Exercise History Report (Full)
Horse #3

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.

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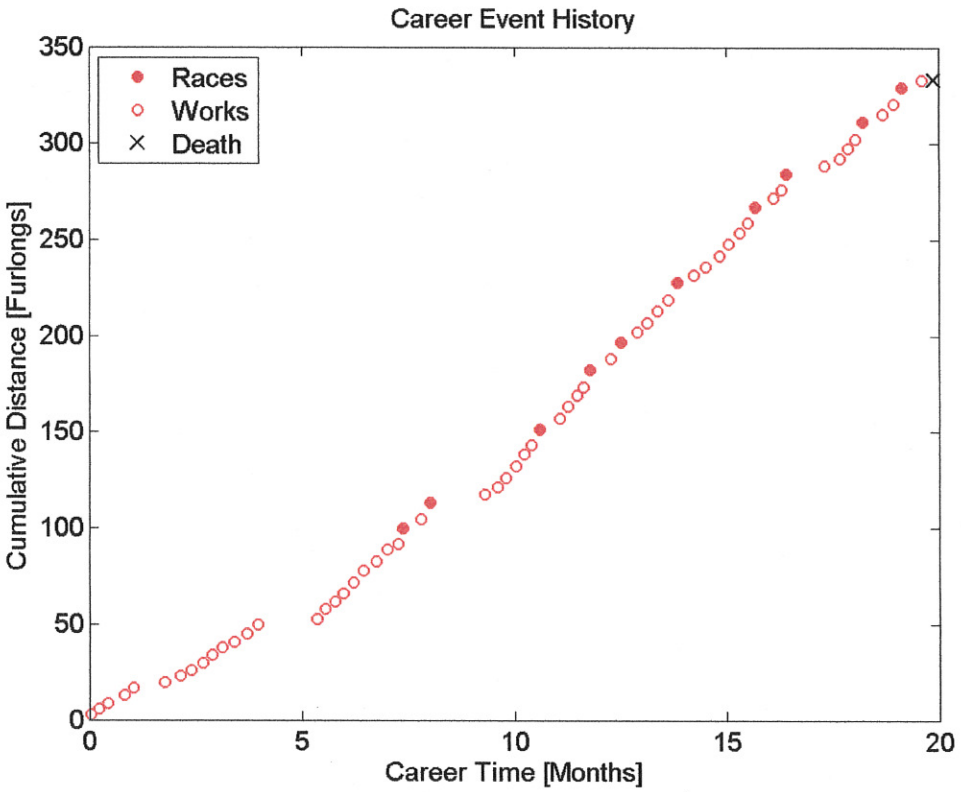
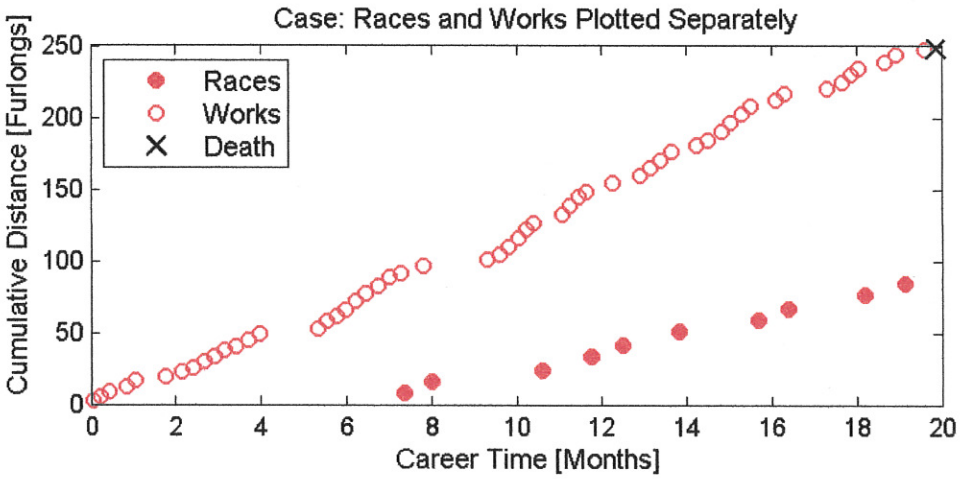
Part 1: Graphical Representation of Individual High-Speed Exercise Histories

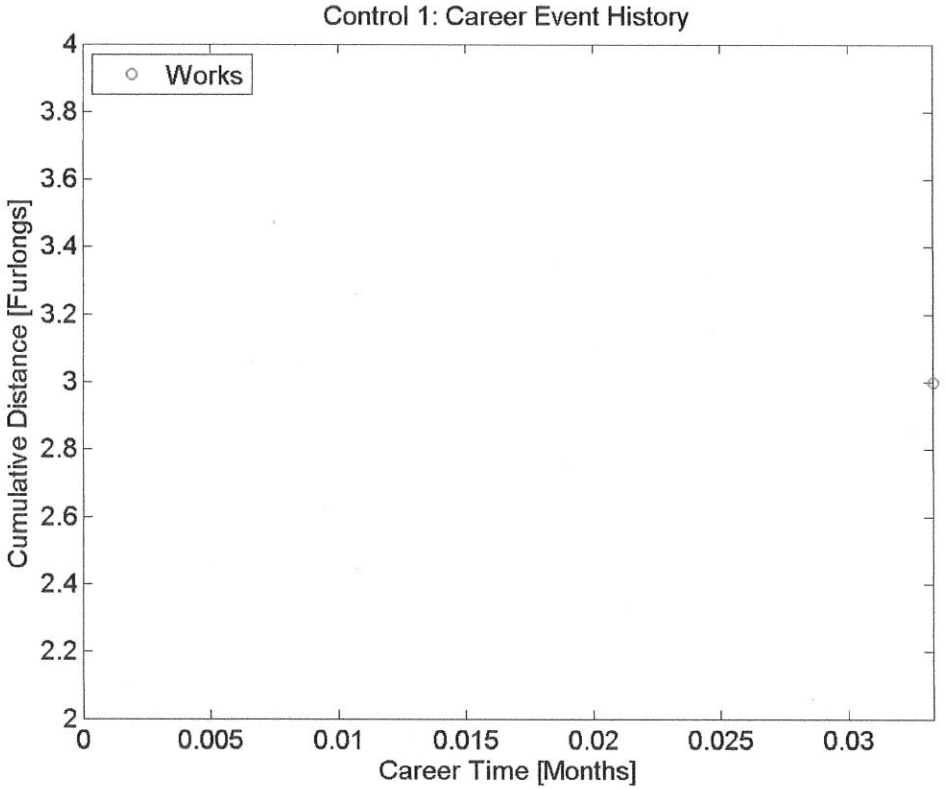
Races (filled circles), officially timed high-speed works (open circles), layups (line with endcaps, periods of time greater than 60 days in length without a race or timed work), and time of death (X) are illustrated over time (Career Time in months). With each event (race or work), the number of furlongs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

