Exercise History Report (Full)

Horse #6

UCDAVIS
VETERINARY MEDICINE
J. D. Wheat Veterinary Orthopedic Research Laboratory

Oct-03-2013

Exercise History Report (Full)

J.D. Wheat Veterinary Orthopedic Research Laboratory

This report summarizes the high speed exercise history for Case Horse. There are four parts to this report:

Part 1 is a graph that depicts the races and officially recorded high speed workouts for Case Horse over the horse's career. The graph is useful for visually assessing features of a horse's career like: career length, periods of layup, and exercise consistency. If Case Horse had zero recorded high-speed exercise events, this graph is not produced. Event histories for three breed, sex, age, and event-matched control horses are also plotted.

Part 2 includes graphs which illustrate Case Horse's exercise history alongside that of Control Horses. These graphs are useful for visually comparing periods of layup and specific rates of exercise in the horses' exercise histories.

Part 3 is a chronological listing of races and officially timed works beginning with the most recent event (race or work).

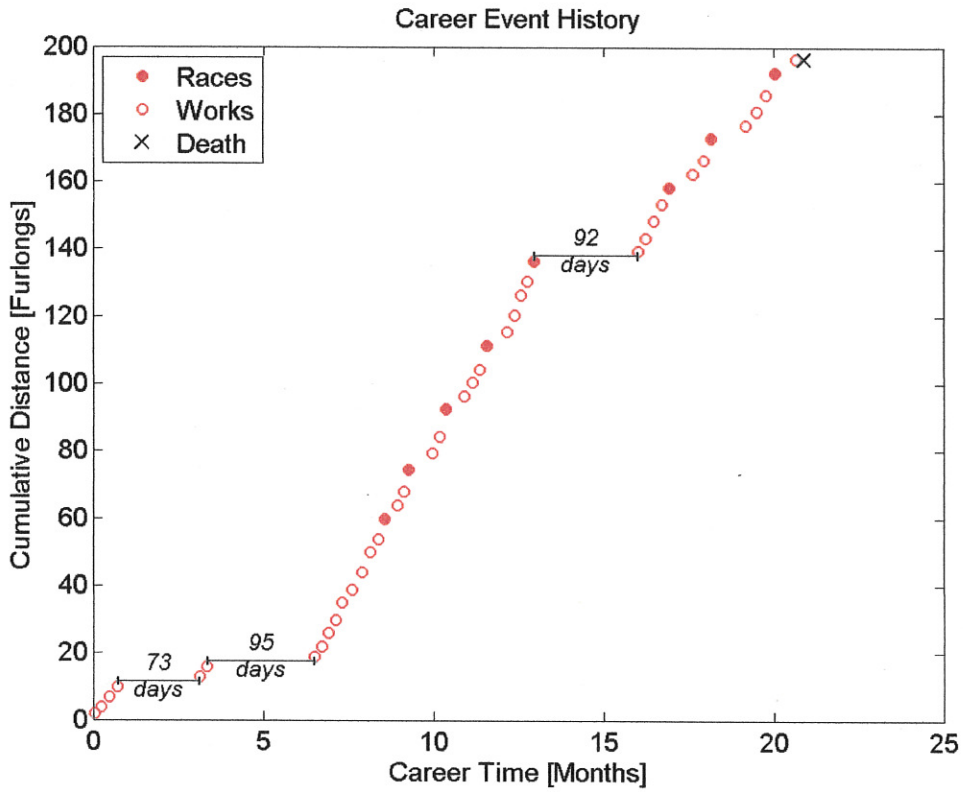
Part 4 is a chart that allows comparison of exercise variables between Case Horse and other racehorses of similar age, sex, and breed that did not die at the same time from an injury. Similar to comparing the results of a blood test to a range of normal values, the values for Case Horse can be assessed in the context of a normal range for 95% of a sample of similar racehorses that did not die during the same time as Case Horse.

