



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
2/6/2019 1:19:11PM

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: 01/21/2019 Date Received: 01/22/2019

Comments: CHRB

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	ARTHUR, RICK	[REDACTED]	[REDACTED]	Sierra Madre	CA	91024
Attending Vet	VALKO, KAREN	[REDACTED]	[REDACTED]	San Dimas	CA	91773
Trainer	PROCTOR, TOM	[REDACTED]	[REDACTED]	Simpsonville	KY	40067

CHRB - Related Information

Horse's Name:	[REDACTED]	Human Injury?	No
Tattoo:	[REDACTED]	Death Related to:	Race
Age:	5.00 Years	Track Surface:	Turf
Gender:	Female	Location on Track:	5/8th pole
Taxonomy:	Thoroughbred Horse	Insured?	Y

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

Laboratory Findings/Diagnosis

A 5 year old [REDACTED] Thoroughbred [REDACTED] ([REDACTED]) submitted with a history of left hind mid third metatarsal bone comminuted fracture

Catastrophic breakdown of the left MTIII with:

LEFT HIND LIMB

Acute changes

- Open, comminuted with multiple fragments missing, complete, displaced, articular, diaphyseal, oblique and parasagittal, medial condylar fracture of MTIII with incomplete sagittal stress fractures in the dorsal cortex of the mid-shaft
- Open, comminuted, complete, non-articular, transverse fracture of the MTII and MTIV
- Severe fraying and diffuse hemorrhage of body of the suspensory ligament
- Severe fraying of the common digital extensor tendon

Chronic changes

- Severe dorsal metatarsal disease with diffuse, red petechiae in cortical bone, moderate thickening of the mid-dorsal cortex with multiple sagittal stress fractures, mild thickening of the remaining periosteum
- Moderate lipping of the dorsal and plantar margin of the proximal articular surface of P1
- Moderate, biaxial cartilage fibrillation of the dorsal margin of the proximal articular surface of P1

RIGHT HIND LIMB**Chronic changes**

- Moderate dorsal metatarsal disease with mild periosteum thickening and multifocal, red petechiae in the focally off-colored/pale dorsal cortical bone
- Mild to moderate, focal, pink subchondral bone discoloration visible through the cartilage of the medial plantar eminence of the proximal articular surface of P1
- Mild lipping of the dorsal and plantar margin of the proximal articular surface of P1

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

01/29/19 The most important findings include open, complete, highly comminuted with numerous fragments missing, fracture of the diaphysis and medial condyle of the left third metatarsal/cannon bone. The fracture resulted in the loss of support of the left hindlimb. The injury most likely was associated with focal porosity surrounded by highly sclerotic bone in medial condyle and severe dorsal cortex stress remodeling (severe dorsal metatarsal disease) that combined, likely predisposed to complete fracture of the cannon bone.

01/22/19 No significant findings were identified in visceral organs. At the time of necropsy, both hind 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 was near the 9/16 pole (less than 1/2 mile into race) when it suddenly went wrong. LH mid MTIII compound comminuted fx.

Gross Observations

Necropsy of a 5 year old, [REDACTED] Thoroughbred [REDACTED] ([REDACTED]'), 494 kg, with a [REDACTED] [REDACTED], tattoo [REDACTED] is commenced at 8:0 pm, January 22, 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. 0,5 cm - diameter), shallow ulcers. The intestinal tract is unremarkable, and the small colon contains formed feces. Both hind limbs are removed at the level of the chestnut for further examination.

CHRB Musculoskeletal

Both hind limbs were examined distally to the tibio-tarsal joints. The following changes were seen:

LEFT HIND LIMB**MTIII**

- Open, comminuted with multiple fragments missing, complete, displaced, non-articular, diaphyseal and parasagittal, articular, medial condylar fracture of MTIII with incomplete sagittal stress fractures in the dorsal cortex of the mid-shaft

The cannon bone is divided into two major, distal and proximal components. Multiple key fragments are missing- in the specimen

there are no fragments of dorsomedial diaphysis, lateral part of the distal third of the shaft and extensive plantar fragment/fragments of the shaft together with distal parts of the fractured splint bones. The cortical bone of the proximal segment is affected by severe metatarsal disease with multifocal red petechiae (especially along the main fracture line), moderate thickening of the dorsal cortex with multiple sagittal incomplete stress fractures and cortical bone discoloration (pale, off-colored). The dorsal periosteal surface of the remaining fragments appears to be mildly roughened/irregular and also slightly thickened. In the cortical bone surrounding the proximal aspect of the diaphyseal fracture the petechiae have slightly different appearance. They are dark (dark blue/violet) and its distribution is sparse in comparison to the distal part of this fracture component. There are also two incomplete fracture line progressing proximally for app. 4 cm from the very proximal edge of the main, diaphyseal fracture line.

The distal segment is split into two major pieces by a medial, condylar, parasagittal, articular fracture. The lateral fragment is divided presumably into half in transverse plane (the proximal piece is missing). The multifocal, red petechiae and pale bone discoloration are also present along the fracture line of the distal component.

- Medial condylar, parasagittal, articular stress fracture- the opposing surfaces of the fracture reveal focal, red spot of increased bone porosity surrounded by highly compacted/sclerotic bone

For better visualization of the injury described above, please see attached pictures and drawings.

