



**UC DAVIS**  
**VETERINARY MEDICINE**

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CAHFS Accession #: [REDACTED]

**FINAL REPORT**

Ref.#: [REDACTED]

Coordinator: Monika Samol, DVM, Resident

E-Signed and Authorized by: Samol, Monika on  
3/29/2019 5:46:03PM

**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: 03/14/2019 Date Received: 03/14/2019

Comments: CHRB

**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	STEAD, DANA	[REDACTED]	[REDACTED]	South Pasadena	CA	91031
Trainer	BERNSTEIN, DAVID	[REDACTED]	[REDACTED]	Rancho Cucamonga	CA	91701

**CHRB - Related Information**

Horse's Name:	[REDACTED]	Human Injury?	
Tattoo:	[REDACTED]	Death Related to:	Training
Age:	3.00 Years	Track Surface:	Dirt
Gender:	Female	Location on Track:	PAST WIRE
Taxonomy:	Thoroughbred Horse	Insured?	

Medications: Dormosedan (Detomidine); Pentobarbital;

**Laboratory Findings/Diagnosis**

A 3 year old [REDACTED] Thoroughbred [REDACTED] ([REDACTED] [REDACTED] [REDACTED]) submitted with history of bilateral compound metacarpophalangeal disarticulation, with biaxial proximal sesamoid bone fractures and upright pastern conformation noted on previous exam  
Catastrophic breakdown of left and right front fetlocks, with:

**LEFT FORELIMB**

**ACUTE CHANGES**

1. Fracture of the medial proximal sesamoid bone- open, simple, articular, transverse, displaced, basilar
2. Severe, complete, longitudinal rupture of the medial branch of the suspensory ligament
3. Severe, multiple incomplete longitudinal splits and fraying of fibers of the lateral branch of the suspensory ligament
4. Chip fracture of the dorsolateral margin of the proximal articular surface of P1
5. Complete luxation of the fetlock joint- MCIII bone completely perforated the skin, which resulted in complete exposure of the

distal third of cannon bone

6. Open, simple, non-articular, transverse, displaced fracture of the MCII and MCIV
7. Severe, complete, transverse rupture of the medial and lateral collateral ligaments of the fetlock
8. Full thickness, transverse and longitudinal rupture of the intersesamoidean ligament
9. Severe, full-thickness, transverse rupture, severe fraying of fibers, hemorrhage, multiple longitudinal, incomplete splits of the deep digital flexor tendon
10. Severe, transverse, complete rupture, severe fraying of fibers, hemorrhage, multiple longitudinal, incomplete splits of the superficial digital flexor tendon
11. Severe fraying of fibers of the lateral and medial short and cruciate ligaments
12. Severe fraying of fibers and incomplete transverse rupture of the lateral and medial collateral ligaments of proximal sesamoid bones
13. Severe, longitudinal, full-thickness split, fraying of fibers and hemorrhage of the straight distal sesamoidean ligament
14. Severe, full thickness cartilage loss of the mid-sagittal ridge of the distal articular surface of MCIII
15. Severe, longitudinal, full thickness cartilage loss of the abaxial margin of the medial condyle of the distal articular surface of MCIII

#### CHRONIC CHANGES:

1. Severe, biaxial palmar osteochondral disease with white, ellipsoidal subchondral bone discoloration (presumably necrotic bone/sequestrum) surrounded by blue rim (bruising) visible through the flattened cartilage overlying the condyles of distal MCIII
2. Severe, biaxial degeneration of the cartilage overlying articular surface of the distal MCIII- significant thinning

#### RIGHT FORELIMB

##### ACUTE CHANGES

1. Fracture of the lateral proximal sesamoid bone - open, simple, articular, transverse, displaced, apical
2. Fracture of the medial proximal sesamoid bone - open, comminuted, articular, transverse, displaced, basilar
3. Severe, complete, longitudinal rupture of the lateral branch of the suspensory ligament originating from bifurcation, multiple incomplete longitudinal splits and moderate fraying of fibers
4. Chip fracture of the dorsal margin of the proximal articular surface of P1
5. Complete luxation of the fetlock joint- MCIII bone completely perforated the skin, which resulted in complete exposure of the distal third of cannon bone
6. Open, simple, non-articular, oblique, displaced fracture of the MCII
7. Severe, complete, transverse rupture of the medial and lateral collateral ligaments of the fetlock
8. Full thickness, transverse and longitudinal rupture of the intersesamoidean ligament
9. Severe, complete, transverse rupture, severe fraying of fibers, hemorrhage, multiple longitudinal, incomplete splits of the deep digital flexor tendon
10. Severe, incomplete, transverse rupture, severe fraying of fibers, hemorrhage, multiple longitudinal, incomplete splits of the superficial digital flexor tendon
11. Severe fraying of fibers of the lateral and medial short and cruciate ligaments
12. Severe fraying of fibers and incomplete transverse rupture of the lateral and medial collateral ligaments of proximal sesamoid bones
13. Severe, longitudinal, full-thickness split, fraying of fibers and hemorrhage of the straight distal sesamoidean ligament
14. Severe, multifocal, full thickness cartilage loss of the mid-sagittal ridge of the distal articular surface of MCIII
15. Severe, multifocal, full thickness cartilage loss of the abaxial margin of the medial condyle of the distal articular surface of MCIII

##### CHRONIC CHANGES

1. Severe, biaxial palmar osteochondral disease with white/yellowish, ellipsoidal subchondral bone discoloration (presumably necrotic bone/sequestrum) surrounded by blue rim (bruising) visible through the flattened cartilage overlying the condyles of distal MCIII
2. Severe degeneration of the cartilage overlying articular surface of the distal MCIII- significant thinning
3. Moderate to severe, focal, blue subchondral bone discoloration visible through the cartilage of the dorsal aspect of the mid-sagittal ridge and along the abaxial margin of the medial condyle

## Other findings:

- Moderate to severe, extensive gastric hyperkeratosis of non-glandular mucosa with moderate gastric ulceration along the margo plicatus (incidental)
- Splenomegaly (euthanasia artifact)
- Pulmonary congestion and edema (euthanasia artifact)

### Case Summary

03/20/19: The most important findings in the right and left forelimbs are open fractures of the proximal sesamoid bones, rupture of suspensory ligament and severe, bilateral palmar osteochondral disease. The latter injuries caused lateral displacement of both cannon bones and consequently skin laceration, which ultimately resulted in loss of support of the fetlock joints in both front limbs. The aforementioned fractures may be related to the focal regions of discoloration and bone porosity/osteopenic focus associated with fracture surfaces in the medial proximal sesamoid bones. Furthermore, the morphologic presentation of the palmar osteochondral disease affecting both front limbs equally was considered atypical due to the shape and extent of the noted changes. Usually formation of the sequestrum/necrotic bone is less extensive and rounded in shape. In this case, the stress applied to the palmar aspect of distal condyles encompassed a wider area of articular surface.

