



UC DAVIS
VETERINARY MEDICINE

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FINAL REPORT

Ref.#: [REDACTED]

Coordinator: Monika Samol, DVM, Resident

E-Signed and Authorized by: Samol, Monika on
2/14/2019 9:07:15AM

Email To:
ARTHUR, RICK
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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: 02/02/2019 Date Received: 02/04/2019

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	Birch, Sarah	[REDACTED]	[REDACTED]	Arcadia	CA	91066
Trainer	BAROCIO, LIBRADO	[REDACTED]	[REDACTED]	Culver City	CA	90231

CHRB - Related Information

Horse's Name:	[REDACTED]	Human Injury?	No
Tattoo:	[REDACTED]	Death Related to:	Race
Age:	3.00 Years	Track Surface:	Dirt
Gender:	Neutered Male	Location on Track:	3/4 Pole
Taxonomy:	Thoroughbred Horse	Insured?	N

Medications: Dormosedan (Detomidine); Pentobarbital;

Laboratory Findings/Diagnosis

A 3 year old [REDACTED] Thoroughbred ([REDACTED]) submitted with a history of comminuted, slab fracture of third carpal bone, slab fracture of radial carpal bone, chip fracture of intermediate carpal bone

Catastrophic breakdown of the left carpus with

LEFT FORELIMB

ACUTE CHANGES

- 1) Closed, comminuted, complete, displaced, bi-articular, slab fracture of the radial carpal bone
- 2) Closed, comminuted, complete, displaced, bi-articular, slightly oblique, slab fracture of the ulnar carpal bone
- 3) Closed, comminuted, complete, displaced, bi-articular, slab fracture of the third carpal bone
- 4) Multiple, very small, variably shaped chip fractures of the axial margin of the carpal intermediate bone
- 5) Chip fractures of the axial and partially dorsal aspects of the fourth carpal bone

- 6) Severe scoring of the distal articular surface of the radius
- 7) Severe scoring and extensive cartilage loss of the articular surface of the carpal intermediate bone
- 8) Severe, complete rupture of the palmar intercarpal ligaments

CHRONIC CHANGES

- 1) Severe, focal, dark (violet/grey) discoloration of the cartilage and underlying subchondral bone of the axial aspect of the dorsal margin of the carpal intermediate bone
- 2) Moderate, dark (blue/violet), focal, subchondral bone discoloration visible through the cartilage of the cranial margin of the intermediate facet
- 3) Moderate thickening and focal hemorrhage of the origin of the suspensory ligament (high suspensory desmitis)
- 4) Severely thickened and hyperemic synovium of the carpal joints (proliferative synovitis)

RIGHT FORELIMB

CHRONIC CHANGES

- 1) Moderate, focal, rounded, full thickness cartilage loss in the middle of the cranial aspect of the intermediate facet of the distal articular surface of radius
- 2) Mild to moderate, focal cartilage pitting with mild, focal, blue discoloration of the underlying subchondral bone of the cranial margin and abaxial aspect of the radial facet of the distal radius
- 3) Severe osteophytosis of the dorsal margins of the carpal, intermediate and ulnar bones accompanied by mild to moderate cartilage ulceration
- 4) Moderate, focal, extensive, blue subchondral bone discoloration located roughly in the middle of the axial aspect of the radial carpal bone- the location is analogous to the main fracture line affecting carpal bone in contralateral limb
- 5) Moderate, two foci of blue subchondral bone discoloration of the axial and abaxial aspect along the dorsal margin of the third carpal bone
- 6) Moderately thickened and mildly hyperemic synovium of the carpal joints (proliferative synovitis)

Other findings:

- Mild, multifocal gastric hyperkeratosis with mild, multifocal, non-glandular gastric ulceration along the margo plicatus (incidental)
- Pulmonary congestion and edema (euthanasia artifact)
- Splenomegaly (euthanasia artifact)

Case Summary

02/08/19 The most important findings associated with the left carpus are fractures of the third, fourth, radial, intermediate and ulnar carpal bones, which together with rupture of palmar intercarpal ligaments caused acute instability of the left carpus and led to catastrophic breakdown. Probably due to significant comminution of the fractured bones, I could not locate any pre-existing lesions. However, the extensive sclerosis of subchondral bone was present, which is highly suggestive evidence of ongoing chronic stress remodeling. Furthermore, the location of subchondral bone bruising in right third and radial carpal bones was analogous to the location of the fracture affecting the same bones in the contralateral limb.

Additional findings include:

- severe degenerative joint disease (DJD) in the left radiocarpal joint, middle carpal joint and carpometacarpal joint
- moderate DJD in the right radiocarpal joint, middle carpal joint with subchondral bone bruising located analogously to the fracture sites in the left carpus
- mild to moderate DJD in the left and right fetlock joints

02/04/19 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: Comminuted, "slab" fracture of third carpal bone "slab" fracture of radial carpal bone; "chip" fracture of intermediate carpal bone.

Gross Observations

Necropsy of a 3 year old, [REDACTED] Thoroughbred [REDACTED] ([REDACTED]), with a [REDACTED] tattoo# [REDACTED] is commenced at 11:00 am, February 4, 2019. The carcass is in good nutritional condition, with appropriate musculature development, good deposits of

adipose tissue, and in moderate post-mortem decomposition. The trachea contains abundant 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 particles. Non-glandular gastric mucosa along the margo plicatus is mildly hyperkeratotic with multifocal (app. 0.2-0.4 cm in diameter), very shallow ulcers. 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 chestnut. Following changes were noted:

LEFT FORELIMB

A- RADIUS

- 1) Severe scoring of the distal articular surface of the radius, in particular affecting radial facet, where are two extensive foci of full thickness cartilage loss- along the abaxial margin (app. 3 cm long) and on the caudal aspect of the latter facet.
- 2) Moderate lipping of the dorsal margin of the distal articular surface of radius
- 3) Moderate, dark (blue/violet), focal, subchondral bone discoloration visible through the cartilage of the cranial margin of the intermediate facet

