



# UC DAVIS VETERINARY MEDICINE

105 W. Central Avenue, San Bernardino,  
CA 92408-2113  
(909) 383-4287

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CAHFS Accession #: [REDACTED]

Addendum Version 1

Ref.#: [REDACTED]

**Coordinator:** Monika Samol, DVM, Resident  
**E-Signed and Authorized by:** Samol, Monika on  
5/21/2019 11:29:01AM

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

**Incident Track:**  
SANTA ANITA RACETRACK  
285 West Huntington Road,  
Arcadia CA 91007  
Los Angeles County

**This report supersedes all previous reports for this case**

**Date Collected:** 03/05/2019    **Date Received:** 03/05/2019

**Comments:** CHR B -

**Case Contacts**

Submitter	GRANDE, TIM	[REDACTED]	[REDACTED]	Arcadia	CA	91007
Bill To	CALIFORNIA HORSE RACING BOARD	916-263-6000	1010 Hurley Way Suite 300	Sacramento	CA	95825
Owner	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Report To	UZAL, FRANCISCO	[REDACTED]	[REDACTED]	San Bernardino	CA	92408
Report To	Baker, Rita L	[REDACTED]	[REDACTED]	Sacramento	CA	95825
Report To	ARTHUR, RICK	[REDACTED]	[REDACTED]	Sierra Madre	CA	91024
Attending Vet	BLEA, JEFF A	[REDACTED]	[REDACTED]	Sierra Madre	CA	91024
Trainer	MCANALLY, RONALD	[REDACTED]	[REDACTED]	Pasadena	CA	91105

**CHR B - Related Information**

Horse's Name:	[REDACTED]	Human Injury?	No
Tattoo:	[REDACTED]	Death Related to:	Training
Age:	4.00 Years	Track Surface:	Dirt
Gender:	Female	Location on Track:	3/8 pole
Taxonomy:	Thoroughbred Horse	Insured?	

Medications: Dormosedan (Detomidine); Pentobarbital; Torbugesic (Butorphanol);

**Laboratory Findings/Diagnosis**

A 4 year old, [REDACTED] Thoroughbred [REDACTED] ([REDACTED]) submitted with a history of right front biaxial sesamoid compound fractures with rupture of suspensory apparatus

Catastrophic breakdown of ~~right~~ <sup>Left</sup> front fetlock with: This case was submitted as a right front fetlock, but the injury was to the left front fetlock

**LEFT FORELIMB**

**ACUTE CHANGES**

1. Proximal sesamoid bone fractures
  - a) Closed, comminuted, articular, transverse, displaced, basilar fracture of the lateral proximal sesamoid bone with oblique fracture line coursing through the proximal fracture component
  - b) Closed, simple, articular, transverse, displaced, basilar fracture of the medial proximal sesamoid bone with possible

predisposing lesion identified in abaxial aspect of the distal fracture fragment

2. Severe, full-thickness cartilage loss along the fracture lines of the proximal sesamoid bones
3. Moderate scoring of articular surfaces of the proximal sesamoid bones
4. Suspensory ligament failure with complete, transverse rupture of the medial branch, mild to moderate fraying of the palmar surface of the medial branch
5. Moderate to severe fraying of the lateral collateral ligament of the fetlock
6. Moderate fraying, hemorrhage and incomplete transverse rupture of the palmar surface of the deep and superficial digital flexor tendons
7. Severe, full thickness, transverse and longitudinal rupture of the intersesamoidean ligament
8. Severe fraying of fibers of the lateral and medial short and cruciate ligaments
9. Severe, longitudinal, full-thickness split, fraying of fibers and hemorrhage of the straight distal sesamoidean ligament
10. Moderate fraying of fibers and incomplete transverse rupture of the lateral and medial collateral ligaments of proximal sesamoid bones
11. Severe, extensive, full thickness cartilage loss of the medial and lateral condyles of the distal articular surface of MCIII
12. Moderate to severe scoring of the distal articular surface of MCIII

#### CHRONIC CHANGES

1. Moderate to severe, biaxial palmar osteochondral disease with blue subchondral bone discoloration (bruising) visible through the flattened and degenerated cartilage overlying condyles of the distal MCIII
2. Moderate transverse ridge arthrosis with cartilage fibrillation

#### RIGHT FORELIMB

#### CHRONIC CHANGES

Moderate degenerative joint disease (DJD)

1. Moderate to severe, palmar osteochondral disease with blue subchondral bone discoloration (bruising) visible through the flattened and degenerated cartilage overlying medial condyle of the distal MCIII
2. Moderate to severe transverse ridge arthrosis with cartilage ulceration surrounded by red discolored fibrous tissue
3. Moderate, multifocal, red discoloration of the cartilage of the abaxial aspects on the proximal sesamoid bones
4. Moderate, biaxial apical modeling with irregular bony outgrowth of the proximal sesamoid bones
5. Moderate scoring of articular surfaces of the proximal sesamoid bones

Other findings:

- Pulmonary congestion and edema (euthanasia artifact)
- Splenomegaly (euthanasia artifact)

### Case Summary

05/21/19: The information on the submission form is incorrect. Horse sustained injury to the left front fetlock, not the right front.

03/13/19: The most important findings in the left forelimb are fractures of the proximal sesamoid bones and complete rupture of the medial branch of suspensory ligament. The latter injuries resulted in loss of support of the fetlock joint in the left forelimb. The aforementioned fractures may be related to the subtle focal region of discoloration and bone porosity/osteopenic focus noted in the distal fracture surface in the medial proximal sesamoid bone. However, changes of similar nature could not be confidently identified in the proximal sesamoid bones in contralateral limb.

03/05/19 No significant findings were identified in visceral organs. At the time of necropsy, both front limbs were removed and saved for detailed examination at a later date. Results of this examination will be included in the next version of this report.

### Clinical History

Updated: Right Front fetlock compound sesamoid fractures with rupture of the suspensory apparatus. Horse was working 5/8.

### Gross Observations

Necropsy of a 4 year old, [REDACTED] Thoroughbred [REDACTED] 440 kg, with [REDACTED], [REDACTED] commenced at 2:30 pm, March 5, 2019. The carcass is in good nutritional condition, with appropriate musculature development, good deposits of adipose tissue, and in mild post-mortem decomposition state. The trachea contains abundant stable foam, the lungs

are mottled pink to red, spongy and wet (euthanasia artifact). The spleen is markedly enlarged and congested (euthanasia artifact). The stomach contains green, soft roughage and grain. The intestinal tract is unremarkable, and the small colon contains formed feces.

Both front limbs are removed at the level of the chestnut for further examination.