03/15/19 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

Bilateral forelegs-compound metacarpophalangeal disarticulations w/biaxial proximal sesamoid bone fractures (bilateral); Hx: shod with medial quarters removed LF/LH/RH; upright pastern conformation noted on previous exam.

### Gross Observations

Necropsy of a 3 year old, [REDACTED] Thoroughbred ([REDACTED]), 454 kg, with [REDACTED], tattoo [REDACTED] commenced at 12:30 pm, March 14, 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. Non-glandular gastric mucosa is extensively hyperkeratotic with moderate, multifocal ulcers (app. 1 cm in diameter) with elevated margins along the margo plicatus. 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 FORELIMB

##### A- PROXIMAL SESAMOID BONES

1. Fracture of the medial proximal sesamoid bones, open, simple, articular, transverse, displaced, basilar fracture of the medial proximal sesamoid bone

The subchondral bone is slightly discolored (red/brown) along the entire articular margin with darker/ more distinct focus (red) in abaxial aspect, which is considered as possible region of increased porosity. The fracture line propagates through this subchondral focus of red discoloration surrounded by highly compacted trabecular bone.

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

2. Mild scoring of the articular surfaces of the proximal sesamoid bones
3. Mild, biaxial apical modeling with irregular bony outgrowth of the proximal sesamoid bones

##### B- SOFT TISSUES

1. Full thickness, transverse intersesamoidean ligament rupture with sagittal component affecting straight distal sesamoidean ligament- the tear is following the fracture line of the medial proximal sesamoid bone, the other transverse component courses

above the lateral proximal sesamoid bone. Then the tear continues distally to merge with full-thickness, longitudinal rupture of the straight distal sesamoidean ligament

2. Severe, full-thickness, transverse rupture of the palmar annular ligament
3. Severe, complete, longitudinal rupture of the medial branch of the suspensory ligament at the level of the insertion on the fractured medial proximal sesamoid bone (ca. 4 cm long);
4. Severe, multiple incomplete longitudinal splits and severe fraying of fibers of the lateral branch of the suspensory ligament
5. Severe, full-thickness longitudinal split, which originates from the bifurcation and progresses for app. 6-7 cm proximally to turn into incomplete split and reach the proximal third of the suspensory ligament body (origin). The suspensory ligament body is markedly hemorrhagic.
6. Severe, complete, transverse rupture of medial and lateral collateral ligaments of the fetlock
7. Full thickness, transverse and longitudinal rupture of the intersesamoidean ligament
8. Severe, complete, transverse rupture of the medial aspect (app. 2-3 cm), severe fraying of fibers, hemorrhage, multiple longitudinal, incomplete splits of the deep digital flexor tendon
9. Severe, incomplete, transverse rupture (affecting app. ¾ width of the tendon), severe fraying of fibers, hemorrhage, multiple longitudinal, incomplete splits of the superficial digital flexor tendon
10. Severe fraying of fibers of the lateral and medial short and cruciate ligaments
11. Severe fraying of fibers and incomplete transverse rupture of the lateral and medial collateral ligaments of the proximal sesamoid bones
12. Moderate to severe proliferative synovitis of the fetlock joint

#### C- MCII

1. Open, simple, complete, non-articular, transverse, displaced fracture of the MCII- fracture resulted in complete separation of the button of the splint bone

#### D- MCIV

1. Open, simple, complete, non-articular, transverse, displaced fracture of the MCII- fracture resulted in complete separation of the button of the splint bone

#### E- MCIII

1. Severe, full thickness, longitudinal cartilage loss of the mid-sagittal ridge of the distal articular surface of MCIII
2. Severe, longitudinal, full thickness cartilage loss of the abaxial margin of the medial condyle of the distal articular surface of MCIII
3. Severe, biaxial palmar osteochondral disease with white, ellipsoidal subchondral bone discoloration (presumably necrotic bone/sequestrum) surrounded by blue rim (bruising) visible through the flattened cartilage overlying the condyles of distal MCIII- the cross section of the affected regions revealed yellow focus of the presumably necrotic subchondral bone surrounded by dark blood vessels (neovascularization).
4. Severe degeneration of the cartilage overlying articular surface of the distal MCIII- significant thinning
5. Severe scoring of the distal articular surface of MCIII
6. Moderate to severe hemorrhage accompanied by soft tissue hypertrophy at the palmar aspect of the supracondylar region of MCIII
7. Moderate to 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

#### F- P1

1. Chip fracture of the dorsolateral margin of the proximal articular surface of P1
2. Moderate, focal, rounded (ca. 0.5 cm in diameter) cartilage ulceration of the dorsomedial margin of the proximal articular surface of P1
3. Severe, biaxial, bony erosion with osteochondral fragmentation of the palmar aspect of the proximal articular surface of P1
4. Mild to moderate scoring lines of the proximal articular surface

### RIGHT FORELIMB

#### A- PROXIMAL SESAMOID BONES

1. Fracture of the lateral proximal sesamoid bone, open, simple, articular, transverse, displaced, apical, avulsed with intersesamoidean ligament
2. Fracture of the medial proximal sesamoid bone, open, comminuted, articular, transverse, displaced, basilar- the basilar fragment is divided into 2 fragments in axial third by sagittal fracture line. The subchondral bone is slightly discolored (brown) along the entire articular margin with slightly darker/ more distinct focus in abaxial aspect, which may be considered as possible

region of increased porosity. The fracture line propagates through this subchondral focus of red discoloration surrounded by highly compacted trabecular bone. The changes are very similar to those seen in medial proximal sesamoid bone in left front. However, they seem to be more subtle. The fracture line propagates through this subchondral focus of discoloration surrounded by highly compacted trabecular bone.

For better visualization please see attached pictures and drawings.

