



# NEWS

University of Pittsburgh Physicians • Department of Orthopaedic Surgery

## The Concussion Safety Program

### Computerized Neuropsychological Testing and the Use of IMPACT

*(Immediate Post-Concussion Assessment and Cognitive Testing)*

**Mark R. Lovell, Ph.D.**  
**Michael W. Collins, Ph.D.**  
**Joseph Maroon, M.D.**  
**John Powell, Ph.D.**  
**Ken Podell, Ph.D.**

### Project Rationale

The specific goals of the "Concussion Safety Program" are twofold:

- 1) To provide comprehensive clinical information through the use of IMPACT (i.e. computerized neuropsychological test data) to help assist team medical personnel in making safe return to play decisions following concussion in at-risk athletes, and
- 2) To utilize this clinical information from a research perspective to investigate several pertinent issues regarding concussion that remain unanswered.

In the United States, the annual incidence of sports-related concussion is estimated at 300,000. Estimates regarding the likelihood of an athlete in a contact sport experiencing

a concussion vary, but may be as high as 19%. Furthermore, the effects of concussions are now known to be cumulative, even when the concussive blows are relatively minor. Recent data suggest that college football players who have experienced two or more prior concussions perform more poorly on tests of cognitive functioning (e.g. speed at which they process information, problem solving) relative to those who have experienced one or zero previous concussions.

Although the majority of athletes who experience a concussion are likely to recover, an as yet unknown number of these individuals may experience chronic cognitive and neurobehavioral symptoms. In some cases, these difficulties can be permanent and disabling. At the current time, there are no curative medical treatments for concussion and the best approach to management of concussion emphasizes early recognition of post-concussion symptoms and prevention of additional concussive injuries. Suffering a second

blow to the head while symptomatic from a previous concussion can have severe consequences as in the case of "second impact syndrome", which has led to a reported 19 documented deaths over the past decade. Furthermore, successive concussive impacts may also lead to milder but still significant impairment of cognitive processes (e.g. attention, memory), personality, language functioning, and somatic concerns (e.g. sensitivity to light, dizziness), which is commonly referred to as "post-concussion syndrome."

The recognition and management of concussion in athletes can be difficult for a number of reasons. Athletes who have experienced a concussion present with a wide variety of symptoms. Although the classic symptoms of loss of consciousness, confusion, memory loss, and/or balance problems may be present in some athletes with mild concussion, there may or may not be obvious signs that a concussion has occurred. Post-concussion symptoms can be quite subtle

and may go unnoticed by the athlete, team medical staff, or coaches. In addition, many coaches and athletic trainers (especially at the high school level) may have limited training in recognizing signs and symptoms of concussion and therefore may not accurately diagnose the injury when it has occurred. Many players may be reluctant to report concussive symptoms to the trainer or team physician due to the fear that they will be removed from the game, thus jeopardizing their status on the team or their careers. Lastly, many sports medicine practitioners are not satisfied with the current concussion return-to-play and management options (at least 14 current versions) that are not based on data-driven or scientific principles.

Traditional neurologic and radiologic procedures, such as CT, MRI, and EEG, although invaluable in discerning more serious intracranial pathology (e.g. edema, contusions, hemorrhagic lesions), are not consistently useful in evaluat-

*Continued on Page 3*

# AMERICAN MEDICAL EQUESTRIAN ASSOCIATION

**Janet M. Friesen, MD**  
PRESIDENT

**Maureane Hoffman, MD PhD**  
VICE PRESIDENT

**William M. Lee, MD**  
PAST PRESIDENT

**LJ Skiver**  
EXECUTIVE CONTACT

## AMEA NEWS

**Doris Bixby Hammett**  
ASSOCIATE EDITOR

**John Stremple, MD**  
MEDICAL EDITOR

**LJ Skiver**  
MANAGING EDITOR

**Pat Hutson Hammett**  
Newsletter Design  
phammet@ortelco.net



## MISSION STATEMENT

The American Medical Equestrian Association is dedicated to the philosophy, principles and application of safety of people in equestrian activities. This purpose is achieved through education, research and resource.

- ▲ EDUCATION of health care professionals, organizational representatives and individuals, including an emphasis on public awareness;
- ▲ RESEARCH to better define injury patterns and risks, efficacy of safety measures and equipment, and assistance in equipment design;
- ▲ A RESOURCE of experience and expertise to be shared and utilized for the benefit of equestrian safety.

