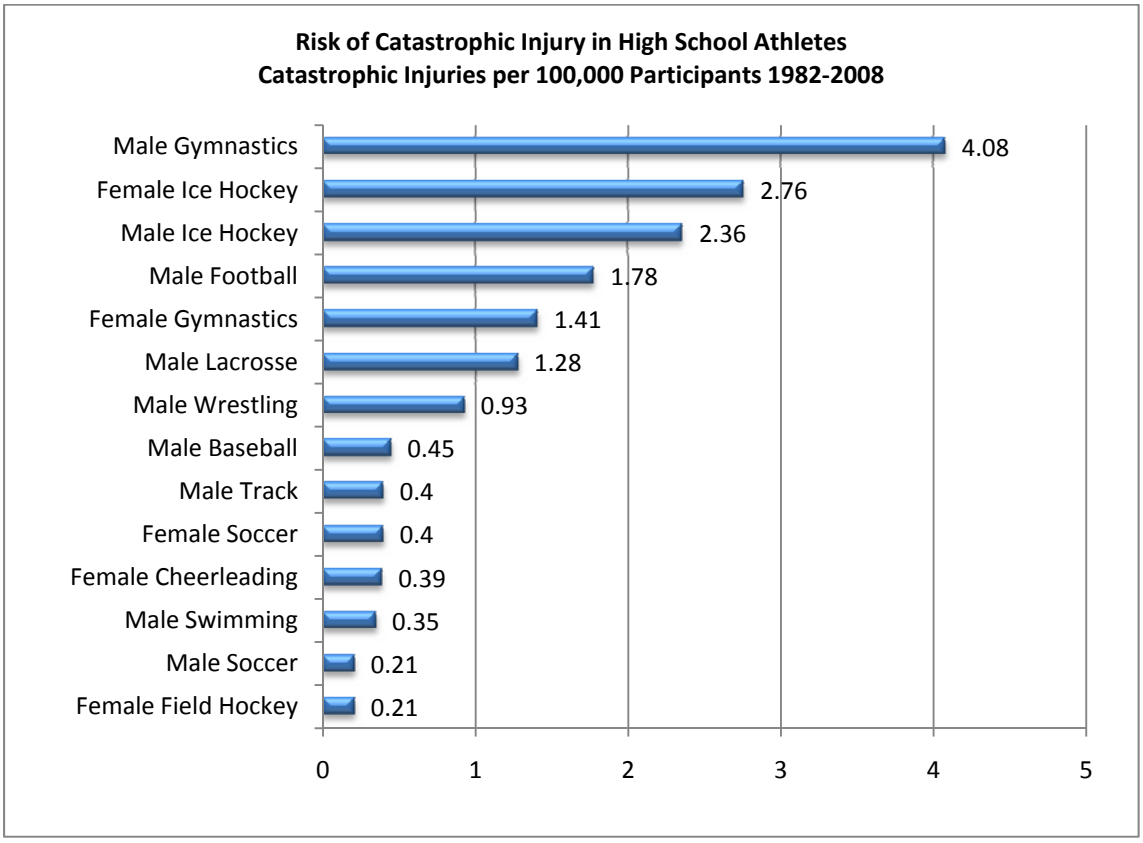


Table I: Risk of High School Catastrophic Injuries for the 26 year period of 1982-2008:

Sport	Injuries per 100K
1. Male Gymnastics	4.08
2. Female Ice Hockey	2.76
3. Male Ice Hockey	2.36
4. Male Football	1.78
5. Female Gymnastics	1.41
6. Male Lacrosse	1.28
7. Male Wrestling	0.93
8. Male Baseball	0.45
9. Male Track	0.40
10. Female Soccer	0.40
11. Female Cheerleading	0.39
12. Male Swimming	0.35
13. Male Soccer	0.21
14. Female Field Hockey	0.21

Summary for Chart I and Table I:

Chart I and Table I show that there is a greater risk of catastrophic injury in seven male sports and three female high school sports than cheerleading. There are a total of seventeen high school sports with a lower risk of catastrophic injury than that of cheerleading.