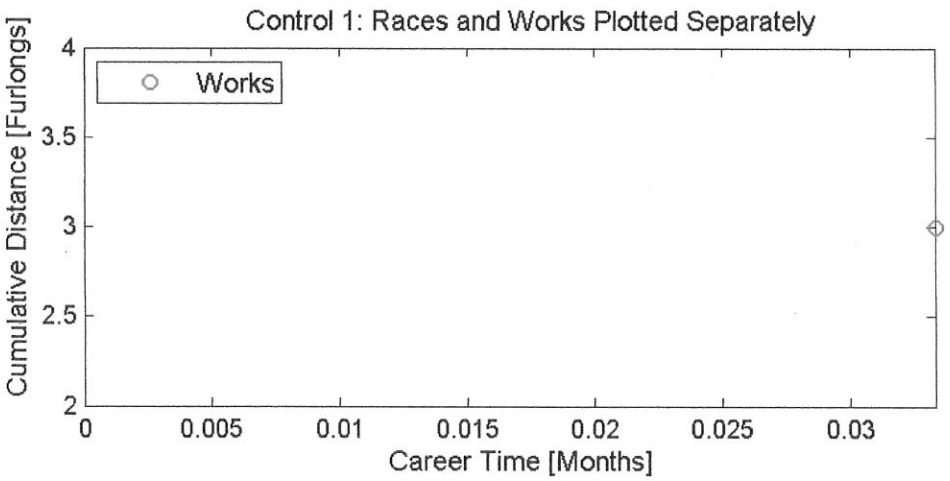
Case Horse High Speed Exercise History



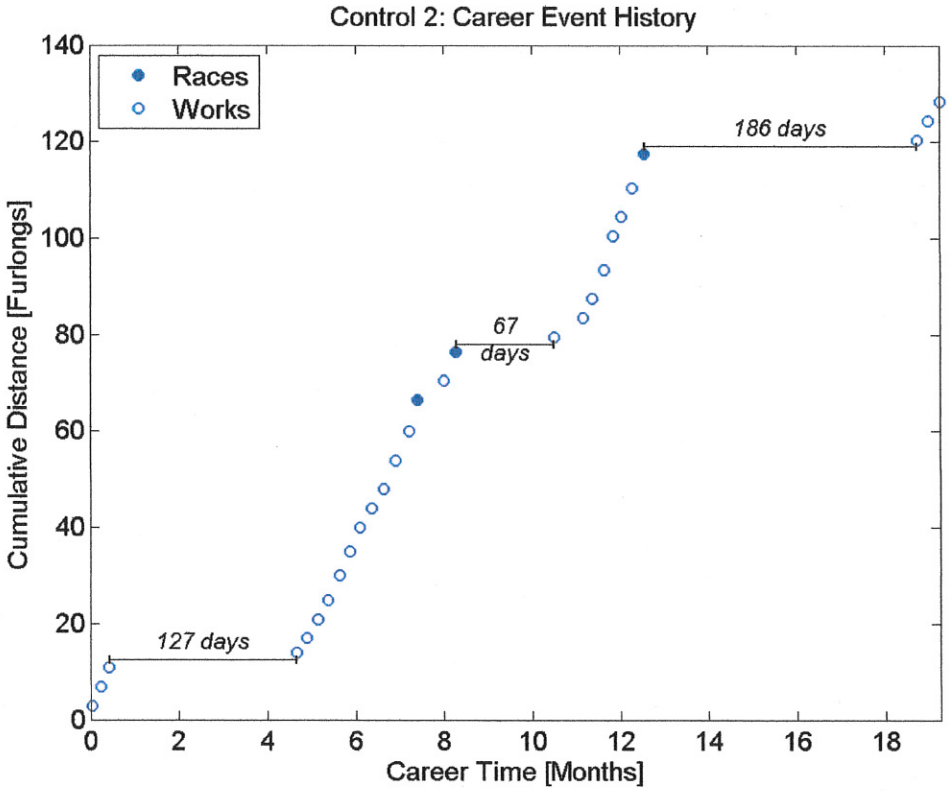


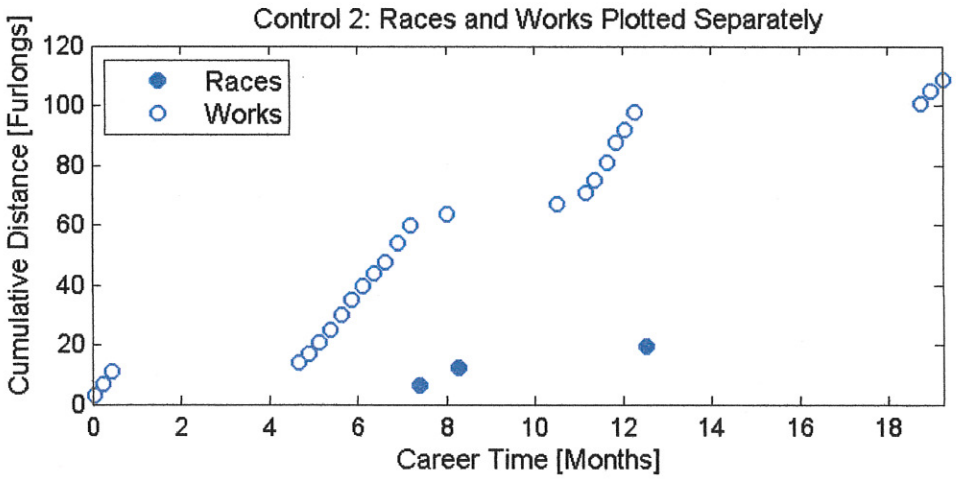
Control 1 High Speed Exercise History



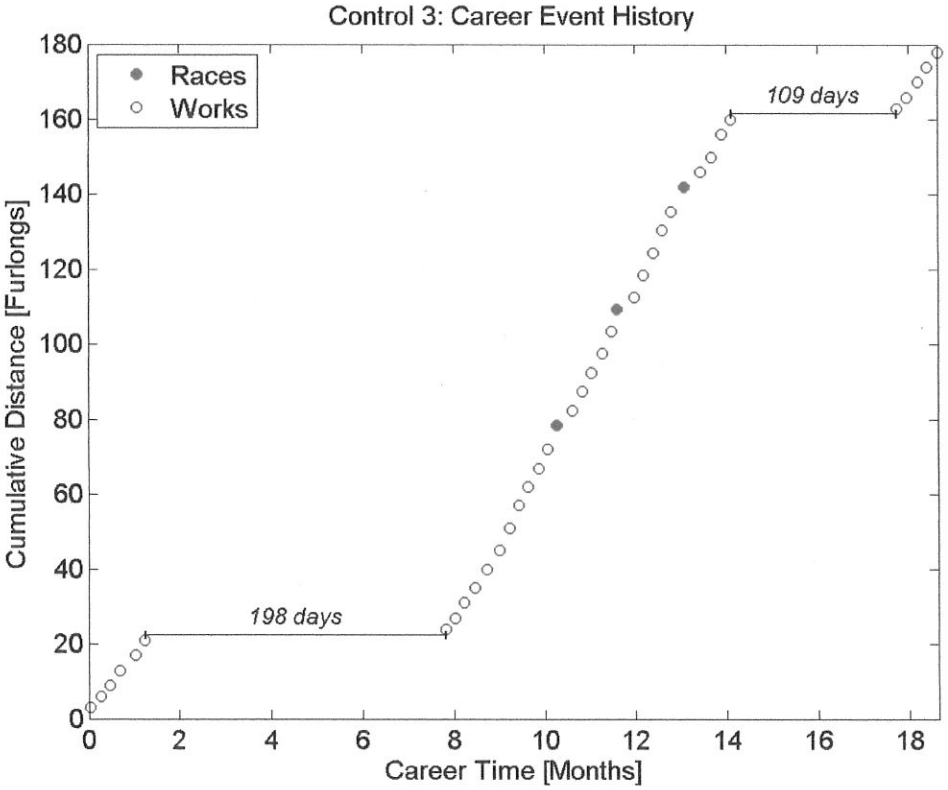