# Synopsis: AMEA Annual Meeting

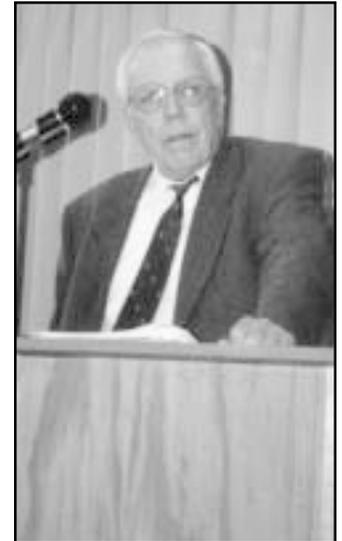
By Dr. Janet Friesen  
AMEA President 2000-2002

The Annual Meeting in Painsville, Ohio proved to be very informative and much was accomplished by the Board. We recommitted ourselves to the 3 main areas of concern for the AMEA: Education, Research and Resource. Three subcommittees will be formed to deal with each area. One member of the board of directors will chair the Committee but the other members will be from the membership at large. Please, inform LaJuan if you are willing to join one of the subcommittees. Most of the work is done via e-mail. Some major changes include increasing the size of the board of directors to include experts from within the membership who are not physicians. We are accepting nominations for these positions from the membership and a ballot will be mailed later this year. The position of Secretary is still open. We have streamlined the Bylaws, basically deleting many out-

dated concepts. We hope to be able to have the membership network more easily this way. After many years of meritorious service Dr. Doris Bixby-Hammett and Dr. Robert Wilson were granted Emeritus status. Their expertise is still available to us but Doris, in particular, will be taking a hard-earned rest from the routine AMEA business. Thank you to both of them, without whom there would be no AMEA. An Award of Merit was sent to Carmelita Lamb for her outstanding work in 4-H regarding use of helmets. The next meeting will be held either in St. Louis or Atlanta next fall. Please mark your calendars and plan to attend. We need your help to ensure the continuation of the valuable work of the AMEA. We need your input and would love to receive information from you regarding equestrian activity safety concerns.

Yours truly,  
JM Friesen

## Stremple recognized



*Dr John Stremple, coordinator for the 11th Annual Meeting, was recognized for his dedication to making the meeting a success. He was awarded an engraved silver hunt cup by AMEA in appreciation of his efforts.*

# AMEA Membership 2001 dues now due

It is time to renew your membership in AMEA for the year 2001. Please submit your renewal dues to the office as soon as possible. If you have any questions please contact La Juan at 1-800-399-0138.

---

Physicians .....	\$100
Associates .....	50
Students .....	35

---

# The Concussion Safety Program, *continued from Page 1*

ing the effects of mild head injury.

## Program Protocol

### *Subjects and Procedure*

Any "at-risk" athletes are encouraged to participate in the proposed "Concussion Safety Program." Recent research has shown that athletes in football, men/women's soccer, hockey, wrestling, and field hockey are all at risk for sustaining concussion.

Preseason baseline evaluation. Athletes who agree to participate will be given a brief battery of computerized neuropsychological measures (ImPACTO) to establish a "baseline" level of cognitive functioning. IMPACTO is also inclusive of a symptom inventory and concussion history form that will be completed by the athlete. The baseline session will take place prior to the beginning of the athletic season, before any physical contact is sustained. With appropriate facilities, computerized testing can be conducted in a group format of up to 30 athletes per session. An athletic trainer or other familiar with IMPACTO should proctor each session. A standardized manual will accompany the software.

Follow-Up Evaluations and Consultation. Following suspected concussion, athletes should undergo a second evaluation using IMPACT. Baseline neuropsychological

data from the first evaluation (along with symptom inventory) will serve as a direct comparison to determine the athlete's recovery from injury. Thus, "recovery curves" for both cognitive and self-report symptoms can be determined. The second evaluation will be conducted by the team trainer or physician and also takes approximately 20 minutes to complete. The tests used in the follow-up phase of the evaluation (see below) will be identical to those utilized in the baseline phase to allow for the direct comparison of results. Retesting can be conducted at regular intervals (e.g. three times at two-day intervals) to determine "recovery curves" for both cognitive and self-report symptomatology.

Following all in-season concussions, clinical consultation will occur with the program director/s (Dr. Collins, Lovell, Podell) by the athletic trainer and/or team physician who are providing care for the concussed athlete. These individuals will be available via pager during season participation. At this time, the baseline evaluation (pre-injury) of the injured athlete will be compared to the athletes' post-concussion performance across both neuropsychological and self-report domains. The consultants will provide a structured output data sheet outlining the athletes' scores. Such data are structured to assist team medical personnel in making more informed and objective decisions regarding return-to-play issues. The goal of

this project is to return the athlete to competition as quickly and as safely as possible following injury. Team medical staff will be ultimately responsible for all decisions regarding return to play of the athlete. Computerized Neuropsychological Test Battery : With athletic concussion in mind, ImPACT-Immediate Post-Concussion Assessment and Cognitive Testing (Lovell, Podell, Powell, Maroon & Collins, 1999)- was developed specifically for assessing athletic related concussions. The computer program measures multiple aspects of cognitive functioning in athletes, including attention span, working memory, sustained and selective attention time, response variability and several dimensions of memory. The program also consists of a self-report symptom questionnaire (20 symptoms commonly associated with concussion) and concussion-history form that precedes the neuropsychological measures. The program, in its entirety, is a user-friendly, Windows-based computer program that can be administered by a team coach or athletic trainer with minimal training. Reaction time is reliably measured to one thousandth of a second across individual test modules (10 modules total) and allows for an assessment of processing speed as the player fatigues. The test battery consists of a near infinite number of alternate forms by randomly varying the stimulus array with each module. This feature was built in to the program to minimize the "practice

effects" that have limited the usefulness of more traditional neuropsychological tests. The program, as a whole, takes approximately 20 minutes to complete.

