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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 3/19/2019 9:18:07AM

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: 02/17/2019 **Date Received:** 02/19/2019

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	ARTHUR, RICK	[redacted]	[redacted]	Sierra Madre	CA	91024
Attending Vet	BROKKEN, TODD	[redacted]	[redacted]	Sierra Madre	CA	91025
Trainer	PERIBAN, JORGE	[redacted]	[redacted]	Downey	CA	90241

CHRB - Related Information

Horse's Name:	[redacted]	Human Injury?	No
Tattoo:	[redacted]	Death Related to:	Training
Age:	4.00 Years	Track Surface:	Dirt
Gender:	Male	Location on Track:	Finish Line
Taxonomy:	Thoroughbred Horse	Insured?	Y

Medications: Dormosedan (Detomidine);

Laboratory Findings/Diagnosis

A 4 year old [redacted] Thoroughbred [redacted] [redacted]) submitted with history of right front biaxial, comminuted sesamoid fracture during training

Catastrophic breakdown of right front fetlock with

RIGHT FORELIMB

ACUTE CHANGES
1. Fracture of the proximal sesamoid bones
a) Closed, simple, articular, oblique, displaced, apical fracture of the lateral proximal sesamoid bone with axial avulsion fracture component
b) Closed, articular, transverse, comminuted, displaced, basilar fracture of the medial proximal sesamoid bone with probable predisposing lesion

2. Suspensory ligament: complete rupture of the lateral branch and medial extensor branch, severe hemorrhage, severe fraying of fibers of both medial and lateral branches, which progresses proximally as incomplete longitudinal split up to proximal third of the body
3. Full thickness, transverse rupture of the intersesamoidean ligament
4. Marked fraying of fibers and hemorrhage of the deep digital flexor tendon
5. Severe fraying of fibers of the lateral and medial short and cruciate ligaments
6. Moderate fraying of fibers and incomplete transverse rupture of the lateral and medial collateral ligaments of proximal sesamoid bones
7. Severe, longitudinal, full-thickness split, fraying of fibers and hemorrhage of the straight distal sesamoidean ligament
8. Severe, deep, biaxial, erosions of the dorsal and palmar aspect of the proximal articular surface of P1
9. Moderate to severe scoring of the distal articular surface of MCIII

CHRONIC CHANGES:
1. Mild to moderate dorsal metacarpal disease with new bone formation resulting in convex appearance of the dorsal cortex, periosteum congestion, thickening
2. Mild to moderate exostosis ('blind splint') of the MCII accompanied by expansion of the palmar aspect of MCIII

LEFT FORELIMB

CHRONIC CHANGES
1. Severe dorsal metacarpal disease with woven bone formation, multiple sagittal stress fractures affecting expanded dorsal cortex, congestion and thickening of the periosteum

Other findings:
- Pulmonary congestion and edema (euthanasia artifact)
- Splenomegaly (euthanasia artifact)

Case Summary

03/19/19: Case was re-opened due to minor corrections (typographical errors). Further testing is concluded.

02/21/19: The most important findings in the right forelimb are biaxial fractures of the proximal sesamoid bones and suspensory ligament failure. The latter injuries resulted in loss of support of the fetlock joint in the right forelimb. The aforementioned fractures may be related to the focal region of subtle discoloration and bone porosity/osteopenic focus associated with the fracture surfaces in the medial proximal sesamoid bone. However, changes of similar nature could not be located in the proximal sesamoid bones in contralateral limb. Additional findings include bilateral dorsal metacarpal disease, significantly more advanced in the left, intact forelimb, where multiple stress fractures affecting the expanded dorsal cortex are present.

Further tesiting is concluded.

02/19/19 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

RF biaxial, comminuted Sesamoid fx's disarticulated-horse was working.

Gross Observations

Necropsy of a 4 year old [redacted] Thoroughbred [redacted]), 545 kg, with tattoo# [redacted] is commenced at 10:30 am, February 19, 2019. The carcass is in good nutritional condition, with appropriate musculature development, good deposits of adipose tissue, and in moderate to severe post-mortem decomposition. 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). On the left kidney, there are multifocal to coalescing, white/grey, irregular areas (app. 2 cm x 4 cm) of capsular thickening (presumably interstitial fibrosis). The stomach contains green, soft roughage and grain particles. 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:

RIGHT FRONT

A- PROXIMAL SESAMOID BONES
1. Fracture of the proximal sesamoid bones
a) Closed, simple, articular, slightly oblique, displaced, apical fracture of the lateral proximal sesamoid bone with additional axial component avulsed with intersesamoidean ligament
b) Closed, articular, transverse, comminuted, displaced, basilar fracture of the medial proximal sesamoid bone with probable predisposing lesion – the distal basilar fragment is divided into two roughly equal fragments in sagittal plane.
A possible region of increased porosity is present at the abaxial aspect of the articular surface on both opposing fracture surfaces of the medial proximal sesamoid bone. The fracture line propagates through a subchondral focus of very subtle brown discoloration surrounded by highly compacted trabecular bone (sclerosis) and adjacent to the cartilage of the articular surface of medial proximal sesamoid bone. The subchondral bone of the lateral proximal sesamoid bone and the trabecular bone adjacent to the abaxial surface/lateral suspensory branch insertion appear to be highly compacted (sclerotic) on both opposing surfaces of the fracture.
For better visualization of described fractures, please see attached pictures and drawings.
2. Moderate, biaxial apical modeling with irregular bony outgrowth
3. Mild scoring of the articular surfaces of the proximal sesamoid bones

