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UCDAVIS 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 3/18/2019 5:00:00PM

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: 02/25/2019 **Date Received:** 02/25/2019

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	DOWD, JOSEPH	[redacted]	[redacted]	Arcadia	CA	91066
Trainer	Glatt, Mark	[redacted]	[redacted]	Monrovia	CA	91016

CHRB - Related Information

Horse's Name:	[redacted]	Human Injury?	
Tattoo:	[redacted]	Death Related to:	Training
Age:	3.00 Years	Track Surface:	Dirt
Gender:	Neutered Male	Location on Track:	1/4 Pole
Taxonomy:	Thoroughbred Horse	Insured?	

Medications: Acepromazine; Pentobarbital; Rompun (Xylazine);

Laboratory Findings/Diagnosis

A 3 year old [redacted] Thoroughbred [redacted] [redacted] submitted with history of left front closed, comminuted, biaxial proximal sesamoid bone fracture with suspensory apparatus failure

Catastrophic breakdown of left front fetlock with

LEFT FORELIMB

ACUTE CHANGES
1. Fracture of the proximal sesamoid bones
a) Closed, comminuted, articular, transverse, displaced, mid-body/basilar, fracture of the lateral proximal sesamoid bone with axial and abaxial avulsion fracture component
b) Closed, comminuted, articular, transverse, displaced, mid-body fracture of the medial proximal sesamoid bone with axial and abaxial avulsion fracture component and probable predisposing lesion identified in abaxial aspect of the distal fracture fragment

2. Chip fracture of the abaxial margin of the dorsal aspect of the lateral condyle of the distal articular surface of MCIII
3. Severe, full-thickness, complete, transverse rupture of the deep digital flexor tendon
4. Severe, full thickness, incomplete, transverse rupture of the superficial digital flexor tendon
5. Severe, full thickness, transverse and longitudinal rupture of the intersesamoidean ligament
6. Severe fraying of fibers of the lateral and medial short and cruciate ligaments
7. Severe, longitudinal, full-thickness split, fraying of fibers and hemorrhage of the straight distal sesamoidean ligament
8. Moderate fraying of fibers and incomplete transverse rupture of the lateral and medial collateral ligaments of proximal sesamoid bones
9. Severe scoring and multifocal, irregularly shaped cartilage ulceration of the distal articular surface of MCIII
10. Moderate to severe, deep, biaxial, erosions of the dorsal and palmar aspect of the proximal articular surface of P1

RIGHT FORELIMB

CHRONIC CHANGES
1. Moderate, focal, blue subchondral bone discoloration visible through the slightly depressed cartilage of the abaxial aspect of the medial proximal sesamoid bone (analogous location as the pre-existing lesion in medial proximal sesamoid bone in fractured limb)
2. Moderate, focal, biaxial, blue subchondral bone discoloration visible through the cartilage of the axial aspect of the palmar eminences, adjacent to the intermediate groove of the proximal P1
3. Mild to moderate dorsal metacarpal disease with pink, diffuse discoloration of the dorsal cortex (presumably due to woven bone formation) accompanied by congestion and thickening of the periosteum
4. Mild to moderate, biaxial, rounded thickening of the proximal third of the oblique distal sesamoidean ligaments (presumably chondroid metaplasia)

Other findings:
- Mild, shallow gastric ulceration of non-glandular mucosa along the margo plicatus (incidental)
- Pulmonary congestion and edema (euthanasia artifact)
- Splenomegaly (euthanasia artifact)

Case Summary

03/18/19: Further testing is concluded.

03/08/19: The most important findings in the left forelimb are biaxial fractures of the proximal sesamoid bones and complete rupture of the deep digital flexor tendon. The latter injuries resulted in loss of support of the fetlock joint in the left forelimb. The aforementioned fractures may be related to the focal region of discoloration and bone porosity/osteopenic focus associated with the distal fracture surface in the medial proximal sesamoid bone. Furthermore, changes of similar nature were identified in the proximal sesamoid bones in contralateral limb. Additional findings include chronic changes affecting the intact, right forelimb. They are unilateral dorsal metacarpal disease affecting right cannon bone, subchondral bone bruising of proximal P1 and presumably chondroid metaplasia of distal oblique sesamoidean ligaments.

02/25/19 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

Left foreleg: Closed, comminuted, biaxial proximal sesamoid bone fractures w/suspensory apparatus failure; (lost rider and ran loose after sustaining injury).

Gross Observations

Necropsy of a 3 year old, [redacted] Thoroughbred [redacted] 523 kg, with a [redacted], microchip [redacted] is commenced at 1:40 pm, February 25, 2019. The carcass is in good nutritional condition, with appropriate musculature development, good deposits of adipose tissue, and in mild 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. 3 cm x 2 cm) of capsular thickening (presumably interstitial fibrosis). The stomach contains green, soft roughage and grain particles. Non-glandular gastric mucosa has very shallow and small (app. 0.5cm in

