

known at this time.

22. A high school cheerleader was tossed in the air during a routine, was not caught, and fell hitting her face on the basketball floor. She remained motionless for approximately 30 minutes. She is expected to recover. The accident happened in December 1993.
23. A high school cheerleader fell and hit her head on the basketball floor while being lifted by the feet by two other cheerleaders. She was taken to the hospital for observation and is expected to recover. The accident happened in December 1993.
24. A college cheerleader was doing a tumbling run when he lost control and fell on his head. He fractured a cervical vertebra and is expected to recover. The accident happened in August 1994.
25. A college cheerleader was injured in a cheerleading competition in April 1994. She struck another cheerleader while doing a backflip and fell to the floor. She suffered a fractured cervical vertebra and is expected to recover.
26. A female college cheerleader received a fractured skull during warm-ups for a performance of stunts for a Christmas parade. She was injured in a four man back tuck basket toss. She landed on her head. There was no permanent disability, but she was in rehabilitation for memory. The injury occurred in November 1994.
27. A high school cheerleader was kicked in the face by a teammate who was falling from the top of a pyramid. The injured cheerleader suffered convulsions and was transported to the hospital. She was in stable condition and was expected to recover. The injury occurred in January 1995.
28. A high school cheerleader received a closed head injury in March 1995 during a basket toss stunt. She landed on a hard rubberized basketball court. There was no permanent disability.
29. A college cheerleader was paralyzed in April 1995 after being injured while performing a double flip during a basket toss. At the present time she is quadriplegic.
30. A high school cheerleader was injured during a stunt when a fellow cheerleader fell on her head. She has had permanent medical problems since the accident. This was an update from November 1993.
31. In 1997, a high school cheerleader suffered a 15 foot fall. She had spinal cord trauma and is paralyzed.
32. A college cheerleader was injured in 1997 during a tumbling routine and is now quadriplegic. She was attempting a back hand spring into a single back tuck during practice and landed on her head.
33. In 1997, two cheerleaders collapsed and died - one during a game and one in tryouts. Cause of death was heart related.
34. A high school junior cheerleader was doing a warm-up for a stunt in a state cheerleading competition. The student involved the cheerleader doing a flip off the hands of a teammate into the arms of several teammates. The teammates failed to catch her and she landed on her back. She suffered a fractured elbow, a concussion, and a back injury that later required spinal fusion. She was not able to return to school and had to be tutored her final high school years. (This case was a 1992 update.)

Cheerleading has changed dramatically in the past sixteen years and is now a pseudo-gymnastics program. A number of schools, both high schools and colleges, across the country have limited the types of stunts that can be attempted by their cheerleaders. The Illinois State High School Association has banned the basket toss. The rule states, "cheerleaders cannot toss another squad member into the air during any part of a cheer, performance, routine or other activity. Illinois has already banned pyramid formations higher than two levels. As already stated in this report, high school and college cheerleaders account for almost one-half of the catastrophic injuries to female athletes.

The basic question that has to be asked is what is the role of the cheerleader? Is cheering an activity that leads the spectators in cheers or is it a sport? If the answer is to entertain the crowd and to be in competition with other cheerleading squads, then there must be safety guidelines initiated. Following are a list of sample guidelines that may help prevent cheerleading injuries:

1. Cheerleaders should have medical examinations before they are allowed to participate.

- Included would be a complete medical history.
2. Cheerleaders should be trained by a qualified coach with training in gymnastics and **partner stunting**. This person should also be trained in the proper methods for spotting and other safety factors.
  3. Cheerleaders should be exposed to proper conditioning programs and trained in proper spotting techniques.
  4. Cheerleaders should receive proper training before attempting gymnastic type stunts and should not attempt stunts they are not capable of completing. A qualification system demonstrating mastery of stunts is recommended.
  5. Coaches should supervise all practice sessions in a safe facility.
  6. Mini-trampolines and flips or falls off of pyramids and shoulders should be prohibited.
  7. Pyramids over two high should not be performed. Two high pyramids should not be performed without mats and other safety precautions.
  8. If it is not possible to have a physician or athletic trainer at games and practice sessions, emergency procedures must be provided. The emergency procedure should be in writing and available to staff and athletes.
  9. There should be continued research concerning safety in cheerleading.
  10. When a cheerleader has experienced or shown signs of head trauma (loss of consciousness, visual disturbances, headache, inability to walk correctly, obvious disorientation, memory loss) she/he should receive immediate medical attention and should not be allowed to practice or cheer without permission from the proper medical authorities.
  11. Cheerleading coaches should have some type of safety certification. The American Association of Cheerleading Coaches and Advisors offers this certification.

The Michigan High School Athletic Association is the second state to recognize cheerleading as a sport. West Virginia incorporated cheerleading into athletics seven years ago. Michigan will have a committee define the sport and will have a state Cheerleading Tournament. Rules and regulations will now govern cheerleading and this is an important move toward a safer activity. Also, the American Association of Cheerleading Coaches and Advisors Safety Certification Program has been implemented and over 500 coaches have participated in safety certification programs. The state of Vermont has adopted the safety certification program as their standard of care and the following NCAA Athletic Conferences have also adopted the program. the Big Ten, Southwest, Southeast and the Western Athletic Conferences.

According to the National Federation of State High School Associations, the primary purpose of spirit groups (cheerleaders) is to serve as support groups for the interscholastic athletic programs within the school. In January of 1993, 18 rules revisions were adopted for spirit groups. One of the major rules prohibits tumbling over, under, or through anything (people or equipment). All of the other rules were adopted to enhance the safety of the participants. Information concerning these new rules is available from Susan True, assistant director of the National Federation and editor of the high school spirit rules.

**Last updated: September 8, 1999**

***National Center for Catastrophic  
Sport Injury Research  
Data Tables***

**Sixteenth Annual Report  
Fall 1982 - Spring 1998**

**Director: Frederick O. Mueller, Ph.D.  
Medical Director: Robert C. Cantu, M. D.**

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National Federation of State High School Associations

This page contains several data tables. Use the following table to scroll to a specific data table.

	<u>Direct Injuries</u>	<u>Indirect Injuries</u>	<u>Direct Injury Rates</u>	<u>Indirect Injury Rates</u>
<u>High School</u>	<u>Fall Sports</u>	<u>Fall Sports</u>	<u>Fall Sports</u>	<u>Fall Sports</u>
	<u>Winter Sports</u>	<u>Winter Sports</u>	<u>Winter Sports</u>	<u>Winter Sports</u>
	<u>Spring Sports</u>	<u>Spring Sports</u>	<u>Spring Sports</u>	<u>Spring Sports</u>
	<u>Cheerleading</u>			
<u>College.</u>	<u>Fall Sports</u>	<u>Fall Sports</u>	<u>Fall Sports</u>	<u>Fall Sports</u>
	<u>Winter Sports</u>	<u>Winter Sports</u>	<u>Winter Sports</u>	<u>Winter Sports</u>
	<u>Spring Sports</u>	<u>Spring Sports</u>	<u>Spring Sports</u>	<u>Spring Sports</u>
	<u>Cheerleading</u>			

Overall participation figures are also available

**HIGH SCHOOL CHEERLEADING  
DIRECT INJURIES  
1982-83 - 1997-98**

SPORT	YEAR	FATALITIES	NON-FATAL	SERIOUS	TOTAL
CHEERLEADING	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	1	0	1
	1985-86	0	1	0	1
	1986-87	0	0	0	0
	1987-88	0	2	1	3
	1988-89	0	0	1	1
	1989-90	0	1	1	2
	1990-91	0	0	1	1
	1991-92	1	0	0	1
	1992-93	0	0	1	1
	1993-94	0	0	2	2

	1994-95	0	1	2	3
	1995-96	0	0	0	0
	1996-97	0	1	1	2
	1997-98	0	0	0	0
	<b>TOTAL</b>	<b>1</b>	<b>7</b>	<b>10</b>	<b>18</b>

**COLLEGE CHEERLEADING  
DIRECT INJURIES  
1982-83 - 1997-98**

SPORT	YEAR	FATALITIES	NON-FATAL	SERIOUS	TOTAL
CHEERLEADING	1982-83	0	1	1	2
	1983-84	0	0	2	2
	1984-85	0	1	0	1
	1985-86	1	1	0	2
	1986-87	0	0	1	1
	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	0	0	1	1
	1990-91	0	0	0	0
	1991-92	0	0	1	1
	1992-93	0	0	0	0
	1993-94	0	0	2	2
	1994-95	0	1	1	2
	1995-96	0	0	0	0
	1996-97	0	1	1	2
	1997-98	0	0	0	0
	<b>TOTAL</b>	<b>1</b>	<b>5</b>	<b>10</b>	<b>16</b>

**HIGH SCHOOL FALL SPORTS  
DIRECT CATASTROPHIC INJURIES  
1982-83 - 1997-98**

SPORT	YEAR	FATALITIES	NON-FATAL	SERIOUS	TOTAL
CROSS COUNTRY	1982-83	0	0	0	0
	1983-84	0	1	0	1
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0

	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	0	1	0	1
<b>FOOTBALL</b>	1982-83	7	7	9	23
	1983-84	4	11	11	26
	1984-85	4	10	8	22
	1985-86	4	10	12	26
	1986-87	11	5	12	28
	1987-88	4	11	22	37
	1988-89	7	14	11	32
	1989-90	4	18	10	32
	1990-91	0	13	7	20
	1991-92	3	4	10	17
	1992-93	1	7	8	16
	1993-94	3	13	18	34
	1994-95	0	5	11	16
	1995-96	4	8	10	22
	1996-97	5	11	7	23
	1997-98	6	14	9	29
	<b>TOTAL</b>	67	161	175	403
<b>SOCCER</b>	1982-83	0	0	1	1
	1983-84	1	0	0	1
	1984-85	0	0	1	1
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	1	0	1	2
	1991-92	0	0	1	1
	1992-93	2	0	1	3

	1993-94	0	0	0	0
	1994-95	0	1	0	1
	1995-96	0	1	0	1
	1996-97	0	0	1	1
	1997-98	0	0	0	0
	<b>TOTAL</b>	<b>4</b>	<b>2</b>	<b>6</b>	<b>12</b>
<b>FIELD HOCKEY</b>	1996-97	0	2	0	2
	1997-98	0	0	0	0
<b>TOTAL</b>		<b>71</b>	<b>166</b>	<b>181</b>	<b>418</b>

**HIGH SCHOOL FALL SPORTS  
DIRECT INJURIES PER 100,000 PARTICIPANTS  
1982-83 - 1997-98**

**MALE**

<b>SPORT</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>
CROSS COUNTRY	0.00	0.04	0.00
FOOTBALL	0.29	0.71	0.77
SOCCER	0.11	0.05	0.16

**FEMALE**

<b>SPORT</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>
CROSS COUNTRY	0.00	0.00	0.00
FOOTBALL	0.00	0.00	0.00
SOCCER	0.00	0.00	0.00
FIELD HOCKEY	0.00	0.24	0.00

**HIGH SCHOOL FALL SPORTS  
INDIRECT CATASTROPHIC INJURIES  
1982-83 - 1997-98**

<b>SPORT</b>	<b>YEAR</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>	<b>TOTAL</b>
CROSS COUNTRY	1982-83	2	0	0	2
	1983-84	1	0	0	1
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	1	0	0	1
	1988-89	0	0	0	0
	1989-90	0	0	0	0

	1990-91	1	0	0	1
	1991-92	0	0	0	0
	1992-93	2	0	0	2
	1993-94	1	0	0	1
	1994-95	1	0	0	1
	1995-96	1	0	0	1
	1996-97	0	0	0	0
	1997-98	1	0	0	1
	<b>TOTAL</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>11</b>
<b>FOOTBALL</b>	1982-83	7	0	0	7
	1983-84	6	0	0	6
	1984-85	3	0	0	3
	1985-86	1	0	0	1
	1986-87	6	0	1	7
	1987-88	4	0	0	4
	1988-89	10	0	0	10
	1989-90	9	0	0	9
	1990-91	3	0	0	3
	1991-92	3	0	0	3
	1992-93	9	0	0	9
	1993-94	8	0	0	8
	1994-95	2	0	0	2
	1995-96	7	0	0	7
	1996-97	10	0	0	10
	1997-98	7	0	0	7
	<b>TOTAL</b>	<b>88</b>	<b>0</b>	<b>1</b>	<b>89</b>
<b>SOCCER</b>	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	1	0	0	1
	1986-87	3	0	0	3
	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	1	0	0	1
	1990-91	2	0	0	2
	1991-92	1	0	0	1
	1992-93	1	0	0	1
	1993-94	4	0	0	4
	1994-95	1	0	0	1
	1995-96	1	0	0	1

	1996-97	1	0	0	1
	1997-98	0	0	0	0
	<b>TOTAL</b>	16	0	0	16
<b>WATER POLO</b>	1992-93	1	0	0	1
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	1	0	0	1
	1996-97	1	0	0	1
	1997-98	0	0	0	0
	<b>TOTAL</b>	3	0	0	3
<b>TOTAL</b>		117	0	1	118

**HIGH SCHOOL FALL SPORTS  
INDIRECT INJURIES PER 100,000 PARTICIPANTS  
1982-83 - 1997-98**

**MALE**

<b>SPORT</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>
CROSS COUNTRY	0.39	0.00	0.00
FOOTBALL	0.42	0.00	0.01
SOCCER	0.41	0.00	0.00
WATER POLO (1992-94)	4.60	0.00	0.00

**FEMALE**

<b>SPORT</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>
CROSS COUNTRY	0.06	0.00	0.00
FOOTBALL	0.00	0.00	0.00
SOCCER	0.05	0.00	0.00
WATER POLO (1992-94)	0.00	0.00	0.00

**COLLEGE FALL SPORTS  
DIRECT CATASTROPHIC INJURIES  
1982-83 - 1997-98**

<b>SPORT</b>	<b>YEAR</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>	<b>TOTAL</b>
CROSS COUNTRY	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	0	0	0	0

	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-980	0	0	0	0
	<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>FOOTBALL</b>	1982-83	0	2	1	3
	1983-84	0	1	4	5
	1984-85	1	2	4	7
	1985-86	1	4	8	13
	1986-87	1	0	8	9
	1987-88	0	0	4	4
	1988-89	0	1	7	8
	1989-90	0	2	4	6
	1990-91	0	2	3	5
	1991-92	0	1	2	3
	1992-93	0	0	4	4
	1993-94	1	0	4	5
	1994-95	1	2	5	8
	1995-96	0	1	3	4
	1996-97	0	3	1	4
	1997-98	1	2	3	6
	<b>TOTAL</b>	<b>6</b>	<b>23</b>	<b>65</b>	<b>94</b>
<b>SOCCER</b>	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	1	1
	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0

	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	0	0	1	1
<b>FIELD HOCKEY</b>	1988-89	0	0	1	1
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	0	0	1	1
<b>TOTAL</b>		6	23	67	96

**COLLEGE FALL SPORTS  
DIRECT INJURIES PER 100,000 PARTICIPANTS  
1982-83 - 1997-98**

**MALE**

<b>SPORT</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>
CROSS COUNTRY	0.00	0.00	0.00
FOOTBALL	0.5	1.92	5.42
SOCCER	0.00	0.00	0.42
FIELD HOCKEY	0.00	0.00	0.00

**FEMALE**

<b>SPORT</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>
CROSS COUNTRY	0.00	0.00	0.00
FOOTBALL	0.00	0.00	0.00
SOCCER	0.00	0.00	0.00
FIELD HOCKEY	0.00	0.00	1.22

**COLLEGE FALL SPORTS  
INDIRECT CATASTROPHIC INJURIES  
1982-83 - 1997-98**

SPORT	YEAR	FATALITIES	NON-FATAL	SERIOUS	TOTAL
CROSS COUNTRY	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	1	0	0	1
	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	1	0	0	1
FOOTBALL	1982-83	3	0	0	3
	1983-84	3	0	0	3
	1984-85	0	0	0	0
	1985-86	1	0	0	1
	1986-87	1	0	0	1
	1987-88	4	0	0	4
	1988-89	0	0	0	0
	1989-90	2	0	0	2
	1990-91	3	0	0	3
	1991-92	1	0	0	1
	1992-93	1	0	0	1
	1993-94	1	0	0	1
	1994-95	2	0	0	2
	1995-96	1	0	0	1
	1996-97	1	0	0	1
	1997-98	0	0	0	0
	<b>TOTAL</b>	24	0	0	24
SOCCER	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0

	1986-87	0	0	0	0
	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	1	0	0	1
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	.1	0	0	1
	1996-97	0	0	0	0
	1997-98	1	1	0	2
	<b>TOTAL</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>
WATER POLO	1988-89	1	0	0	1
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>TOTAL</b>		<b>29</b>	<b>1</b>	<b>0</b>	<b>30</b>