B- CARPUS

a) Proximal articular surface of the proximal carpal row

- 1) Closed, comminuted, complete, displaced, bi-articular, slab fracture of the radial carpal bone- radial carpal bone can be divided into 3, roughly equal parts in frontal plane. Two dorsal and palmar, non-comminuted fragments and highly comminuted part in between the latter two. The middle component consists of multiple, small, variably shaped, scattered fragments. The subchondral bone and partially trabecular bone (axial aspect in proximal third) of the dorsal piece is highly compacted (sclerotic).
- 2) Severe, focal, dark (violet/grey) discoloration of the cartilage and underlying subchondral bone of the axial aspect of the dorsal margin of the carpal intermediate bone, surrounding the osteophyte. The cartilage adjacent to the osteophyte is moderately ulcerated.
- 3) Mild scoring of the proximal articular surface of the carpal bones constituting the proximal row

b) Distal articular surface of the proximal carpal row

- 1) Closed, comminuted, complete, displaced, bi-articular, slab fracture of the radial carpal bone- within this articular surface the radial carpal bone is divided into two major segments, also in frontal plane. The palmar fragment in the dorsal part is comminuted, it is comprised of two wedge shaped fragments and multiple, very small, variably shaped fragments. There is also extensive cartilage loss along the main fracture line and along the dorsal margin on the dorsal fracture component.
- 2) Multiple, very small, variably shaped chip fractures, which broke off the axial margin of the carpal intermediate bone
- 3) Severe scoring and extensive cartilage loss (about 50% of the cartilage remained) of the articular surface of the carpal intermediate bone
- 4) Closed, comminuted, complete, displaced, bi-articular, slightly oblique, slab fracture of the ulnar carpal bone- the fracture is not visible on the proximal articular surface, because it is partially covered by accessory carpal bone. The ulnar carpal bone is also divided into two components, among which the palmar one is smaller and comminuted (small, variably shaped fragments). The subchondral bone of the distal articular surface is highly sclerotic.

c) Proximal articular surface of the distal carpal row

- 1) Closed, comminuted, complete, displaced, bi-articular, slab fracture of the third carpal bone- the main fracture line courses through the intermediate and radial facets in dorsal plane and divides the third carpal bone into two major, dorsal and palmar components. The dorsal component is comminuted in its abaxial part, within the intermediate facet. There is extensive, full thickness cartilage loss along the major fracture line affecting the palmar component. The opposing fracture surfaces reveal highly compacted subchondral bone, which is more evident within the proximal articular surface.
- 2) Chip fractures of the axial and partially dorsal aspects of the fourth carpal bone

d) Distal articular surface of the distal carpal row

- 1) Moderate scoring and degeneration of the cartilage (thinning) of the proximal articular surface of the carpal bones constituting the distal row

C- MCIII

- 1) Moderate scoring of the proximal articular surface of MCIII
- 2) Mild to moderate scoring of the distal articular surface of MCIII
- 3) Mild to moderate transverse ridge arthrosis with cartilage fibrillation and mild pink discoloration
- 4) Moderate hemorrhage accompanied by soft tissue hypertrophy at the palmar aspect of the supracondylar region of MCIII
- 5) Moderate hemorrhage and bone erosion due to hypertrophic synovial pad at the dorsal aspect of the supracondylar region of MCIII

D- SOFT TISSUE

- 1) Moderate thickening and focal hemorrhage of the origin of the suspensory ligament (high suspensory desmitis)
- 2) Severely thickened and hyperemic synovium of the carpal joints (proliferative synovitis)
- 3) Severe, complete rupture of the palmar intercarpal ligaments
- 4) Moderately thickened and mildly hyperemic synovium of the fetlock joint (proliferative synovitis)

E- PROXIMAL SESAMOID BONES

- 1) Mild to moderate, biaxial, apical, irregular bony outgrowth of the proximal sesamoid bones
- 2) Mild scoring lines of the articular surfaces of the proximal sesamoid bones

F- P1

- 1) Moderate lipping of the dorsal and palmar margins of the proximal articular surface of P1
- 2) Moderate, biaxial erosion along the dorsal margin of proximal articular surface of P1

RIGHT FRONTLIMB

A- RADIUS

- 1) Moderate scoring of the distal articular surface of radius
- 2) Mild to moderate lipping of the cranial margin of the distal articular surface of radius
- 3) Moderate, focal, rounded, full thickness cartilage loss in the middle of the cranial aspect of the intermediate facet of the distal articular surface of radius
- 4) Mild to moderate, focal cartilage pitting with mild, focal, blue discoloration of the underlying subchondral bone of the cranial margin and abaxial aspect of the radial facet of the distal radius

B- CARPUS

a) Proximal articular surface of the proximal carpal row

- 1) Severe osteophytosis present on the dorsal margins of the carpal, intermediate and ulnar bones accompanied by mild to moderate cartilage ulceration (in particular on the radial carpal bone)
- 2) Moderate, focal, extensive, blue subchondral bone discoloration located roughly in the middle of the axial aspect of the radial carpal bone- the location is analogous to the main fracture line affecting carpal bone in contralateral limb

b) Distal articular surface of the proximal carpal row

- 1) Mild, shallow foci of the cartilage ulceration located on the dorsal margins of the intermediate and radial bones accompanied by grey cartilage discoloration

c) Proximal articular surface of the distal carpal row

- 1) Moderate, two foci of blue subchondral bone discoloration of the axial and abaxial aspect along the dorsal margin of the third carpal bone
- 2) Moderate lipping of the dorsal margin of the third and fourth carpal bones

C- MCIII

- 1) Mild scoring of the distal articular surface of MCIII
- 2) Mild transverse ridge arthrosis with cartilage fibrillation
- 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

D- PROXIMAL SESAMOID BONES

- 1) Mild, biaxial, apical, irregular bony outgrowth of the proximal sesamoid bones
- 2) Mild scoring lines of the articular surfaces of the proximal sesamoid bones

E- SOFT TISSUES

- 1) Moderately thickened and mildly hyperemic synovium of the carpal joints (proliferative synovitis)
- 2) Mildly thickened and mildly hyperemic synovium of the carpal joints (proliferative synovitis)