### 3. Severe scoring of the articular surfaces of the proximal sesamoid bones

#### B- SOFT TISSUES

1. Severe, longitudinal rupture of the body of the suspensory ligament originating from bifurcation (ca. 6-7 cm long), resulting in complete separation of the lateral branch together with lateral aspect of the body of suspensory ligament accompanied by multiple incomplete longitudinal splits and moderate to severe fraying of fibers of the lateral branch
2. Full thickness, transverse intersesamoidean ligament rupture with sagittal component affecting straight distal sesamoidean ligament- the tear is following the fracture line of the medial proximal sesamoid bone, the other transverse component courses above the lateral proximal sesamoid bone. Then the tear continues distally to merge with full-thickness, longitudinal rupture of the straight distal sesamoidean ligament
3. Complete luxation of the fetlock joint- MCIII bone completely perforated the skin, which resulted in complete exposure of the distal third of cannon bone
4. Severe, complete, transverse rupture of medial and lateral collateral ligaments of the fetlock
5. Severe, complete, transverse rupture, severe fraying of fibers, hemorrhage, multiple longitudinal, incomplete splits of the deep digital flexor tendon
6. Severe, incomplete, transverse rupture, severe fraying of fibers, hemorrhage, multiple longitudinal, incomplete splits of the superficial digital flexor tendon
7. Severe fraying of fibers of the lateral and medial short and cruciate ligaments
8. Severe fraying of fibers and incomplete transverse rupture of the lateral and medial collateral ligaments of proximal sesamoid bones
9. Moderate thickening of the lateral lobe of the superficial digital flexor tendon at the level of distal P1

#### C- MCII

1. Open, simple, complete, non-articular, oblique, displaced fracture of the MCII- fracture resulted in complete separation of the button of the splint bone

#### D- MCIII

1. Severe, biaxial palmar osteochondral disease with white, ellipsoidal subchondral bone discoloration (presumably necrotic bone/sequestrum) surrounded by blue rim (bruising) visible through the flattened cartilage overlying the condyles of distal MCIII- the cross section of the affected regions revealed yellow focus of presumably necrotic subchondral bone surrounded by dark blood vessels (neovascularization).
2. Moderate to severe, focal, blue subchondral bone discoloration visible through the cartilage of the dorsal aspect of the mid-sagittal ridge and along the abaxial margin of the medial condyle
3. Severe, multifocal, irregularly shaped, full thickness cartilage loss of the mid-sagittal ridge of the distal articular surface of MCIII
4. Severe, multifocal, irregularly shaped, full thickness cartilage loss of the abaxial margin of the medial condyle of the distal articular surface of MCIII
5. Mild to severe hemorrhage accompanied by soft tissue hypertrophy at the palmar aspect of the supracondylar region of MCIII
6. Mild to 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

#### E- P1

1. Chip fracture of the dorsal margin of the proximal articular surface of P1
2. Severe, biaxial, bony erosion with osteochondral fragmentation of the palmar aspect of the proximal articular surface of P1
3. Mild to moderate scoring lines of the proximal articular surface

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

Accession #

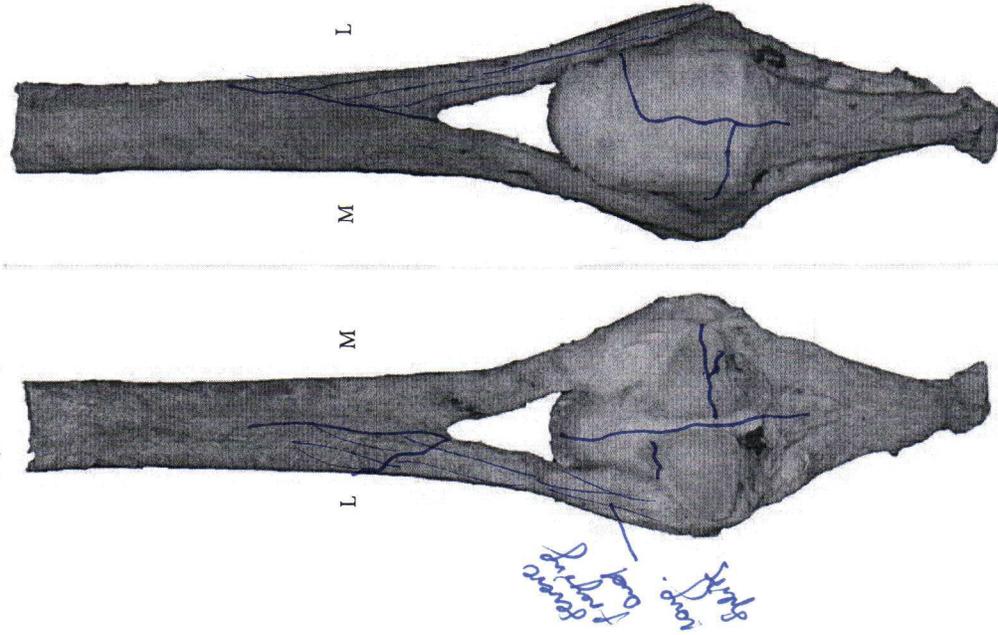
CC: MAS

Date: 3/25/19

Right Fetlock

Please circle affected leg

foreleg  
hindleg



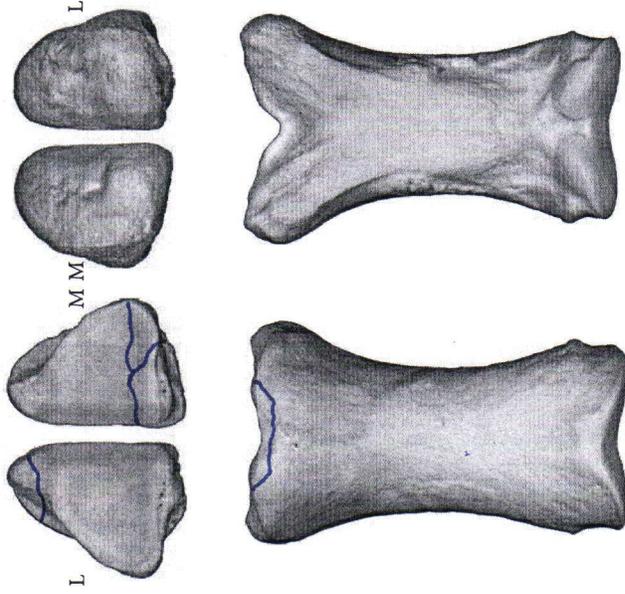
Susp. App. (dorsal)

Susp. App. (palmar/plantar)