**COLLEGE FALL SPORTS  
INDIRECT INJURIES PER 100,000 PARTICIPANTS  
1982-83 - 1997-98**

**MALE**

<b>SPORT</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>
CROSS COUNTRY	0.64	0.00	0.00
FOOTBALL	2.00	0.00	0.00
SOCCER	0.83	0.42	0.00
WATER POLO	6.08	0.00	0.00

**FEMALE**

SPORT	FATALITIES	NON-FATAL	SERIOUS
CROSS COUNTRY	0.00	0.00	0.00
FOOTBALL	0.00	0.00	0.00
SOCCER	0.81	0.00	0.00
WATER POLO	0.00	0.00	0.00

**HIGH SCHOOL WINTER SPORTS  
DIRECT CATASTROPHIC INJURIES  
1982-83 - 1997-98**

SPORT	YEAR	FATALITIES	NON-FATAL	SERIOUS	TOTAL
BASKETBALL	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	1	0	1
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	0	0	1	1
	1988-89	0	1	1	2
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	1	1
	1993-94	0	0	1	1
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	1	1
1997-98	1	1	1	3	
	<b>TOTAL</b>	<b>1</b>	<b>3</b>	<b>6</b>	<b>10</b>
GYMNASTICS	1982-83	0	0	1	1
	1983-84	0	1	0	1
	1984-85	0	2	1	3
	1985-86	0	0	0	0
	1986-87	0	1	0	1
	1987-88	1	1	1	3
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	1	0	1
	1993-94	0	0	0	0
	1994-95	0	0	0	0

	1995-96	0	1	1	2
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	<b>1</b>	<b>7</b>	<b>4</b>	<b>12</b>
<b>ICE HOCKEY</b>	1982-83	0	0	1	1
	1983-84	0	1	0	1
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	2	0	2
	1987-88	0	0	1	1
	1988-89	1	0	0	1
	1989-90	0	0	0	0
	1990-91	0	1	0	1
	1991-92	0	0	1	1
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	1	0	2	3
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	1	0	1
	<b>TOTAL</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>12</b>
<b>SWIMMING</b>	1982-83	0	0	2	2
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	1	1
	1987-88	0	2	0	2
	1988-89	0	1	0	1
	1989-90	0	1	0	1
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	1	0	1
	<b>TOTAL</b>	<b>0</b>	<b>5</b>	<b>3</b>	<b>8</b>
<b>WRESTLING</b>	1982-83	0	2	0	2

	1983-84	1	1	1	3
	1984-85	0	1	2	3
	1985-86	1	0	2	3
	1986-87	0	3	0	3
	1987-88	0	1	1	2
	1988-89	0	3	2	5
	1989-90	0	1	0	1
	1990-91	0	1	0	1
	1991-92	0	3	1	4
	1992-93	0	0	0	0
	1993-94	0	2	1	3
	1994-95	0	1	0	1
	1995-96	0	0	1	1
	1996-97	0	1	0	1
	1997-98	0	2	2	4
	<b>TOTAL</b>	<b>2</b>	<b>22</b>	<b>13</b>	<b>37</b>
<b>VOLLEYBALL</b>	1994-95	0	1	0	1
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>
<b>TOTAL</b>		<b>6</b>	<b>43</b>	<b>31</b>	<b>80</b>

**HIGH SCHOOL WINTER SPORTS  
DIRECT INJURIES PER 100,000 PARTICIPANTS  
1982-83 - 1997-98**

**MALE**

<b>SPORT</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>
BASKETBALL	0.01	0.02	0.06
GYMNASTICS	1.36	1.36	1.36
ICE HOCKEY	0.53	1.33	1.33
SWIMMING	0.00	0.24	0.24
WRESTLING	0.05	0.58	0.34

**FEMALE**

SPORT	FATALITIES	NON-FATAL	SERIOUS
BASKETBALL	0.00	0.02	0.02
GYMNASTICS	0.00	1.37	0.69
ICE HOCKEY	0.00	0.00	0.00
SWIMMING	0.00	0.13	0.00
WRESTLING	0.00	0.00	0.00
VOLLEYBALL	0.00	0.07	0.00

**HIGH SCHOOL WINTER SPORTS  
INDIRECT CATASTROPHIC INJURIES  
1982-83 - 1997-98**

SPORT	YEAR	FATALITIES	NON-FATAL	SERIOUS	TOTAL
BASKETBALL	1982-83	4	0	0	4
	1983-84	3	0	0	3
	1984-85	3	0	0	3
	1985-86	1	0	0	1
	1986-87	3	0	0	3
	1987-88	4	0	0	4
	1988-89	2	0	0	2
	1989-90	4	0	0	4
	1990-91	7	0	0	7
	1991-92	6	0	0	6
	1992-93	3	0	0	3
	1993-94	7	0	0	7
	1994-95	4	0	1	5
	1995-96	0	0	0	0
	1996-97	3	0	0	3
1997-98	8	0	0	8	
	<b>TOTAL</b>	<b>62</b>	<b>0</b>	<b>1</b>	<b>63</b>
GYMNASTICS	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0

	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	0	0	0	0
<b>ICE HOCKEY</b>	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	1	0	0	1
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	1	0	0	1
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	2	0	0	2
<b>SWIMMING</b>	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	1	0	0	1
	1987-88	1	0	0	1
	1988-89	1	0	0	1
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	1	0	1	2
	1996-97	0	0	0	0

	1997-98	0	0	0	0
	<b>TOTAL</b>	4	0	1	5
<b>WRESTLING</b>	1982-83	0	0	0	0
	1983-84	4	0	0	4
	1984-85	2	0	0	2
	1985-86	2	0	0	2
	1986-87	1	0	0	1
	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	1	0	0	1
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	1	0	0	1
	1994-95	0	0	0	0
	1995-96	2	0	0	2
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	13	0	0	13
<b>VOLLEYBALL</b>	1993-94	1	0	0	1
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	1	0	0	1
<b>TOTAL</b>		82	0	2	84

**HIGH SCHOOL WINTER SPORTS  
INDIRECT INJURIES PER 100,000 PARTICIPANTS  
1982-83 - 1997-98**

**MALE**

<b>SPORT</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>
BASKETBALL	0.65	0.00	0.00
GYMNASTICS	0.00	0.00	0.00
ICE HOCKEY	0.53	0.00	0.53
SWIMMING	0.00	0.00	0.00
WRESTLING	0.34	0.00	0.00

**FEMALE**

<b>SPORT</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>
BASKETBALL	0.12	0.00	0.02
GYMNASTICS	0.00	0.00	0.00
ICE HOCKEY	0.00	0.00	0.00
SWIMMING	0.27	0.00	0.07
WRESTLING	0.07	0.00	0.00
VOLLEYBALL	0.00	0.00	0.00

**COLLEGE WINTER SPORTS  
DIRECT CATASTROPHIC INJURIES  
1982-83 - 1997-98**

<b>SPORT</b>	<b>YEAR</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>	<b>TOTAL</b>
BASKETBALL	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	1	1
	1986-87	0	0	0	0
	1987-88	0	0	0	0
	1988-89	0	0	1	1
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	1	0	1
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
BASKETBALL	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	0	1	2	3
GYMNASTICS	1982-83	0	0	0	0
	1983-84	0	1	1	2
	1984-85	0	0	0	0
	1985-86	0	1	0	1
	1986-87	0	0	0	0
	1987-88	0	0	0	0
	1988-89	0	1	0	1
	1989-90	0	0	0	0
	1990-91	0	1	0	1
	1991-92	0	0	0	0

	1992-93	0	0	0	0
	1993-94	0	1	0	1
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>6</b>
<b>ICE HOCKEY</b>	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	1	1
	1987-88	0	0	0	0
	1988-89	0	1	0	1
	1989-90	0	0	0	0
	1990-91	0	0	1	1
	1991-92	0	0	1	1
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	2	0	2
	1996-97	0	1	0	1
	1997-98	0	0	0	0
	<b>TOTAL</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>7</b>
<b>SWIMMING</b>	1982-83	0	1	0	1
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0

	<b>TOTAL</b>	0	1	0	1
<b>WRESTLING</b>	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	0	1	0	1
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	<b>TOTAL</b>	0	1	0	1
<b>SKING</b>	1989-90	1	0	0	1
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	<b>TOTAL</b>	1	0	0	1
<b>TOTAL</b>		1	12	6	19

**COLLEGE WINTER SPORTS  
DIRECT INJURIES PER 100,000 PARTICIPANTS  
1982-83 - 1997-98**

**MALE**

<b>SPORT</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>
BASKETBALL	0.00	0.47	0.94
GYMNASTICS	0.00	25.51	8.50
ICE HOCKEY	0.00	6.50	4.97
SWIMMING	0.00	0.79	0.00
WRESTLING	0.00	0.87	0.00

SKIING	0.00	0.00	0.00
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**FEMALE**

<b>SPORT</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>
BASKETBALL	0.00	0.00	0.00
GYMNASTICS	0.00	8.16	0.00
ICE HOCKEY	0.00	0.00	0.00
SWIMMING	0.00	0.00	0.00
WRESTLING	0.00	0.00	0.00
SKIING	12.50	0.00	0.00

**COLLEGE WINTER SPORTS  
INDIRECT CATASTROPHIC INJURIES  
1982-83 - 1997-98**

<b>SPORT</b>	<b>YEAR</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>	<b>TOTAL</b>
BASKETBALL	1982-83	1	0	0	1
	1983-84	1	0	0	1
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	3	0	0	3
	1988-89	1	0	0	1
	1989-90	1	0	0	1
	1990-91	0	0	0	0
	1991-92	1	0	0	1
	1992-93	1	0	0	1
	1993-94	1	0	0	1
	1994-95	2	0	0	2
	1995-96	0	0	0	0
	1996-97	0	0	0	0
1997-98	2	0	0	2	
	<b>TOTAL</b>	14	0	0	14
GYMNASTICS	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	0	0	0	0

	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>ICE HOCKEY</b>	1982-83	0	0	0	0
	1983-84	1	0	0	1
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	1	0	1
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>
<b>SWIMMING</b>	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	1	0	0	1
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	1	0	0	1

	1995-96	0	1	1	2
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	<b>1</b>	<b>7</b>	<b>4</b>	<b>12</b>
<b>ICE HOCKEY</b>	1982-83	0	0	1	1
	1983-84	0	1	0	1
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	2	0	2
	1987-88	0	0	1	1
	1988-89	1	0	0	1
	1989-90	0	0	0	0
	1990-91	0	1	0	1
	1991-92	0	0	1	1
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	1	0	2	3
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	1	0	1
	<b>TOTAL</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>12</b>
<b>SWIMMING</b>	1982-83	0	0	2	2
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	1	1
	1987-88	0	2	0	2
	1988-89	0	1	0	1
	1989-90	0	1	0	1
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	1	0	1
	<b>TOTAL</b>	<b>0</b>	<b>5</b>	<b>3</b>	<b>8</b>
<b>WRESTLING</b>	1982-83	0	2	0	2

	1983-84	1	1	1	3
	1984-85	0	1	2	3
	1985-86	1	0	2	3
	1986-87	0	3	0	3
	1987-88	0	1	1	2
	1988-89	0	3	2	5
	1989-90	0	1	0	1
	1990-91	0	1	0	1
	1991-92	0	3	1	4
	1992-93	0	0	0	0
	1993-94	0	2	1	3
	1994-95	0	1	0	1
	1995-96	0	0	1	1
	1996-97	0	1	0	1
	1997-98	0	2	2	4
	<b>TOTAL</b>	<b>2</b>	<b>22</b>	<b>13</b>	<b>37</b>
<b>VOLLEYBALL</b>	1994-95	0	1	0	1
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>
<b>TOTAL</b>		<b>6</b>	<b>43</b>	<b>31</b>	<b>80</b>

**HIGH SCHOOL WINTER SPORTS  
DIRECT INJURIES PER 100,000 PARTICIPANTS  
1982-83 - 1997-98**

**MALE**

<b>SPORT</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>
BASKETBALL	0.01	0.02	0.06
GYMNASTICS	1.36	1.36	1.36
ICE HOCKEY	0.53	1.33	1.33
SWIMMING	0.00	0.24	0.24
WRESTLING	0.05	0.58	0.34

**FEMALE**

SPORT	FATALITIES	NON-FATAL	SERIOUS
BASKETBALL	0.00	0.02	0.02
GYMNASTICS	0.00	1.37	0.69
ICE HOCKEY	0.00	0.00	0.00
SWIMMING	0.00	0.13	0.00
WRESTLING	0.00	0.00	0.00
VOLLEYBALL	0.00	0.07	0.00

**HIGH SCHOOL WINTER SPORTS  
INDIRECT CATASTROPHIC INJURIES  
1982-83 - 1997-98**

SPORT	YEAR	FATALITIES	NON-FATAL	SERIOUS	TOTAL
BASKETBALL	1982-83	4	0	0	4
	1983-84	3	0	0	3
	1984-85	3	0	0	3
	1985-86	1	0	0	1
	1986-87	3	0	0	3
	1987-88	4	0	0	4
	1988-89	2	0	0	2
	1989-90	4	0	0	4
	1990-91	7	0	0	7
	1991-92	6	0	0	6
	1992-93	3	0	0	3
	1993-94	7	0	0	7
	1994-95	4	0	1	5
	1995-96	0	0	0	0
1996-97	3	0	0	3	
1997-98	8	0	0	8	
	<b>TOTAL</b>	<b>62</b>	<b>0</b>	<b>1</b>	<b>63</b>
GYMNASTICS	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	0	0	0	0
1990-91	0	0	0	0	
1991-92	0	0	0	0	
1992-93	0	0	0	0	

	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	0	0	0	0
<b>ICE HOCKEY</b>	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	1	0	0	1
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	1	0	0	1
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	2	0	0	2
<b>SWIMMING</b>	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	1	0	0	1
	1987-88	1	0	0	1
	1988-89	1	0	0	1
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	1	0	1	2
	1996-97	0	0	0	0

	1997-98	0	0	0	0
	<b>TOTAL</b>	4	0	1	5
<b>WRESTLING</b>	1982-83	0	0	0	0
	1983-84	4	0	0	4
	1984-85	2	0	0	2
	1985-86	2	0	0	2
	1986-87	1	0	0	1
	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	1	0	0	1
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	1	0	0	1
	1994-95	0	0	0	0
	1995-96	2	0	0	2
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	13	0	0	13
<b>VOLLEYBALL</b>	1993-94	1	0	0	1
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	1	0	0	1
<b>TOTAL</b>		82	0	2	84

**HIGH SCHOOL WINTER SPORTS  
INDIRECT INJURIES PER 100,000 PARTICIPANTS  
1982-83 - 1997-98**

**MALE**

<b>SPORT</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>
BASKETBALL	0.65	0.00	0.00
GYMNASTICS	0.00	0.00	0.00
ICE HOCKEY	0.53	0.00	0.53
SWIMMING	0.00	0.00	0.00
WRESTLING	0.34	0.00	0.00

**FEMALE**

<b>SPORT</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>
BASKETBALL	0.12	0.00	0.02
GYMNASTICS	0.00	0.00	0.00
ICE HOCKEY	0.00	0.00	0.00
SWIMMING	0.27	0.00	0.07
WRESTLING	0.07	0.00	0.00
VOLLEYBALL	0.00	0.00	0.00

**COLLEGE WINTER SPORTS  
DIRECT CATASTROPHIC INJURIES  
1982-83 - 1997-98**

<b>SPORT</b>	<b>YEAR</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>	<b>TOTAL</b>
BASKETBALL	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	1	1
	1986-87	0	0	0	0
	1987-88	0	0	0	0
	1988-89	0	0	1	1
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	1	0	1
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
1996-97	0	0	0	0	
1997-98	0	0	0	0	
	<b>TOTAL</b>	0	1	2	3
GYMNASTICS	1982-83	0	0	0	0
	1983-84	0	1	1	2
	1984-85	0	0	0	0
	1985-86	0	1	0	1
	1986-87	0	0	0	0
	1987-88	0	0	0	0
	1988-89	0	1	0	1
	1989-90	0	0	0	0
1990-91	0	1	0	1	
1991-92	0	0	0	0	

	1992-93	0	0	0	0
	1993-94	0	1	0	1
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>6</b>
<b>ICE HOCKEY</b>	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	1	1
	1987-88	0	0	0	0
	1988-89	0	1	0	1
	1989-90	0	0	0	0
	1990-91	0	0	1	1
	1991-92	0	0	1	1
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	2	0	2
	1996-97	0	1	0	1
	1997-98	0	0	0	0
	<b>TOTAL</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>7</b>
<b>SWIMMING</b>	1982-83	0	1	0	1
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0

	<b>TOTAL</b>	0	1	0	1
<b>WRESTLING</b>	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	0	1	0	1
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	<b>TOTAL</b>	0	1	0	1
<b>SKING</b>	1989-90	1	0	0	1
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	<b>TOTAL</b>	1	0	0	1
<b>TOTAL</b>		1	12	6	19