F- P1

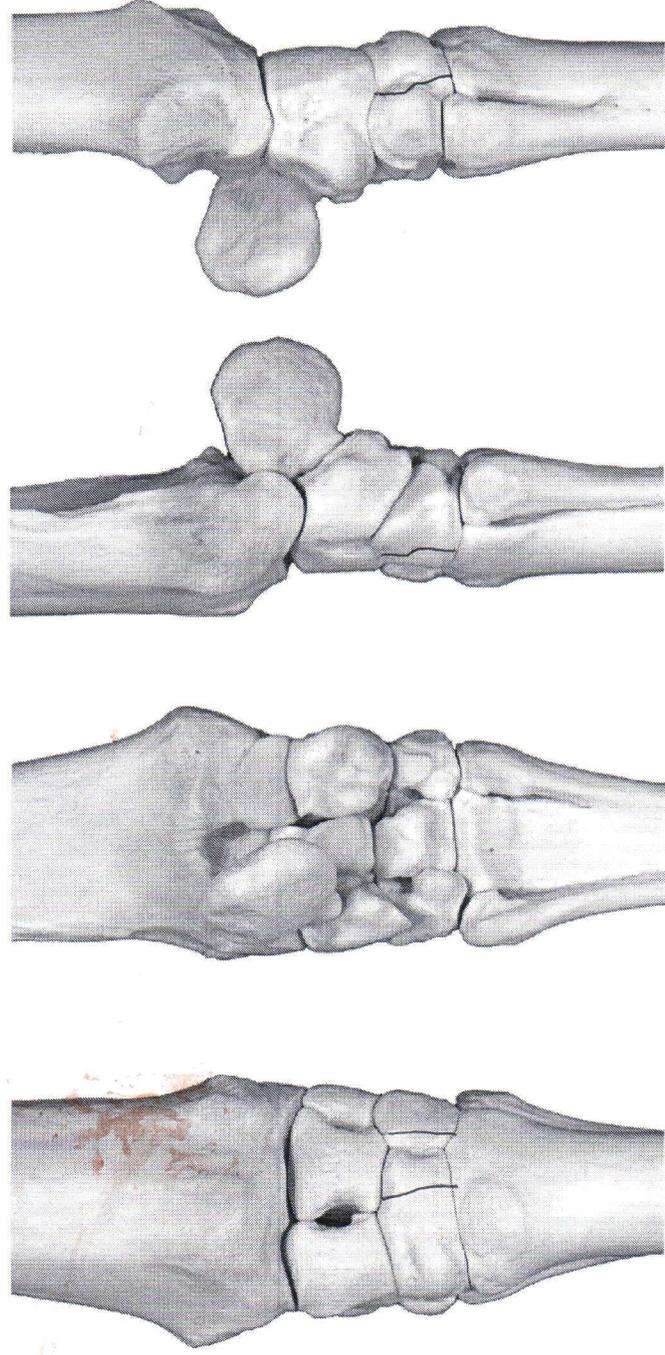
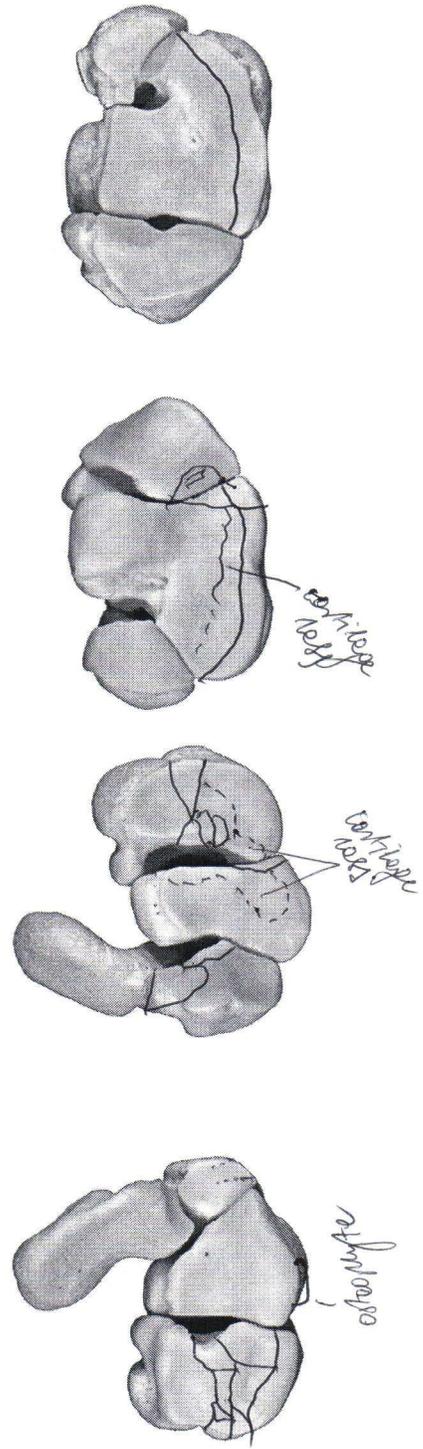
- 1) Mild lipping of the dorsal and palmar margins of the proximal articular surface of P1
- 2) Mild, biaxial erosion along the dorsal margin of proximal articular surface of P1

No gross lesions/ abnormalities were identified in other bones of both distal front limbs examined from the level of the chestnut.

Acc [REDACTED]
 Date 02/06/18
 CC MAS

Nature:

<input type="checkbox"/>	Open	<input checked="" type="checkbox"/>	Closed
<input checked="" type="checkbox"/>	Simple	<input checked="" type="checkbox"/>	Comminuted
<input checked="" type="checkbox"/>	Complete	<input type="checkbox"/>	Incomplete
<input checked="" type="checkbox"/>	Displaced	<input type="checkbox"/>	Non-displaced
<input checked="" type="checkbox"/>	Articular	<input type="checkbox"/>	Non-articular
<input checked="" type="checkbox"/>	Slab		



Pre-existing callus:

<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
<input type="checkbox"/>	Unable to evaluate		

Legend:

— — — Callus

- - - Incomplete Fx

M Missing fragments

Exercise History Report (Full)



UC DAVIS

VETERINARY MEDICINE

*J.D. Wheat Veterinary Orthopedic
Research Laboratory*

Mar-11-2019

Exercise History Report (Full)

J.D. Wheat Veterinary Orthopedic Research Laboratory

This report summarizes the high speed exercise history for Case Horse. There are four parts to this report:

Part 1 is a graph that depicts the races and officially recorded high speed workouts for Case Horse over the horse's career. The graph is useful for visually assessing features of a horse's career like: career length, periods of layup, and exercise consistency. If Case Horse had zero recorded high-speed exercise events, this graph is not produced. Event histories for three breed, sex, age, and event-matched control horses are also plotted.