### CHRB Musculoskeletal

Both front limbs were examined distally from the radiocarpal joint. Following changes were seen:

#### LEFT FRONT

##### A- PROXIMAL SESAMOID BONES

###### 1. Fracture of the proximal sesamoid bone

a) Closed, comminuted, articular, transverse, displaced, basilar fracture of the lateral proximal sesamoid bone – The distal fracture segment is divided into three fragments- small, triangular piece, based roughly in the middle and two fragments adjacent to it. The proximal component is divided by oblique fracture line coursing through the mid-body into two components that are firmly fixed to the intersesamoidean ligament.

b) Closed, simple, articular, transverse, displaced, basilar fracture of the medial proximal sesamoid bone with possible predisposing lesion identified in abaxial aspect of the distal fracture fragment. A possible region of increased porosity is present at the abaxial aspect of the distal fracture surface of the medial proximal sesamoid bone. The fracture line propagates through a subchondral focus of red, subtle discoloration surrounded by highly compacted trabecular bone (sclerosis), which is adjacent to the cartilage of the articular surface of medial proximal sesamoid bone. The subchondral and trabecular bone is highly compacted (sclerotic) on both opposing surfaces of the fracture.

For better visualization of described fractures, please see attached pictures and drawings.

##### B- SOFT TISSUES

1. Full thickness, transverse intersesamoidean ligament rupture with short sagittal component affecting straight distal sesamoidean ligament- 'T' shaped; the tear follows the main fracture line of the proximal sesamoid bones
2. Suspensory ligament failure with complete, transverse rupture of the medial branch, mild to moderate fraying of the palmar surface of the medial branch
3. Moderate to severe proliferative synovitis of the fetlock joint
4. Moderate to severe fraying of the lateral collateral ligament of the fetlock
5. Moderate fraying, hemorrhage and incomplete transverse rupture of the palmar surface of the deep and superficial digital flexor tendons- the incomplete tears affect both medial and lateral edge, are very short app. 1-1.5 cm
6. Severe, full thickness, transverse and longitudinal rupture of the intersesamoidean ligament
7. Severe fraying of fibers of the lateral and medial short and cruciate ligaments
8. Severe, longitudinal, full-thickness split, fraying of fibers and hemorrhage of the straight distal sesamoidean ligament
9. Moderate fraying of fibers and incomplete transverse rupture of the lateral and medial collateral ligaments of proximal sesamoid bones

##### C- MCIII

1. Moderate to severe, biaxial palmar osteochondral disease with blue subchondral bone discoloration (bruising) visible through the flattened and degenerated cartilage overlying condyles of the distal MCIII. The bruising of the medial condyle is more distinct, ellipsoidal in shape, and app. 1.5 cm x 0.5 cm in diameter.
2. Severe, extensive, full thickness cartilage loss of the medial and lateral condyle of the distal articular surface of MCIII- dorsal to the transverse ridge the cartilage is completely degenerated. There are two foci of ulceration, one on each one condyle; the one on the medial condyle is larger, app. 2 cm x 3 cm in diameter, on the lateral condyle 1 cm x 1.3 cm in diameter
3. Moderate to severe scoring of the distal articular surface of MCIII with multiple clefts of variable depth and width
4. Severe hemorrhage accompanied by soft tissue proliferation at the palmar aspect of the supracondylar region of MCIII
5. Severe hemorrhage with bone erosion due to compression of the hypertrophic synovial pad (osteoclastic osteolysis) at the dorsal aspect of the supracondylar region of MCIII

##### D- P1

1. Mild scoring lines of the proximal articular surface of P1
2. Moderate to severe, biaxial cartilage erosion of the dorsal margins of the proximal articular surface of P1

## RIGHT FRONT

## A- PROXIMAL SESAMOID BONES

1. Moderate, multifocal, red discoloration of the cartilage on the abaxial aspects of the proximal sesamoid bones
2. Moderate, biaxial apical modeling with irregular bony outgrowth of the proximal sesamoid bones
3. Moderate scoring of articular surfaces of the proximal sesamoid bones

## B- SOFT TISSUES

1. Moderate proliferative synovitis and hemarthrosis of the fetlock joint

## C- MCIII

1. Moderate to severe, palmar osteochondral disease with blue subchondral bone discoloration (bruising) visible through the flattened and degenerated cartilage overlying medial condyle of the distal MCIII
2. Moderate to severe transverse ridge arthrosis with cartilage ulceration surrounded by red discolored fibrous tissue
3. Severe hemorrhage accompanied by soft tissue hypertrophy at the palmar aspect of the supracondylar region of MCIII
4. Severe hemorrhage with bone erosion due to compression of the hypertrophic synovial pad (osteoclastic osteolysis) at the dorsal aspect of the supracondylar region of MCIII
5. Mild to moderate scoring of the distal articular surface of MCIII

## D- P1

1. Mild lipping of the dorsal aspect of the proximal articular surface of P1
2. Mild scoring of the proximal articular surface
3. Mild to moderate, biaxial cartilage erosions of the dorsal margin of the proximal surface of P1

No gross lesions/ abnormalities were identified in other structures of both distal front limbs examined from the chestnut to the hoof.

Appendix - Report Related Images

Accession # [REDACTED]

updated  
3/6/19

STATE OF CALIFORNIA  
CALIFORNIA HORSE RACING BOARD  
NECROPSY SUBMISSION FORM  
CHRB-72 (Rev. 06/04)

CAHFS - Davis  
620 W. Health Sciences Dr.  
Davis, CA 95616  
Phone. (530) 752-8709  
Fax. (530) 752-7170  
chrnecropsy.davis@ad3.ucdavis.edu

CAHFS - San Bernardino  
105 W. Central Ave  
San Bernardino, CA 92408  
Phone. (909) 383-4287  
Fax. (909) 884-5980  
chrnecropsy.sanb@ad3.ucdavis.edu

CAHFS - Tulare  
18830 Road 112  
Tulare, CA 93274  
Phone. (559) 688-7543  
Fax. (559) 686-4231  
chrnecropsy.tulare@ad3.ucdavis.edu

Additional necropsy examination(s) that exceed the standard necropsy or equine special necropsy required by and provided through the California Horse Racing Board (CHRB) are the responsibility of the requesting individual (SEE REVERSE SIDE).

When a horse dies or is euthanized and the CHRB Official Veterinarian is not available; the owner's or trainer's attending veterinarian must phone the laboratory within one hour and fax this completed Necropsy Submission Form to the laboratory. A copy of the completed Necropsy Submission Form must be given to the CHRB Official Veterinarian on the official Veterinarian's next scheduled work day.