MTII

- Complete, transverse, simple, displaced fracture at the level of the mid-shaft, from the distal component there is only a small part of the splint button embedded in the hemorrhagic soft tissue

MTIV

- Complete, transverse, simple, displaced fracture at the level of the mid-shaft, the distal part of the bone is completely missing

SOFT TISSUES

- Severe fraying and diffuse hemorrhage with multiple small bony fragments embedded in the dorsal surface of the body of the suspensory ligament at the level of the fracture
- Moderate thickening with dark red discoloration (visible on the cross-section) of the medial and lateral suspensory branches
- Severe fraying of the common digital extensor tendon extending from the level of proximal third of MTIII to its distal third

PROXIMAL SESAMOID BONES

- Moderate scoring of the articular surfaces of the proximal sesamoid bones
- Moderate synovial discoloration underneath the bases of the proximal sesamoid bones

P1

- Moderate lipping of the dorsal and plantar margin with pink discoloration of the proximal articular surface of P1
- Moderate, biaxial, focal cartilage fibrillation of the dorsal margin of the proximal articular surface of P1 (dorsomedial margin is more affected)
- Mild to moderate scoring of the proximal articular surface of P1

RIGHT HIND LIMB

MTIII

- Moderate dorsal metatarsal disease with mild periosteum thickening and multifocal, red petechiae in the focally off-colored/pale dorsal cortical bone

PROXIMAL SESAMOID BONES

- Mild, biaxial apical modeling with subtle, irregular bony outgrowth

P1

- Mild to moderate, focal, pink subchondral bone discoloration visible through the cartilage of the medial plantar eminence of the proximal articular surface of P1
- Mild lipping of the dorsal and plantar margin of the proximal articular surface of P1
- Mild, biaxial, focal cartilage fibrillation of the dorsal margin of the proximal articular surface of P1

No gross lesions/ abnormalities were identified in other bones of both distal hind limbs examined from the level of the midshaft of the tibia to the hoof.

Acc #

Date

CC

01/28/18
MAS

Metatarsal Bones - Left

Nature:

- Open Closed
- Simple Comminuted
- Complete Incomplete
- Displaced Non-displaced
- Articular Non-articular

Location:

- Proximal Epiphyseal Distal Epiphyseal
- Proximal Metaphyseal Distal Metaphyseal
- Proximal Physeal Distal Physeal
- Diaphyseal
- Condylar

Medial cm
Lateral cm

Configuration:

- Axial (longitudinal) Butterfly
- Transverse Oblique
- Segmental

Direction:

- Proximodorsal-Distopalmar
- Proximolateral-Distomedial
- Sagittal
- Proximopalmar-Distodorsal
- Proximomedial-Distolateral
- Dorsal plane (mediolateral)

Pre-existing callus:

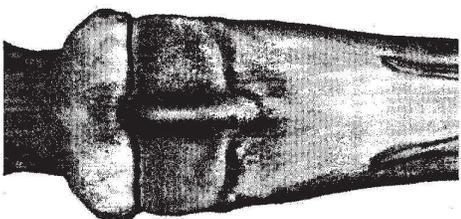
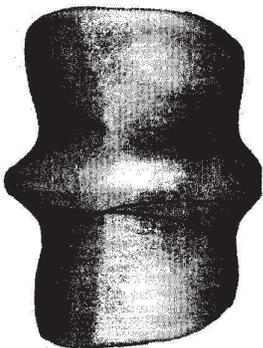
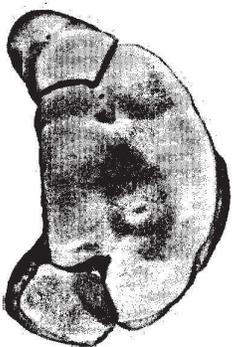
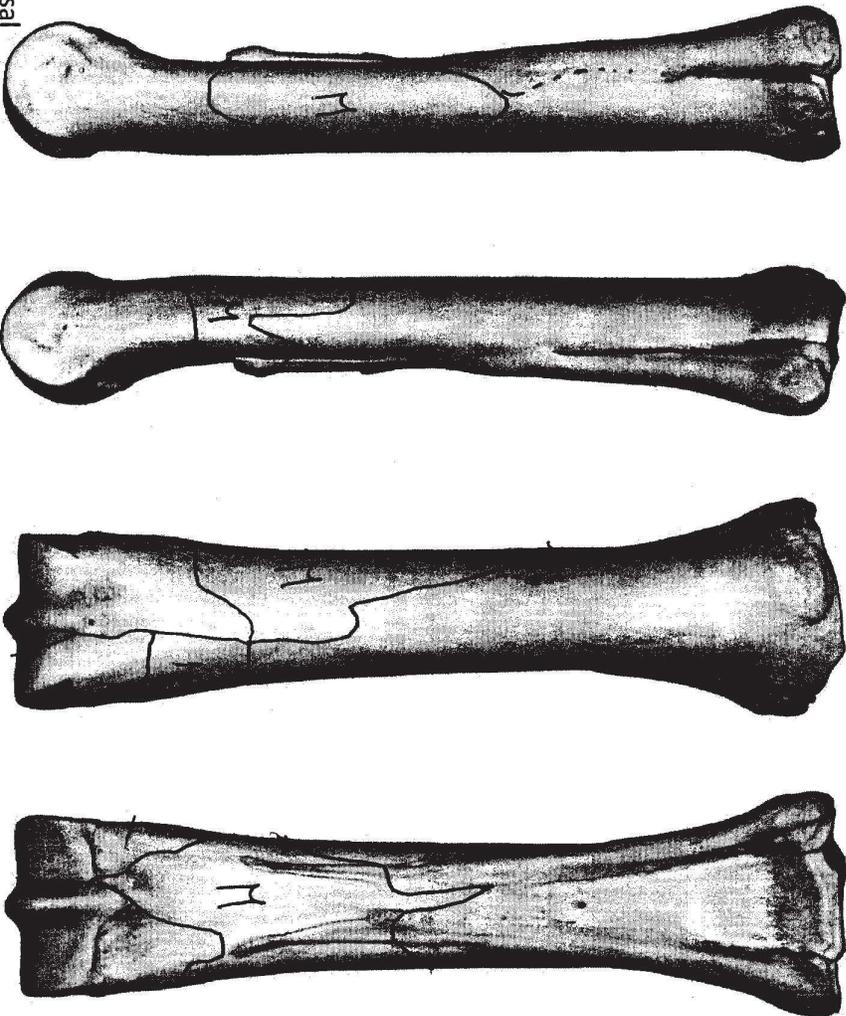
- Yes No
- Unable to evaluate

Legend:

==== Callus

--- Incomplete Fx

M Missing fragments



Exercise History Report (Full)



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.