Part 2 includes graphs which illustrate Case Horse's exercise history alongside that of Control Horses. These graphs are useful for visually comparing periods of layup and specific rates of exercise in the horses' exercise histories.

Part 3 is a chronological listing of races and officially timed works beginning with the most recent event (race or work).

Part 4 is a chart that allows comparison of exercise variables between Case Horse and other racehorses of similar age, sex, and breed that did not die at the same time from an injury. Similar to comparing the results of a blood test to a range of normal values, the values for Case Horse can be assessed in the context of a normal range for 95% of a sample of similar racehorses that did not die during the same time as Case Horse.

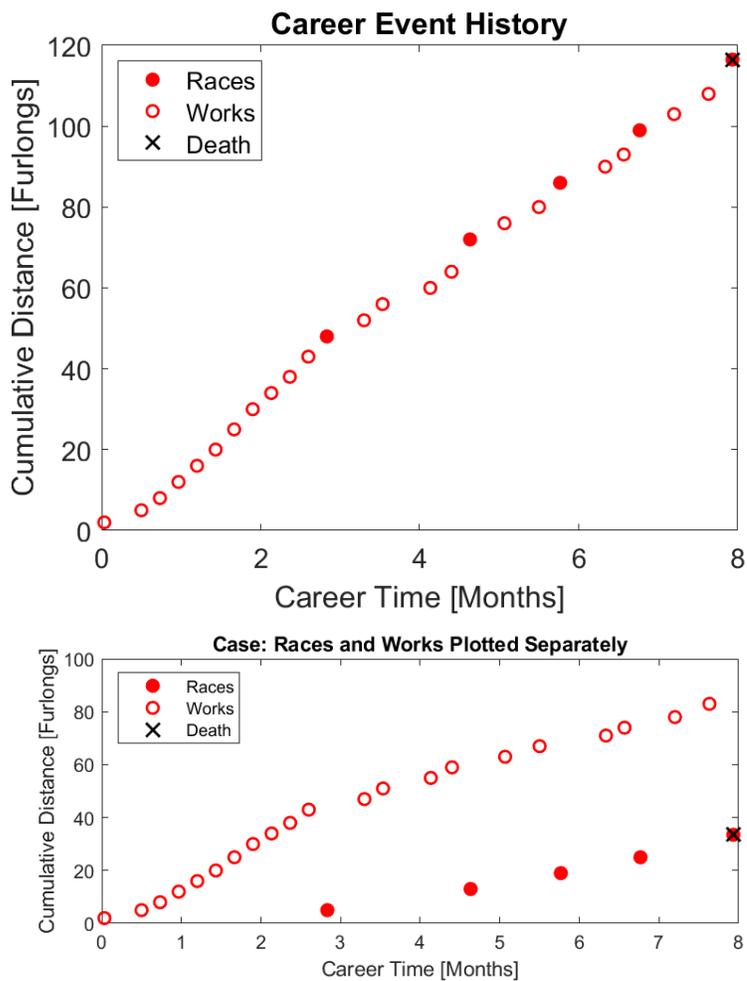
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Part 1: Graphical Representation of Individual High-Speed Exercise Histories

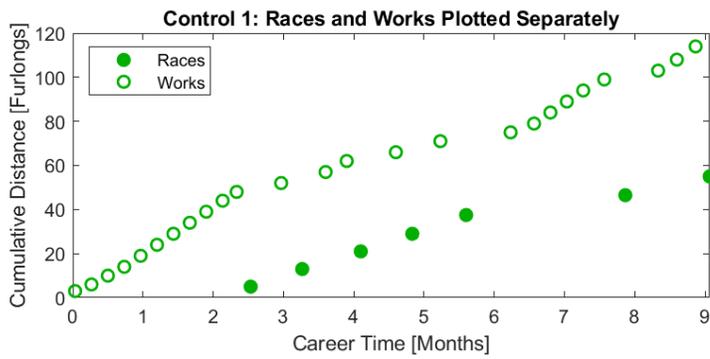
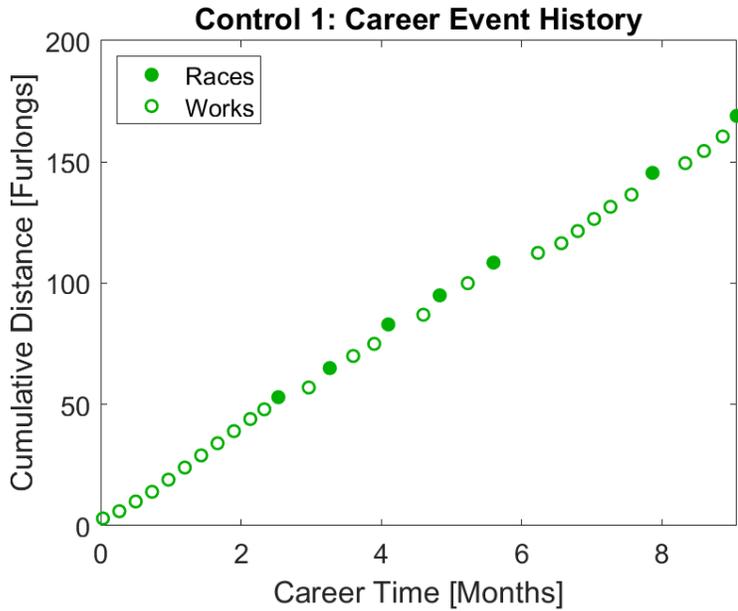
Races (filled circles), officially timed high-speed works (open circles), layups (line with endcaps, periods of time greater than 60 days in length without a race or timed work), and time of death (X) are illustrated over time (Career Time in months). With each event (race or work), the number of furlongs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