diameter) ulcers 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 FRONT

A- PROXIMAL SESAMOID BONES
1. Fracture of the proximal sesamoid bones
a) Closed, comminuted, articular, transverse, displaced, mid-body/basilar, fracture of the lateral proximal sesamoid bone with axial and abaxial avulsion fracture component- the distal component is divided roughly in axial 1/3 by slightly oblique fracture line into two pieces. The proximal component is divided roughly into four fragments. Two of them broke off along the insertion of the branch of suspensory ligament and are avulsed with lateral branch. There is triangular fragment, adjacent to the described fragments, which is avulsed with intersesamoidean ligament together with axial smaller piece.
b) Closed, comminuted, articular, transverse, displaced, mid-body fracture of the medial proximal sesamoid bone with axial and abaxial avulsion fracture components and probable 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 articular surface on distal fracture surface of the medial proximal sesamoid bone. The fracture line propagates through a subchondral focus of 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 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- 'Y' shaped, the tear is following the main fracture line of the proximal sesamoid bones
2. Moderate to severe proliferative synovitis of the fetlock joint
3. Severe, full-thickness, complete, transverse rupture of the deep digital flexor tendon
4. Severe, full thickness, incomplete, transverse rupture of the superficial digital flexor tendon
5. Severe, full thickness, transverse and longitudinal rupture of the intersesamoidean ligament
6. Severe fraying of fibers of the lateral and medial short and cruciate ligaments
7. Severe, longitudinal, full-thickness split, fraying of fibers and hemorrhage of the straight distal sesamoidean ligament
8. Moderate fraying of fibers and incomplete transverse rupture of the lateral and medial collateral ligaments of proximal sesamoid bones

C- MCIII
1. Chip fracture of the abaxial margin of the dorsal aspect of the lateral condyle of the distal articular surface of MCIII
2. Severe scoring of the distal articular surface of MCIII with multiple vertical clefts of variable depth and width
3. Severe, multifocal, irregularly shaped cartilage loss of the distal articular surface of MCIII
4. Severe, focal, full thickness, irregularly shaped cartilage loss on the dorsal aspect of the mid-sagittal ridge of the distal articular surface of MCIII
5. Moderate to severe hemorrhage accompanied by soft tissue hypertrophy at the palmar aspect of the supracondylar region of MCIII
6. 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

D- P1
1. Severe scoring lines of the proximal articular surface of P1
2. Moderate to severe, biaxial, deep bony erosion of the dorsal and palmar aspect of the proximal articular surface of P1
3. Moderate lipping of the dorsal and palmar margins of the proximal articular surface of P1

RIGHT FRONT

A- PROXIMAL SESAMOID BONES
1. Moderate, focal, blue subchondral bone discoloration visible through the slightly depressed cartilage of the abaxial aspect of the medial proximal sesamoid bone with short fissure located centrally (analogous location as the pre-existing lesion in medial

proximal sesamoid bone in fractured limb)
2. Mild to moderate, biaxial apical modeling with irregular bony outgrowth accompanied by focal, blue discoloration of the subchondral bone visible through the cartilage

B- SOFT TISSUES
1. Mild to moderate, biaxial, rounded thickening of the proximal third of the oblique distal sesamoidean ligaments (presumably chondroid metaplasia)

C- MCIII
1. Mild to moderate dorsal metacarpal disease with pink, diffuse discoloration of the dorsal cortex (presumably due to woven bone formation) accompanied by congestion and thickening of the periosteum - the cross section at the level of mid diaphysis revealed app. 1-2 mm thick rim of the new, consolidated bone and multifocal, dark red petechiae, especially affecting dorsomedial aspect of the trabecular bone. The outer layer of the dorsal cortex/pink discoloration is most likely formed by woven bone.

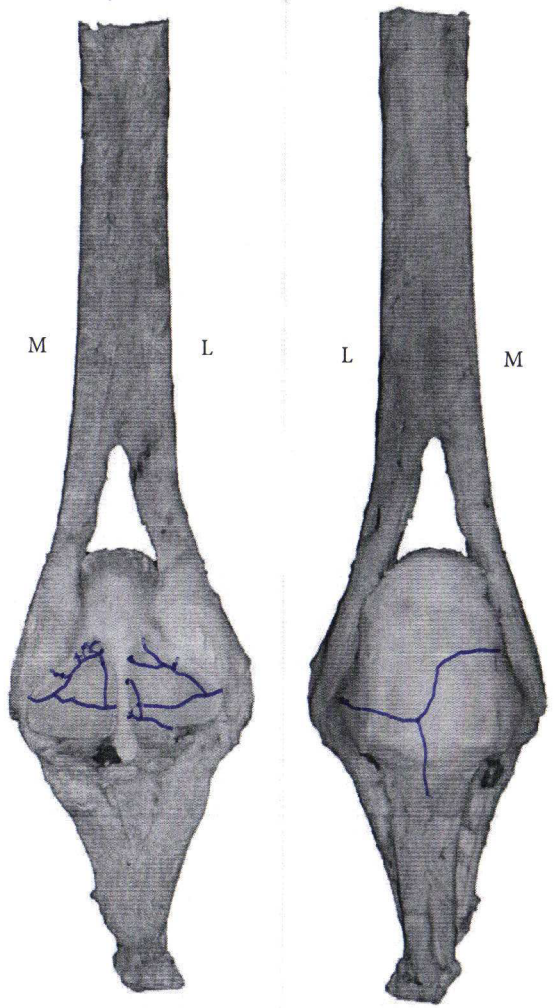
D- P1
1. Moderate lipping of the dorsal aspect of the proximal articular surface of P1
2. Moderate, focal, biaxial, blue subchondral bone discoloration visible through the cartilage of the axial spect of the palmar eminences, adjacent to the intermediate groove of the proximal P1, which turns into pink discoloration of the cartilage when moving towards palmar margin of the articular surface.