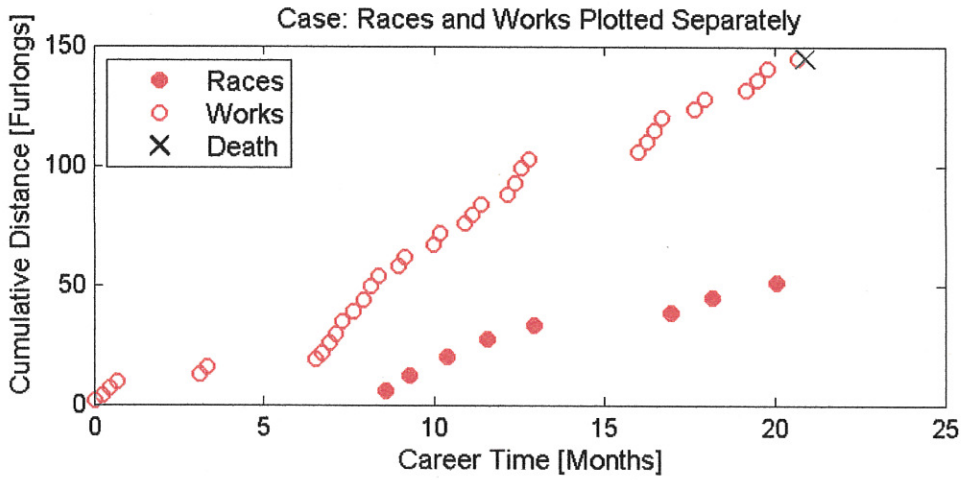
Table of Contents

Part 1: Graphical Representation of Individual High-Speed Exercise Histories

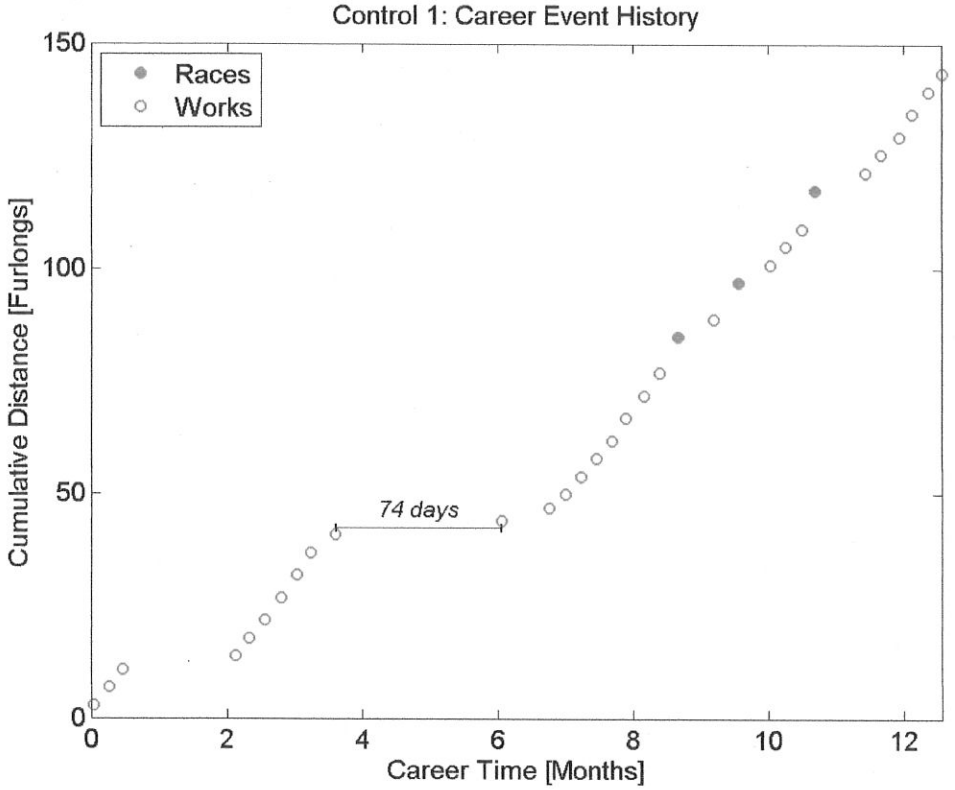
Races (filled circles), officially timed high-speed works (open circles), layups (line with endcaps, periods of time greater than 60 days in length without a race or timed work), and time of death (X) are illustrated over time (Career Time in months). With each event (race or work), the number of furlongs the horse exercised in that event is added to the number of furlongs exercised in all previous events.