Open wound?  Yes  No

Joint capsule intact? Yes  No

Joint luxated?  Yes  No



**Involved Structures**

SDF tendon:  Yes  No DDF tendon:  Yes  No

Suspensory ligament:  Yes  No

SL Medial branch

SL Lateral branch

SL Body

Intersesamoid ligament:  Yes  No

Longitudinal

Transverse

Distal Sesamoid ligaments (straight and/or oblique)  Yes  No

Collateral ligaments:  Yes  No

Collateral Sesamoid ligaments:  Yes  No

Cruciate and/or Short Sesamoid ligaments:  Yes  No

Accession #

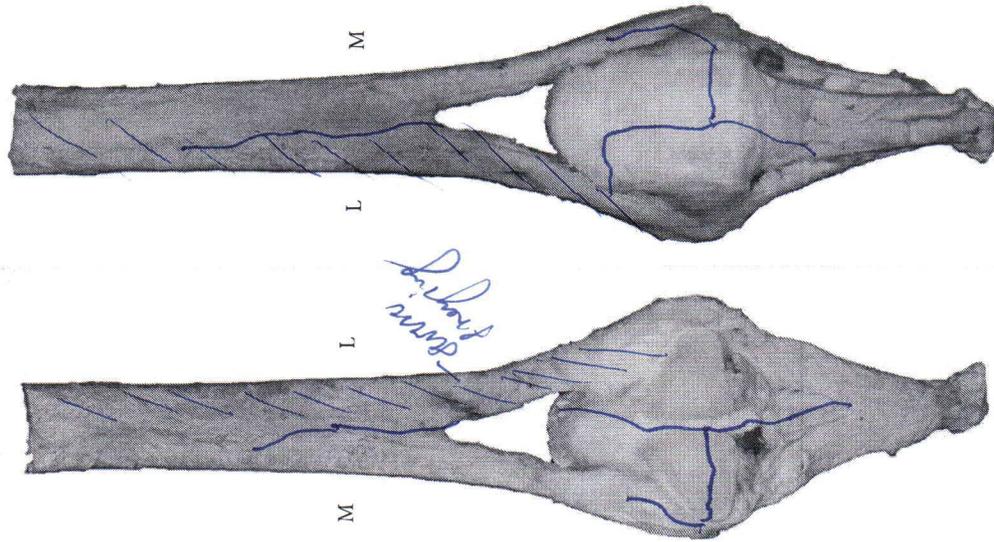
CC: MAS

Date: 3/15/19

Left Fetlock

Please circle affected leg

foreleg  
hindleg



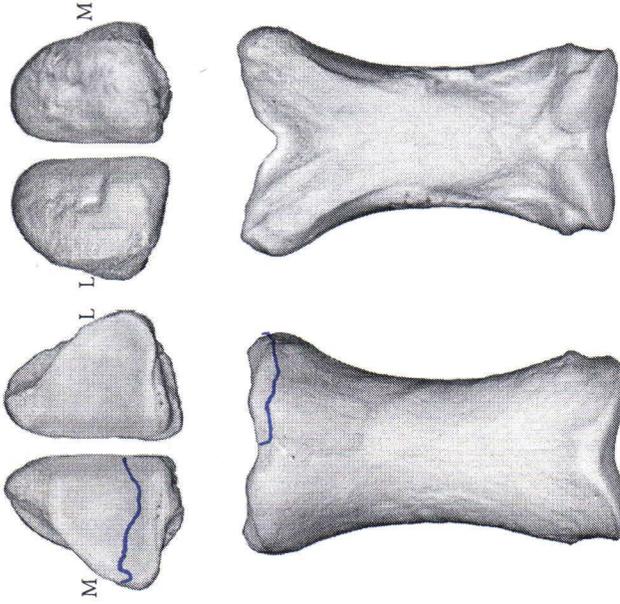
Susp. App. (dorsal)

Susp. App. (palmar/plantar)

Open wound?  Yes  No

Joint capsule intact? Yes  No

Joint luxated?  Yes  No



**Involved Structures**

SDF tendon:  Yes  No DDF tendon:  Yes  No

Suspensory ligament:  Yes  No

SL Medial branch

SL Lateral branch

SL Body

Intersesamoid ligament:  Yes  No

Longitudinal

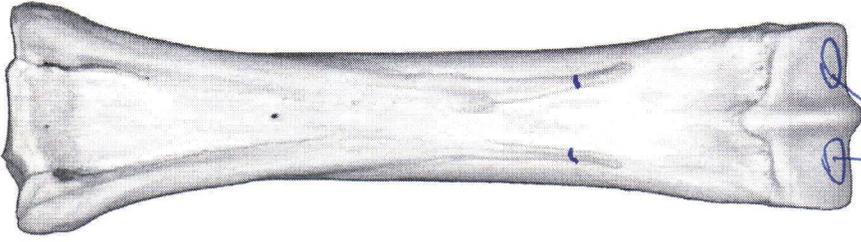
Transverse

Distal Sesamoid ligaments:  Yes  No (straight and/or oblique)

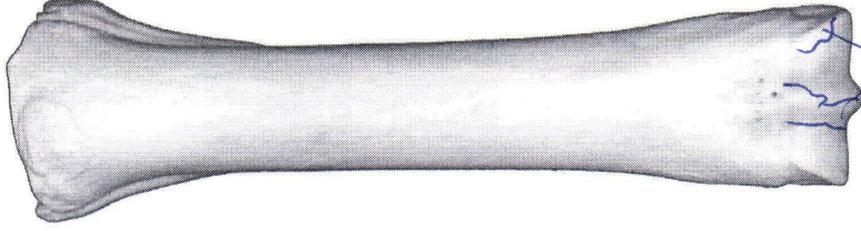
Collateral ligaments:  Yes  No

Collateral Sesamoid ligaments:  Yes  No

Cruciate and/or Short Sesamoid ligaments:  Yes  No



POD (ferme)



Volar notch

# Exercise History Report (Full)



**UCDAVIS**

**VETERINARY MEDICINE**

*J.D. Wheat Veterinary Orthopedic  
Research Laboratory*

**Mar-19-2019**

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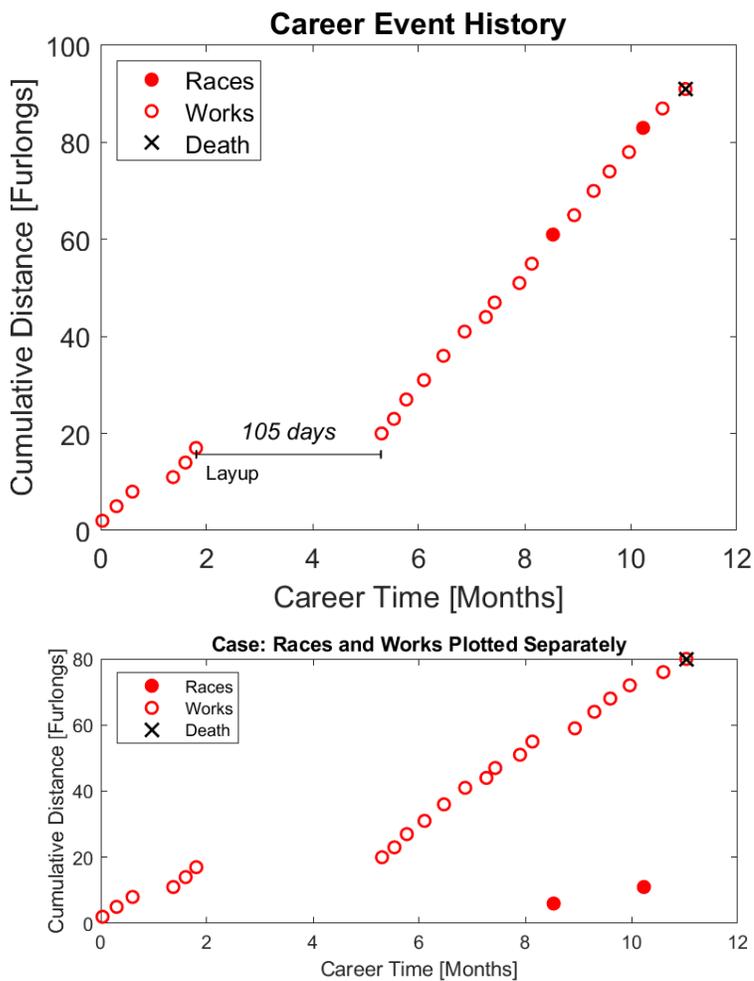
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## Part 1: Graphical Representation of Individual High-Speed Exercise Histories