The 2007-2008 school year is the first year with a comprehensive study of high school cheerleading participation by the National Federation of State High School Associations which estimated there were 394,694 high school cheerleading participants. Therefore, a risk assessment can only be made regarding high school athletic participation at this time. A study is needed to determine the participation figures for college cheerleading so that the comparative risk associated with college cheerleading can be determined.

Note: The risk of injury for sports other than cheerleading is given for the 26-year duration of the study. The participation data for cheerleading is only available for 2007-2008 as noted above. In order to compare the risk of catastrophic injury for cheerleading across the entire range of the study, we used the current participation figures and estimated them backward to 1982 using US Census population data. This resulted in a total estimated cheerleading participation of 9,380,190 high school participants for the 26-year range of the study. The second issue we addressed is the fact that participation in cheerleading occurs over the entire school year from football through basketball seasons. In order to properly assess the risk in comparison to other single season sports, the number of cheerleading participants would have to at least be doubled. We have doubled the participation figures in order to provide a conservative estimate.

Chart II: Total Catastrophic Injuries 1982 - 2008

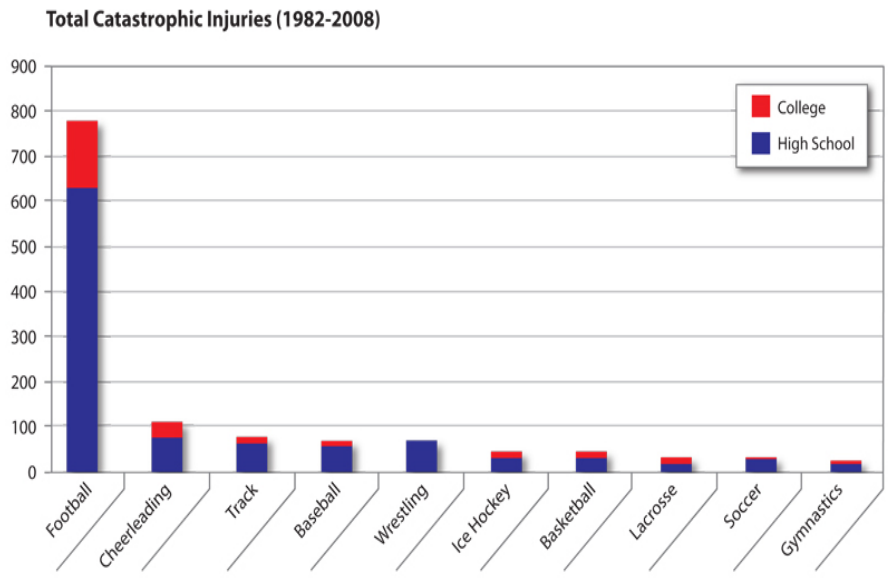


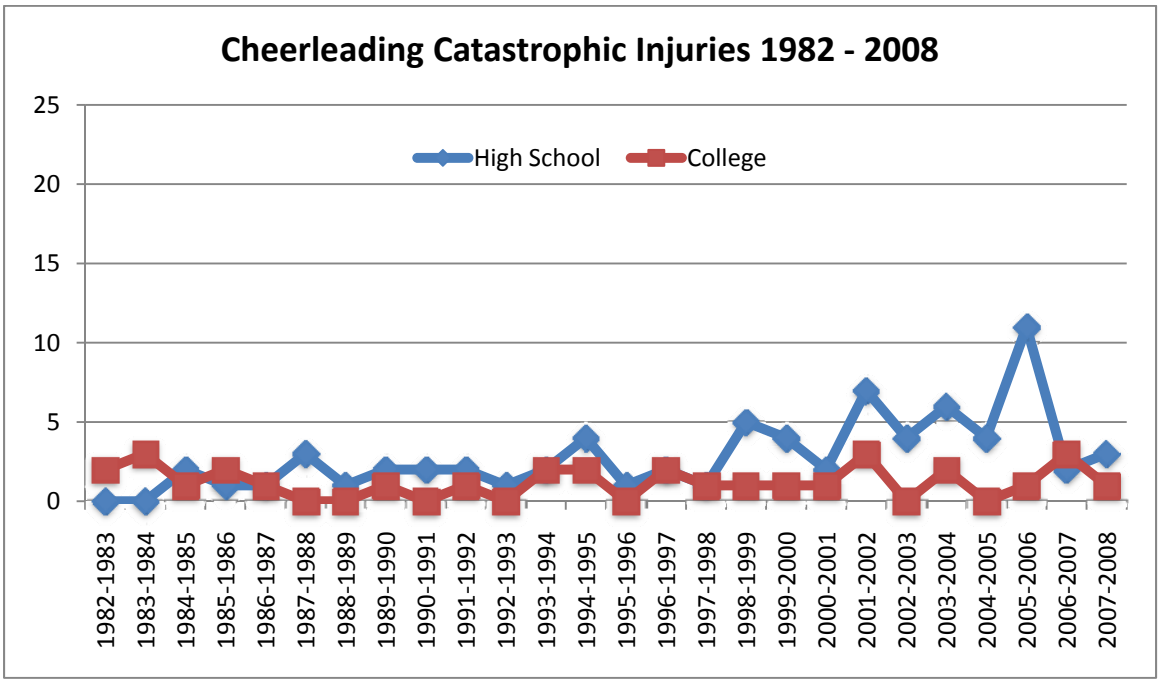
Table II: Total Catastrophic Injuries 1982 - 2008

Sport	HS	College
Football	635	140
Cheerleading	73	31
Track	61	10
Baseball	49	12
Wrestling	58	1
Ice Hockey	19	12
Basketball	19	9
Lacrosse	12	11
Soccer	17	3
Gymnastics	13	6

Summary for Chart II and Table II:

As shown by Chart II and Table II, the greatest number of catastrophic injuries occurs in football with 64.9% of high school catastrophic injuries, 57.9% of college catastrophic injuries and 63.5% of combined injuries. By comparison, cheerleading accounts for 7.5% of high school catastrophic injuries, 12.8% of college catastrophic injuries and 8.5% of catastrophic injuries in high school and college combined. However, these figures do not provide a relevant risk assessment since they do not include participation figures or number of exposures as with Chart I and Table I.