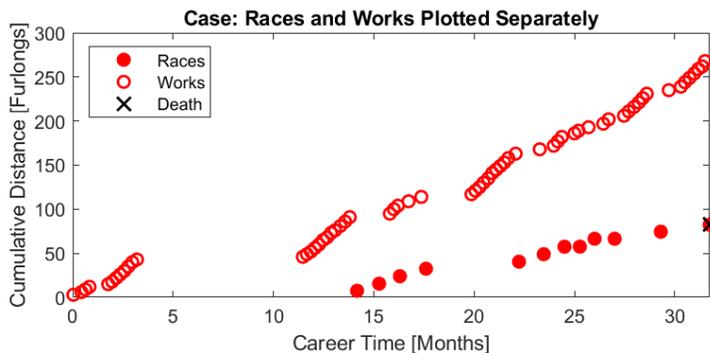
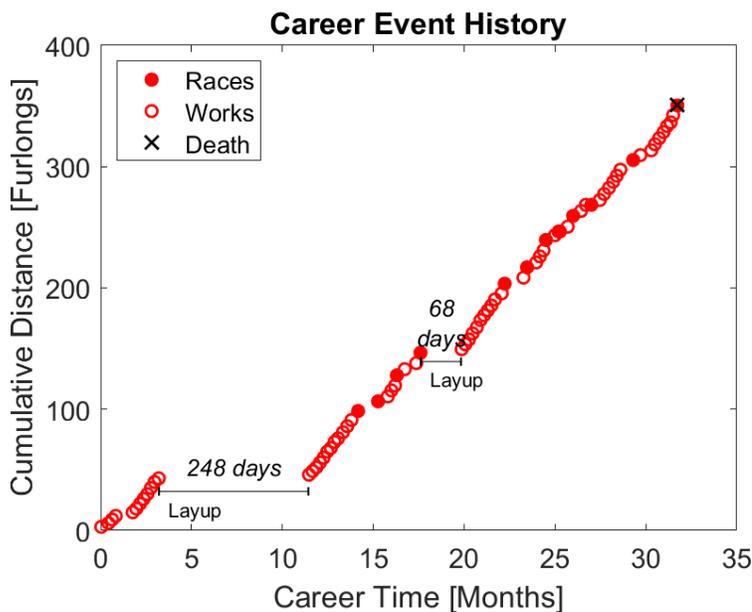
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Part 1: Graphical Representation of Individual High-Speed Exercise Histories

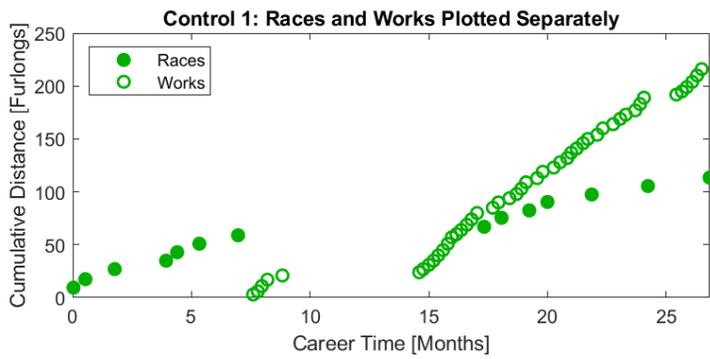
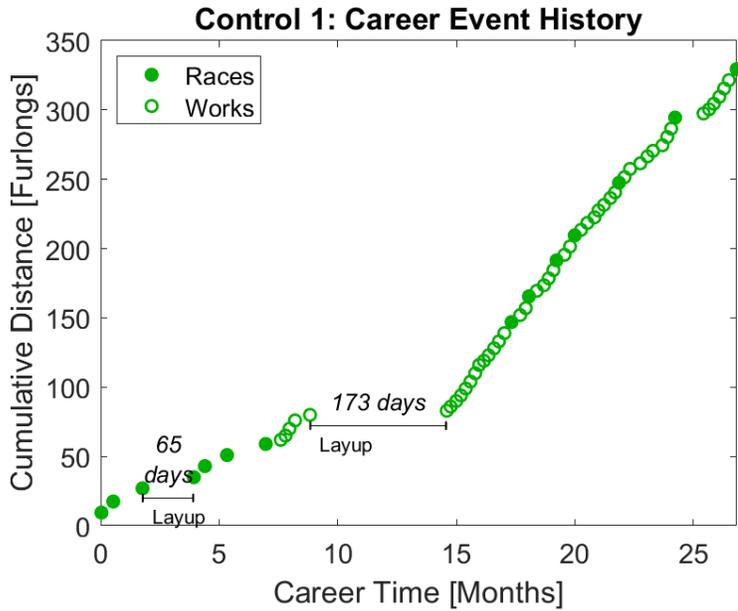
Races (filled circles), officially timed high-speed works (open circles), layups (line with endcaps, periods of time greater than 60 days in length without a race or timed work), and time of death (X) are illustrated over time (Career Time in months). With each event (race or work), the number of furlongs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