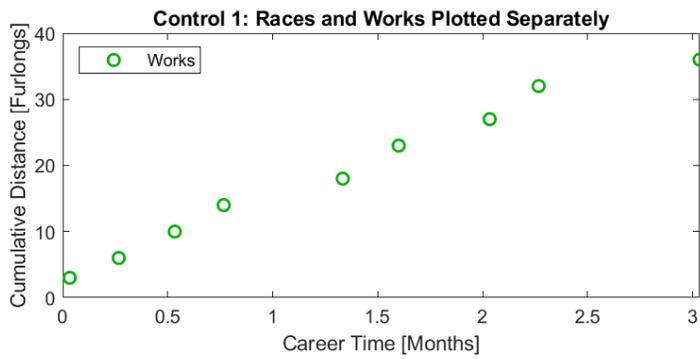
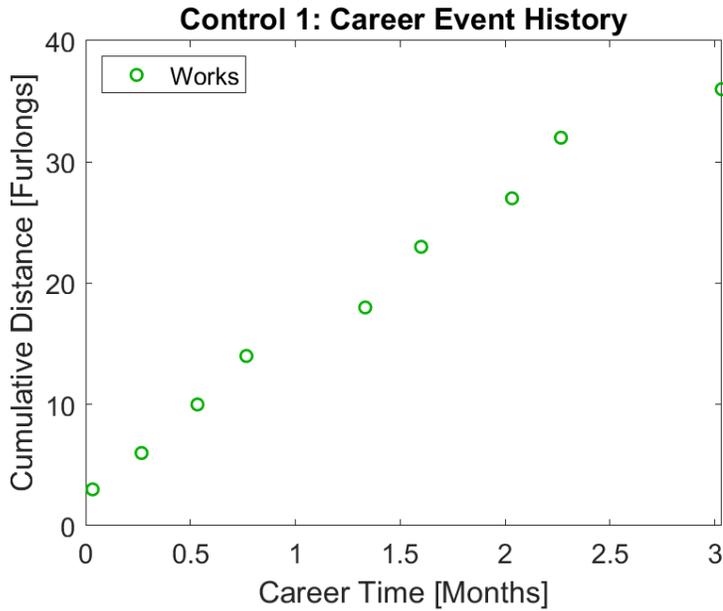
Races (filled circles), officially timed high-speed works (open circles), layups (line with endcaps, periods of time greater than 60 days in length without a race or timed work), and time of death (X) are illustrated over time (Career Time in months). With each event (race or work), the number of furlongs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

### Case Horse High Speed Exercise History

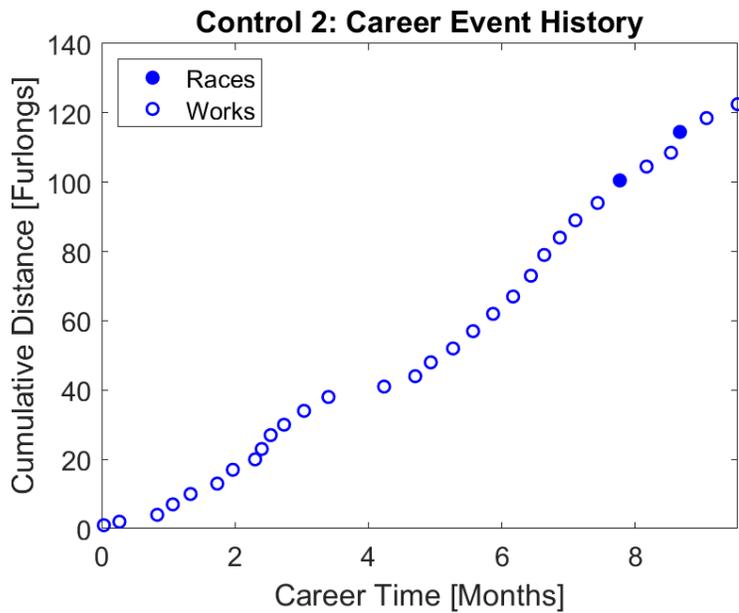


# Part 1: Graphical Representation of Individual High-Speed Exercise Histories

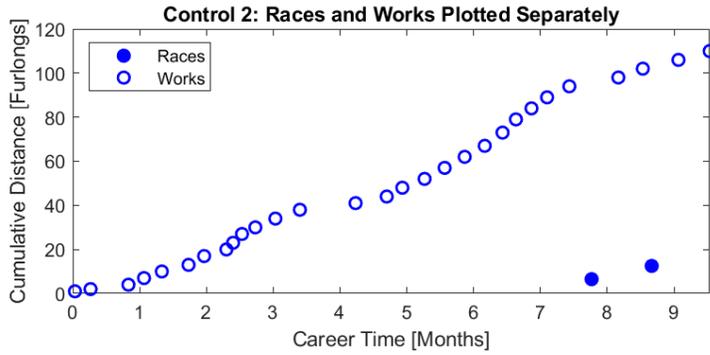
## Control 1 High Speed Exercise History



