

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 practice or game;
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 results 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 number of exposures to the possibility of injury are similar, 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 ($100/50,000 = 2$ injuries/1000 A-E) and natural ($200/100,000 = 2$ injuries/ 1,000 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.

skip → Any questions regarding the NCAA Injury Surveillance System or its data reports should be directed to: Randall W. Dick, assistant director of sports sciences, NCAA, 6201 College Boulevard, Overland Park, Kansas 66211-2422 (913/339-1906).

BASEBALL

Table 1
Distribution of Participating Teams

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

Note: Totals indicate regional and divisional breakdown of institutions participating in the NCAA Injury Surveillance System. Numbers in parentheses indicates the total number of NCAA institutions sponsoring the sport by division and nationally.

BASEBALL

Figure 1
Regions of the Injury Surveillance System

East

Connecticut
Delaware
Dist. of Col.
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

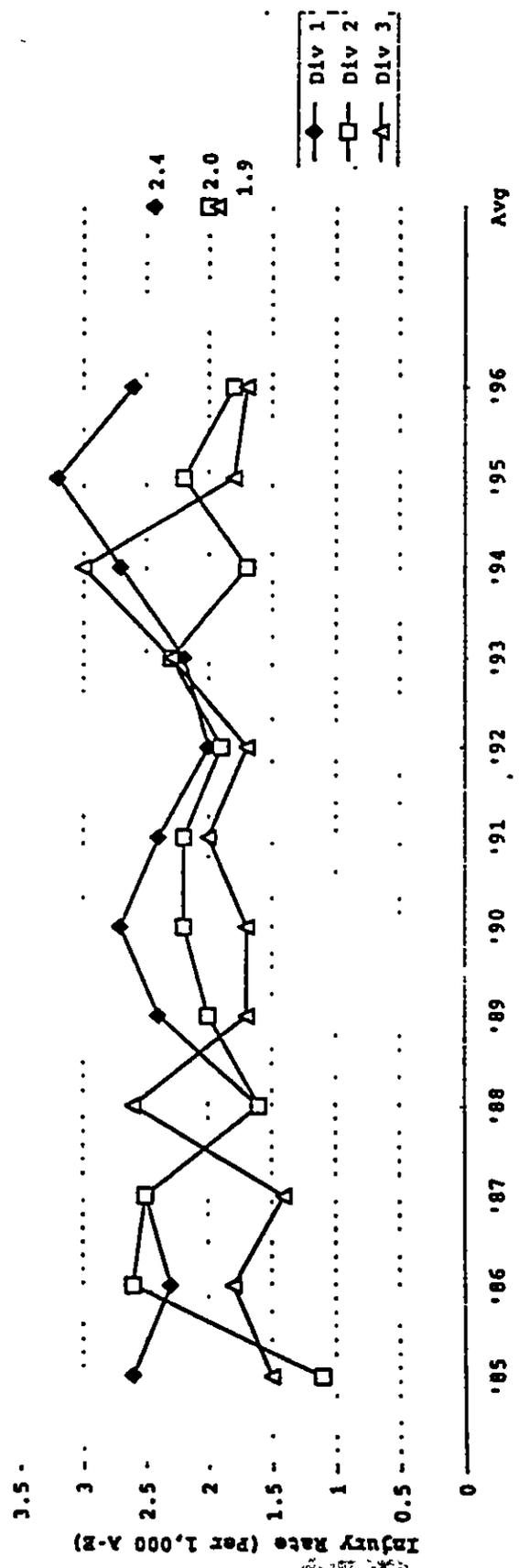
Illinois
Indiana
Iowa
Kansas
Michigan
Minnesota
Missouri
Nebraska
North Dakota
Ohio
Oklahoma
South Dakota
Wisconsin

West

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

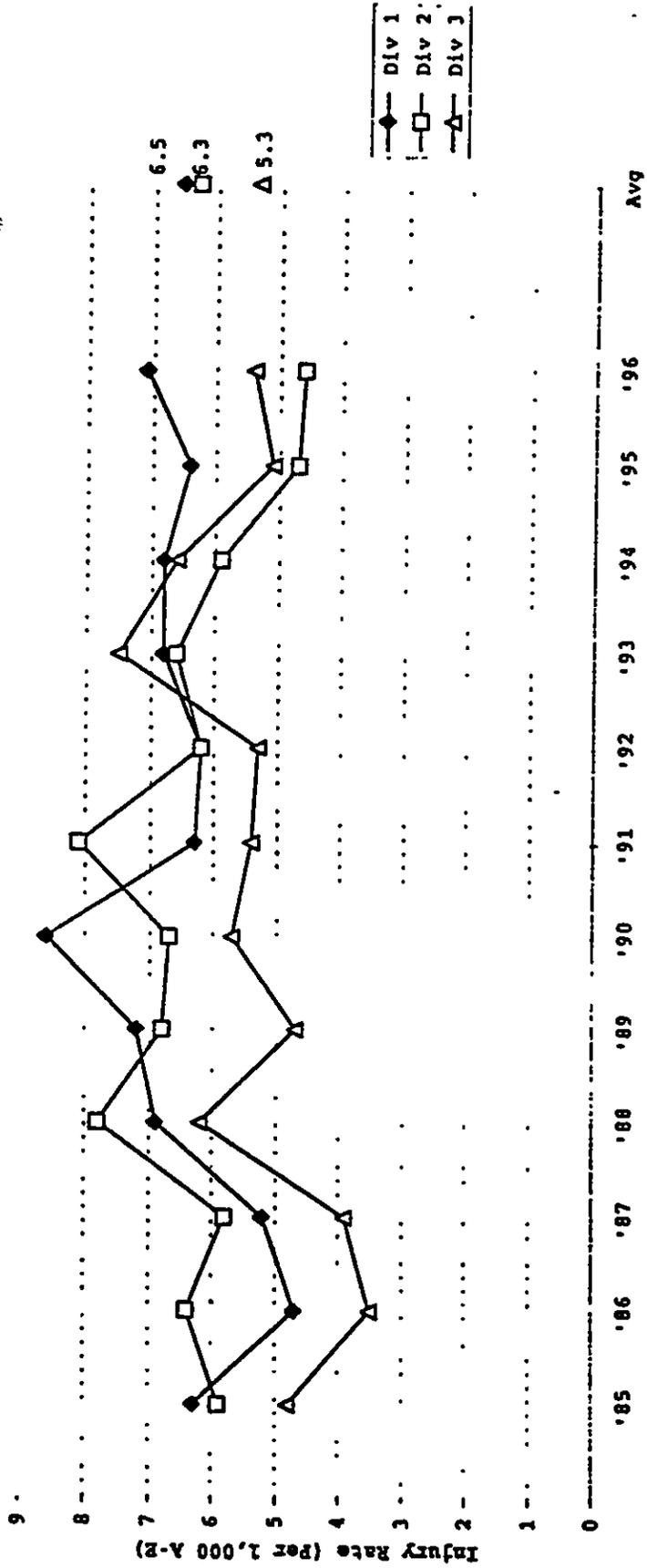
BASEBALL

Figure 2
Practice Injury Rates by Division



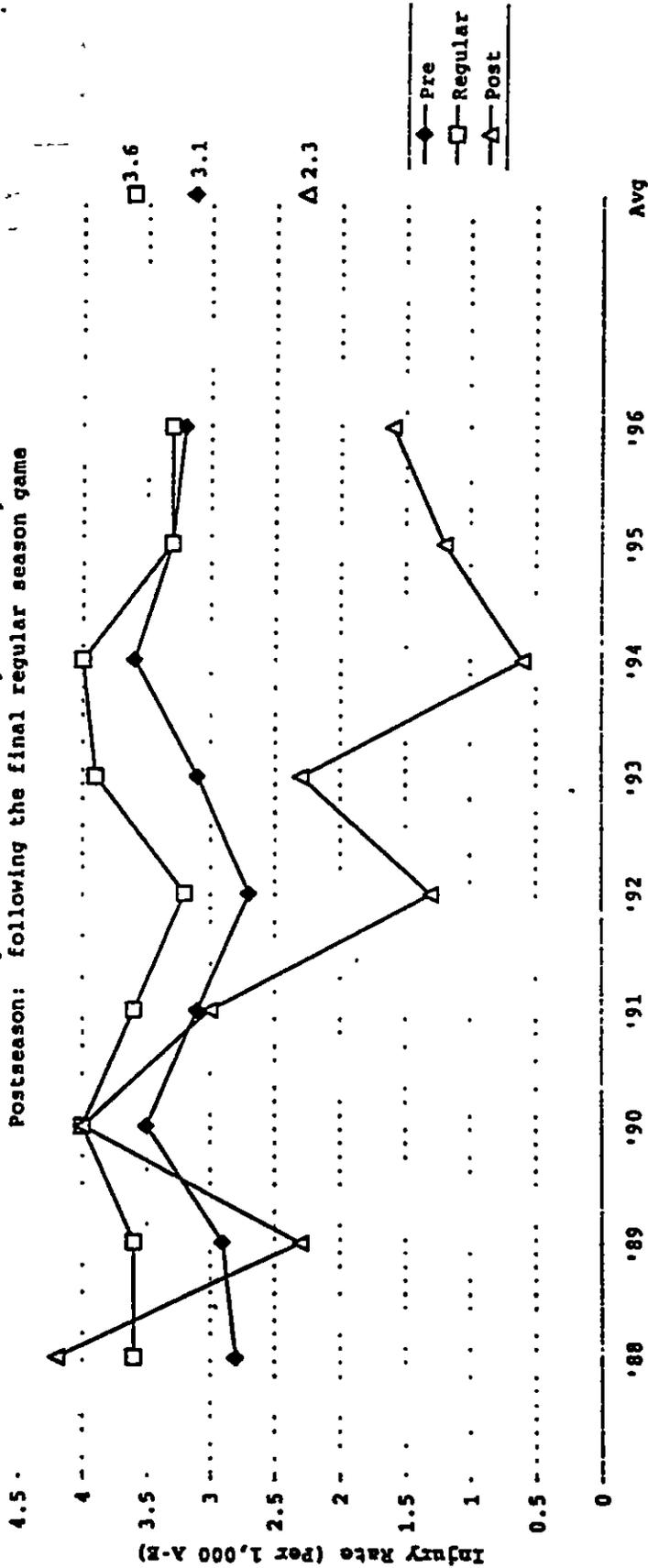
BASEBALL

Figure 3
Game Injury Rates by Division



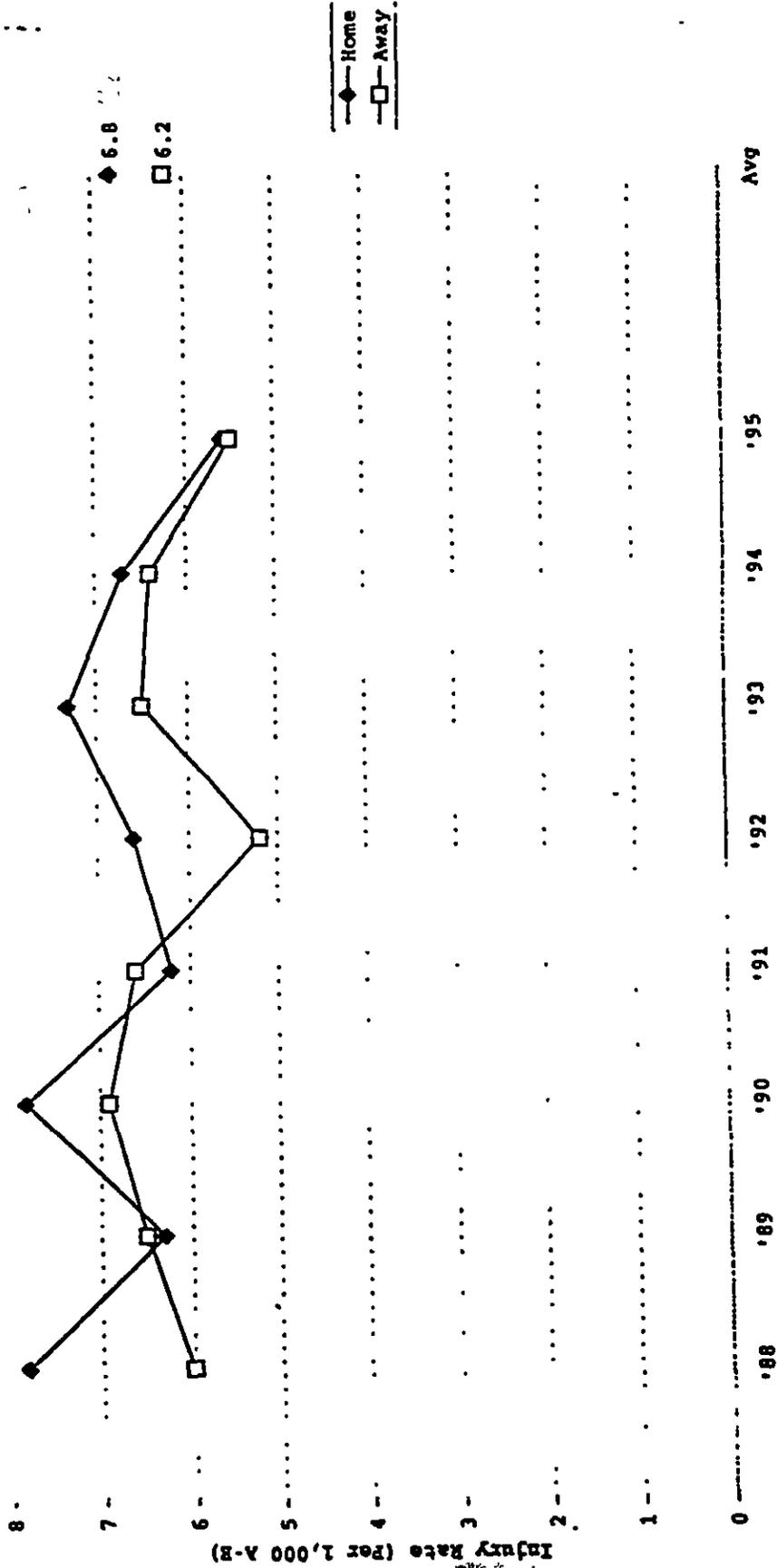
BASEBALL

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



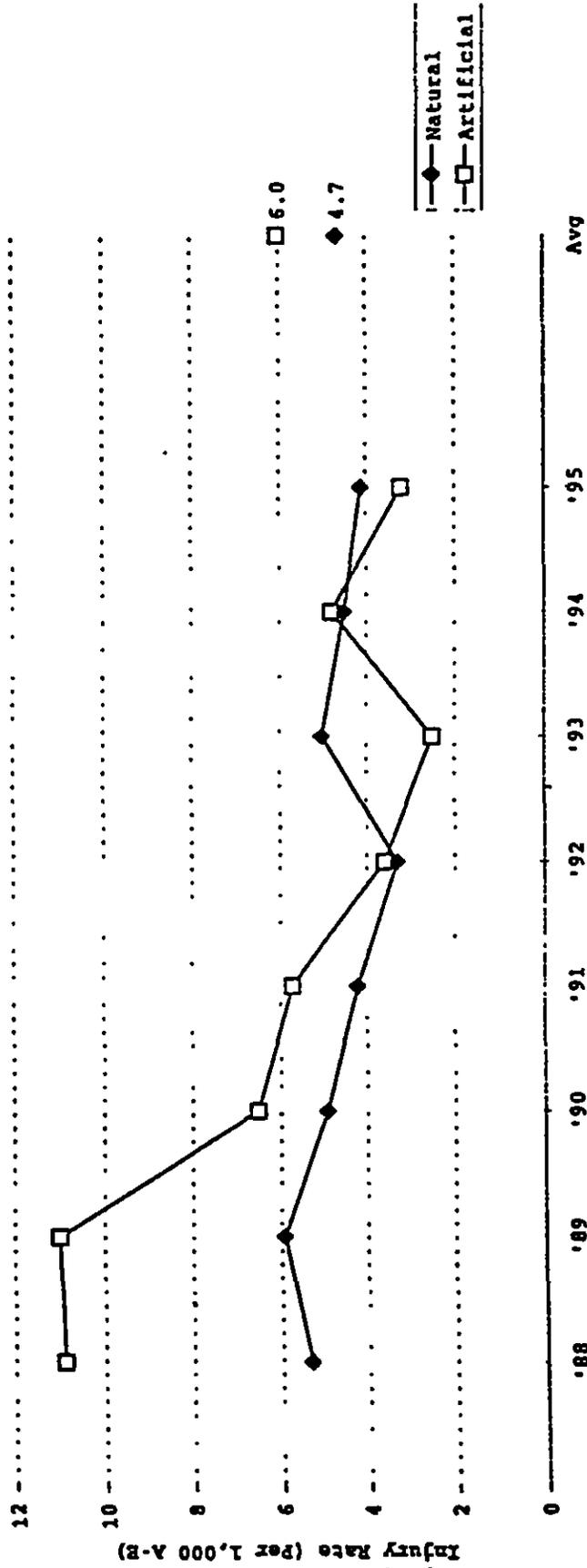
BASEBALL

Figure 5
Home and Away Injury Rates



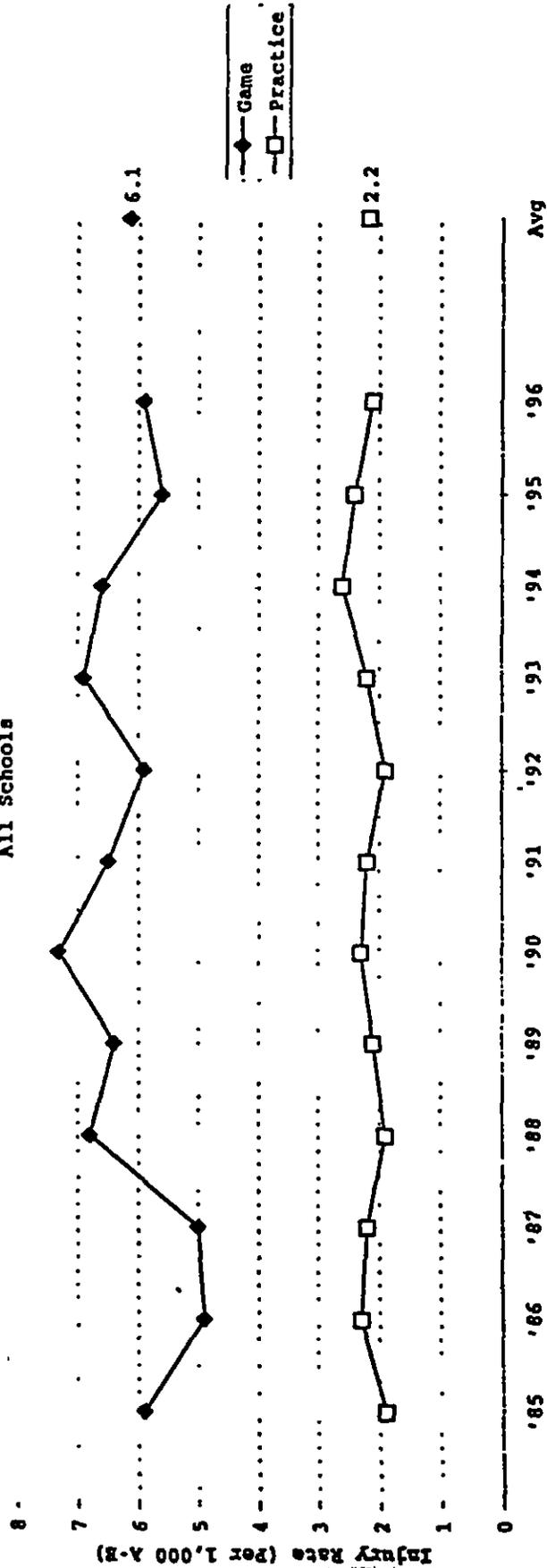
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Figure 6
Game Surface Injury Rates