Case Horse High Speed Exercise History

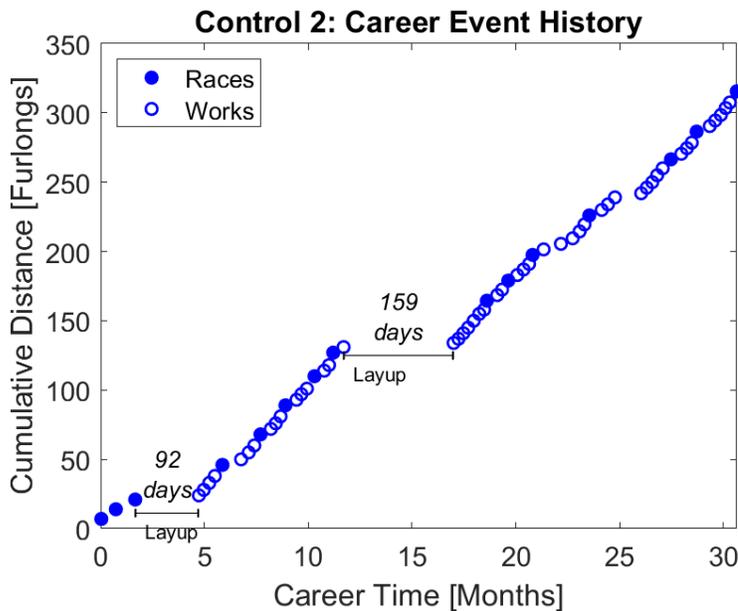


Part 1: Graphical Representation of Individual High-Speed Exercise Histories

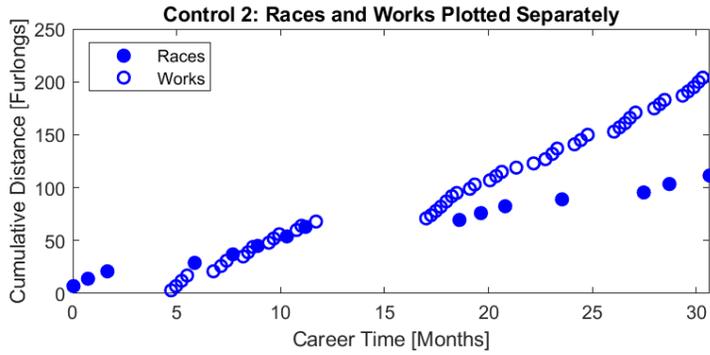
Control 1 High Speed Exercise History



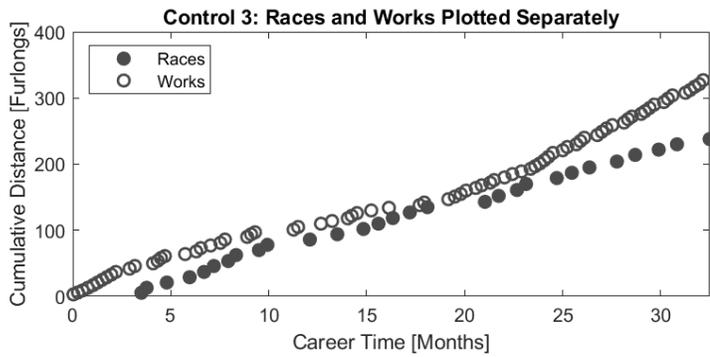
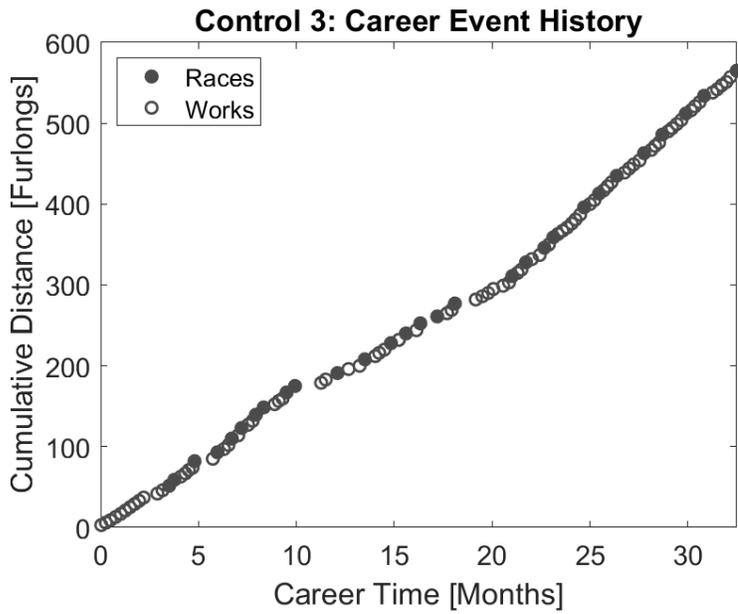
Control 2 High Speed Exercise History



