



Looking for Causes of Injuries — Racehorse Postmortem Program

by LAURIE FIO

The California Horse Racing Board (CHRB) Postmortem Examination Program provides valuable information regarding injuries to racehorses. When racehorses suffer catastrophic injuries, the tragedy affects, not only the horse, but also the owners, trainers, jockeys and even the racehorse fans betting on their favorites. If researchers can identify causes of injuries, then they can begin to develop preventive strategies to reduce the chances of these injuries resulting in catastrophic breakdowns in racehorses.

The postmortem program was created in 1990 as a partnership between the California Animal Health and Food Safety Laboratory (CAHFS) at U.C. Davis and the CHRB to meet three primary objectives:

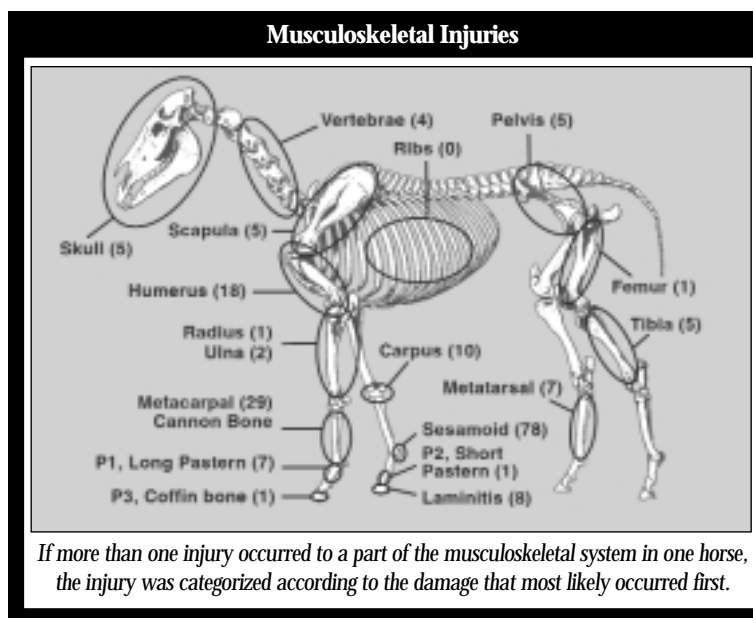
- 1) to determine the nature of injuries occurring in racehorses,
- 2) to determine the reasons for these injuries, and
- 3) to develop injury prevention strategies.

Every horse that dies or is euthanized on racetracks or training facilities under the CHRB's jurisdiction is sent to a CAHFS facility for a complete necropsy. The CHRB and the California Department of Food and Agriculture (CDFA) provide funding for the postmortem examinations and the racing associations provide funding for the transportation of the horses. This visionary partnership has become a national model for the racing industry in a united effort to improve the safety and welfare of racehorses. Additionally, the U.C. Davis Center for Equine Health funds in-depth studies through their J.D. Wheat Veterinary Orthopedic Research Laboratory utilizing the

necropsy specimens. These studies, in turn, provide valuable research information to the racing industry.

During the year 2000, 260 horses were examined as part of the post-mortem examination program. Most of the submissions were Thoroughbreds (84 percent) and most commonly 3-year-olds (32 percent). Only 21 percent of all racehorses submitted were 2-year-olds. The 2-year-olds had the highest proportional number (35 percent) of fatalities due to diseases other than musculoskeletal disease. The number of submissions for post-mortem examinations declines dramatically after the horses reach their fifth year of age.

Approximately 80 percent (209 horses) of the fatal injuries were due to musculoskeletal (muscles, tendons, ligaments and bones) problems, primarily of the legs. Because these injuries are by far the most common noted, U.C. Davis researchers have focused most of their investigative efforts on causes and prevention of limb injuries. Most of the catastrophic injuries (44 percent) occurred during or immediately following a race.



Activity at Time of Injury

Accident	8
Non-exercise	57
Racing	115
Training	80
Total	260

Thirty one percent of the fatal injuries occurred during or immediately following a training session. Horses that were injured in the non-exercise category (22 percent) primarily suffered from colic or infectious diseases. Only three percent of the submissions resulted from accidents. These horses suffered a fatal injury due to a one-of-a kind mishap such as rearing over backward or a collision.

The sesamoid bone was the most common site of musculoskeletal injury (37 percent). The metacarpal or cannon bone was the second most common site of injury (14 percent), followed by the humerus, ligament rupture and carpal (knee) fractures.

Of the other organ systems affected by injuries, the respiratory system was the next most commonly damaged system (6 percent), followed by the gastrointestinal system (5 percent), the whole body (4 percent), the central nervous system (2 percent), the skin (1 percent) and the cardiovascular system (1 percent).

In earlier studies, U.C. Davis researchers demonstrated how previously undiagnosed stress fractures could lead to catastrophic fractures of the pelvis, femur and humerus in Thoroughbred racehorses. More recent information has prompted researchers within the U.C. Davis J.D. Wheat Veterinary Ortho-

pedic Research Laboratory to focus on a specific site of the cannon bone with the hope of developing methods for early detection of injury to this location.

Based on earlier studies, researchers are also gathering additional evidence on horses in race training to determine the role of toe grabs in contributing to an increased risk for catastrophic limb injuries. Earlier studies indicated that the height of toe grabs on horseshoes is related to injury of the suspensory apparatus.

The results of a three-year-study on equine protozoal encephalomyelitis (EPM) are also being prepared for publication. In this project, researchers examined 372 racehorses through the postmortem program for exposure to the parasite that causes EPM. Participating racetrack practitioners obtained blood and spinal

fluid samples from horses prior to being submitted for necropsy. Pathologists closely examined the spinal cords and brains of these horses at necropsy. The microscopic results were compared to blood and spinal tests to give veterinarians the best possible information on interpreting future test results on racehorses with signs of EPM.

Over the years, the CHRB Post-mortem Examination Program has obtained detailed information on more than 2,800 horses. This includes statistics on injuries and illnesses developed during racing, training and even during non-exercise-related activities. The postmortem program is very well respected throughout the national racing community. The program's goal is to continually improve the welfare of racehorses and to foster the public's trust in the sport of racing.

Injury by Age

Age (years)	≤ 2	3	4	5	6	7	8	9	>9	NG*	Total
Accident	2	4	0	0	0	0	0	0	1	1	8
Non-exercise	19	15	11	2	2	1	2	1	3	1	57
Racing	17	35	19	21	8	9	1	1	2	2	115
Training	17	30	18	6	0	1	3	0	0	5	80
Total	55	84	48	29	10	11	6	2	6	9	260

*NG=not given

Breed Submissions by Age

Age (years)	≤ 2	3	4	5	6	7	8	9	>9	NG*	Total
Thoroughbred	42	74	43	25	9	11	4	1	1	8	218
Quarter Horse	9	8	2	2	1	0	0	0	2	0	24
Other	4	2	3	2	0	0	2	1	3	1	18
Total	55	84	48	29	10	11	6	2	6	9	260

*NG=not given

Organ Systems Affected

	MS	CV	GI	Skin	CNS	Resp	WB	Total
Thoroughbred	181	1	10	2	5	10	9	218
Quarter Horse	18	1	2	1	1	0	1	24
Other	10	0	2	0	0	5	1	18
Total	209	2	14	3	6	15	11	260

MS-musculoskeletal system, CV-cardiovascular system, GI-gastrointestinal system, CNS-central nervous system, Resp-respiratory system, WB-whole body.