Delay of necropsy makes some test results questionable in value. A necropsy will not be performed until the following information has been provided:

<u>Dr. Grande</u> Name of CHRB Official Veterinarian	[REDACTED]	Name of Horse	[REDACTED]	Name of Owner(s)	[REDACTED]
<u>Santa Anita</u> Track Name		4	Thoroughbred	[REDACTED]	[REDACTED]
<u>285 W. Huntington Drive</u> Address		Age (years)	Breed	[REDACTED]	[REDACTED]
<u>Arcadia CA 91007</u> City State Zip Code		female	No	[REDACTED]	[REDACTED]
<u>(626) 574-6355</u> Phone		Sex	Castrated	[REDACTED]	[REDACTED]
		Tattoo	<input checked="" type="radio"/> Yes [REDACTED]	[REDACTED]	[REDACTED]
			<input type="radio"/> No. Color and markings	[REDACTED]	[REDACTED]
				Multiple Owner's	Yes <input type="radio"/> No <input type="radio"/> Unknown <input type="radio"/>

<u>Dr. Jeff Blea</u> Name of Attending Veterinarian	[REDACTED]	<u>Ron McAnally</u> Name of Trainer	[REDACTED]	Trainer License #	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
City State Zip Code		City State Zip Code			
[REDACTED]		[REDACTED]			
Phone		Phone			
	or Dr. Jeff Blea				
Signature (electronically signed or typed)					

Medications:	<u>Dorm/Torb</u>	Turf <input type="radio"/>	Synthetic <input type="radio"/>	Main-dirt <input checked="" type="radio"/>	Training-dirt <input type="radio"/>
<u>Santa Anita</u> Track where injury occurred	<u>3/8th Pole</u> Location on track where injury occurred				
History: <input type="radio"/> Died <input checked="" type="radio"/> Euthanized	<u>Pentobarbital</u> Agents used for Euthanasia	<u>03/05/2019</u> Date of death	<u>07:45</u> Time of death	<input checked="" type="radio"/> a.m. <input type="radio"/> p.m.	
Horse insured: <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown	Human Injury: <input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Unknown				

Clinical findings & diagnosis:

Right Front fetlock compound sesamoid fractures with rupture of the suspensory apparatus. Horse was working 5/8.

The injury is related to one of the following: Running of the race  Training  Non-exercise related  Other

Signature of CHRB Official Veterinarian \_\_\_\_\_ Date \_\_\_\_\_ Updated form? No

Appendix - Report Related Images

05/20/2019 11:13 5307545588

MADDY EQUINE LAB

#6865 P.003/003

UNIVERSITY OF CALIFORNIA, DAVIS

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SANTA BARBARA • SANTA CRUZ

CALIFORNIA ANIMAL HEALTH & FOOD SAFETY  
LABORATORY SYSTEM  
P.O. BOX 1770  
DAVIS, CALIFORNIA 95617

PHONE: (530) 752-8700  
FAX: (530) 752-6253

Rick Arthur, DVM  
California Horse Racing Board  
285 West Huntington Drive  
Arcadia, CA 91007

March 20, 2019

RE: Sample [REDACTED]

Received: March 07, 2019  
Date Taken: March 05, 2019  
Laboratory No.: EACL-190307-3  
No. of Samples: 1

INVESTIGATION: Post Mortem Analysis

One blood (serum) and aqueous humor sample collected from a horse at Santa Anita was received from CAHFS-San Bernadino.

The contents were analyzed by Liquid Chromatography - Mass Spectrometry and Gas Chromatography - Mass Spectrometry for the presence exogenous substances.

The aqueous humor sample was analyzed and hydroxy-detomidine, a metabolite of detomidine was detected. The blood sample was analyzed for NSAIDs and phenylbutazone (6.24 µg/mL) was detected. Confirmation analysis was not performed.

If you have any questions or require additional information, please don't hesitate to contact me.

The remainder of the original sample will be stored at the Maddy Lab and disposed of after 1 month.

Sincerely,

Benjamin Moeller, PhD DABT  
Assistant Professor  
University of California - Davis

Acc #

Date

CC

03/11/18

MAJ

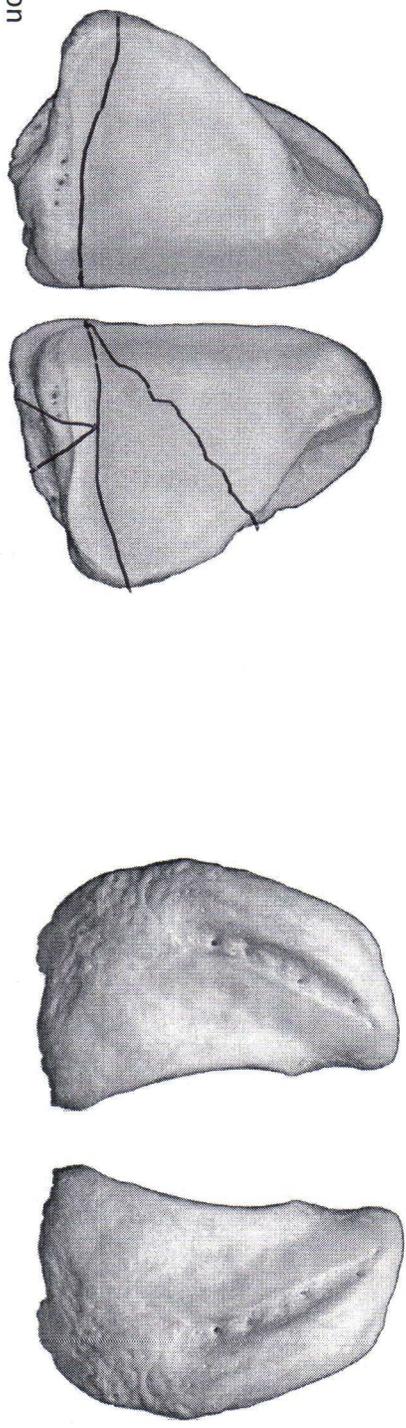
Proximal Sesamoid Bones

Nature:

- Open
- Simple
- Complete
- Displaced
- Articular
- Closed
- Comminuted
- Incomplete
- Non-displaced
- Non-articular

Location:

- Apical
- Mid Body
- Basilar
- Avulsion



Configuration:

- Axial (longitudinal)
- Transverse
- Segmental
- Butterfly
- Oblique

Distribution:

- Axial
- Abaxial

Pre-existing callus:

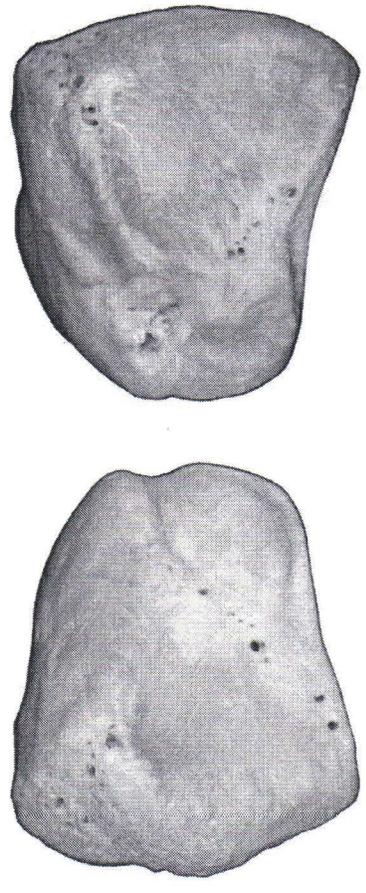
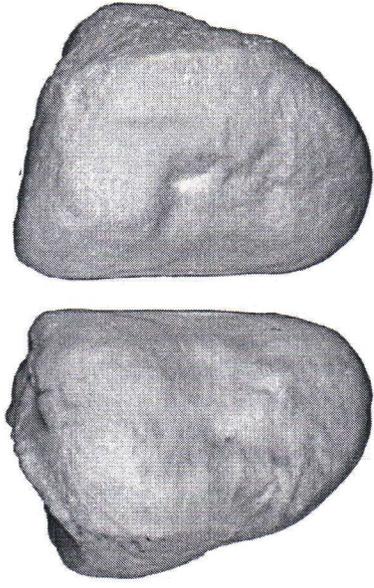
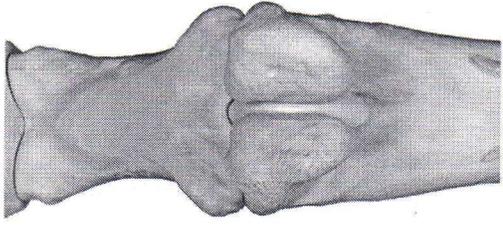
- Yes
- No
- Unable to evaluate

Legend:

==== Callus

- - - - Incomplete Fx

M Missing fragments



# Exercise History Report (Full)



**UCDAVIS**

**VETERINARY MEDICINE**

*J.D. Wheat Veterinary Orthopedic  
Research Laboratory*

**Mar-11-2019**

## **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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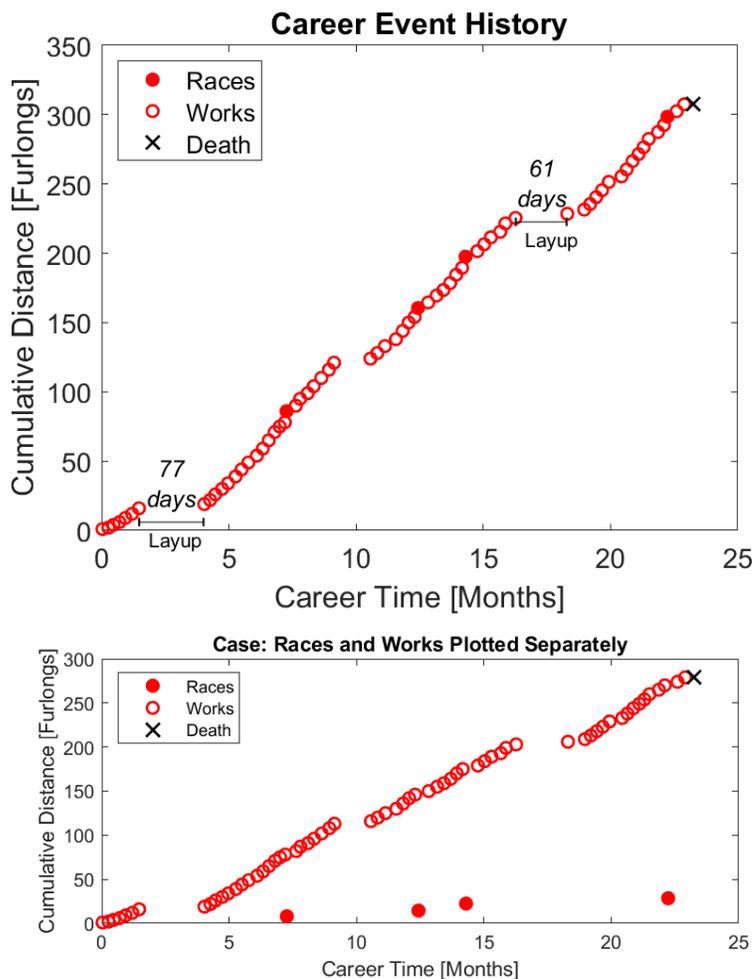
Part 1: Graphical Representation of Individual High-Speed Exercise Histories .....	1
Case Horse High Speed Exercise History .....	1
Control 1 High Speed Exercise History .....	2
Control 2 High Speed Exercise History .....	2
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## Part 1: Graphical Representation of Individual High-Speed Exercise Histories

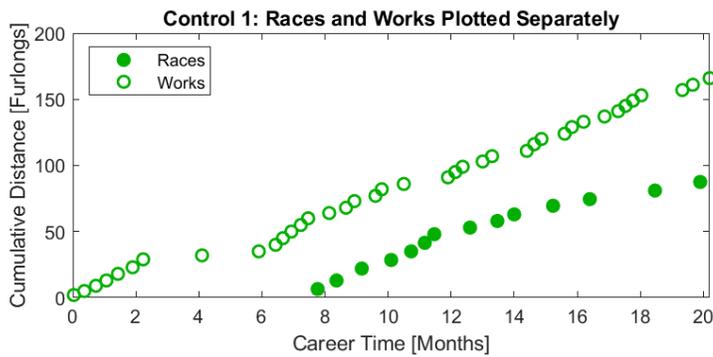
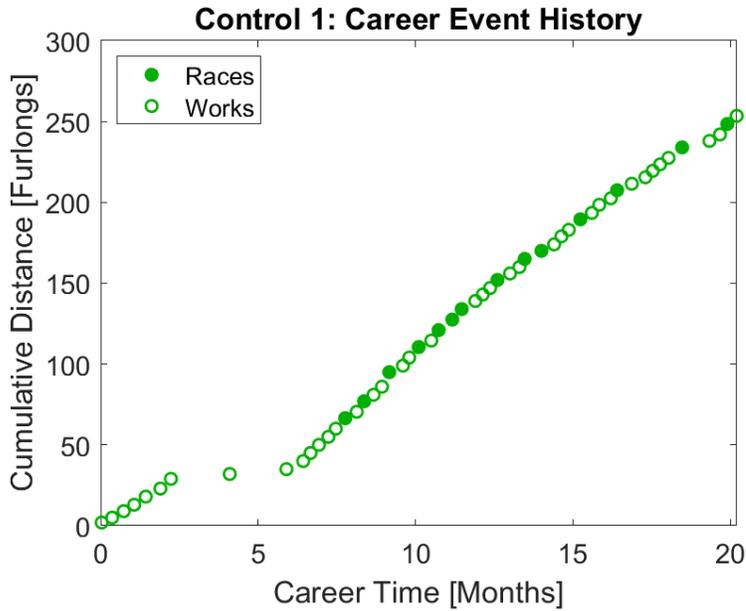
Races (filled circles), officially timed high-speed works (open circles), layups (line with endcaps, periods of time greater than 60 days in length without a race or timed work), and time of death (X) are illustrated over time (Career Time in months). With each event (race or work), the number of furlongs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