## Biographical Sketches

### **Mark R. Lovell, Ph.D.**

Dr. Mark R. Lovell is the Director of the UPMC Sports Medicine Concussion Program at the University of Pittsburgh Medical Center within the Department of Orthopaedic Surgery. He completed his doctoral degree at Finch University of Health Sciences-Chicago Medical School in 1984. Dr. Lovell completed both his Clinical Internship and Post-Doctoral Fellowship in Neuropsychology at the University of Nebraska Medical Center. Dr. Lovell is currently a Fellow of the National Academy of Neuropsychology and serves as a reviewer for numerous scientific journals. He recently coedited a book entitled Sports-Related Concussion.

Dr. Lovell was the first neuropsychologist to utilize neuropsychological testing in professional sports with the Pittsburgh Steelers and developed the neuropsychological test protocols that are currently being utilized within the National Football League (NFL) and National Hockey League (NHL). Dr. Lovell serves as Director of the Neuropsychology program for the NFL and Co-Director of the NHL Neuropsychology Advisory Board and administers league-wide neu-

*Continued on Page 4*

# The Concussion Safety Program, *continued from Page 3*

ropsychological testing programs for both the NFL and NHL. Dr. Lovell also serves as a consultant to numerous individual professional sports organizations.

## **Michael W. Collins, Ph.D.**

Dr. Michael W. Collins is the Assistant Director of the UPMC Sports Medicine Concussion Program at the University of Pittsburgh Medical Center within the Department of Orthopaedic Surgery. Dr. Collins completed his Clinical Psychology Internship at the University of Florida Health Sciences Center/Shands Hospital and Doctoral degree at Michigan State University. Dr. Collins completed his bachelor's degree at the University of Southern Maine, where he played collegiate baseball and participated in the 1989 College World Series.

Dr. Collins is currently responsible for the implementation of the "Concussion Safety Program" at several Division I A colleges, including Michigan State University, the University of Florida, the University of Pittsburgh, University of Utah, the University of California; Berkeley, and Arizona State University. He is also the director of similar programs working clinically with several high schools across the country (Michigan, Illinois, Oregon, Maine). Dr. Collins was the lead author of two recent articles published in the *Journal of the American Medical Association*, entitled "Current Issues in Managing Sports-Related Concussion" and "Relationship Be-

tween Concussion and Neuropsychological Performance in College Football Players."

## **Kenneth Podell, Ph.D.**

Dr. Podell is the Division Head of Neuropsychology at Henry Ford Health System in Detroit, MI. Dr. Podell received his M.A. and Ph.D. in Psychology at The City University of New York. He did his pre doctoral and post doctoral training at The Medical College of Pennsylvania. Dr. Podell has been instrumental in developing IMPACT and has made several national presentations on computerized assessment in evaluating concussion.

## **John Powell, AT.C., Ph.D.**

Dr. Powell is an associate professor of Kinesiology at Michigan State University. Dr. Powell has been a veteran athletic trainer, consultant, and epidemiologist for the National Collegiate Athletic Association, National Hockey League, and National Football League. He also serves on the NFL subcommittee on mild traumatic brain injury. Dr. Powell was recently the lead author on a manuscript published in the *Journal of the American Medical Association* entitled "Epidemiology of Concussion in High School Athletics." Dr. Powell has made numerous national and international scholarly presentations on the topic of concussion.

## **Joseph Maroon, M.D.**

Dr. Maroon is currently the Team Neurosurgeon for the

Pittsburgh Steelers and the University of Pittsburgh. He is currently the Vice Chairman of Neurosurgery at the University of Pittsburgh

Medical Center. Dr. Maroon was instrumental in developing impose and has made hundreds of national presentations on the topic of concussion. Dr. Maroon recently co-edited "Current Issues in Managing Sports-Related Concussion" with Dr. Lovell.

## *Editor's Note:*



Dr Michael Collins presented the IMPACT program to attendees of the 11th Annual Members Meeting at Lake Erie College, Erie Pennsylvania.

His presentation generated animated discussions concerning concussion and the viability of adapting the IMPACT program to test equestrian athletes.

# Drusilla Malavase presented Ayer-Hammett Safety Award

The American Medical Equestrian Association awarded **Drusilla Malavase** the Ayer-Hammett Safety Award for 2000 at its annual meeting in Painesville, Ohio.