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

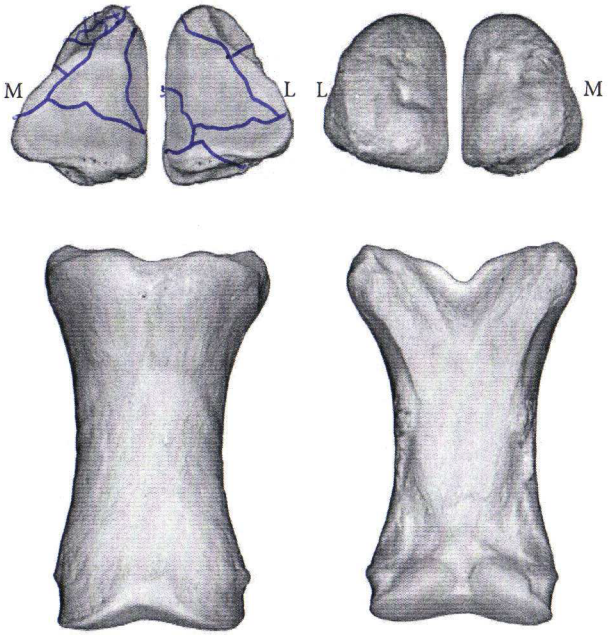
Accession # [redacted]
CC: MAS
Date: 03/07/19

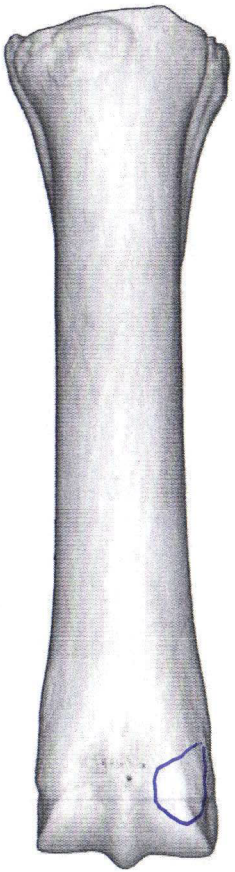
Left Fetlock

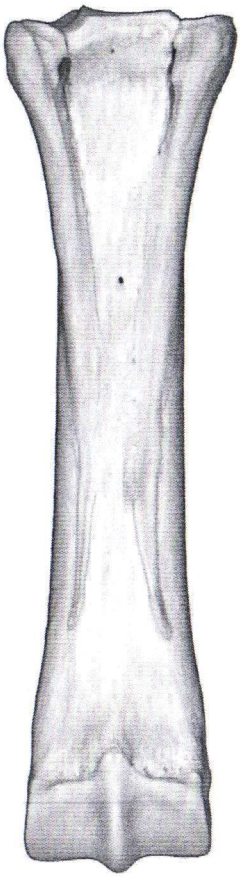
Please circle affected leg
foreleg
hindleg



Susp. App. (dorsal) Susp. App. (palmar/plantar)







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: Yes No (straight and/or oblique)

Collateral ligaments: Yes No

Collateral Sesamoidean Ligaments: Yes No

Cruciate and/or Short Sesamoidean Ligaments: Yes No

Open wound? Yes No

Joint capsule intact? Yes No

Joint luxated? 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).

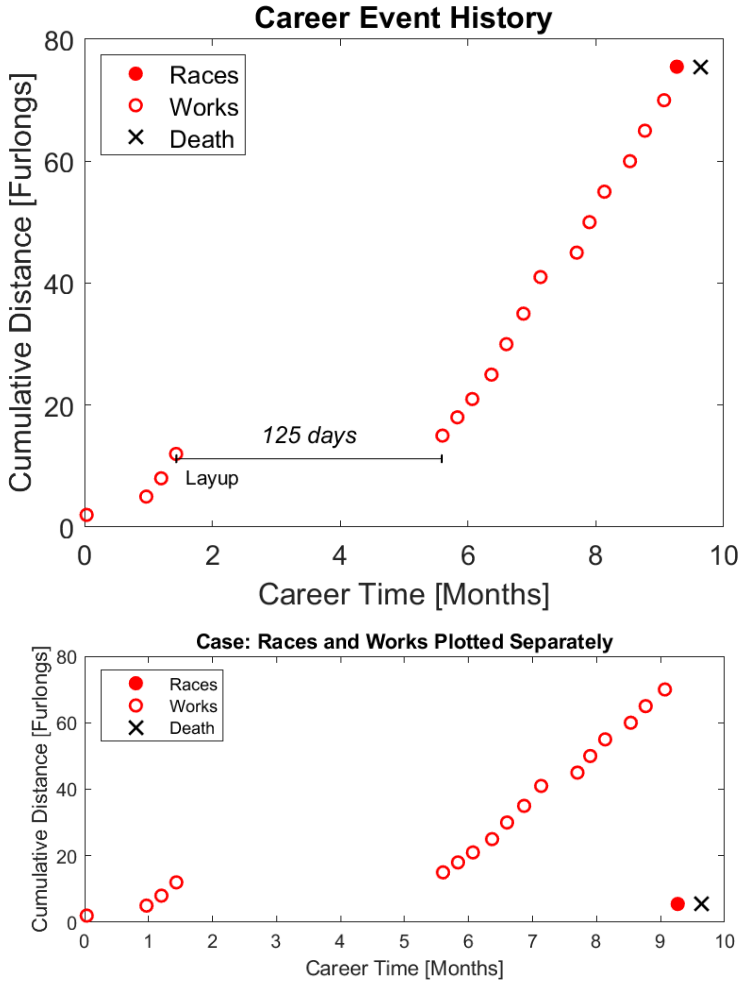
Part 4 is a chart that allows comparison of exercise variables between Case Horse and other racehorses of similar age, sex, and breed that did not die at the same time from an injury. Similar to comparing the results of a blood test to a range of normal values, the values for Case Horse can be assessed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