### Case Horse High Speed Exercise History

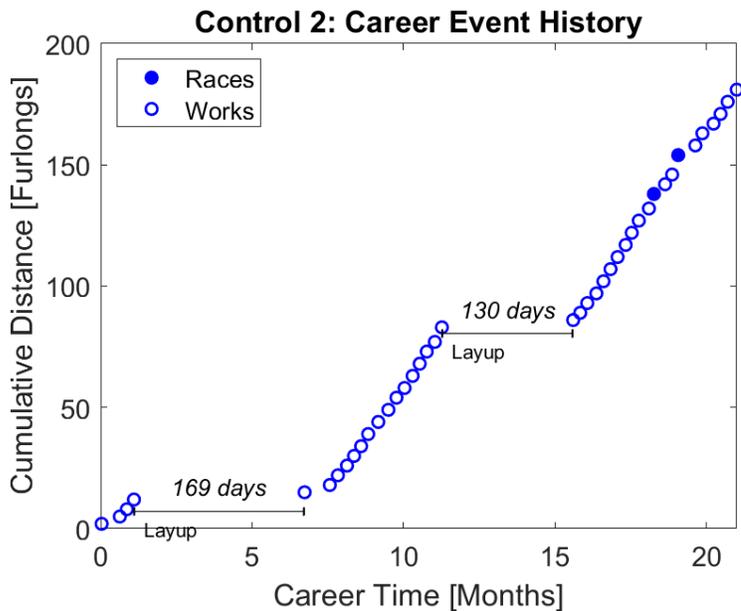


Part 1: Graphical Representation of Individual High-Speed Exercise Histories

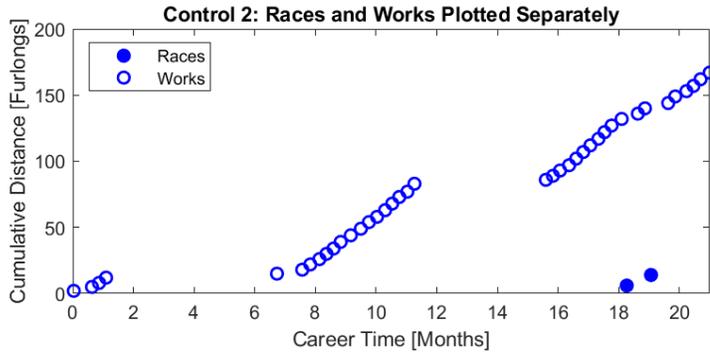
Control 1 High Speed Exercise History



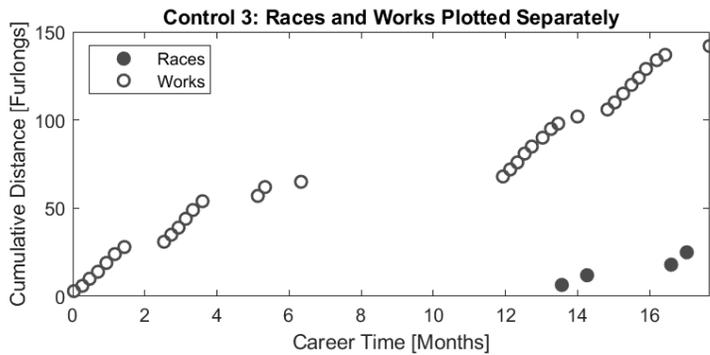
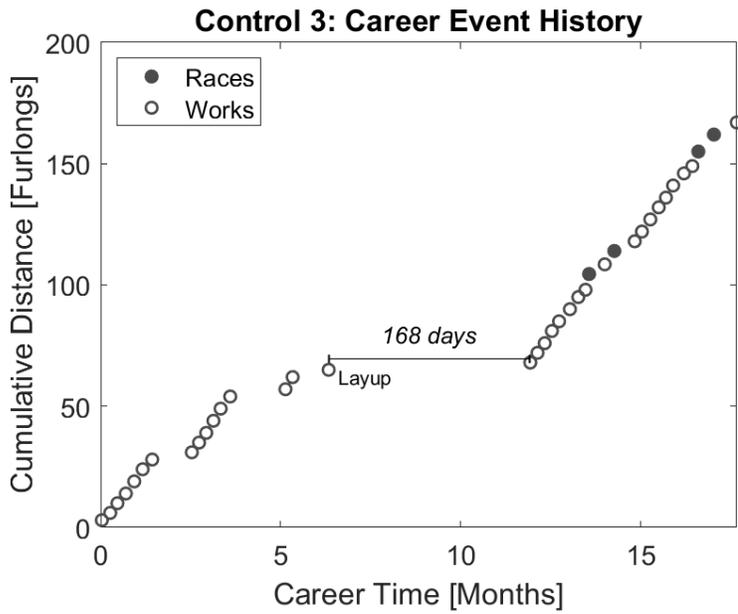
Control 2 High Speed Exercise History