This award was created in 1997 to recognize individuals who have demonstrated outstanding leadership in the area of rider safety. The award is not given every year, only when individuals meeting the criteria have been identified. The first award was given to Denny Emerson in 1998.

Drusilla Malavase has long been active in the horse community serving through the United States Pony Clubs where she was Chairman of the Ad Hoc Committee for Equestrian Headgear in the late 1970s. From this work, the first U.S. equestrian safety helmet was developed using the USPC safety standard. She then was chairman and a long time member of the newly formed USPC Safety Committee. Working for a national helmet standard, she was elected chairman of the ASTM subcommittee on Equestrian Protective Headgear leading the committee in developing the ASTM equestrian standard. This was followed by her work to have helmets certified that they meet this ASTM safety standard by the Safety Equipment Institute.



*Drusilla Malavase*

Drusilla is serving as Chairman of the New York Horse Council Safety Committee which has developed safety guidelines for organizers of equestrian events and other horse-related issues. She was a consultant to the author of the New York Helmet legislation and has written materials interpreting its use. She is an at-large member of the Horse Advisory Council for the New York State 4-H, frequently speaking at in-service training for volunteers and Cooperative Extension professionals. A disaster guide written for horse owners in her home county has been adopted by the New York State Horse Council and has been distributed widely both within and out of New York.

Drusilla was an ASHA licensed Technical Delegate for Dressage and Eventing, using this opportunity for teaching safety to those

with whom she came in contact. She continues to judge a variety of horse sports, and is the Co-Organizer of Stuart Horse Trials in Victor, New York.

She shares her information with all those who come to her for advice, work-

ing not only in the USA but also in Canada, England, Ireland, New Zealand and Australia, and with the Federation Equestre Internationale.

The horse community is a safer place for the service of Dru Malavase.

*Doris Bixby Hammett, MD  
Board of Directors Emeritus  
American Medical  
Equestrian Association*

## Gathering of the Board



*Five of the 10 members of the AMEA board gathered for quick picture at the AMEA Annual meeting held at Lake Erie Equestrian College in October.*

*Pictured: front row (l to r) Janet Friesen, MD; Doris Bixby-Hammett, MD; George Koepke, MD.*

*Back row (l to r) John Stremple, MD; Robert Faulkner, MD*

# Horse-related Deaths in Ohio, 1980-1998 and Plans to Make Roads Safer

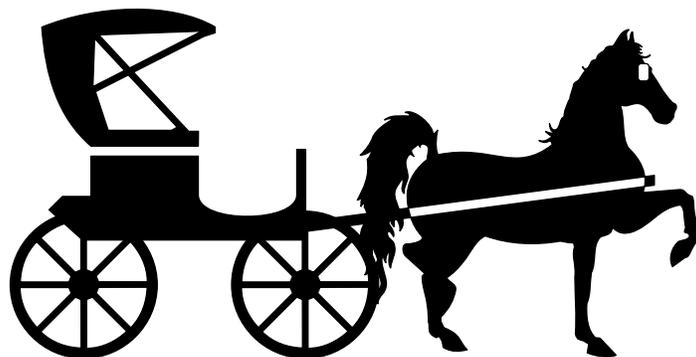
George H. Koepke, MD

A review of horse-related death certificates issued in Ohio from 1990 through 1998 was reported in the June, 2000 issue of the *AMEA News*. There were only 39 deaths during that period and more than 60% occurred while unmounted. For these reasons, the study was extended to include 80 coroner's reports issued from 1980 through 1998.

The certificates provided by a coroner reporting system do not provide details of the accident that are often found in reports by medical examiners in some other states. For example, there are no reports of alcohol or substance abuse or information about a possibility that the horse might have fallen before the rider. There are no statements with regard to environmental factors that might have contributed to the accident. It would be interesting to know if those that died from head injuries might have worn protective headgear.

Of the 80 fatalities, 50 were males and 30 were females. Their ages varied from ages one to 84 years. Approximately 40% were under 24 and the largest group of 46% was 25 to 64. The older group of those 65 to 84 were least, at 14% of the total.

As shown in **Table 1**, only 32 (40%) of the 80 deaths occurred while mounted. Of this number, automobiles struck two riders and their horses.



One of these groups was a professional driver that was thrown from a sulky during a collision with another sulky.

This study of fatalities in Ohio during a period of 19 years provides evidence that 48 (60%) of the deaths were "unmounted" as shown in **Table 2**. Of these groups, 21 (43.7%) were in horse-drawn vehicles that were struck by automobiles or trucks, 8 (10%) were kicked by a horse and 7 (9%) were found in stalls with crushing injuries to the chest and/or abdominal viscera. Other miscellaneous causes of the unmounted are also listed in **Table 2**.

