



**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  
4/5/2019 2:17:55PM

**Email To:**  
Baker, Rita L  
RitaB@chrh.ca.gov

**Incident Track:**  
FARMER, WILL  
285 W HUNTINGTON,  
Arcadia CA 91007  
Los Angeles County

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

Date Collected: 03/31/2019 Date Received: 04/01/2019

Comments: CHRHB

**Case Contacts**

Submitter	FARMER, WILL	[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	Dowd, Joe	[REDACTED]	[REDACTED]	Arcadia	CA	91066
Trainer	MILLER, PETER	[REDACTED]	[REDACTED]	Manhattan Bea	CA	90266

**CHRHB - Related Information**

Horse's Name:	[REDACTED]	Human Injury?	No
Tattoo:	[REDACTED]	Death Related to:	Race
Age:	5.00 Years	Track Surface:	Turf
Gender:	Neutered Male	Location on Track:	1/4th pole
Taxonomy:	Thoroughbred Horse	Insured?	N

Medications: Dormosedan (Detomidine); Lasix (Furosemide); Pentobarbital;

**Laboratory Findings/Diagnosis**

Euthanized 5 year-old, [REDACTED] Thoroughbred [REDACTED] submitted with history of right front compound lateral condyle fracture with medial proximal sesamoid bone fracture and possible lateral proximal sesamoid bone fracture

Catastrophic right front fetlock breakdown with

**RIGHT FORELIMB**

**ACUTE CHANGES**

1. Open, comminuted, complete, displaced, articular, parasagittal, lateral condylar fracture of the MCIII with the presence of pre-existing lesion (palmar osteochondral disease, see chronic changes 1.)
2. Open, mid-body and apical, complete, articular, transverse, displaced, fractures of the medial proximal sesamoid bone
3. Open, comminuted, complete, articular, displaced avulsion fracture of the axial margin of the lateral proximal sesamoid bone

4. Open, simple, non-articular, transverse, displaced fracture of the MCII and MCIV
5. Severe, complete, longitudinal rupture of the medial branch of the suspensory ligament
6. Complete luxation of the fetlock joint- MCIII completely perforated the skin, which resulted in complete exposure of the distal half of the cannon bone
7. Severe, complete, transverse rupture of the medial collateral ligaments of the fetlock
8. Severe fraying of fibers of the lateral collateral ligament of the fetlock
9. Full thickness, transverse and longitudinal rupture of the intersesamoidean ligament
10. Severe, longitudinal, full-thickness split, fraying of fibers and hemorrhage of the straight distal sesamoidean ligament
11. Severe fraying of fibers, hemorrhage, multiple longitudinal, incomplete splits of the deep digital flexor tendon
12. Severe fraying of fibers of the lateral and medial short and cruciate ligaments
13. Severe fraying of fibers and incomplete transverse rupture of the lateral and medial collateral ligaments of proximal sesamoid bones
14. Severe, full thickness, multifocal cartilage loss of the distal articular surface of MCIII
15. Severe, extensive cartilage loss of the articular surface of the lateral proximal sesamoid bone
16. Severe scoring of the distal articular surface of MCIII

#### CHRONIC CHANGES:

1. Severe, palmar osteochondral disease with brown, focal discoloration and porosity of the subchondral bone, surrounded by rim of neovascularization and highly compacted (sclerotic) trabecular bone, visible on both opposing surfaces of the fractured lateral condyle of the distal MCIII
2. Moderate, focal, blue subchondral bone discoloration (bruising) of the mid-sagittal ridge of the distal articular surface of MCIII
3. Osteochondral fragment (OCD) of the dorsal articular margin of the intermediate facet of the distal radius
4. Chip fracture of the axial margin of the proximal articular surface of the carpal intermediate bone
5. Moderate lipping of the dorsal margin of the proximal articular surface of P1
6. Moderate, biaxial osteochondral fragmentation of the palmar margin of the proximal articular surface of P1

#### LEFT FORELIMB

#### CHRONIC CHANGES

1. Moderate to severe, biaxial palmar osteochondral disease with focal, blue subchondral bone discoloration (bruising) visible through the flattened cartilage of the condyles of the distal articular surface of MCIII
2. Moderate, biaxial transverse ridge arthrosis with cartilage fibrillation and red discoloration of the distal articular surface of MCIII
3. Moderate lipping of the dorsal aspect of the proximal articular surface of P1
4. Moderate proliferative synovitis of the fetlock joint

#### Other findings:

- Hemabdomen
- Liver trauma- 18.5 cm long tear of the right lobe
- Pulmonary congestion and edema (euthanasia artifact)

### Case Summary

04/02/19: The most important findings in the right forelimb are lateral condylar fracture of the cannon bone, fractures of the proximal sesamoid bones, and rupture of the medial branch of suspensory ligament. The latter injuries resulted in loss of support of the fetlock joint of the right forelimb. The reason of the aforementioned fractures may be related to the focal region of discoloration and bone porosity/osteopenic focus associated with the fracture surfaces in the lateral condyle of the right cannon bone.

04/01/19 The horse sustained liver injury of traumatic origin, and hemabdomen noted is a consequence of the liver tear. Most likely, the injury occurred secondary to the fall caused by right front fetlock breakdown.

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

Horse went bad at transition from turf to dirt. RF compound lateral condyle fx with medial sesamoid fx and possible lateral sesamoid fx.

Additional history per Dr. W Farmer 4/3/19

Please note that when [REDACTED] fell, a rival behind fell over him .

Also, the rider of the other horse was injured and taken off his remaining mounts.