**COLLEGE WINTER SPORTS  
DIRECT INJURIES PER 100,000 PARTICIPANTS  
1982-83 - 1997-98**

**MALE**

<b>SPORT</b>	<b>FATALITIES</b>	<b>NON-FATAL</b>	<b>SERIOUS</b>
BASKETBALL	0.00	0.47	0.94
GYMNASTICS	0.00	25.51	8.50
ICE HOCKEY	0.00	6.50	4.97
SWIMMING	0.00	0.79	0.00
WRESTLING	0.00	0.87	0.00

SKIING	0.00	0.00	0.00
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FEMALE

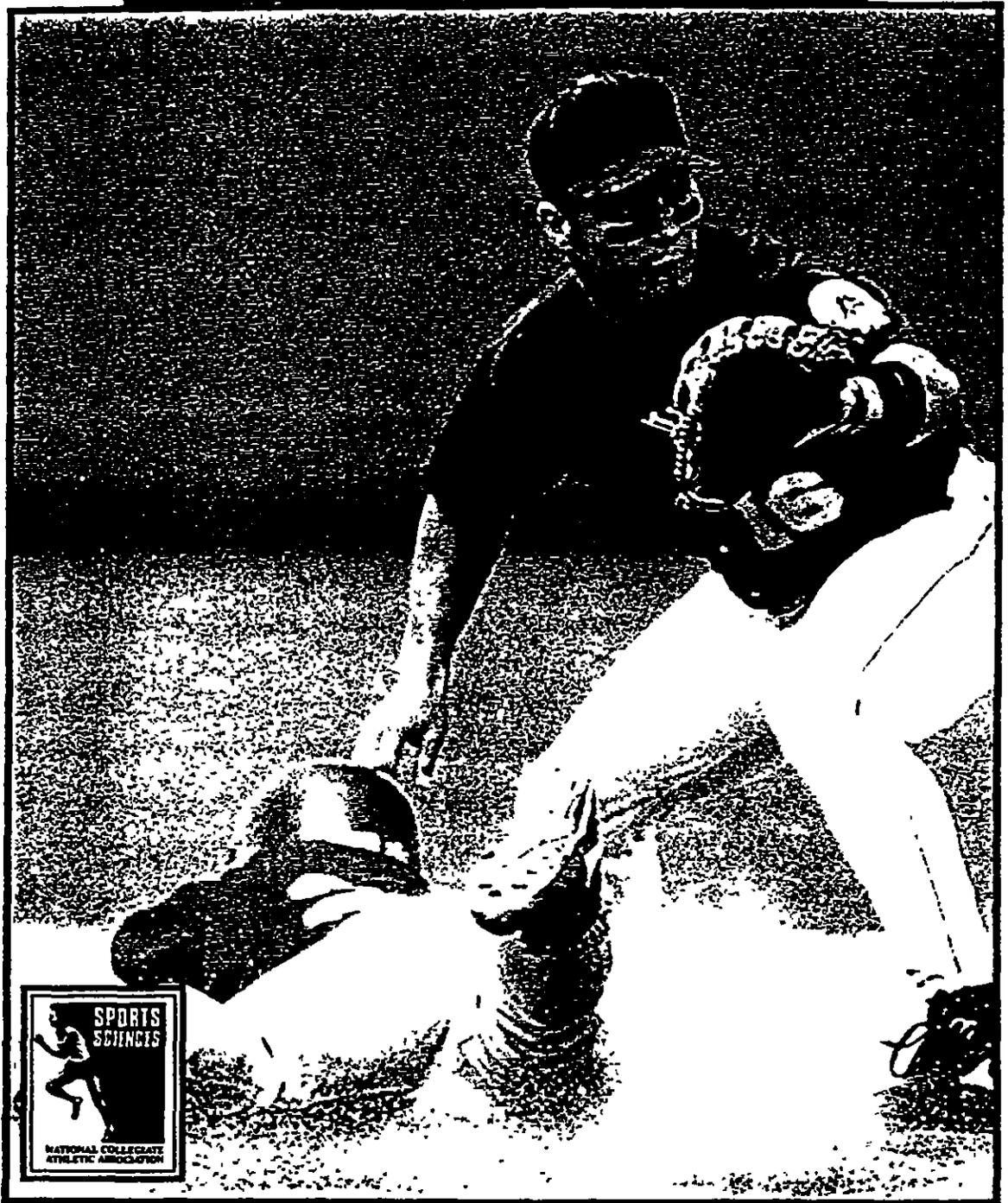
SPORT	FATALITIES	NON-FATAL	SERIOUS
BASKETBALL	0.00	0.00	0.00
GYMNASTICS	0.00	8.16	0.00
ICE HOCKEY	0.00	0.00	0.00
SWIMMING	0.00	0.00	0.00
WRESTLING	0.00	0.00	0.00
SKIING	12.50	0.00	0.00

COLLEGE WINTER SPORTS  
INDIRECT CATASTROPHIC INJURIES  
1982-83 - 1997-98

SPORT	YEAR	FATALITIES	NON-FATAL	SERIOUS	TOTAL
BASKETBALL	1982-83	1	0	0	1
	1983-84	1	0	0	1
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	3	0	0	3
	1988-89	1	0	0	1
	1989-90	1	0	0	1
	1990-91	0	0	0	0
	1991-92	1	0	0	1
	1992-93	1	0	0	1
	1993-94	1	0	0	1
	1994-95	2	0	0	2
	1995-96	0	0	0	0
1996-97	0	0	0	0	
1997-98	2	0	0	2	
	<b>TOTAL</b>	14	0	0	14
GYMNASTICS	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	0	0	0	0

	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>ICE HOCKEY</b>	1982-83	0	0	0	0
	1983-84	1	0	0	1
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	0	0	0	0
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	1	0	1
	1992-93	0	0	0	0
	1993-94	0	0	0	0
	1994-95	0	0	0	0
	1995-96	0	0	0	0
	1996-97	0	0	0	0
	1997-98	0	0	0	0
	<b>TOTAL</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>
<b>SWIMMING</b>	1982-83	0	0	0	0
	1983-84	0	0	0	0
	1984-85	0	0	0	0
	1985-86	0	0	0	0
	1986-87	0	0	0	0
	1987-88	1	0	0	1
	1988-89	0	0	0	0
	1989-90	0	0	0	0
	1990-91	0	0	0	0
	1991-92	0	0	0	0
	1992-93	1	0	0	1

# Injury Surveillance System



## 1997-98 Baseball

NCAA-38921

## INTRODUCTION

The NCAA Injury Surveillance System (ISS) was developed in 1982 to provide current and reliable data on injury trends in intercollegiate athletics. Injury data are collected yearly from a representative sample of NCAA member institutions and the resulting data summaries are reviewed by the NCAA Committee on Competitive Safeguards and Medical Aspects of Sports. The committee's goal continues to be to reduce injury rates through suggested changes in rules, protective equipment or coaching techniques based on data provided by the Injury Surveillance System. Injury data are also presented to NCAA sport committees and national sports science meetings.

During the 1982-83 academic year, injury data were collected only on the sport of football. Since that time the ISS has been expanded to include four additional NCAA fall sports (men's soccer, women's soccer, field hockey, and women's volleyball), six winter sports (men's gymnastics, women's gymnastics, wrestling, ice hockey, men's basketball, and women's basketball), and five spring sports (spring football, baseball, softball, men's lacrosse and women's lacrosse). This report presents information regarding injuries in baseball since the 1985-86 season.

**It should be noted that no common definition of injury, measure of severity or evaluation of exposure exists in the athletic injury literature. The information contained in this summary must be evaluated under the definitions and methodology outlined for the NCAA Injury Surveillance System.**

## METHODS

### Sampling

Participation in the NCAA Injury Surveillance System is voluntary and limited to the 902 member institutions (as of May, 1997). ISS participants are selected from the population of schools sponsoring a given sport. Selections are random within the constraints of having a minimum 10 percent representation of each NCAA division (I, II and III) and region (East, South, Midwest, West) (See Table 1). This sampling scheme assures a true cross-section of NCAA institutions, which can be used to express injury rates representative of the total population of NCAA institutions sponsoring a particular sport.

The regional distribution of schools is the same for all sports in the ISS although different from regional distributions as noted in the NCAA championship manuals. Figure 1 documents the regional distribution of states used in the Injury Surveillance System.

*It is important to emphasize that this system does not identify EVERY injury that occurs at NCAA institutions in a particular sport. Rather, it collects a sampling that is representative of a cross-section of NCAA institutions.*

### Data Reporting

Injury and exposure data are recorded by certified and student athletics trainers from participating institutions. Information is collected from the first official day of preseason practice to the final tournament contest.

## Injuries

A reportable injury in the Injury Surveillance System is defined as one that:

1. Occurs as a result of participation in an organized intercollegiate
2. Requires medical attention by a team athletics trainer or physician, and
3. Results in restriction of the student-athlete's participation for one or more days beyond the day of injury.

A separate report is submitted for each injury by an athletics trainer.

Each injury is described in detail including type of injury, body part injured, severity of injury, field type, field condition and special equipment worn.

## Exposures

To establish an injury rate, data are expressed as the number of injuries per unit of participation or risk.

An athlete exposure (A-E), the unit of risk in the ISS, is defined as one athlete participating in one practice or game where he or she is exposed to the possibility of athletic injury.

A one-page exposure form, submitted weekly, summarizes the number of practices and games, types of playing surfaces and numbers of participants. For example, five practices, each involving 60 participants, and one game involving 40 participants, would result in 300 practice A-Es, 40 game A-Es and 340 total A-Es for a particular week.

## Injury Rate

An injury rate is simply a ratio of the number of injuries in a particular category to the number of athlete exposures in that category. In the ISS, this value is expressed as injuries per 1,000 athlete exposures. For example, six reportable injuries during 563 athlete exposures result in an injury rate of  $(6/563) \times 1,000$  or 10.7 injuries/1,000 athlete exposures.

In the above example, one would anticipate 10.7 injuries if one athlete participated in 1000 practices and/or games, if 50 athletes participated in 20 practices and/or games, or if 100 athletes participated in 10 practices and/or games.

Injury rates can be a valuable tool in data analysis, especially when the number of exposures associated with the injury categories is not similar. For example, consider a study reporting 100 injuries on artificial turf and 200 injuries on natural turf. If the numbers of exposures is similar to the possibility of injury, then one might conclude that the chances of being injured on natural turf are greater than being injured on artificial turf.

However, if the 100 artificial turf injuries were associated with 50,000 exposures and the 200 natural turf injuries were associated with 100,000 exposures, then the injury rates for artificial  $(100/50,000 = 2 \text{ injuries}/1000 \text{ A-E})$  and natural  $(200/100,000 = 2 \text{ injuries}/1,000 \text{ A-E})$  turf are identical.

Therefore, injury rates, rather than absolute number of injuries, may be a more valuable expression of injury tendencies. Because of the divisional and regional distribution of participants, injury rates are representative of those that occur at NCAA institutions sponsoring the given sport.

## RESULTS

The following tables and figures are a summary of ISS information collected on the sport of baseball. It should be noted that these data represent selected information; a complete printout of injury data for each of the 16 sports monitored is available at the NCAA national office. The first section focuses on the sport of baseball; the next section compares selected baseball information with the 15 other sports monitored in the ISS. Additional topic areas will be added to this report annually.

The injury data presented in this report are descriptive in nature; no statistical analysis of these data has been performed. The amount of significance associated with differences in injury rates must be determined by the reader. Emphasis in these tables should be placed on the yearly trends rather than on absolute numerical values.

## ACKNOWLEDGMENTS

The NCAA Injury Surveillance System should be acknowledged in any reports or publication resulting from evaluations or analyses of these data. A copy of all such reports or publications should be sent to the NCAA assistant director of sports sciences upon public release for accession to the Association's library. In addition, the following statement should be incorporated in the acknowledgment of the source of the data:

"Conclusions drawn from or recommendations based on the data provided by the National Collegiate Athletic Association are those of the author(s) based on analyses/evaluations of the author(s) and do not represent the views of the officers, staff or membership of the NCAA."

A special thanks is directed to the other staff members involved in the NCAA Injury Surveillance System; Fred Worthman, who has recorded injury data for the ISS since its inception, and Dan Spencer, Kathy Day, Doug Carpenter and Susan Brown, who have developed the computer enhancements for this system. The participating athletics trainers should also be recognized for contributing greatly to the success of this program.

Any questions regarding the NCAA Injury Surveillance System or its data reports should be directed to the following address:

Randall W. Dick  
Assistant Director of Sports Sciences  
NCAA  
6201 College Boulevard  
Overland Park, Kansas 66211-2422  
(913/339-1906)

**Table 1 - Baseball  
Distribution of Participating Teams**

	<u>Div. I</u>	<u>Div. II</u>	<u>Div. III</u>	<u>Regional Totals</u>
1985-86	23 <b>265</b>	11 <b>141</b>	14 <b>251</b>	48 <b>657</b>
1986-87	34 <b>271</b>	31 <b>133</b>	34 <b>258</b>	99 <b>662</b>
1987-88	36 <b>272</b>	19 <b>133</b>	30 <b>263</b>	85 <b>668</b>
1988-89	36 <b>272</b>	10 <b>144</b>	26 <b>262</b>	72 <b>678</b>
1989-90	35 <b>273</b>	18 <b>159</b>	28 <b>270</b>	81 <b>702</b>
1990-91	45 <b>275</b>	27 <b>159</b>	39 <b>274</b>	111 <b>708</b>
1991-92	37 <b>277</b>	21 <b>171</b>	32 <b>281</b>	90 <b>729</b>
1992-93	37 <b>276</b>	22 <b>177</b>	49 <b>291</b>	108 <b>744</b>
1993-94	38 <b>279</b>	20 <b>196</b>	26 <b>294</b>	84 <b>769</b>
1994-95	30 <b>278</b>	16 <b>209</b>	21 <b>319</b>	67 <b>806</b>
1995-96	36 <b>282</b>	24 <b>233</b>	38 <b>325</b>	98 <b>840</b>
1996-97	37 <b>273</b>	29 <b>196</b>	44 <b>288</b>	110 <b>760</b>
1997-98	36 <b>276</b>	23 <b>224</b>	35 <b>320</b>	94 <b>820</b>

**Note:** Totals indicate regional and divisional breakdown of institutions participating in the NCAA Injury Surveillance System. Numbers in bold, italicized text indicate the total numbers of NCAA institutions sponsoring the sport by division and nationally.