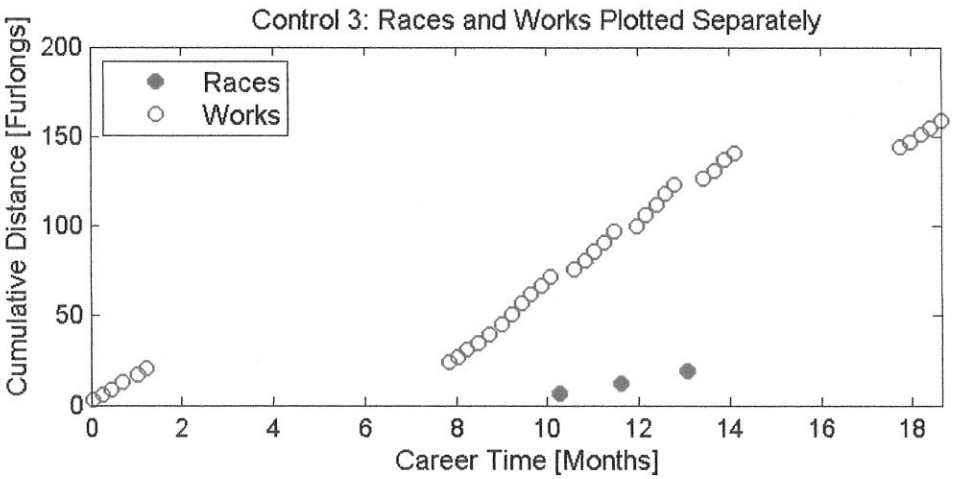
Control 2 High Speed Exercise History



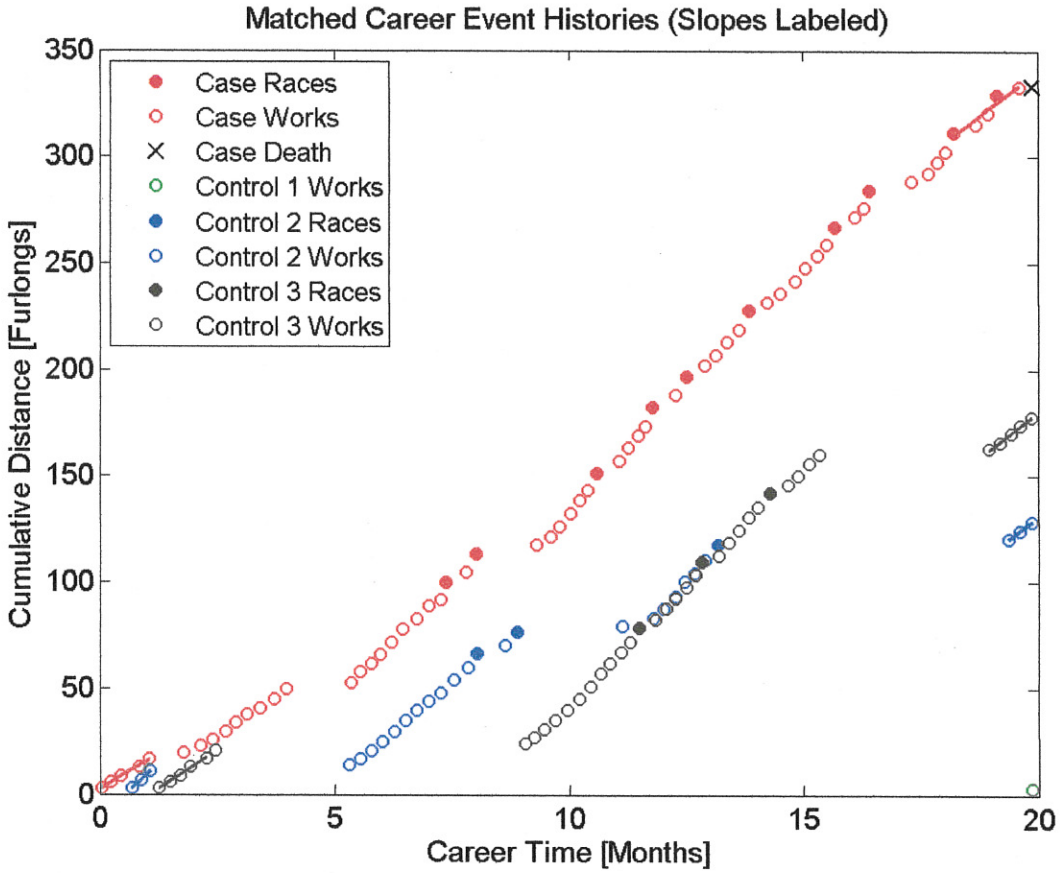


Control 3 High Speed Exercise History

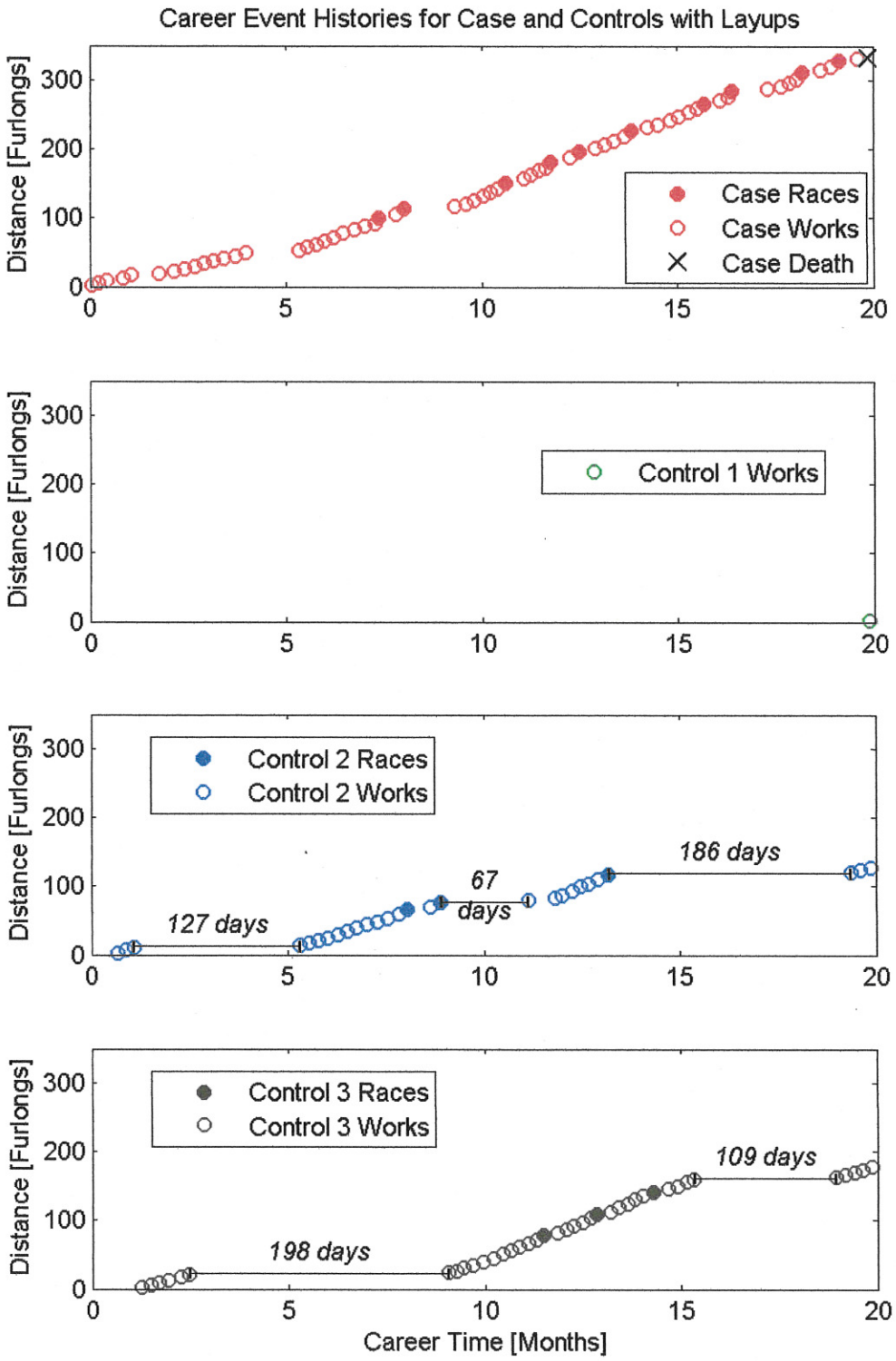


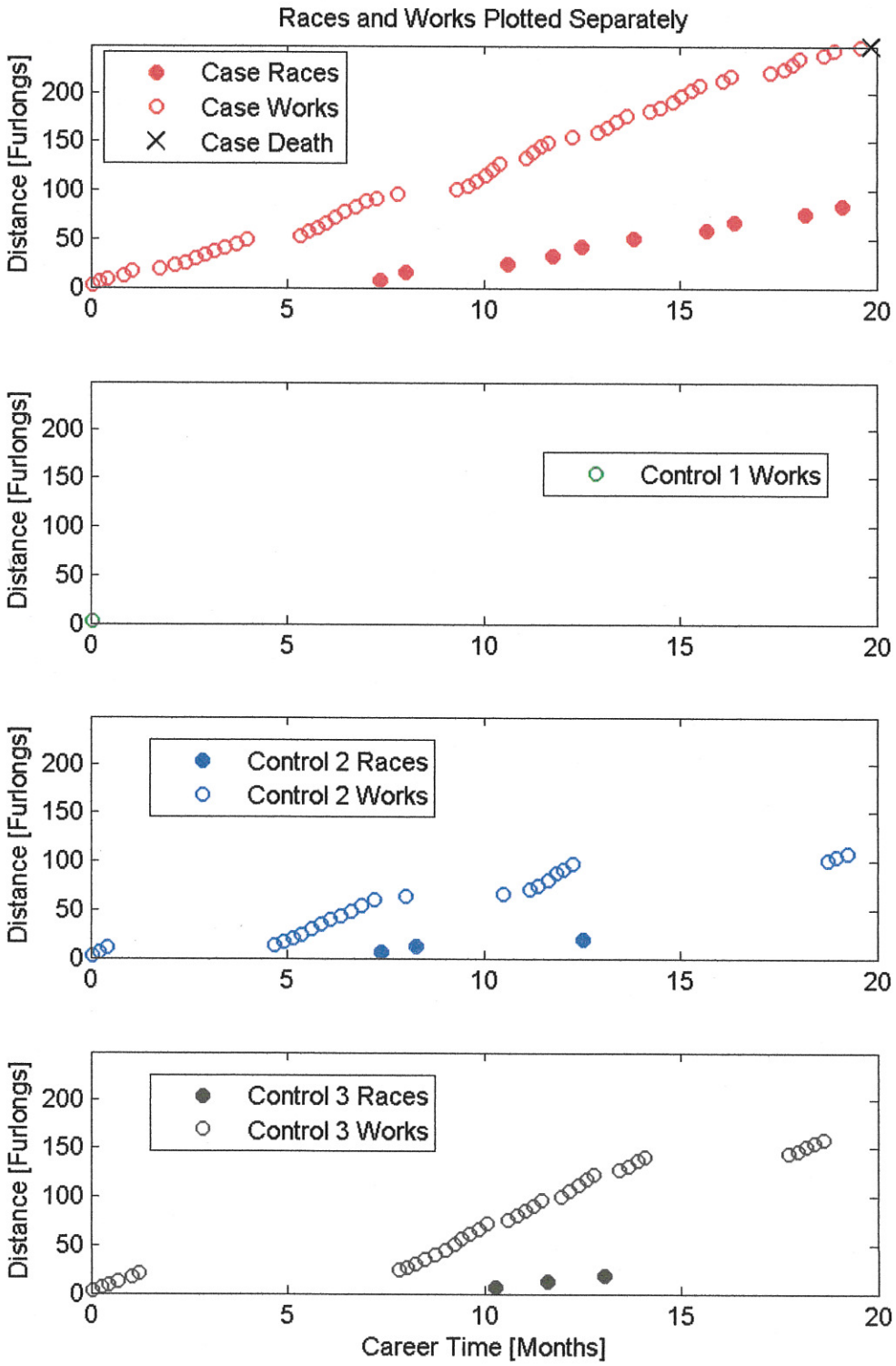


Part 2: Case and Control Horses Plotted Together



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]
Case Races
Case Works
Case Death
Control 1 Works
Control 2 Races
Control 2 Works
127 days
67 days
186 days
Control 3 Races
Control 3 Works
198 days
109 days
Career Time [Months]