B- SOFT TISSUES
1. Full thickness, transverse intersesamoidean ligament rupture with very short sagittal component affecting straight distal sesamoidean ligament- 'S' shaped, the tear is following the fracture lines of the proximal sesamoid bones
2. Suspensory ligament failure with complete trasnverse rupture of the lateral branch and medial extensor branch, severe hemorrhage, severe fraying of fibers of both medial and lateral branches, which progresses proximally as incomplete longitudinal split up to proximal third of the suspensory body (lateral aspect). There is also severe, focal hemorrhage visible on the cross section of the proximal third of suspensory body ('high suspensory desmitis')
3. Marked fraying and hemorrhage of fibers of the dorsal surface of the deep digital flexor tendon at the level of the fetlock
4. Moderate fraying of fibers of the lateral and medial short and cruciate ligaments
5. Moderate fraying of fibers and incomplete longitudinal rupture of the collateral ligaments of the proximal sesamoid bones
6. Severe, longitudinal, short (app. 2-3 cm), full-thickness split, fraying of fibers and hemorrhage of the straight distal sesamoidean ligament
7. Moderate to severe proliferative synovitis of the fetlock joint

C- MCIII
1. Mild to moderate dorsal metacarpal disease with new bone formation resulting in convex appearance of the dorsal cortex, periosteum congestion, thickening. The periosteum is strongly adhered to the cortical bone. The cross section at the level of the mid-shaft reveals the cortical bone expansion (new bone layer is app. 2-3 mm thick). The base of the new bone rim is surrounded by the multifocal, red petechiae.
2. Mild to moderate exostosis ('blind splint') of MCII at the level of the mid-shaft accompanied by expansion of the palmar aspect of MCIII- the cross section at the level of the widest part of the exostosis reveals the rim of the new bone on the palmar aspect of MCIII, which appears to fuse with the medial splint bone.
*For better visualization of changes described in points 1 and 2, please refer to attached pictures of the cross sections.
3. Moderate to severe scoring of the distal articular surface of MCIII
4. Moderate, focal, full thickness cartilage loss along the dorsolateral edge of the articular surface of the medial condyle of distal MCIII
5. Moderate, focal, full thickness, irregularly shaped cartilage loss on the dorsal aspect of the mid-sagittal ridge of the distal articular surface of MCIII
6. Severe hemorrhage accompanied by soft tissue hypertrophy at the palmar aspect of the supracondylar region of MCIII
7. 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. Moderate to severe scoring lines of the proximal articular surface
2. Severe, biaxial, deep bony erosion of the dorsal and palmar aspect of the proximal articular surface of P1

LEFT FRONT

A- MCIII
1. Severe dorsal metacarpal disease with woven bone formation, multiple sagittal stress fractures affecting expanded dorsal cortex, congestion and thickening of the periosteum- the cross section at the level of mid diaphysis revealed app. 3 mm thick rim of the new, consolidated bone. Its base is surrounded by multifocal, dark red petechiae. The expanded cortex has multiple, short, sagittal stress fractures, which are also surrounded by red petechiae. The outter layer of the dorsal cortex is presumably a woven bone (app. 0.5-1 mm thick, pink, relatively soft), which formed due to presence of described sagittal stress fractures.
2. Mild transverse ridge arthrosis with cartilage pitting adjacent to the parasagittal grooves
3. Mild to moderate expansion of the palmar aspect of the MCIII- the cross section at the level of the mid-shaft revealed the presence of the new, consolidated bone formation.

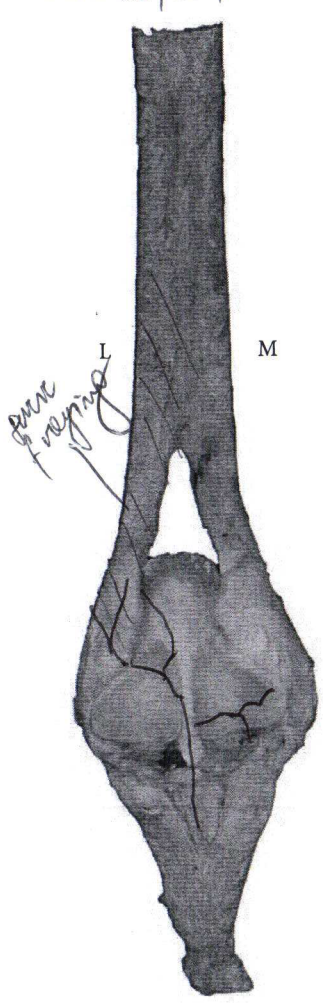
B- P1
1. Mild lipping of the dorsal aspect of the proximal articular surface of P1
2. Moderate, focal cartilage ulceration along the dorsomedial margin (app. 2 cm long) of the proximal articular surface of P1.

