

WASHINGTON HORSE RACING COMMISSION EQUINE HEALTH AND SAFETY REPORT 2022

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Horseracing Integrity and Safety Act (HISA)

As of the date of this report, HISA's future is uncertain. Partial implementation of the federal legislation Horseracing Integrity and Safety Act (HISA) began on July 1, 2022. In 2022, the legislation's effect on the WHRC veterinary regulatory functions primarily impact the Veterinarian's List: which horses are placed on the VL, multiple inclusions on VL during the previous 365 days, examining claimed horses and the potential of voiding claims, and working off the veterinarian's list (VL). These changes will be discussed in the Veterinarian's List section below. Implementation of HISA medication rules were scheduled for January 2023, but have been delayed due to legal uncertainty.

WHRC Racing Statistics

Racing and Training Days

Washington had one 52 day race meet in 2022 at Emerald Downs (EMD) from May 15 to September 18, 2022. The 52 day meet was a 7% increase from the forty nine (49) days of 2021. Although an increase from the scheduled 50 race days in 2021, it was a 25% decrease from the 67 days in 2018 and 2019. **(figure 1)** There were one hundred eighty five (185) training days in 2022; unchanged from 2021, but the fewest since 2012. Sun Downs (SUD) did not conduct a race meet in 2022.

Figure 1: Number of: Race Days, Training Days, Races, Starters 2012-2021

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Racing Days	81	75	73	70	70	72	67	67	38	49	52
Races	690	665	641	647	599	604	558	547	391	417	425
Races per day						8.38	8.61	8.16	10.3	8.1	8.17
Starters	4390	4427	4022	4438	4450	4224	3927	3737	2905	2707	2725
Starters per race						6.99	7.04	6.83	7.43	6.48	6.41
Training Days	187	218	215	215	202	210	210	200	230	185	185

Total: Races, races per day, starters, and average starters per race

- **Races:** In 2022 there were four hundred twenty-five (425) races, virtually unchanged with a 2% increase from the four hundred seventeen (417) of 2021.
- **Races Per Day:** There was an average of 8.17 races per day in 2022, unchanged with less than a 1% increase from the 8.1 in 2021.
- **Total Starters:** There were 2725 total starts at EMD in 2022, virtually unchanged with less than a 1% increase from the 2707 in 2021. This discontinues the trend of decreasing total starts seen in previous years.
- **Average Starters Per Race:** There was an average of 6.41 starters per race in 2022, virtually unchanged with a less than 1% decrease from 2021 with 6.48 starters per race.

These numbers are the result of the decreasing racehorse population at Emerald Downs. In 2017 there were 969 racehorses on the grounds. In 2022 they had decreased to seven hundred eighty nine (789), a 21.7% reduction

The total number of races increased slightly from 2021 to 2022, reversing a recent declining trend following the pandemic. The races per day, total starters, average starters per race remained virtually unchanged from 2021.

Sample Collection and Analysis

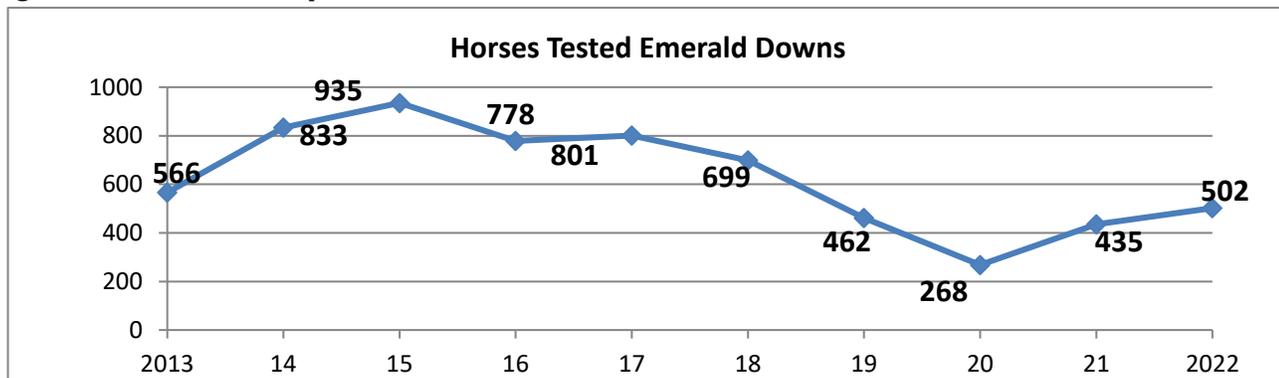
Post-race samples were collected from five hundred two (502) horses, a 13% increase from the four hundred thirty-five (435) horses tested sampled in 2021, continuing an increasing trend from 2020.

