ArrowSport

INSIGHT V3 07

ARROWSPORT

# IS ARCHERY A SAFE SPORT? YES!

## WHAT RESEARCH REVEALS ABOUT THE SAFETY OF ARCHERY

Archery has been part of countless physical education introductory programs in schools, summer camps, Scouts, 4-H Clubs and community recreational programs, to name a few. Throughout its long history in recreational sports, archery ranks as one of the safest activities offered in any organized group setting. Especially impressive is the fact that archery maintains a consistently high safety record despite the fact that participants range from grade-school children to senior citizens, many of whom have never before picked up a bow and arrow.

Archery has become increasingly popular in recent years as schools and recreational programs strive to find activities that appeal to families, both genders, and all age groups in a variety of group settings. Educators, group leaders and recreation instructors find archery is safe and easily learned. Beginners become proficient with minimal assistance, and they improve their skills quickly with practice.

As more administrators at schools, camps, clubs and recreational programs consider adding an archery program, safety questions often arise. This report addresses those concerns, and also compares archery's safety record with the safety record of many recreational activities that regularly draw more experienced participants.

> *"We implemented archery in schools across Kentucky in 2002, and because we emphasized safety with our students, conducted training for all teachers, and adhered to standard procedures, we have had a remarkable safety record. Vigilant school districts are always concerned about liability issues, especially with sports and recreational activities, and archery consistently proves itself one of the safest sports taught in our public schools' physical education programs."*
>
> **Commissioner Gene Wilhoit**
> Kentucky Department of Education

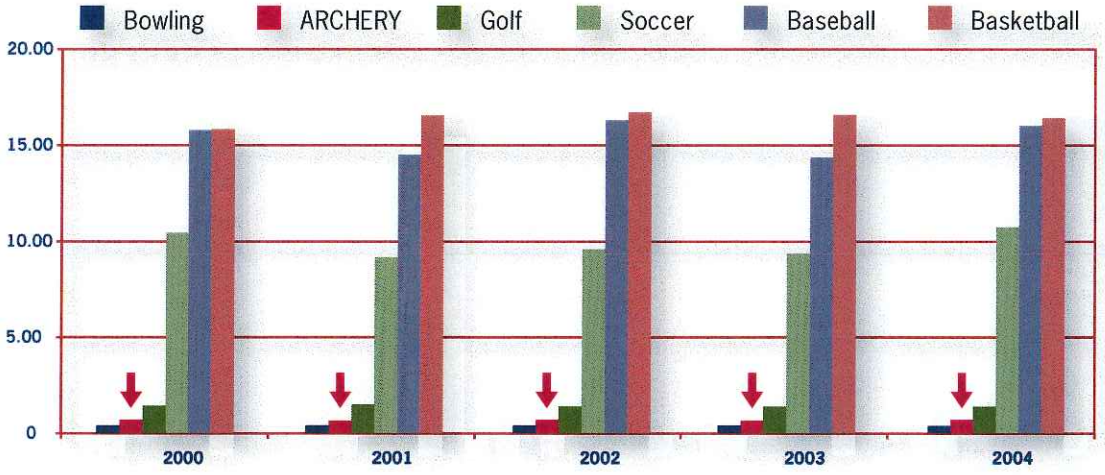
## COMPARISON OF SPORTS PARTICIPATION AND INJURY RATES

The U.S. Consumer Product Safety Commission (CPSC) operates the National Electronic Injury Surveillance System (NEISS)[1], which is a database used to track hospital injuries for more than 15,000 kinds of consumer products used in sports and recreational activities in and around homes and schools. Data from the NEISS are a critical resource for consumer groups, manufacturing and industry organizations, the media, educators, researchers and attorneys. The data are also used by the Centers for Disease Control and Prevention which is one of the 13 major operating components of the Department of Health and Human Services, the principal agency in the United States government for protecting the health and safety of Americans. Organizations like the National Safety Council, a nonprofit, nongovernmental, international service organization also use the data from NEISS to compile its annual Injury Facts publication[2].