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

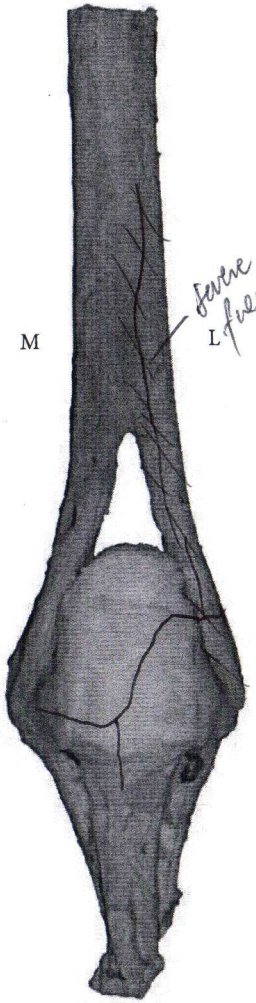
Accession # [redacted]
CC: MAS
Date: 02/19/19

Right Fetlock

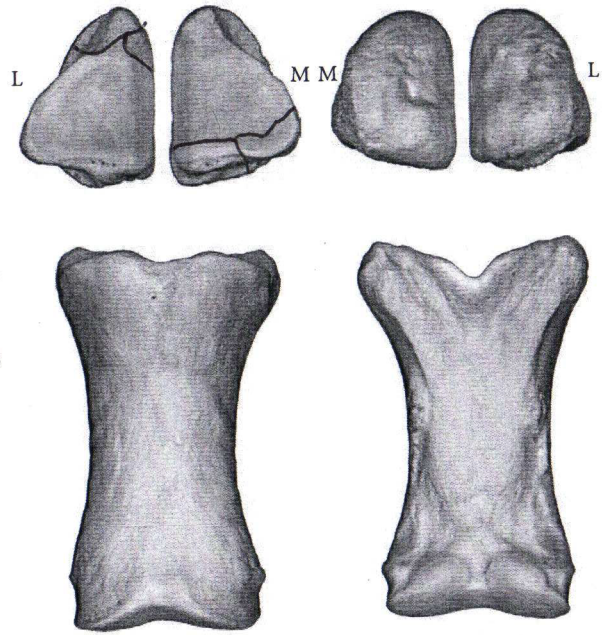
Please circle affected leg
foreleg
hindleg

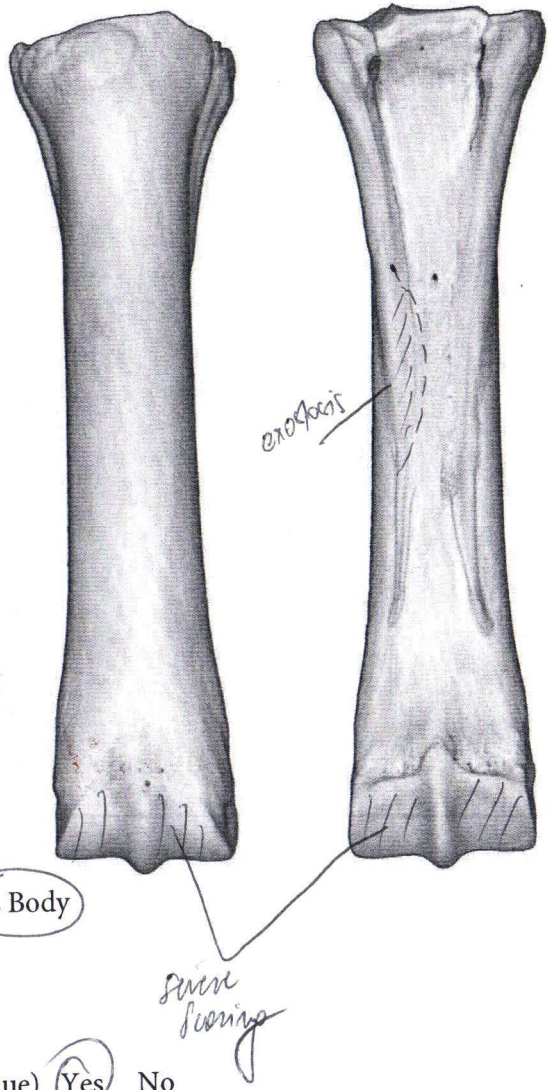


Susp. App. (dorsal)



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)

Intersesamoidean ligament: (Yes) No
(Longitudinal) (Transverse)

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

Collateral ligaments: (Yes) No

Collateral Sesamoidean Ligaments: (Yes) No

Cruciate and/or Short Sesamoidean Ligaments (Yes) No

Exercise History Report (Full)

[redacted]

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).