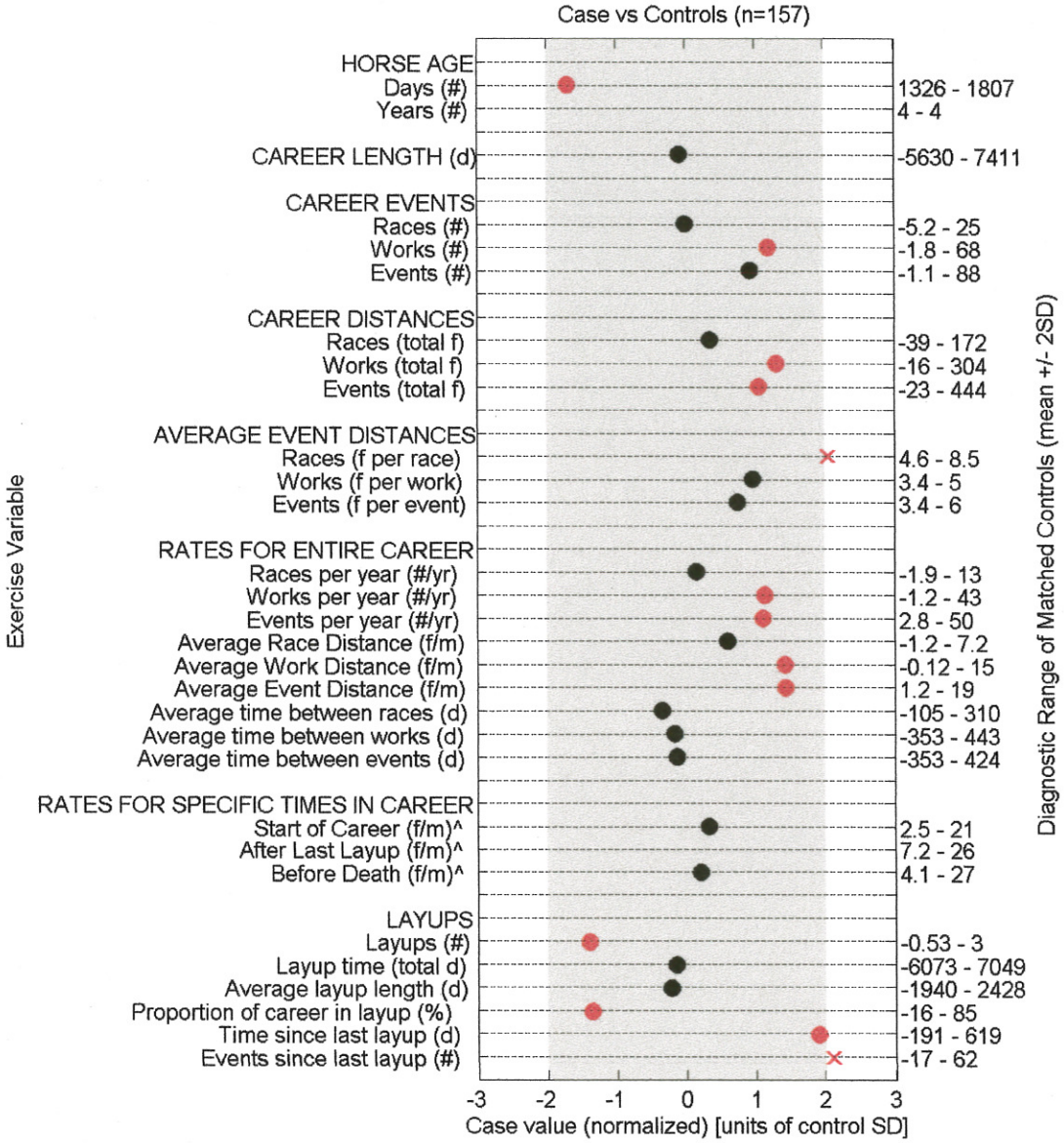

Races and Works Plotted Separately
Case Races
Case Works
Case Death
Control 1 Works
Control 2 Races
Control 2 Works
Control 3 Races
Control 3 Works
Distance [Furlongs]
Career Time [Months]
0
50
100
150
200
5
10
15
20

Part 3: Case Horse's Event History

Date	Race/ Work	Fur-longs	Track	Surface	Track Cond.	Time	Age/ Sex	Race Class	Earn-ings	Finish
12/29/2011	W	4.0	HOL	AllWthr	Fast	:47.80				
12/15/2011	R	8.5	HOL	AllWthr	Fast		3U	Aoc62500nw2$/ x-N	10400	2
12/9/2011	W	5.0	HOL	AllWthr	Fast	01:01.2				
12/1/2011	W	4.0	HOL	AllWthr	Fast	:48.00				
11/17/2011	R	9.0	HOL	AllWthr	Fast		3U	Aoc62500nw2$/ x-N	6240	3
11/12/2011	W	5.0	HOL	AllWthr	Fast	01:01.8				
11/7/2011	W	5.0	HOL	AllWthr	Fast	01:00.4				
11/1/2011	W	4.0	HOL	AllWthr	Fast	:48.40				
10/21/2011	W	4.0	HOL	AllWthr	Fast	:49.20				
9/24/2011	R	8.5	FPX	Dirt	Fast		3	PomonaDrby -50k	9500	2
9/21/2011	W	4.0	SA	Dirt	Fast	:49.20				
9/15/2011	W	5.0	SA	Dirt	Fast	:59.00				
9/2/2011	R	8.0	DMR	AllWthr	Fast		3	ElCajon -100k	6000	4
8/28/2011	W	5.0	DMR	AllWthr	Fast	:59.40				
8/22/2011	W	6.0	DMR	AllWthr	Fast	01:11.0				
8/14/2011	W	6.0	DMR	AllWthr	Fast	01:12.4				
8/8/2011	W	6.0	DMR	AllWthr	Fast	01:14.0				
7/29/2011	W	4.0	SA	Dirt	Fast	:48.80				
7/21/2011	W	4.0	HOL	AllWthr	Fast	:48.00				
7/9/2011	R	9.0	HOL	AllWthr	Fast		3	SwapsG2 -150k	18000	3
7/3/2011	W	6.0	HOL	AllWthr	Fast	01:12.0				
6/25/2011	W	6.0	SA	Dirt	Fast	01:13.8				
6/18/2011	W	5.0	SA	Dirt	Fast	01:00.8				
6/11/2011	W	5.0	SA	Dirt	Fast	01:00.0				
5/30/2011	R	8.5	LS	Turf	Firm		3	LSDerby -200k	3000	8
5/23/2011	W	6.0	SA	Dirt	Fast	01:11.0				
5/8/2011	R	9.0	HOL	AllWthr	Fast		3	Alydar -70k	14340	2
5/4/2011	W	4.0	HOL	AllWthr	Fast	:47.20				
4/29/2011	W	6.0	HOL	AllWthr	Fast	01:11.6				