### Gross Observations

Necropsy of a 5 year old, [REDACTED] Thoroughbred [REDACTED] 474 kg, with [REDACTED] and [REDACTED] commenced at 8:49 am, April 1, 2019. The carcass is in good nutritional condition, with appropriate musculature, good deposits of adipose tissue, and is in good post-mortem condition. The trachea contains abundant stable foam, and both lungs are inflated, mottled pink to red, spongy and wet (euthanasia artifact). The spleen is pale and decreased in size. There is a large, irregularly shaped focus of hemorrhage in muscular portion of the diaphragm along the pleural margin on the left side. Abdominal cavity contains approximately 2 liters of frank blood. The liver is slightly pale, reduced in size, and the right hepatic lobe has 18.5 cm long by 0.5 cm to cm deep, jagged tear involving both the dorsal and ventral surfaces. The spleen is also pale and decreased in size. 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 FORELIMB

##### A- RADIUS

1. Osteochondral fragment (OCD) of the dorsal articular margin of the intermediate facet of the distal radius- the OCD fragment is rectangular in shape ( app. 1.5 cm x 0.5 cm), its ventral margin is accompanied by rim of marked cartilage ulceration

##### B- CARPUS

1. Chip fracture of the axial margin of the proximal articular surface of the intermediate carpal bone (app. 0.5 cm x 0.2cm). The subchondral bone along the dorsal margin, adjacent to the chipped fragment has blue discoloration visible through the cartilage (bruising). The rim of discoloration is app. 2 cm long.

##### C- MCIII

1. Open, comminuted, complete, displaced, articular, parasagittal, lateral condylar fracture of the MCIII with the presence of pre-existing lesion

The condylar fragment is app. 8 cm long. The opposing surfaces of the fracture reveal focus of brown discoloration of increased bone porosity (osteopenic focus) surrounded by red rim of neovascularization and highly compacted/sclerotic trabecular bone. There is a significant cartilage loss along the fracture line.

The dorsal cortex of the proximal third of the cannon bone, especially surrounding the fracture line has diffuse, dash-shaped, black/violet petechiae.

2. Severe, palmar osteochondral disease with brown, focal discoloration and porosity of the subchondral bone visible on both opposing surfaces of the fractured lateral condyle the distal articular surface of MCIII

3. Severe scoring of the distal articular surface of MCIII

4. Severe, focal, full thickness, extensive longitudinal (app. 2 cm long) cartilage loss of the dorsal edge of the articular surface of mid-sagittal ridge of the distal MCIII

5. Severe, multifocal, rounded, app. 2 mm in diameter, full-thickness cartilage loss of the distal articular surface of MCIII

6. Complete luxation of the fetlock joint- MCIII completely perforated the skin, which resulted in complete exposure of the distal half of the cannon bone

7. Moderate, focal, blue subchondral bone discoloration (bruising) of the mid-sagittal ridge (dorsal aspect) of the distal articular surface of MCIII

8. Moderate transverse ridge arthrosis with cartilage loss, fibrillation and red discoloration of the medial condyle of the distal MCIII

##### D- PROXIMAL SESAMOID BONES

1. Open, mid-body and apical, complete, articular, transverse, displaced, fractures of the medial proximal sesamoid bone- the apical fragment is avulsed with intersesamoidean ligament. The opposing surfaces of the mid-body fracture reveal markedly compacted subchondral bone and highly compacted trabecular bone along the axial margin.

2. Open, comminuted, complete, articular, displaced avulsion fracture of the axial margin of the lateral proximal sesamoid bone-

the fragment is divided roughly into 4 smaller pieces, which remain firmly attached to the intersesamoidean ligament.

3. Severe, extensive cartilage loss of the articular surface of the lateral proximal sesamoid bone (app. 95% of the articular surface has no cartilage left)
  4. Severe scoring of the articular surface of the medial proximal sesamoid bone
- For better visualization of the fractures described above, please see attached pictures and drawings.

#### E- MCII

1. Open, simple, complete, non-articular, transverse, displaced fracture of the MCII- the fractured distal fourth of the bone is missing from the specimen

#### F- MCIV

1. Open, simple, complete, non-articular, transverse, displaced fracture of the MCII- the fractured distal fourth of the bone is missing from the specimen

#### G- SOFT TISSUES

1. Severe, complete, longitudinal rupture of the medial branch of the suspensory ligament- the complete separation of the branch is at the level of bifurcation, where the injury progresses further proximally as incomplete split up to proximal third of the suspensory ligament body.
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 sagittal tear courses in between the proximal sesamoid bones distally to merge with full-thickness, longitudinal rupture of the straight distal sesamoidean ligament
3. Severe, complete, transverse rupture of the medial collateral ligaments of the fetlock
4. Severe fraying of fibers of the lateral collateral ligament of the fetlock
5. Severe fraying of fibers, hemorrhage, multiple longitudinal, incomplete splits of the dorsal surface of the deep digital flexor tendon at the level of the fetlock
6. Severe fraying of fibers of the lateral and medial short and cruciate ligaments
7. Severe fraying of fibers and incomplete transverse rupture of the lateral and medial collateral ligaments of proximal sesamoid bones
8. Severe synovial thickening in the fetlock joint (proliferative synovitis)

#### H- P1

1. Severe scoring of the proximal and distal articular surface of P1
2. Moderate lipping of the dorsal margin of the proximal articular surface of P1
3. Moderate, biaxial osteochondral fragmentation of the palmar margin of the proximal articular surface of P1
4. Moderate to severe, multifocal, irregularly shaped, full-thickness ulceration of small diameter (app. 1-2mm) of the proximal articular surface of P1

#### LEFT FRONTLIMB

##### A- PROXIMAL SESAMOID BONES

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

##### B- MCIII

1. Severe palmar osteochondral disease with focal, biaxial, rounded (app. 1.3 cm in diameter) blue subchondral bone discoloration (bruising) visible through the flattened cartilage of the condyles of the distal articular surface of MCIII. The medial condyle is slightly more affected.
2. Mild scoring of the distal articular surface of MCIII
3. Mild hemorrhage accompanied by soft tissue hypertrophy at the palmar aspect of the supracondylar region of MCIII
4. Mild hemorrhage and bone erosion due to hypertrophic synovial pad at the dorsal aspect of the supracondylar region of MCIII
5. Moderate focus (4 cm x 2 cm) of dark violet petechiae on the dorsal aspect of the proximal third of the MCIII
6. Severe hemarthrosis of the fetlock joint