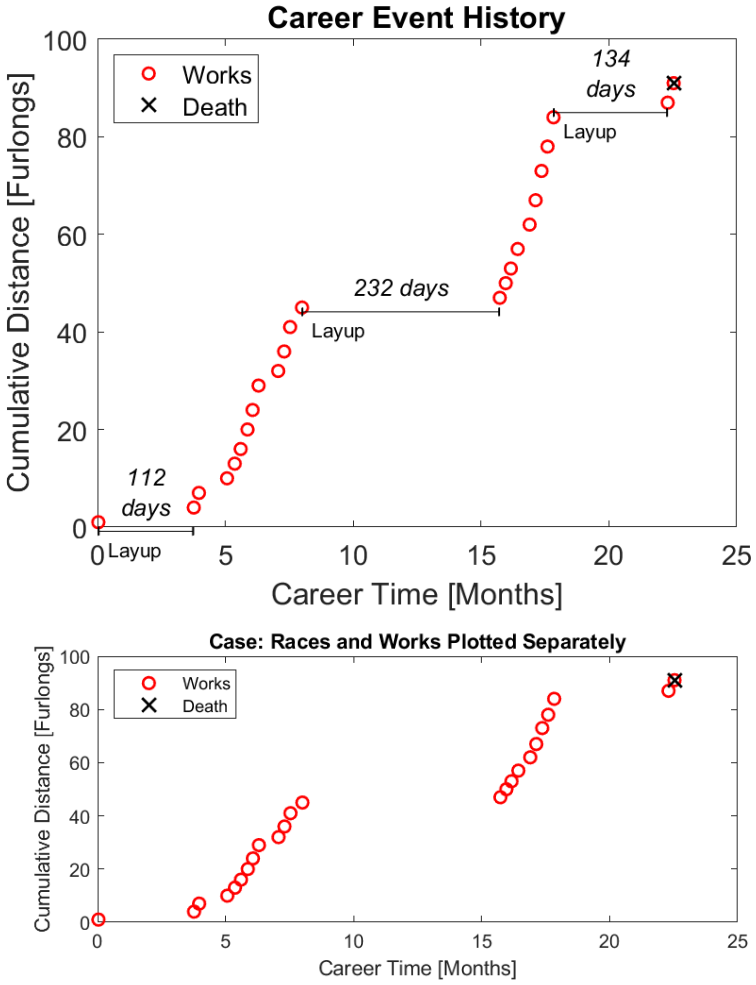
Part 4 is a chart that allows comparison of exercise variables between Case Horse and other racehorses of similar age, sex, and breed that did not die at the same time from an injury. Similar to comparing the results of a blood test to a range of normal values, the values for Case Horse can be assessed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

Table of Contents

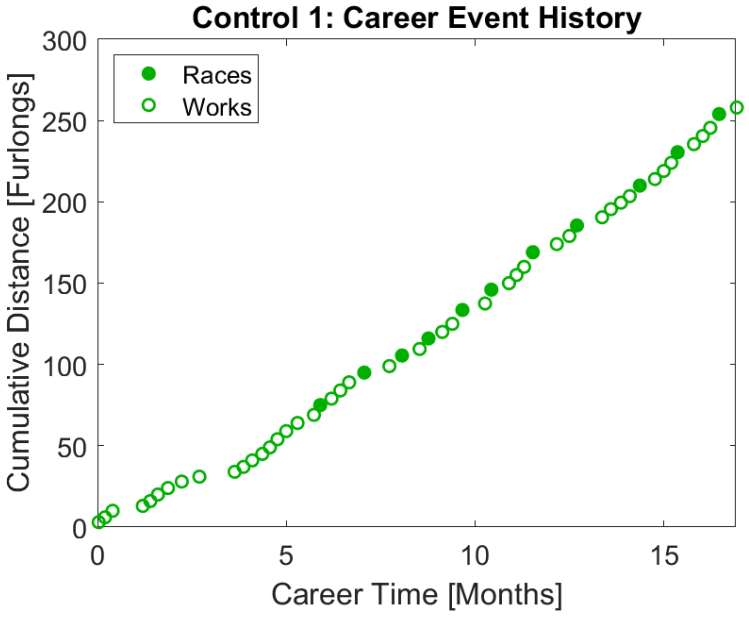
Part 1: Graphical Representation of Individual High-Speed Exercise Histories

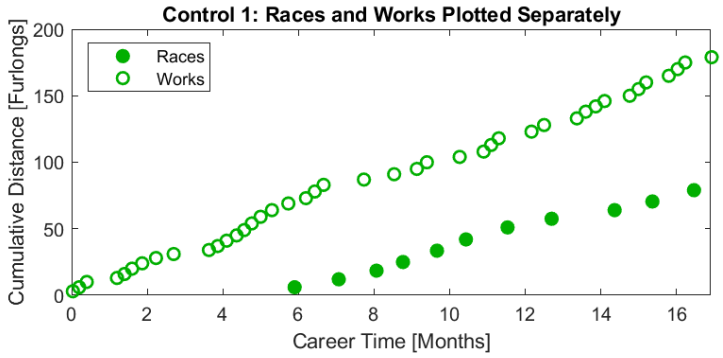
Races (filled circles), officially timed high-speed works (open circles), layups (line with endcaps, periods of time greater than 60 days in length without a race or timed work), and time of death (X) are illustrated over time (Career Time in months). With each event (race or work), the number of furlongs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