Date	Race/ Work	Fur-longs	Track	Surface	Track Cond.	Time	Age/ Sex	Race Class	Earn-ings	Finish
4/23/2011	W	6.0	SA	Dirt	Fast	01:13.0				
4/17/2011	W	6.0	SA	Dirt	Fast	01:13.8				
4/3/2011	R	8.0	SA	Dirt	Fast		3	Aoc80000nw1$/ x-N	33600	1
3/28/2011	W	5.0	HOL	AllWthr	Fast	:59.00				
3/23/2011	W	6.0	HOL	AllWthr	Fast	01:12.0				
3/17/2011	W	6.0	HOL	AllWthr	Fast	01:12.6				
3/10/2011	W	5.0	HOL	AllWthr	Fast	01:00.4				
3/4/2011	W	4.0	HOL	AllWthr	Fast	:49.00				
2/23/2011	W	4.0	HOL	AllWthr	Fast	:48.60				
1/15/2011	R	8.5	SA	Dirt	Fast		3	ShamG3 -100k	6000	4
1/9/2011	W	5.0	SA	Dirt	Fast	01:01.4				
12/27/2010	R	8.0	SA	Dirt	Fast		2	Msw	32400	1
12/24/2010	W	3.0	SA	Dirt	Fast	:38.00				
12/16/2010	W	6.0	SA	Dirt	Fast	01:10.6				
12/8/2010	W	5.0	HOL	AllWthr	Fast	01:00.0				
11/29/2010	W	6.0	HOL	AllWthr	Fast	01:12.4				
11/22/2010	W	6.0	HOL	AllWthr	Fast	01:12.6				
11/15/2010	W	4.0	HOL	AllWthr	Fast	:48.40				
11/9/2010	W	4.0	HOL	AllWthr	Fast	:48.20				
11/2/2010	W	5.0	HOL	AllWthr	Fast	01:00.6				
10/27/2010	W	3.0	OTH	AllWthr	Fast	:37.40				
9/16/2010	W	5.0	FPX	Dirt	Fast	01:02.0				
9/8/2010	W	4.0	FPX	Dirt	Fast	:49.20				
8/30/2010	W	3.0	HOL	AllWthr	Fast	:35.40				
8/22/2010	W	4.0	HOL	AllWthr	Fast	:48.40				
8/15/2010	W	4.0	HOL	AllWthr	Fast	:48.20				
8/8/2010	W	4.0	HOL	AllWthr	Fast	:48.60				
7/31/2010	W	3.0	HOL	AllWthr	Fast	:37.00				
7/23/2010	W	3.0	HOL	AllWthr	Fast	:36.60				
7/12/2010	W	3.0	SA	AllWthr	Fast	:37.40				
6/20/2010	W	4.0	SA	AllWthr	Fast	:48.40				
6/14/2010	W	4.0	SA	AllWthr	Fast	:48.20				

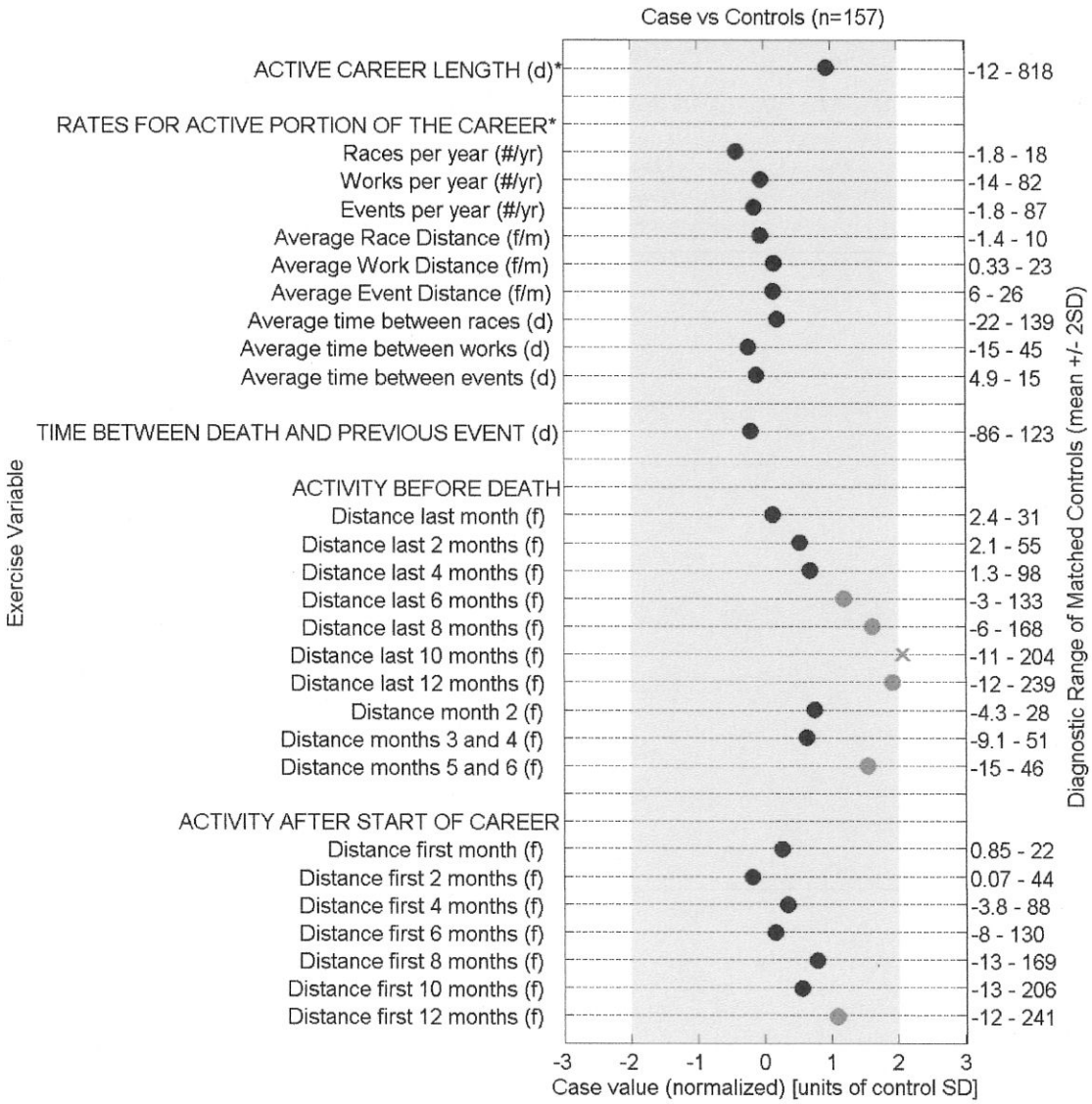
Part 4: Comparison of Exercise Variables between Case Horse and 157 Control Horses (4 year old, male, Thoroughbred)



Case Horse values are indicated by black or red symbols: circles indicate values considered normal for 95% of 4 year old, male, Thoroughbreds (n=157) (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.