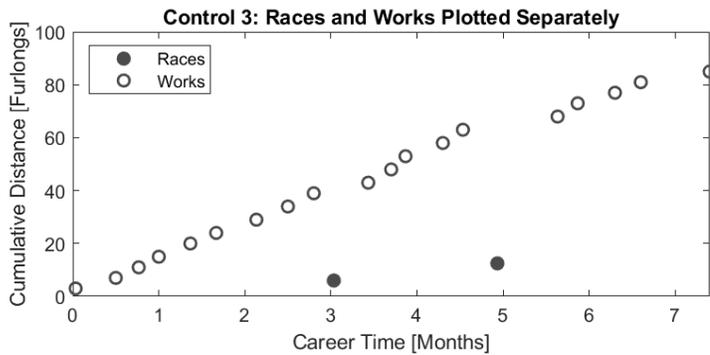
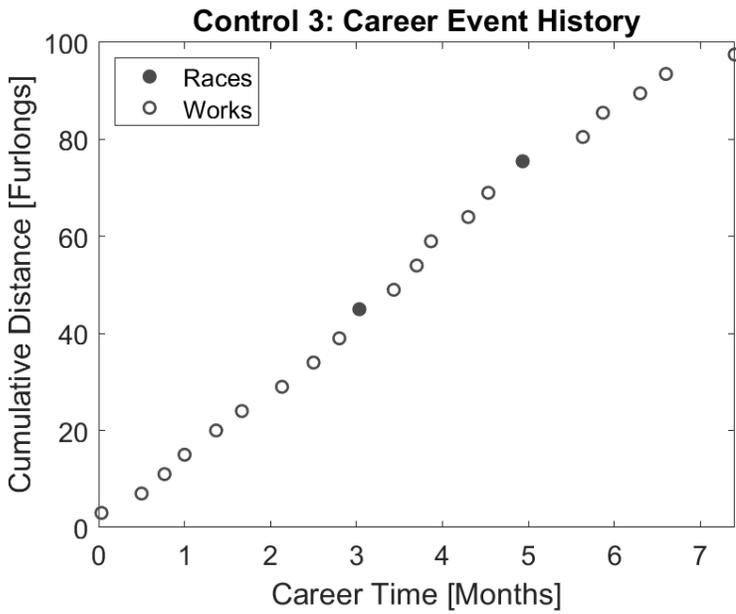
## Control 2 High Speed Exercise History