Case Horse High Speed Exercise History

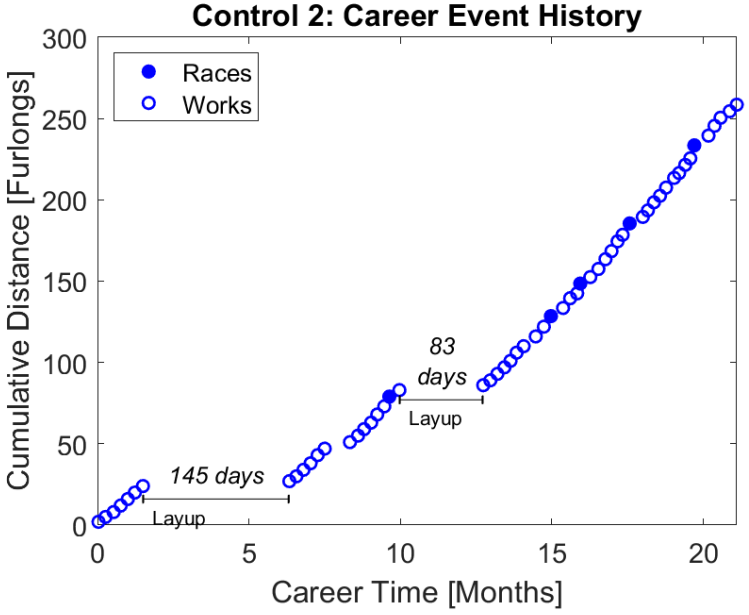


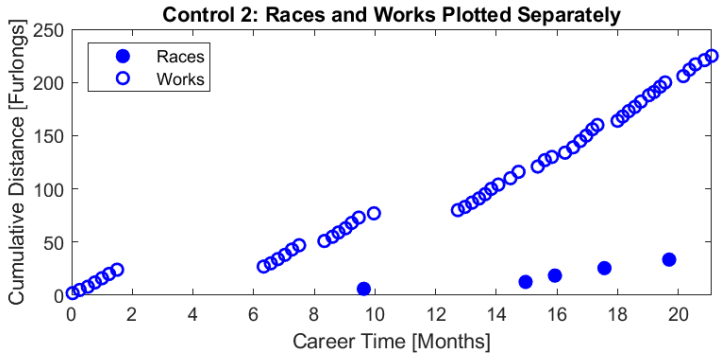
Control 1 High Speed Exercise History



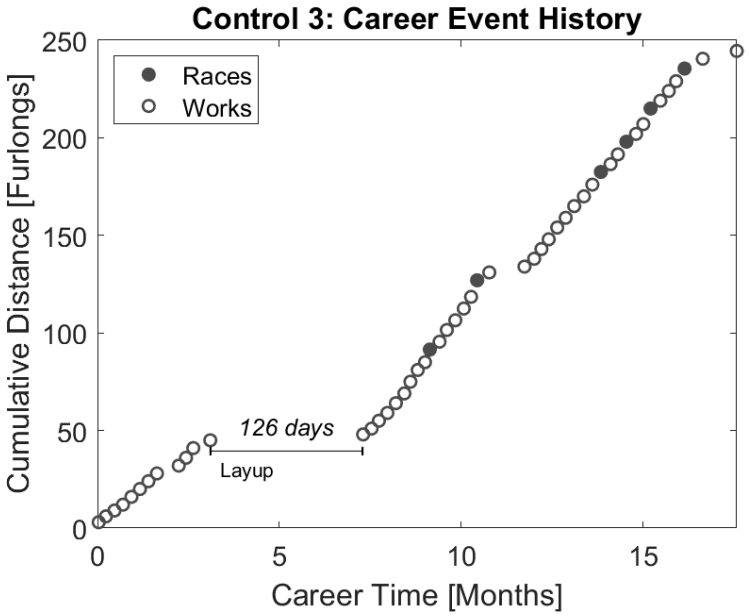


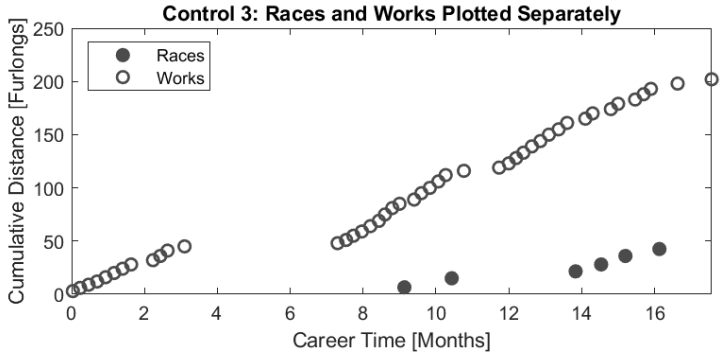
Control 2 High Speed Exercise History