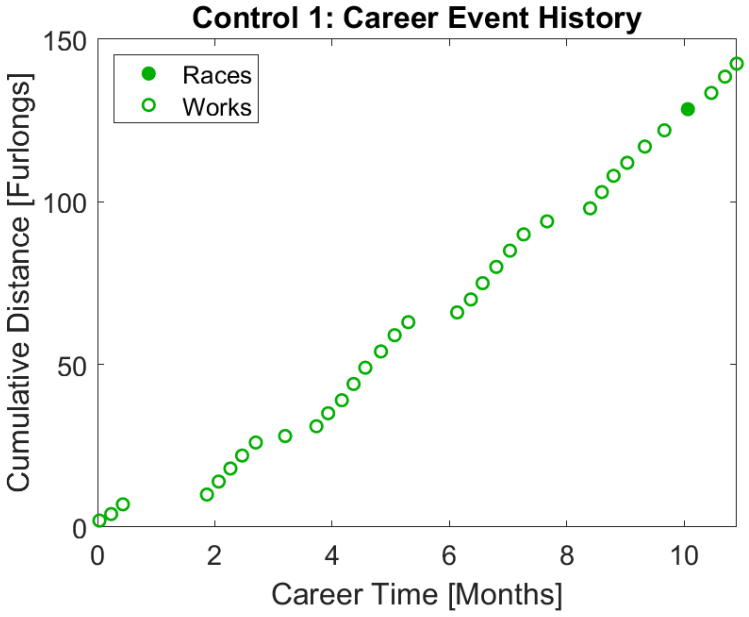
Part 1: Graphical Representation of Individual High-Speed Exercise Histories

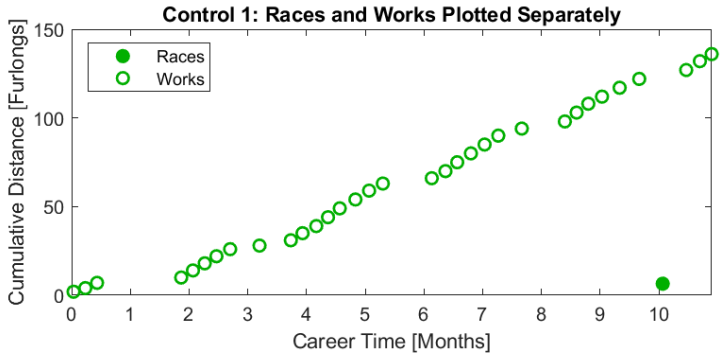
Races (filled circles), officially timed high-speed works (open circles), layups (line with endcaps, periods of time greater than 60 days in length without a race or timed work), and time of death (X) are illustrated over time (Career Time in months). With each event (race or work), the number of furlongs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