Samples were collected from all first place finishers, as well as other horses selected by the Board of Stewards for testing. Horses in Stakes races finishing first, second, and third were selected and tested. Samples were analyzed by Industrial Laboratories of Denver, Colorado, the WHRC contract laboratory. **(figure 2)**

Total Carbon Dioxide samples (TCO₂)

Ninety-four (94) pre-race samples were collected for total carbon dioxide (TCO₂) testing, an 88% increase from the eleven (11) samples of 2021

Figure 2: Horse Blood Samples Submitted EMD 2013-22



Medication Threshold Violations

Fourteen (14) medication violations were reported in 2022, a 42% decrease from the twenty four (24) violations of 2021 in which a cluster of fourteen (14) dexamethasone violations were reported.

Violations reported were three (3) for corticosteroids, eight (8) for nonsteroidal anti-inflammatory drugs (NSAID), two (2) for the muscle relaxant methocarbamol, and one (1) each for the sedative xylazine, and the prohibited opioid fentanyl. **(figures 3,4)**

Oral administration of medications continues to be a problem. It is suspected in eight (8) violations: four (4) of the phenylbutazone, the only flunixin, both of the methocarbamol, and the only dexamethasone violation. Absent oral administration there would have been six (6) medication violations. Caution is recommended for oral medications in the WHRC Withdrawal Time Recommendations.

www.whrc.wa.gov/uploads/1/1/2/0/112048803/whrc_withdrawal_time_recommendations_2022.pdf

Figure 3: Number of Violations 2012-22

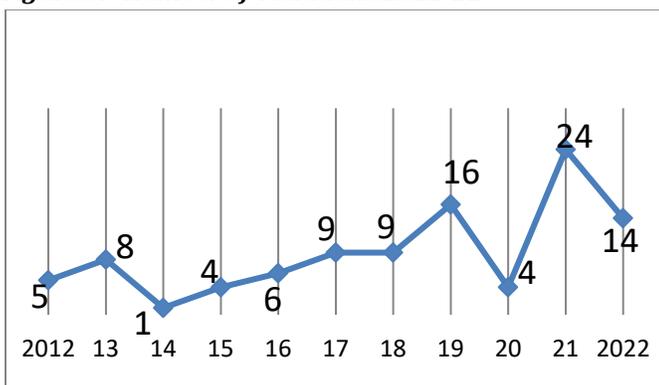


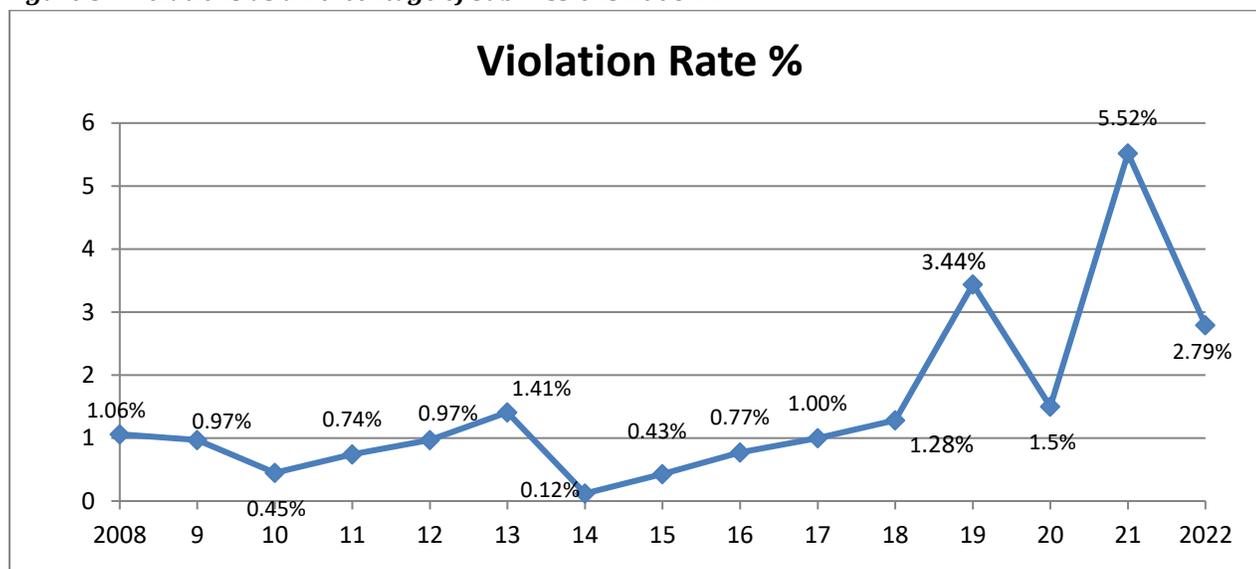
figure 4: Emerald Downs Threshold Violations 2021-22