From these observations, it is apparent that almost one-third of the mounted and unmounted deaths were the result of horse-motor vehicle accidents. Approximately 29% of the unmounted deaths were associated with horse care or injuries in a stall. Further, more than one-third of the fatalities were among those mounted and did not involve automobiles or trucks.

A comparison of the major causes of death with the nature of the accident is shown in **Table 3**. From this study, as well as those from other reports, head injuries are the most common cause of horse-related deaths. For this reason, approved, well-fitted and secured helmets should be worn whenever one is engaged in horse activities. Lethal injuries to the trunk are often associated with crushing injuries.

It is gratifying to know that Ohio and a few other states have recognized the alarming number of horse-related fatalities that occur on roadways and plan to make them safer. The department of public safety has prepared an excellent "Status Report and Recommendations to Improve Amish Buggy Safety." It is available from the office of a Governor's Safety Representative at 1979 West Broad Street, P.O. Box 18281, Columbus, OH 43218-2081.

Inspection of state maintained roads in several counties has verified that the state Department of Transportation

(DOT) has made preliminary efforts to make roads safer. Holmes County has the largest Amish population in the world and like Geauga and a few other counties, is growing. The Amish have demonstrated their cooperation with representatives of state and local departments of public safety, law enforcement, transportation and the Ohio State University Extension Service. There have been several well-attended regional meetings, driver education classes and materials for slow moving vehicles (SMV) have been provided. Speeding and no-passing laws are now strictly enforced, the shoulders of roads are being graded and plowed to eight feet wide with "turnouts" on hills and bridges. Buggy-identifying lights, SMV emblems and reflective materials are more abundant. Bus transit services have improved in rural areas and additional plans are being considered at future meetings. The leaders of state and local representatives as well as the Amish communities are to be congratulated for their efforts to show the ways to decrease accidents on Ohio roadways.

## *Horse-related Deaths in Ohio, 1980-1998*

**Table 1. Nature of Mounted Lethal Accidents**

Horse and rider struck by auto	2
Fell or thrown from horse	29
Sulkies collided in race (drivers)	1

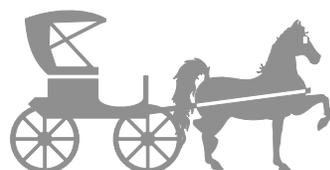
**Table 2. Nature of Unmounted Lethal Accidents**

Victims in buggy or wagon	21
Kicked	8
Crushed (in stall)	7 *
Child, run over by spreader	1
Dragged, when victim was walking	2
Runaway horse(s) victims in buggy or cart	2
Stepped on — usually small children	3
Buggy overturned when horse shied by passing trucks	2
Sulky collided with another (victim walking line driving)	1 *
Spectator at horse race (fracture tibia-post op Pulmonary Emboli)	1
7 month fetus (not among numbers)	

\* 3 were horse professionals

**Table 3. Relationship of Accident and Chief Cause of Death**

Nature of Accident	Chest &/or Abdominal	Head &/or Neck Injuries	Other
Fell or thrown from horse 1 professional	1	28	
Horse & rider struck by motor vehicle	0	2	
Victims in buggy or wagon —motor vehicle	0	21	
Kicked	6	2	
Crushed in stall	6	1	
Child run over by spreader	0	1	
Dragged — victims walking	0	2	
Runaway horses — victims in vehicle	1	1	
Stepped on (usually small children)	1	2	
Horse & buggy — shied by trucks	0	2	
Sulkies collided	1	1	
Spectators at horse race	0	0	1—Post-op tibial fracture Bilat. Pulmonary Emboli



# A Riding Workout — It's Not Just for the Horse

Shelia King



Reprinted by permission of  
*Underwire*  
[www.underwire.msn.com](http://www.underwire.msn.com)

If you read *Black Beauty* over and over again as a kid or dreamed you were Elizabeth Taylor in *National Velvet* or begged your parents for a pony, you're probably still crazy about horses, and you are not alone.

Horses and women have special affinity for each other (*Lady Godiva*, *Mary Queen of Scots*, *Julie Krone*). Few sports can match the exhilaration and beauty of horseback riding, which combines the grace of dance with the athleticism of skiing. And this is one sport in which women have taken the lead, representing more than 80 percent of today's horse enthusiasts and riders.

Opportunities for college-aged students to participate in this once-elite sport have increased, as equestrian programs have become part of intercollegiate competition.

But you don't have to be a college student to saddle up. Before you throw yourself into a saddle, you need to get educated.

- Check out the riding rings in your area.

Find out what style they teach, Western or English. (Western burns fewer calories and is less technique intensive.)

- Find out what their fees are.
- What kind of gear do you need to get started?
- What condition are the horses in?
- Will you be able to ride the same horse every time?
- Can you afford the time and money required for quality time on a horse with an instructor?
- Be sure to check with your local university or college extension program, because many offer introductory courses through local equestrian centers.