We queried the NEISS database to determine the safety of archery compared to other sports. We compared this information to the data on participation obtained from Sporting Goods Manufacturers Association (SGMA)[3], a global trade association of manufacturers, retailers and marketers in the sports products industry. The SGMA provides estimates of the number of participants in a number of sports and recreational activities, including archery, through an annual survey conducted for them by American Sports Data, Inc. Since SGMA only tracks participation for ages 6 and above, we queried the NEISS database for safety data for several sports beginning at age 6.

These data indicate that archery is one of the safest sports, with an injury rate of less than one incident per 1,000 participants, in 2004 (Table 1). Recreational activities like golf and fishing have an injury rate of up to 1.5 to 2 times the rate for archery (Figure 1). Common sports like soccer, baseball and basketball have injury rates 15 to 25 times that of archery (Figure 1). Because the National Safety Council cautions about calculating injury rates from these data, we presented the raw injury and participation numbers in the Sports Participation and Injury Table (Table 1) so you can judge for yourself.

**Figure 1.** Injury rates per 1000 participants in youth sports from 2000 through 2004.



# SPORTS PARTICIPATION AND INJURY RATES

*"Archery is probably the safest thing we've done in our phys-ed classes. Not one person has been sent to the office for an injury. For most activities, we send down at least one student a day for a turned ankle, jammed finger or an elbow to the face. With archery, no one has ever been hurt. When you're playing football or basketball, and dealing with large and small kids or eighth-graders playing with sixth-graders, kids get hurt when running over each other. Archery is an individual sport, so you don't worry about someone's aggressive behavior."*

**Joey Chilton, Wellness Instructor**
East Hickman Middle School, Lyles, Tennessee

**Table 1.** Injury data for participants in youth sports in 2004.

| | Actual Number of Cases[a] | Estimated Number of Cases[b] | Estimated Number of Particpants[c] | Injury Rate per 1000 Particpants[d] |
|---|---|---|---|---|
| Football | 11,863 | 393,088 | 16,436,000 | 23.92 |
| Basketball | 15,963 | 557,815 | 34,223,000 | 16.30 |
| Baseball | 4,050 | 154,873 | 9,694,000 | 15.98 |
| Wrestling | 837 | 32,691 | 2,303,000 | 14.19 |
| Soccer | 4,819 | 171,276 | 15,900,000 | 10.77 |
| Ice Hockey | 548 | 20,211 | 1,998,000 | 10.12 |
| Softball | 2,634 | 112,656 | 16,324,000 | 6.90 |
| Cheerleading | 763 | 28,107 | 4,131,000 | 6.80 |
| Gymnastics | 967 | 30,820 | 5,273,000 | 5.84 |
| Horseback Riding | 1,670 | 74,842 | 14,695,000 | 5.09 |
| Volleyball | 1,350 | 55,824 | 22,216,000 | 2.51 |
| Inline Skating | 991 | 37,284 | 17,348,000 | 2.15 |
| Ice Skating | 570 | 19,589 | 14,692,000 | 1.33 |
| Golf | 770 | 33,100 | 25,723,000 | 1.29 |
| Fishing | 1,164 | 60,977 | 47,906,000 | 1.27 |
| Tennis | 508 | 21,219 | 18,346,000 | 1.16 |
| ARCHERY | 82 | 4,373 | 6,756,000 | 0.65 |
| Bowling | 382 | 16,405 | 53,603,000 | 0.31 |
| Badminton | 42 | 1,843 | 6,432,000 | 0.29 |
| Table Tennis | 37 | 1,347 | 14,286,000 | 0.09 |

[a] These data are from the National Electronic Injury Surveillance System and represent the hospitals which actually record the information.

[b] These data are from National Electronic Injury Surveillance System and represent estimated nationwide injuries based on samples.

[c] These data are from the Sporting Good Manufacturers Association International for ages 6 and older who have participated at least once per year.

[d] This rate was calculated by dividing the number of estimated cases by the number of participants and multiplied by 1000. The National Safety Council discourages this calculation because the frequency and duration of participation of each sport is not known.

## SAFETY RATINGS FROM THE INSURANCE INDUSTRY

The safe record of archery is also recognized by the insurance industry. Based on evidence from injury reports, the standard general liability coverage maintained by most organizations has been determined sufficient for archery. In these situations, no additional policy amendments are needed when adding an archery program.