##### C- SOFT TISSUE

1. Moderate synovial thickening in the fetlock joint (proliferative synovitis)

##### D- P1

1. Moderate lipping of the dorsal aspect of the proximal articular surface of P1

Accession #

CC: MAS

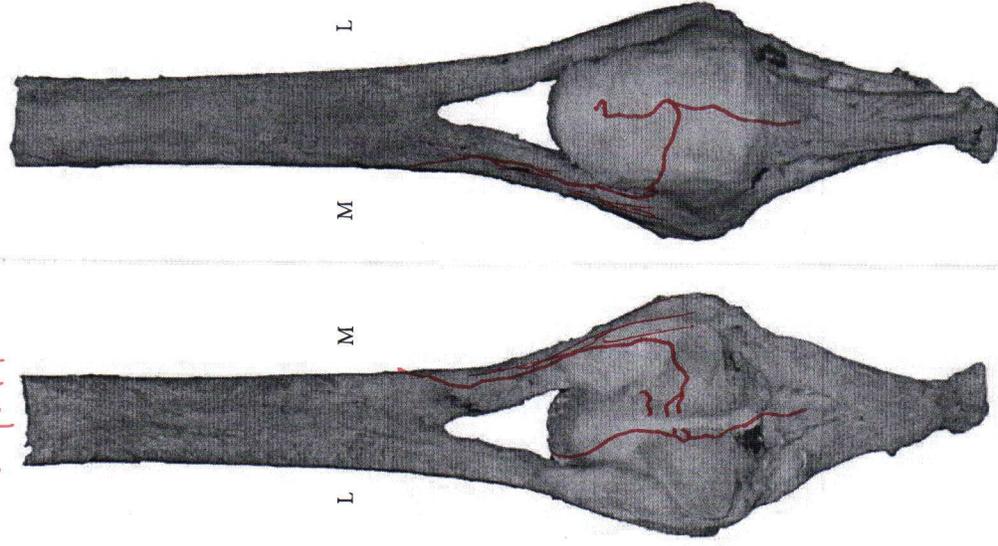
Date: 04/01/19

Right Fetlock

Please circle affected leg

foreleg

hindleg



Susp. App. (dorsal)

Susp. App. (palmar/plantar)

Open wound?

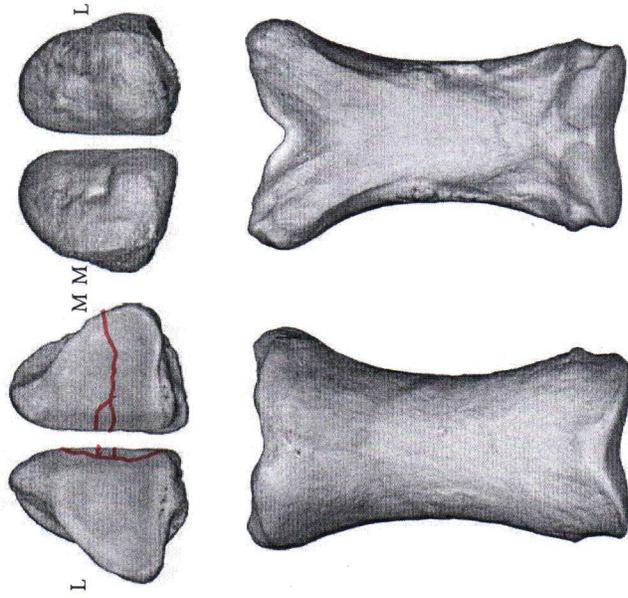
Yes No

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

# Exercise History Report (Full)



**UCDAVIS**

**VETERINARY MEDICINE**

*J.D. Wheat Veterinary Orthopedic  
Research Laboratory*

**Apr-02-2019**

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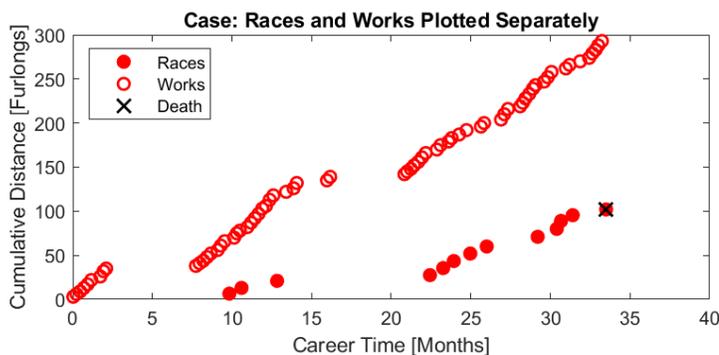
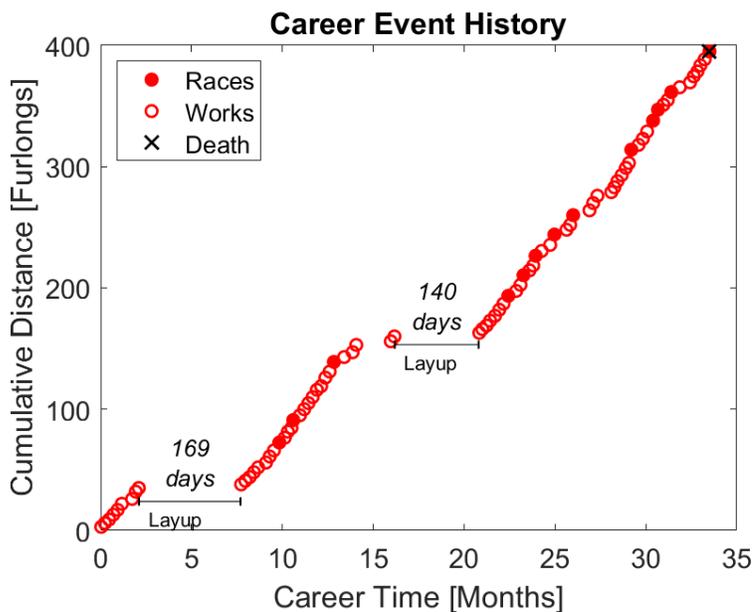
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## Part 1: Graphical Representation of Individual High-Speed Exercise Histories