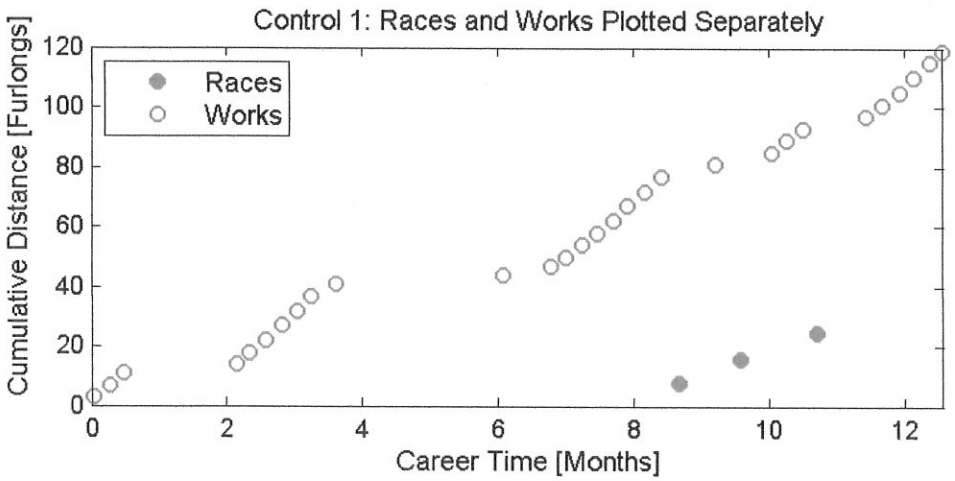
Case Horse High Speed Exercise History



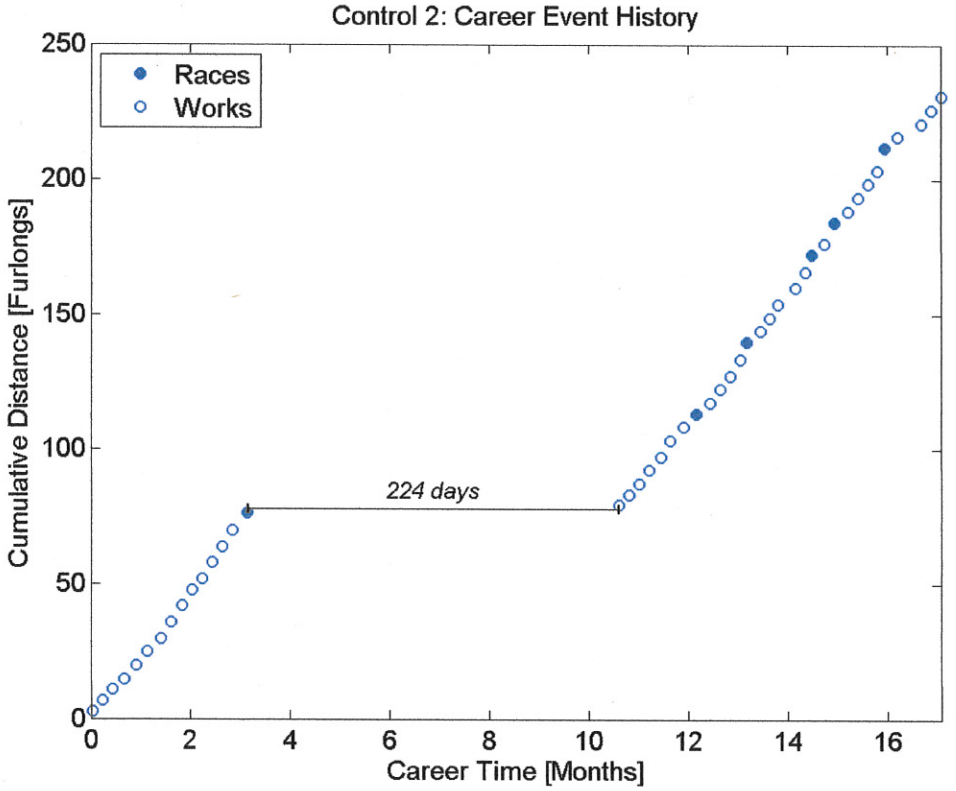


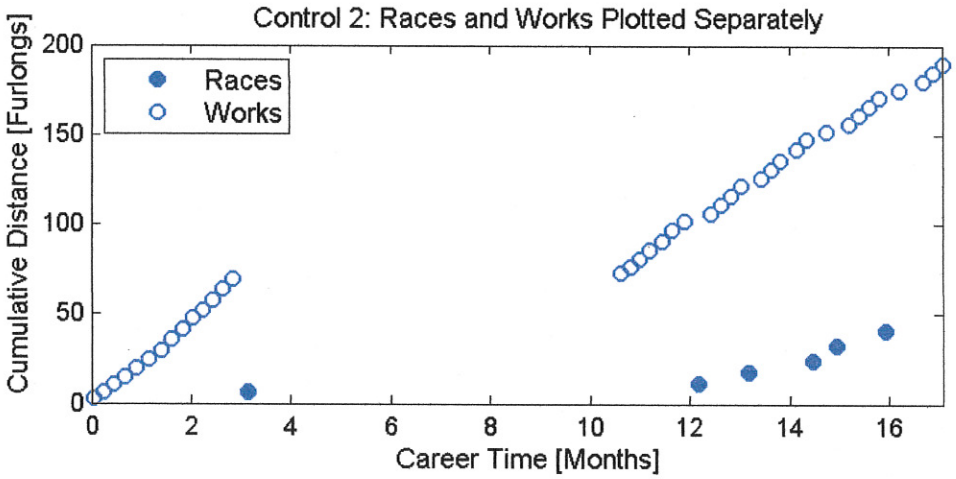
Control 1 High Speed Exercise History



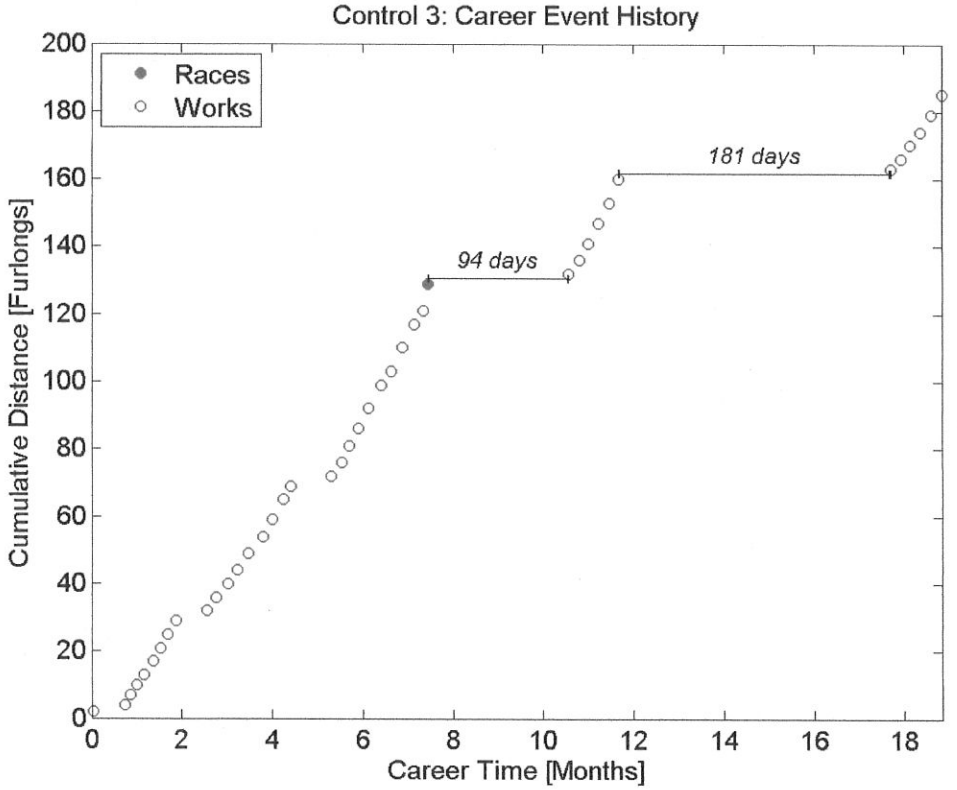


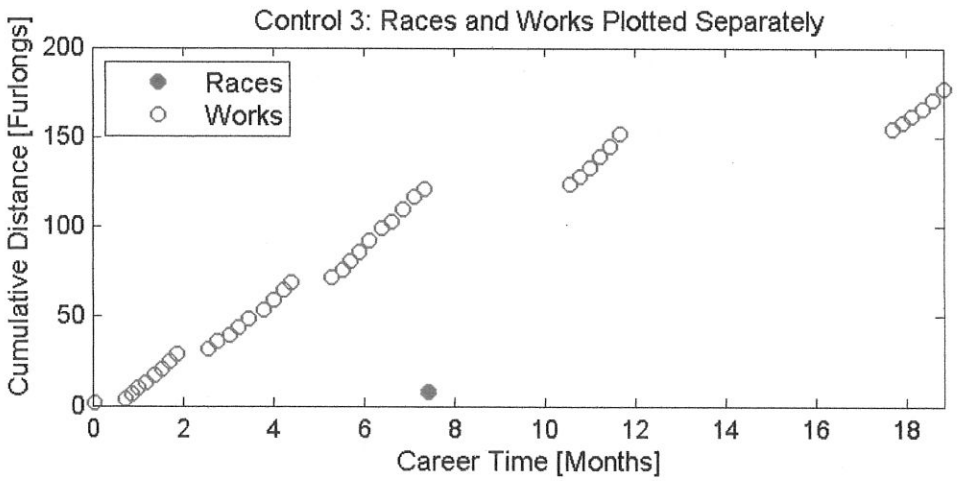
Control 2 High Speed Exercise History



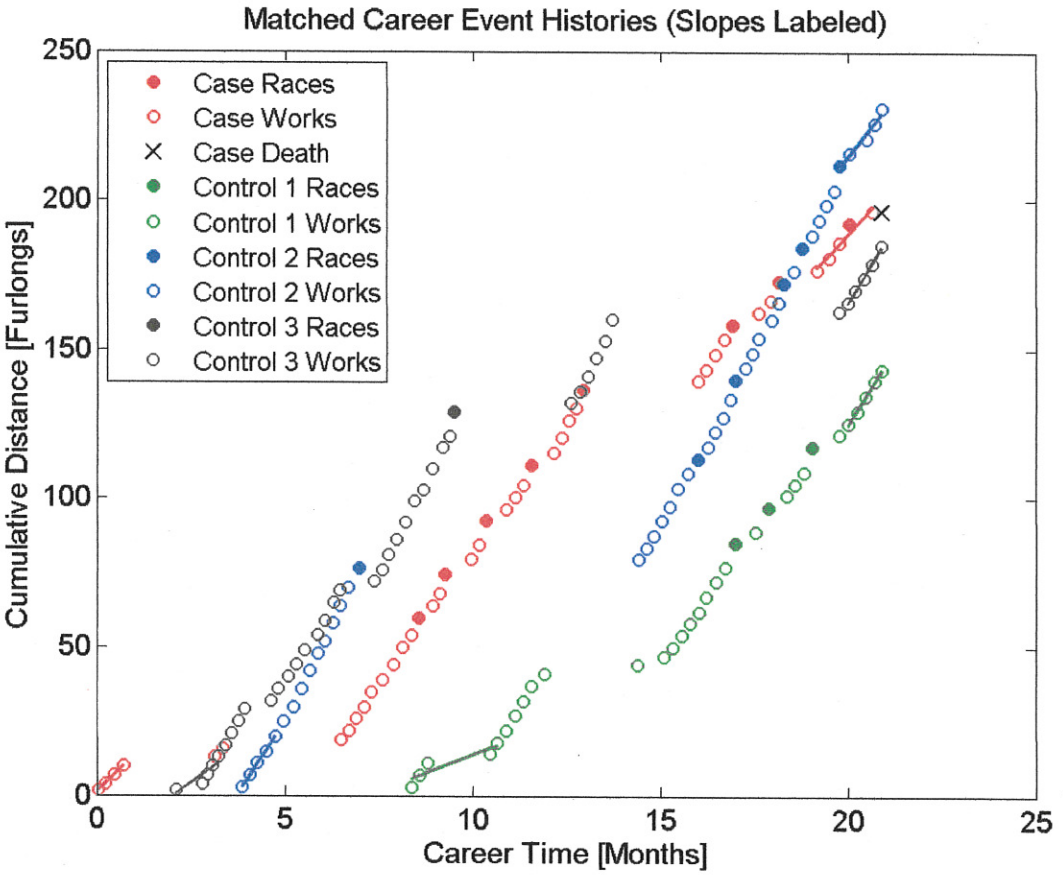


Control 3 High Speed Exercise History