Insurance broker Francis L. Dean & Associates[4] rates archery in the same class as badminton, bowling, cross country, fencing, golf, handball, rowing, tennis and track when calculating policy premiums. Among the sports that require the highest insurance premiums for coverage by Francis L. Dean & Associates are basketball, cheerleading and volleyball.

### Archery Shooting Procedure

Beginning archers are taught to respond to whistle commands, much like other sporting activities. Participants are trained to move between stages in shooting by one, two or three whistle commands. In most situations, participants are placed into small groups to share equipment and so each individual can enjoy shooting safely.

Because of the highly organized and sequential nature of archery, the participants are never running, jumping, engaging in physical contact or trying to coordinate their physical activities as a team. Individuals, regardless of physical capabilities, sex, and age all participate on the same playing field and all respond to the same commands.

Archery teachers/instructors should be certified. For Information on certification go to www.archerysearch.com or call 866-266-2776. Certification programs are scheduled to be sure every instructor is prepared to teach archery in schools, camps, recreation programs and other organization or group activities.

**The progression in archery is to:**

1

Start at the waiting line.

2

Proceed upon hearing two whistles to the shooting line.

3

One whistle is blown to indicate that shooting can begin in a sequence of steps.

4

Each step of the shooting sequence is triggered by a command from the instructor.

5

When each archer has shot their arrows and the range is clear, three whistles allow the archers to set their equipment aside.

6

After three whistles, the archers proceed to the target line, and score their arrows.

*"The archery training our teachers received was so complete and well done that they were confident in their ability to teach it to students. Much of that's because of the emphasis on safety. Each student can be easily monitored to determine their effort, skills, technique and safe conduct. Teachers can address each student and provide individual feedback. The safety whistle codes make sense to students, and the good equipment and standardized training encourage safe participation."*

**Julia Jilek, Administrator**
White Bear Lake Learning Center, White Bear Lake, Minnesota

Sportscover[5], an international insurance company that specializes in coverage for sporting activities, has developed a youth injury calculator that factors in age, sex, and fitness level for many sports. This calculator uses participation and injury data to estimate the potential probability of injury for individuals in specified age, sex and fitness categories. Sportscover is one of the world's leading sports insurance underwriters with over one million active sporting clients including players, administrators, coaches and officials.

For all ages, both sexes and for both unfit and fit participants, only fishing had fewer injuries than archery when analyzing 14 sporting activities (Table 2). The injury rates estimated for girls were about 80 percent of the rates for boys for all sports and across all age groupings. In addition, injury rates for unfit participants were about twice the injury rates for fit participants. Injury rates for archery averaged 5 to 20 times lower than for all other sporting activities including badminton, tennis, soccer and golf.

**Table 2.** Sportscover's estimates on how likely you are to be injured within a 12 month period. The values shown are for unfit individuals. Youths rated as fit are injured half as often as unfit participants and that trend holds for all ages and sports.

| | Unfit | | | | | |
|---|---|---|---|---|---|---|
| | 0-10 Years Old | | 11-16 Years Old | | 17-20 Years Old | |
| | Female | Male | Female | Male | Female | Male |
| Ice Hockey | 85.95 | 99.00 | 96.70 | 99.00 | 99.00 | 99.00 |
| Football | 64.19 | 80.20 | 72.22 | 90.30 | 80.24 | 99.00 |
| Baseball | 32.64 | 40.80 | 36.72 | 45.90 | 40.80 | 51.00 |
| Golf | 28.29 | 35.36 | 31.82 | 39.78 | 35.36 | 44.20 |
| Inline Skating | 21.76 | 27.20 | 24.48 | 30.60 | 27.20 | 34.00 |
| Soccer | 21.76 | 27.20 | 24.48 | 30.60 | 27.20 | 34.00 |
| Tennis | 19.58 | 24.48 | 22.03 | 27.54 | 24.48 | 30.60 |
| Softball | 18.49 | 23.10 | 20.81 | 26.00 | 23.12 | 28.90 |
| Volleyball | 17.41 | 21.80 | 19.58 | 24.50 | 21.76 | 27.20 |
| Basketball | 16.32 | 20.40 | 18.36 | 23.00 | 20.40 | 25.50 |
| Badminton | 13.06 | 16.32 | 14.69 | 18.36 | 16.32 | 20.40 |
| ARCHERY | 4.35 | 5.44 | 4.90 | 6.12 | 5.44 | 6.80 |