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^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 #3
Referral #: [redacted]
Date Collected: 01/06/2012
Date Received: 01/06/2012
Case Coordinator: F.A. Uzal, DVM, MSc, PhD, Dipl ACVP
Electronically Signed and Authorized By: Uzal, Francisco A. on 2/13/2013 9:12:31PM

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	BAILEY, JILL	310-419-1680	1050 S. PRAIRIE AVE INGLEWOOD, CA 90301
Trainer	BAFFERT, BOB	626-446-2167	PO BOX 661912 Arcadia, CA 91066

CHRB - Related Information

Horse's Name:	[redacted]	Human Injury?	N
Tattoo:		Death Related to:	Training
Age:	4.00 Years	Track Surface:	Synthetic
Gender:	Male	Location on Track:	3/8 POLE
Taxonomy:	Thoroughbred Horse	Insured?	N

Medications: Lasix (Furosemide);

Laboratory Findings/Diagnosis

Equine protozoal myelitis with:
1-Encephalomyelitis, lymphocytic and neutrophilic, acute to sub-acute, severe, with positive S. neurona immunohistochemistry
Etiology: S. neurona

Other lab test results
1-Severe bleeding along mesenteric vessels, multifocal (no vascular rupture detected grossly)
2-No significant aerobic bacterial isolated from liver
3-Negative Salmonella spp. PCR (liver)
4-Heavy metal screen (including selenium) unremarkable
5-Brain cholinesterase within normal range
6-No unusual drugs detected via GCMS and LCMS screen
7-Avicide screen uremarkable
8-No prohibited substance detected in urine (per EAL-CAHFS)
9-Mineralization of intima of mesenteric vessels (incidental)
10-Congestion of pulmonary and intestinal vessels (probably terminal)
11-No significant histological abnormalities in heart (11 sections examined)
12-Negative EHV-1 PCR (including neuropathogenic form)

13-Negative EHV-1 IHC
14-Negative WNV PCR
15-Negative WNV IHC
16-Negative encephalomyelitis virus PCR (per NVSL)
17-Negative virus isolation (per NVSL)
18-Negative anticoagulant screen

Case Summary

1/13/12: This horse had severe bleeding of mesenteric vessels, which was the most likely cause of death. Careful dissection of the mesenteric vasculature and other major blood vessels of thorax and abdomen did not reveal grossly visible ruptures. This, coupled with the multifocal distribution of the hemorrhages, suggest that the bleeding was not consequence of vascular rupture but rather a more diffuse bleeding through leaky vessels. The cause of this leakiness has still not been determined. All testing so far has been unrewarding. I will be discussing with our Davis Toxicology lab and with the EAL alternatives to perform additional toxicology testing in this horse. 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.

1/19/12: Histology of 11 sections of the heart (including the major conduction pathways) and multiple organs, was unremarkable. Although mineralization of multiple mesenteric arteries was seen, this is a common feature of otherwise normal horses and it is therefore considered an incidental finding. Histology of the brain and additional toxicology are pending.

1/30/12: This horse had severe encephalomyelitis. This was an unexpected finding as no neurological clinical signs were reported in the clinical history. The lesions were rather acute and this might explain why no neurological signs were observed. Also, encephalomyelitis is not a usual lesion associated with sudden death, which makes this case even more puzzling. Possible etiologies for these lesions include Equine herpes virus type 1, WNV, S. neurona, and others. I have requested PCR for EHV and WNV and IHC for these plus EPM. Samples for additional toxicological testing have been submitted to the Equine Analytical laboratory in UCDavis and also to the Davis Toxicology laboratory of CAHFS. Results will be available within the next few days.

2/22/12: All testing performed to date on this horse was unremarkable. The immunohistochemistry for EPM was undetermined and I have sent the slides to Dr Barr (Davis) for a second opinion. Toxicology from the EAL in Davis is still pending.

2/25/12: Additional EPM IHC and examination of sections by Dr Bradd confirmed that the results of this technique are positive. Dr Barr also suggested that the brain lesions are somehow compatible with EPM, although the more histiocytic and neutrophilic nature of the lesions is slightly different from the classic EPM changes. If, as suspected, the cause of the encephalitis in this horse was S. neurona, death might have been related to lesions affecting vital CNS areas (e.g. respiratory center in medulla and spinal cord and/or origin of phrenic nerve in spinal cord). Unfortunately because of the history of sudden death, the spinal cord was not collected in this case and I cannot confirm or rule out these possibilities. To further rule out other possible causes of encephalitis, I have ordered virus isolation and EEE PCR on brain of this horse. The pathogenesis of the hemorrhagic mesenteric lesions remains undetermined. The results of additional toxicology from the EAL are still not available.

3/15/12: All other testing (including virus isolation, PCR for encephalitis viruses and prohibited substances screen at the EAL) were unrewarding. We most likely cause for the brain lesions was S. neurona. The cause of death, however, could not be determined. If parasitic lesions in the spinal cord affected the respiratory center and/or the origin of the phrenic nerve, this could have caused acute respiratory failure followed by death. This, however, remains speculative. This concludes testing in this case.

3/13/13: This case was reopened to test liver for anticoagulants. No anticoagulants were detected. This concludes testing in this case.

Clinical History

Horse was working 5/8th, went 1/4 mile in 24 sec and collapsed and was dead.

This is the 3rd for this owner/trainer in about as many months that collapsed and died. Please do a full necropsy and bill the owner.
1-6-12.

Gross Observations

Necropsy of a [redacted] Thoroughbred [redacted] began at 12.35 pm on January 6th, 2012.

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

The mesentery of the small intestine had four multifocal hemorrhages along the vascular tracts and most marked close to the mesenteric attachment on the intestine, covering an area of ~ 25 cm x 15 cm. There was also a large mesenteric, roughly spherical hematoma (~ 30 cm in diameter), containing ~ 3-4 liters of partially clotted blood. Within the abdominal cavity, there were an additional 2-3 liters of fluid blood and several small blood clots attached to the serosa of the small intestine, colon and cecum. Small petechial hemorrhages and ecchymoses were scattered throughout other serosal surfaces, including the parietal pleura, adventitia of the aorta and epicardium. The lungs were moderately distended, with rounded margins, rib imprints on the pleural surface and mild to moderate ecchymotic hemorrhages along the dorsal aspect of both lungs. The trachea and major airways were filled with very abundant tan to pink, stable foam. The spleen was small and pale. The left kidney was markedly pale. No major blood vessel rupture was observed. Both jugular veins were examined and no gross lesions were present. The non-glandular mucosa of the stomach had a few small, variably size and shape, chronic erosions and ulcerations along the margo plicatus. A full cardiac necropsy was performed; there were focally extensive sub-endocardial ecchymosis within both ventricles.