Medication	Family	2021	2022
Dexamethasone	Corticosteroid	14	1
Betamethasone	Corticosteroid	3	0
Triamcinolone	Corticosteroid	1	1
Phenylbutazone (PBZ)	NSAID	2	7
Flunixin (FLN)	NSAID	0	1
Methocarbamol	Muscle relaxant	3	2
Dantrolene	Muscle relaxant	1	0
Xylazine	Sedative	0	1
Fentanyl	Opioid	0	1

Violation percentage of submissions

With fourteen (14) violations measured as a percentage of the five hundred two (502) horses tested, 2022 had a 2.79% violation rate, a significant decrease from 2021 with 5.52%. Although the rate of violations was lower than 2021, it was double the rates of previous years, and the 3rd highest over the last 15 years. **(figures 3,4,5)** If the use of oral medications was eliminated, the rate would be less than half at 1.2%.

Figure 5: Violations as a Percentage of Submissions 2008-22



Violations by RCI Class

As RCI Penalty Class increases, the potential for altering a horse’s performance decreases and as such penalties decrease. Therefore RCI Class 4 violations are less severe than RCI Class 3. Twelve (12) of the fourteen (14) violations were Class 4, one (1) was Class 3, and one (1) was Class 1. This continues a trend from 2018 with Class 4 being the predominant violation. By comparison, in 2017 most of the violations were Class 3 medications. **(figure 6)**.

Figure 6: Violation by RCI Class 2017-22

Medication	Family	RCI Class	2017	2018	2019	2020	2021	2022
Betamethasone	Corticosteroid	Class 4		2			3	
Dexamethasone	Corticosteroid	Class 4			1		14	1
Triamcinolone	Corticosteroid	Class 4					1	1
Phenylbutazone	NSAID	Class 4			7	1	2	7
Flunixin	NSAID	Class 4	1	1				1
‘Stacking’ NSAIDS	NSAID	Class 4		3	1	2		
Methocarbamol	Muscle relaxant	Class 4			4		3	2
Dantrolene	Muscle relaxant	Class 4					1	
Furosemide	Diuretic	Class 4		1				
Trichlormethiazide	Diuretic	Class 4			4			
Acetanilide	NSAID (unapproved)	Class 4				1		
Xylazine	Sedative	Class 3	0	2				1
Clenbuterol	Bronchodilator	Class 3	6					
Stanozolol	Anabolic steroid	Class 3	2					
Cannabidiol	Anti-epileptic, analgesic	Class 2			1			
Fentanyl	Opioid	Class 1						1
Methamphetamine	Stimulant	Class 1			1			

Health and Safety Statistics

Fatalities

Status at time of fatality

All fatalities were sent to Washington Animal Disease Diagnostic Laboratory (WADDL) Necropsy and Pathology section for comprehensive post mortem examination. In 2022, there were five (5) fatalities associated with racing. **(figures 7, 8)** In total there were seven (7) fatalities at Emerald Downs in 2022. One (1) fatality was associated with training, and one (1) fatality was from a condition unrelated to racing or training. Of the five (5) fatalities associated with racing, humane euthanasia was carried out by WHRC veterinarians on two (2) horses on the track, attending private veterinarians humanely euthanized three (3) horses in the barns.

Racing associated fatalities

Five (5) fatalities occurred as a result of musculoskeletal injuries sustained during a race in 2022 a decrease from 2021 with seven (7) racing associated fatalities. **(figures 7,8,9)** Racing associated fatalities from musculoskeletal failures consisted of:

- One (1) with right front biaxial sesamoid bone fractures.
- Two (2) with multiple carpal bone fractures: one (1) involving the right carpal bones, one (1) in the left carpal bones.
- One (1) with left front distal sesamoidean ligament rupture.
- One (1) with right scapula bone fracture

All five (5) racing associated musculoskeletal fatalities had findings consistent with chronic mechanical overloading and pre existing injuries contributing to the musculoskeletal failure.