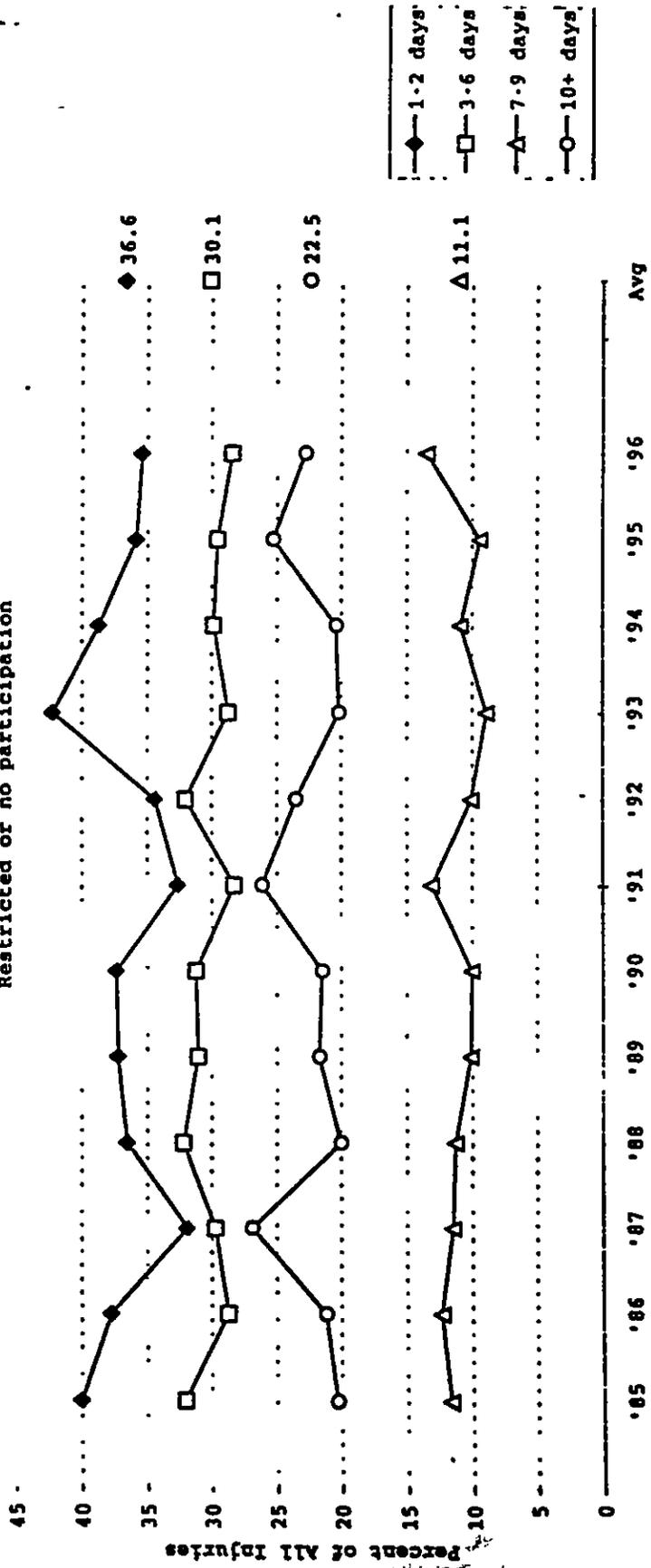
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Figure 7
Practice and Game Injury Rates
All Schools



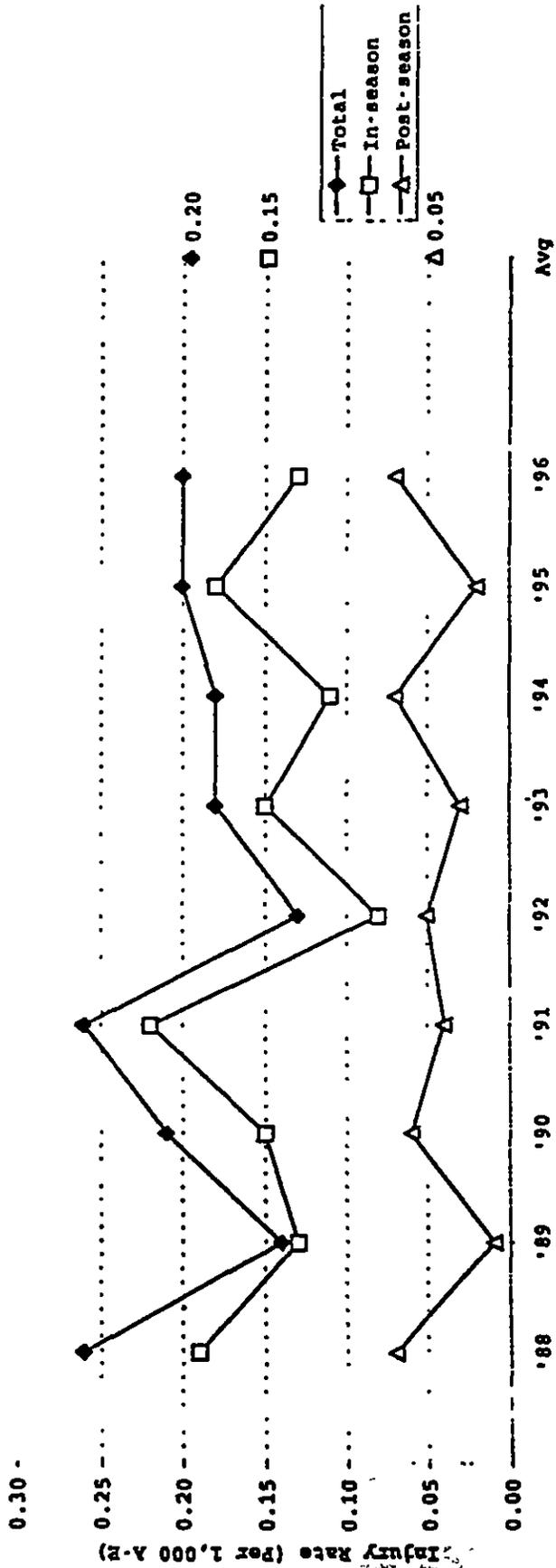
BASEBALL

Figure 8
Time Loss Injury Summary
Restricted or no participation



BASEBALL

Figure 9
Injuries Requiring Surgery



BASEBALL

Table 2
Top Three Body Parts Injured

	No. of <u>Teams</u>	No. of <u>Injuries</u>	1	2	3
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%)

BASEBALL

Table 3
Top Three Types of Injury

	<u>No. of Teams</u>	<u>No. of Injuries</u>	1	2	3
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%)
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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%)

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.

- a. 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: 1) an injury that restricts participation in one sport may not restrict participation in another sport and 2) injuries that occur at an end of the season can only be estimated with regard to time loss.
- b. 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: 1) the changing nature of surgical techniques and how they are applied, 2) the assumption that all sports had access to the same quality of medical evaluation, and 3) injuries can occur that may be categorized as severe, such as concussions, that may not require surgery.

PRACTICE INJURY RATE SUMMARY

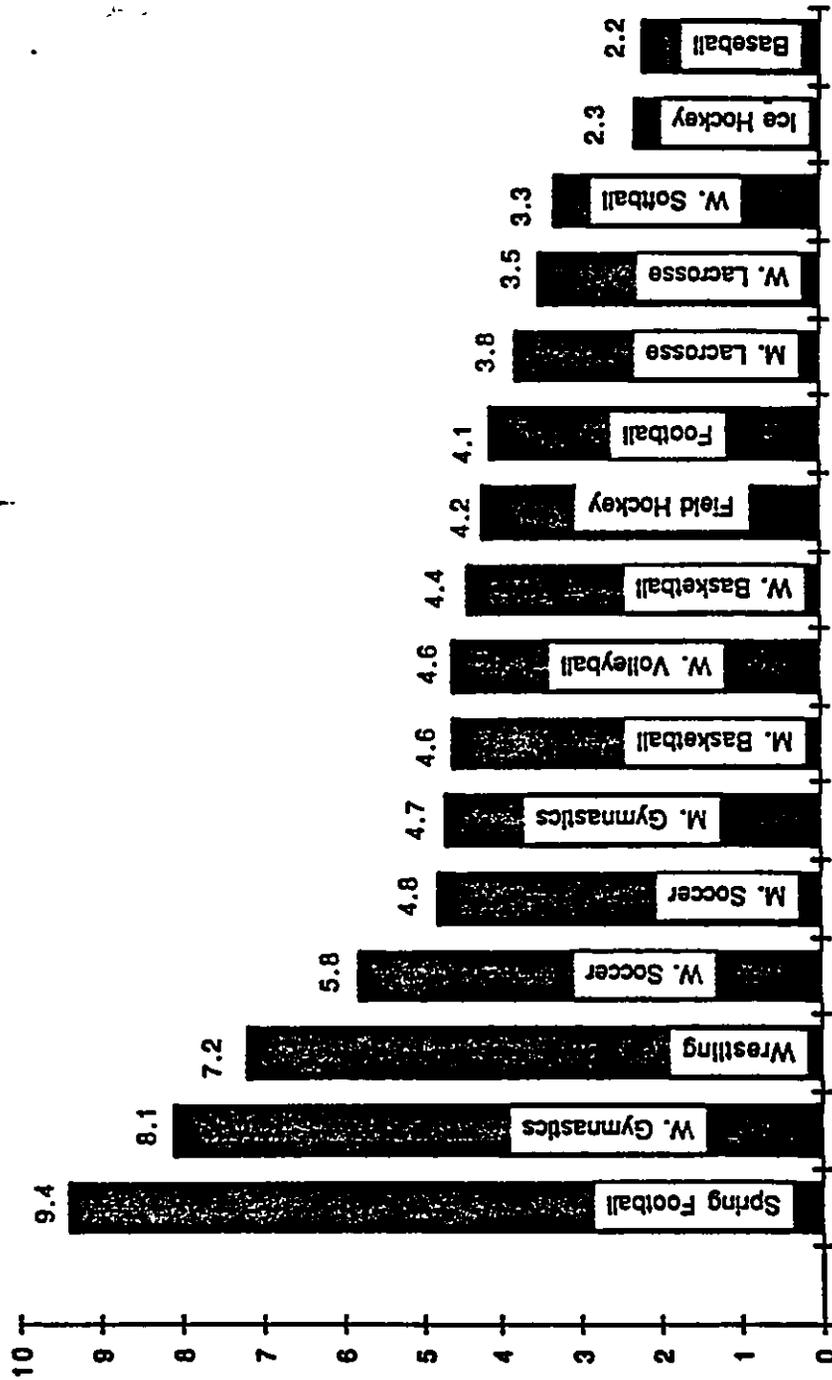


Figure 1 -- Practice injury rate across all sports analyzed in the ISS through the 1995-96 season.

GAME INJURY RATE SUMMARY

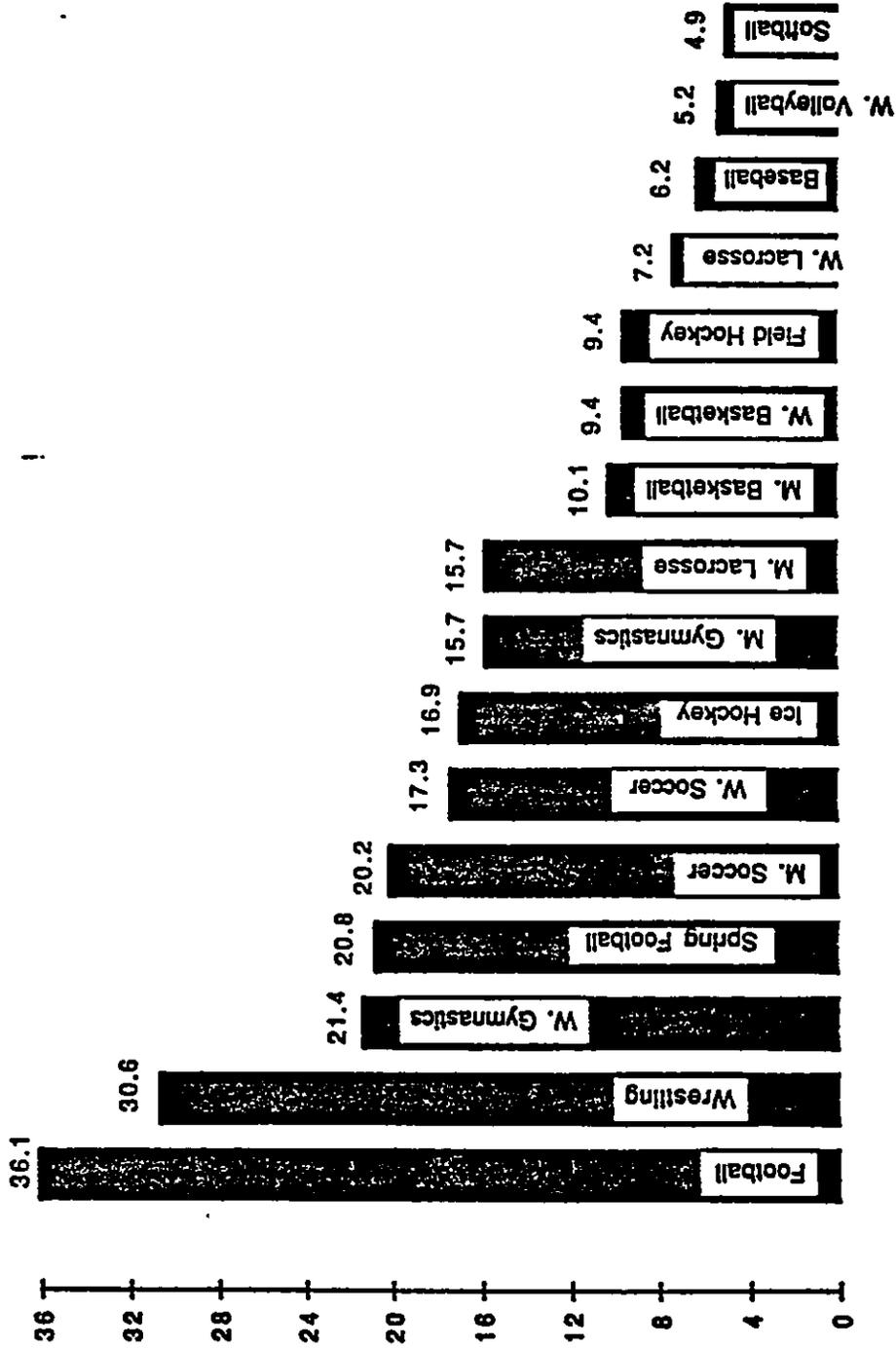


Figure 2 --Game injury rate across all sports analyzed in the ISS through the 1995-1996 season.