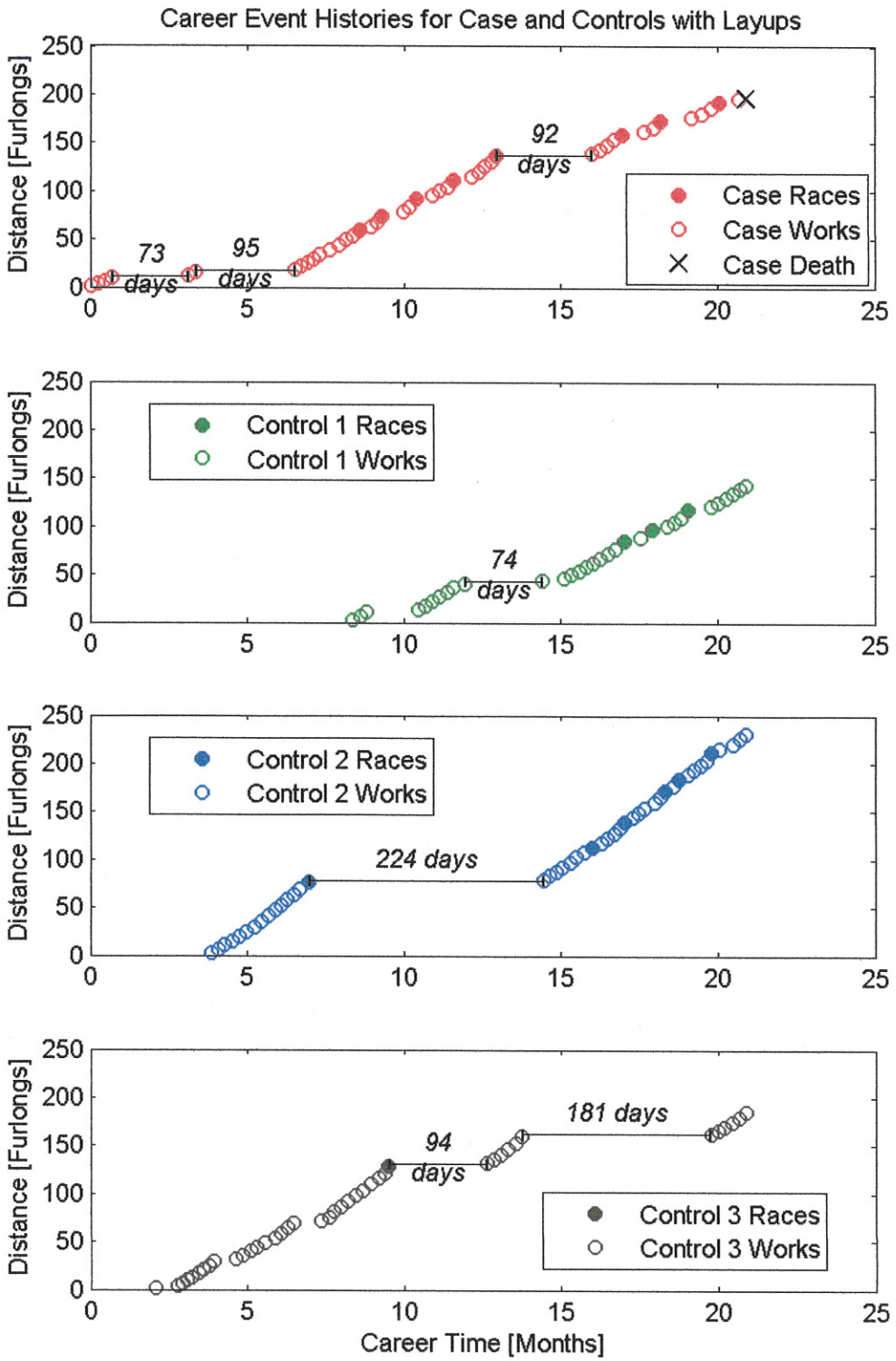


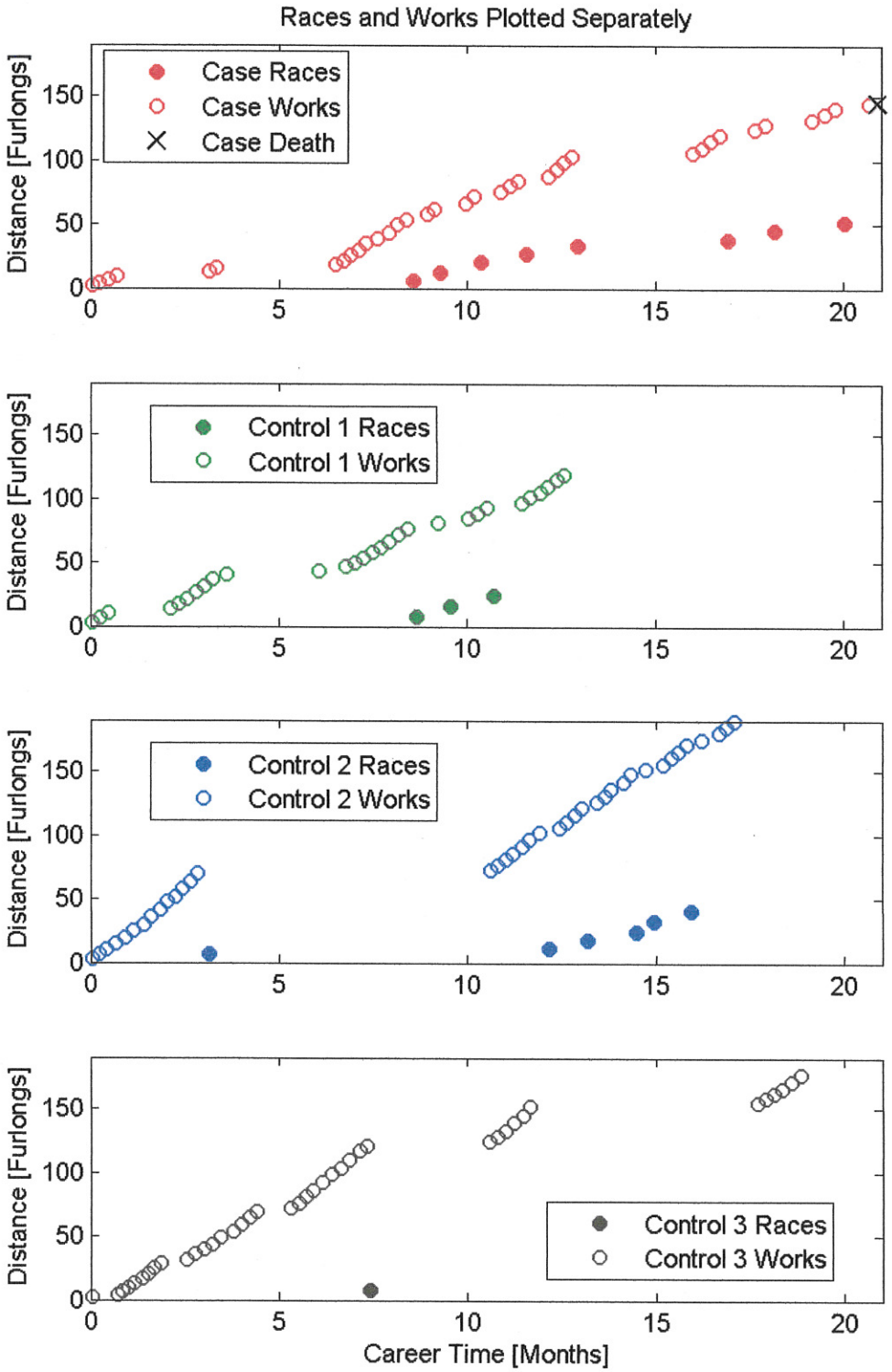


Part 2: Case and Control Horses Plotted Together



Case and Control Horses' exercise event histories are plotted on the same axes. The plots are aligned by the match date (equal to the date of death of Case Horse). Lines segments indicate specific rates of exercise at the start of career, end of career (for Case Horse), and match date (for Control Horses). Event rates are calculated as the slopes of the plots over 2 to 5 events not spanning a layup period, in units of furlongs per month.


Career Event Histories for Case and Controls with Layups
Distance [Furlongs]
Career Time [Months]
73 days
95 days
92 days
Case Races
Case Works
Case Death
Control 1 Races
Control 1 Works
74 days
Control 2 Races
Control 2 Works
224 days
Control 3 Races
Control 3 Works
94 days
181 days