*"Every kid learns something in archery, because those who dominate everyday physical education activities do not always dominate archery. Other kids get to feel what it's like to be the best at something, to feel like a superstar. It also teaches them about safety, and how unsafe habits can cause injury to them or to those around them. When this idea was first pitched to me I was a big skeptic. But after doing it for a year and taking a group to a contest, I'm a big fan."*

**Drew Heuertz, PE/Health Teacher**
East Jessamine Middle School, Nicholasville, Kentucky

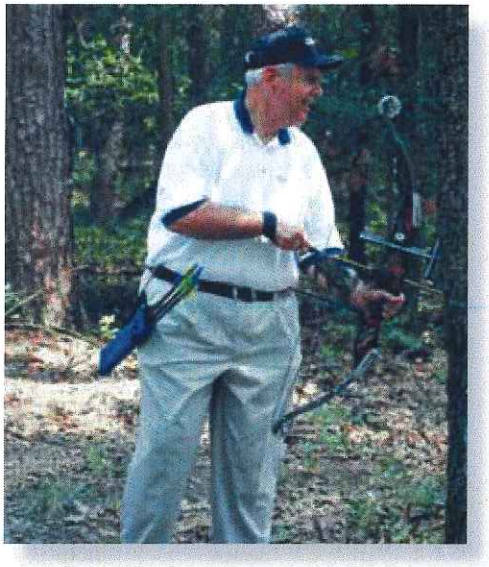
## SPORTS INJURIES FOR SENIOR CITIZENS

Archery's safety record also stands out when analyzing sports-related injuries of senior citizens. In 1996, the U.S. Consumer Product Safety Commission[6] released a report on sports-related injuries for people ages 65 and older. The report lists the 13 sports and activities with the highest number of reported injuries, and **archery did not make the list**.

**Table 3.** Estimated sports-related injuries to persons 65 years or older for 1996. The list includes sports with 500 or more reported cases. **NOTE: ARCHERY WAS NOT LISTED.**

| | |
|---|---|
| Bicycling | 11,002 |
| Exercise Activity/Weightlifting | 8,197 |
| Golf & Golf Carts | 8,127 |
| Snow Skiing | 5,432 |
| Fishing | 5,268 |
| Tennis | 2,818 |
| Swimming/Diving | 2,623 |
| Bowling | 2,326 |
| Skating | 1,460 |
| Baseball/Softball | 1,364 |
| All Terrain Vehicles | 818 |
| Horseback Riding | 731 |
| Basketball | 532 |
| TOTAL[a] | 53,003 |

[a] The total includes all sports for which injuries were reported, including those with less than 500 cases (which were not included in the list).



*"Target archery is one of the safest sports for kids because the discipline involved teaches participants to be safe while having fun. My international experience with Olympic youth development programs has convinced me that certifying instructors – just like any other major recreational sport – is the key to everyone enjoying an archery shooting experience. We were so impressed with the discipline and responsibility taught as a part of archery that my entire family has been involved in the Chicagoland Junior Olympic Program for many years."*

**Mark Miller, Past President**

USA Archery/International Archery Junior Development Chair, Naperville, Illinois

*"Once people see how our archery class is conducted, they see it's very safe. Unlike most sports, archery offers a controlled environment. In comparison, when you put a ball in the air and get kids running, jumping and spinning around, almost anything can happen. You expect injuries, whether it's turned ankles, twisted knees or torn ligaments. It doesn't matter if you're talking about softball, badminton, football or basketball. Archery allows us to teach kids a safe, lifetime skill they can practice almost anywhere."*

**Dave Bagley, School Superintendent**

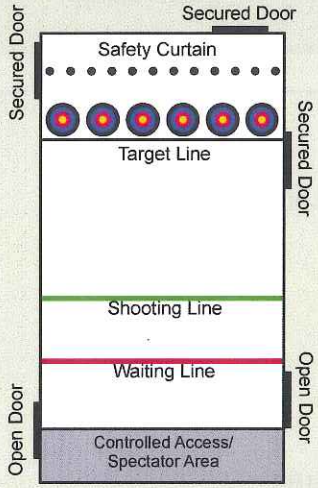
Antwerp Schools, Paulding County, Ohio

## Archery Range Layout

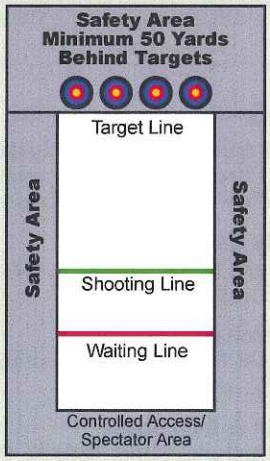
Archery is safe because, as a shooting sport, the field of play – or range – is designed with safety in mind.