Detractors of horseback riding may think that the only one getting exercise is the horse. Not true. The average one-hour workout with a horse will eat up between 300-350 calories. You'll burn up another 150-200 calories in the half-hour it requires to groom, saddle and clean the beast. Even carrying hay burns calories. An hour of horseback riding is comparable to walking/running four to five miles or bicycling 10 miles.

Riding has other conditioning benefits. Posture improves because proper technique requires riders to develop strong upper back, abdominal and low back muscles. Legs become stronger as hamstring quadriceps and adductor (inner thigh) muscles adapt to the work of posting and jumping. Coordination and balance improve as the rider learns to adjust and control the movements of the horse. Reflexes are heightened as riders respond without thinking to changes in gait, jumping movements and unpredictable horse behavior. Muscle flexibility is required in the adductors (especially if you are riding a large horse!). Flexibility is also enhanced in the Achilles tendons and calves as you press your heels down in the stirrups. Your horse isn't the only one getting cardiovascular conditioning during a workout. Research indicates that riders will experience moderate increases in heart rate and respiratory rate while the horse is trotting and cantering.

It takes muscles to control that horse and stay in the saddle! But don't rely on horseback riding alone. Each week, add three additional days of aerobic exercise such as walking or swimming (30-45 minutes each session) to further enhance your cardiovascular health and fitness benefits.

## What else can riding give you?

The psychological pluses of developing a sense of achievement; building self-confidence; conquering fears; mastering self-discipline; practicing stress management; problem solving (also known as thinking on your "seat"); caring for and learning about a magnificent animal.

To get the most out of your horsing around, you must be sure to follow proper safety practices. Buy and wear an approved helmet, use a well-fitted saddle to prevent low-back pain, and wear boots with heels. Other safety measures that have been shown to decrease risk of injury are better rider instruction, knowledge of horse behavior, warming up and working with an expert trainer to practice falling safely from the horse. To enhance your riding technique, you should definitely maintain a well-rounded "on the ground" fitness program by including the following equestrian-specific strength and flexibility exercises: Dumbbell bent-over supported rows: strengthens latissimus dorsi, rhomboids and biceps — needed to maintain "shoulders back" posture. Push-ups: strengthens deltoids, pectorals and triceps — used to mount and move the horse in stalls and trailers. Dumbbell or barbell squats: strengthens gluteus maxi-

mus, quadriceps, hamstrings and spinal erectors (back muscles) — used to mount, post, maintain proper seat during jumping, trotting and galloping. Adductor (inner thigh): Strengthens inner thigh muscles, which are used to keep you on the horse. Trunk curls: strengthens abdominal muscles used to support the spine and prevent hyperextension of the back during riding. Leg extensions: strengthens erector spinae (back muscles) used in maintaining upright posture and supporting the spine. Calf stretches: increases the flexibility of the calf muscles and prevents tightness in the Achilles tendon — stretched when riding in the “heels down” position. Adductor (inner thigh) stretch: increases the range of motion in the groin, stretched when riding astride the horse.

Find more about women and horses at the web site of Mary D. Midkiff, author of *Fitness, Performance and the Female Equestrian*. This book provides a comprehensive review of the biomechanics of riding as well as exercises that can be performed to improve fitness specific to different equestrian events. Happy trails!

#### **About the Author**

*Sheila King is an exercise physiologist at UCLA with more than 15 years of experience. She is a certified Program Director of the American College of Sports Medicine, and a trainer of personal trainers at UCLA Extension.*

## BOOK REVIEW

**HORSEBACK RIDING:  
The Parent's Guide**  
by Jessica Jahiel, Ph.D

**T**his book gives excellent advice to parents as well as references, resources and contacts throughout the book. It is recommended reading for a parent with a child who has “found” horses.

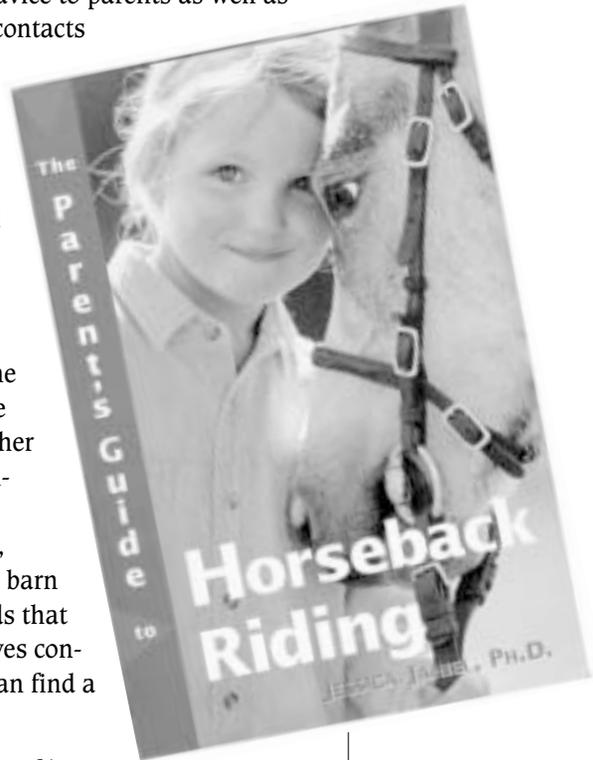
Dr. Jahiel gives sound counsel for every step in the parent's adventures with the child and the horse.