TOTAL (COMBINED PRACTICE AND GAME)
INJURY RATE SUMMARY

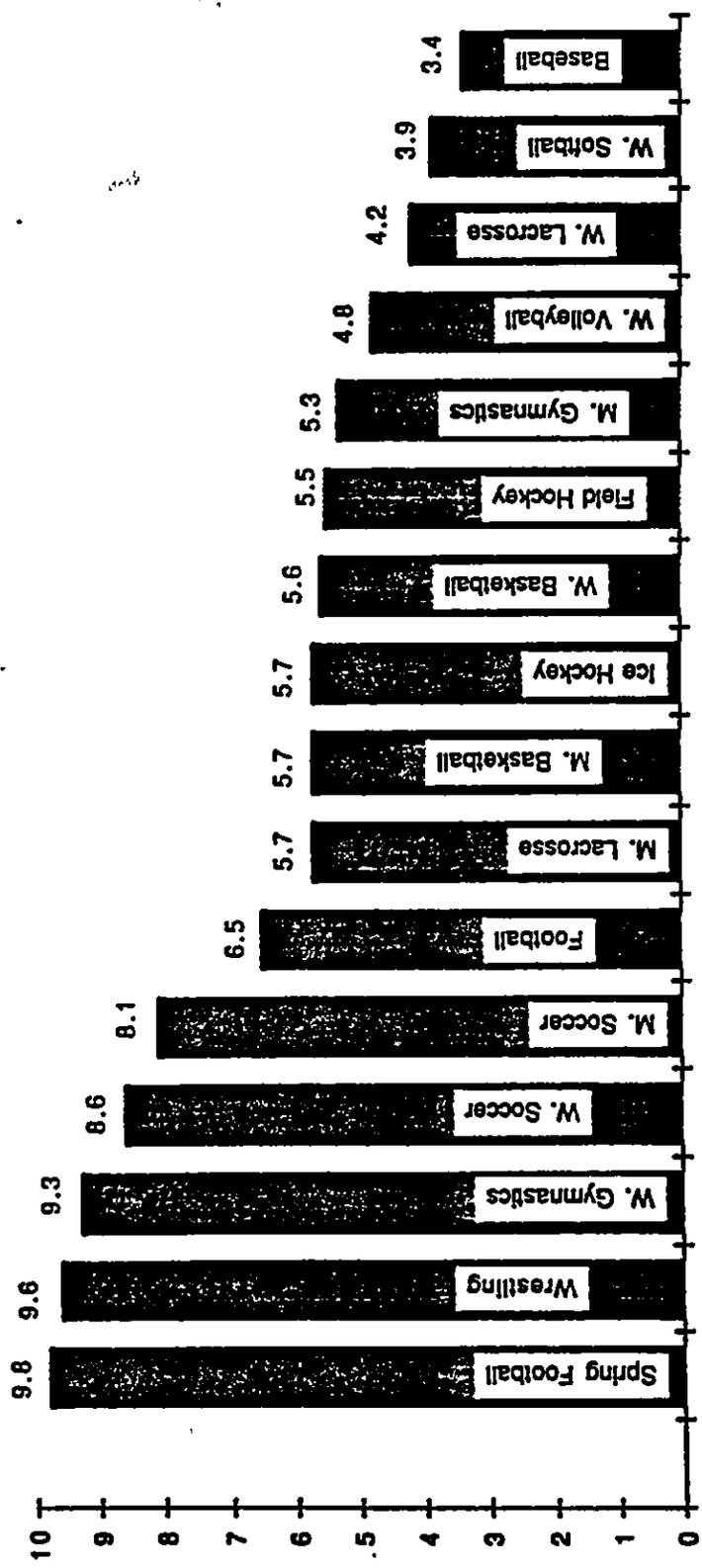


Figure 3 -- Total (practice and game) injury rate across all sports analyzed in the ISS through the 1995-96 season.

PERCENTAGE OF ALL INJURIES OCCURRING IN PRACTICES AND GAMES

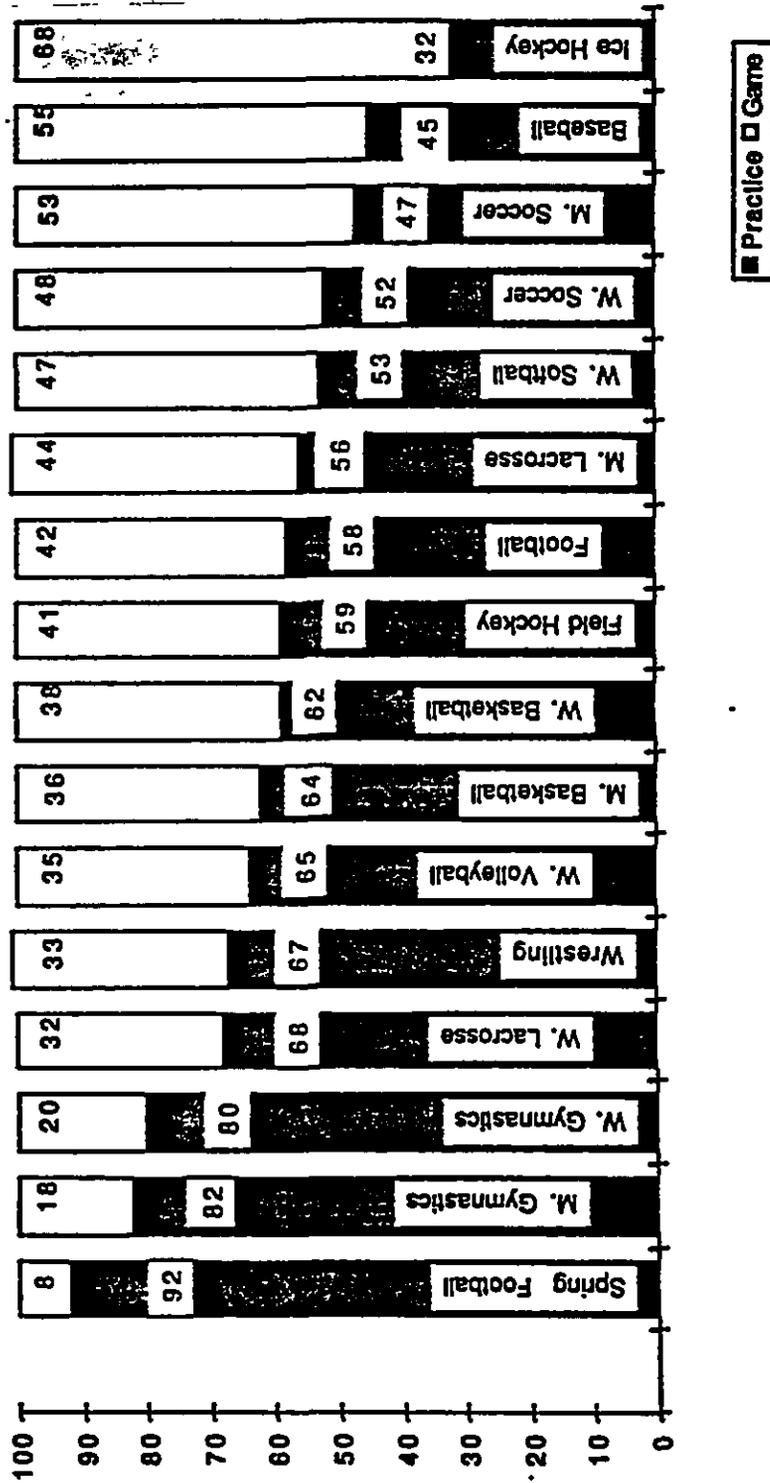


Figure 4 .. Percentage of all injuries that occurred in practices and in games through 1995-96 season. The relatively few injuries that occurred in the weight room were not included in the practice and game percentages. It should be noted that these calculations are based only on the absolute number of injuries and do not take exposures into consideration.

SEVERITY - INJURIES RESULTING IN 7+ DAYS OF TIME LOSS
(% OF ALL INJURIES)

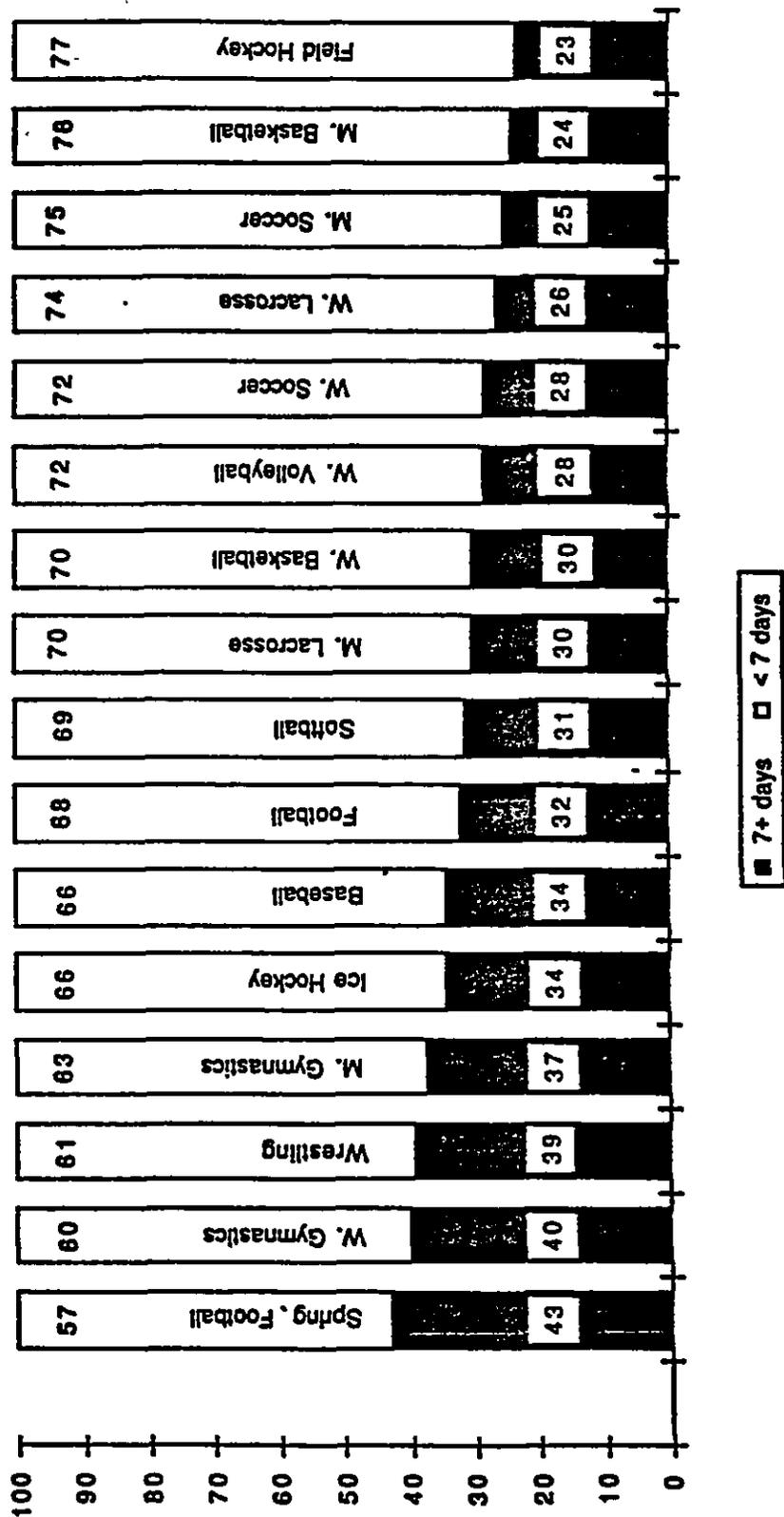


Figure 5 -- Injury severity (time loss) across all sports analyzed in the ISS through the 1995-96 season. Specifically, the percentage of all injuries that caused restricted or missed participation for seven or more days are reported.

SEVERITY - INJURY RESULTING IN 7+ DAYS TIME LOSS
(INJURY RATE)

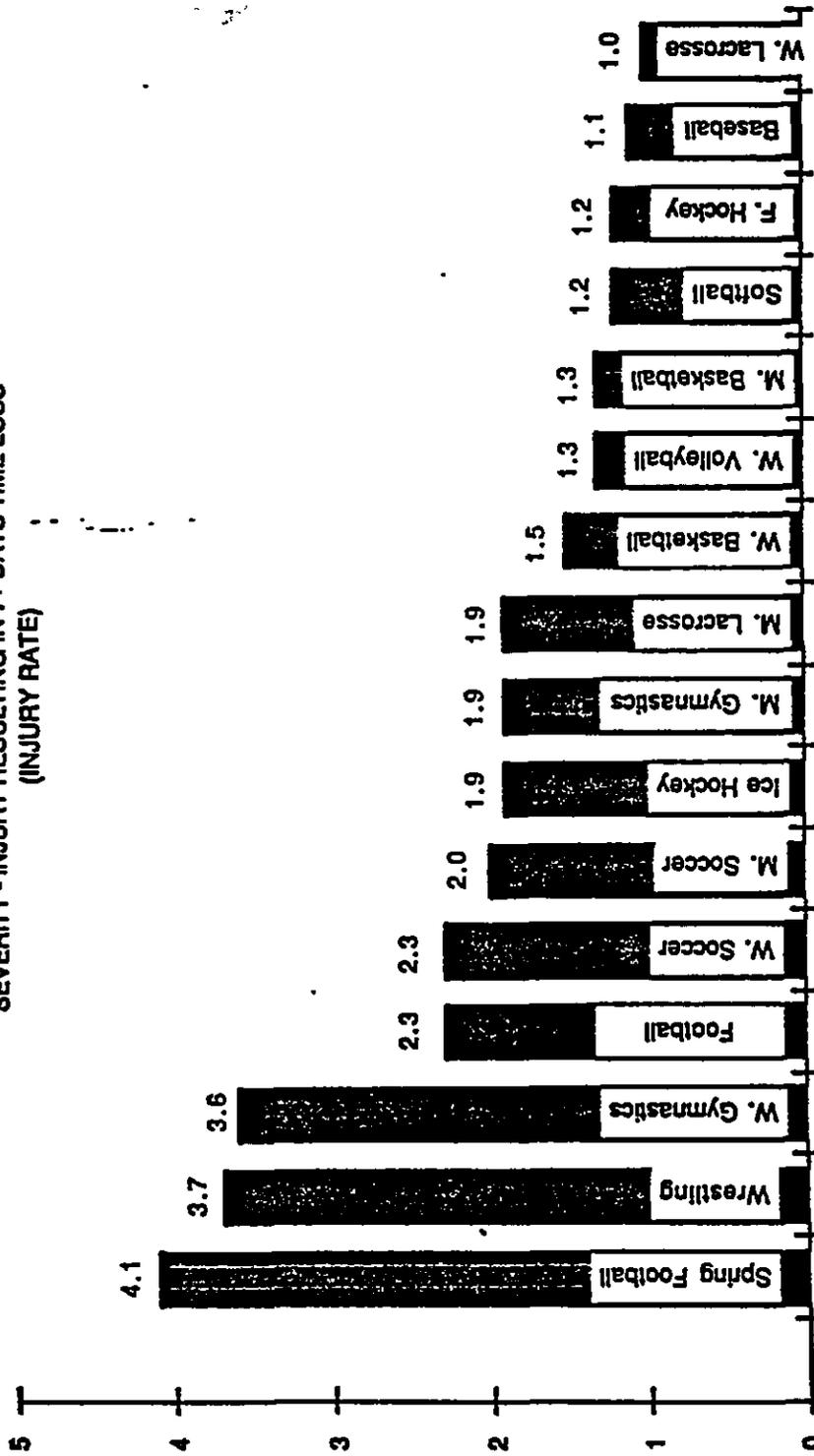


Figure 6 . . The rate of injuries that caused restricted or missed participation for seven or more days is reported. For example, one would expect 4.1 injuries per 1000 A-E restricting participation for at least seven days in spring football.

SEVERITY - PERCENTAGE OF ALL REPORTED INJURIES
REQUIRING SURGERY

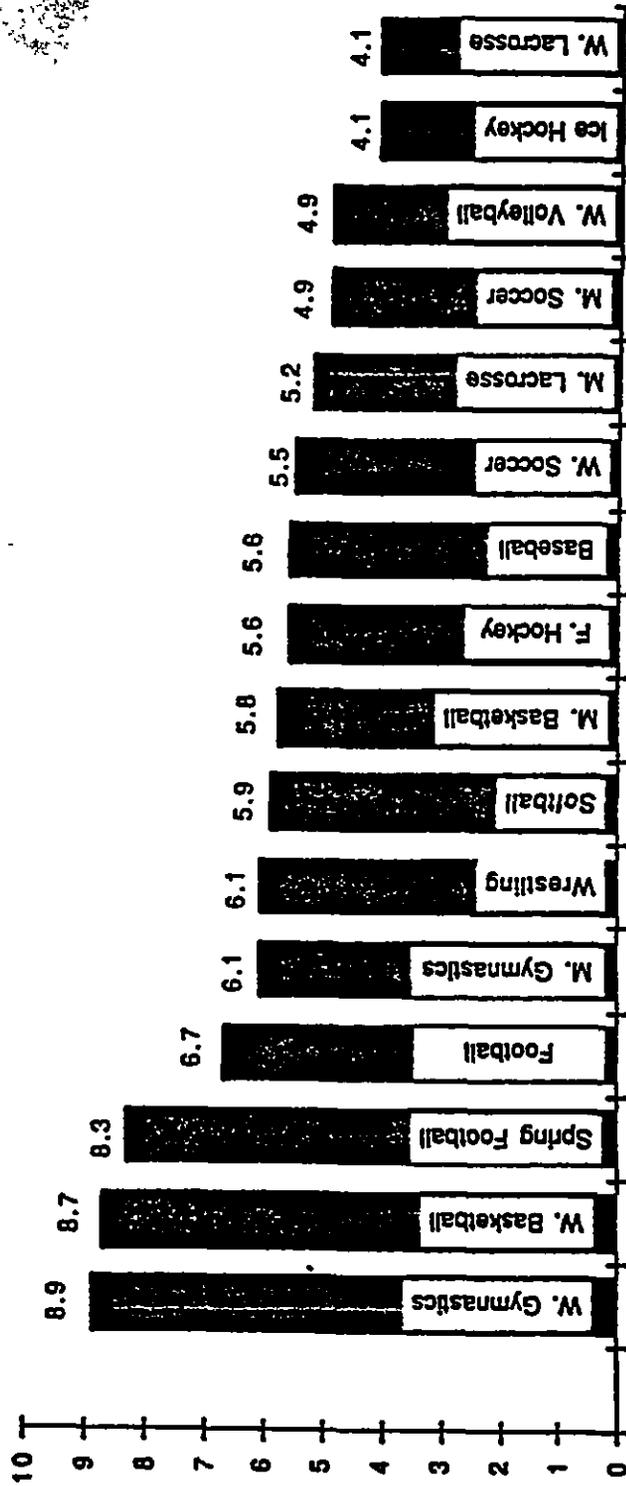


Figure 7 -- Injury severity (% of reported injuries requiring surgery) across all sports analyzed in the ISS through the 1995-96 season.