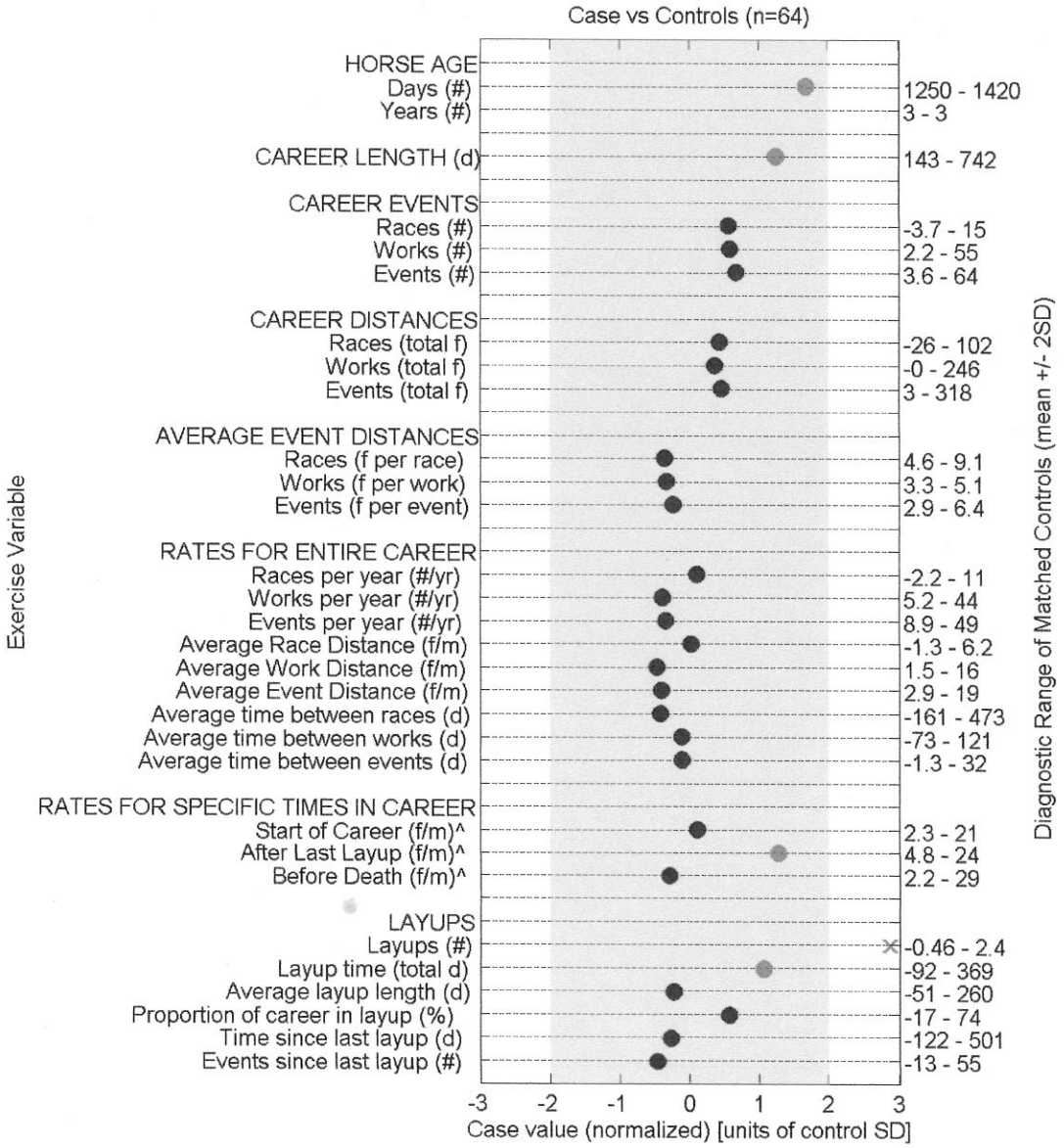

Races and Works Plotted Separately
Case Races
Case Works
Case Death
Control 1 Races
Control 1 Works
Control 2 Races
Control 2 Works
Control 3 Races
Control 3 Works
Distance [Furlongs]
Career Time [Months]
0
5
10
15
20
50
100
150

Part 3: Case Horse's Event History

Date	Race/ Work	Fur-longs	Track	Surface	Track Cond.	Time	Age/ Sex	Race Class	Earn-ings	Finish
12/14/2012	W	4.0	BHP	AllWthr	Fast	:47.60				
11/25/2012	R	6.5	BHP	AllWthr	Fast		3U	Alw48000nw1$/x	350	6
11/17/2012	W	5.0	BHP	AllWthr	Fast	01:00.6				
11/9/2012	W	4.0	BHP	AllWthr	Fast	:48.20				
10/30/2012	W	4.0	BHP	AllWthr	Fast	:48.40				
9/30/2012	R	6.5	SA	Turf	Firm		3U	Clm40000 (40-35)-c	350	10
9/23/2012	W	4.0	BHP	AllWthr	Fast	:47.60				
9/14/2012	W	4.0	BHP	AllWthr	Fast	:47.80				
8/24/2012	R	5.0	DMR	Turf	Firm		3U	Aoc40000nw1$/x-N	350	6
8/17/2012	W	5.0	DMR	AllWthr	Fast	01:00.6				
8/10/2012	W	5.0	DMR	AllWthr	Fast	01:00.2				
8/3/2012	W	4.0	DMR	AllWthr	Fast	:47.80				
7/27/2012	W	3.0	DMR	AllWthr	Fast	:36.40				
4/26/2012	R	6.0	BHP	AllWthr	Fast		3	HHenson -70k	8682	3
4/21/2012	W	4.0	HOL	Turf	Firm	:48.20				
4/15/2012	W	6.0	HOL	AllWthr	Fast	01:12.8				
4/9/2012	W	5.0	HOL	AllWthr	Fast	01:02.0				
4/3/2012	W	4.0	HOL	AllWthr	Fast	:49.60				
3/16/2012	R	7.0	SA	Dirt	Fast		3	Aoc80000nw1$/x-N	6960	3
3/10/2012	W	4.0	HOL	AllWthr	Fast	:46.00				
3/3/2012	W	4.0	HOL	AllWthr	Fast	:46.00				
2/25/2012	W	4.0	HOL	AllWthr	Fast	:46.80				
2/9/2012	R	8.0	SA	Dirt	Fast		3	Aoc80000nw1$/x-N	11600	2
2/3/2012	W	5.0	HOL	AllWthr	Fast	:59.00				
1/28/2012	W	5.0	HOL	AllWthr	Fast	:59.00				
1/7/2012	R	6.5	SA	Dirt	Fast		3	Msw	33600	1
1/3/2012	W	4.0	SA	Dirt	Fast	:46.80				

Date	Race/ Work	Fur- longs	Track	Surface	Track Cond.	Time	Age/ Sex	Race Class	Earn- ings	Finish
12/28/2011	W	4.0	HOL	AllWthr	Fast	:46.40				
12/17/2011	R	6.0	HOL	AllWthr	Fast		2	Msw	9000	2
12/11/2011	W	4.0	HOL	AllWthr	Fast	:49.00				
12/4/2011	W	6.0	HOL	AllWthr	Fast	01:12.2				
11/27/2011	W	5.0	HOL	AllWthr	Fast	01:02.0				
11/18/2011	W	4.0	HOL	AllWthr	Fast	:47.80				
11/9/2011	W	5.0	HOL	AllWthr	Fast	:59.20				
11/3/2011	W	4.0	HOL	AllWthr	Fast	:49.60				
10/28/2011	W	4.0	HOL	AllWthr	Fast	:46.20				
10/22/2011	W	3.0	HOL	AllWthr	Fast	:36.20				
10/16/2011	W	3.0	HOL	AllWthr	Fast	:36.40				
7/13/2011	W	3.0	HOL	AllWthr	Fast	:35.40				
7/7/2011	W	3.0	HOL	AllWthr	Fast	:36.60				
4/25/2011	W	3.0	HOL	AllWthr	Fast	:36.60				
4/18/2011	W	3.0	HOL	AllWthr	Fast	:36.80				
4/11/2011	W	2.0	HOL	AllWthr	Fast	:24.20				
4/5/2011	W	2.0	HOL	AllWthr	Fast	:25.40				