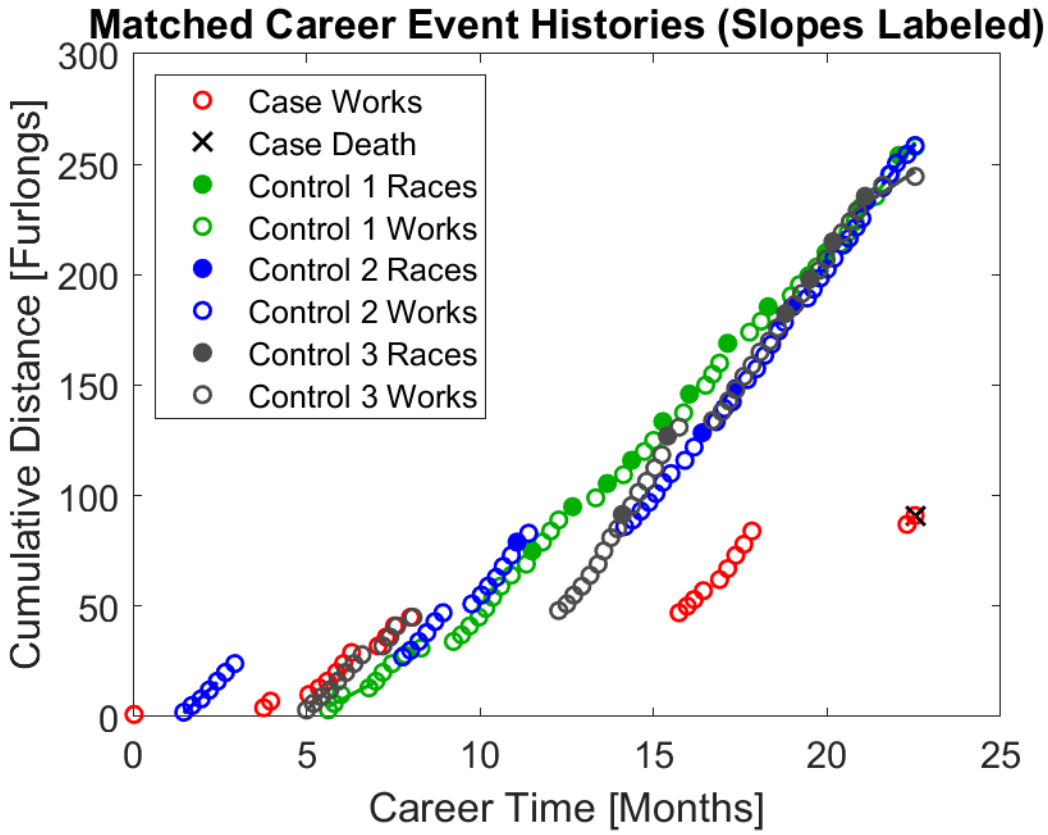


Control 3 High Speed Exercise History

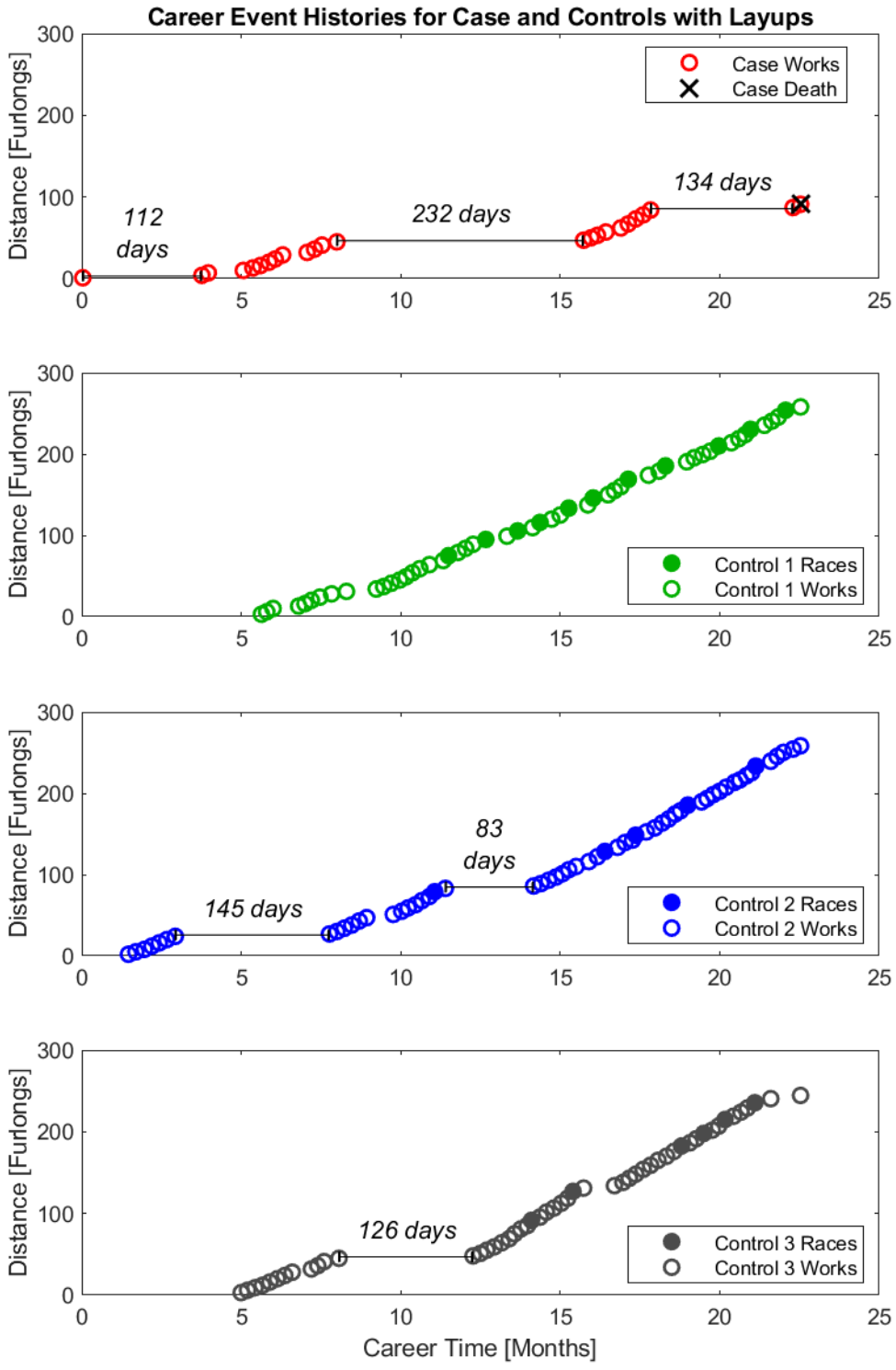


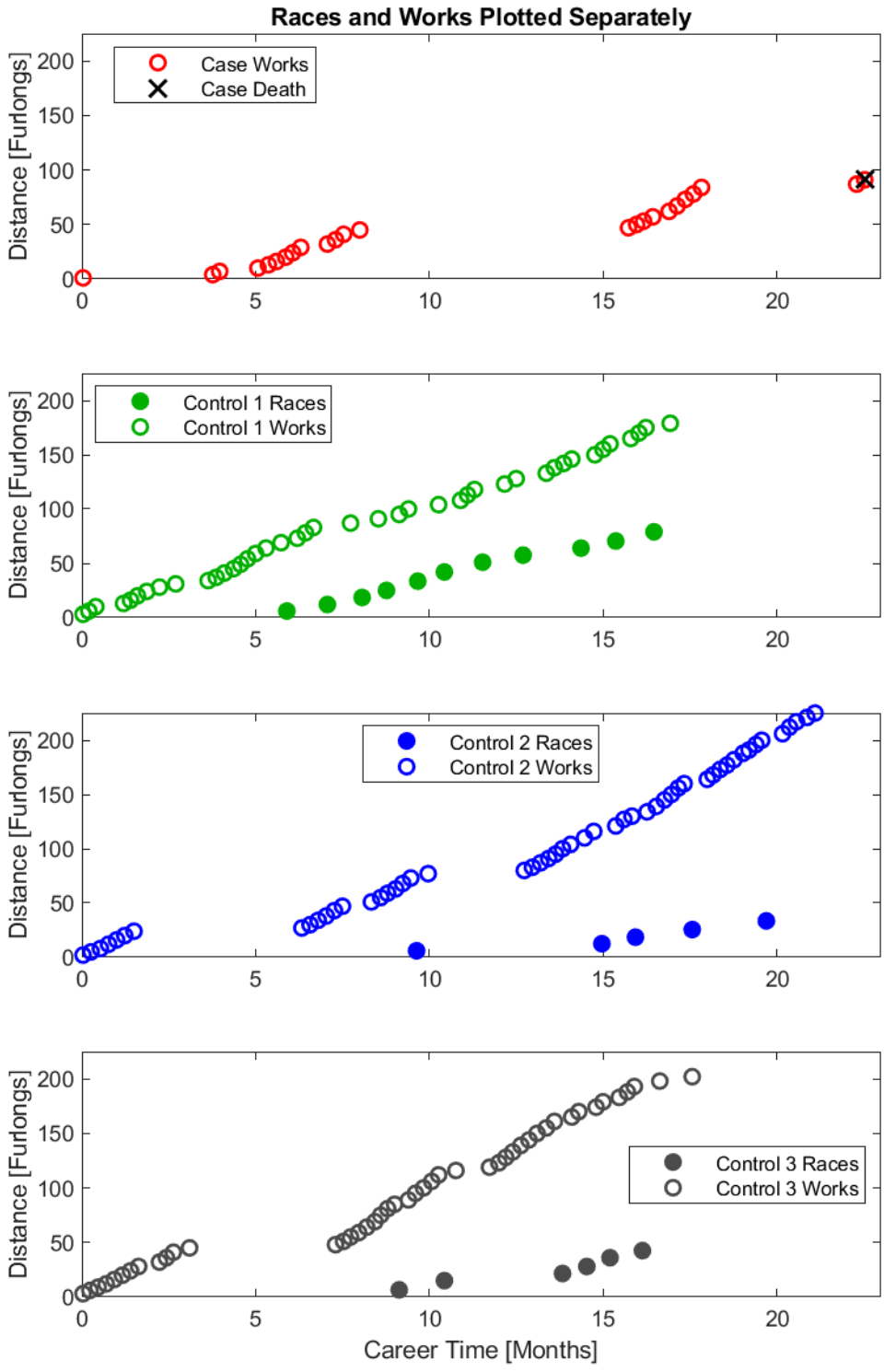


Part 2: Case and Control Horses Plotted Together



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.