SEVERITY (INJURY REQUIRED SURGERY)
INJURY RATE

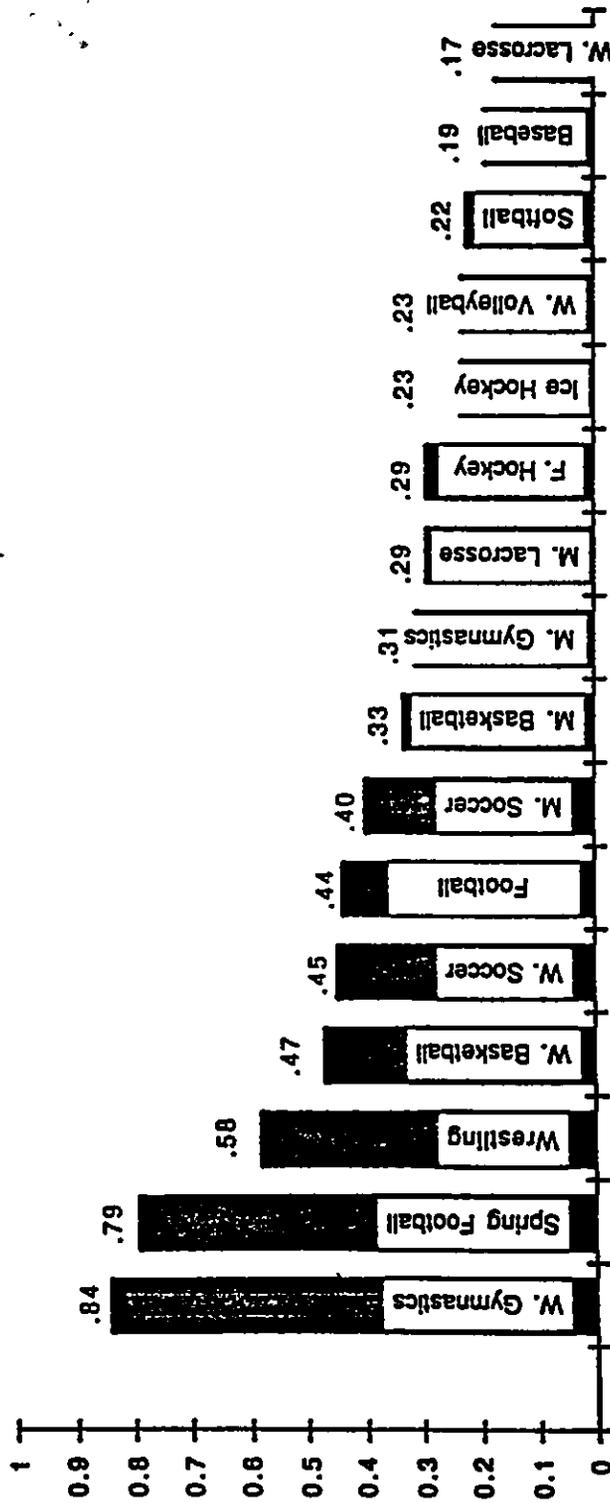


Figure 8 -- Injury severity (rate of reported injuries requiring surgery.)

*Pitcher
to 8.3*

NCAA Injury Surveillance System (ISS) Baseball Injury Analysis

*(FROM
NCAA)*

I. Introduction.

a. Reportable injury:

- Occurs in organized intercollegiate practice or game.
- Requires medical attention by athletics trainer or physician.
- Restricts athletics participation or performance for one or more days beyond day of injury.

92

b. Injury due to impact with batted ball added to survey for 1993-93 season.

c. Sampling: From 1993-1998, an average of 94 schools sampled out of an average 789 schools sponsoring baseball - 12% SAMPLE

2. Injury Analysis.

a.	<u>Year</u>	<u>% Injuries due to Pitcher Impacted with a Batted Ball</u>
	1993	3%
	1994	4%
	1995	2%
	1996	3%
	1997	3%
	1998	3%

b. From 1993-1998, 45 injuries to pitchers due to impact with a batted ball were reported that met NCAA ISS injury definition.

Extrapolating the 12% sample to all schools sponsoring baseball, this projects to:

- 375 injuries for all schools over the six year period (45 x 8.3)
- 63 injuries annually for all schools (375 / 6 years)
- Approximately 22 injuries annually in Division I. (35% of all sponsoring schools)

3. NCAA Committee on Competitive Safeguards and Medical Aspects of Sports statement.

At its June 1998 meeting, the NCAA Committee on Competitive Safeguards and Medical Aspects of Sports continued its review of this issue, including an analysis of injury numbers and issued the following statement:

The NCAA Committee on Competitive Safeguards and Medical Aspects of Sports is very concerned about the potential of serious injury from batted balls in the sport and supports research in this area. We are very pleased to see the bat manufacturers and administrative bodies coming together to address this issue in an objective and expedient manner. It is our hope that this combined endeavor will promote increased safety for the student-athlete.

4. Questions.

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NCAA BASEBALL INJURY SURVEILLANCE SYSTEM
 FOR ACADEMIC YEAR 1997-1998
 TOTAL OF ALL SCHOOLS

Number of Participating Schools = 94

THE FOLLOWING EXPOSURE NUMBERS WERE USED TO CALCULATE THE RATES REPORTED FOR ALL SCHOOLS

ABSOLUTE # OF GAMES	3,731
ABSOLUTE # OF PRACTICES	4,727
GAME AWAY EXPOSURES	28,657
GAME HOME EXPOSURES	22,679
GAME SEASON-POST EXPOSURES	1,856
GAME SEASON-PRE EXPOSURES	1,196
GAME SEASON-REGULAR EXPOSURES	48,299
GAME SURFACE ARTIFICIAL EXPOSURES	2,432
GAME SURFACE NATURAL EXPOSURES	48,818
GAME SURFACE NON-GRASS EXPOSURES	59
GAME TOTAL, EXPOSURES	51,351
PRACTICE SEASON-POST EXPOSURES	3,019
PRACTICE SEASON-PRE EXPOSURES	66,073
PRACTICE SEASON-REGULAR EXPOSURES	60,531
PRACTICE SURFACE ARTIFICIAL EXPOSURES	5,866
PRACTICE SURFACE NATURAL EXPOSURES	73,075
PRACTICE SURFACE NON-GRASS EXPOSURES	50,682
PRACTICE TOTAL, EXPOSURES	129,623
TOTAL EXPOSURES	180,974
TOTAL SEASON-POST EXPOSURES	4,875
TOTAL SEASON-PRE EXPOSURES	67,269
TOTAL SEASON-REGULAR EXPOSURES	108,830
TOTAL SURFACE ARTIFICIAL EXPOSURES	8,298
TOTAL SURFACE NATURAL EXPOSURES	121,893
TOTAL SURFACE NON-GRASS EXPOSURES	50,741

NCAA BASEBALL INJURY SURVEILLANCE SYSTEM
FOR ACADEMIC YEAR 1997-1998
TOTAL OF ALL SCHOOLS

1. Year

	# OF INJ.	PRACTICE TOTALS \$ OF EXP.	INJ. RATE	# OF INJ.	GAME TOTALS \$ OF EXP.	INJ. RATE
1. Freshman	84	0	.00	43	0	.00
2. Sophomore	79	0	.00	59	0	.00
3. Junior	84	0	.00	78	0	.00
4. Senior	66	0	.00	100	0	.00
5. Fifth Year	3	0	.00	9	0	.00
TOTALS:	316	0	.00	289	0	.00

6. Injury occurred during:

1. Preseason (prior to first regular-season contest)	203	66,073	3.07	3	1,196	2.51
2. Regular season	112	60,531	1.85	274	48,299	5.67
3. Postseason (following final regular-season game)	1	3,019	.31	12	1,856	6.47
99. Other	0	0	.00	0	0	.00
TOTALS:	316	129,623	2.44	289	51,351	5.63

7. Injury occurred in:

1. Competition--varies by	0	0	.00	289	51,351	5.63
2. NOT APPLICABLE	0	0	.00	0	0	.00
3. Practice	316	129,623	2.44	0	0	.00
99. Other	0	0	.00	0	0	.00
TOTALS:	316	129,623	2.44	289	51,351	5.63

8. Where did this injury occur (Game only)?

1. Home	1	0	.00	143	22,679	6.31
2. Away	3	0	.00	146	28,657	5.09
99. Other	0	0	.00	0	0	.00
TOTALS:	4	0	.00	289	51,336	5.63

9. Injury occurred during:

1. Pregame warm-up	1	0	.00	28	51,351	.55
2. Practice	313	129,623	2.41	0	0	.00
3. Innings 1 thru 3	0	0	.00	66	51,351	1.29
4. Innings 4 thru 6	0	0	.00	111	51,351	2.16
5. Innings 7 thru 9	0	0	.00	77	51,351	1.50
6. Extra Innings	0	0	.00	0	51,351	.00
99. Other	2	0	.00	7	0	.00
TOTALS:	316	129,623	2.44	289	51,351	5.63

NCAA BASEBALL INJURY SURVEILLANCE SYSTEM
FOR ACADEMIC YEAR 1997-1998
TOTAL OF ALL SCHOOLS

	# of INJ.	PRACTICE TOTALS # of EXP.	INJ. RATE	# of INJ.	GAME TOTALS # of EXP.	INJ. RATE
10. This injury is a:						
1. New injury	235	129,623	1.81	242	51,351	4.71
2. Recurrence of injury from this season	16	129,623	.12	19	51,351	.37
3. Recurrence injury from previous season	49	129,623	.38	19	51,351	.37
4. Complication of previous injury (this sport)	6	129,623	.05	3	51,351	.06
5. Recurrence of other sport injury	0	129,623	.00	4	51,351	.08
6. Recurrence of non-sport injury	3	129,623	.02	1	51,351	.02
7. Complication previous other sport injury	1	129,623	.01	1	51,351	.02
TOTALS:	310	129,623	2.39	289	51,351	5.63
11. Unrelated injury recorded this season?						
1. Yes	49	129,623	.38	67	51,351	1.30
2. No	266	129,623	2.05	221	51,351	4.30
TOTALS:	315	129,623	2.43	288	51,351	5.61
12. Weather/field condition						
1. No precipitation	196	0	.00	249	0	.00
2. Rain	1	0	.00	9	0	.00
3. Snow	2	0	.00	0	0	.00
4. Indoor	93	0	.00	0	0	.00
5. No precipitation/wet field	23	0	.00	31	0	.00
100. Other	0	0	.00	0	0	.00
TOTALS:	315	0	.00	289	0	.00
13. How long did injury keep from participating in sport						
1. 1-2 days	115	129,623	.89	113	51,351	2.20
2. 3-6 days	90	129,623	.69	68	51,351	1.32
3. 7-9 days	33	129,623	.25	31	51,351	.60
4. 10 days or more	78	129,623	.60	77	51,351	1.50
5. Catastrophic nonfatal	0	129,623	.00	0	51,351	.00
6. Fatal	0	129,623	.00	0	51,351	.00
TOTALS:	316	129,623	2.44	289	51,351	5.63
14. This injury involved (circle one):						
1. Contact with another competitor	11	129,623	.08	28	51,351	.55
2. Contact with playing surface	28	129,623	.22	41	51,351	.80
3. Contact with apparatus/ball	52	129,623	.40	85	51,351	1.66
4. Contact with other in environment (wall, fence)	4	129,623	.03	12	51,351	.23
5. No apparent contact (trauma about planted foot)	39	129,623	.30	22	51,351	.43
6. No apparent contact (other)	174	129,623	1.34	89	51,351	1.73
99. Other	8	129,623	.06	12	51,351	.23
TOTALS:	316	129,623	2.44	289	51,351	5.63

NCAA BASEBALL INJURY SURVEILLANCE SYSTEM
FOR ACADEMIC YEAR 1997-1998
TOTAL OF ALL SCHOOLS

15. Principal body part injured	# of INV.	PRACTICE TOTALS		GAME TOTALS	
		# of EXP.	INV. RATE	# of INV.	# of EXP. INV. RATE
1. Head	16	129,623	.12	19	51,351 .37
2. Eye(s)	1	129,623	.01	3	51,351 .06
3. Ear(s)	0	129,623	.00	0	51,351 .00
4. Nose	4	129,623	.03	3	51,351 .06
5. Face	1	129,623	.01	4	51,351 .08
6. Chin	0	129,623	.00	0	51,351 .00
7. Jaw (TMJ)	1	129,623	.01	3	51,351 .06
8. Mouth	0	129,623	.00	1	51,351 .02
9. Teeth	1	129,623	.01	2	51,351 .04
10. Tongue	0	129,623	.00	0	51,351 .00
11. Neck	2	129,623	.02	4	51,351 .08
12. Shoulder	72	129,623	.57	52	51,351 1.01
13. Clawicle	2	129,623	.02	1	51,351 .02
14. Scapula	1	129,623	.01	2	51,351 .04
15. Upper arm	4	129,623	.03	3	51,351 .04
16. Elbow	36	129,623	.28	19	51,351 .37
17. Forearm	4	129,623	.03	6	51,351 .12
18. Wrist	10	129,623	.08	20	51,351 .39
19. Hand	7	129,623	.05	6	51,351 .12
20. Thumb	4	129,623	.03	7	51,351 .14
21. Finger(s)	8	129,623	.06	12	51,351 .23
22. Upper Back	3	129,623	.02	2	51,351 .04
23. Spine	1	129,623	.01	8	51,351 .16
24. Lower Back	19	129,623	.15	4	51,351 .08
25. Rib(s)	2	129,623	.02	0	51,351 .00
26. Sternum	1	129,623	.01	0	51,351 .00
27. Stomach	3	129,623	.02	2	51,351 .04
28. Pelvis, Hips, Groin	10	129,623	.08	13	51,351 .25
29. Buttocks	1	129,623	.01	0	51,351 .00
30. Upper Leg	24	129,623	.19	31	51,351 .60
31. Knee	21	129,623	.16	23	51,351 .45
32. Patella	2	129,623	.02	3	51,351 .06
33. Lower Leg	9	129,623	.07	8	51,351 .16
34. Ankle	26	129,623	.20	20	51,351 .39
35. Heel/Achilles Tendon	1	129,623	.01	2	51,351 .04
36. Foot	5	129,623	.04	2	51,351 .04
37. Toe(s)	3	129,623	.02	1	51,351 .02
38. Spine	0	129,623	.00	0	51,351 .00
39. Kidney	0	129,623	.00	0	51,351 .00
40. External genitalia	3	129,623	.02	0	51,351 .00
41. Coccyx	0	129,623	.00	0	51,351 .00
42. Breast	0	129,623	.00	0	51,351 .00
99. Other	6	129,623	.05	4	51,351 .08
TOTALS:	316	129,623	2.44	289	51,351 5.63

NCAA BASEBALL INJURY SURVEILLANCE SYSTEM
FOR ACADEMIC YEAR 1997-1998
TOTAL OF ALL SCHOOLS

		# OF INV.	PRACTICE TOTALS \$ OF EXP.	INI. RATE	# OF INV.	GAME TOTALS \$ OF EXP.	INI. RATE
16. If head injury, athlete diagnosed as having:							
1.1 degree Cerebral concussion		10	129,623	.08	20	51,351	.39
2.2 degree Cerebral concussion		0	129,623	.00	2	51,351	.04
3.3 degree Cerebral concussion		0	129,623	.00	0	51,351	.00
5. Unknown		2	129,623	.02	0	51,351	.00
TOTALS:		12	129,623	.09	22	51,351	.43
17. If head injury, was a mouthpiece worn?							
1. NP worn: dentist-fitted		0	0	.00	0	0	.00
2. NP worn: self-fitted		0	0	.00	1	0	.00
3. NP not worn		24	0	.00	27	0	.00
TOTALS:		24	129,623	.19	28	51,351	.55
18. If eye injury, type of eye injury?							
1. Orbital fracture		1	129,623	.01	2	51,351	.04
2. Cornea		0	129,623	.00	0	51,351	.00
3. Ruptured globe		0	129,623	.00	1	51,351	.02
4. Soft tissue		3	129,623	.02	3	51,351	.06
99. Other		1	129,623	.01	1	51,351	.02
TOTALS:		5	129,623	.04	7	51,351	.14
19. Indicate ALL base structure injured:							
1. Collateral		7	129,623	.05	10	51,351	.19
2. Anterior cruciate		5	129,623	.04	2	51,351	.04
3. Posterior cruciate		0	129,623	.00	2	51,351	.04
4. Torn cartilage (meniscus)		12	129,623	.09	7	51,351	.14
5. Patella and/or patella tendon		5	129,623	.04	4	51,351	.08
99. Other		4	129,623	.03	3	51,351	.06
TOTALS:		33	129,623	.25	38	51,351	.59

NCAA BASEBALL INJURY SURVEILLANCE SYSTEM
FOR ACADEMIC YEAR 1997-1998
TOTAL OF ALL SCHOOLS

20. Primary type of injury

	# of INJ.	PRINCIPLE TOTALS # of EXP. INJ. RATE	# of INJ.	GAME TOTALS # of EXP. INJ. RATE
1. Abrasion	1	129,623 .01	1	51,351 .02
2. Contusion	27	129,623 .21	51	51,351 .99
3. Laceration	8	129,623 .06	9	51,351 .18
4. Puncture wound	0	129,623 .00	0	51,351 .00
5. Burn/bleb	5	129,623 .04	4	51,351 .08
6. Tendinitis	10	129,623 .08	10	51,351 .19
7. Ligament sprain (incomplete tear)	47	129,623 .36	46	51,351 .90
8. Ligament sprain (complete tear)	2	129,623 .02	6	51,351 .12
9. Muscle-tendon strain (incomplete tear)	106	129,623 .82	86	51,351 1.67
10. Muscle-tendon strain (complete tear)	2	129,623 .02	1	51,351 .02
11. Torn cartilage	8	129,623 .06	3	51,351 .06
12. Hyperextension	0	129,623 .00	1	51,351 .02
13. AC separation	2	129,623 .02	1	51,351 .02
14. Dislocation (partial)	5	129,623 .04	6	51,351 .12
15. Dislocation (complete)	2	129,623 .02	4	51,351 .08
16. Fracture	17	129,623 .13	20	51,351 .39
17. Stress fracture	0	129,623 .00	0	51,351 .00
18. Concussion	8	129,623 .06	17	51,351 .33
19. Heat exhaustion	1	129,623 .01	0	51,351 .00
20. Heat stroke	1	129,623 .01	0	51,351 .00
21. Burn	0	129,623 .00	0	51,351 .00
22. Inflammation	15	129,623 .12	7	51,351 .14
23. Infection	4	129,623 .03	0	51,351 .00
24. Hemorrhage	0	129,623 .00	0	51,351 .00
25. Internal injury (non-hemorrhage)	0	129,623 .00	0	51,351 .00
26. Nerve injury	7	129,623 .05	1	51,351 .02
27. Blister	0	129,623 .00	1	51,351 .02
28. Blisters	0	129,623 .00	0	51,351 .00
29. Hernia	1	129,623 .01	0	51,351 .00
30. Foreign object in body orifice	0	129,623 .00	0	51,351 .00
31. Avulsion (tooth)	0	129,623 .00	1	51,351 .02
32. Overuse	0	129,623 .00	0	51,351 .00
99. Other	17	129,623 .13	13	51,351 .25
TOTALS:	316	129,623 2.44	289	51,351 5.63