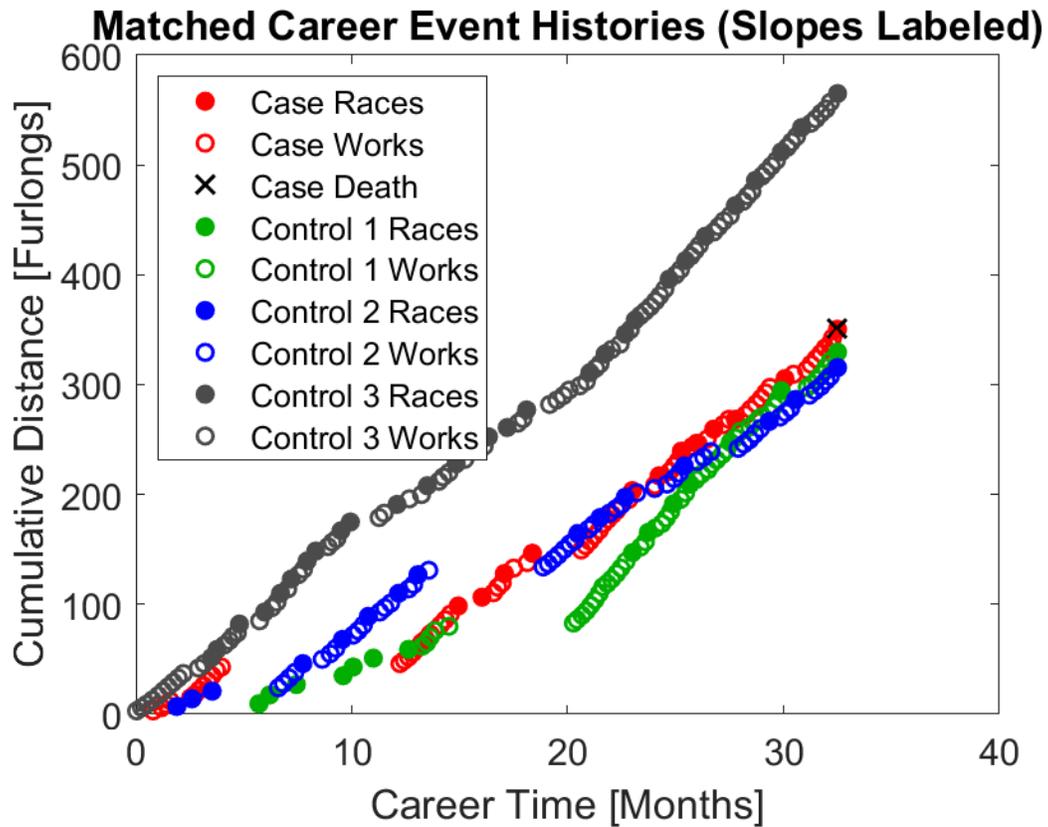
Part 1: Graphical Representation of Individual High-Speed Exercise Histories