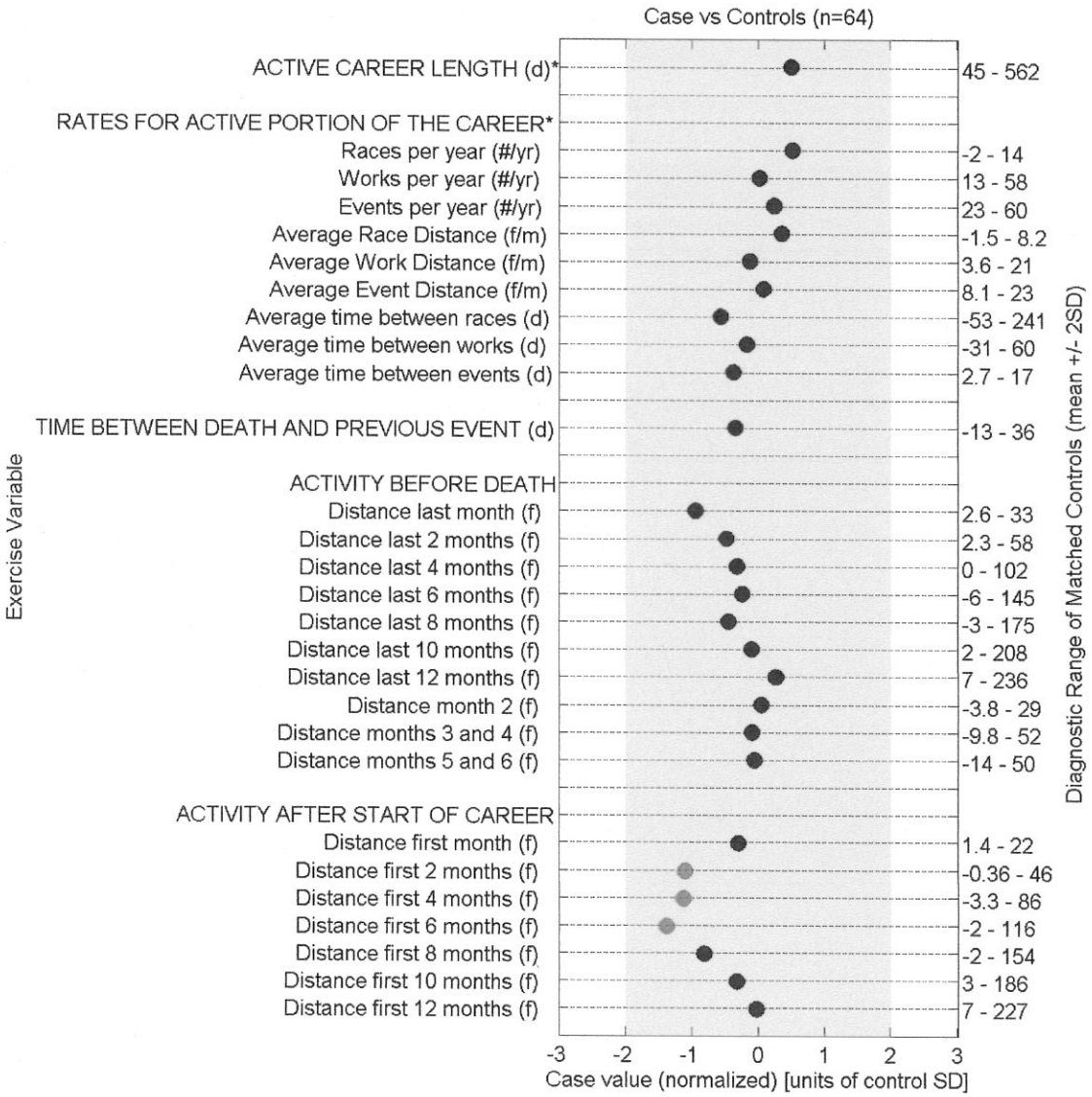
Part 4: Comparison of Exercise Variables between Case Horse and 64 Control Horses (3 year old, male, Thoroughbred)



Case Horse values are indicated by black or red symbols: circles indicate values considered normal for 95% of 3 year old, male, Thoroughbreds (n=64) (gray region) (black and red indicate within 1 and 2 SD, respectively, of mean value of controls), X's indicate values outside of the normal range. Two and 3 year old case horses are also matched to control horses by the quarter in which the case horse died (Jan-Mar, Apr-Jun, Jul-Sep,Oct-Dec). Variables that are not calculable are not plotted (e.g. time between races for a horse with zero events). f=furlongs; yr=year; m=month; d=days.

^Rates are calculated over 2 to 5 events.

*Active Career Length is the career length excluding the time during layups.



Case Horse values are indicated by black or red symbols: circles indicate values considered normal for 95% of 3 year old, male, Thoroughbreds (n=64) (gray region) (black and red indicate within 1 and 2 SD, respectively, of mean value of controls), X's indicate values outside of the normal range. Two and 3 year old case horses are also matched to control horses by the quarter in which the case horse died (Jan-Mar, Apr-Jun, Jul-Sep,Oct-Dec). Variables that are not calculable are not plotted (e.g. time between races for a horse with zero events). f=furlongs; yr=year; m=month; d=days.

^Rates are calculated over 2 to 5 events.

*Active Career Length is the career length excluding the time during layups.

California Animal Health & Food Safety Laboratory System
105 W. Central Avenue
San Bernardino, CA 92408-2113
(909) 383-4287

Addendum
Version 1
This report supersedes all previous reports for this case

CAHFS Case #:Horse # 6
Referral #: [redacted]
Date Collected: 12/21/2012
Date Received: 12/21/2012
Case Coordinator: F.A. Uzal, DVM, MSc, PhD, Dipl ACVP
Electronically Signed and Authorized By: Uzal, Francisco A. on 1/23/2013 2:27:52PM

Email To:
ARTHUR, RICK M
RMARTHUR@UCDAVIS.EDU

Incident Track:
HOLLYWOOD PARK RACETRACK
1050 S PRAIRIE AVE
INGLEWOOD, CA 90301

Comments: CHRB

Case Contacts

Bill To	CALIFORNIA HORSE RACING BOARD	916-263-6000	1010 HURLEY WAY SUITE 300ATTENTION: ACCOUNTS PAYABLE SACRAMENTO, CA 95825
Owner	[redacted]	[redacted]	[redacted]
Report To	UZAL, FRANCISCO	909-383-4287	CAHFSL105 WEST CENTRAL SAN BERNARDINO, CA 92408
Report To	ARTHUR, RICK M	626-665-8130	311 E GRAND VIEW AVE SIERRA MADRE, CA 91024
Attending Vet	CARPENTER, RYAN	909-980-0170	10542 WALKER Norwalk, CA 90650
Submitter	GRANDE, TIM	310-419-1680	1050 S PRAIRIE AVE Inglewood, CA 90301
Trainer	BAFFERT, BOB	714-969-2377	6122 EAGLECREST DRIVE Huntington Beach, CA 92648

CHRB - Related Information

Horse's Name:	[redacted]	Human Injury?	N
Tattoo:		Death Related to:	Training
Age:	3.00 Years	Track Surface:	Synthetic
Gender:	Neutered Male	Location on Track:	Main track
Taxonomy:	Thoroughbred Horse	Insured?	N

Medications: None Listed In The History;

Laboratory Findings/Diagnosis

Thoroughbred gelding; history of sudden death during exercise:

1-Massive abdominal and thoracic cavity hemorrhages; origin not identified (no major blood vessel rupture seen)
2-Congested, edematous and hemorrhagic lungs
Etiology: undetermined at this stage (additional testing being performed)

Other lab test results
1-Diphacinone (trace) detected in liver
2-No toxic compounds detected in GC/MS
3-Heavy metal screen unremarkable
4-EAL testing unremarkable

Case Summary

12/26/12: This horse had massive thoracic and abdominal hemorrhages. Although we carefully dissected all major blood vessels in both cavities, no vascular rupture or tear could be found. The fact that blood was present in both thoracic and abdominal cavities and no diaphragmatic rupture was found, suggest that bleeding occurred from several organs in both cavities. In addition to histology, bacteriology and heavy metals, I have requested an anticoagulant screen. This screen includes several anticoagulant rodenticides. If you think that this horse might have been exposed to other potential anticoagulant substances,

please let me know so we can test for them. I will keep you posted with our results. In the meantime, please do not hesitate to contact me if you would like to discuss any aspects of this report.