21. Bleeding occurred as part of injury?

1. Yes	21	129,623 .16	21	51,351 .41
2. No	295	129,623 2.28	266	51,351 5.18
99. Other	0	129,623 .00	0	51,351 .00
TOTALS:	316	129,623 2.44	287	51,351 5.39

22. Did this injury require surgery?

1. Yes, in-season	25	129,623 .19	15	51,351 .29
2. Yes, post-season	6	129,623 .05	9	51,351 .16
3. No	284	129,623 2.19	263	51,351 5.12
TOTALS:	315	129,623 2.43	287	51,351 5.39

NCAA BASEBALL INJURY SURVEILLANCE SYSTEM
FOR ACADEMIC YEAR 1997-1998
TOTAL OF ALL SCHOOLS

23. Describe the joint surgery:

	# of INJ.	PRACTICE TOTALS # of EXP. INJ. RATE	# of INJ.	GAME TOTALS # of EXP. INJ. RATE
1.Arthroctomy	6	129,623	6	51,351
2.Diagnostic arthroscopy	1	129,623	0	51,351
3.Operative arthroscopy	15	129,623	9	51,351
99.Other	6	129,623	5	51,351
TOTALS:	30	129,623	20	51,351

24. Injury diagnosis (best diagnostic procedure)

	# of INJ.	PRACTICE TOTALS # of EXP. INJ. RATE	# of INJ.	GAME TOTALS # of EXP. INJ. RATE
1.Clinical exam by athletics trainer	176	129,623	159	51,351
2.Clinical exam by M.D. / D.D.S.	81	129,623	57	51,351
3.X-ray	24	129,623	38	51,351
4.MRI	20	129,623	26	51,351
5.Other imaging techniques	3	129,623	3	51,351
6.Surgery	6	129,623	2	51,351
7.Blood work/lab test	0	129,623	1	51,351
99.Other	5	129,623	1	51,351
TOTALS:	315	129,623	267	51,351

25. Field surface

	# of INJ.	PRACTICE TOTALS # of EXP. INJ. RATE	# of INJ.	GAME TOTALS # of EXP. INJ. RATE
1.Natural grass	146	73,079	173	48,818
2.Artificial grass	16	5,866	8	2,432
3.Infield or basepath dirt	41	0	102	0
4.Non-grass surfaces (i.e. gym floors, etc.)	104	50,682	1	0
99.Other	7	0	3	0
TOTALS:	314	129,623	287	51,250

26. Position played at time of injury:

	# of INJ.	PRACTICE TOTALS # of EXP. INJ. RATE	# of INJ.	GAME TOTALS # of EXP. INJ. RATE
1.Batter	34	0	50	0
2.Base runner	23	0	64	0
3.Pitcher	100	0	56	0
4.Catcher	22	0	26	0
5.First base	14	0	10	0
6.Second base	12	0	7	0
7.Shortstop	9	0	17	0
8.Third base	13	0	14	0
9.Left field	14	0	11	0
10.Center field	15	0	8	0
11.Right field	10	0	16	0
12.Non-positional/conditioning drill	42	0	6	0
13.Coach	0	0	0	0
99.Other	4	0	2	0
TOTALS:	312	129,623	267	51,351

NCAA BASEBALL INJURY SURVEILLANCE SYSTEM
FOR ACADEMIC YEAR 1997-1998
TOTAL OF ALL SCHOOLS

27. Did injury involve the
player sliding into a base

- 1. Yes, hand first
- 2. Yes, feet first
- 3. No

	# of INV.	PRACTICE TOTALS # of EXP. INV. RATE	# of INV.	GAME TOTALS # of EXP. INV. RATE
1. Yes, hand first	9	0	20	0
2. Yes, feet first	11	0	29	0
3. No	295	0	238	0
TOTALS:	315	129,623	267	51,351

28. Injury was caused by:

- 1. Being hit by a pitch
- 2. NOT APPLICABLE
- 3. Contact with boundary walls, railing, dugout
- 4. Contact with opposing player
- 5. Contact with teammate
- 6. Contact with ground
- 7. Contact with fixed base
- 8. Contact with breakaway base
- 9. Throwing (pitching)
- 10. Throwing (non-pitching)
- 11. No apparent contact
- 12. Contact with batted ball
- 13. Contact with thrown ball (non-pitch)
- 99. Other

	# of INV.	PRACTICE TOTALS # of EXP. INV. RATE	# of INV.	GAME TOTALS # of EXP. INV. RATE
1. Being hit by a pitch	13	129,623	26	51,351
2. NOT APPLICABLE	1	0	0	0
3. Contact with boundary walls, railing, dugout	4	129,623	7	51,351
4. Contact with opposing player	2	129,623	21	51,351
5. Contact with teammate	8	129,623	8	51,351
6. Contact with ground	26	129,623	33	51,351
7. Contact with fixed base	7	129,623	29	51,351
8. Contact with breakaway base	1	129,623	0	51,351
9. Throwing (pitching)	71	129,623	22	51,351
10. Throwing (non-pitching)	41	129,623	16	51,351
11. No apparent contact	88	129,623	54	51,351
12. Contact with batted ball	19	129,623	27	51,351
13. Contact with thrown ball (non-pitch)	7	129,623	10	51,351
99. Other	26	129,623	23	51,351
TOTALS:	314	129,623	286	51,351

NCAA[®]
INJURY SURVEILLANCE
SYSTEM

1998-99



**NATIONAL COLLEGIATE
ATHLETIC ASSOCIATION**



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, football, softball, men's lacrosse and women's lacrosse).

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 964 member institutions (as of August, 1998). 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.

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; Steve Kanaby and Jeff Dubes, current data input specialists, Heather MacKenzie, who revised and edited all charts and tables, Fred Worthman, who recorded injury data for the ISS since its inception until his retirement this fall, and Dan Spencer, Dean Dautenhahn, Kathy Day, Doug Carpenter and Susan Brown, who developed 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:

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BASEBALL

NCAA BASEBALL INJURY SURVEILLANCE SYSTEM
FOR ACADEMIC YEAR 1998-1999
TOTAL OF ALL SCHOOLS

Number of Participating Schools = 92

THE FOLLOWING EXPOSURE NUMBERS WERE USED TO CALCULATE THE RATES REPORTED FOR ALL SCHOOLS

ABSOLUTE # OF GAMES	3,708
ABSOLUTE # OF PRACTICES	4,743
GAME AWAY EXPOSURES	26,622
GAME HOME EXPOSURES	22,585
GAME SEASON-POST EXPOSURES	2,014
GAME SEASON-PRE EXPOSURES	1,104
GAME SEASON-REGULAR EXPOSURES	46,089
GAME SURFACE ARTIFICIAL EXPOSURES	1,427
GAME SURFACE NATURAL EXPOSURES	47,780
GAME TOTAL EXPOSURES	49,207
PRACTICE SEASON-POST EXPOSURES	3,033
PRACTICE SEASON-PRE EXPOSURES	65,959
PRACTICE SEASON-REGULAR EXPOSURES	61,996
PRACTICE SURFACE ARTIFICIAL EXPOSURES	7,108
PRACTICE SURFACE NATURAL EXPOSURES	76,706
PRACTICE SURFACE NON-GRASS EXPOSURES	47,174
PRACTICE TOTAL EXPOSURES	130,988
TOTAL EXPOSURES	180,195
TOTAL SEASON-POST EXPOSURES	5,047
TOTAL SEASON-PRE EXPOSURES	67,063
TOTAL SEASON-REGULAR EXPOSURES	108,085
TOTAL SURFACE ARTIFICIAL EXPOSURES	8,535
TOTAL SURFACE NATURAL EXPOSURES	124,486
TOTAL SURFACE NON-GRASS EXPOSURES	47,174

NCAA BASEBALL INJURY SURVEILLANCE SYSTEM
 FOR ACADEMIC YEAR 1998-1999
 TOTAL OF ALL SCHOOLS

	# of INJ.	FRACTICE TOTALS # of EXP. INJ. RATE	# of INJ.	GAME TOTALS # of EXP. INJ. RATE
1. Year				
1 Freshman	94	0 .00	46	0 .00
2 Sophomore	54	0 .00	61	0 .00
3 Junior	68	0 .00	99	0 .00
4 Senior	63	0 .00	91	0 .00
5 Fifth Year	5	0 .00	6	0 .00
TOTALS	284	0 .00	293	0 .00
6. Injury occurred during:				
1. Preseason (prior to first regular-season center	198	65,959 3.00	2	1,104 1.81
2 Regular season	78	61,956 1.26	283	46,089 6.14
3 Postseason (following final regular-season game	8	3,033 2.64	8	2,014 3.97
99 Other	0	0 .00	0	0 .00
TOTALS	284	130,988 2.17	293	49,207 5.95
7. Injury occurred in:				
1. Competition-varsity	0	0 .00	293	49,207 5.95
2 NOT APPLICABLE	0	0 .00	0	0 .00
3 Practice	284	130,988 2.17	0	0 .00
99 Other	0	0 .00	0	0 .00
TOTALS	284	130,988 2.17	293	49,207 5.95
8. Where did this injury occur (Game only)?				
1 Home	0	0 .00	148	22,585 6.55
2 Away	0	0 .00	122	26,622 4.58
3 Neutral site	0	0 .00	23	0 .00
99 Other	0	0 .00	0	0 .00
TOTALS	0	0 .00	293	49,207 5.95
9. Injury occurred during:				
1 Pregame warm-up	0	0 .00	24	49,207 4.9
2 Innings 1 thru 3	0	130,988 .00	72	0 .00
3 Innings 4 thru 6	0	0 .00	121	49,207 2.46
4 Innings 7 thru 9	0	0 .00	74	49,207 1.50
5 Extra Innings	0	0 .00	2	49,207 .04
6 Practice	270	0 .00	0	49,207 .00
99 Other	14	0 .00	0	0 .00
TOTALS	284	130,988 2.17	293	49,207 5.95

NCAA BASEBALL INJURY SURVEILLANCE SYSTEM
FOR ACADEMIC YEAR 1998-1999
TOTAL OF ALL SCHOOLS

	PRACTICE TOTALS			GAME TOTALS		
	# of INJ.	# of EXP.	INJ. RATE	# of INJ.	# of EXP.	INJ. RATE
10. This injury is a:						
1 New injury	216	130,988	1.63	252	49,207	5.12
2 Recurrence of injury from this season	11	130,988	.08	19	49,207	.39
1. Recurrence injury from previous season	39	130,988	.30	19	49,207	.39
4. Complication of previous injury (this sport)	9	130,988	.07	1	49,207	.02
5. Recurrence of other sport injury	3	130,988	.02	2	49,207	.04
6. Recurrence of nonsport injury	5	130,988	.04	0	49,207	.00
7. Complication previous other sport injury	1	130,988	.01	0	49,207	.00
TOTALS:	284	130,988	2.17	293	49,207	5.95
11. Unrelate injury recorded this season?						
1. Yes	34	130,988	.26	72	49,207	1.46
2. No	250	130,988	1.91	221	49,207	4.49
TOTALS:	284	130,988	2.17	293	49,207	5.95
12. Weather/field condition						
1 No precipitation	164	0	.00	269	0	.00
2. Rain	1	0	.00	6	0	.00
3 Snow	1	0	.00	0	0	.00
4. Indoor	98	0	.00	0	0	.00
5 No precipitation/wet field	20	0	.00	18	0	.00
100. Other	0	0	.00	0	0	.00
TOTALS:	284	0	.00	293	0	.00
13. How long did injury keep from participating in spo						
1. 1-2 days	88	130,988	.67	123	49,207	2.50
2 3-6 days	98	130,988	.75	81	49,207	1.65
3 7-9 days	25	130,988	.19	21	49,207	.43
4. 10 days or more	73	130,988	.56	68	49,207	1.38
5. Catastrophic nonfatal	0	130,988	.00	0	49,207	.00
6. Fatal	0	130,988	.00	0	49,207	.00
TOTALS:	284	130,988	2.17	293	49,207	5.95
14. This injury involved (circle one):						
1 Contact with another competitor	6	130,988	.05	26	49,207	.53
2. Contact with playing surface	25	130,988	.19	53	49,207	1.08
3 Contact with apparatus/ball	48	130,988	.37	90	49,207	1.83
4 Contact with other in environment (wall, fence	7	130,988	.05	9	49,207	.18
5. No apparent contact (rotation about planted fo	16	130,988	.12	19	49,207	.39
6. No apparent contact (other)	163	130,988	1.24	80	49,207	1.63
99 Other	19	130,988	.15	16	49,207	.33
TOTALS:	284	130,988	2.17	293	49,207	5.95

NCAA BASEBALL INJURY SURVEILLANCE SYSTEM
FOR ACADEMIC YEAR 1998-1999
TOTAL OF ALL SCHOOLS

15. Principal body part injured	PRACTICE TOTALS			GAME TOTALS		
	# of INJ.	# of EXP.	INJ. RATE	# of INJ.	# of EXP.	INJ. RATE
1 Head	8	130,988	.06	10	49,207	.20
2 Eye(s)	2	130,988	.02	0	49,207	.00
3 Ear(s)	1	130,988	.01	0	49,207	.00
4 Nose	2	130,988	.02	5	49,207	.10
5 Face	2	130,988	.02	1	49,207	.02
6 Chin	0	130,988	.00	3	49,207	.06
7 Jaw (TMJ)	0	130,988	.00	1	49,207	.02
8 Mouth	2	130,988	.02	0	49,207	.00
9 Teeth	2	130,988	.02	3	49,207	.06
10 Tongue	0	130,988	.00	0	49,207	.00
11 Neck	0	130,988	.00	3	49,207	.06
12 Shoulder	57	130,988	.44	42	49,207	.85
13 Clavicle	2	130,988	.02	1	49,207	.02
14 Scapula	0	130,988	.00	2	49,207	.04
15 Upper arm	10	130,988	.08	3	49,207	.06
16 Elbow	36	130,988	.27	22	49,207	.45
17 Forearm	3	130,988	.02	9	49,207	.18
18 Wrist	2	130,988	.02	13	49,207	.26
19 Hand	3	130,988	.02	8	49,207	.16
20 Thumb	6	130,988	.05	7	49,207	.14
21 Finger(s)	9	130,988	.07	13	49,207	.26
22 Upper Back	5	130,988	.04	2	49,207	.04
23 Spine	2	130,988	.02	0	49,207	.00
24 Lower Back	14	130,988	.11	6	49,207	.12
25 Ribs	1	130,988	.01	7	49,207	.14
26 Sternum	0	130,988	.00	0	49,207	.00
27 Stomach	3	130,988	.02	3	49,207	.06
28 Pelvis, Hips, Groin	7	130,988	.05	11	49,207	.22
29 Buttocks	0	130,988	.00	1	49,207	.02
30 Upper leg	36	130,988	.27	31	49,207	.63
31 Knee	15	130,988	.11	20	49,207	.41
32 Patella	1	130,988	.01	0	49,207	.00
33 Lower leg	16	130,988	.12	15	49,207	.30
34 Ankle	25	130,988	.19	39	49,207	.79
35 Heel/Achilles Tendon	0	130,988	.00	6	49,207	.12
36 Foot	7	130,988	.05	4	49,207	.08
37 Toe(s)	1	130,988	.01	1	49,207	.02
38 Spleen	0	130,988	.00	0	49,207	.00
39 Kidney	0	130,988	.00	0	49,207	.00
40 External genitalia	2	130,988	.02	0	49,207	.00
41 Coccyx	0	130,988	.00	0	49,207	.00
42 Breast	0	130,988	.00	0	49,207	.00
99 Other	2	130,988	.02	1	49,207	.02
TOTALS:	284	130,988	.217	293	49,207	5.95

NCAA BASEBALL INJURY SURVEILLANCE SYSTEM
FOR ACADEMIC YEAR 1998-1999
TOTAL OF ALL SCHOOLS

	# of INV	PRACTICE TOTALS		# of INV.	GAME TOTALS	
		# of EXP.	INJ. RATE		# of EXP.	INJ. RATE
16. If head injury, athlete diagnosed as having:						
1 1 degree Cerebral concussion	9	130,988	.07	6	49,207	.12
2 2 degree Cerebral concussion	0	130,988	.00	0	49,207	.00
3 3 degree Cerebral concussion	0	130,988	.00	0	49,207	.00
4 No cerebral concussion	10	130,988	.08	17	49,207	.35
5 Unknown	0	130,988	.00	0	49,207	.00
TOTALS	19	130,988	.15	23	49,207	.47
17. If head injury, was a mouthpiece worn?						
1 MP worn, dentist-fitted	0	0	.00	0	0	.00
2 MP worn, self-fitted	5	0	.00	0	0	.00
3 MP not worn	14	0	.00	23	0	.00
TOTALS	19	0	.00	23	0	.00
18. If eye injury, type of eye injury?						
1 Orbital fracture	0	130,988	.00	0	49,207	.00
2 Cornea	0	130,988	.00	0	49,207	.00
3 Ruptured globe	0	130,988	.00	0	49,207	.00
4 Soft tissue	2	130,988	.02	2	49,207	.04
99 Other	0	130,988	.00	0	49,207	.00
TOTALS	2	130,988	.02	2	49,207	.04
19. Indicate ALL knee structures injured:						
1 Collateral	1	130,988	.01	7	49,207	.14
2 Anterior cruciate	1	130,988	.01	3	49,207	.06
3 Posterior cruciate	0	130,988	.00	1	49,207	.02
4 Torn cartilage (meniscus)	8	130,988	.06	4	49,207	.08
5 Patella and/or patella tendon	3	130,988	.02	2	49,207	.04
6 None	2	130,988	.02	2	49,207	.04
99 Other	3	130,988	.02	5	49,207	.10
TOTALS	18	130,988	.14	24	49,207	.49