Figure 1 - Baseball  
Regions of the Injury Surveillance System

East

Connecticut  
Delaware  
Washington, D.C.  
Maine  
Maryland  
Massachusetts  
New Hampshire  
New Jersey  
New York  
Pennsylvania  
Rhode Island  
Vermont

South

Alabama  
Arkansas  
Florida  
Georgia  
Kentucky  
Louisiana  
Mississippi  
North Carolina  
South Carolina  
Tennessee  
Texas  
Virginia  
West Virginia

Midwest

Illinois  
Indiana  
Iowa  
Kansas  
Michigan  
Minnesota  
Missouri  
Nebraska  
North Dakota  
Ohio  
Oklahoma  
South Dakota  
Wisconsin

West

Alaska  
Arizona  
California  
Colorado  
Hawaii  
Idaho  
Montana  
Nevada  
New Mexico  
Oregon  
Utah  
Washington  
Wyoming

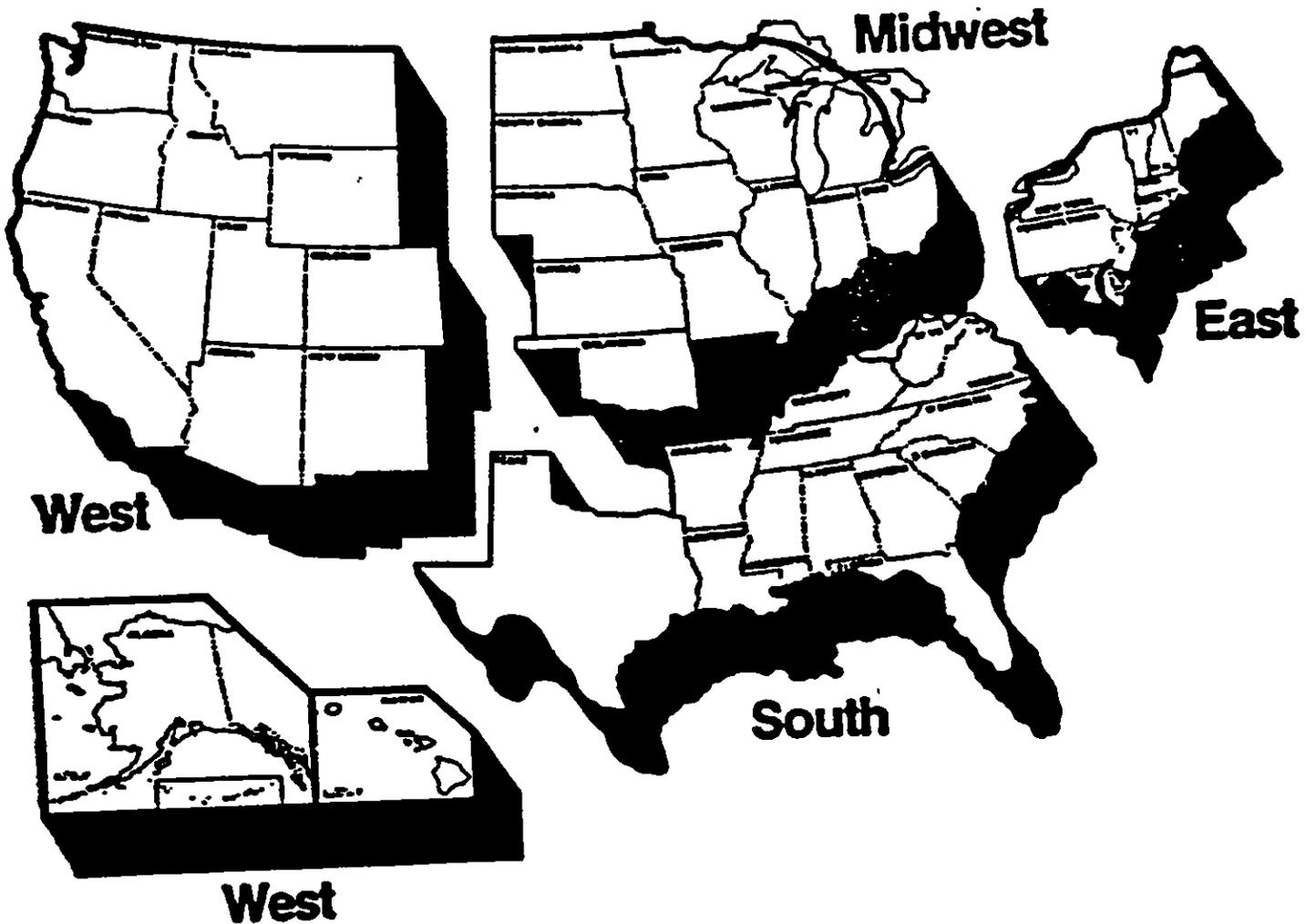


Figure 2 - Baseball  
Practice Injury Rates by Division

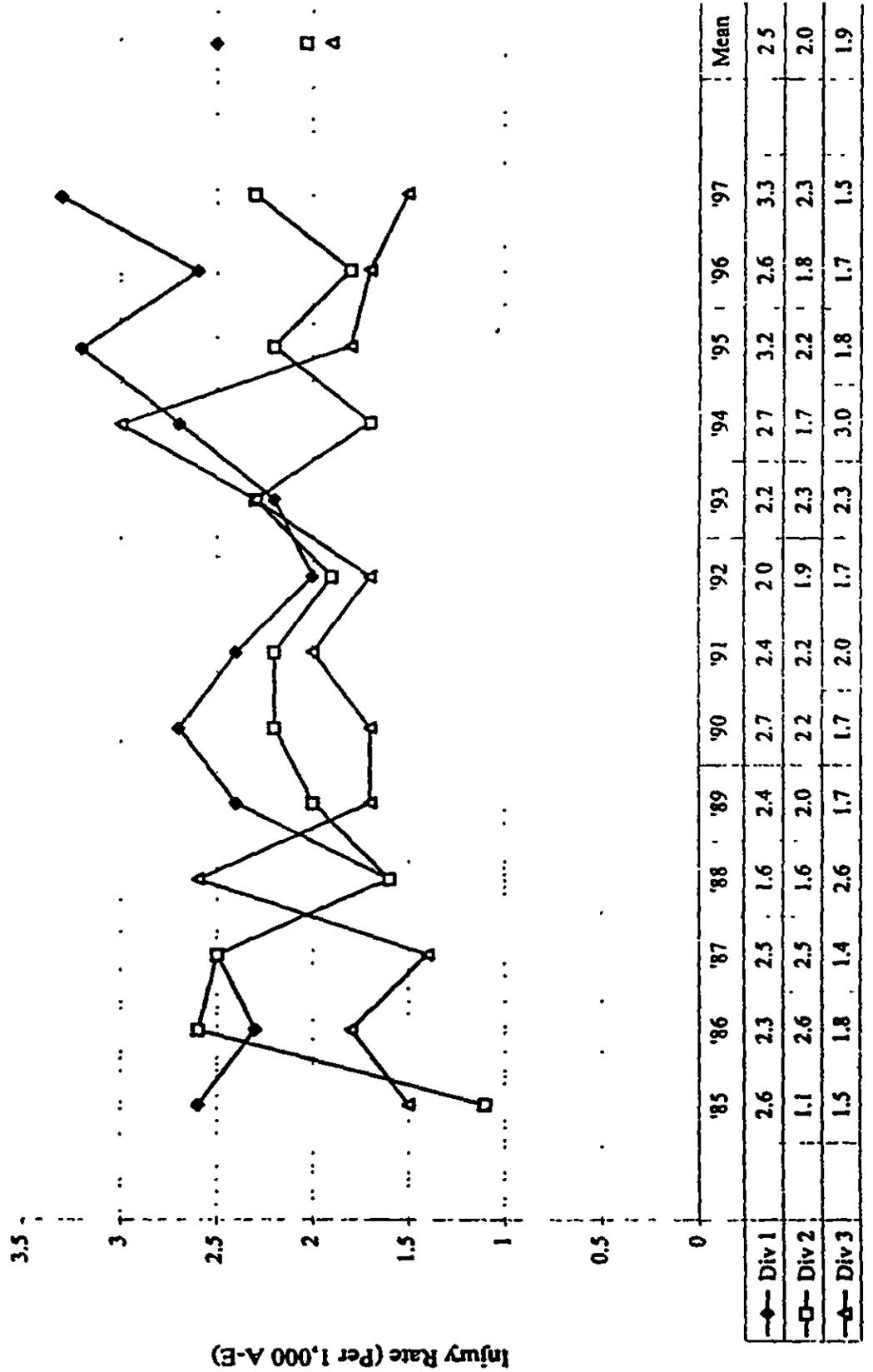
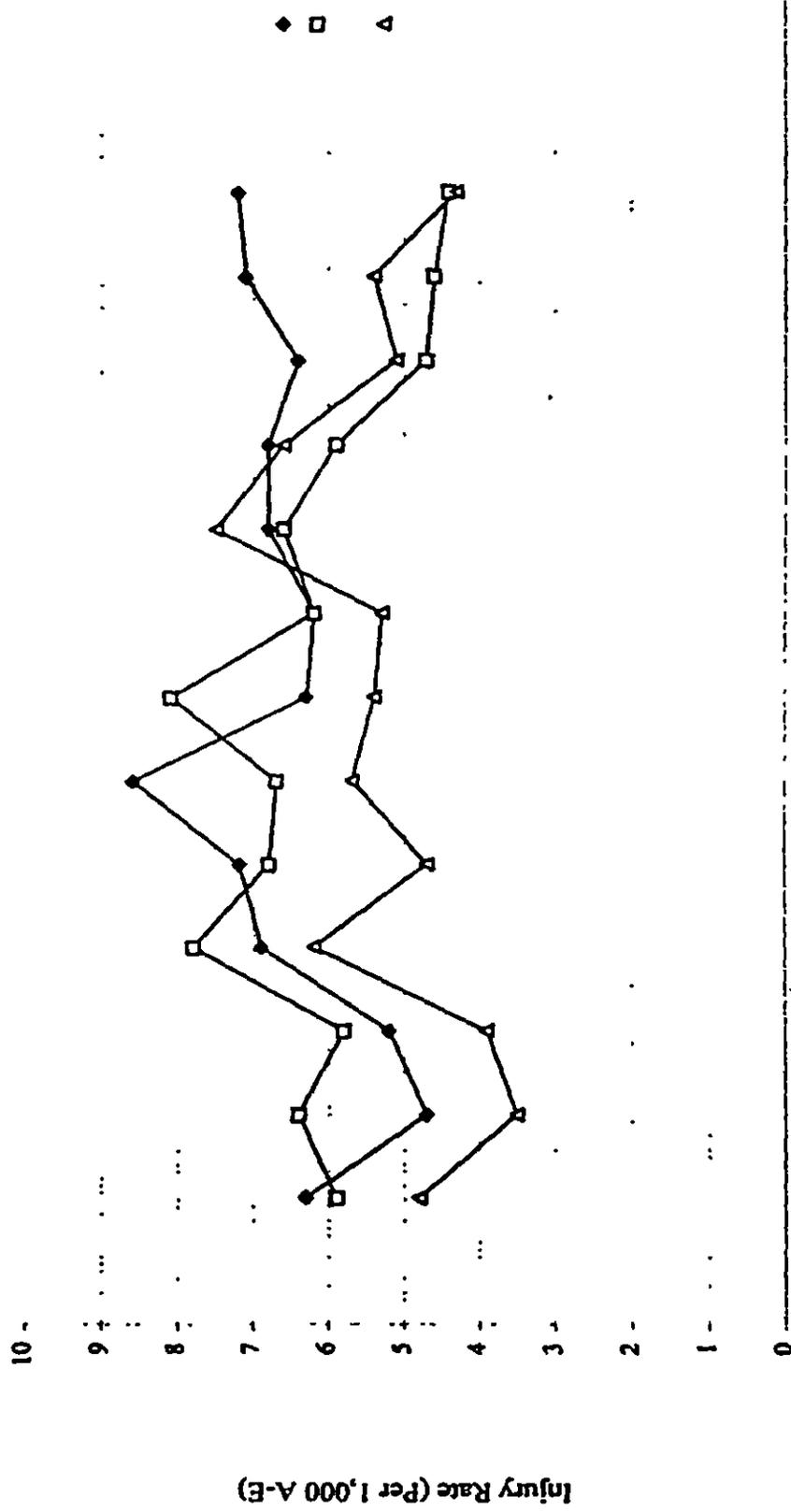


Figure 3 - Baseball  
Game Injury Rates by Division



	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	Mean
◆ Div 1	6.3	4.7	5.2	6.9	7.2	8.6	6.3	6.2	6.8	6.8	6.4	7.1	7.2	6.6
□ Div 2	5.9	6.4	5.8	7.8	6.8	6.7	8.1	6.2	6.6	5.9	4.7	4.6	4.4	6.1
△ Div 3	4.8	3.5	3.9	6.2	4.7	5.7	5.4	5.3	7.5	6.6	5.1	5.4	4.3	5.3

**Figure 4 - Baseball**  
**Pre, Regular and Post Season Injury Rates**  
*Preseason: prior to the first regular season game*  
*Postseason: following the final regular season game*

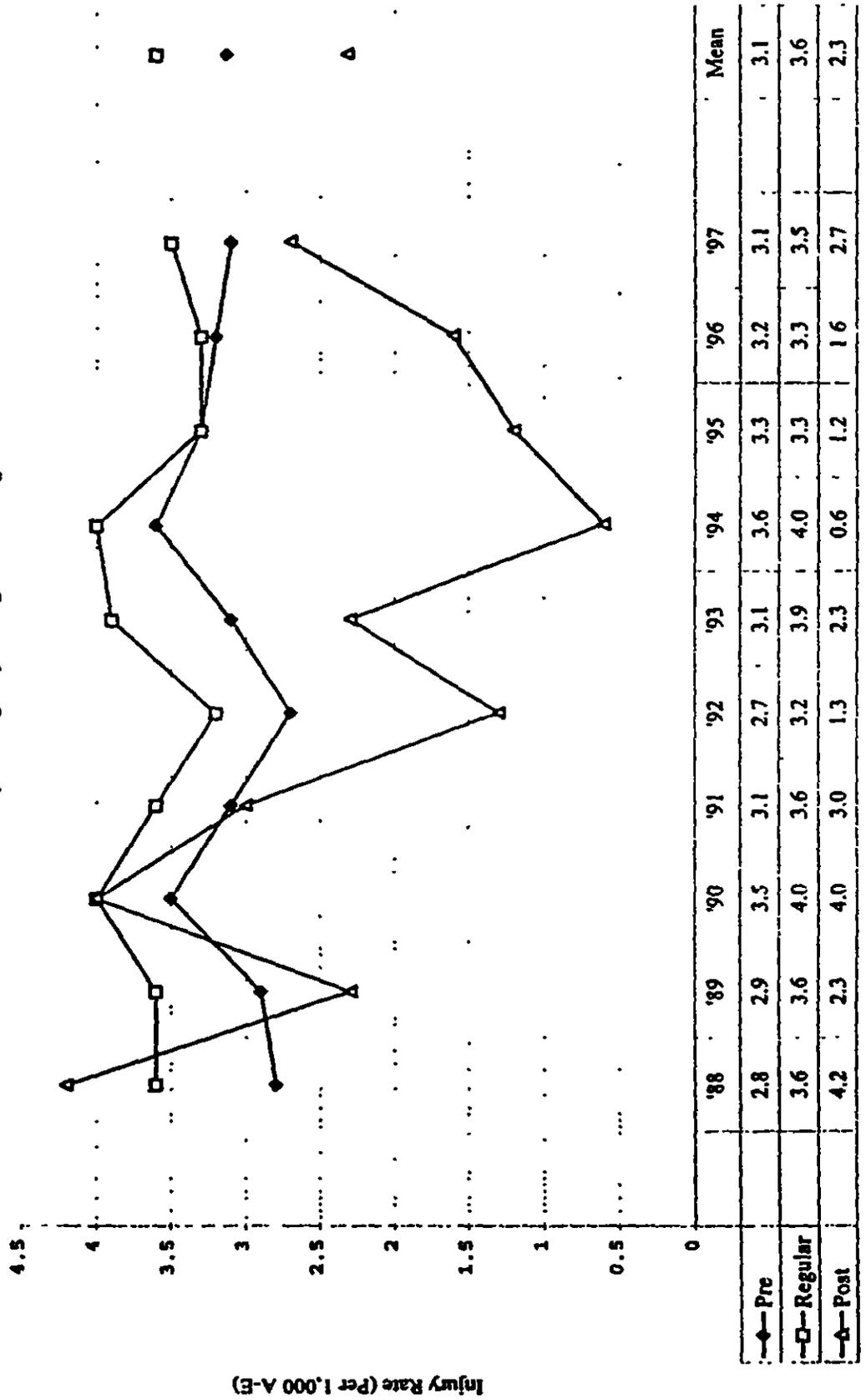
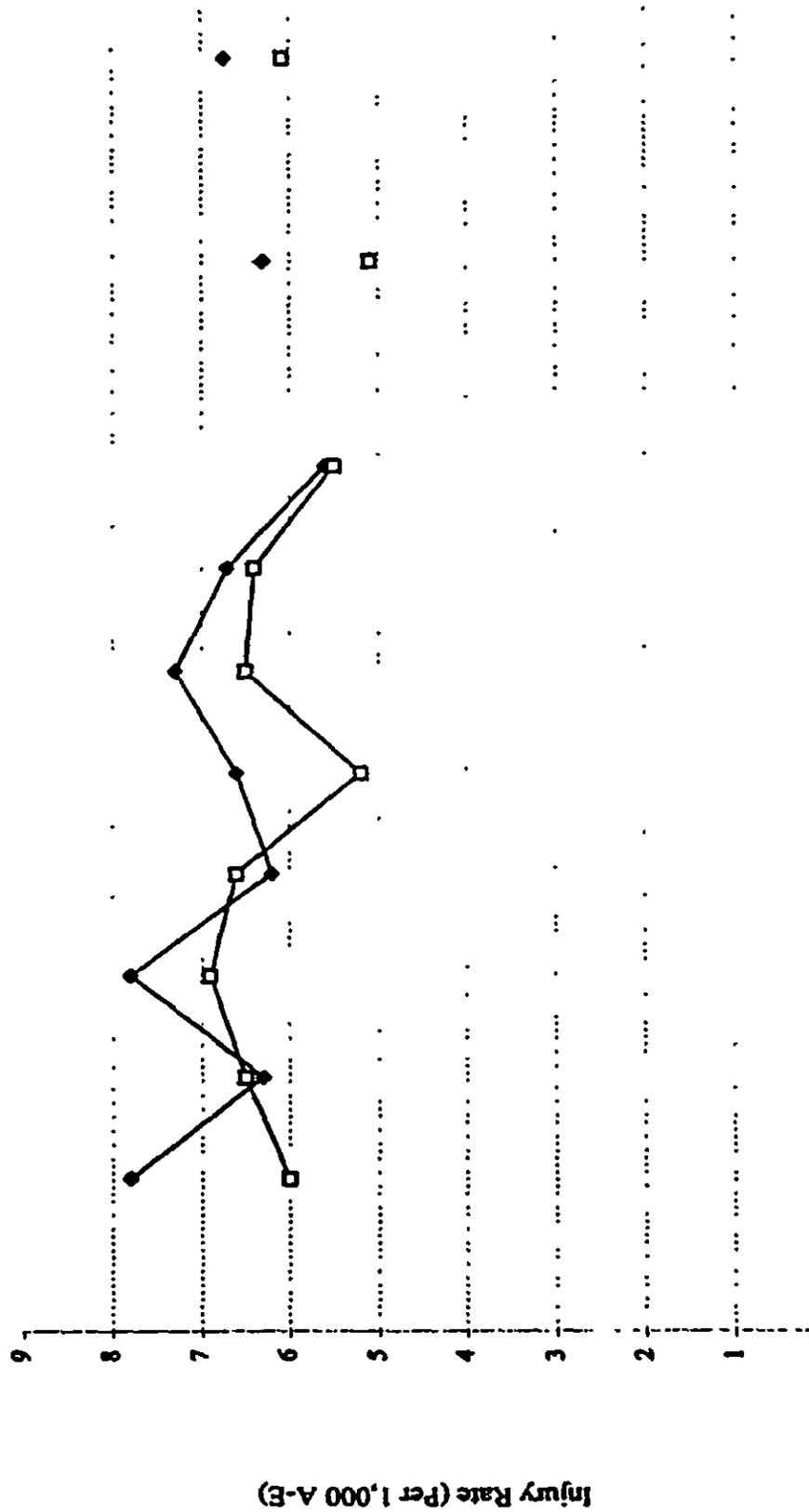