Her repeated warning is for the parent to move slowly and let the child determine the direction for her riding using the best advice available: books (excellent ones are listed), instructors, veterinarians, other parents and children in the barn or the activities. She recommends that the instructor be certified and gives contacts through which the parent can find a qualified instructor.

Dr Jahiel faces directly the cost of horse activities and points out ways to be sure that the child helps in the decisions to be made and that the direction is correct for the child. She lists some of the ways these costs can be decreased.

Unless the parent is a knowledgeable horse person and a child psychologist who already knows the right answers, all others will find that this book gives good advice and support for decisions to be made along the way. *The Parent's Guide to Horseback Riding* will be an appreciated help to the parent.

*Doris Bixby Hammett, MD*



*Published by  
NTC/Contemporary  
Publishing Group, 4255 West  
Touhy Ave., Lincolnwood, IL  
60646-1975*

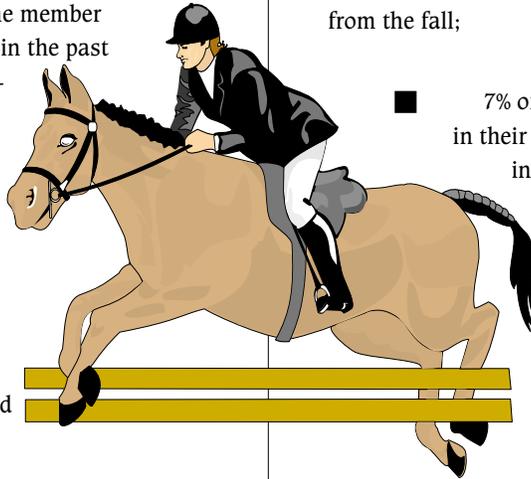
# SURVEY RESULTS

## Masters of Foxhounds Association of America

*COVERTSIDE*, the magazine of the Masters of Foxhounds Association of America, asked its readers in March 2000 to respond to a questionnaire giving information on head injuries to foxhunters.

The editor, Norman Fine, requested that if the member had a fall from a horse and hit his/her head in the past 24 months to reply. As of September 169 respondents reported falling from their horses within the last 2 years and striking their heads: of these:

- 58% were confused or disoriented after their fall: Of those that were confused or disoriented: 34% were in that state only momentarily; 19% up to 5 minutes; 17% up to 15 minutes; and 30% were confused or disoriented longer than 15 minutes.
- Of the 169 that struck their heads: 31% were unconscious: Of those that were unconscious: 55% regained consciousness in less than 5 minutes; 36% in 5-30 minutes; 2% in 30 minutes to 1 hour; 7% in 1 hour or more.
- Of the 169 that struck their heads: 52% had symptoms of headache, dizziness, or nausea: Of those who had symptoms of headache, dizziness or nausea: 17% experienced the symptoms for less than 1 hour; 35% for up to 1 day; 24% for up to 1 week; 13% for up to 1 month; and 11% for longer than 1 month
- 17 still experience residual symptoms; Of the 169 that struck their heads: 26% returned to hunting the same day; 27% within 1 week; 20% between 1 week and 1 month; 15% between 1 - 6 months; 9% longer than 6 months; and 3% never hunted again.
- Of the 169 that struck their heads: 99% were wearing a hard hat of some type when the accident occurred; 88% wore a hard hat with a harness; Of those with harnesses: 100% were fastened; 95% were fastened properly (admitting only a finger between harness and jaw); 3% of the harnesses came loose; Of the 169 that struck their heads: 96% claim that their hat fit properly
- 75% of the hats were less than 5 years old; 18% were 5-9 years old 4% were 10-14 years old; 1% were 15-19 years old 2% were over 20 years old.



- 70% wore a protective SEI helmet meeting ASTM standards; 7% lost their hat sometime during the accident; 98% of the hats were on at the time of impact; 42% of the hats were damaged from the fall;

- 7% of the riders were 12-29 years old; 11% were in their thirties; 31% were in their forties; 38% were in their fifties; 11% were in their sixties; and 2% were over 70 years old.

- 39% had been hunting for less than 10 years; 40% for 10-29 years; 19% for 30-40 years; and 2% for 50-63 years.

A member of the MFHA, Christopher J. Lyons, MD, Chester County, PA, commented: "By far, the most common injury

that required presentation to our Emergency Room after an equestrian injury is head injury. The E.R. physicians...believe that the need for proper protective head gear is so obvious that they can make an initial separation of riders into two groups - the knowledgeable and the less knowledgeable, based on the rider's decision to wear a proper helmet."