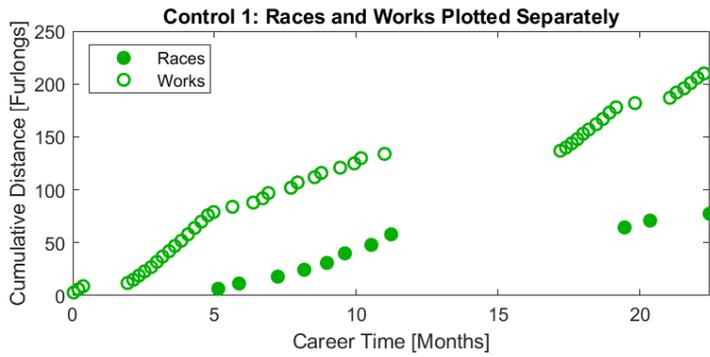
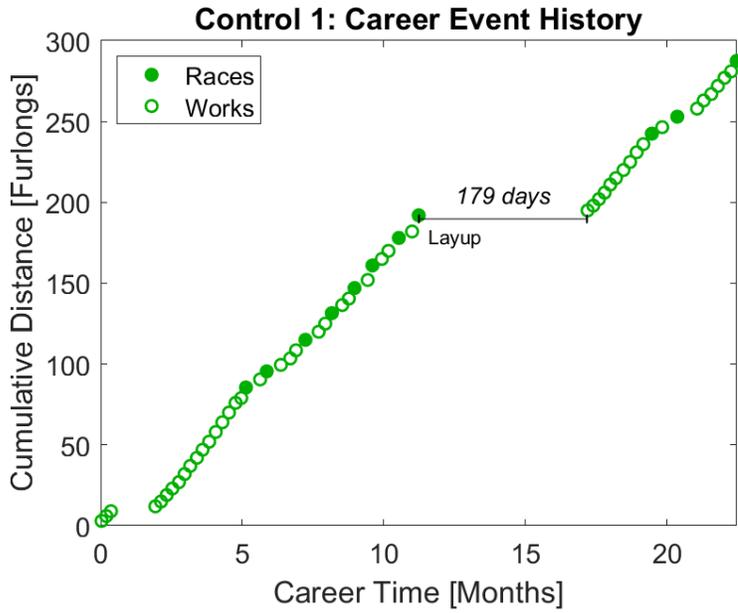
Races (filled circles), officially timed high-speed works (open circles), layups (line with endcaps, periods of time greater than 60 days in length without a race or timed work), and time of death (X) are illustrated over time (Career Time in months). With each event (race or work), the number of furlongs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

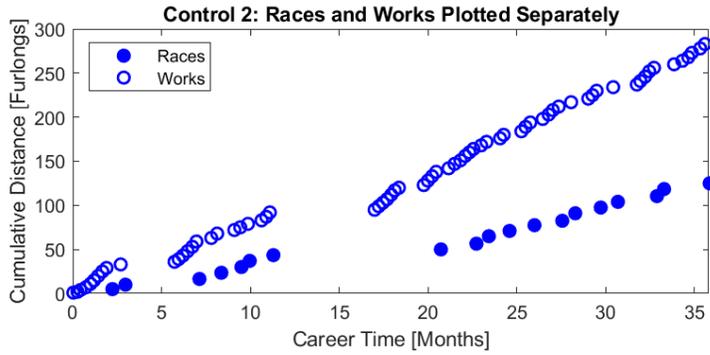
Control 1 High Speed Exercise History



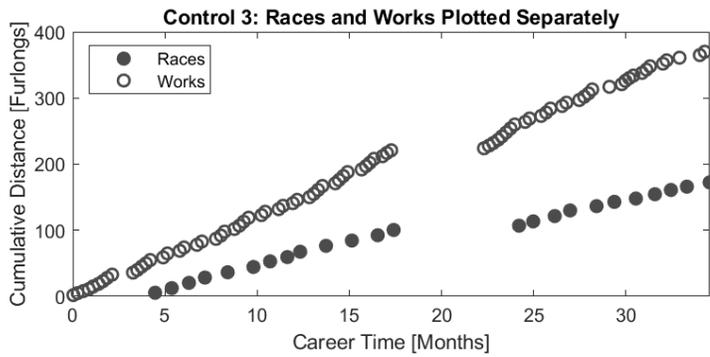
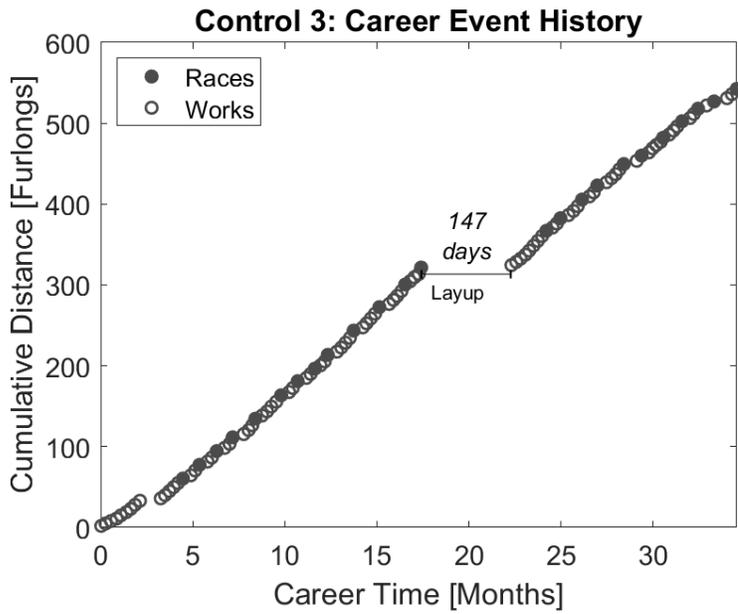
Control 2 High Speed Exercise History