Case Horse High Speed Exercise History

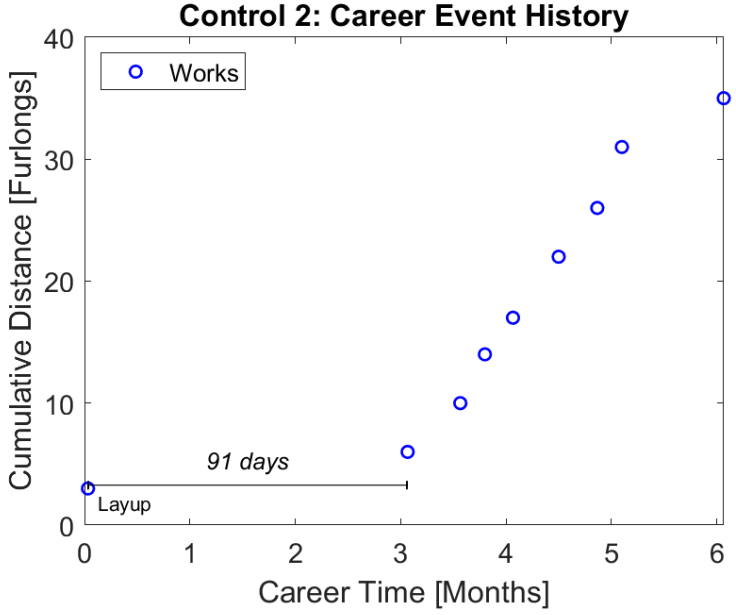


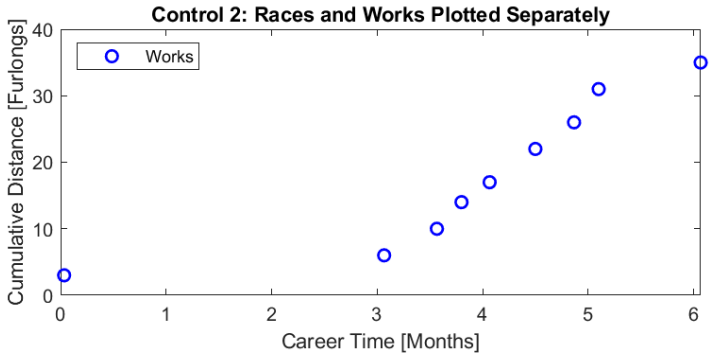
Control 1 High Speed Exercise History



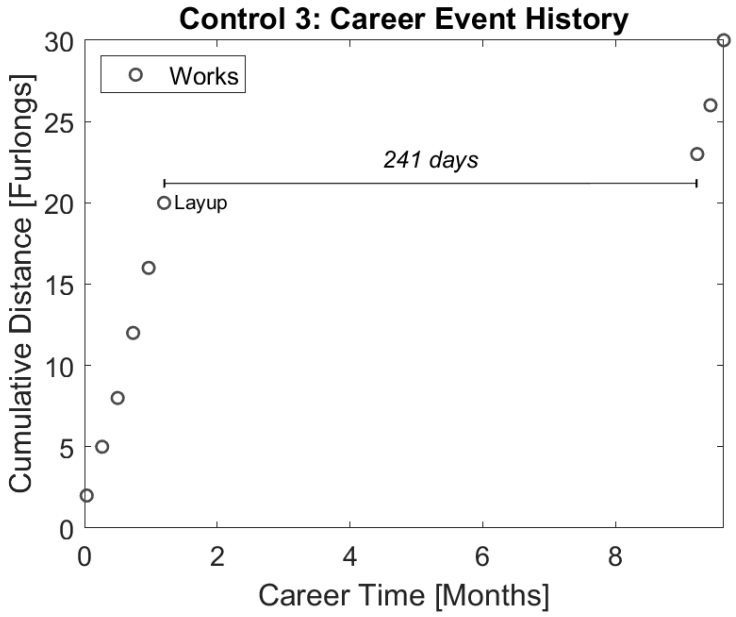


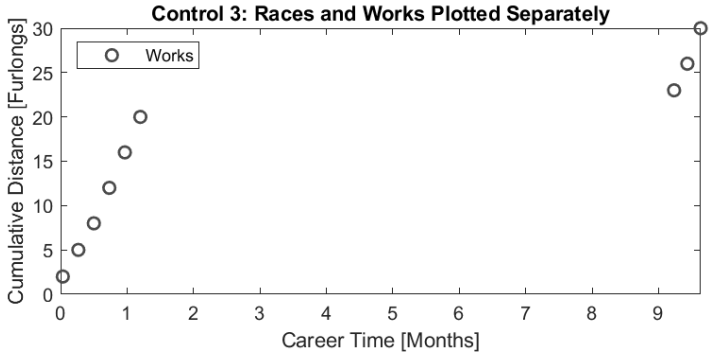
Control 2 High Speed Exercise History