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

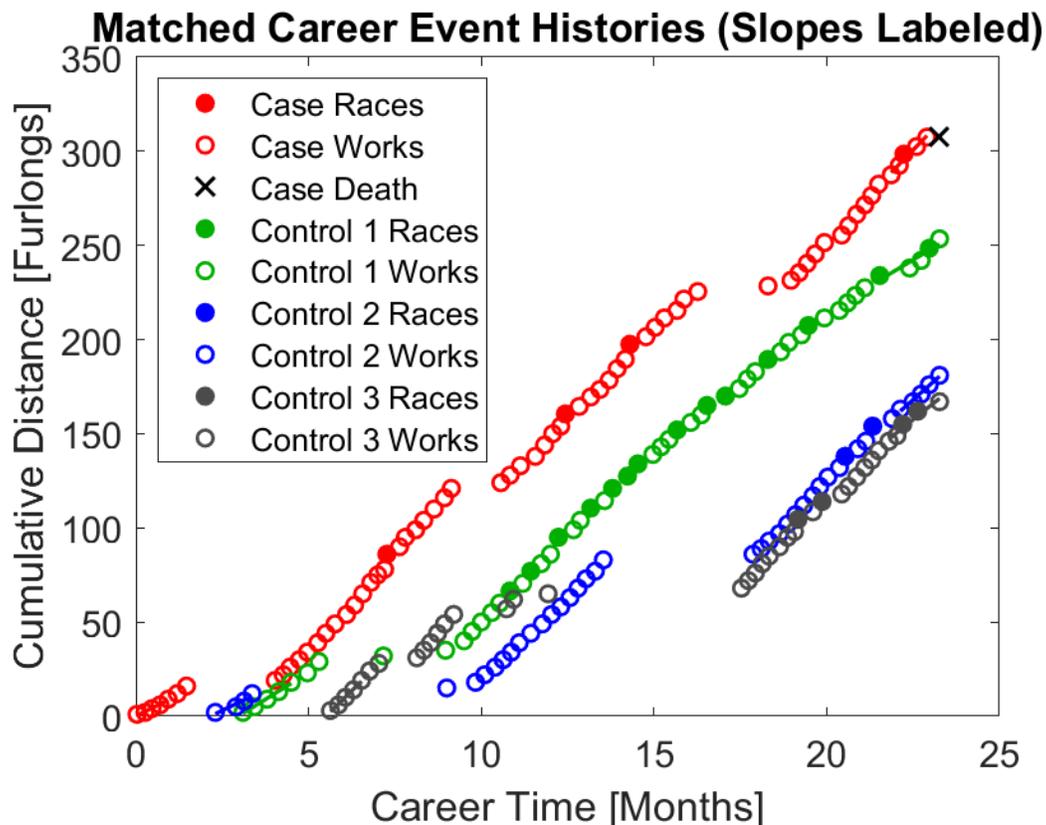


## Control 3 High Speed Exercise History



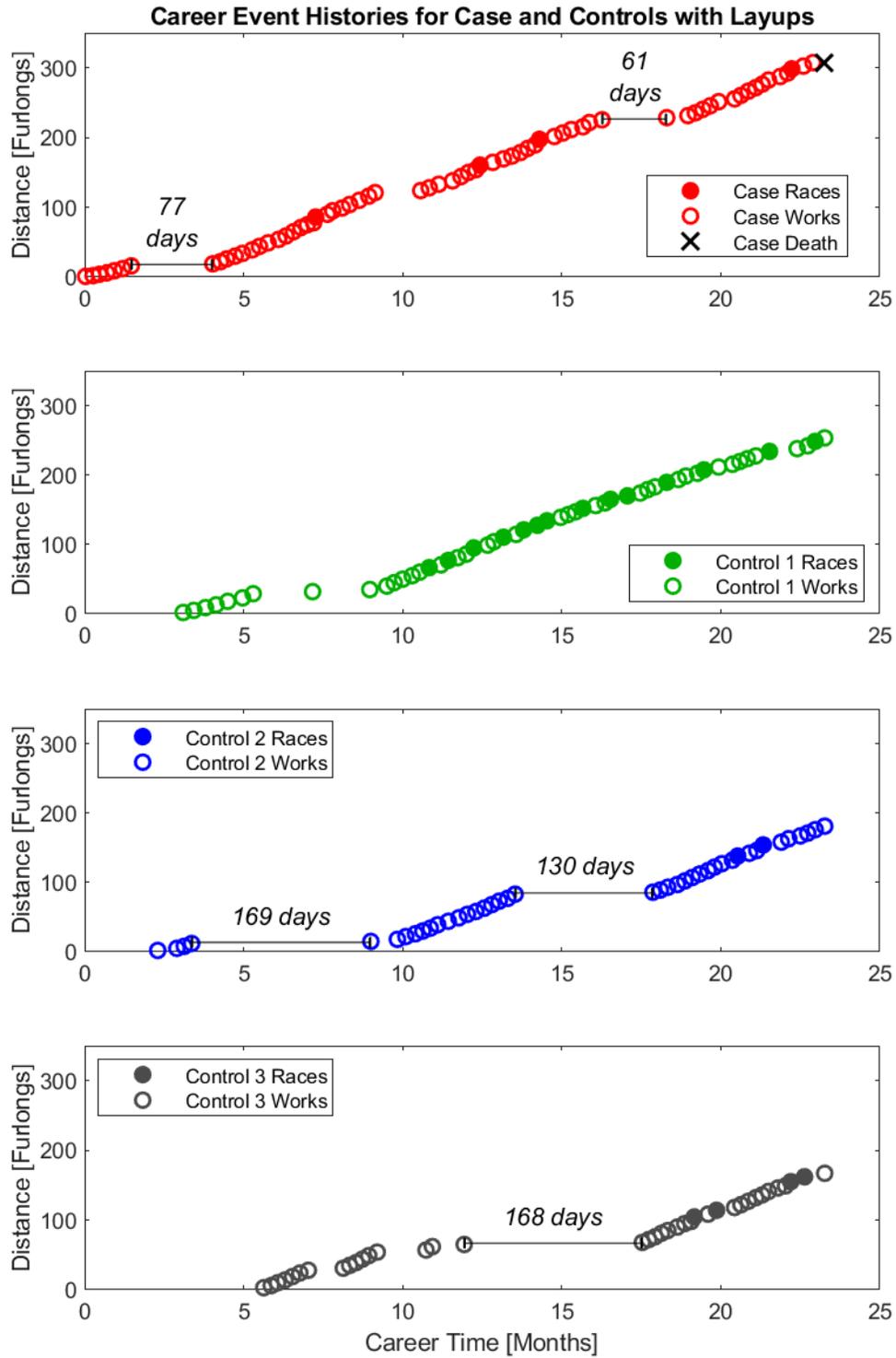
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## Part 2: Case and Control Horses Plotted Together