Case Horse High Speed Exercise History

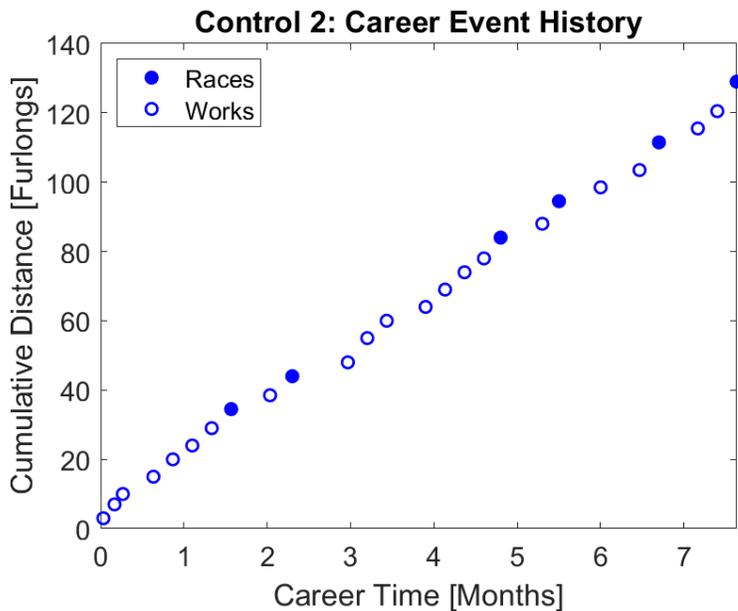


Part 1: Graphical Representation of Individual High-Speed Exercise Histories

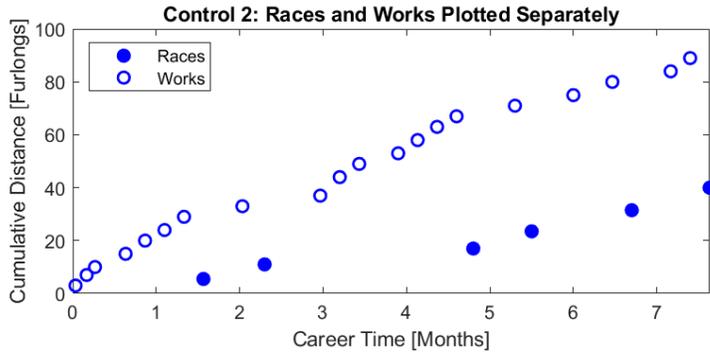
Control 1 High Speed Exercise History



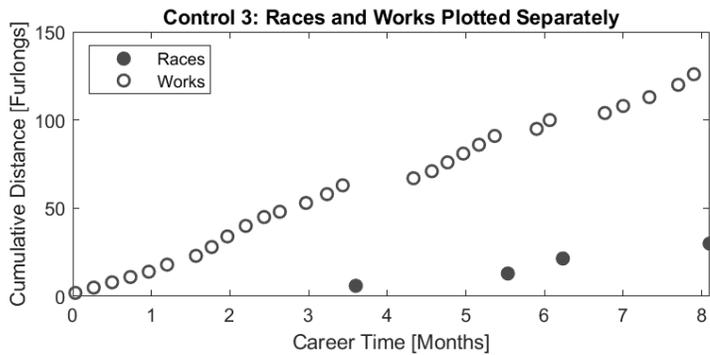
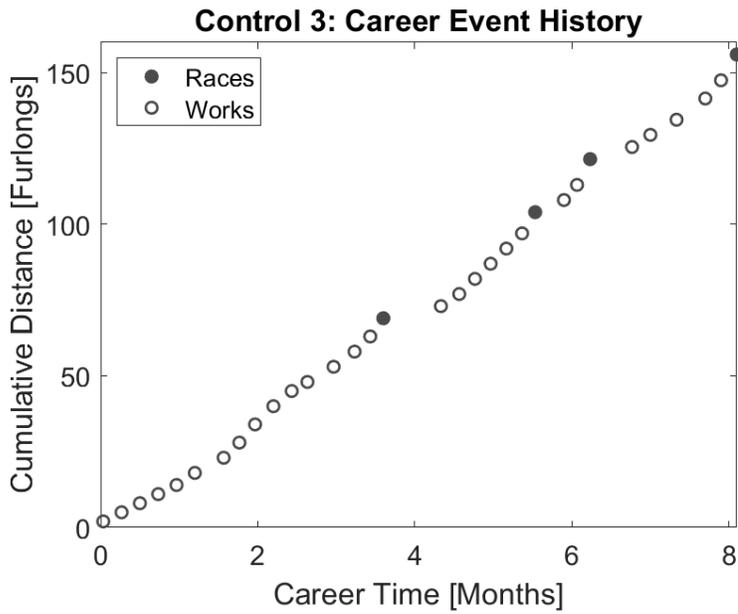
Control 2 High Speed Exercise History