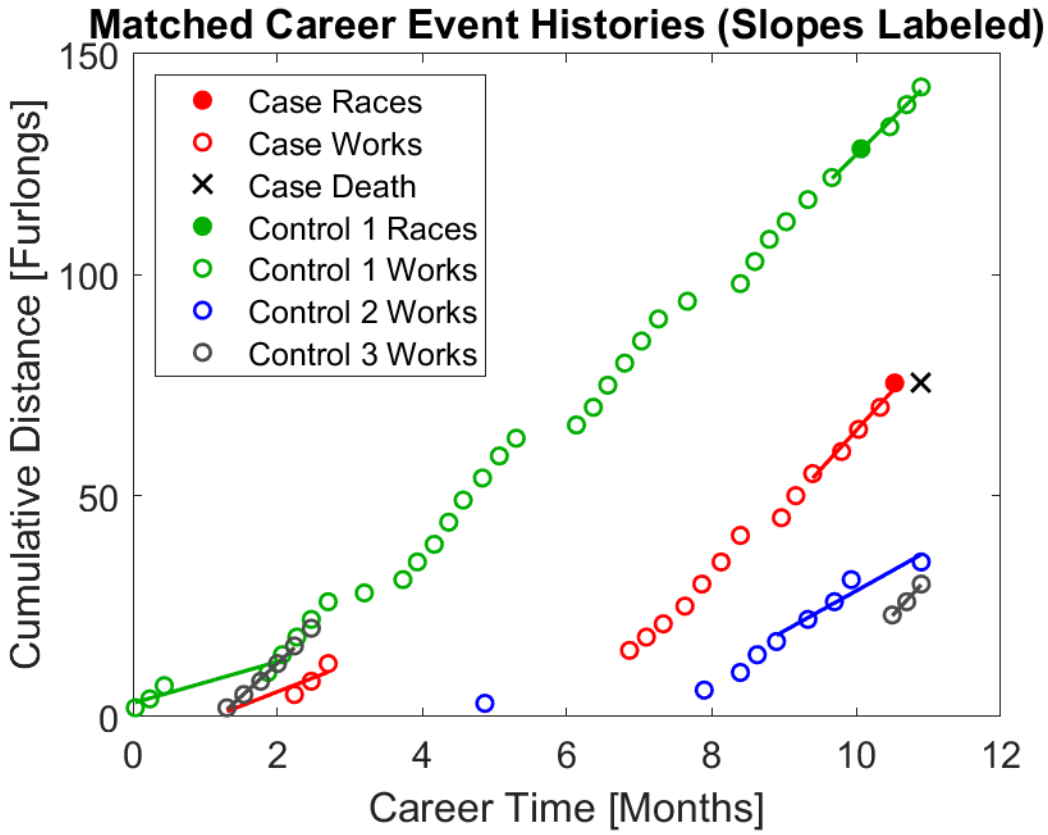


Control 3 High Speed Exercise History

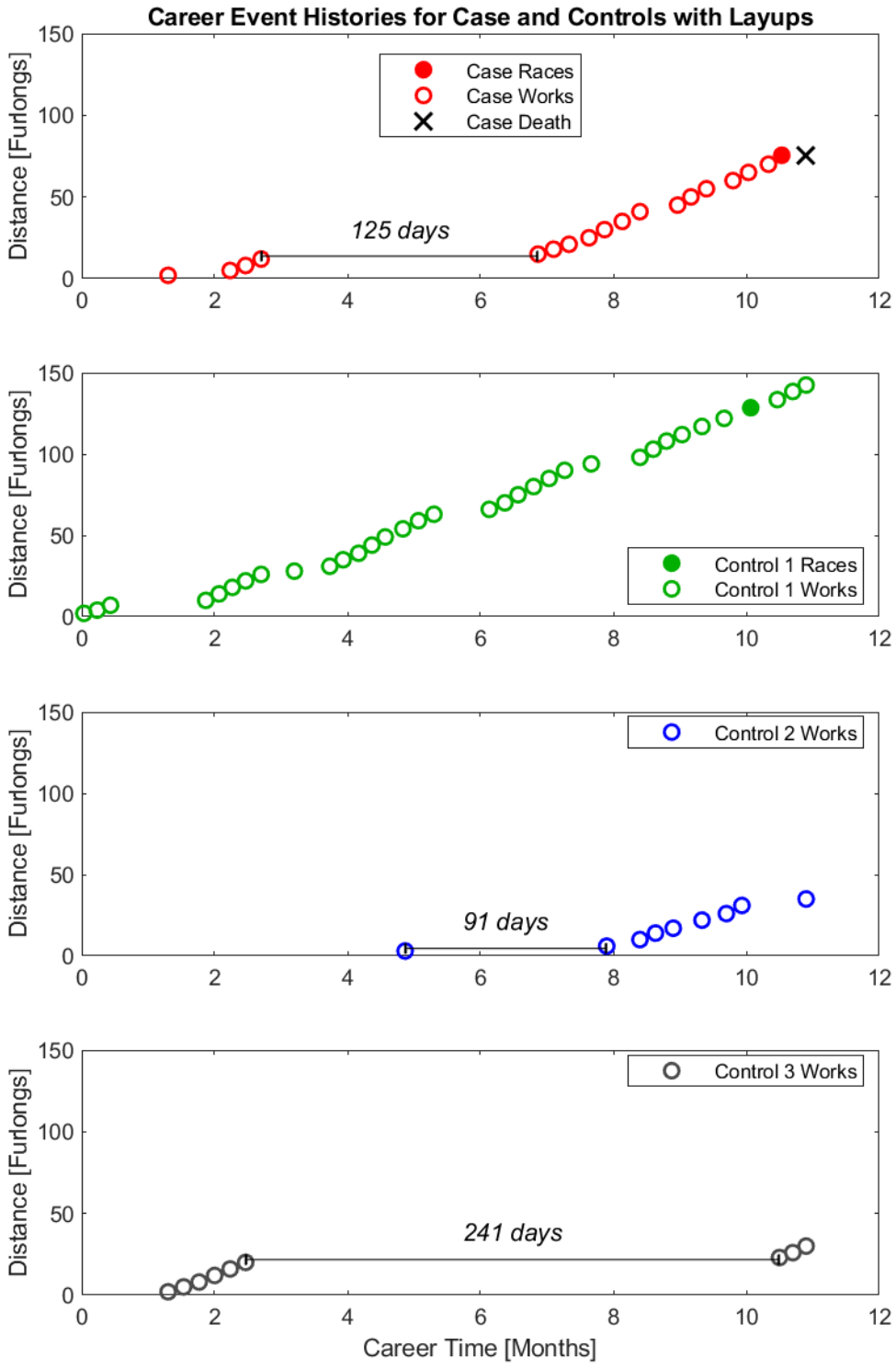


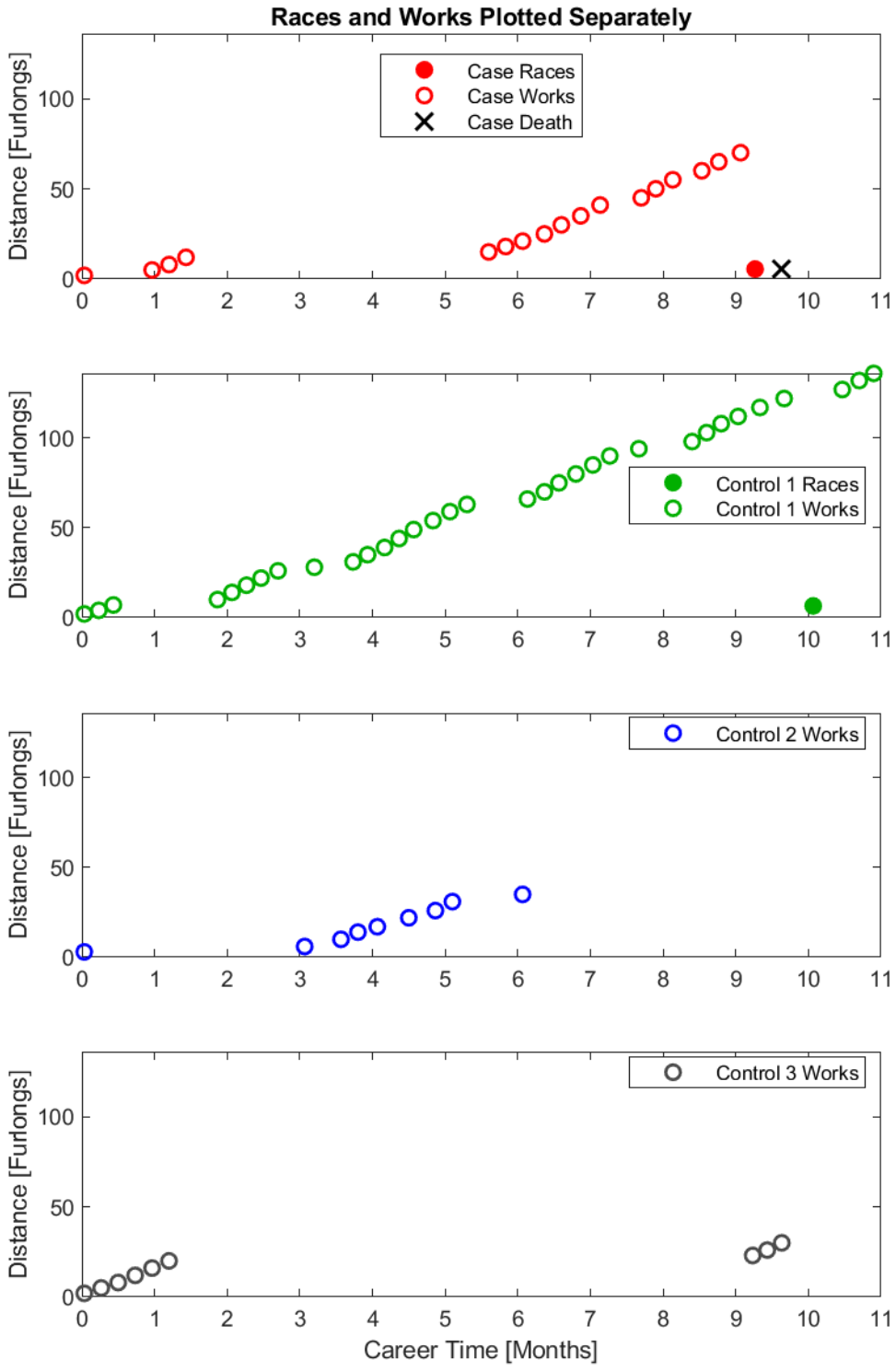


Part 2: Case and Control Horses Plotted Together



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.