Figure 5 - Baseball  
Home and Away Injury Rates



**Figure 6 - Baseball  
Game Surface Injury Rates**

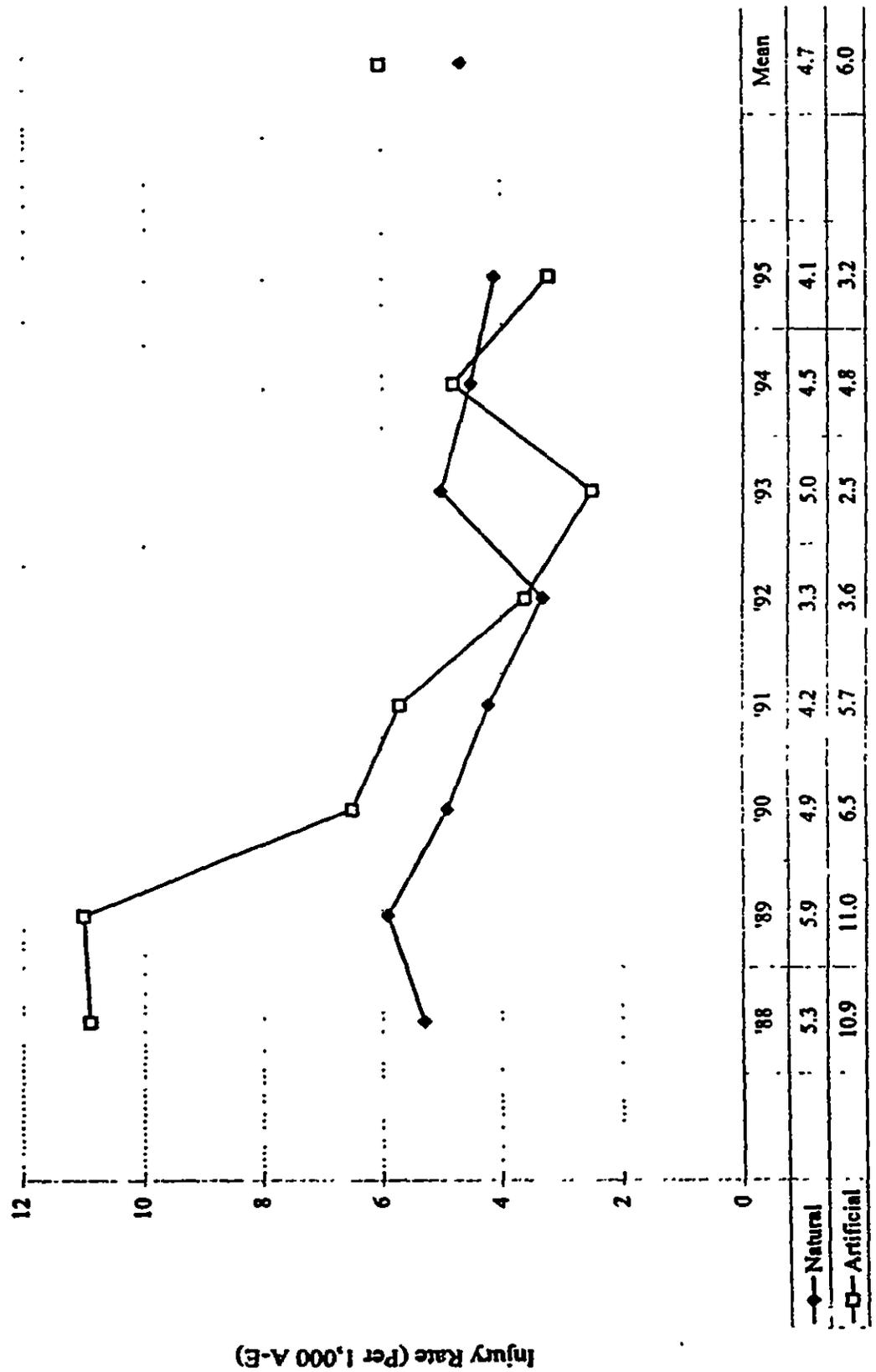
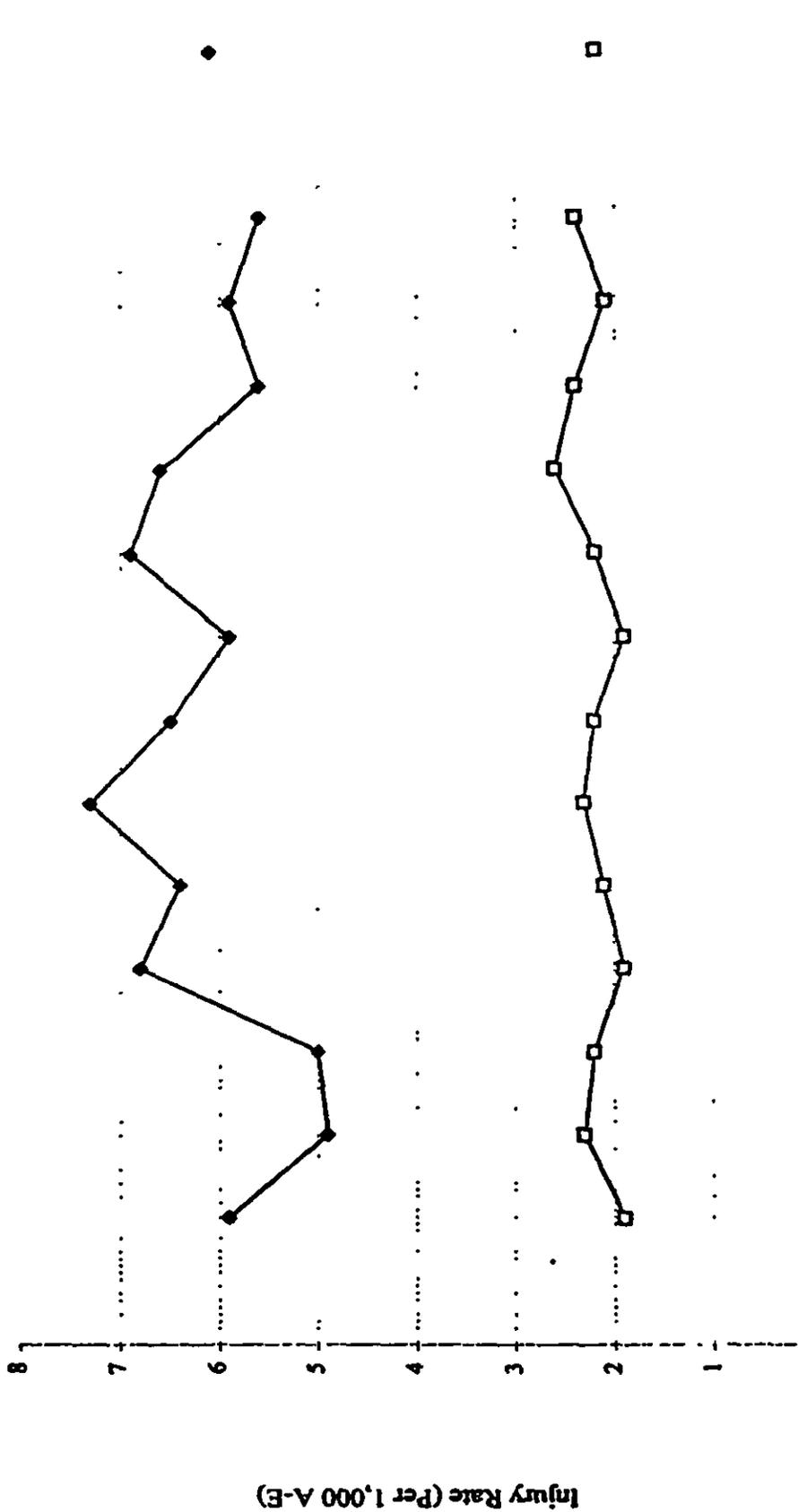


Figure 7 - Baseball  
Practice and Game Injury Rates  
All Schools



	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	Mean
Game	5.9	4.9	5.0	6.8	6.4	7.3	6.5	5.9	6.9	6.6	5.6	5.9	5.6	6.1
Practice	1.9	2.3	2.2	1.9	2.1	2.3	2.2	1.9	2.2	2.6	2.4	2.1	2.4	2.2

**Figure 8 - Baseball**  
**Time Loss Injury Summary**  
*Restricted or no participation*

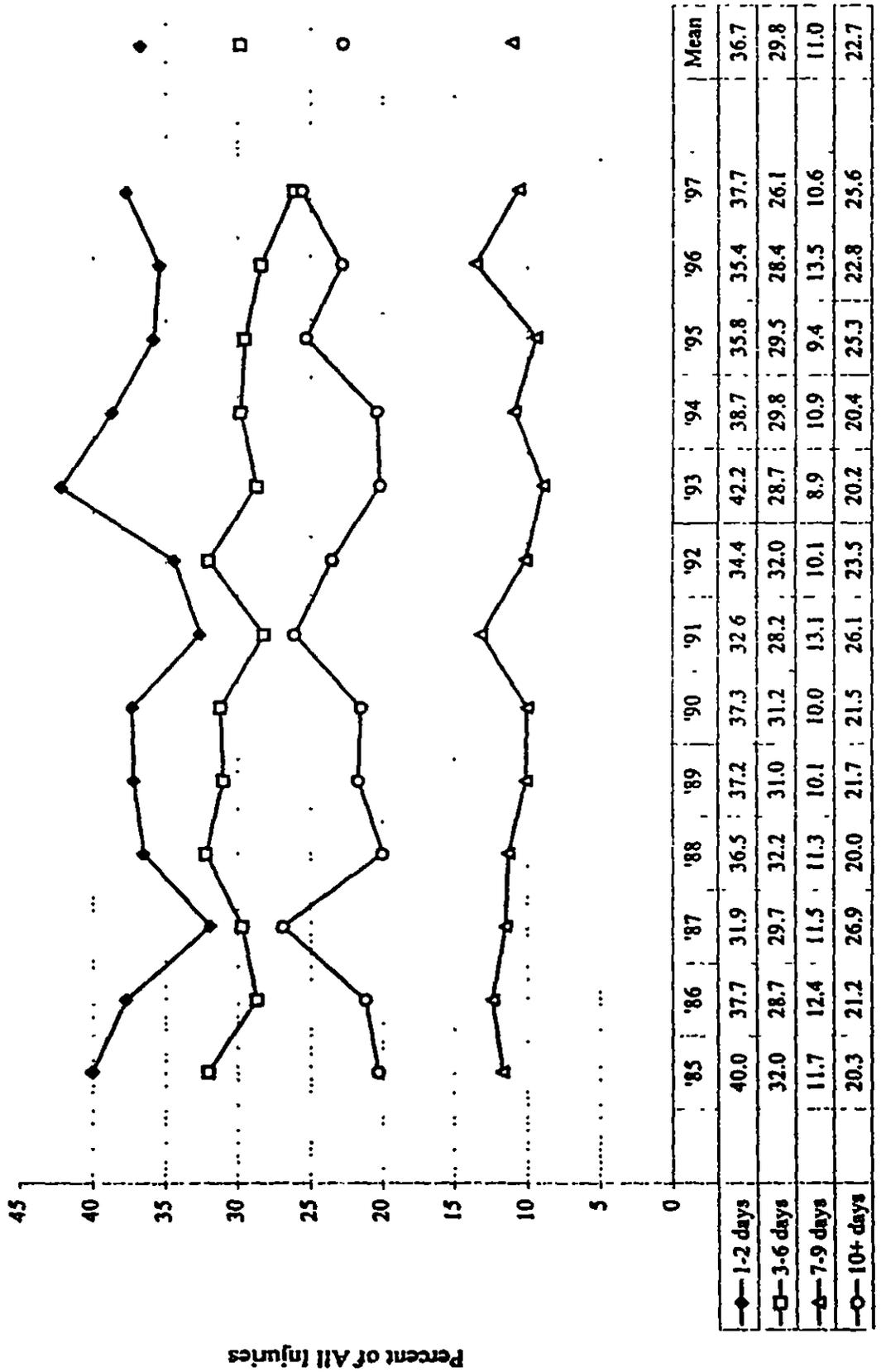
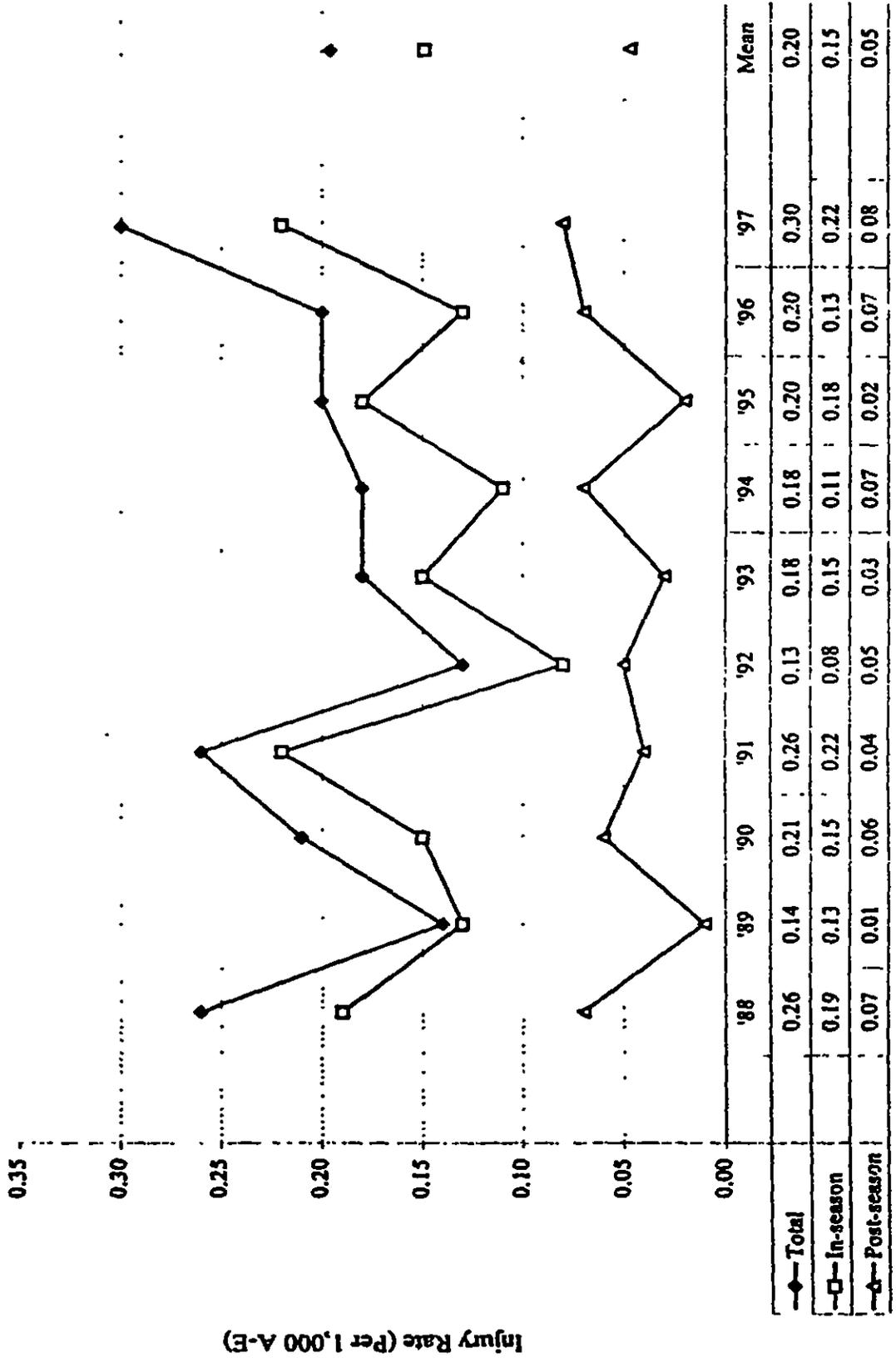