Control 3 High Speed Exercise History

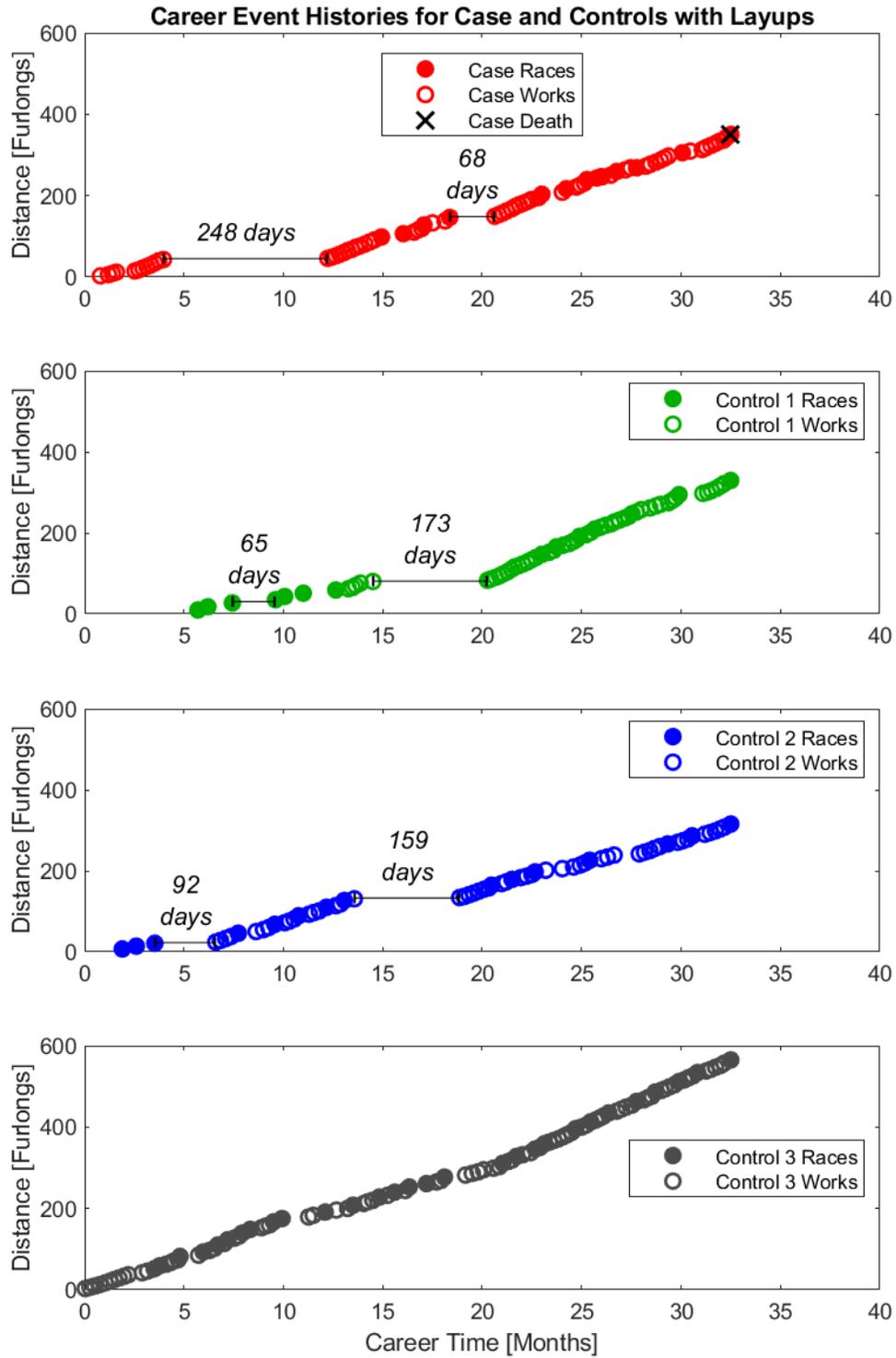


Part 2: Case and Control Horses Plotted Together

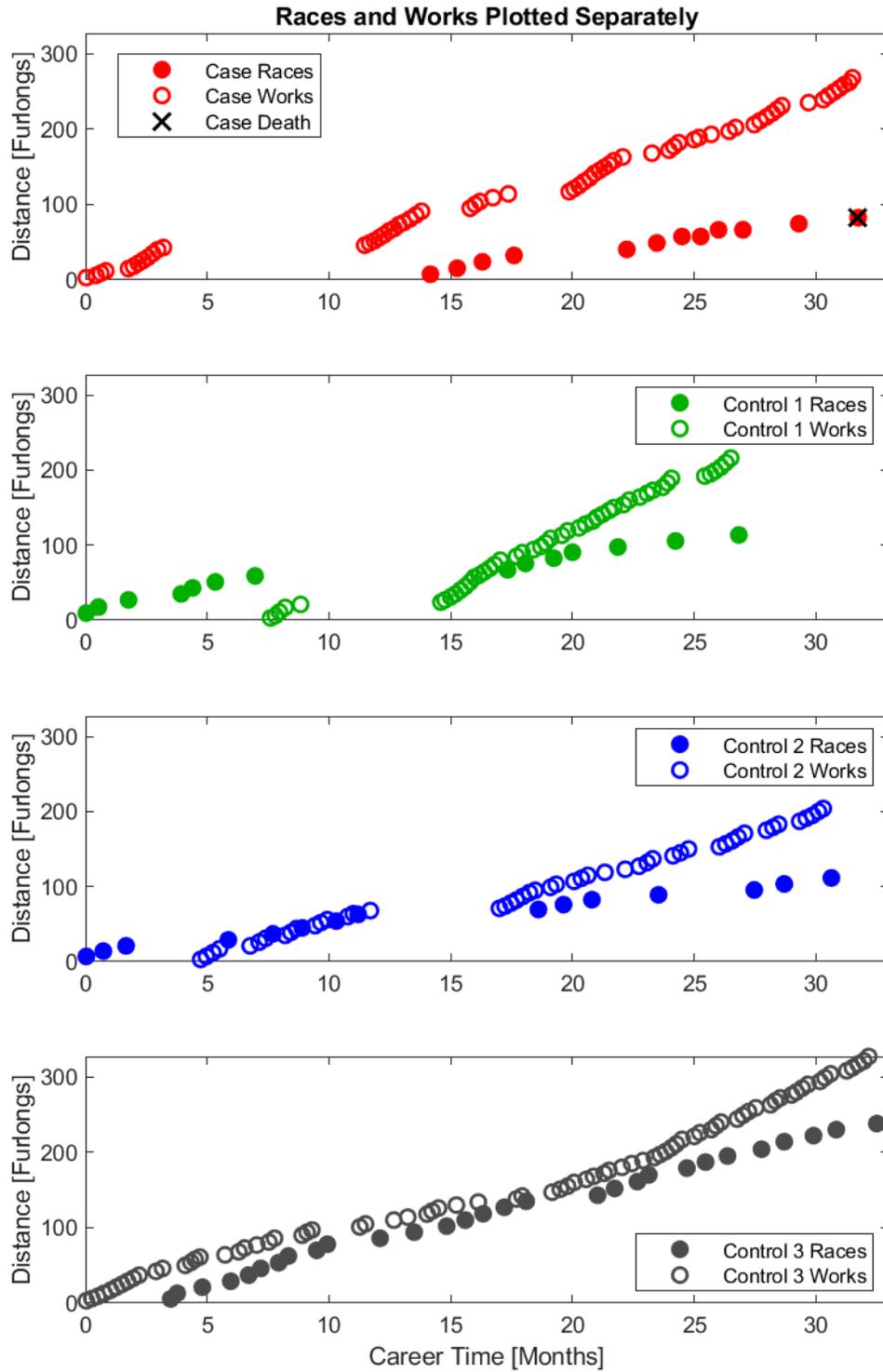


Case and Control Horses' exercise event histories are plotted on the same axes. The plots are aligned by the match date (equal to the date of death of Case Horse). Lines segments indicate specific rates of exercise at the start of career, end of career (for Case Horse), and match date (for Control Horses). 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
1/21/2019	R	8.0	SA	Turf	Good		4U/FM	MegahrtzG3-100k	351	6
1/14/2019	W	6.0	SA	Dirt training	Fast	01:15.2				
1/10/2019	W	3.0	SA	Dirt training	Fast	:36.60				
1/4/2019	W	5.0	SA	Dirt training	Fast	01:02.0				
12/29/2018	W	5.0	SA	Dirt training	Fast	01:02.2				
12/22/2018	W	5.0	SA	Dirt training	Fast	01:02.6				
12/15/2018	W	5.0	SA	Dirt training	Fast	01:02.8				
12/9/2018	W	4.0	SA	Dirt training	Fast	:48.60				
11/21/2018	W	4.0	DMR	Dirt	Fast	:50.00				
11/9/2018	R	8.0	DMR	Turf	Firm		3U/FM	(R) KthnCrsbyB-75k	345	9
10/19/2018	W	5.0	FAI	Turf	Firm	01:01.4				
10/13/2018	W	5.0	FAI	All Weather Training	Fast	01:00.2				
10/7/2018	W	5.0	FAI	All Weather Training	Fast	01:01.4				
9/30/2018	W	5.0	FAI	All Weather Training	Fast	01:02.0				
9/22/2018	W	5.0	FAI	All Weather Training	Fast	01:01.4				
9/15/2018	W	4.0	FAI	All Weather Training	Fast	:50.20				