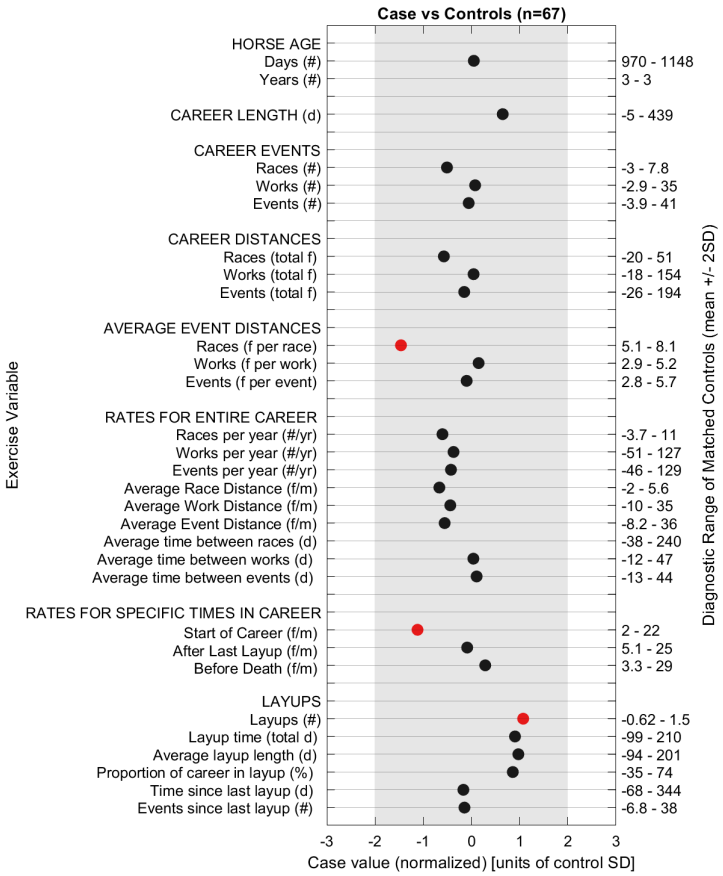

Career Event Histories for Case and Controls with Layups
Distance [Furlongs]
Case Races
Case Works
Case Death
125 days
Control 1 Races
Control 1 Works
Control 2 Works
91 days
Control 3 Works
241 days
Career Time [Months]