Figure 9 -Baseball  
Injuries Requiring Surgery



NCAA-38934

**Table 2 - Baseball  
Top Three Body Parts Injured**

	<u>No. of Teams</u>	<u>No. of Injuries</u>	<u>1</u>	<u>2</u>	<u>3</u>
1985-86	48	359	Shoulder 20%	Upper Leg 11%	Ankle 11%
1986-87	99	589	Shoulder 16%	Ankle 10%	Upper Leg 9%
1987-88	85	539	Shoulder 16%	Elbow 10%	Ankle 9%
1988-89	72	451	Shoulder 18%	Ankle 14%	Upper Leg 10%
1989-90	81	525	Shoulder 19%	Upper Leg 12%	Ankle 12%
1990-91	111	772	Shoulder 21%	Elbow 9%	Upper Leg 9%
1991-92	90	602	Shoulder 23%	Upper Leg 9%	Ankle 9%
1992-93	108	582	Shoulder 21%	Elbow 12%	Ankle 10%
1993-94	84	529	Shoulder 17%	Upper Leg 11%	Elbow 10%
1994-95	67	486	Shoulder 19%	Elbow 9%	Upper Leg 9%
1995-96	98	617	Shoulder 20%	Elbow 12%	Upper Leg 11%
1996-97	110	659	Shoulder 22%	Elbow 10%	Upper Leg 10%
1997-98	94	605	Shoulder 21%	Elbow 9%	Upper Leg 9%

**Table 3 - Baseball  
Top Three Types of Injury**

	<u>No. of Teams</u>	<u>No. of Injuries</u>	<u>1</u>	<u>2</u>	<u>3</u>
1985-86	48	359	Strain 32%	Contusion 17%	Sprain 15%
1986-87	99	589	Strain 27%	Contusion 18%	Sprain 16%
1987-88	85	539	Strain 30%	Contusion 16%	Sprain 12%
1988-89	72	451	Strain 26%	Sprain 21%	Contusion 13%
1989-90	81	525	Strain 38%	Sprain 17%	Contusion 14%
1990-91	111	772	Strain 32%	Sprain 16%	Contusion 15%
1991-92	90	602	Strain 33%	Sprain 17%	Contusion 13%
1992-93	108	582	Strain 27%	Sprain 18%	Contusion 16%
1993-94	84	529	Strain 31%	Contusion 18%	Sprain 15%
1994-95	67	486	Strain 31%	Sprain 15%	Contusion 14%
1995-96	98	617	Strain 36%	Sprain 16%	Contusion 12%
1996-97	110	659	Strain 32%	Sprain 18%	Contusion 13%
1997-98	94	605	Strain 32%	Sprain 17%	Contusion 13%

NCAA-38936

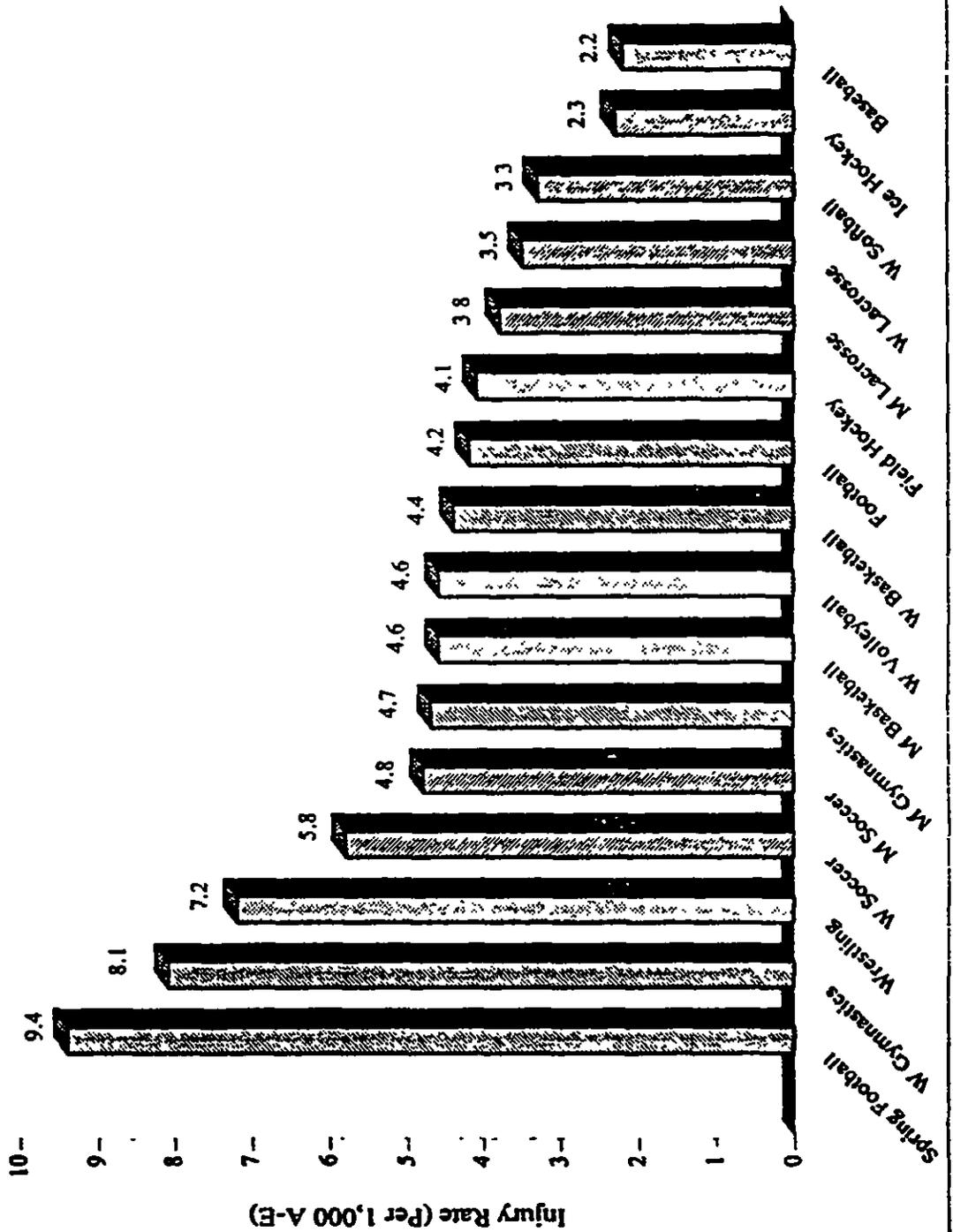
## ALL SPORTS INJURY SUMMARY

Figure Nos. 1-4 compare the practice, game and combined injuries across sixteen sports without regard to severity. Comparisons of injury rates between sports are difficult because each sport has its own unique schedule and activities. If such comparisons are necessary, it may be best to use the game data for which the intensity variable is most consistent.

Figure Nos. 5-8 examine two measures of severity found in the ISS-time loss and injuries that required surgery. These data are presented to assist in decision regarding appropriate medical coverage for a sport; however, each severity category has some limitations that should be considered.

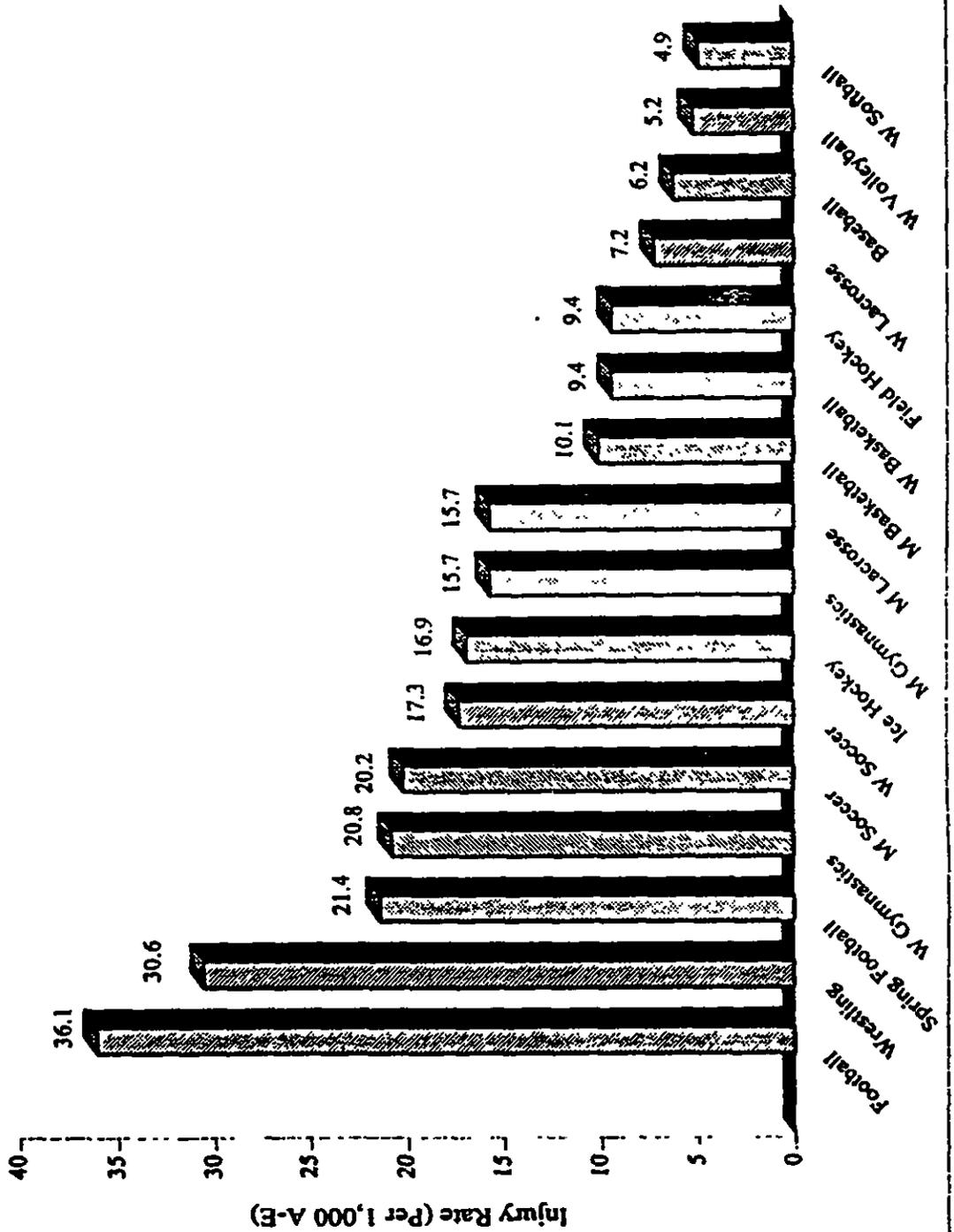
1. Time loss – Figure Nos. 5 and 6 evaluate the percentage or rate of reported injuries that caused restricted or loss of participation of seven days or more. Limitation to this type of severity evaluation include:
  - a. an injury that restricts participation in one sport may not restrict participation in another sport and
  - b. injuries that occur at an end of the season can only be estimated with regard to time loss.
  
2. Injuries that require surgery – Figure Nos. 7 and 8 evaluate the percentage or rate of reported injuries that required either immediate or post-season surgery. Limitations to this severity evaluation include:
  - a. The changing nature of surgical techniques and how they are applied.
  - b. The assumption that all sports had access to the same quality of medical evaluation.
  - c. Injuries can occur that may be categorized as severe, such as concussions, that may not require surgery.

**Figure 1**  
**Practice Injury Rate Summary**  
**Through 1995-96 Season**



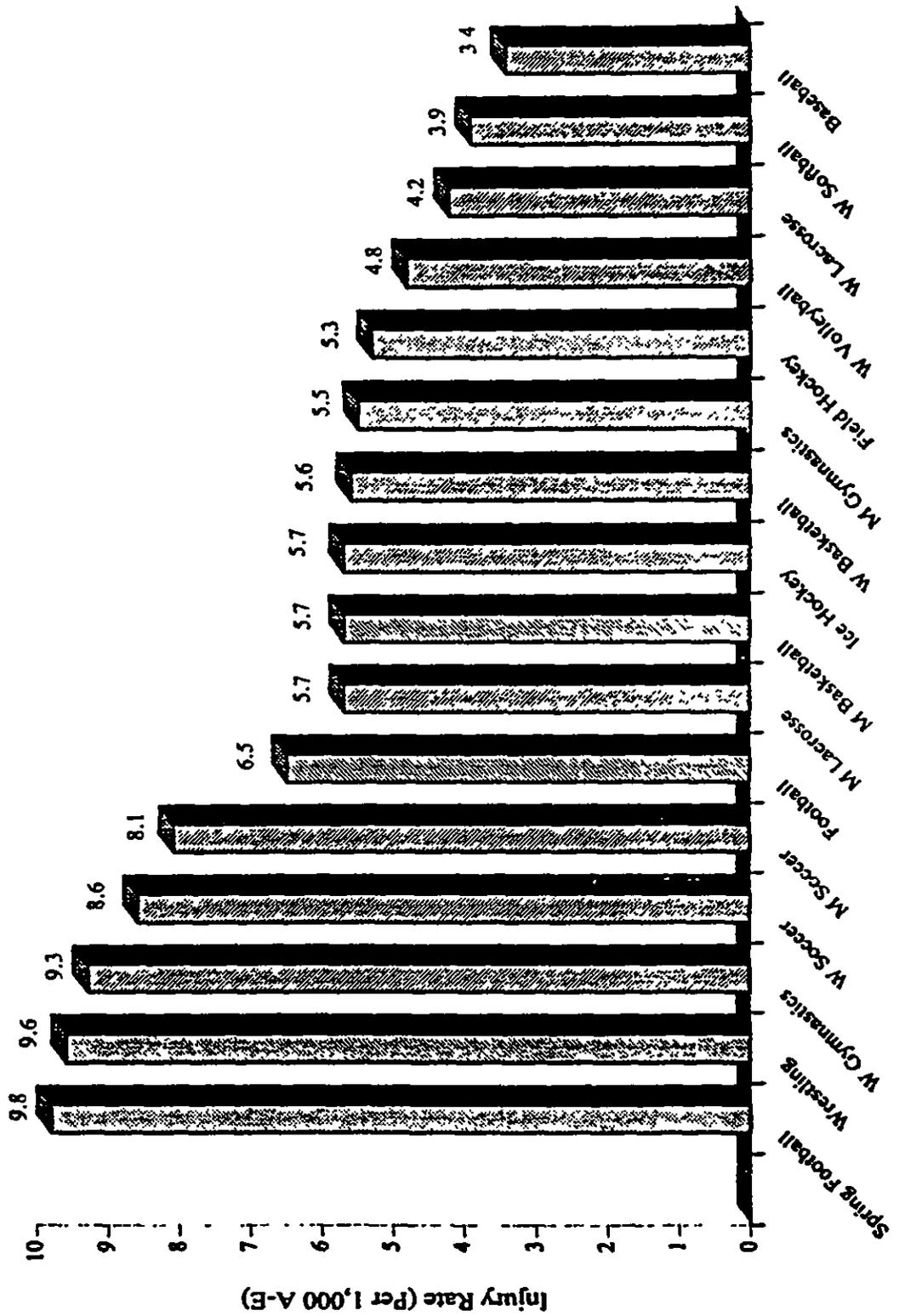
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**Figure 2**  
**Game Injury Rate Summary**  
*Through 1995-96 Season*