NCAA BASEBALL INJURY SURVEILLANCE SYSTEM
FOR ACADEMIC YEAR 1998-1999
TOTAL OF ALL SCHOOLS

20. Primary type of injury	PRACTICE TOTALS			GAME TOTALS		
	# of INJ.	# of EXP.	INJ. RATE	# of INJ.	# of EXP.	INJ. RATE
1. Abrasion	0	130,988	.00	0	49,207	.00
2. Contusion	33	130,988	.25	62	49,207	1.26
3. Laceration	4	130,988	.03	9	49,207	.18
4. Puncture wound	0	130,988	.00	1	49,207	.02
5. Bursitis	5	130,988	.04	3	49,207	.06
6. Tendinitis	30	130,988	.23	6	49,207	.12
7. Ligament sprain (incomplete tear)	48	130,988	.37	66	49,207	1.34
8. Ligament sprain (complete tear)	2	130,988	.02	4	49,207	.08
9. Muscle-tendon strain (incomplete tear)	104	130,988	.79	178	49,207	3.59
10. Muscle-tendon strain (complete tear)	1	130,988	.01	1	49,207	.02
11. Torn cartilage	9	130,988	.07	3	49,207	.06
12. Hyperextension	1	130,988	.01	2	49,207	.04
13. AC separation	1	130,988	.01	0	49,207	.00
14. Dislocation (partial)	1	130,988	.01	3	49,207	.06
15. Dislocation (complete)	1	130,988	.01	6	49,207	.12
16. Fracture	10	130,988	.08	27	49,207	.55
17. Stress fracture	0	130,988	.00	3	49,207	.06
18. Concussion	7	130,988	.05	4	49,207	.08
19. Heat exhaustion	1	130,988	.01	0	49,207	.00
20. Heat stroke	0	130,988	.00	0	49,207	.00
21. Burn	0	130,988	.00	0	49,207	.00
22. Inflammation	8	130,988	.06	4	49,207	.08
23. Infection	0	130,988	.00	0	49,207	.00
24. Hemorrhage	0	130,988	.00	0	49,207	.00
25. Internal injury (non-hemorrhage)	0	130,988	.00	0	49,207	.00
26. Nerve injury	3	130,988	.02	1	49,207	.02
27. Blisters	0	130,988	.00	2	49,207	.04
28. Boll(s)	0	130,988	.00	0	49,207	.00
29. Hernia	1	130,988	.01	0	49,207	.00
30. Foreign object in body orifice	1	130,988	.01	0	49,207	.00
31. Avulsion (tooth)	0	130,988	.00	0	49,207	.00
32. Overuse	0	130,988	.00	0	49,207	.00
99 Other	13	130,988	1.0	8	49,207	.16
TOTALS-	284	130,988	2.17	293	49,207	5.95
21. Bleeding occurred as part of injury?	15	130,988	.11	22	49,207	.45
2 No	269	130,988	2.05	271	49,207	5.51
99 Other	0	130,988	.00	0	49,207	.00
TOTALS	284	130,988	2.17	293	49,207	5.95
22. Did this injury require surgery?	8	130,988	.06	13	49,207	.26
2. Yes, post-season	3	130,988	.02	5	49,207	.10
3. No	273	130,988	2.08	275	49,207	5.59
TOTALS	284	130,988	2.17	293	49,207	5.95

NCAA BASEBALL INJURY SURVEILLANCE SYSTEM
FOR ACADEMIC YEAR 1998-1999
TOTAL OF ALL SCHOOLS

	# of INJ	PRACTICE TOTALS # of EXP	INJ. RATE	# of INS.	GAME TOTALS # of EXP. INJ. RATE
23. Describe the joint surgery:					
1 Arthroscopy	2	130,988	.02	3	49,207 .06
2 Diagnostic arthroscopy	2	130,988	.02	0	49,207 .00
3 Operative arthroscopy	6	130,988	.05	6	49,207 .12
4 No joint surgery	272	130,988	2.08	278	49,207 5.65
99.Other	1	130,988	.01	6	49,207 .12
TOTALS:	283	130,988	2.16	293	49,207 5.95
24. Injury diagnosis (best diagnostic procedure)					
1 Clinical exam by athletics trainer	162	130,988	1.24	177	49,207 3.60
2 Clinical exam by M.D / D D S	82	130,988	.63	50	49,207 1.02
3 X-ray	24	130,988	.18	46	49,207 .93
4 MRI	9	130,988	.07	13	49,207 .26
5 Other imagery techniques	4	130,988	.03	3	49,207 .06
6 Surgery	2	130,988	.02	4	49,207 .08
7 Blood work/lab test	1	130,988	.01	0	49,207 .00
99.Other	0	130,988	.00	0	49,207 .00
TOTALS:	284	130,988	2.17	293	49,207 5.95
25. Field surface					
1 Natural grass	107	76,706	1.39	132	47,780 2.76
2 Artificial grass	8	7,108	1.13	7	1,427 4.91
3 Infield or basepath dirt	68	0	.00	144	0 0.00
4 Non-grass surfaces (i.e gym floors, etc)	92	47,174	1.95	1	0 0.00
99.Other	9	0	.00	9	0 0.00
TOTALS:	284	130,988	2.17	293	49,207 5.95
26. Position played at time of injury:					
1 Batter	27	0	.00	51	0 0.00
2 Base runner	28	0	.00	76	0 0.00
3 Pitcher	78	0	.00	59	0 0.00
4 Catcher	25	0	.00	26	0 0.00
5 First base	9	0	.00	9	0 0.00
6 Second base	10	0	.00	13	0 0.00
7 Shortstop	18	0	.00	13	0 0.00
8 Third base	9	0	.00	12	0 0.00
9 Left field	9	0	.00	12	0 0.00
10 Center field	7	0	.00	9	0 0.00
11 Right field	4	0	.00	9	0 0.00
12 Non-positional/conditioning drill	55	0	.00	2	0 0.00
13 Coach	0	0	.00	0	0 0.00
99.Other	5	0	.00	2	0 0.00
TOTALS:	284	130,988	2.17	293	49,207 5.95

NCAA BASEBALL INJURY SURVEILLANCE SYSTEM
FOR ACADEMIC YEAR 1998-1999
TOTAL OF ALL SCHOOLS

	# of INJ	PRACTICE TOTALS # of EXP INJ	RATE	# of INJ.	GAME TOTALS # of EXP. INJ	RATE
27. Did injury involve the player sliding into a base	3	0	.00	22	0	.00
	6	0	.00	17	0	.00
	275	0	.00	234	0	.00
TOTALS	284	130,988	2.17	293	49,207	5.95
28. Injury was caused by:	14	130,988	.11	29	49,207	.59
1 Being hit by a pitch	15	0	.00	6	0	.00
2 Contact with thrown ball (nonpitch)	6	130,988	.05	5	49,207	.10
3 Contact with boundary walls, railing, dugout	1	130,988	.01	21	49,207	.43
4 Contact with opposing player	5	130,988	.04	4	49,207	.08
5 Contact with teammate	19	130,988	.15	43	49,207	.67
6 Contact with ground	6	130,988	.05	33	49,207	.67
7 Contact with fixed base	1	130,988	.01	2	49,207	.04
8 Contact with breakaway base	59	130,988	.45	42	49,207	.85
9 Throwing (pitching)	43	130,988	.33	13	49,207	.26
10 Throwing (non-pitching)	75	130,988	.57	34	49,207	.69
11 No apparent contact (non-throwing)	17	130,988	.13	32	49,207	.65
12 Hit by batted ball	23	130,988	.18	29	49,207	.59
99 Other						
TOTALS	284	130,988	2.17	293	49,207	5.95

**ALL
SPORTS
INJURY
SUMMARY**

ALL SPORTS INJURY SUMMARY

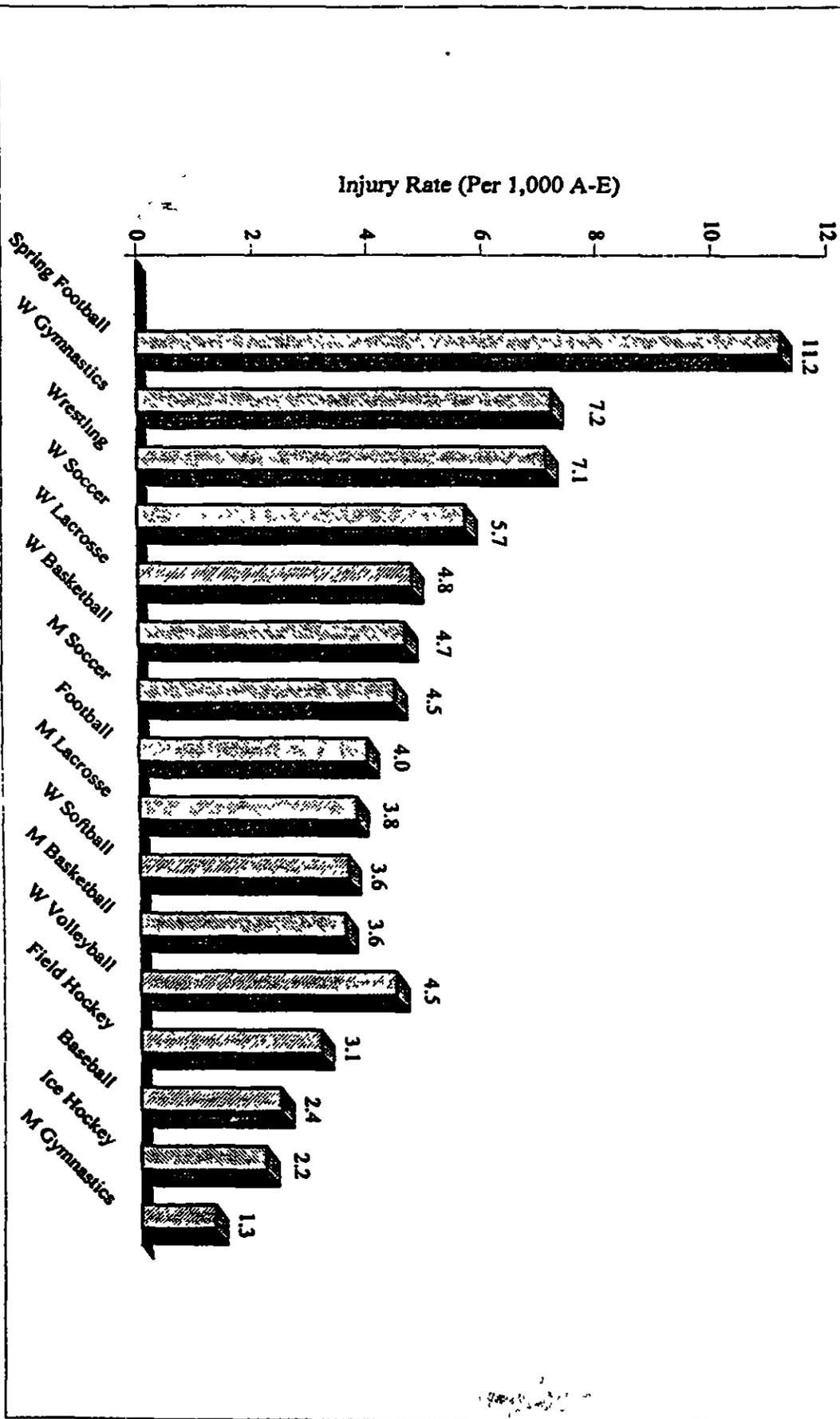
Figure Nos. 1-3 compare the practice, game and combined injuries across sixteen sports without regard to severity. Comparisons of injury rates between sports are difficult because each sport has its own unique schedule and activities. If such comparisons are necessary, it may be best to use the game data for which the intensity variable is most consistent.

Figure Nos. 4-7 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. 4 and 5 evaluate the practice and game rates 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. 6 and 7 evaluate the practice and game rates 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
1997-98 and 1998-99 Seasons



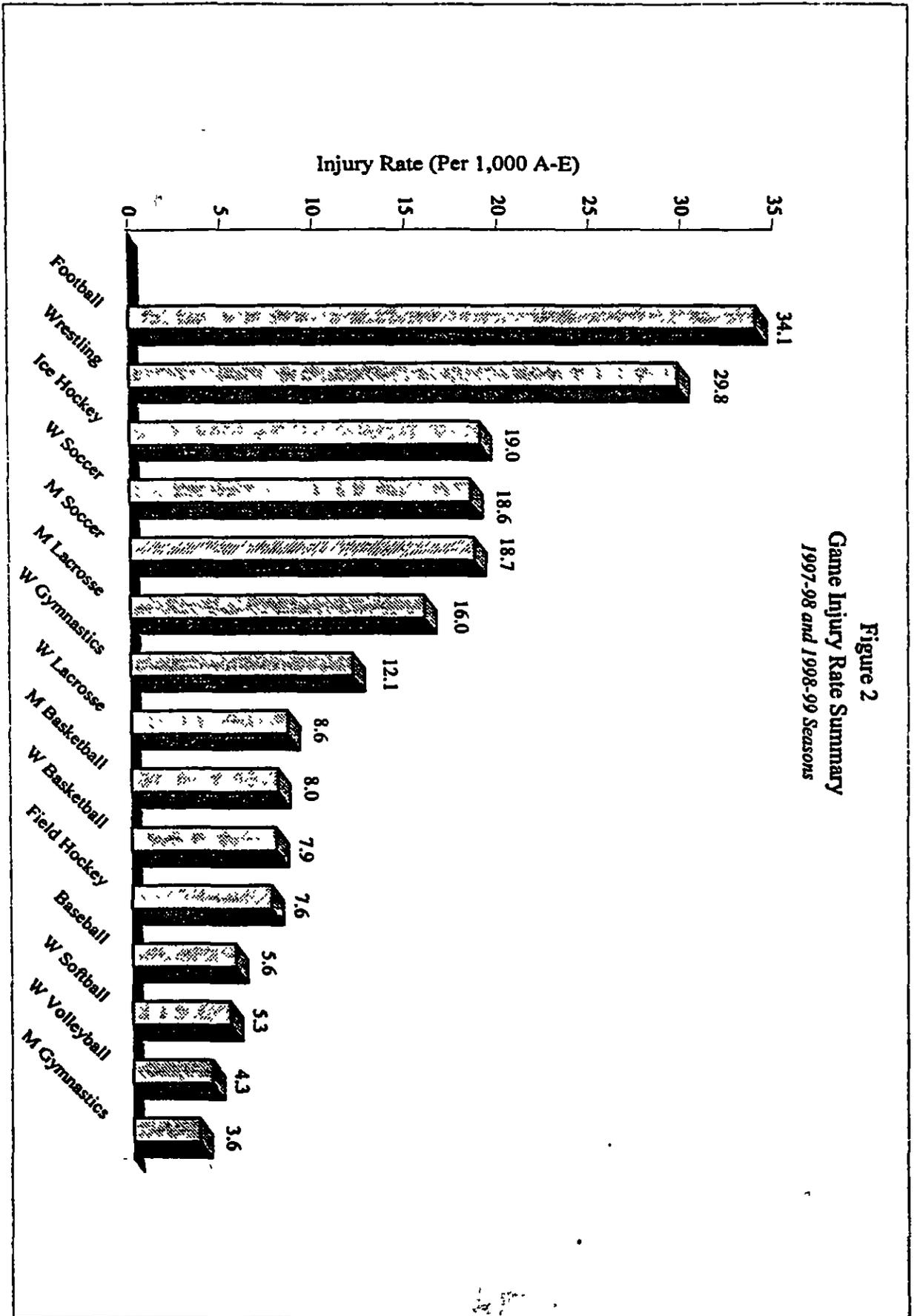


Figure 2
Game Injury Rate Summary
 1997-98 and 1998-99 Seasons



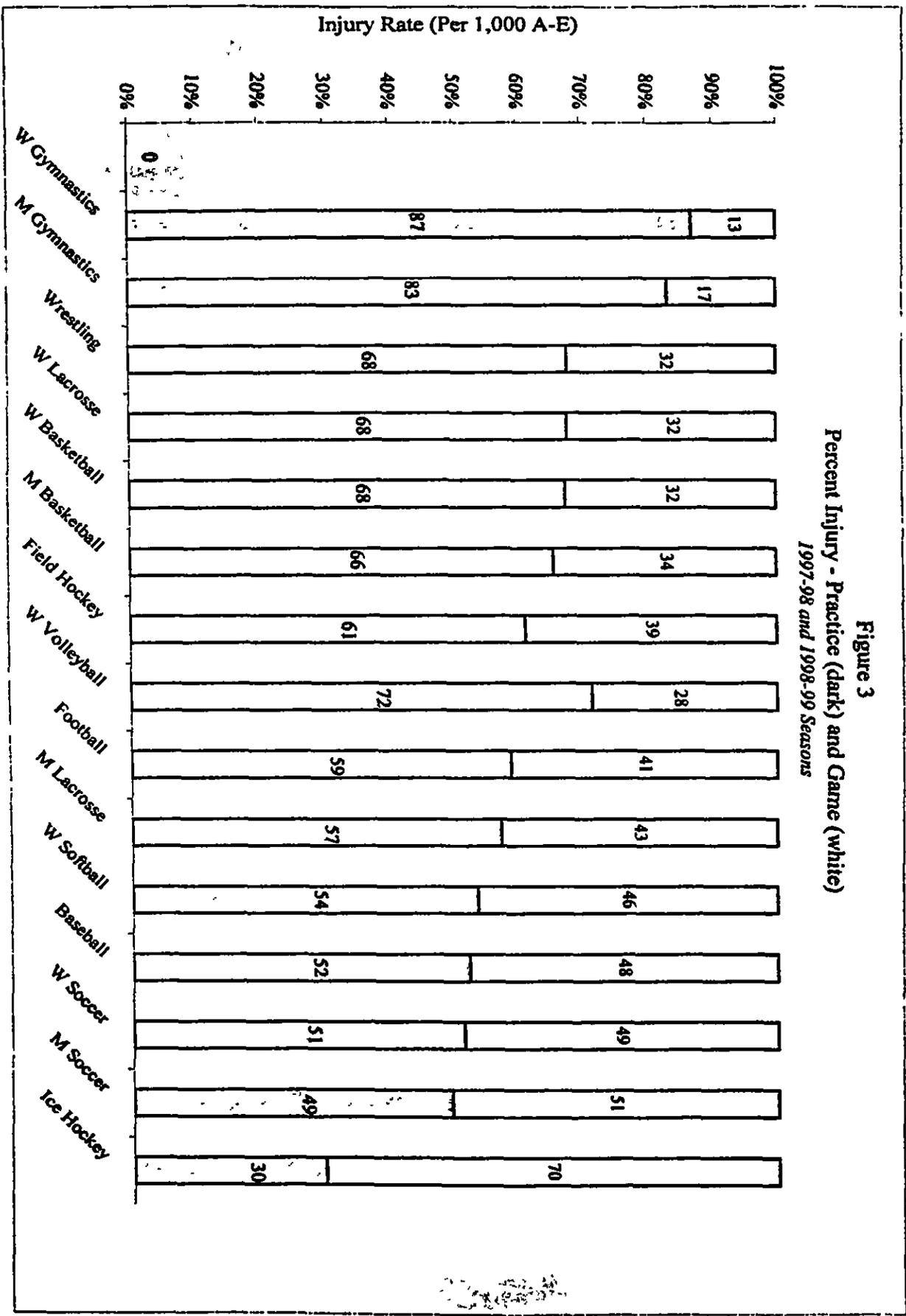


Figure 4
 Severity - Time Loss (7 + days) Injury Rate in Practice
 1997-98 and 1998-99 Seasons