Chart III: Cheerleading Catastrophic Injuries



Summary for Chart III:

Chart III shows a relatively stable trend line for college cheerleading catastrophic injuries, which average 1.2 per year. While there is an increase in the incidence of high school catastrophic injuries toward the end of the study, the last two years show a marked decrease in the incidence of catastrophic injury, back to earlier levels. This reduction in injuries is likely attributable to multiple factors; rules changes that limit the types of skills allowed, an increase in required safety training for coaches and an overall increase in safety awareness at all levels. For example, in 2006 the AACCA prohibited all tosses and specific pyramids and stunts from the basketball court surface. Also in 2006, the NCAA required all college cheer programs to be supervised by someone who has completed a safety course like that conducted by the AACCA. At the high school level, the AACCA and National Federation of State High School Associations (NFHS) partnered to create a cheerleading coaches education program that includes the AACCA Safety Course, Sport First Aid, Coaching Principles and specific skill technique courses. Many states have begun to require this training for their high school coaches before the team can participate in stunting and tumbling.

Results of CPSC NEISS (Emergency Room Visits) Data

The CPSC's National Electronic Injury Surveillance System (NEISS) is an emergency room estimate report based on a national sample of hospitals in the U.S. It includes data from each NEISS hospital emergency visit involving an injury associated with consumer products. The limitations of this study are the low number of hospitals used in the study (approximately one hundred) and the lack of accompanying participation data to determine a standard risk assessment such as injuries per AE (Athlete Exposure).