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

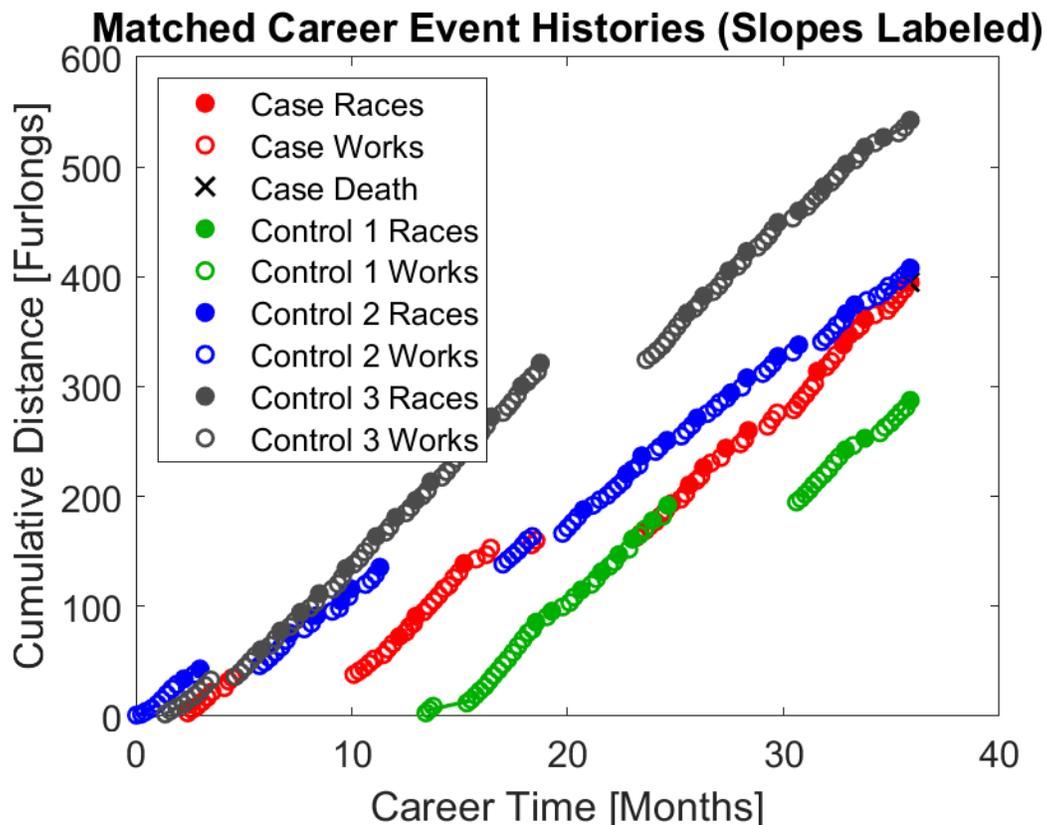


## Control 3 High Speed Exercise History



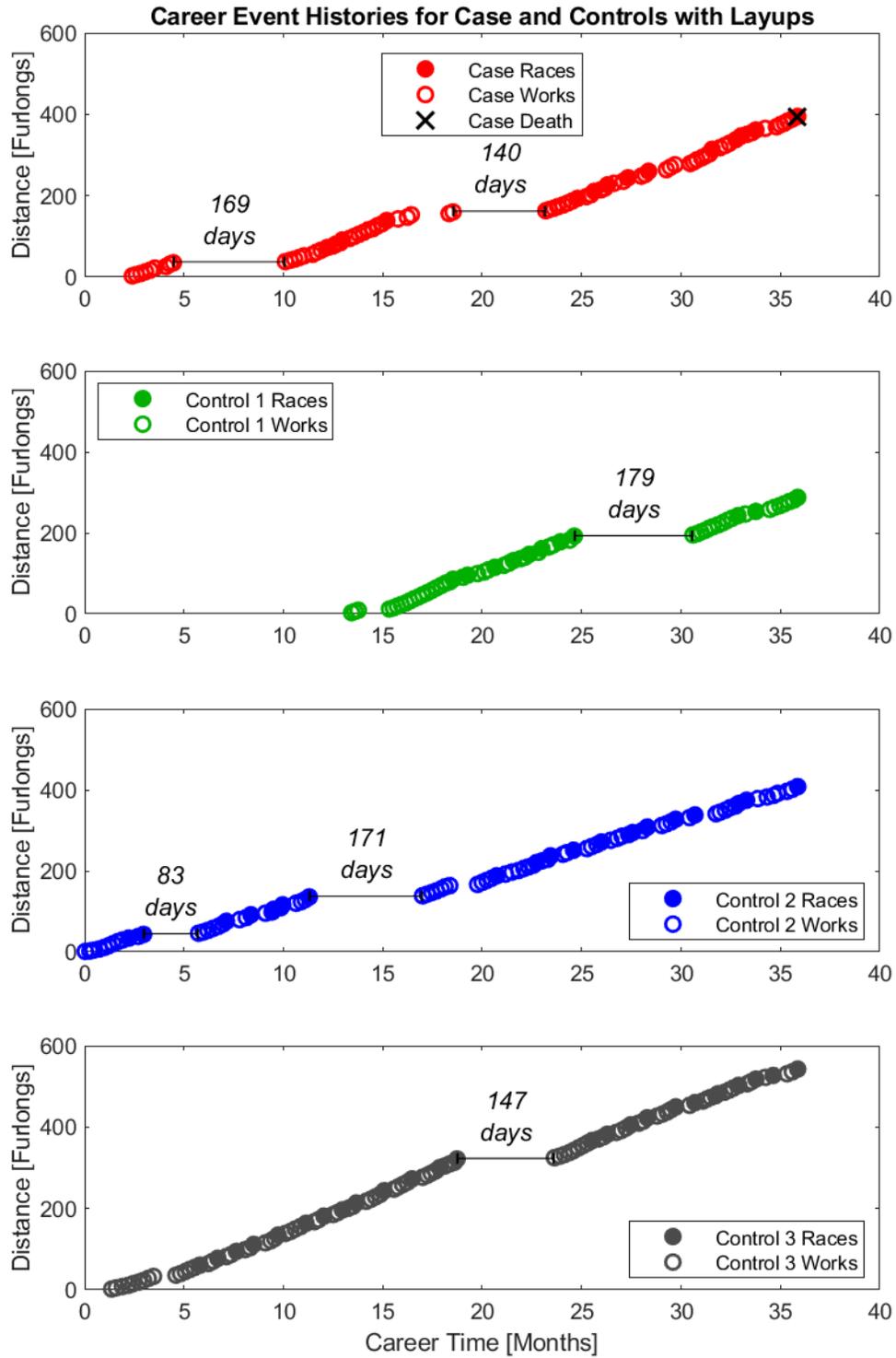
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## Part 2: Case and Control Horses Plotted Together