Races and Works Plotted Separately
Case Races
Case Works
Case Death
Control 1 Races
Control 1 Works
Control 2 Works
Control 3 Works
Distance [Furlongs]
Career Time [Months]

Part 3: Case Horse's Event History

Date	Race/ Work	Fur-longs	Track	Surface	Track Cond.	Time	Age/ Sex	Race Class	Earn-ings	Finish
2/14/2019	R	5.5	SA	Dirt	Sloppy		3	Msw	351	6
2/8/2019	W	5.0	SA	Dirt	Fast	:59.60				
1/30/2019	W	5.0	SA	Dirt	Fast	01:00.8				
1/23/2019	W	5.0	SA	Dirt	Fast	:59.80				
1/11/2019	W	5.0	SA	Dirt	Fast	01:00.0				
1/4/2019	W	5.0	SA	Dirt	Fast	01:02.0				
12/29/2018	W	4.0	SA	Dirt	Fast	:50.80				
12/12/2018	W	6.0	SA	Dirt	Fast	01:16.0				
12/4/2018	W	5.0	SA	Dirt	Fast	01:01.2				
11/26/2018	W	5.0	SA	Dirt	Fast	01:01.0				
11/19/2018	W	4.0	SA	Dirt	Fast	:48.80				
11/10/2018	W	3.0	SLR	Dirt	Fast	:35.80				
11/3/2018	W	3.0	SLR	Dirt	Fast	:37.00				
10/27/2018	W	3.0	SLR	Dirt	Fast	:38.20				
6/24/2018	W	4.0	SA	Dirt	Fast	:49.80				
6/17/2018	W	3.0	SA	Dirt	Fast	:36.20				
6/10/2018	W	3.0	SA	Dirt	Fast	:36.00				
5/13/2018	W	2.0	SA	Dirt	Fast	:25.00				

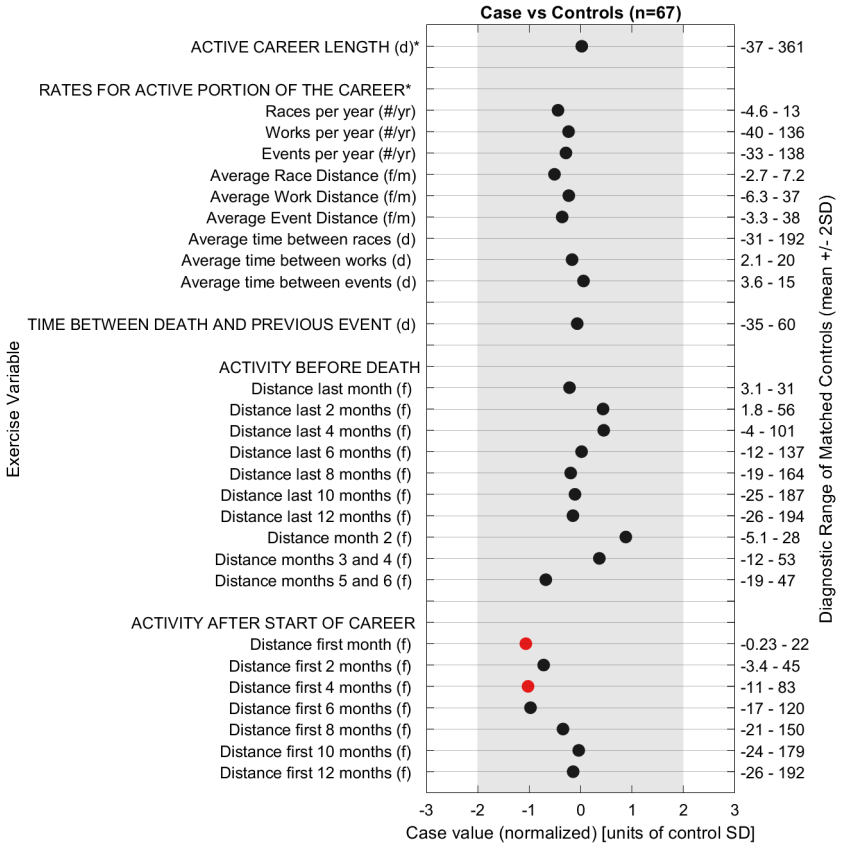
Part 4: Comparison of Exercise Variables between Case Horse and 67 Control Horses (3 year old, male, Thoroughbred)



Case Horse values are indicated by black or red symbols: circles indicate values considered normal for 95% of 3 year old, male, Thoroughbreds (n=67) (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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