Chart IV: Total Female ER Visits by Sport

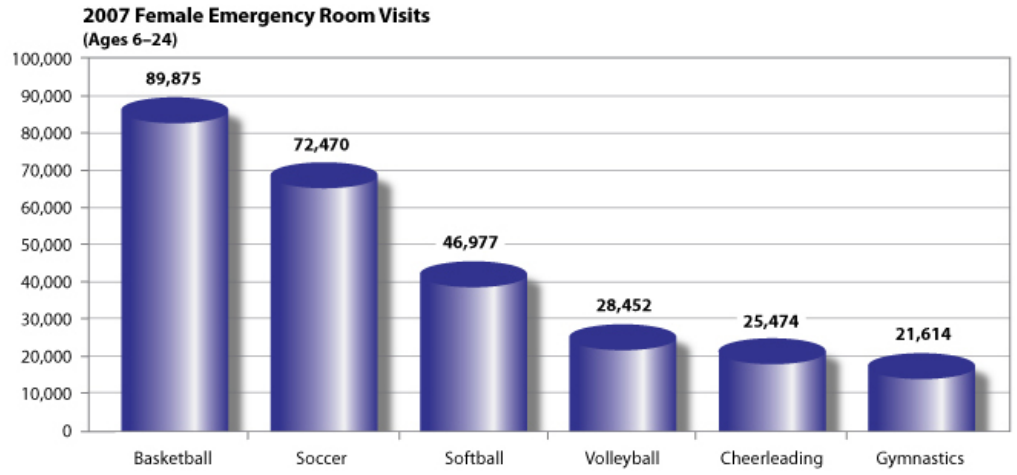


Chart IV Summary:

Chart IV shows that there are over three times more emergency room visits for girls basketball than for cheerleading and that at least four tradition girls sports (basketball, soccer, softball and volleyball) have more emergency room visits than cheerleading. However, this data does not represent a risk assessment, since it does not account for participation or exposures.

While specific participation data is not available from the CPSC, there is an annual sports participation study conducted by American Sports Data (ASD) which can be used to help evaluate the rate of emergency room visits associated with these activities. As noted, the data collected by the CPSC is from the entire spectrum of sports participation from organized participation in youth recreational leagues, school participation, non-school participation such as AAU teams or All-Star cheerleading as well as non-organized participation such as sandlot baseball, a pickup game of basketball or building partner stunts in the backyard.

Including American Sports Data Participation Figures

American Sports Data conducts an annual study of total U.S. participation in sports called the Superstudy® of Sports Participation in which household are surveyed as to how many individuals participated in each sport during the year. The data is available by gender and in age groupings of 6 to 11, 12 to 17 and 18 to 24. For this reason, we have selected the same age range and gender range (females age 6 to 24) from the NEISS study for comparison. The sports were selected based on the availability of data from both studies. The chart below represents the number of NEISS emergency room visits per 1,000 ASD participants for 2007, the last year for which data was available in both studies.