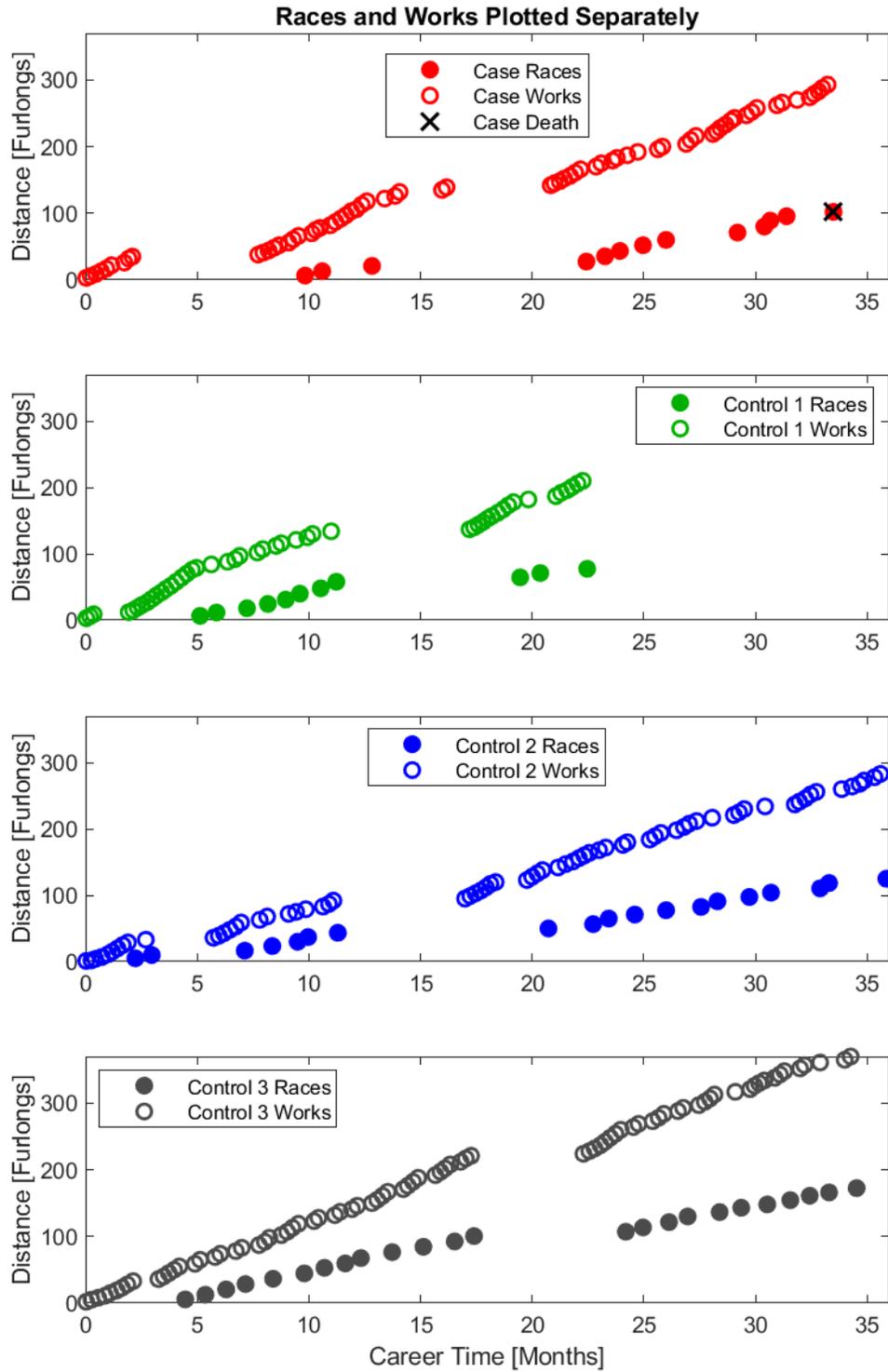


Case and Control Horses' exercise event histories are plotted on the same axes. The plots are aligned by the match date (equal to the date of death of Case Horse). Lines segments indicate specific rates of exercise at the start of career, end of career (for Case Horse), and match date (for Control Horses). 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
3/31/2019	R	6.5	SA	Turf	Firm		3U	SnSimeonG3-100k	351	7
3/23/2019	W	5.0	SLR	Dirt	Fast	01:00.2				
3/16/2019	W	5.0	SLR	Dirt	Fast	01:00.4				
3/11/2019	W	4.0	SLR	Dirt	Fast	:49.00				
3/5/2019	W	5.0	SLR	Dirt	Fast	01:01.4				
2/27/2019	W	4.0	SLR	Dirt	Fast	:48.20				
2/10/2019	W	4.0	SLR	Dirt	Fast	:48.40				
1/27/2019	R	6.5	SA	Turf	Firm		4U	Aoc62500nw2\$35400x-N	35400	1
1/21/2019	W	4.0	SLR	Dirt	Fast	:48.20				
1/14/2019	W	4.0	SLR	Dirt	Fast	:48.40				
1/5/2019	R	9.0	SA	Turf	Firm		4U	SnGabrlG2-200k	351	7
12/28/2018	R	9.0	SA	Turf	Firm		3U	Aoc62500nw2\$345x-N	345	8
12/18/2018	W	6.0	SLR	Dirt	Fast	01:13.0				
12/11/2018	W	5.0	DMR	Dirt	Fast	01:03.6				
12/4/2018	W	4.0	DMR	Dirt	Fast	:48.20				
11/22/2018	R	11.0	DMR	Turf	Firm		3U	Aoc62500nw2\$345x-N	345	8
11/18/2018	W	4.0	DMR	Dirt	Fast	:49.60				
11/13/2018	W	6.0	DMR	Dirt	Fast	01:14.2				
11/6/2018	W	5.0	SLR	Dirt	Fast	01:01.2				
10/30/2018	W	5.0	SLR	Dirt	Fast	01:00.8				
10/25/2018	W	4.0	SLR	Dirt	Fast	:50.00				
10/20/2018	W	3.0	SLR	Dirt	Fast	:36.00				
9/27/2018	W	6.0	SLR	Dirt	Fast	01:13.2				
9/20/2018	W	6.0	SLR	Dirt	Fast	01:14.0				
9/14/2018	W	4.0	SLR	Dirt	Fast	:48.60				