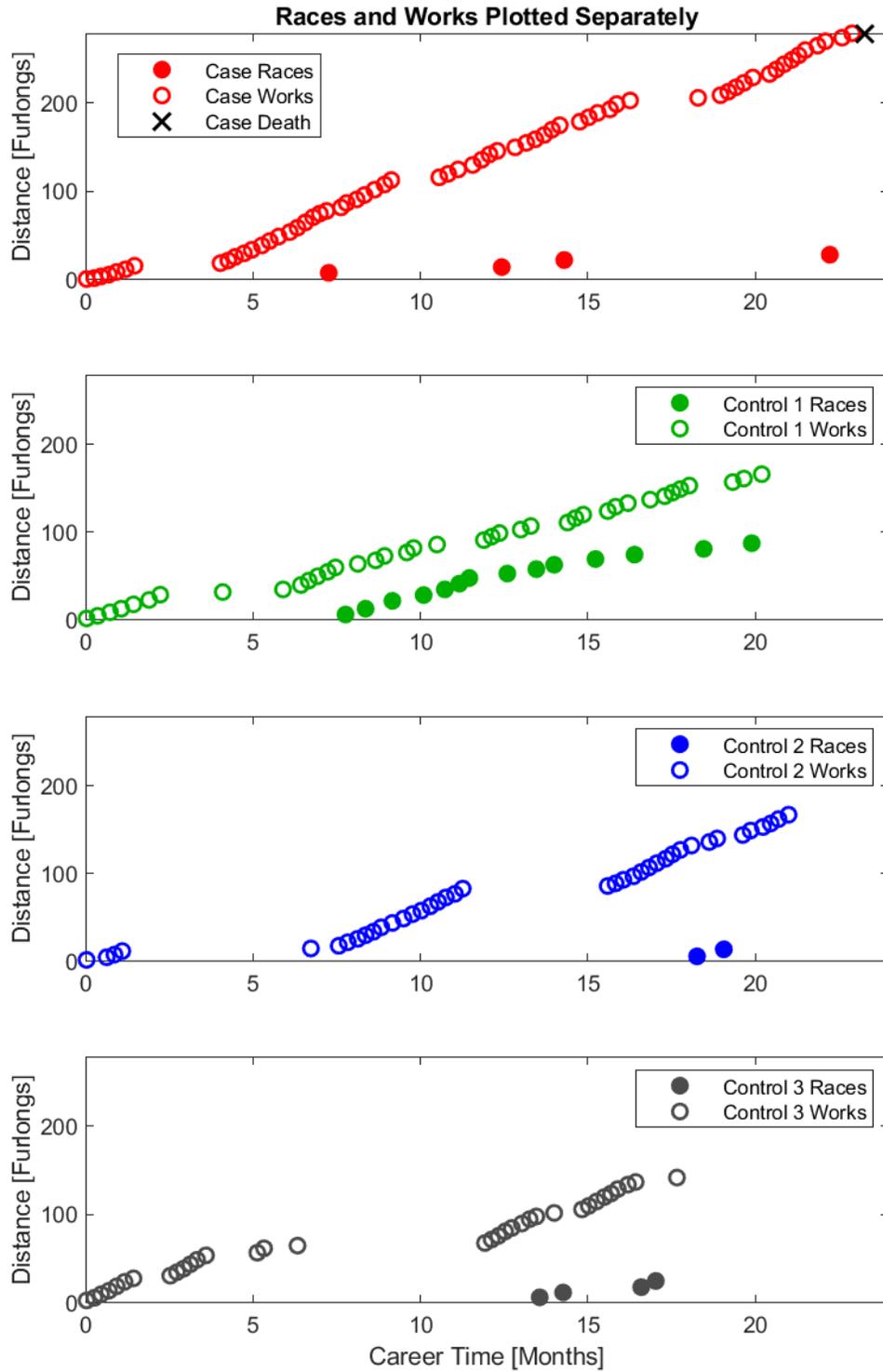


Case and Control Horses' exercise event histories are plotted on the same axes. The plots are aligned by the match date (equal to the date of death of Case Horse). Lines segments indicate specific rates of exercise at the start of career, end of career (for Case Horse), and match date (for Control Horses). 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.

## Part 2: Case and Control Horses Plotted Together



## Part 2: Case and Control Horses Plotted Together



### Part 3: Case Horse's Event History

Date	Race/Work	Furlongs	Track	Surface	Track Cond.	Time	Age/Sex	Race Class	Earnings	Finish
2/22/2019	W	5.0	SA	Dirt	Fast	01:00.8				
2/13/2019	W	4.0	SA	Dirt	Fast	:49.80				
2/2/2019	R	6.0	SA	Dirt	Sloppy		4U/ FM	Alw57000nw1\$3420 x		4
1/29/2019	W	5.0	SA	Dirt	Fast	01:03.0				
1/22/2019	W	5.0	SA	Dirt	Fast	01:01.8				
1/11/2019	W	6.0	SA	Dirt	Fast	01:15.4				
1/5/2019	W	5.0	SA	Dirt	Fast	01:02.2				
12/30/2018	W	5.0	SA	Dirt	Fast	01:02.0				
12/23/2018	W	6.0	SA	Dirt	Fast	01:16.2				
12/16/2018	W	5.0	SA	Dirt	Fast	01:02.4				
12/10/2018	W	4.0	SA	Dirt	Fast	:49.20				
11/25/2018	W	6.0	DMR	Dirt	Fast	01:16.6				
11/17/2018	W	5.0	DMR	Dirt	Fast	01:00.6				
11/10/2018	W	5.0	DMR	Dirt	Fast	01:02.2				
11/3/2018	W	4.0	SA	Dirt	Fast	:50.40				
10/27/2018	W	3.0	SA	Dirt	Fast	:37.00				
10/7/2018	W	3.0	SA	Dirt	Fast	:37.20				
8/7/2018	W	4.0	DMR	Dirt	Fast	:48.40				
7/26/2018	W	6.0	DMR	Dirt	Fast	01:15.0				
7/20/2018	W	4.0	DMR	Dirt	Fast	:50.00				
7/9/2018	W	5.0	SA	Dirt	Fast	01:01.8				
7/1/2018	W	5.0	SA	Dirt	Fast	01:02.8				
6/23/2018	W	4.0	SA	Dirt	Fast	:49.60				
6/9/2018	R	8.0	SA	Dirt	Fast		3U/ FM	Str30000nw2/ L	1980	4
6/5/2018	W	5.0	SA	Dirt	Fast	01:01.4				
5/29/2018	W	6.0	SA	Dirt	Fast	01:15.0				
5/22/2018	W	5.0	SA	Dirt	Fast	01:01.8				
5/14/2018	W	4.0	SA	Dirt	Fast	:49.20				
5/6/2018	W	5.0	SA	Dirt	Fast	01:02.2				
4/26/2018	W	4.0	SA	Dirt	Fast	:49.20				