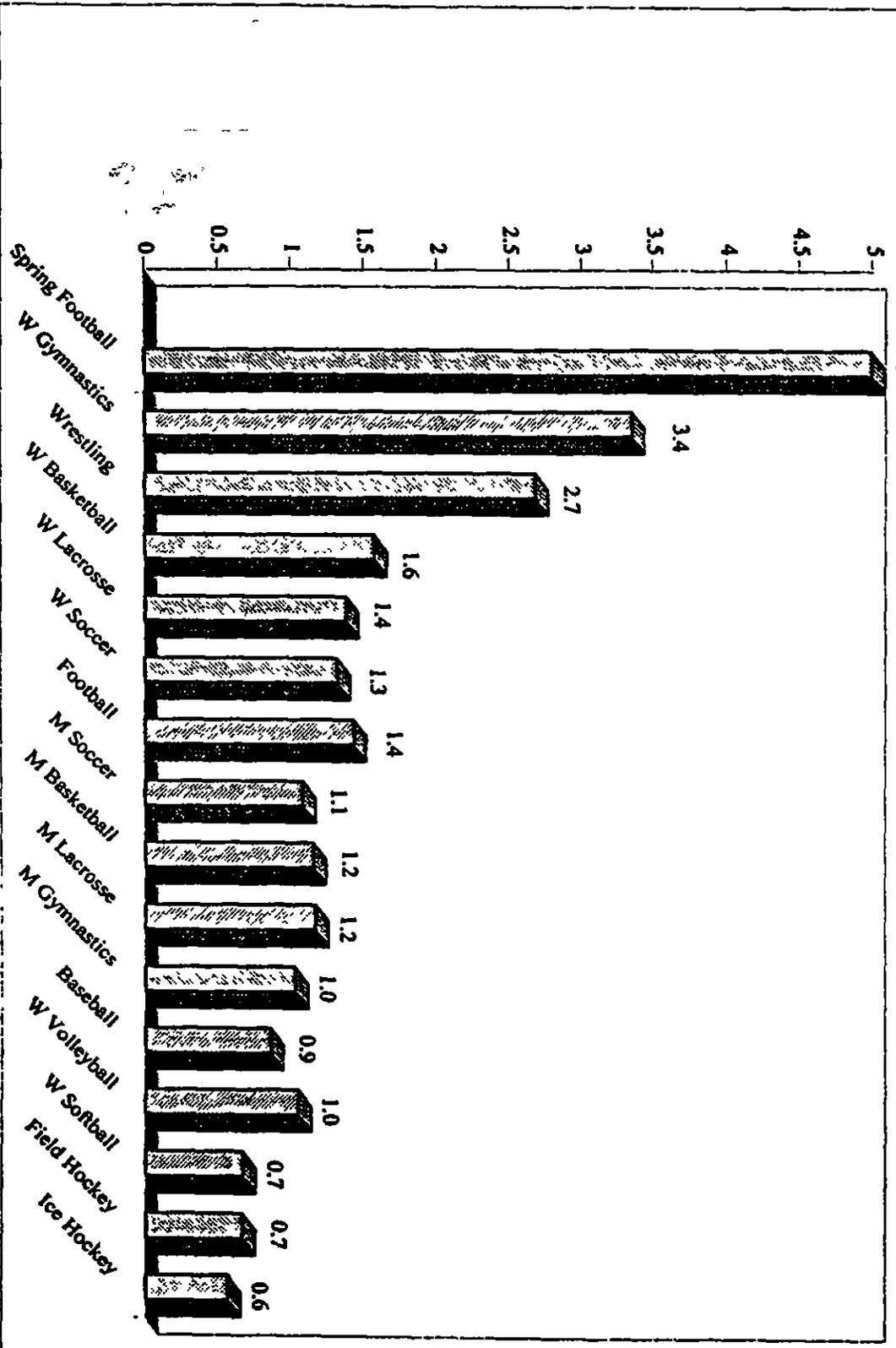


Figure 5
Severity - Time Loss (7 + days) in Games
1997-98 and 1998-99 Seasons

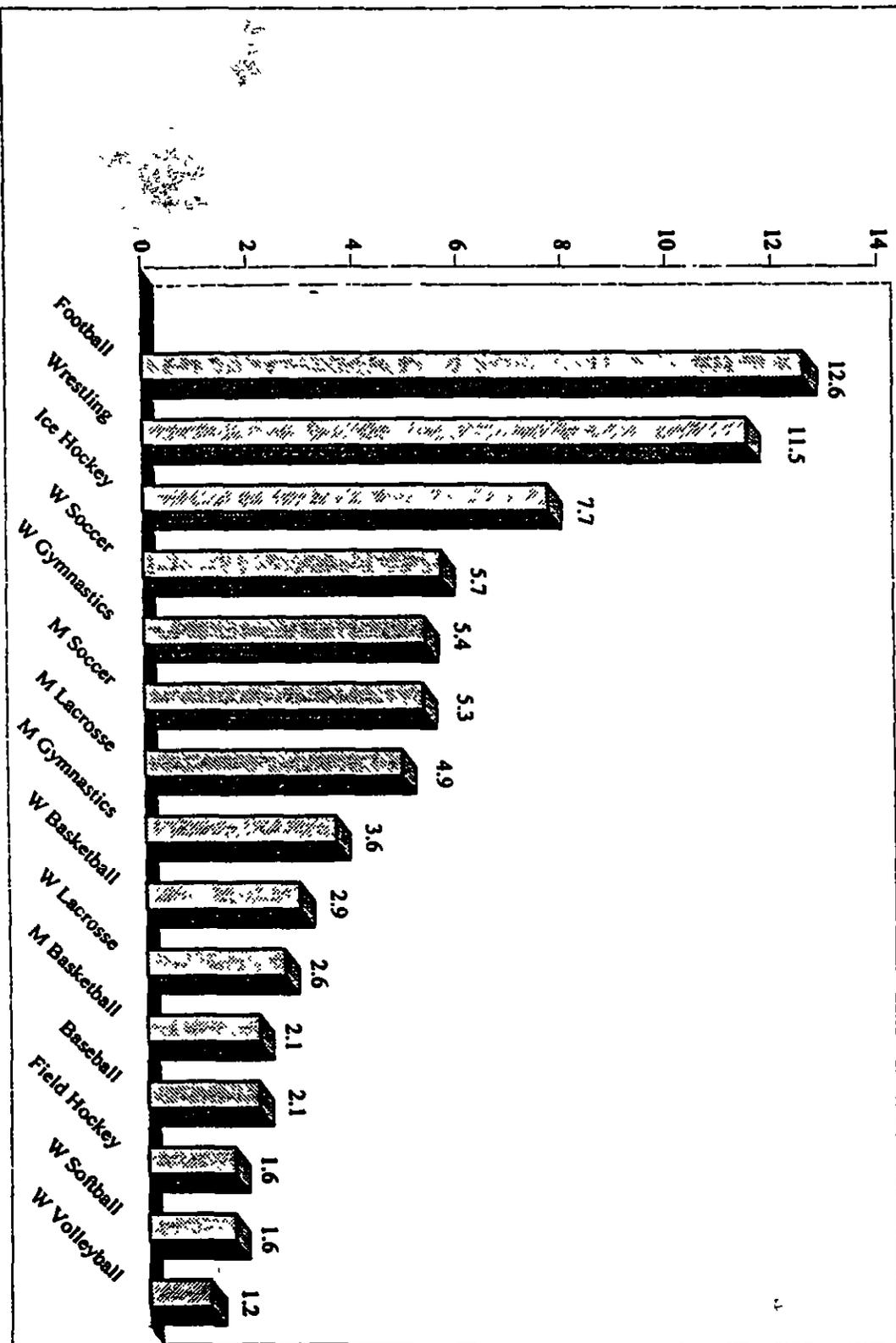
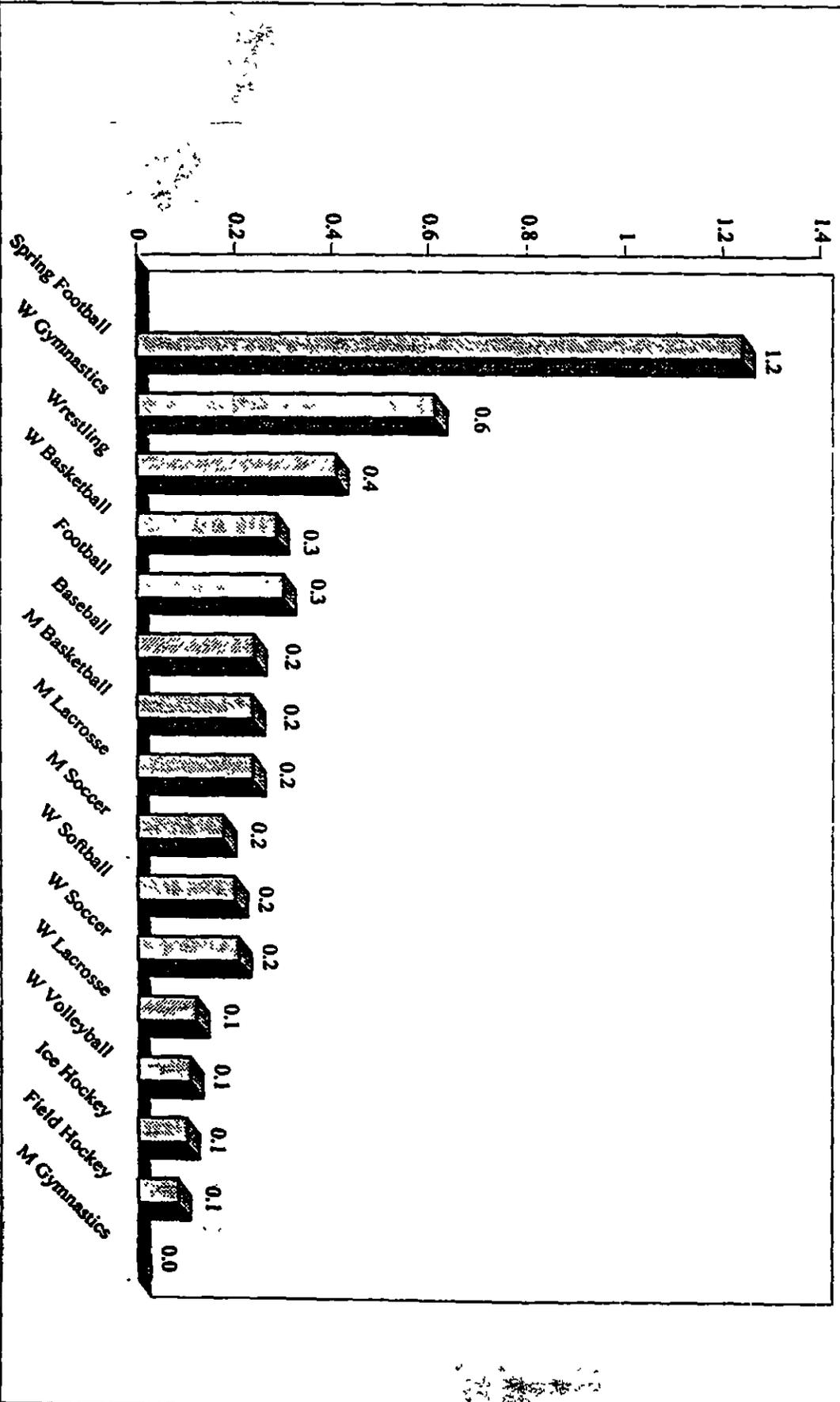


Figure 6
Severity - Surgery Injury Rate in Practice
1997-98 and 1998-99 Seasons



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September 1, 1997

Baseball, softball injury rates still among NCAA's lowest

The spring sports of baseball and softball continue to have among the lowest practice and game injury rates of sports monitored by the NCAA's Injury Surveillance System (ISS).

Baseball had practice and game injury rates that were consistent with its 12-year averages. Shoulder injuries accounted for 22 percent of those reported. Such injuries have been the most common in the sport since 1985-86.

Thirty-four percent of reported baseball injuries resulted in at least one week of time loss.

Softball practice and game injury rates were consistent with that sport's 11-year averages. Knee, shoulder and ankle injuries continued to be the most common. Thirty percent of those reported resulted in at least one week of time loss.

The spring football practice injury rate was consistent with its nine-year average, which is more than double the injury rate for fall football. The rates of surgeries, concussions, fractures and knee injuries were consistent with those of previous years, which are two to three times higher than fall values. The most common injuries in spring football were those to the knee and ankle. Forty-four percent of spring football injuries involved restricted participation for at least seven days.

These data were considered in the development of the spring football proposal reported in the July 21 issue of The NCAA News.

Women's lacrosse had a lower practice injury rate (3.2) but a higher game injury rate (9.8) than its 11-year averages. The rate for injuries occurring above the neck was slightly higher than the past overall average for the sport. Injuries to the ankle and upper leg continued to be the most common. Twenty-six percent of injuries caused restricted participation for at least one week.

Men's lacrosse showed game (12.1) and practice (3.5) injury rates that were lower than its 13-year averages. The upper leg and ankle were the most common body parts injured. Thirty percent of the reported injuries resulted in restricted participation for seven days or more.

Baseline of data

The survey, conducted as part of the ISS, provides a baseline of injury data from a national sampling. Researchers should be cautious when comparing ISS results with injury data from other studies. No common definition of injury, measure of severity or evaluation of exposure exists in athletics-injury literature. The information in the summary must be evaluated under the definitions and methodology outlined for the ISS.

The 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 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 ISS data.

Sampling

Exposure and injury data were submitted weekly by athletic trainers from institutions selected to represent a cross section of NCAA membership. The cross section was based on the three divisions of the NCAA and the four geographical regions of the country. The selected institutions amount to a minimum 10 percent sample of the membership sponsoring the sport; therefore, the resulting data should be representative of the total population of NCAA institutions.

The 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 the NCAA.

Exposures

An athlete-exposure (A-E) is one athlete participating in one practice or game in which he or she is exposed to the possibility of athletics injury. For example, five practices, each involving 60 participants, and one game involving 40 participants, would result in a total of 340 A-Es for a particular week.

Injuries

A reportable injury in the ISS is defined as one that:

1. Occurred as a result of participation in an organized intercollegiate practice or game, and
2. Required medical attention by a team athletic trainer or physician, and
3. Resulted in restriction of the student-athlete's participation or performance for one or more days beyond the day of injury.

Injury rate

An injury rate is a ratio of the number of injuries in a particular category to the number of athlete-exposures in that category. This value is then multiplied by 1,000 to produce an injury rate per 1,000 athlete-exposures. For example, six reportable injuries during a period of 563 athlete-exposures would give an injury rate of 10.7 injuries per 1,000 athlete-exposures [(six divided by 563) times 1,000.]

Additional information on the report is available from the sports sciences staff at the NCAA national office.

The accompanying tables highlight selected information from the spring 1997 ISS. When appropriate, injury rates and game-practice percentages are compared to an average value calculated from all years in which ISS data has been collected in a specific sport.



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The Tucson Citizen
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Thursday, July 13, 2000

Sports

Line drive puts UA athlete in coma Baseball player Kelsey Osburn was not wearing a helmet when he was hit in the head by a batted ball during a summer-league practice in Rochester, N.Y.

Corky_Simpson

By CORKY SIMPSON
and MIKE CHESNICK
Citizen Sportswriters

University of Arizona baseball player Kelsey Osburn clung to life today in a Rochester, N.Y., hospital after being struck in the head by a line drive during a pregame workout Tuesday night in Newark, N.Y.

A hospital spokeswoman this morning listed Osburn, 20, in "satisfactory condition" in the intensive-care unit. His father said the shortstop-second baseman is still in a coma.

"He's a battler and has been his whole life because he's so small," Mike Osburn, a Tucson architect, said today from the University of Rochester's Strong Memorial Hospital. "So we're very hopeful."