Part 3: Case Horse's Event History

Date	Race/Work	Furlongs	Track	Surface	Track Cond.	Time	Age/Sex	Race Class	Earnings	Finish
9/1/2018	R	0.0	KD	Turf	Firm		3U/FM	(R) OneDreamrB-250k	23750	3
8/23/2018	W	5.0	FAI	All Weather Training	Fast	01:02.0				
8/15/2018	W	4.0	FAI	All Weather Training	Fast	:48.40				
8/2/2018	R	9.0	SAR	Turf	Firm		4U/FM	Aoc80000cnd-N	2850	6
7/24/2018	W	4.0	FAI	All Weather Training	Fast	:49.20				
7/11/2018	R	0.0	DEL	Turf	Firm		3U/FM	Aoc65000cnd-N	4400	3
7/9/2018	W	3.0	FAI	All Weather Training	Fast	:36.60				
7/3/2018	W	4.0	FAI	Turf	Firm	:51.40				
6/18/2018	R	8.5	DEL	Turf	Firm		3U/FM	Aoc25000nw2/x-N	22800	1
6/14/2018	W	5.0	FAI	All Weather Training	Fast	01:02.6				
6/8/2018	W	5.0	FAI	All Weather Training	Fast	01:01.4				
6/2/2018	W	4.0	FAI	All Weather Training	Fast	:49.00				
5/18/2018	R	8.5	PIM	Dirt	Sloppy		3U/FM	Aoc25000 (25-20)cnd-N	7260	3
5/12/2018	W	5.0	FAI	All Weather Training	Fast	01:01.0				
4/11/2018	R	8.0	KEE	Turf	Good		4U/FM	Alw78000nw2x	\$2340	5

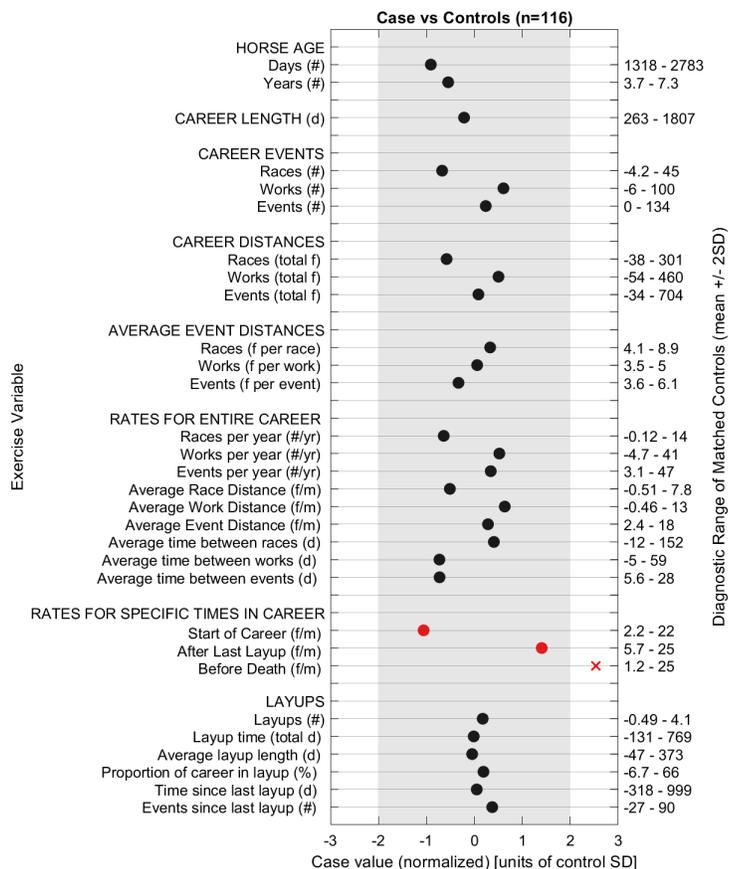
Part 3: Case Horse's Event History

Date	Race/Work	Furlongs	Track	Surface	Track Cond.	Time	Age/Sex	Race Class	Earnings	Finish
4/6/2018	W	5.0	KEE	Dirt	Fast	01:02.4				
3/26/2018	W	5.0	TAM	Dirt	Fast	01:01.0				
3/20/2018	W	4.0	TAM	Dirt	Fast	:47.80				
3/14/2018	W	4.0	TAM	Dirt	Fast	:50.00				
3/8/2018	W	4.0	TAM	Dirt	Fast	:49.00				
3/2/2018	W	6.0	TAM	Dirt	Fast	01:14.0				
2/24/2018	W	5.0	TAM	Dirt	Fast	01:01.4				
2/17/2018	W	5.0	TAM	Dirt	Fast	01:04.6				
2/11/2018	W	4.0	TAM	Dirt	Fast	:48.20				
2/5/2018	W	4.0	TAM	Dirt	Good	:51.80				
1/30/2018	W	3.0	TAM	Dirt	Fast	:37.40				
11/23/2017	R	8.5	AQU	Turf	Good		3/F	WntrMemrsB-150k	750	9
11/16/2017	W	5.0	FAI	All Weather Training	Fast	01:01.4				
10/28/2017	W	5.0	FAI	All Weather Training	Fast	01:01.2				
10/15/2017	R	8.5	KEE	Turf	Firm		3U/FM	Alw67000nw1/x	40200	1
10/12/2017	W	4.0	KEE	Dirt	Fast	:48.80				
10/6/2017	W	5.0	FAI	Turf	Firm	01:02.0				
9/30/2017	W	4.0	FAI	All Weather Training	Fast	:49.20				
9/14/2017	R	8.0	KD	Turf	Yielding		3U/FM	Msw	78000	1
8/12/2017	R	7.5	DEL	Turf	Good		3U/FM	Msw	2040	4
8/1/2017	W	5.0	FAI	All Weather Training	Fast	01:02.2				
7/25/2017	W	5.0	FAI	All Weather Training	Fast	01:01.8				