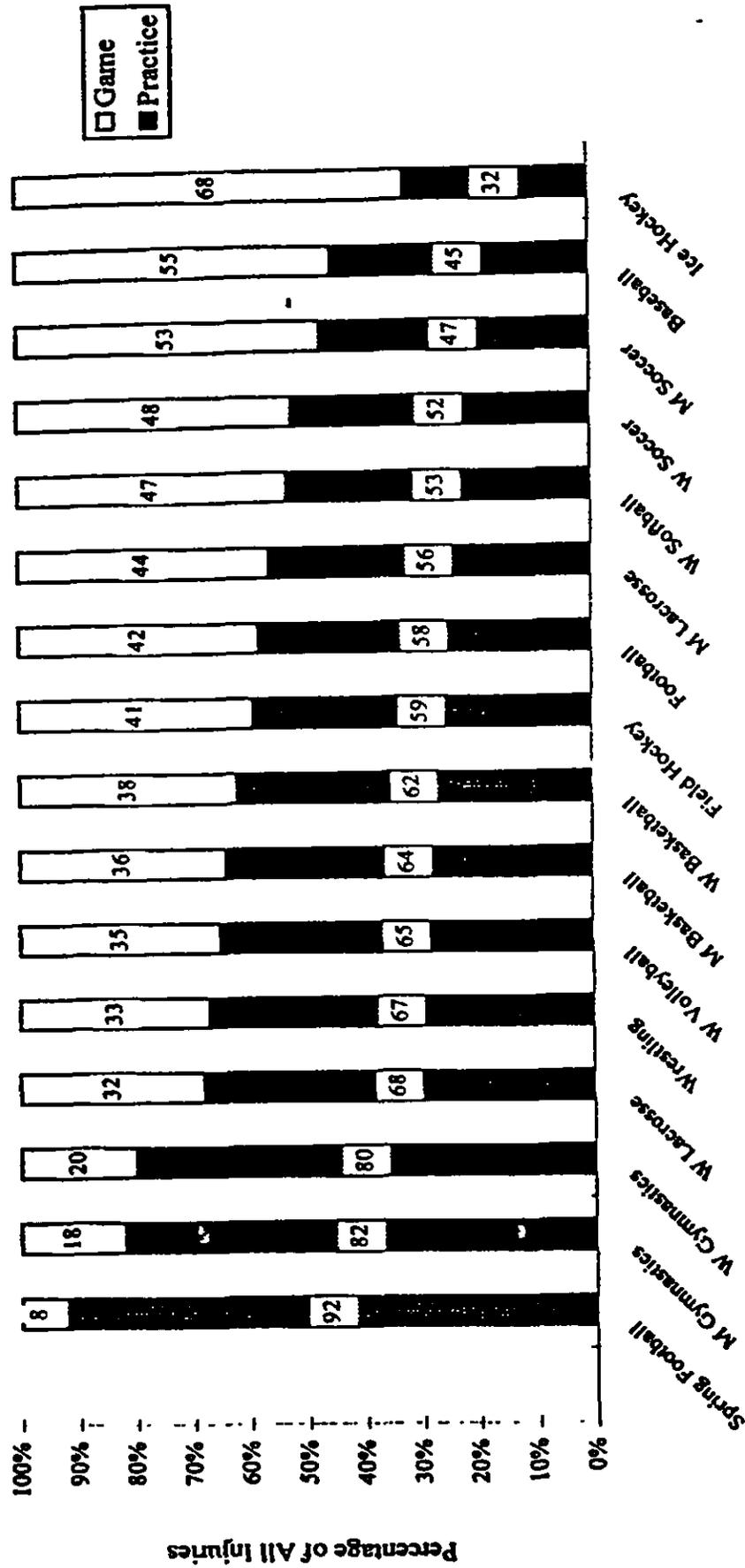
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**Figure 3**  
**Total (Practice and Game) Injury Rate Summary**  
*Through 1995-96 Season*



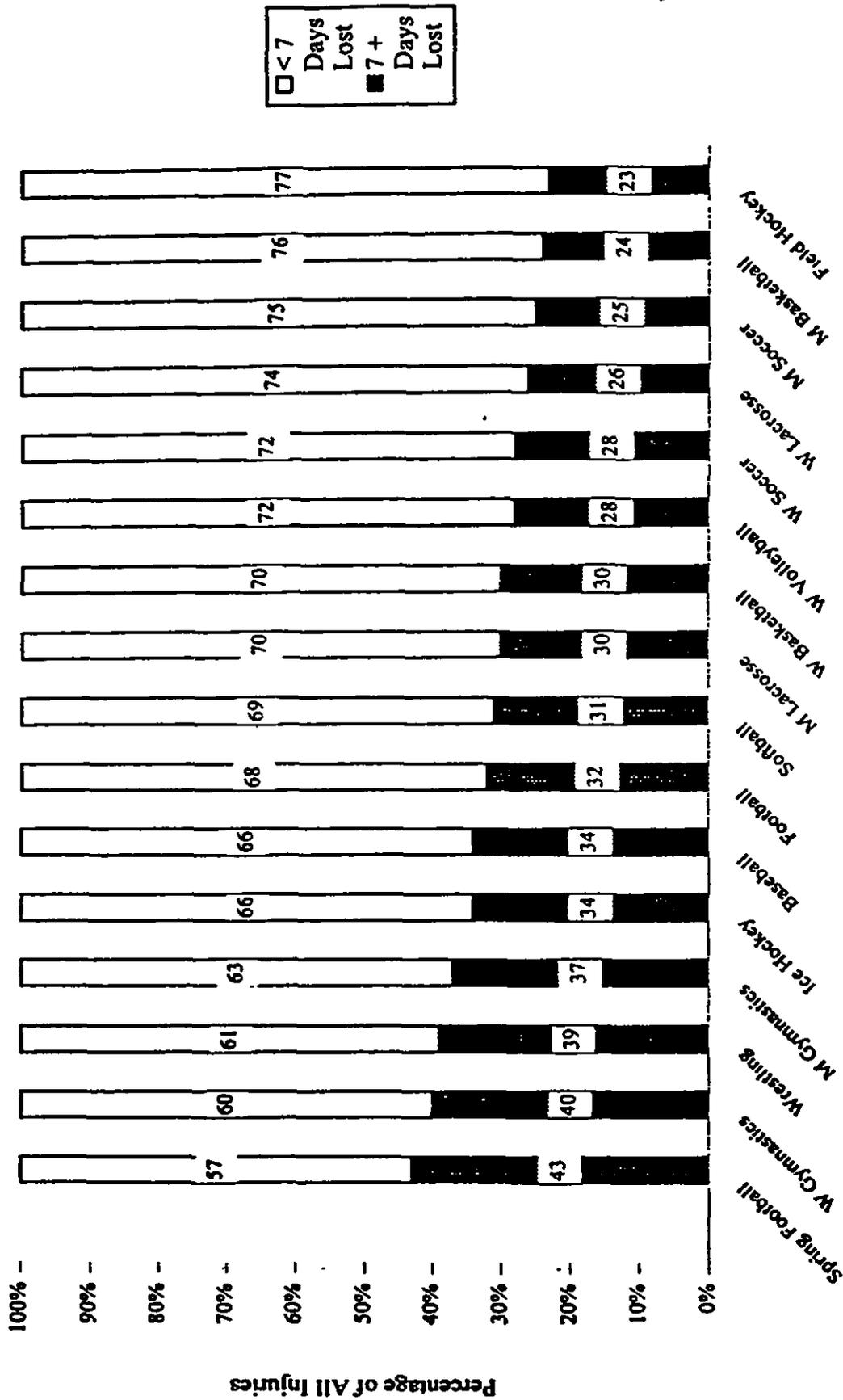
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**Figure 4**  
**Percentage of All Injuries Occurring in Practices and Games**  
**Through 1995-96 Season**

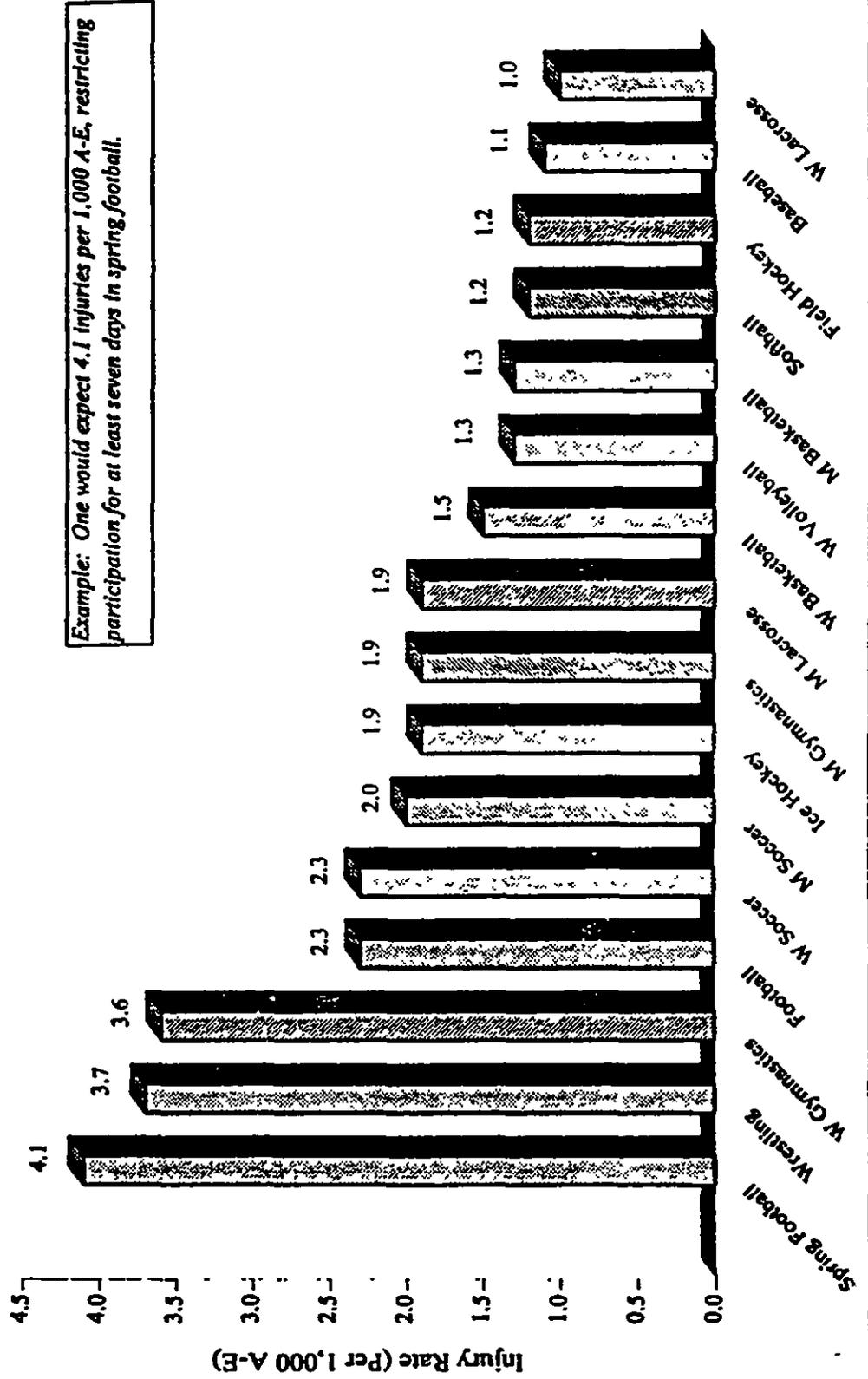


*The relatively few injuries that occurred in the weight room were not included in these percentages. It should be noted that these calculations are based only on the absolute number of injuries and do not take exposures into consideration.*

**Figure 5**  
**Severity: Percentage of Injuries Resulting in Seven or More Days of Time Loss**  
*Through 1995-96 Season*

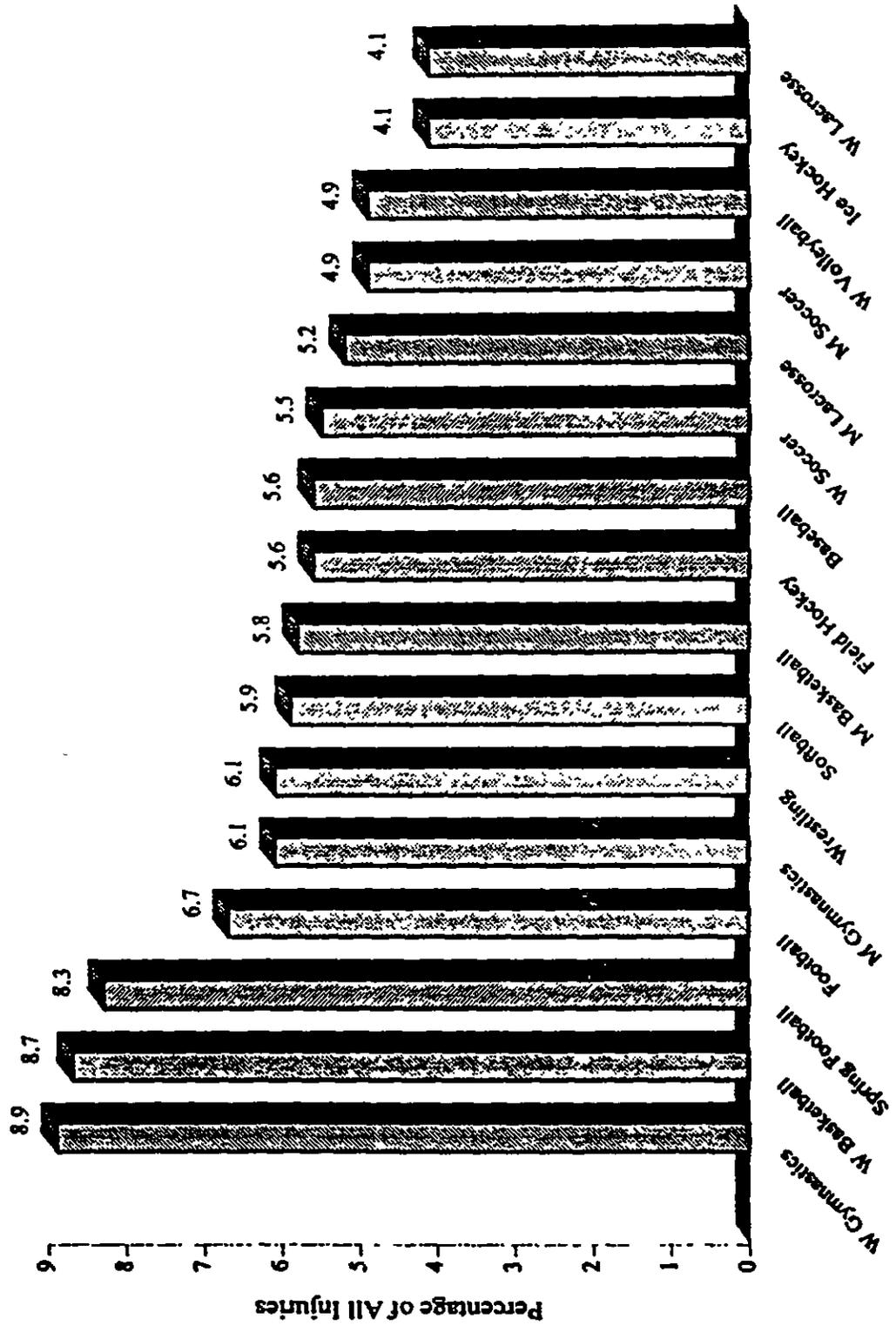


**Figure 6**  
**Severity: Rate of Injuries Resulting in Seven or More Days Time Loss**  
 Through 1995-96 Season

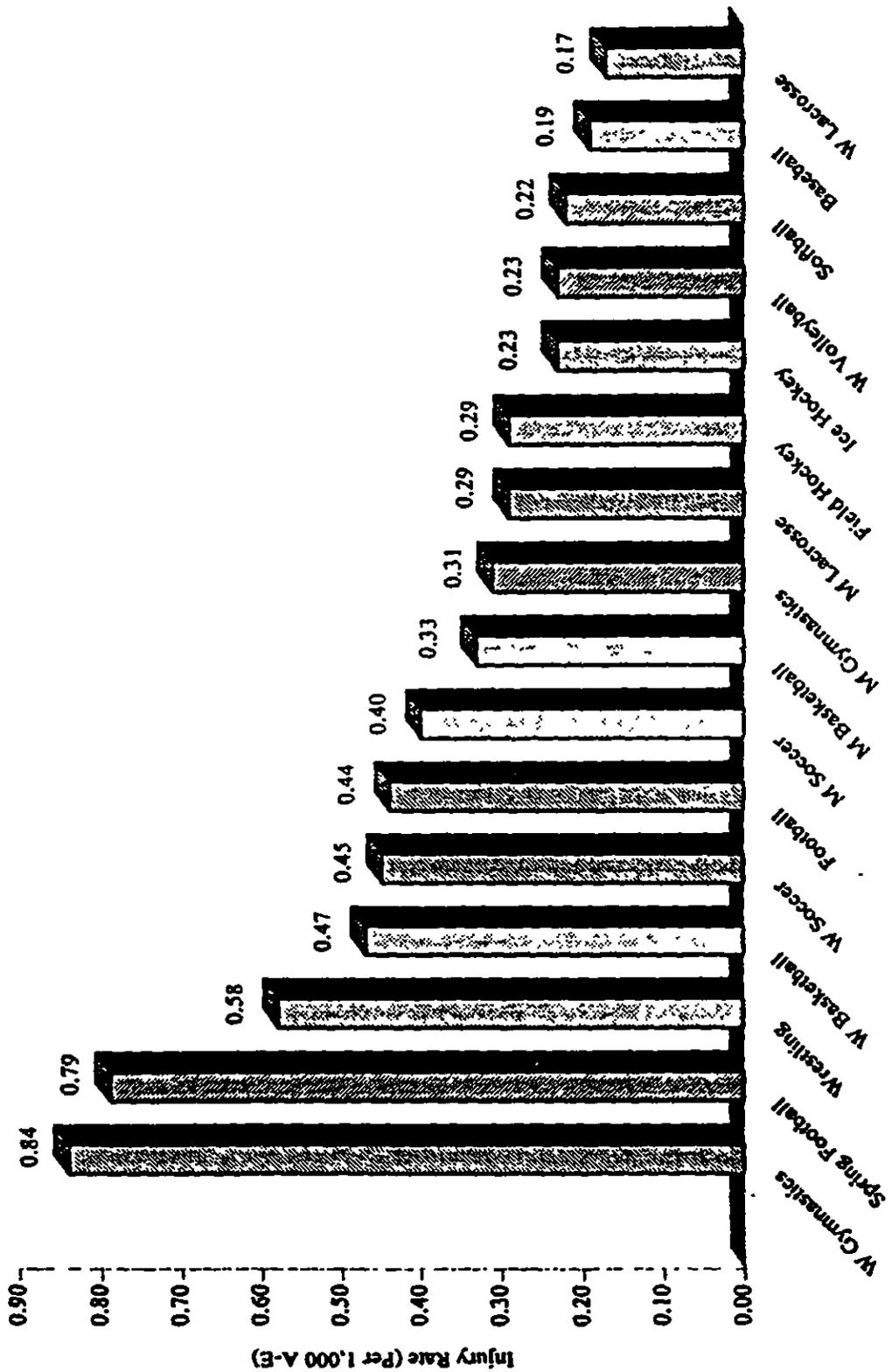


*Example: One would expect 4.1 injuries per 1,000 A-E, restricting participation for at least seven days in spring football.*