Chart V: Female ER Visits Per 1,000 Participants by Sport

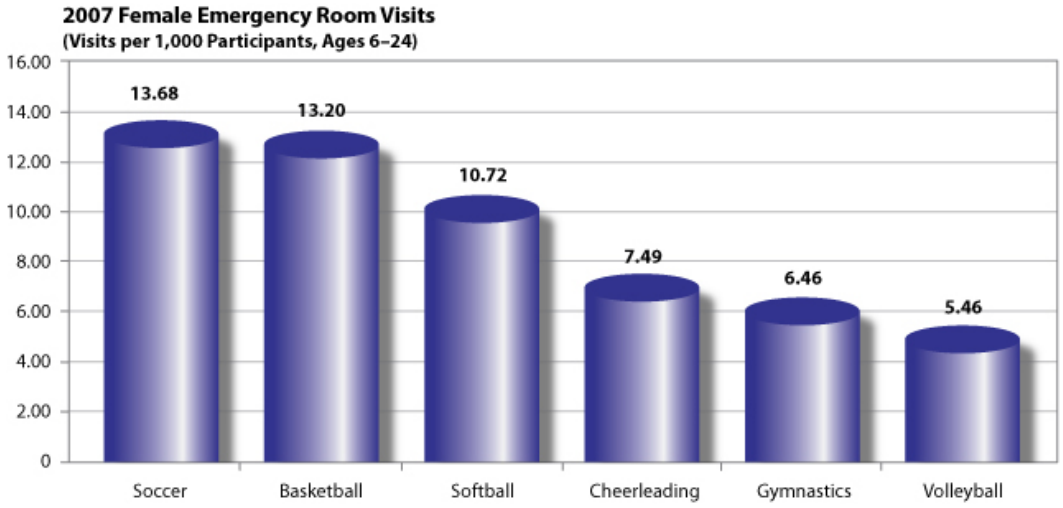


Table III: Female ER Visits Per 1,000 Participants by Sport

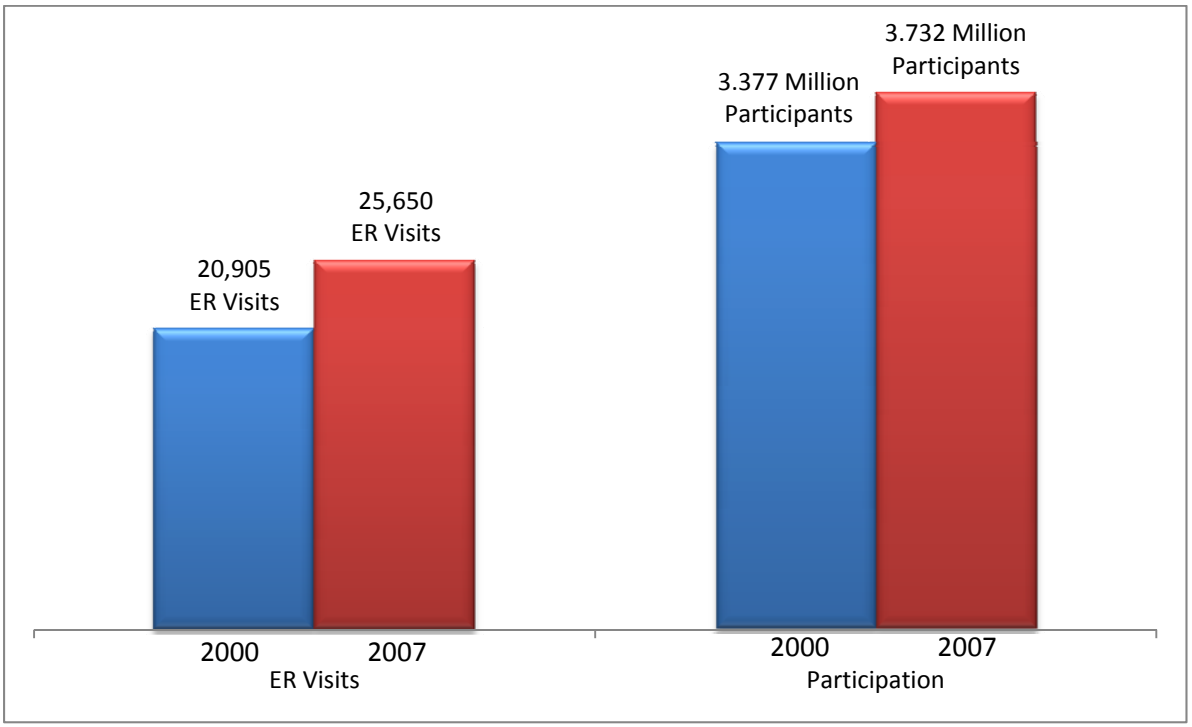
Sport	ER Visits	Participants	ER visits
Soccer	72,470	5,296,000	13.68
Basketball	89,875	6,810,000	13.20
Softball	46,977	4,381,000	10.72
Cheerleading	25,474	3,402,560	7.49
Gymnastics	21,614	3,347,000	6.46
Volleyball	28,452	5,210,000	5.46