Part 3: Case Horse's Event History

Date	Race/Work	Furlongs	Track	Surface	Track Cond.	Time	Age/Sex	Race Class	Earnings	Finish
7/18/2017	W	5.0	FAI	Turf	Firm	01:02.6				
7/10/2017	W	3.0	DEL	Dirt	Fast	:35.60				
7/4/2017	W	5.0	DEL	Dirt	Fast	01:04.8				
6/28/2017	W	3.0	DEL	Dirt	Fast	:35.40				
6/22/2017	W	5.0	DEL	Dirt	Fast	01:03.8				
6/16/2017	W	4.0	DEL	Dirt	Fast	:49.40				
6/10/2017	W	4.0	DEL	Dirt	Fast	:51.20				
6/4/2017	W	3.0	DEL	Dirt	Fast	:37.80				
5/29/2017	W	3.0	DEL	Dirt	Fast	:37.20				
5/23/2017	W	3.0	DEL	Dirt	Fast	:39.60				
9/17/2016	W	3.0	DEL	Dirt	Fast	:36.60				
9/10/2016	W	5.0	DEL	Dirt	Fast	01:02.0				
9/4/2016	W	5.0	DEL	Dirt	Fast	01:03.0				
8/29/2016	W	4.0	DEL	Dirt	Fast	:49.60				
8/23/2016	W	4.0	DEL	Dirt	Fast	:49.80				
8/17/2016	W	4.0	DEL	Dirt	Fast	:49.60				
8/11/2016	W	3.0	DEL	Dirt	Fast	:38.00				
8/5/2016	W	3.0	DEL	Dirt	Fast	:37.80				
7/8/2016	W	3.0	DEL	Dirt	Fast	:36.40				
7/2/2016	W	3.0	DEL	Dirt	Fast	:37.40				
6/26/2016	W	3.0	DEL	Dirt	Fast	:39.60				
6/14/2016	W	3.0	DEL	Dirt	Fast	:38.60				

Part 4: Comparison of Exercise Variables between Case Horse and 116 Control Horses (5+ year old, female, Thoroughbred)

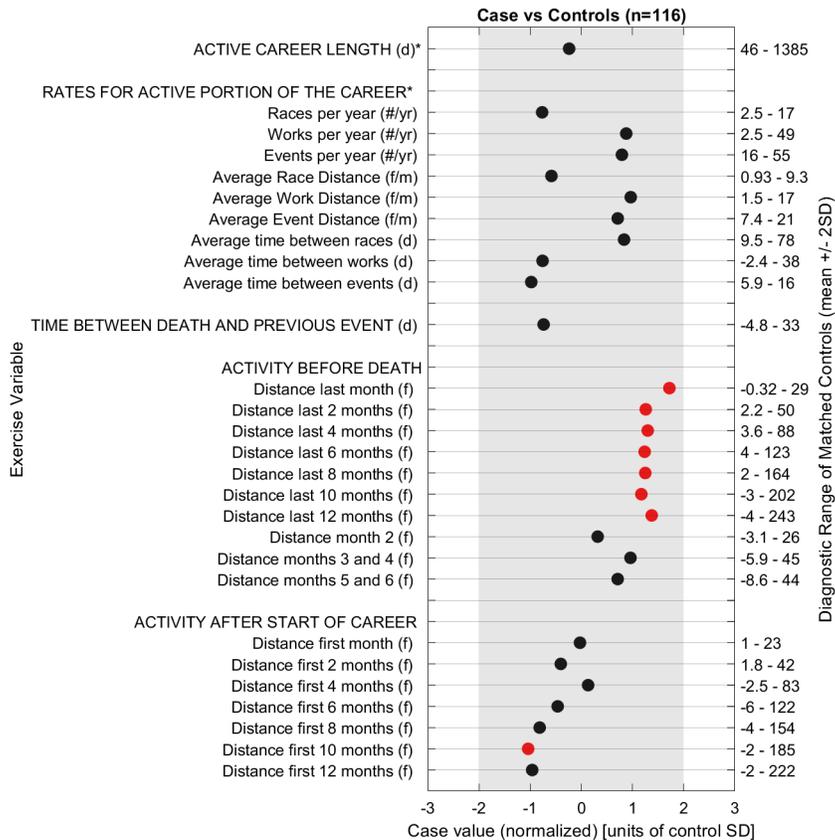


Case Horse values are indicated by black or red symbols: circles indicate values considered normal for 95% of 5+ year old, female, Thoroughbreds (n=116) (gray region) (black and red indicate within 1 and 2 SD, respectively, of mean value of controls), X's indicate values outside of the normal range. 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 116 Control Horses (5+ year old, female, Thoroughbred)



Case Horse values are indicated by black or red symbols: circles indicate values considered normal for 95% of 5+ year old, female, Thoroughbreds (n=116) (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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