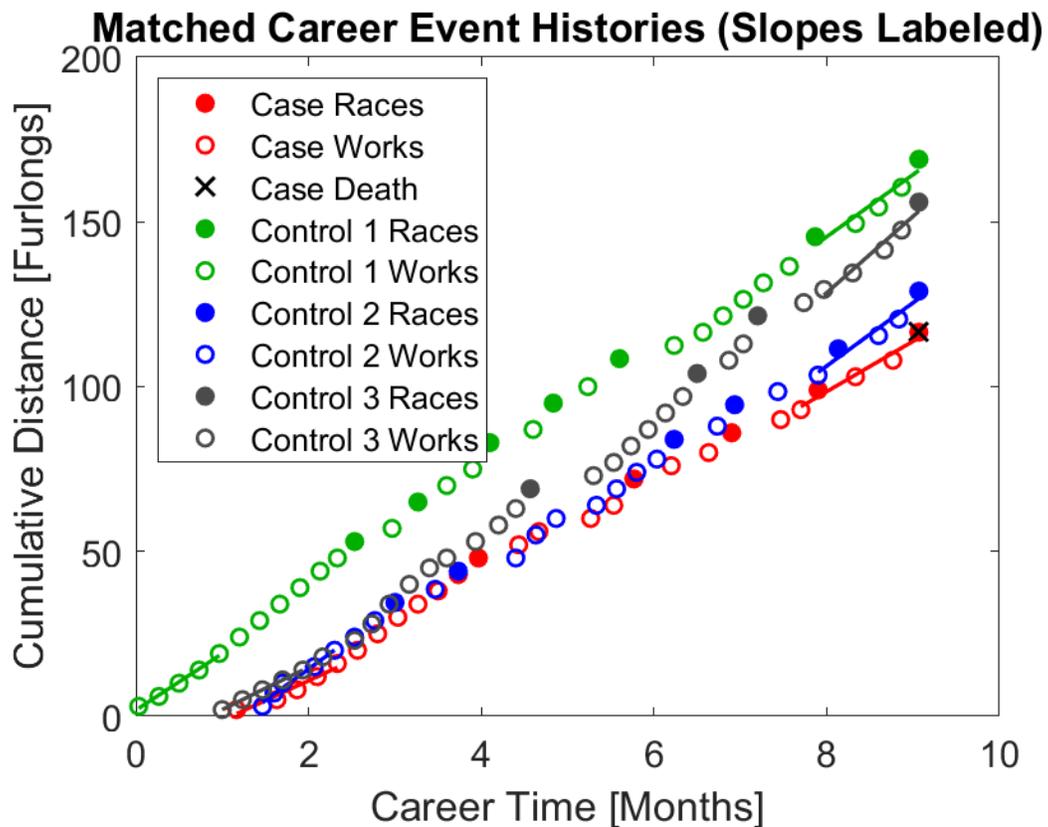
Part 1: Graphical Representation of Individual High-Speed Exercise Histories