**Figure 7**  
**Severity: Percentage of All Reported Injuries Requiring Surgery**  
 Through 1995-96 Season



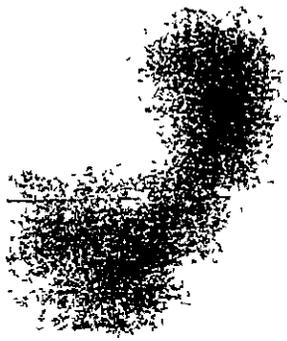
**Figure 8**  
**Severity: Surgery-Required Injury Rates**  
*Through 1995-96 Season*





National Collegiate Athletic Association

NCAA-38946



January 15, 1999

Welcome to this rebroadcast of the NCAA teleconference. At the tone please leave your name and affiliation, clearly spelling any unusual pronunciations. When finished, press the pound key.

**Operator:** At this time I would like to turn the call over to Mr. Wally Renfro with the NCAA. Please go ahead, sir.

**Renfro:** Thank you. Good afternoon and thank you for your patience. This afternoon's teleconference is to announce the decision of the NCAA's Executive Committee regarding specifications for bats to be used in the 1999 NCAA baseball championships. Participating in the call are Charles Wethington, President at the University of Kentucky and Chair of the NCAA Executive Committee, Cedric Dempsey, NCAA President and Elsa Cole, General Counsel for the NCAA. President Wethington will open with a few remarks and then we will open up the press conference for calls -- questions, rather, from the media. President Wethington.

**Wethington:** Thank you and good afternoon. As you know the purpose of this press conference is to announce the decision of the NCAA Executive Committee with regard to which bats will be used in NCAA baseball championship competition for 1999. I

will get to that announcement in just a moment, but first let me review for you the key elements in this issue.

The NCAA Baseball Rules Committee has been working for more than a decade to reduce the performance level of non-wood bats. The primary concerns in that effort have been the integrity of the game, the balance between offense and defense and minimizing risk. The recommendations forwarded by the Rules Committee last summer were designed to accomplish those two goals. Those three recommendations were that bats have an optimum diameter of 2-5/8 inches, that they have a weight to length unit difference of no more than three and that they produce no more than a 94 miles per hour batted ball exit speed. The Executive Committee looked at the evidence and agreed but voted to delay implementation until it could be assured that thorough testing and certification could be put in place and that an adequate supply of certified bats would be available. That's the reason it postponed implementation to August 1999.

Based on recommendations from the respective baseball committees, the championships committees in Divisions II and III voted in December to implement the full range of specifications for the 1999 championships; that is, bat diameter, weight-length difference and batted ball exit velocity. The Division I cabinet declined to implement the batted ball exit velocity standard. As a result the Executive Committee was asked to consider the question of which bats would be used in all three championships in 1999. It's important to note that we have not yet

been able to test the bats for certification. The Executive Committee met earlier this week in conjunction with the NCAA annual convention. That Committee has concluded that bats used in the 1999 NCAA baseball championships in all three divisions cannot exceed 2-5/8 inches in diameter and cannot have more than three units difference between the length of the bat and its weight, not including the grip. There is no batted ball exit speed requirement for bats used in the 1999 championship games.

Even without the exit speed specification, this is a significant step we think. Adopting the other two specifications will retard the performance of non-wood bats and that will be happening on a faster track than the August 1999 implementation date would have allowed. In addition, the Committee has authorized the NCAA staff to create a special panel of independent experts who will study the issues related to this matter, request and review additional testing if they think it is necessary and report to the Executive Committee by July 1 of this year. This panel will include scientists and other experts with no vested interest in the outcome of the testing or the recommendations. We want to bring together a collection of the very best minds to address these risks and performance issues. Baseball is a great game and deserves that consideration. I know you will have questions and I will turn this back to Wally Renfro.

**Renfro:** Thank you. We'll now open up the conference for questions from the media.

**Operator:** Thank you. Today's question and answer session will be conducted electronically. If you do wish to ask a question, please signal us by firmly pressing the star key followed by the digit one on your touch-tone telephone at this time. We will come to you in the order you signal and if you find your question has already been asked and answered or would like to remove yourself from the queue, please press the pound key. Once again, to ask a question please signal us by firmly pressing the star key followed by the digit one.

We'll take our first question from Steve Rock at T.C. Star.

**Steve:** Good afternoon. This is for really anyone who cares to answer. First of all, I just wanted to ask how much feedback, how much input have you gotten from baseball coaches and their concerns about the exit speed specifications? And then the other question I wanted to ask is does the NCAA's own injury surveillance system indicate over a course of five or ten years an increase in injuries and is that what kind of was the impetus behind the exit speed specifications?

**Renfro:** We'll ask Cedric Dempsey to answer that question.

**Dempsey:** Steve, in relationship to your last question, most of the information we have collected over the last decade would indicate that injuries have been somewhat flat, if you will, in baseball. Your first question again was?

**Pavlovich:** Then I've got one also, another question. With this -- these specifications going in effect for the 1999 championship, does this mean that the earlier recommendation or actual ruling that the August date would, all three specifications would go into effect, is that out the window now?

**Renfro:** Cedric Dempsey?

**Dempsey:** No, that is not, Lou, that is still in place. And if I can just add to what President Wethington said, which is accurate, the lawsuit with Easton bat company has not been resolved. There has been ongoing discussions with them, and those discussions will continue.

**Pavlovich:** Thank you.

**Renfro:** Next question, please.

**Operator:** Go next to Welch Suggs, *Chronicle of Higher Education*.

**Suggs:** Hi, Dr. Wethington, I understand the Executive Committee got this question, I guess, originally right before Christmas. Why did it take so long to arrive at a decision?

**Wethington:** Wally, I'll respond to that.

**Renfro:** Sure.

**Wethington:** The Executive Committee meeting was scheduled for Tuesday of this past week. That was the first opportunity that the Executive Committee had to consider this question.

**Renfro:** Next question, please.

**Operator:** Once again, if you would like to ask a question, please signal us by pressing your star key followed by the digit one. We will go to Matt Sherrieb from *The Daily Record*.

**Sherrieb:** Yes, I guess my question is, why did you guys accept two of the recommendations and not the third with the exit speed?

**Renfro:** Ced Dempsey?

**Dempsey:** In the wisdom of the Executive Committee last year, they -- one reason they postponed the implementation of all three prongs was a concern of whether or not we would have an instrument available and the protocol established in time for this season to test the exit velocity. That was good wisdom because we have not totally completed the testing of potential bats for this area and so that's one reason we had

delayed implementation until next August, and we will be continuing testing in the next few months.

**Renfro:** Next question.

**Operator:** We go next to Dana Hise, *Baseball Weekly*.

**Hise:** Hi, gentlemen. Anyone can answer this. You mentioned that you feel that the, I guess -- well, we know the two-thirds compromise is a fair compromise. In what ways do you anticipate the college baseball game to change with the new specifications for bats without the exit speed requirement?

**Renfro:** I think that Cedric Dempsey will answer that question.

**Dempsey:** Well, as President Wethington indicated, we do expect the adoption of the two-prong test for this year, which we can measure, where we don't have the measurement ability to do the exit velocity at this point in time for this season, will certainly retard the exit velocity of the ball off the bat and make it more wood-like, which is the goal of the Rules Committee, and I think we will see a game much more leaning toward a wood-like bat than we saw this past year.

**Renfro:** Next question, please.

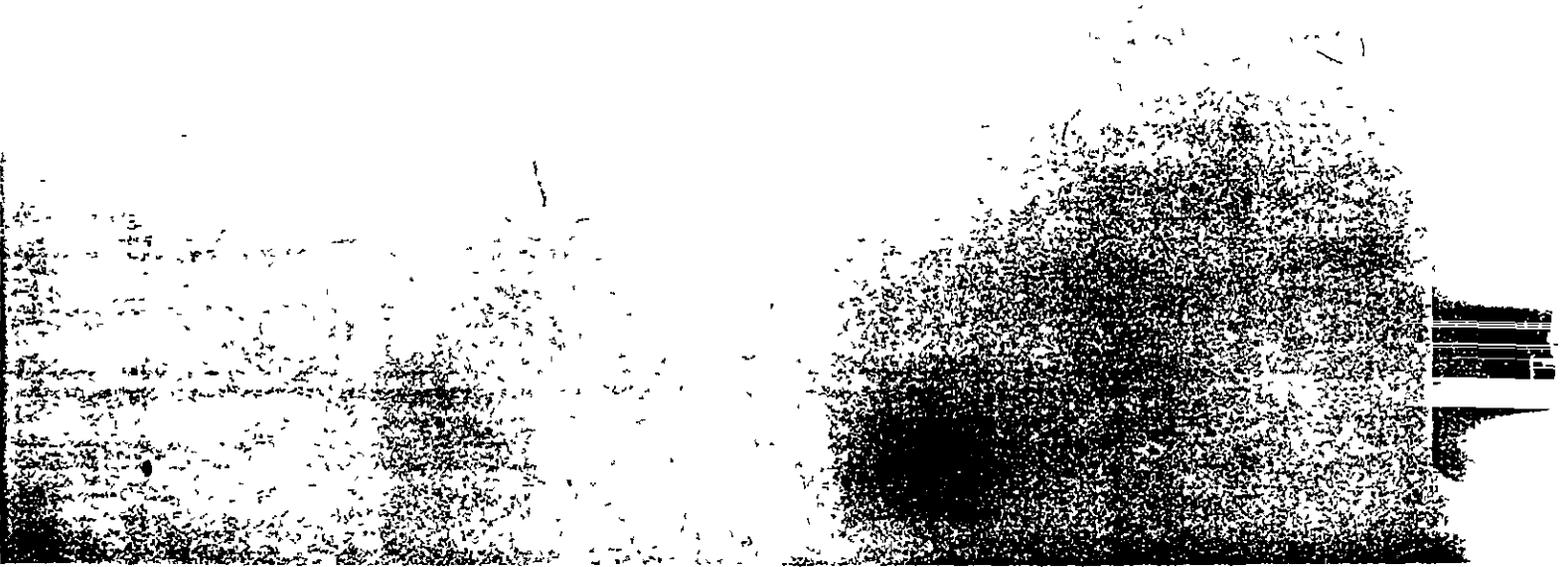
**Operator:** Again, if you would like to ask a question, please signal by pressing your star key, followed by the digit one on your touch-tone telephone at this time. We'll pause a moment.

Mr. Renfro, at this time there appears to be no further questions, so I would like to turn the conference back over to you.

**Renfro:** Thank you very much, and thank you for joining us on the conference call. Good day.

**Operator:** This does complete today's NCAA conference call. We do thank you for your participation and ask that you please disconnect at this time.

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# PBATSinteractive

Professional Baseball Athletic  
Trainers Society

Home

**Feature Article**

**Bat Survey - "Up The Middle Hits" And Their Relation To Injuries To Pitchers: Wood vs. Metal Bats**

**By Kent Biggerstaff**

In Brief: Metal bats were introduced into high school and college level baseball in 1974 in order to reduce the rising costs of wooden bats. The increased cost of wood was beginning to put a burden on budgets and the metal bat was an intelligent way to control these costs.

Unfortunately, with the increase in the offensive production of teams the last few years as well as a perceived increase in injuries to pitchers, due to batted balls hit up the middle, the NCAA has taken steps to make metal bats perform more like wooden bats. The changes will make the length to weight differential of metal bats 3 or less thus cutting down on the bat head speed, which in turn will reduce the exit velocity of the ball. There is a general perception that pitchers don't get injured often by batted balls when teams play with wood bats instead of metal. With this in mind, I decided to look into the injuries sustained by major league baseball pitchers from being hit by baseballs hit "Up the Middle".

In a memo from Cedric Dempsey of the NCAA to the CEO's, athletic directors, head coaches and conference commissioners: he shared some *important information about baseball bat safety*. The NCAA Executive Committee voted to adopt a change in metal bat specifications for the 1999 season. The NCAA took a survey of Division I schools, with 118 schools participating, concerning the number of injuries sustained by pitchers hit by batted balls. The only criteria of injury was if a pitcher was hit by a batted ball hit back up the middle, the injury was reported. Batted balls that were caught or deflected by the glove and did not contact the body were not recorded.

With the 118 Division I schools responding, it was projected that 375 incidents of pitchers being hit by a batted ball occurred in 1998. While most of these injuries were minor, 11% were serious enough to merit a physician's attention.

As stated earlier, there is a perception that major league pitchers don't get injured from batted balls because the game is played with wood bats and these pitchers are elite athletes with tremendous athletic ability and reaction time. This is where our survey came into being. With the

assistance of all major league athletic trainers, the Professional Baseball Athletic Trainers Society (PBATS) took a survey of the 1998 major league championship baseball season. The same criteria used by the NCAA was used by PBATS, any pitcher hit by a batted ball up the middle was recorded. I am happy to say that we had 100% participation with a monthly update returned from all 30 major league teams.

The results are shown in the accompanying table. There were 316 injuries reported during the 1998 season 34 pitchers (11%) had to be taken out of the game and of the game and required a physician's attention. In addition, 6 pitchers (2%) were placed on the disabled list with serious injuries.

**TABLE: PITCHERS - UP THE MIDDLE SURVEY**

MONTH	# HIT	HEAD/ FACE	TORSO	HAND/ ARM	FOOT/ LEG	EVAL ONLY	TAKEN OUT	MISSED NEXT	DL
APRIL	58	1	7	17	33	48	10	1	1
MAY	54	2	8	15	29	48	6	0	2
JUNE	61	1	9	18	33	56	5	1	1
JULY	53	3	6	14	30	49	4	2	2
AUG	47	0	6	12	29	42	5	1	0
SEPT	43	0	10	9	24	39	4	0	0
TOTAL	316	7	46	85	178	282	34	5	6

As you can see, using wooden bats will not eliminate the injuries pitchers sustain during a baseball season. There are certain occupational hazards related to all jobs and we all have to be prepared to handle these injuries. The percentage of injuries needing a physician's attention and those considered serious in nature were constant with both the metal and wood bats.

This comparison of injuries suffered by pitchers where metal and wood bats are used should at least eliminate the idea that injuries would be eliminated by changing the bat composition. The idea of having metal bat performance conform more closely to wood bats is a good idea, as this still enables high schools and colleges to use products that will help defray the costs to their athletic department budgets. By keeping the ratio of bat length to bat weight at no more than a differential of 3, i.e. 34" to 31oz, they might be able to keep the bat head speed reduced enough to allow for a ball exit velocity of no more than 93 - 94 mph. This exit velocity would give the pitchers approximately 0.4 seconds reaction time and, according to research, this is the reaction time needed to react to a ball hit from 54 feet away. It is also important to remember that there are many variables involved which contribute to pitcher's injuries, these include the background behind home plate that interferes with a pitcher's ability to pick the ball up off the bat as well as the hardness of the ball.

PBATS is planning on expanding our survey in 1999 to include all of the minor league baseball teams. With the cooperation of the professional athletic trainers with these teams, we will be able to get a much larger sampling thereby giving us a more accurate accounting of