Summary of Chart V and Table III:

Chart V and Table III show that at least three female sports have a higher rate of emergency room visits than cheerleading. Girls' soccer and girls' basketball have nearly twice the rate of emergency room visits per person than cheerleading. This may be attributable to the nature of the activity. While there is obviously a risk of falling from a cheerleading stunt, bases and spotters are trained to safely dismount or catch the fall of the top person. Therefore the occurrence of an injury is likely to happen only after those methods to protect the top person have failed. In contrast, in soccer, basketball or softball contact between two players involves little if any measure to protect the other individual and often occur with two players colliding with each other at full speed.

While the total participation figures give some ability to compare risk per person, they do not fully measure injuries per athletic exposure. The basketball player could have participated in a school practice earlier in the day, but been injured during a church league game that evening. Similarly, a cheerleader may have participated in both school and all-star cheerleading in the same day. The participation figures also do not account for the length of time a sport is "in season" during the year of the study.

Chart VI: Cheerleading ER Visits and Participation 2000 – 2007



Summary of Chart IV:

Chart IV demonstrates a strong correlation in the increase in emergency room visits and a similar increase in cheerleading participation due largely to the creation and development of All-Star cheerleading. The years selected for comparison here are the first and last years for which participation data and emergency room data are both available. One factor these figures do not account for is the situation in which a school cheerleader also participates on an all-star team which would increase the overall exposures. For the years shown, there is an eleven percent increase in participation and a corresponding twenty-three percent increase in emergency room visits. However, previous years point to an actual decrease in the rate of emergency room visits. For example, from 2000 to 2006, participation estimates increased 19.6% while emergency room visits increased at a lower rate of 17%.

Results of National Collegiate Athletic Association Safety Initiative

In 2005, the NCAA reported that cheerleading accounted for 25% of their catastrophic injury claims over the previous several years.

In order to address this issue, the NCAA entered into a partnership with the American Association of Cheerleading Coaches and Administrators (AACCA) and with Varsity Brands, the leading provider of cheerleading educational camps. The resulting program is the College Cheerleading Safety Initiative which includes the requirement that all NCAA cheerleading programs are supervised by safety certified personnel. In addition, the more than 10,000 college cheerleaders and coaches who attend Varsity's camps each year complete a safety awareness course. As part of this initiative, the AACCA instituted a new policy that coaches found to be violating AACCA college cheerleading rules could lose their certification permanently. Finally, the AACCA made several major rules changes to ban stunts such as 2 ½ high pyramids, basket tosses and twisting dismounts from anything other than a matted or grass surface.

The NCAA reports that since the initiative began in 2006, there have been no catastrophic cheerleading injury claims.

Recommendations for Improving Cheerleading Safety

While the data analyzed in this study clearly shows that the risks associated with cheerleading are in line with other male and female sports and are vastly lower than the risks associated with football, it also shows that there is room for improvement at all levels of cheerleading based on the success of recent rules changes and training requirements.

The AACCA recommends the following steps to improve cheerleading safety.

- Require AACCA Safety Certification for all coaches. This training is now accessible online.
- Require additional emergency training for all coaches, including Sports First Aid, CPR and AED training.
- Access to certified athletic trainers to assist with injury prevention and emergency procedures.
- Adherence to recognized safety rules such as the AACCA, NFHS or US All-Star Federation Rules.
- Regulation by state school athletics/activities associations to require adherence to rules and safety training regardless of whether cheerleading is designated as a "sport" or "activity".
- Recognition by coaches, cheerleaders and parents that the use of skill progressions and the demonstrated ability to safely perform basic skills before advancing is key to safe participation.
- Continued review of cheerleading safety rules to provide a framework for safe participation.
- Every program should develop and practice an Emergency Action Plan. A sample plan can be found in the Resources section of the AACCA website at http://www.aacca.org.
- Continued development and funding for cheerleading injury studies that can provide detailed injury data for use in establishing and evaluating changes in safety rules and procedures.