8/18/2018	R	8.0	DMR	Turf	Firm		3U	Aoc62500nw2\$345x-N	345	9
8/13/2018	W	4.0	DMR	Dirt	Fast	:48.60				

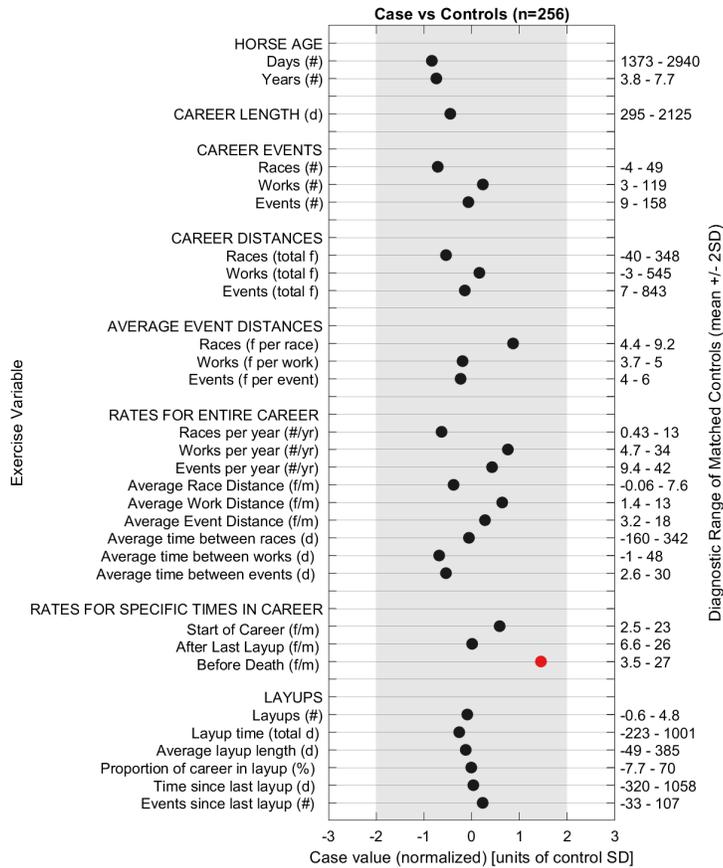
Part 3: Case Horse's Event History

Date	Race/Work	Furlongs	Track	Surface	Track Cond.	Time	Age/Sex	Race Class	Earnings	Finish
8/7/2018	W	4.0	DMR	Dirt	Fast	:49.60				
7/18/2018	R	8.5	DMR	Turf	Firm		3U	Aoc62500nw2\$ x-N	345	10
7/11/2018	W	5.0	SLR	Dirt	Fast	01:00.2				
6/27/2018	W	4.0	SLR	Dirt	Fast	:49.20				
6/17/2018	R	8.0	SA	Turf	Firm		3U	Aoc75000cnd- N	4140	4
6/13/2018	W	4.0	SLR	Dirt	Fast	:48.20				
6/7/2018	W	4.0	SLR	Dirt	Fast	:48.60				
5/28/2018	R	8.0	SA	Turf	Firm		3U	ShoemkrMG1 -400k	345	8
5/23/2018	W	5.0	SLR	Dirt	Fast	01:00.4				
5/16/2018	W	4.0	SLR	Dirt	Fast	:48.60				
5/3/2018	R	6.5	SA	Turf	Firm		3U	Aoc62500nw2\$ x-N	3480	4
4/25/2018	W	5.0	SLR	Dirt	Fast	01:01.8				
4/18/2018	W	5.0	SLR	Dirt	Fast	01:00.8				
4/11/2018	W	4.0	DMR	Dirt	Fast	:49.20				
4/3/2018	W	4.0	DMR	Dirt	Fast	:48.20				
3/28/2018	W	3.0	DMR	Dirt	Fast	:37.20				
3/21/2018	W	3.0	DMR	Dirt	Fast	:39.40				
3/16/2018	W	3.0	DMR	Dirt	Fast	:39.00				
10/27/2017	W	4.0	SLR	Dirt	Fast	:49.00				
10/21/2017	W	3.0	SLR	Dirt	Fast	:36.60				
8/25/2017	W	6.0	SLR	Dirt	Fast	01:11.4				
8/19/2017	W	4.0	SLR	Dirt	Fast	:50.60				
8/5/2017	W	4.0	SLR	Dirt	Fast	:49.60				
7/19/2017	R	8.0	DMR	Turf	Firm		3	(R) OceansideB -100k	345	7
7/12/2017	W	5.0	SLR	Dirt	Fast	01:01.6				
7/5/2017	W	7.0	SLR	Dirt	Fast	01:24.4				
6/28/2017	W	3.0	SLR	Dirt	Fast	:37.40				
6/21/2017	W	6.0	SLR	Dirt	Fast	01:11.6				