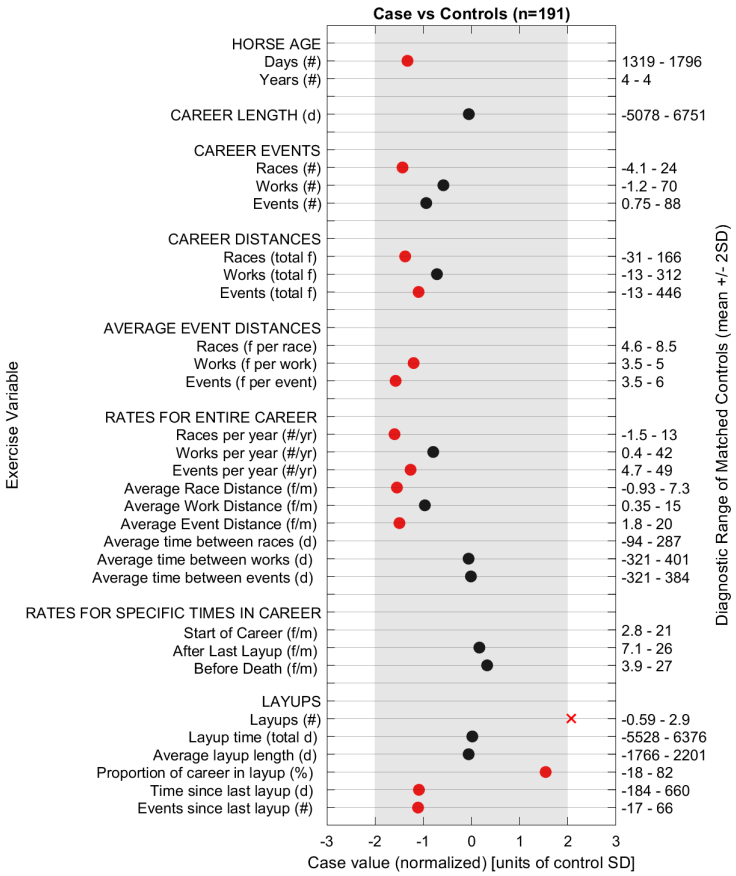

Career Event Histories for Case and Controls with Layups
Distance [Furlongs]
Career Time [Months]
Case Works
Case Death
112 days
232 days
134 days
Control 1 Races
Control 1 Works
145 days
83 days
Control 2 Races
Control 2 Works
126 days
Control 3 Races
Control 3 Works