Control 3 High Speed Exercise History

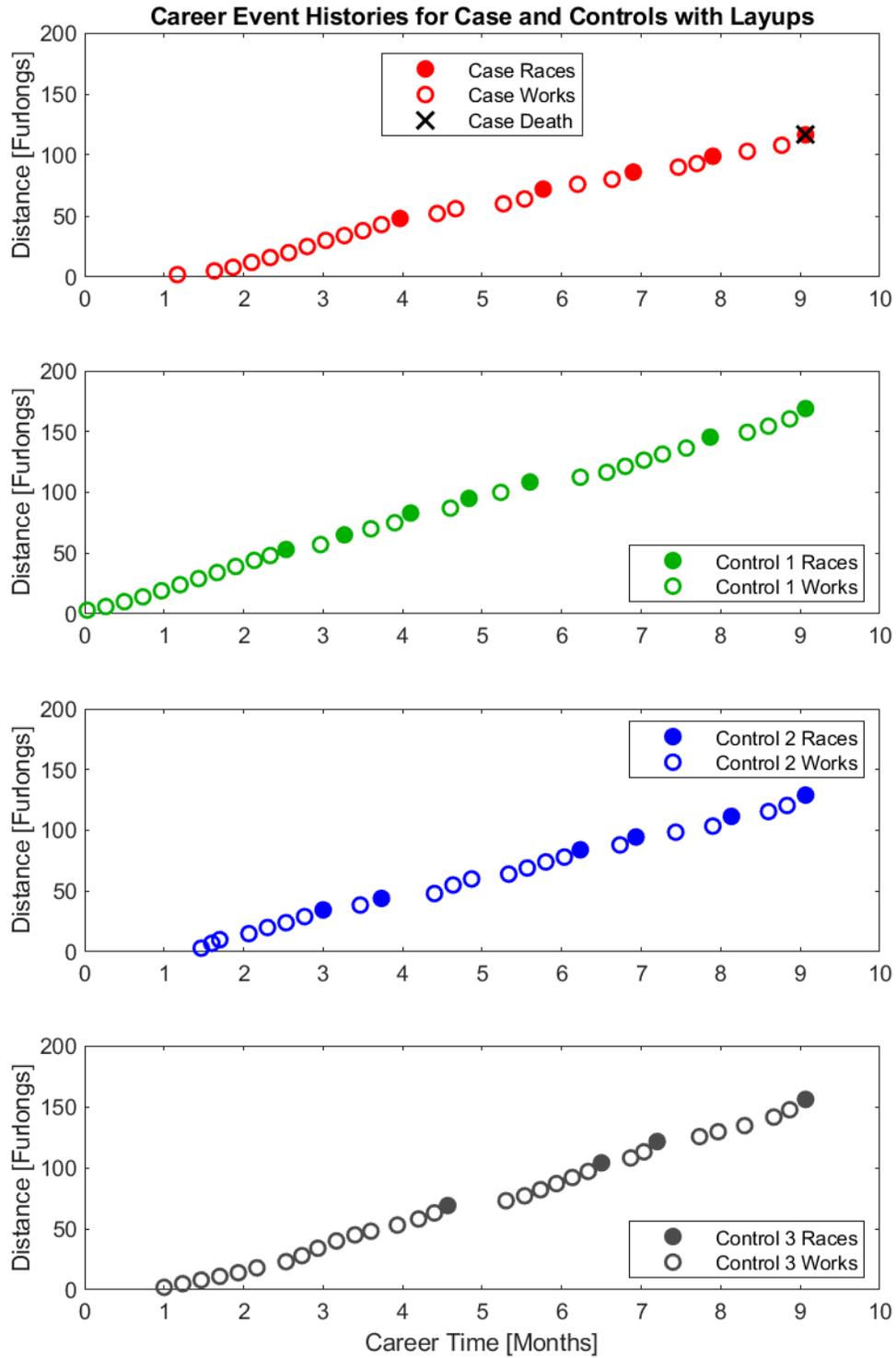


Part 2: Case and Control Horses Plotted Together

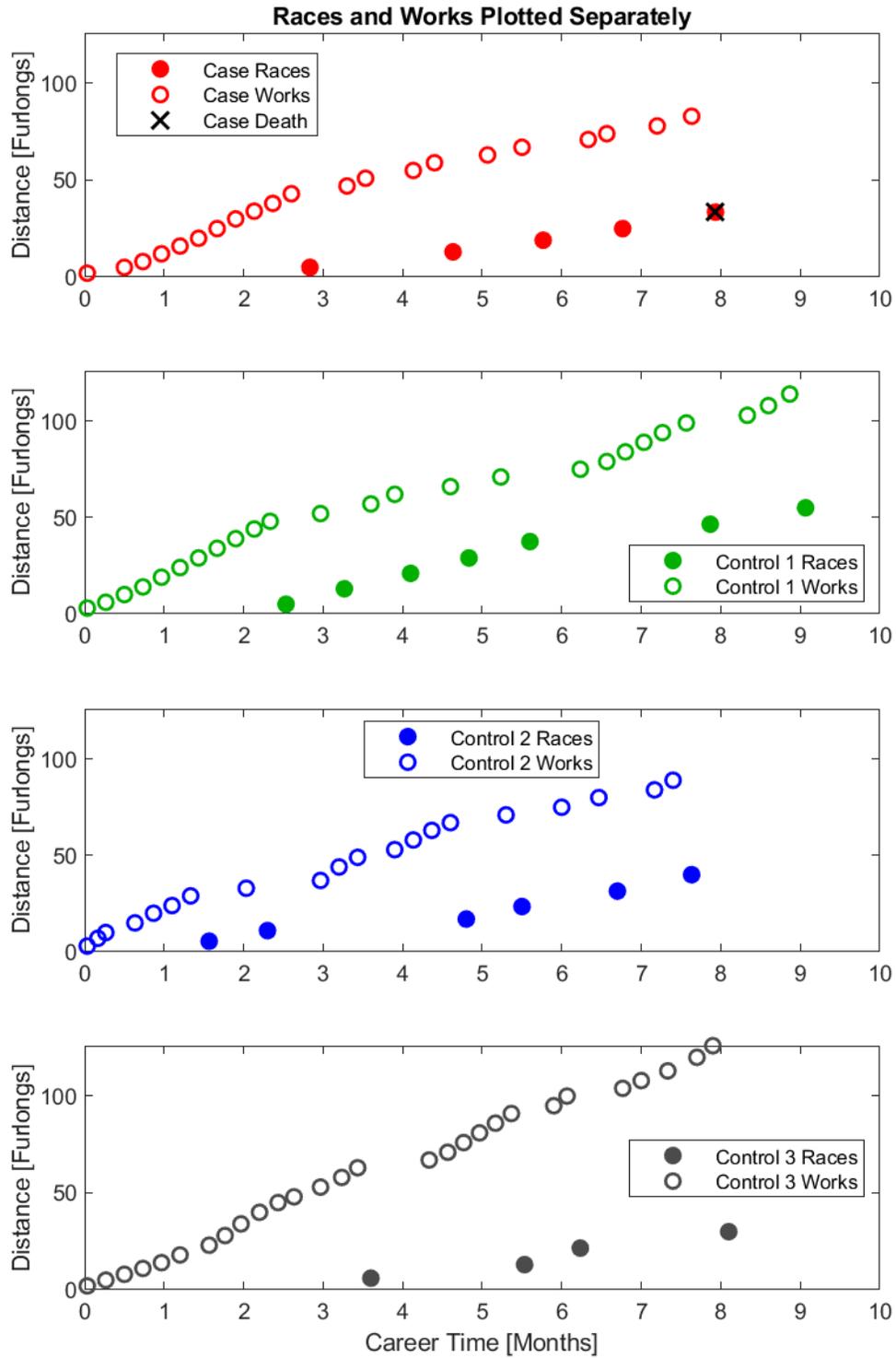


Case and Control Horses' exercise event histories are plotted on the same axes. The plots are aligned by the match date (equal to the date of death of Case Horse). Lines segments indicate specific rates of exercise at the start of career, end of career (for Case Horse), and match date (for Control Horses). Event rates are calculated as the slopes of the plots over 2 to 5 events not spanning a layup period, in units of furlongs per month.