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

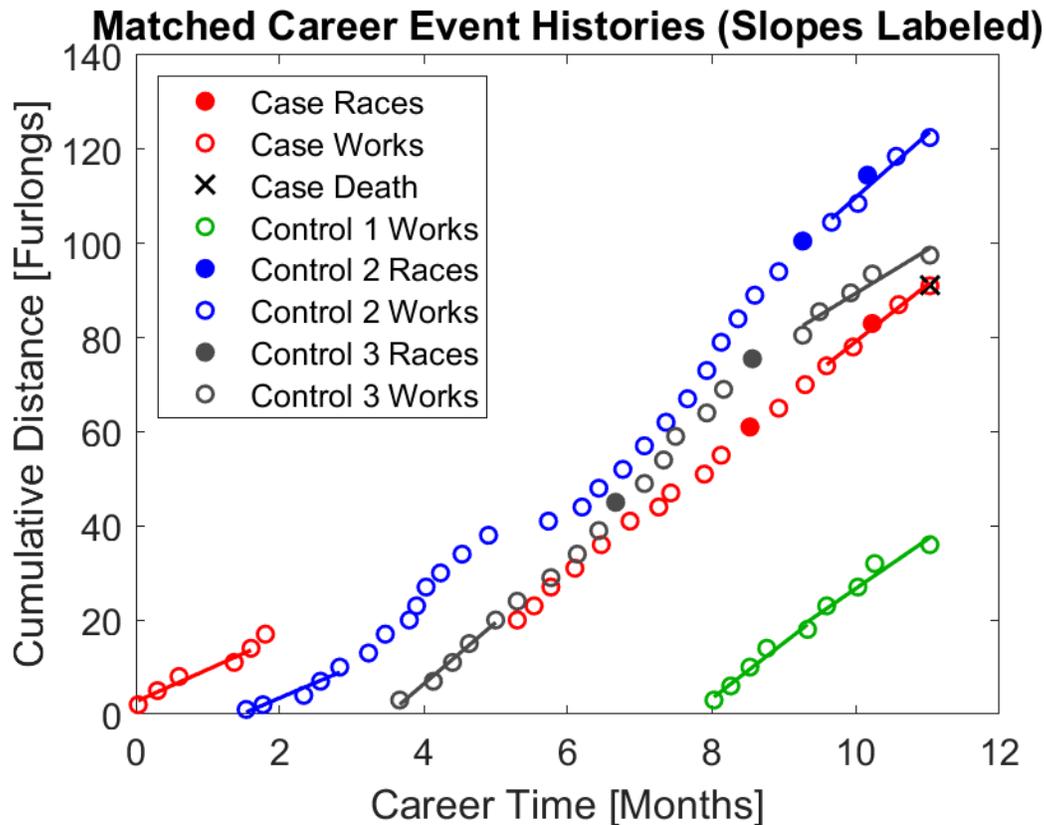


## Control 3 High Speed Exercise History



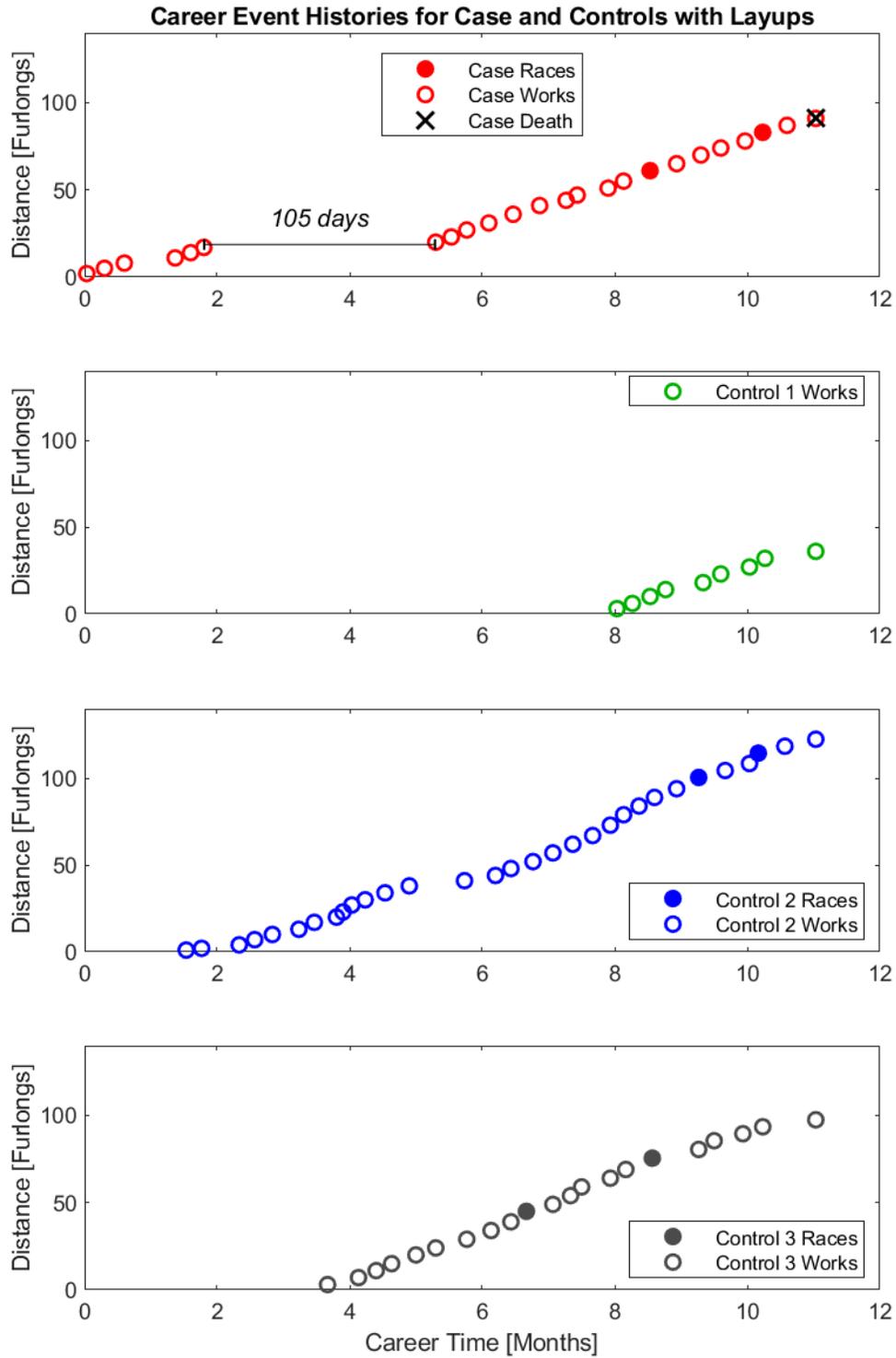
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## Part 2: Case and Control Horses Plotted Together

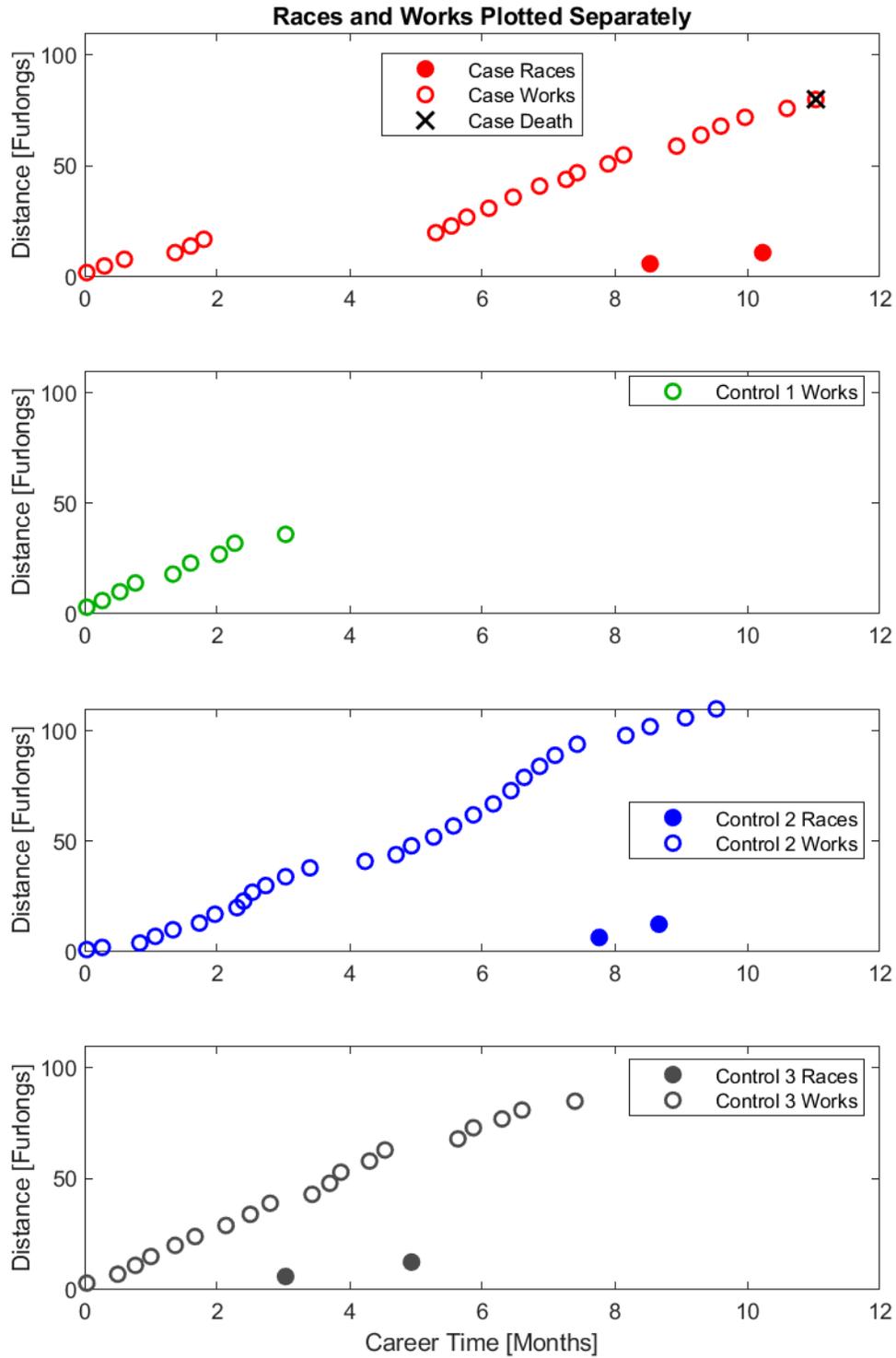


Case and Control Horses' exercise event histories are plotted on the same axes. The plots are aligned by the match date (equal to the date of death of Case Horse). Lines segments indicate specific rates of exercise at the start of career, end of career (for Case Horse), and match date (for Control Horses).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