No other significant gross abnormalities were observed in any of the other organs examined. In particular, para-medial section of head and neck did not reveal gross abnormalities in brain, spinal cord or other tissues examined. No fractures or major musculoskeletal lesions of any of the 4 legs were observed.

Bacteriology

BACTERIAL AEROBIC CULTURE

Animal/Source	Specimen	Specimen Type	Results
[redacted]	[redacted]	Liver Tissue	Mixed flora Rare

Salmonella PCR and Confirmation Culture

Animal/Source	Specimen	Specimen Type	Results
[redacted]	[redacted]	Liver Tissue	No salmonella detected

Biotechnology

Encephalomyelitis virus PCR panel (EEE, WEE, WNV) – NVSL

Animal/Source	Specimen	Specimen Type	Results
[redacted]	[redacted]	Brain Tissue	Virus not detected

Equine Herpesvirus qPCR

Animal/Source	Specimen	Specimen Type	Results
[redacted]	[redacted]	Brain Tissue	Negative

Equine Neuropathogenic Herpesvirus qPCR

Animal/Source	Specimen	Specimen Type	Results
[redacted]	[redacted]	Brain Tissue	Negative

West Nile Virus Mammalian qRT PCR

Animal/Source	Specimen	Specimen Type	Results
[redacted]	[redacted]	Brain Tissue	Negative

Histology

Sections of adrenal gland, mesentery (including several blood vessels), jejunum, colon, stomach, lung, liver, kidney and 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) are examined

Changes found:

1-Mesentery: mineralization of intima of arteries, not occluding the lumen, multifocal, mild to moderate; diffuse hemorrhage
2-Jejunum: congestion and hemorrhage of lamina propria, diffuse, severe
3-Lung: congestion, diffuse, severe, and occasional interstitial, focal hemorrhage, acute
4-Liver: multifocal, random discrete areas of pleocellular infiltration (lymphocytes and neutrophils)

Addendum (1/30/12): 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.

The sections of pons, cerebellar peduncles and medulla show severe multifocal lesions consisting of gliosis, neuronophagia, perivascular cuffing and vasculitis with lymphocytes, neutrophils and occasional plasma cells. The lesions affect both grey and white matter and are particularly marked on the peri ventricular areas, but also in peripheral nerves emerging from the pons. No microorganisms are observed.

ImmunoHistoChemistry

Equine herpesvirus 1 and 4 immunohistochemistry

Animal/Source	Specimen	Specimen Type	Results
[redacted]	block #28	brain tissue - fixed	Negative
[redacted]	block #29	brain tissue - fixed	Negative

Sarcocystis neurona immunohistochemistry

Animal/Source	Specimen	Specimen Type	Results
[redacted]	block #28	brain tissue - fixed	Positive
[redacted]	block #29	brain tissue - fixed	Positive

West Nile Virus immunohistochemistry

Animal/Source	Specimen	Specimen Type	Results
[redacted]	block #28	brain tissue - fixed	Negative
[redacted]	block #29	brain tissue - fixed	Negative

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 submitted liver had the listed metals, including selenium, in acceptable concentrations for horses.

The submitted brain had an acceptable cholinesterase activity for horses (adequate > 2.1 uM/g/min).

No toxic compounds were detected in the submitted specimens (urine, liver) by our accurate mass liquid chromatography - mass spectrometry (LC-MS) organic chemical screen. The LC-MS screen is designed to potentially detect a large number of organic compounds belonging to diverse chemical classes (pesticides, drugs, natural products, and other toxins). Control matrices were obtained to compare analytical results with those obtained from the submitted specimen. No unexpected chemicals were identified. Within the limits of the samples tested and the analytical procedures performed, chemical contamination of the submitted specimens appears unlikely.

The submitted liver contained no starlicide or avitrol at or above the stated reporting limits.

The submitted blood was analyzed for drugs by the Equine Analytical Chemistry Laboratory (EACL). No drugs were detected by their screening methods.

The submitted specimen contained none of the listed anticoagulant rodenticides in a concentration greater than the stated reporting limits.

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	Not Detected	ppm	0.25	ppm
Warfarin	Not Detected	ppm	0.05	ppm

AVICIDES

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

Analyte	Result	Units	Rep. Limit	Units
AVITROL	Not Detected	ppb	50 ppb	ppb
STARLICIDE	Not Detected	ppb	50 ppb	ppb

CHOLINESTERASE

Animal/Source	Specimen	Specimen Type	Results	Units	Rep. Limit	Ref. Range
[redacted]	[redacted]	Brain Tissue	3.6	uM/g/min	0.1	2.1-4.7

Drug Screen - General

Animal/Source	Specimen	Specimen Type
[redacted]	[redacted]	Clotted Blood

Analyte	Result	Units	Rep. Limit	Units
Other1	Not Detected			
Other2	Not Detected			
Other3	Not Detected			
Other4	Not Detected			
Other5	Not Detected			
Other6	Not Detected			
Other7	Not Detected			

Other8	Not Detected
Other9	Not Detected
Other10	Not Detected

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	1.5	PPM	0.040	PPM	1-6
Iron	250	PPM	0.200	PPM	100-300
Mercury	Not Detected	PPM	1.000	PPM	<1.0
Arsenic	Not Detected	PPM	1.000	PPM	<1.0
Molybdenum	0.81	PPM	0.400	PPM	<2.0
Zinc	38	PPM	0.100	PPM	40-125
Copper	4.6	PPM	0.100	PPM	4-7.5
Cadmium	0.43	ppm	0.300	ppm	<20

ORGANIC COMPND BY REQUEST

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

Analyte	Result	Units	Rep. Limit	Units
LC-MS Screen	See comment under Toxicology		N/A	

[redacted]	[redacted]	Urine

Analyte	Result	Units	Rep. Limit	Units
LC-MS Screen	See comment under Toxicology		N/A	

SELENIUM - TISSUE/OTHER

Animal/Source	Specimen	Specimen Type	Results	Units	Rep. Limit	Ref. Range
[redacted]	[redacted]	Liver Tissue	0.52	ppm	0.020 ppm	0.3-1.0

Equine encephalomyelitis virus isolation - NVSL

Animal/Source	Specimen	Specimen Type	Results
[redacted]	[redacted]	Brain Tissue	Negative for WEE