Part 2: Case and Control Horses Plotted Together



Part 2: Case and Control Horses Plotted Together



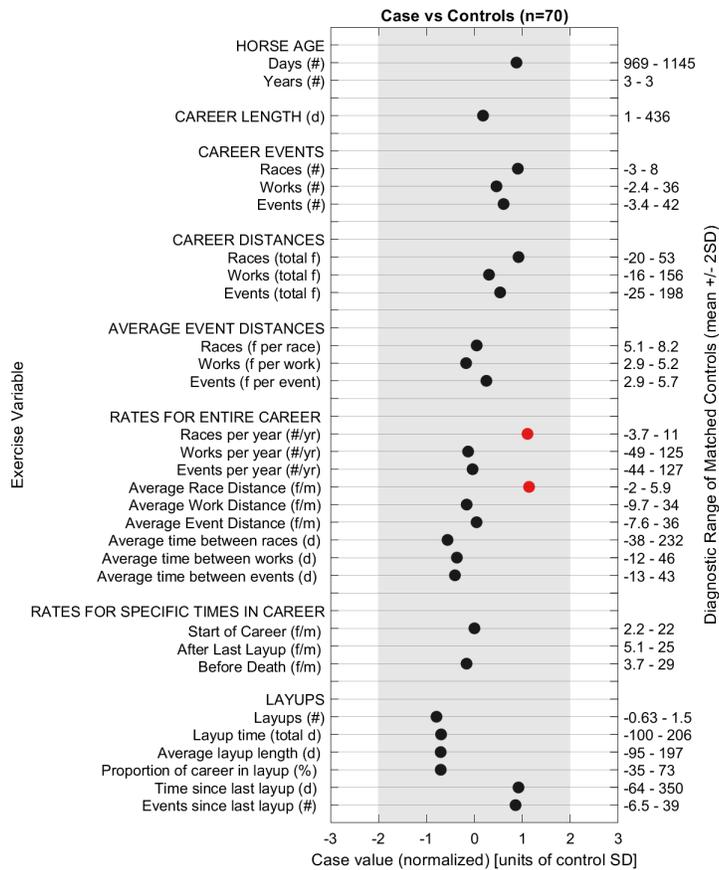
Part 3: Case Horse's Event History

Date	Race/Work	Furlongs	Track	Surface	Track Cond.	Time	Age/Sex	Race Class	Earnings	Finish
2/2/2019	R	8.5	SA	Dirt	Sloppy		3	RBLewisG3-150k	351	5
1/24/2019	W	5.0	SA	Dirt	Fast	01:01.2				
1/11/2019	W	4.0	SA	Dirt training	Fast	:50.40				
12/29/2018	R	6.0	SA	Dirt	Fast		2	Str50000nw2/L	6600	2
12/23/2018	W	3.0	SA	Dirt training	Fast	:37.60				
12/16/2018	W	4.0	SA	Dirt training	Fast	:49.80				
11/29/2018	R	6.0	DMR	Dirt	Wet Fast		2	(S) Aoc80000nw1\$/x-N	3240	4
11/21/2018	W	4.0	SA	Dirt	Fast	:49.80				
11/8/2018	W	4.0	GG	AllWthr	Fast	:50.00				
10/26/2018	R	8.0	GG	AllWthr	Fast		2	Msw	20280	1
10/19/2018	W	4.0	GG	AllWthr	Fast	:47.60				
10/11/2018	W	4.0	GG	AllWthr	Fast	:50.80				
9/23/2018	W	4.0	GG	AllWthr	Fast	:50.00				
9/16/2018	W	4.0	GG	AllWthr	Fast	:49.40				
9/2/2018	R	5.0	GG	AllWthr	Fast		2	Mcl25000 (25-22.5)	2800	2
8/26/2018	W	5.0	GG	AllWthr	Fast	01:05.0				
8/19/2018	W	4.0	GG	AllWthr	Fast	:50.00				
8/12/2018	W	4.0	GG	AllWthr	Fast	:52.40				
8/5/2018	W	5.0	GG	AllWthr	Fast	01:04.0				
7/29/2018	W	5.0	GG	AllWthr	Fast	01:04.6				
7/22/2018	W	4.0	GG	AllWthr	Fast	:51.20				
7/15/2018	W	4.0	GG	AllWthr	Fast	:51.20				
7/8/2018	W	4.0	GG	AllWthr	Fast	:53.60				
7/1/2018	W	3.0	GG	AllWthr	Fast	:38.20				
6/24/2018	W	3.0	GG	AllWthr	Fast	:38.60				

Part 3: Case Horse's Event History

Date	Race/ Work	Fur- longs	Track	Surface	Track Cond.	Time	Age/ Sex	Race Class	Earn- ings	Finish
6/10/2018	W	2.0	GG	AllWthr	Fast	:26.40				

Part 4: Comparison of Exercise Variables between Case Horse and 70 Control Horses (3 year old, male, Thoroughbred)

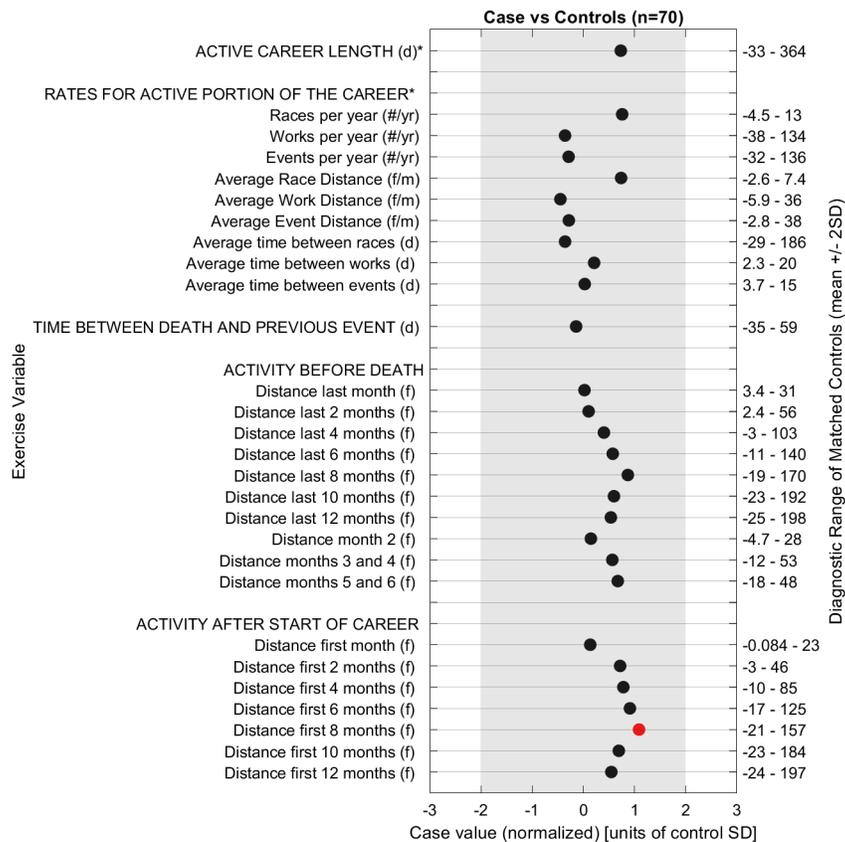


Case Horse values are indicated by black or red symbols: circles indicate values considered normal for 95% of 3 year old, male, Thoroughbreds (n=70) (gray region) (black and red indicate within 1 and 2 SD, respectively, of mean value of controls), X's indicate values outside of the normal range. Two 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 70 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=70) (gray region) (black and red indicate within 1 and 2 SD, respectively, of mean value of controls), X's indicate values outside of the normal range. Two and 3 year old case horses are also matched to control horses by the quarter in which the case horse died (Jan-Mar, Apr-Jun, Jul-Sep, Oct-Dec). Variables that are not calculable are not plotted (e.g. time between races for a horse with zero events). f=furlongs; yr=year; m=month; d=days.

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