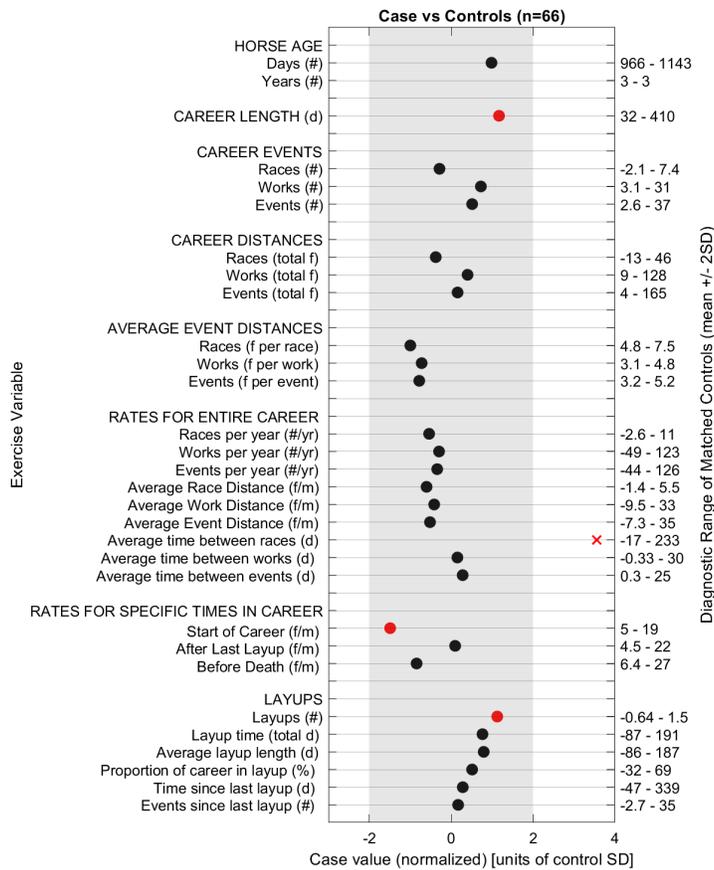
## Part 2: Case and Control Horses Plotted Together



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

Date	Race/Work	Furlongs	Track	Surface	Track Cond.	Time	Age/Sex	Race Class	Earnings	Finish
3/14/2019	W	4.0	SA	Dirt	Fast	:53.00				
3/1/2019	W	4.0	SA	Dirt	Fast	:50.00				
2/18/2019	R	5.0	SA	Dirt	Fast		3/F	Mcl20000	1000	5
2/10/2019	W	4.0	SA	Dirt	Fast	:49.80				
1/30/2019	W	4.0	SA	Dirt	Fast	:48.80				
1/21/2019	W	5.0	SA	Dirt	Fast	01:02.4				
1/10/2019	W	4.0	SA	Dirt	Fast	:50.40				
12/29/2018	R	6.0	SA	Dirt	Fast		2/F	(S) Mcl50000 (50-40)	345	9
12/17/2018	W	4.0	SA	Dirt	Fast	:50.80				
12/10/2018	W	4.0	SA	Dirt	Fast	:50.00				
11/26/2018	W	3.0	SA	Dirt	Fast	:36.40				
11/21/2018	W	3.0	SA	Dirt	Fast	:36.20				
11/9/2018	W	5.0	SA	Dirt	Fast	01:05.2				
10/28/2018	W	5.0	SA	Dirt	Fast	01:05.8				
10/17/2018	W	4.0	SA	Dirt	Fast	:50.40				
10/7/2018	W	4.0	SA	Dirt	Fast	:50.80				
9/30/2018	W	3.0	SA	Dirt	Fast	:37.00				
9/23/2018	W	3.0	SA	Dirt	Fast	:38.00				
6/10/2018	W	3.0	SA	Dirt	Fast	:39.00				
6/4/2018	W	3.0	SA	Dirt	Fast	:36.80				
5/28/2018	W	3.0	SA	Dirt	Fast	:37.40				
5/5/2018	W	3.0	SA	Dirt	Fast	:36.40				
4/26/2018	W	3.0	SA	Dirt	Fast	:37.80				
4/18/2018	W	2.0	SA	Dirt	Fast	:24.00				

## Part 4: Comparison of Exercise Variables between Case Horse and 66 Control Horses (3 year old, female, Thoroughbred)

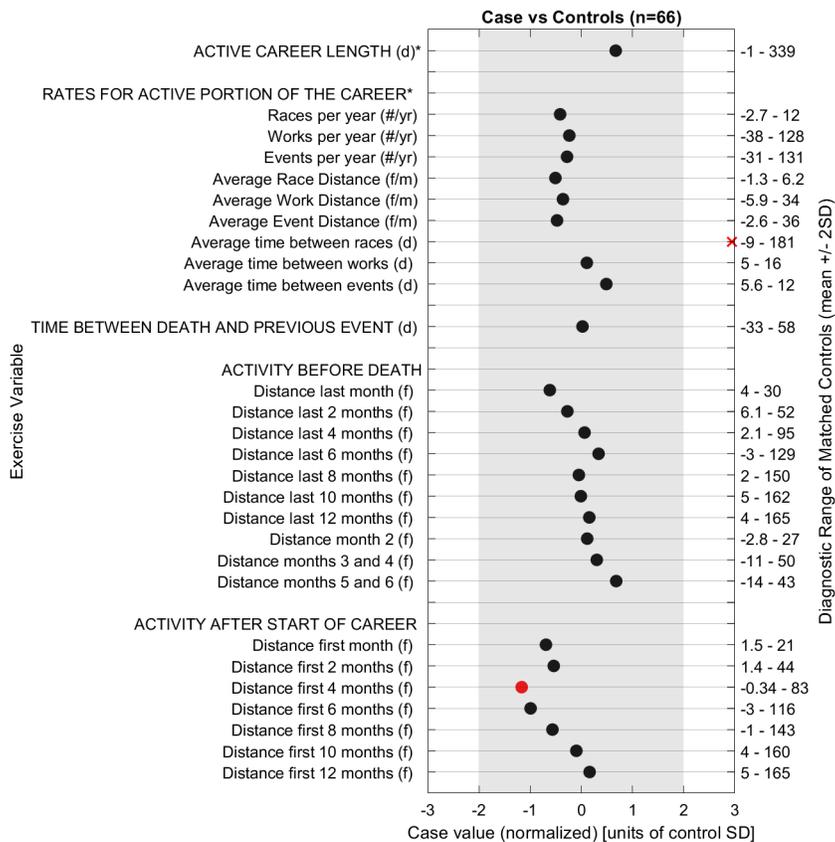


Case Horse values are indicated by black or red symbols: circles indicate values considered normal for 95% of 3 year old, female, Thoroughbreds (n=66) (gray region) (black and red indicate within 1 and 2 SD, respectively, of mean value of controls), X's indicate values outside of the normal range. Two 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 66 Control Horses (3 year old, female, Thoroughbred)



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