Part 3: Case Horse's Event History

Date	Race/Work	Furlongs	Track	Surface	Track Cond.	Time	Age/Sex	Race Class	Earnings	Finish
6/14/2017	W	5.0	SLR	Dirt	Fast	01:00.0				
6/7/2017	W	5.0	SLR	Dirt	Fast	:59.60				
5/31/2017	W	5.0	SLR	Dirt	Fast	01:00.8				
5/24/2017	W	4.0	SLR	Dirt	Fast	:48.60				
5/13/2017	R	6.5	SA	Turf	Firm		3	DesertCdeB -75k	47100	1
5/10/2017	W	3.0	SLR	Dirt	Fast	:37.40				
5/4/2017	W	5.0	SLR	Dirt	Fast	01:00.8				
4/29/2017	W	4.0	SLR	Dirt	Fast	:48.20				
4/20/2017	R	6.5	SA	Turf	Firm		3	Msw	32400	1
4/11/2017	W	5.0	SLR	Dirt	Fast	:59.40				
4/4/2017	W	5.0	SLR	Dirt	Fast	01:00.0				
3/29/2017	W	4.0	SLR	Dirt	Fast	:49.60				
3/16/2017	W	4.0	SLR	Dirt	Fast	:49.00				
3/9/2017	W	4.0	SLR	Dirt	Fast	:48.00				
3/2/2017	W	3.0	SLR	Dirt	Fast	:37.00				
2/23/2017	W	3.0	SLR	Dirt	Fast	:38.60				
2/16/2017	W	3.0	SLR	Dirt	Fast	:37.20				
8/31/2016	W	3.0	SLR	Dirt	Fast	:36.80				
8/26/2016	W	6.0	SLR	Dirt	Fast	01:13.6				
8/20/2016	W	4.0	SLR	Dirt	Fast	:49.80				
8/3/2016	W	5.0	SLR	Dirt	Fast	:59.20				
7/27/2016	W	4.0	SLR	Dirt	Fast	:47.40				
7/20/2016	W	4.0	SLR	Dirt	Fast	:49.20				
7/13/2016	W	3.0	SLR	Dirt	Fast	:37.20				
7/6/2016	W	3.0	SLR	Dirt	Fast	:37.80				
6/30/2016	W	3.0	SLR	Dirt	Fast	:37.60				

## Part 4: Comparison of Exercise Variables between Case Horse and 256 Control Horses (5+ year old, male, Thoroughbred)

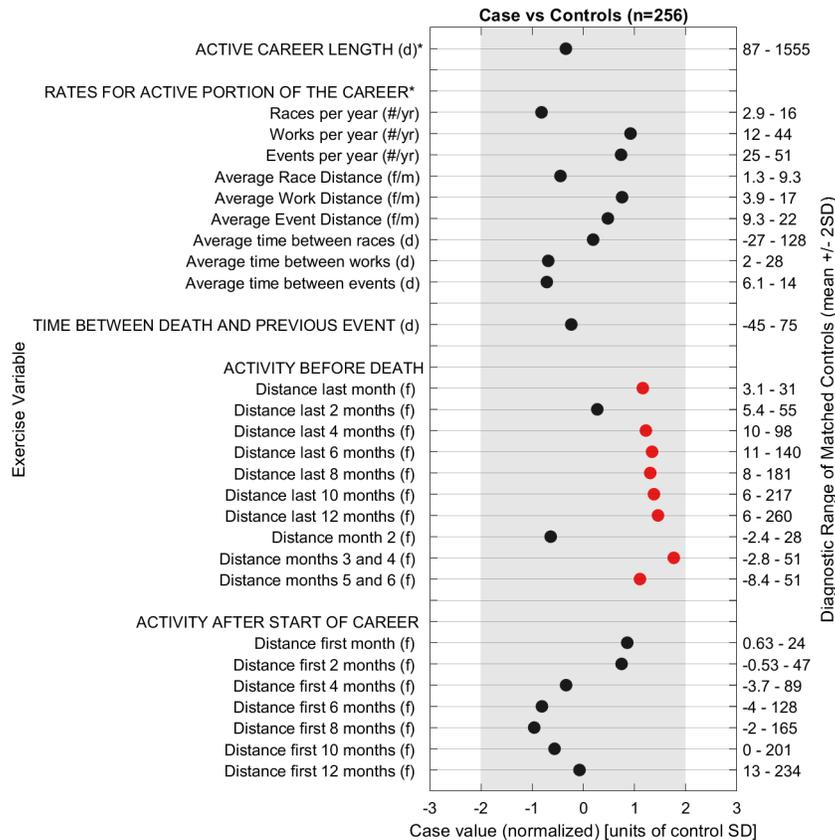


Case Horse values are indicated by black or red symbols: circles indicate values considered normal for 95% of 5+ year old, male, Thoroughbreds (n=256) (gray region) (black and red indicate within 1 and 2 SD, respectively, of mean value of controls), X's indicate values outside of the normal range. Two 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 256 Control Horses (5+ year old, male, Thoroughbred)



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