Part 3: Case Horse's Event History

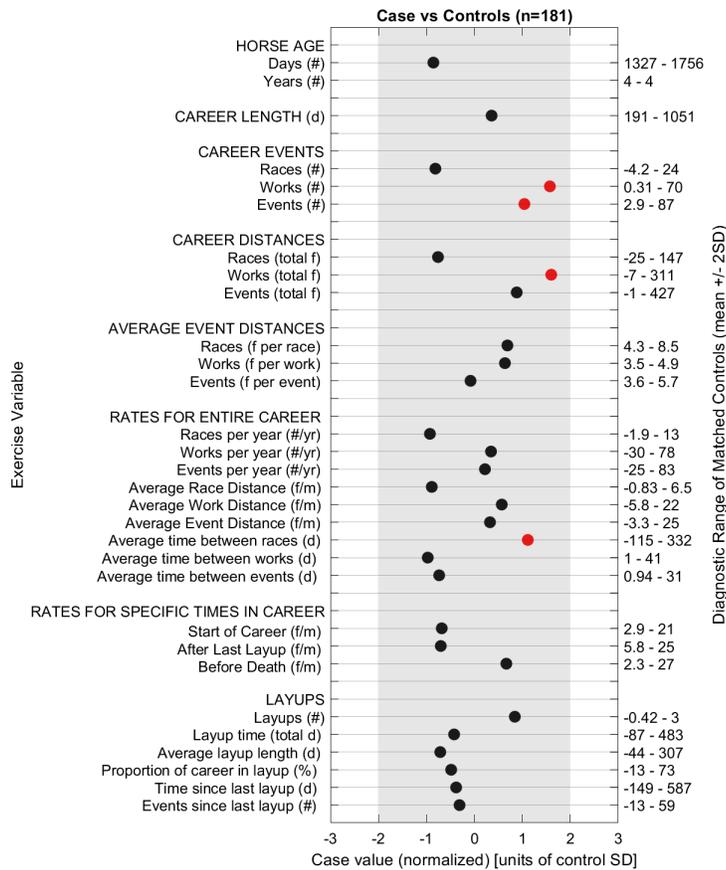
Date	Race/Work	Furlongs	Track	Surface	Track Cond.	Time	Age/Sex	Race Class	Earnings	Finish
4/14/2018	R	6.5	SA	Dirt	Fast		3/F	Mcl30000	12600	1
4/10/2018	W	4.0	SA	Dirt	Fast	:49.80				
4/3/2018	W	6.0	SA	Dirt	Fast	01:15.4				
3/27/2018	W	6.0	SA	Dirt	Fast	01:15.2				
3/19/2018	W	5.0	SA	Dirt	Fast	01:00.6				
3/6/2018	W	5.0	SA	Dirt	Fast	01:03.0				
2/25/2018	W	4.0	SA	Dirt	Fast	:50.00				
2/17/2018	W	3.0	SA	Dirt	Fast	:37.00				
1/5/2018	W	5.0	SA	Dirt	Fast	01:00.4				
12/30/2017	W	6.0	SA	Dirt	Fast	01:15.8				
12/21/2017	W	6.0	SA	Dirt	Fast	01:15.0				
12/12/2017	W	5.0	SA	Dirt	Fast	01:04.2				
12/5/2017	W	4.0	SA	Dirt	Fast	:49.80				
11/26/2017	W	5.0	DMR	Dirt	Fast	01:01.4				
11/21/2017	W	4.0	DMR	Dirt	Fast	:49.40				
11/10/2017	R	8.0	DMR	Dirt	Fast		2/F	Mcl35000 (40-35)	500	5
11/8/2017	W	3.0	DMR	Dirt	Fast	:37.80				
11/2/2017	W	4.0	DMR	Dirt	Fast	:50.20				
10/27/2017	W	6.0	SA	Dirt	Fast	01:17.2				
10/20/2017	W	6.0	SA	Dirt	Fast	01:16.4				
10/13/2017	W	5.0	SA	Dirt	Fast	01:03.8				
10/6/2017	W	5.0	SA	Dirt	Fast	01:02.0				
9/26/2017	W	5.0	SA	Dirt	Fast	01:02.8				
9/18/2017	W	5.0	SA	Dirt	Fast	01:04.8				
9/11/2017	W	5.0	SA	Dirt	Fast	01:03.2				
9/2/2017	W	4.0	DMR	Dirt	Fast	:48.80				
8/26/2017	W	4.0	DMR	Dirt	Fast	:48.80				
8/18/2017	W	4.0	DMR	Dirt	Fast	:53.60				
8/12/2017	W	3.0	DMR	Dirt	Fast	:39.40				
8/5/2017	W	3.0	DMR	Dirt	Fast	:38.80				
5/20/2017	W	4.0	LA	Dirt	Fast	:50.60				
5/12/2017	W	3.0	LA	Dirt	Fast	:37.40				

Part 3: Case Horse's Event History

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<b>Date</b>	<b>Race/ Work</b>	<b>Fur- longs</b>	<b>Track</b>	<b>Surface</b>	<b>Track Cond.</b>	<b>Time</b>	<b>Age/ Sex</b>	<b>Race Class</b>	<b>Earn- ings</b>	<b>Finish</b>
5/4/2017	W	3.0	LA	Dirt	Fast	:36.40				
4/27/2017	W	2.0	LA	Dirt	Fast	:25.00				
4/20/2017	W	2.0	LA	Dirt	Fast	:25.00				
4/14/2017	W	1.0	LA	Dirt	Fast	:13.60				
4/7/2017	W	1.0	LA	Dirt	Fast	:12.80				

## Part 4: Comparison of Exercise Variables between Case Horse and 181 Control Horses (4 year old, female, Thoroughbred)

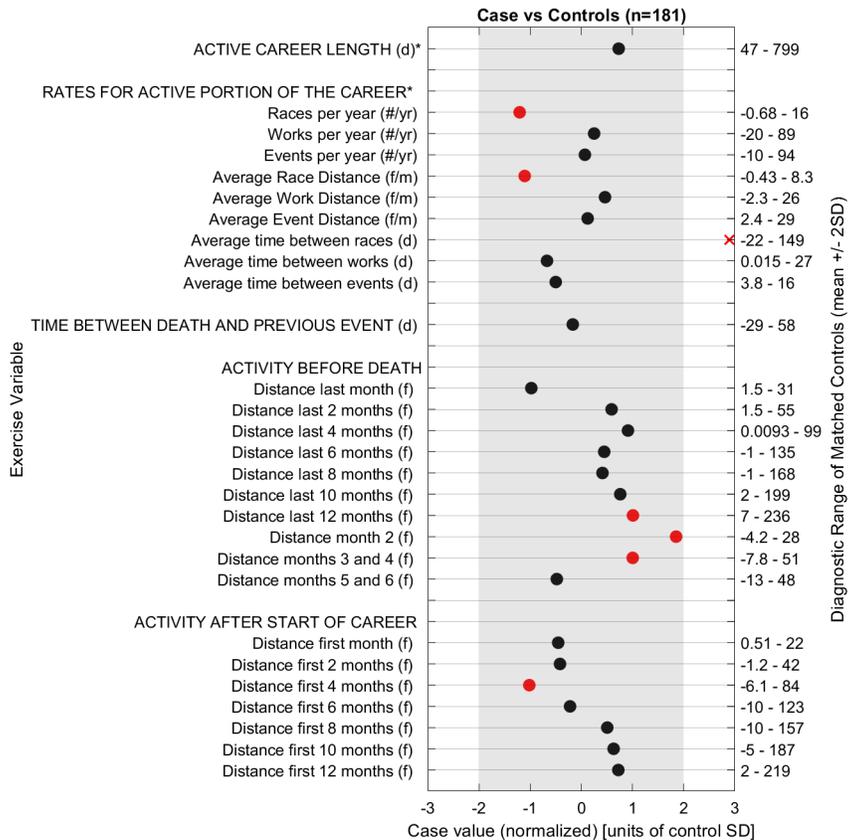


Case Horse values are indicated by black or red symbols: circles indicate values considered normal for 95% of 4 year old, female, Thoroughbreds (n=181) (gray region) (black and red indicate within 1 and 2 SD, respectively, of mean value of controls), X's indicate values outside of the normal range. Two 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.

## Part 4: Comparison of Exercise Variables between Case Horse and 181 Control Horses (4 year old, female, Thoroughbred)



Case Horse values are indicated by black or red symbols: circles indicate values considered normal for 95% of 4 year old, female, Thoroughbreds (n=181) (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.

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