Editor Norman Fine comments: "if hunting experience correlated to Dr. Lyons' 'knowledgeable' riders, initial evidence suggests that the most experienced foxhunters are not necessarily wearing safer headgear."

*From COVERTSIDE  
Vol., 6 No. 26  
September 2000  
Norman M. Fine, Editor*

# Rider injury rates and emergency medical services at equestrian events

*Paix.BR, Br J Sports Med 1999 Feb;33(1):46-8 Trauma Service, Royal Adelaide Hospital, Australia.*

## BACKGROUND

Horse riding is a hazardous pastime, with a number of studies documenting high rates of injury and death among horse riders in general. This study focuses on the injury experience of cross-country event riders, a high risk subset of horse riders.

## METHOD

Injury data were collected at a series of 35 equestrian events in South Australia from 1990 to 1998.

## RESULTS

Injury rates were found to be especially high among event riders, with frequent falls, injuries, and even deaths. The highest injury rates were among the riders competing at the highest levels.

## CONCLUSION

This is a need for skilled emergency medical services at equestrian events.

## Editorial Comment

The injury rates cited here are compatible with those reported in 1998 by the accident study committee of the United States Pony Clubs. Children with the greater number of years riding have higher injury rates than those less experienced. Injuries are more frequent among riders competing at the higher levels. For those reasons skilled medical services should be available at all equestrian events.

*Doris Bixby Hammett, MD*

## Editorial Comment:

The questions by event organizers may be "where do you get skilled medical services?" I had the privilege on two occasions to participate as a physician stationed at cross-country and steeplechase jumps at the Rolex 3-day Event. The emergency medical services at this event are outstanding as organized through the University of Kentucky Medical Center. Event organizers might consider contacting the Emergency Medical Services of a nearby medical center for help in organizing skilled emergency medical services at events.

*John F. Stremple, MS, MD, MSFACS*

## Immediate and Persistent Complete Heart Block following a horse kick

*Benitez RM, Gold MR Pacing Clin Electrophysiol 1999 May;22(5)816-8 Division of Cardiology, University of Maryland School of Medicine, Baltimore, MD 21201 Mbenitez@Dheat.ab.imd.edu*

Non-penetrating chest trauma has been reported to cause acute and transient disorders of impulse formation and propagation, including intraventricular conduction delay and heart block. We report a case of immediate and sustained complete heart block following blunt chest injury.

## Editorial Comment

Several studies have revealed that approximately 20% of horse-related accidents do not occur while mounted. As pointed out in the AMEA News of November 1995, as many as 34% of injuries occur in stable management.

Blunt trauma to the chest has been described repeatedly to produce varied degrees of heart block or disturbances in the conduction system of the heart. As a result, severe cardiac irregularities or sudden death (*Commotio Cordis*) may occur. The authors alert equestrians of the potential danger of being kicked in the chest by a horse. One wonders if an

equestrian vest might offer some protection to this type of accident.

*Doris Bixby Hammett, MD*

## Editorial Comment

I have talked to an experienced trainer who regularly wears helmet protection while on the ground working with green horses and teaches her students to do the same. Perhaps also wearing a vest while training green horses would be appropriate. This particular trainer is very active in the US Pony Clubs.

*Dr John Stremple MS MD FACS Professor Emeritus of Surgery University of Pittsburgh*

Heart Block Following a Horse Kick  
at Equestrian Events  
Rider Injury Rates & EMS Services  
Association of America  
Survey Results  
Masters of Foxhounds  
Horseback Riding: The Parent's Guide  
Book Review  
— It's Not Just for the Horse  
A Riding Workout  
Horse-related Deaths in Ohio  
Ayer-Hammitt Safety Award  
Drusilla Malavase  
Concussion Safety Program

**INSIDE**



5318 Old Bullard Road  
Tyler, Texas 75703

**American  
Medical  
Equestrian  
Association**



BULK  
U.S. POSTAGE  
**PAID**  
PERMIT NO. 275  
TYLER, TX

**MEMBERSHIP APPLICATION**



**American  
Medical  
Equestrian  
Association**

5318 Old Bullard Road  
Tyler, Texas 75703  
903-509-2473  
Fax 903-509-2474

NAME IF MD, MEDICAL SPECIALTY

OFFICE/BUSINESS ADDRESS

OFFICE PHONE / OFFICE FAX

HOME ADDRESS

HOME PHONE / HOME FAX

E-MAIL ADDRESS

**NEW**

**RENEWAL**

**Enclosed:**

Application for: Active Membership (Physicians) (\$100) \_\_\_\_\_  
Associate Membership (Non-Physician) (\$ 50) \_\_\_\_\_  
Junior Members (Students, Youth) (\$ 35) \_\_\_\_\_

Send Application and dues to:

**American Medical Equestrian Association**  
5318 Old Bullard Road  
Tyler, Texas 75703