- For indoor ranges, arrow safety curtains are hung no further than 3 feet behind the archery targets across the full length of the target line. No one is allowed behind the safety curtain while shooting is in progress. All doors in the general shooting area are closed and warning signs are posted outside the doors where archery practice is in progress. Doors behind the target line are locked or temporary barriers are used as a warning signal.
- For outdoor ranges, all shooting occurs away from any area where people might be. Signs and safety tape lines are used to keep people at a safe distance from the archers.
- A shooting line is established at least 10 to 20 feet in front of the targets. On outdoor ranges, archers may be as much as 15 to 20 yards in front of the targets. Archers are spaced about 6 feet apart on a shooting line when they are shooting.
- A waiting line is used for those archers waiting their turn to shoot. The waiting line is at least 10 feet behind the shooting line. The waiting line is usually where the equipment is held or set in safe, non-shooting positions. All archers stand along and behind this line while not shooting.
- A target line is set 3 feet from the front of the targets and is the distance from which archers score their arrows.

**Indoor Archery Range Layout**




**Outdoor Archery Range Layout**




*"The greatest safety consideration is setting up a safe range. By dividing the space into 'shooting' and 'non-shooting' areas, only instructors and student-archers get close to the firing line. No one can wander close to the shooters to distract them and create a potential safety problem. We make sure all entrances and exits behind the shooting line are closed and secured."*

**Schyler Jones, Public Relations Coordinator**
Board of Education, McCreary County, Ohio

## HOW TO START A SAFE ARCHERY PROGRAM

For information about archery programs, go to **ARCHERYSEARCH•COM**

ArcherySearch.com will help you:

- locate your closest retailer
- locate the closest club
- locate the local range
- find the nearest certified instructor

ArcherySearch.com will also link you to information that will guide you through starting an archery program or help you become a certified instructor.

**To obtain copies of this publication or for questions contact:**

ArrowSport
304 Brown Street E
PO Box 258
Comfrey, MN 56019
(866) 266-2776
www.arrowsport.org

*"I have been involved in youth archery programs since 1973 and have never had nor heard of any serious archery accident or injury. The most serious incidents we have had are string burns from kids who did not use arm guards or where an instructor simply failed to watch a new shooter closely. Where good, qualified adults are mixed with motivated kids who are willing and desiring to learn under sound standards of safety and range protocol, archery is extremely safe."*

**Ronald A. Howard Jr, PhD Professor and Extension Specialist - 4-H and Youth**
College Station, Texas

## REFERENCES

1. **National Electronic Surveillance System**
   US Consumer Product Safety Commission, Washington, D.C. 20207-0001
   (301) 504-7923, www.cpsc.gov/library/neiss.html

2. **National Safety Council**
   1121 Spring Lake Drive, Itasca, IL 60143-3201
   (630) 285-1121, www.nsc.org

3. **SGMA International**
   1150 17th Street North #850, Washington, D.C. 20036
   (202) 775-1762, www.sgma.com

4. **Francis L. Dean & Associates**
   1776 South Naperville Road, Bldg-B, P.O. Box 4200, Wheaton, IL 60189
   (800) 745-2409, www.fdean.com
   Ratings for youth sports are at www.fdean.com/youth_sports_teams_insurance_rates.html

5. **Sportscover**
   52-62 Stud Road, Bayswater, 3153 Melbourne, Australia
   61 3 9721 4700 www.sportscover.com
   The injury calculator is at www.sportscover.com/calculator.html.

6. **U.S Consumer Product Safety Commission**
   Sports Related Injuries to Persons 65 Years of Age and Older. April 1998.
   By: Rutherford, George W., Jr. and Schroeder, Thomas J. 14pp.

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