The 1998 Sabino High School graduate - 5 feet 7, 150 pounds - was working on taking leads at third base during batting practice for the Newark Raptors, a summer team in the Northeast Collegiate Baseball League.

He was not wearing a helmet, and there was no protective screen between Osburn and the batter.

After Osburn was struck and carried from the field, the Newark team called off its the game against Geneva on Tuesday night.

"I was there, and it was a frightening moment," said Amanda Mitchell, general manager of the Raptors. "Kelsey was struck near his right ear by this line drive. Most of the players left the field when they took Kelsey away and followed the ambulance to the hospital in Rochester."

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Newark also canceled last night's game, and the league had a moment of silence at other games.

Tom Kenney of Hornell, N.Y., president of the Northeast Collegiate Baseball League, said wooden bats are used by all the players but that helmets are not required during batting practice.

"I think that's standard throughout college baseball, that you don't wear helmets during batting practice," he said today.

But Arizona baseball coach Jerry Stitt, who flew today to be with Osburn, said UA runners practicing leads at third wear helmets and have a screen protecting them. College batters use aluminum bats, which may lead to harder line drives.

The batted ball struck Osburn in the right temple.

"The surgery was to relieve pressure from the hemorrhage," Mike Osburn said.

Hope among family, teammates at his side and friends heightened today at word that swelling of Osburn's brain went down after surgery.

"That's a good sign," Stitt said.

Teammates Shelley Duncan, Ken Huff and Keone DeRenne also went to the hospital from their respective summer league teams to join Osburn's father and mother, Emily.

"My wife and I have been close friends of the Osburns for 25 years," Stitt said. "We watched Kelsey grow up. This is really tough."

Osburn is known for his hustle and aggressive play. The Tucson Citizen All-Star batted .402 his senior year at Sabino, was voted the team's most valuable player and led the Sabercats to the Class 4A state title in 1997.

"Kelsey's summer league teammates are here, including Josh Canales from UCLA, and UA teammates Shelley Duncan, Ken Huff and Keone DeRenne," Mike Osburn said.

Duncan is probably the closest friend of Kelsey's.

"He's a great guy, and that makes this even a tougher situation," Duncan said.

Arizona athletic director Jim Livengood was in touch with the player's parents last night and again today.

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(Publication page references are not available for this document.)

"Kelsey is such a super kid," Livengood said. "I told Mike and Emily our thoughts and prayers are with Kelsey and them."

"This was just one of those tragic, unfortunate things. The good news is, Kelsey is battling like the dickens."

Victor Solis, Osburn's position coach at UA, said, "Kelsey is the best-liked player on our team and has been the best-liked player on every team he has ever played for."

Bob Bensinger, the Arizona equipment man assigned to baseball, said: "Kelsey is one of those little guys just full of energy, a prankster and someone we all love." Bensinger comes from Rochester and is visiting his parents there.

Osburn batted .324 in 30 games for the Wildcats this spring. He started 11 games.

"If thoughts and prayers are as good a medicine as we believe, Kelsey will be back on his feet again," Mike Osburn said.

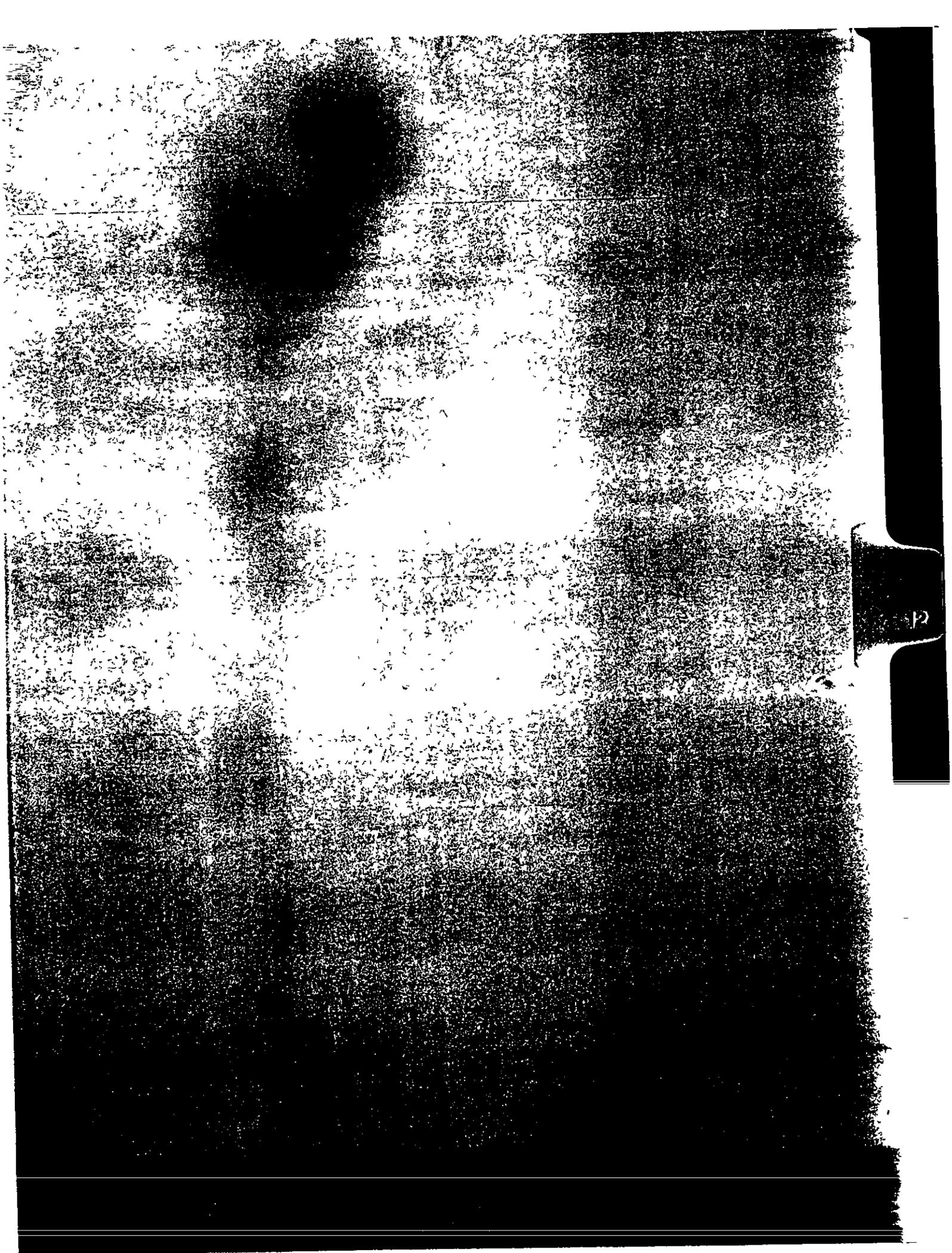
---- INDEX REFERENCES ----

ED PERSON: OSBURN, KELSEY; OSBURN, MIKE; STITT, JERRY; DUNCAN, SHELLEY;
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GANIZATION: UNIVERSITY OF ARIZONA

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UA infielder dies after hit by ball

Associated Press
July 18, 2000

ROCHESTER, N.Y. - University of Arizona sophomore infielder Kelsey Osburn died Monday, six days after being hit in the head by a batted ball during batting practice.

Osburn, 20, died at Strong Memorial Hospital in Rochester, a hospital spokesman said.

Osburn was playing for the Newark Raptors of the Northeast Collegiate Baseball League. He was running the bases without a helmet during batting practice June 11 when he was struck in the right temple. He was taken to a local hospital, then airlifted the 35 miles from Newark to Strong Memorial Hospital where he underwent brain surgery. He had been in a coma since the operation.

"The outpouring of love and compassion from people all around the country has comforted us greatly," Kelsey's parents, Mike and Emily Osburn, said in a statement released by UA, "and we thank you for all your prayers and thoughts."

The family has established a Kelsey Osburn Memorial Player Fund in lieu of other expressions of sympathy. No funeral or memorial service plans have been announced.

Use the scrollable list below to select scores and statistics from the MLB, NFL, NBA, and NHL.

Stats & Scores
- Diamondbacks -
Game Logs

Pac-10 preseason rankings
Football*

Team	99 Finish
Washington(16)	3rd
USC(11)	7th
Oregon(1)	2nd
UCLA	9th
ASU(2)	4th
OSU	5th
Stanford	1st
Arizona	6th
California	8th
WSU	10th

*media poll
* first place votes in parentheses

team coverage

- Football roster
- Football schedule
- Men's basketball roster
- Men's basketball schedule
- Tickets
- Daily Wildcat coverage

links

- Official UofA site
- Official ASU site
- Official NAU site
- Official Pac-10 site
- Official NCAA site

extras

- sports postcards

message boards

POST OF THE WEEK: "John Rattay is DA MAN!!! Rattay will lead the Wildcats to unbelievable success. Everything will be comin' up Roses for the 'Cats once Ratty takes over at QB. Just you wait and see." (Sheet for Brains)

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local headlines

- Tournaments to make a return? (8/04)
- Respect the goal for Pac-10(7/29)
- Olson gets \$40,000 pay raise (7/29)
- Rattay decides UA is good fit (7/18)
- UA infielder dies after hit by ball (7/18)

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About the Northeastern Collegiate League

The Northeastern Collegiate Baseball League is one of ten summer leagues located throughout the United States, including the Cape Cod League, Great Lakes League, Alaska League, Atlantic League, Jayhawk League, and several others. The leagues are sanctioned by the NCAA and partially funded by Major League Baseball. They are intended to give college players who have not yet signed a professional contract the opportunity to develop their skills at a higher level of competition and be scouted by Major League scouts. In order to maintain eligibility, the players cannot be paid, but may be found part-time jobs and inexpensive housing in the community. Under current rules, once a player enters college, he may not be drafted by the Major Leagues until he completes his junior year of school, or turns 21 years of age. Many players from these summer leagues have gone on to play professional baseball. In recent years, the Northeastern Collegiate League has produced Tim Lincecum (Seattle Mariners), Kirt Manwaring (San Francisco Giants), Archi Cianfranco (San Diego Padres), and William Pennyfeather (Pittsburgh Pirates).

This year, the Northeastern Collegiate League will consist of seven teams: Geneva Knights, Hornell Dodgers, Cohocton Redwings, Cortland Apples, Schenectady Mohawks, and the Mohawk Valley (Utica) Indians, in addition to the Ithaca Lakers. Team expenses are significant: playing facilities, uniforms, bats and balls, coaching salaries, umpires, travel costs, and many other items must be paid for. In past years, Major League Baseball has given each team a stipend to cover some of these costs. This funding came out of the shared revenues from the World Series, but because last year's baseball strike curtailed the season, Major League Baseball was not able to fund the league this year. Instead, teams must rely solely on ticket sales, concessions, advertising, corporate sponsorship, and any other means to raise money to cover expenses.

The caliber of baseball being played in summer leagues is excellent, in part due to the higher level of baseball being played in colleges today. More and more players are opting to attend college rather than sign a contract right out of high school. Each year's Laker squad includes players who have been drafted out of high school, but have chosen not to sign in order to obtain an education and further develop their baseball skills through college play. In addition to more playing time against tougher competition, summer leagues give college players needed experience with wood bats. For economy reasons, all colleges use metal bats, which are much easier to hit with. The wood bats give scouts a much better measure of both hitting and pitching talent.

In recent years, declining attendance has forced several minor league teams in New York State to move to larger cities in Canada, Pennsylvania, and New Jersey. Summer collegiate baseball may help fill a void in these areas, providing communities with quality baseball without having to satisfy the even harsher economic realities of professional sports.

Last modified 28 March 1995 mha.





The NCAA News – September 27, 1999

Spring sports study reveals increased risk for baseball, softball base runners

Research from the 1999 spring NCAA Injury Surveillance System (ISS) indicates that baseball and softball base runners may be at risk, having accounted for 25 percent of game injuries during the research period. Those injuries were related primarily to injuries incurred while sliding into a base.

On the other hand, in spring football, the injury numbers for the sport's "spring game" were the lowest in 10 years.

The ISS, in its 16th year, monitors injuries in 15 sports, including five in the spring: baseball, softball, football, and men's and women's lacrosse.

Research from the 1998-99 baseball season showed practice (2.2) and game (6.0) injury rates for the 1998-99 season that were comparable to the 13-year averages for the sport. Shoulders, ankles and the upper leg were the top three body parts injured in games and accounted for 38 percent of all reported game injuries in the sport.

The base runner was involved in more than 25 percent of game injuries (primarily sliding).

Muscle strains, which have been the most common injury to players for the past 13 years, continue to be a significant nuisance, accounting for 27 percent of all reported game injuries. Thirty-two percent of all reported injuries resulted in seven or more days of time loss. Throwing or pitching accounted for more than one-third of practice and 19 percent of game injuries. Eleven percent of game injuries involved impact with a batted ball.

Base runners in softball were involved in one-third of game injuries (primarily sliding), but overall, the softball research showed practice (3.0) and game (4.5) injury rates that were slightly below the 13-year averages for the sport. Ankles, knee and fingers were the top three body parts injured and accounted for 35 percent of the reported game injuries in the sport. Sprains, contusions and strains were the top types of injuries, accounting for 62 percent of the reported game injuries.

Twenty-eight percent of all reported injuries resulted in seven or more days of time loss. Throwing or pitching accounted for 27 percent of practice and 9 percent of game injuries. Twelve percent of game injuries involved impact with a batted ball.

Spring football

The spring football practice injury rates of 10.5 were slightly higher than the 11-year average of the sport and more than double the rates of fall practice. Knees, ankles and shoulders accounted for 47 percent of all reported injuries while sprains, strains and contusions accounted for 69 percent of all injuries.

Nine percent of reported injuries required surgery, while 7 percent were concussions. Thirty-eight

percent of injuries occurred during a full scrimmage. Injury rates in contact practices involving no tackling were much lower than those practices that involved tackling. Injury rates in the "spring game" were the lowest reported in the last 10 years.

Men's and women's lacrosse

Practice injury rates in women's lacrosse (2.7) were lower than the 13-year average for the sport, while game rates (7.3) were similar. The ankle, head and knee accounted for 51 percent of reported game injuries while the top three types of injuries were sprains, strains and contusions.

Twenty-nine percent of all reported injuries involved seven or more days of time loss. Non-contact was the primary injury mechanism in both practice and game. Contact with the ball accounted for 16 percent of practice and 4 percent of game injuries while stick contact was the cause of 3 percent of practice and 21 percent of game injuries. Twenty percent of reported game injuries were above the neck.

However, research in men's lacrosse showed a practice (3.9) injury rate that was comparable to and a game (16.7) injury rate that was above the 12-year averages for the sport. Shoulders, upper leg, head and ankle were the top body parts injured in games, accounting for 52 percent of all reported game injuries.

Sprains, contusions and strains were the top types of injuries. Twenty-three percent of reported injuries resulted in restricted or no participation for seven or more days. Player contact was the mechanism of injury in more than one-half of reported game injuries. Thirteen percent of all game injuries occurred to the head, with most being concussions.

Baseline of data

The survey, conducted as part of the ISS, provides a baseline of injury data from a national sampling. Researchers should be cautious when comparing ISS results with injury data from other studies. No common definition of injury, measure of severity or evaluation of exposure exists in athletics-injury literature. The information in the summary must be evaluated under the definitions and methodology outlined for the ISS.

The 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 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 ISS data.

Sampling

Exposure and injury data were submitted weekly by athletic trainers from institutions selected to represent a cross section of NCAA membership. The cross section was based on the NCAA's three divisions and the four geographical regions of the country. The selected institutions amount to a minimum 10 percent sample of the membership sponsoring the sport; therefore, the resulting data should be representative of the total population of NCAA institutions.

The 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 the NCAA.

Exposures

An athlete exposure (A-E) is one athlete participating in one practice or game in which he or she is

exposed to the possibility of athletics injury. For example, five practices, each involving 60 participants, and one game involving 40 participants, would result in a total of 340 A-Es for a particular week.

Injuries

A reportable injury in the ISS is defined as one that:

1. Occurred as a result of participation in an organized intercollegiate practice or game, and
2. Required medical attention by a team athletic trainer or physician, and
3. Resulted in restriction of the student-athlete's participation or performance for one or more days beyond the day of injury.

Injury rate

An injury rate is a ratio of the number of injuries in a particular category to the number of athlete exposures in that category. This value is then multiplied by 1,000 to produce an injury rate per 1,000 athlete-exposures. For example, six reportable injuries during a period of 563 athlete-exposures would give an injury rate of 10.7 injuries per 1,000 A-Es [(6 divided by 563) x 1,000].

Additional information on the report is available from the sports sciences staff at the NCAA national office.

The accompanying tables highlight selected information from the spring 1999 ISS. When appropriate, injury rates and game-practice percentages are compared to an average value calculated from all years in which ISS data have been collected in a specific sport.

Injury Surveillance System Highlights

The following table highlights selected information from the spring 1999 Injury Surveillance System. When appropriate, injury rates and game-practice percentages are compared to an average value calculated from all years in which ISS data have been collected in a specific sport.

Baseball Softball Spring Football Women's Lacrosse Men's Lacrosse

No. of Teams 92 (11%) 97 (12%) 50 (13%) 31 (15%) 35 (18%)

Practice injury rate (per 1,000 A-E) 14-year avg. 2.2 13-year avg. (3.3) 11-year avg. 10.0 13-year avg. (3.6) 12-year avg. (3.8)

Game injury rate (per 1,000 A-E) 6.1 (5.0) 10.0 (7.4) (15.3)

Percent of injuries occurring in practices 49 (53%) 92% (68%) (56%)

Percent of injuries occurring in games 51 (47%) Scrimmage 8% (32%) (44%)

Top three body parts injured--game Shoulder 14% Ankle 13% Knee 22% Ankle 21% Shoulder 15%

(% of all injuries) Ankle 13% Knee 11% Ankle 15% Head 15% Upper Leg 13%

Upper Leg 11% Fingers 11% Ankle 15% Knee 15% Ankle/Head 12%