1/17/13: Traces of diphacinone were detected in the liver. The significance of this finding is still undetermined. Because race horses are rarely tested for anticoagulants, we have no baseline data to interpret this result. We are currently testing liver from a number of healthy horses that were euthanized due to catastrophic fractures, in order to gain baseline data. This will take a while. Results from the EAL are also pending.

1/17/13: Results from the EAL were unremarkable. I am going to close this case now, and I will re-open it when results of anticoagulants from other horses are available.

Clinical History

Horse collapsed and died on the main track while training-galloping.

Gross Observations

Necropsy of a [redacted] Thoroughbred [redacted] began at 3.20 pm on December 21, 2012.

The carcass was in good nutritional condition, with adequate amount of fat reserves, well fleshed and in mild to moderate state of post-mortem decomposition.

There was a large amount of fluid and clotted blood free in the abdominal and thoracic cavities (~ 5 liter in thorax and ~ 15 l in the abdomen). The lungs were not collapsed, with rib imprints on the pleural surface, and there was a large amount of stable pink froth in the trachea and lower airways.

No other significant gross abnormalities were observed in the rest of the carcass. In particular, thorough dissection of the main vessels, including aorta, pulmonary artery, anterior mesenteric artery and its branches, renal arteries, iliac arteries, vena cava and porta, did not reveal ruptures or tears. No major organ ruptures or tears were observed either and no obvious origin for the bleeding was identified. Paramedial section of the head and neck did not reveal significant gross abnormalities in the brain, spinal cord or other tissues of the head and neck. No tears were detected in the diaphragm either.

Histology

Sections of heart (including: right ventricular free wall with right atrial posterior wall, right coronary artery, and parietal leaflet of the tricuspid valve; right ventricular outflow tract including the pulmonic valve and the pulmonary artery; right atrial appendage; sinoatrial node region; left atrial appendage; left ventricular free wall with left atrium; left coronary artery, and parietal leaflet of the mitral valve; anterior and posterior papillary muscle of the left ventricle; atrioventricular node region; left ventricular outflow tract including the aortic valve and aorta), lung, thymus, liver, spleen, bladder, adrenal gland, kidney, skeletal muscle, anterior celiaco mesenteric ganglion, anterior mesenteric artery, small intestine, sciatic nerve, colon and stomach are examined.

Changes found:

1-Lung: congestion, diffuse, interstitial hemorrhage, focally extensive, and alveolar edema, proteinaceous multifocally extensive. All changes are acute.

Addendum (1/23/13): Sections of brain (cortex, corpus striatum, thalamus, midbrain at the level of superior colliculi, pons, cerebellar peduncles, cerebellum and medulla at the level of obex) are examined.

No significant histological abnormalities are observed.

Toxicology

Reporting Limit (Rep. Limit): The lowest routinely quantified concentration of an analyte in a sample. The analyte may be detected, but not quantified, at concentrations below the reporting limit. Sample volumes less than requested might result in reporting limits that are higher than those listed.

The detected liver mineral results are within acceptable or non-diagnostic ranges for this species.

Also the GC/MS screen was unremarkable. No toxic compounds were detected on the submitted specimen by our gas chromatography - mass spectrometry (GC/MS) organic chemical screen. The GC/MS screen is designed to potentially detect a large number of organic compounds belonging to diverse chemical classes (pesticides, environmental contaminants, drugs and natural products). Control matrices were obtained to compare analytical results with those obtained from the submitted specimen.

Please note that a "trace" of the anticoagulant rodenticide, diphacinone, was detected in the submitted liver sample. A trace amount indicates that the analyte was present in the tested sample but at a concentration below the stated reporting limit. We cannot accurately quantitate trace amounts. It is unusual to detect an anticoagulant rodenticide in horse liver, although we don't test many livers from horses for these compounds. Unfortunately, the detection of diphacinone (particularly at a low trace amount) confirms exposure to the rodenticide, but not necessarily intoxication. The diagnosis of anticoagulant rodenticide intoxication requires both the presence of one or more AR in appropriate samples (e.g., liver or serum) and antemortem or postmortem evidence of a coagulopathy unrelated to another identifiable cause of hemorrhage (e.g., trauma). Although the amount of diphacinone detected is rather low, the postmortem findings suggest that this is an important finding.

ANTICOAGULANT SCREEN

Animal/Source	Specimen	Specimen Type
[redacted]	[redacted]	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units
Brodifacoum	Not Detected	ppm	0.01	ppm
Bromadiolone	Not Detected	ppm	0.05	ppm
Chlorophacinone	Not Detected	ppm	0.25	ppm
Coumachlor	Not Detected	ppm	0.05	ppm
Difethialone	Not Detected	ppm	0.25	ppm
Diphacinone	Trace	ppm	0.25	ppm
Warfarin	Not Detected	ppm	0.05	ppm

GCMS Screen

Animal/Source	Specimen	Specimen Type
[redacted]	[redacted]	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units
negative	See comment under Toxicology	N/A	N/A	N/A

HEAVY METAL SCREEN

Animal/Source	Specimen	Specimen Type
[redacted]	[redacted]	Liver Tissue

Analyte	Result	Units	Rep. Limit	Units	Ref. Range
Lead	Not Detected	PPM	1.000	PPM	<3.0

Manganese	2.0	PPM	0.040	PPM	1-6
Iron	130	PPM	0.200	PPM	100-300
Mercury	Not Detected	PPM	1.000	PPM	<1.0
Arsenic	Not Detected	PPM	1	PPM	<1.0
Molybdenum	1.0	PPM	0.400	PPM	<2.0
Zinc	42	PPM	0.100	PPM	40-125
Copper	5.8	PPM	0.100	PPM	4-7.5
Cadmium	1.1	ppm	0.300	ppm	<20

SELENIUM - TISSUE/OTHER

Animal/Source	Specimen	Specimen Type	Results	Units	Rep. Limit	Ref. Range
[redacted]	[redacted]	Liver Tissue	0.45	ppm	0.020ppm	0.3-1.0