Races and Works Plotted Separately
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
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
2/17/2019	W	4.0	SA	Dirt	Fast	:47.00				
2/10/2019	W	3.0	SA	Dirt	Fast	:37.00				
9/29/2018	W	6.0	SLR	Dirt	Fast	01:15.8				
9/22/2018	W	5.0	SLR	Dirt	Fast	01:03.2				
9/15/2018	W	6.0	SLR	Dirt	Fast	01:12.2				
9/8/2018	W	5.0	SLR	Dirt	Fast	01:00.4				
9/1/2018	W	5.0	SLR	Dirt	Fast	01:02.2				
8/18/2018	W	4.0	SLR	Dirt	Fast	:49.60				
8/10/2018	W	3.0	SLR	Dirt	Fast	:35.20				
8/4/2018	W	3.0	SLR	Dirt	Fast	:36.00				
7/28/2018	W	2.0	SLR	Dirt	Fast	:23.00				
12/8/2017	W	4.0	SA	Dirt	Fast	:50.40				
11/24/2017	W	5.0	DMR	Dirt	Fast	01:01.2				
11/17/2017	W	4.0	DMR	Dirt	Fast	:48.20				
11/10/2017	W	3.0	DMR	Dirt	Fast	:35.80				
10/18/2017	W	5.0	SA	Dirt	Fast	01:04.0				
10/11/2017	W	4.0	SA	Dirt	Fast	:51.20				
10/5/2017	W	4.0	SA	Dirt	Fast	:50.60				
9/27/2017	W	3.0	SA	Dirt	Fast	:39.00				
9/20/2017	W	3.0	SA	Dirt	Fast	:37.00				
9/11/2017	W	3.0	SA	Dirt	Fast	:39.00				
8/9/2017	W	3.0	DMR	Dirt	Fast	:37.00				
8/3/2017	W	3.0	DMR	Dirt	Fast	:36.20				
4/13/2017	W	1.0	LA	Dirt	Fast	:12.40				

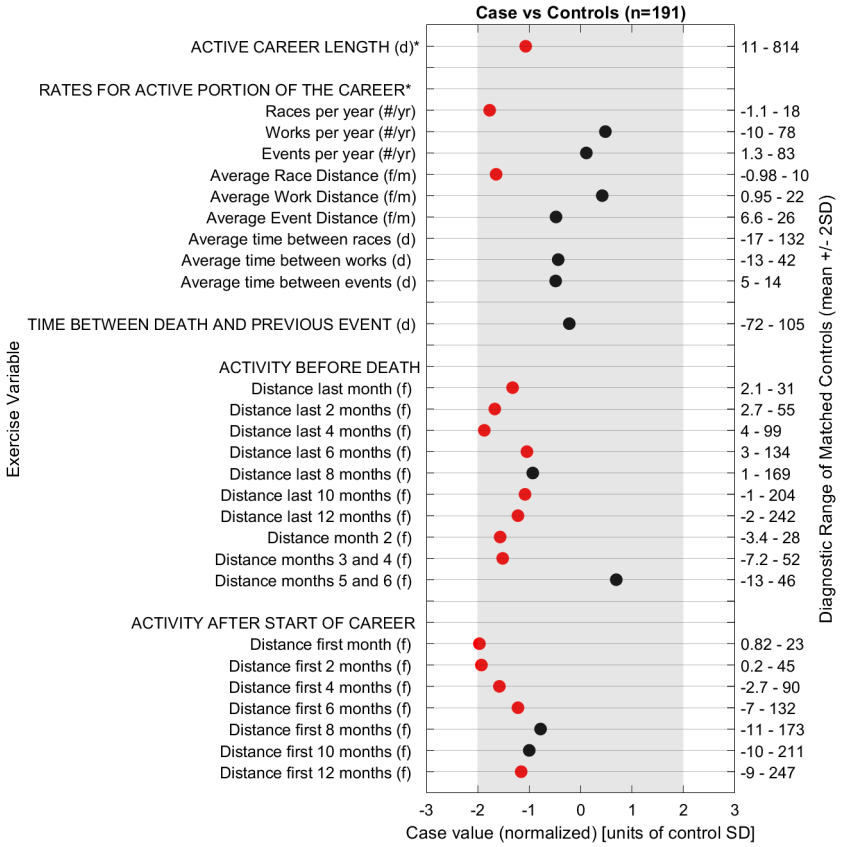
Part 4: Comparison of Exercise Variables between Case Horse and 191 Control Horses (4 year old, male, Thoroughbred)



Case Horse values are indicated by black or red symbols: circles indicate values considered normal for 95% of 4 year old, male, Thoroughbreds (n=191) (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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