With two thousand seven hundred twenty five (2,725) total starts-there were 1.83 fatalities per 1000 starts. The total number of 2022 racing associated fatalities was the lowest number during the last 14 years, with the exception of 2014 with five (5) and 2020 with zero (0). **(figures 7,8,9)**

Figure 7: Fatalities: Total, Per 1000 Starts 2009-22

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Racing Days	91	90	82	81	75	73	70	70	72	67	67	38	49	52
Starters	6058	5429	4898	4390	4427	4022	4438	4450	4223	3927	3737	2905	2707	2725
Racing fatalities	16	9	10	8	8	5	11	8	6	9	7	0	7	5
Fatalities/1000 starts	2.64	1.65	2.04	1.80	1.81	1.24	2.47	1.80	1.42	2.29	1.87	0	2.58	1.83
Training fatalities	8	12	5	4	4	8	4	4	4	2	3	7	5	1
Non racing fatalities	10	10	9	8	4	4	5	3	8	7	6	6	2	1
TOTAL FATALITIES	34	31	24	20	16	17	20	15	18	18	16	13	14	7

Figure 8: EMD Racing Fatalities 2007-22

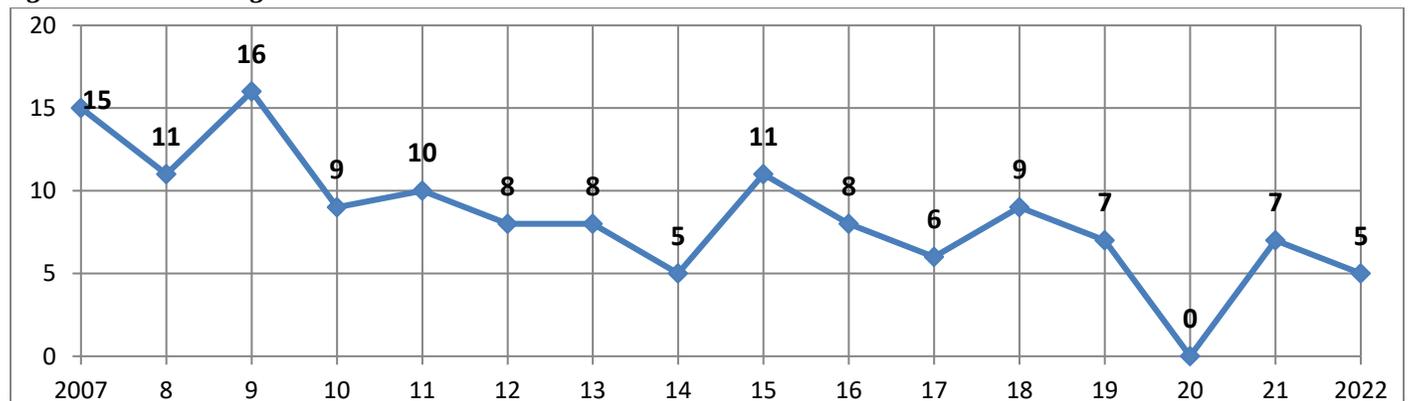
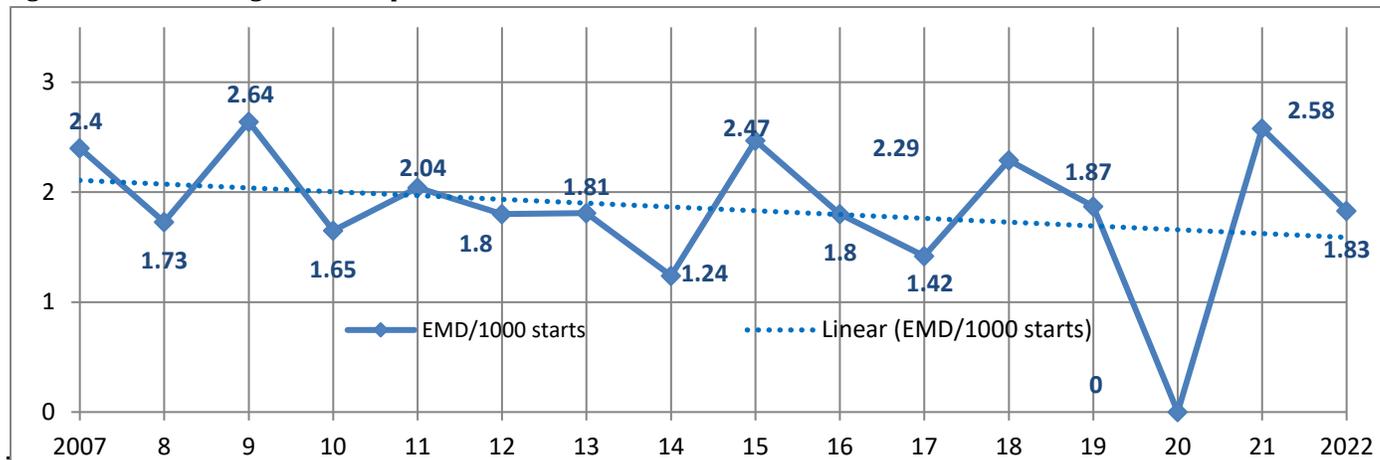
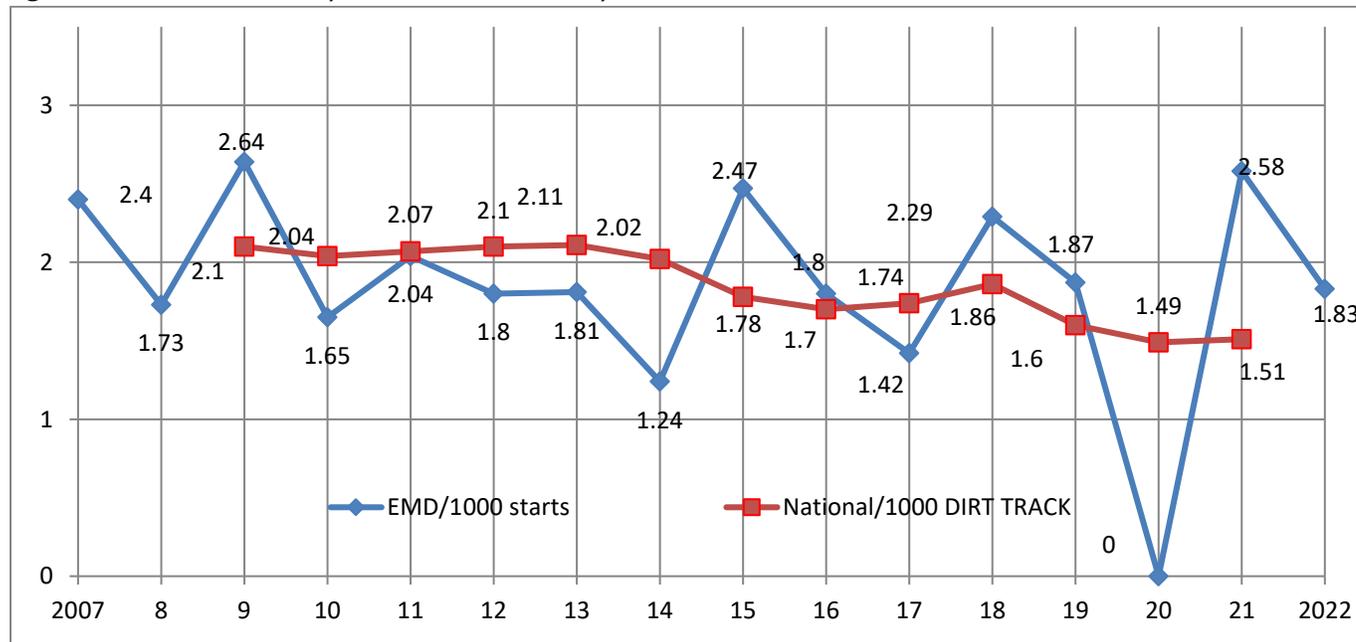


Figure 9: EMD Racing Fatalities per 1000 Starts 2007-22



The 2022 EMD fatality per 1000 starts of 1.83 is slightly below the average for EMD from the years 2007–2022 of 1.85. It is lower than the national average for fatality rate per 1000 starts on dirt tracks of 1.89 during those years. The EMD 2022 fatality per 1000 starts is greater than the national rate for dirt tracks of 1.51¹ in 2021 (the last available year). (figure 10)

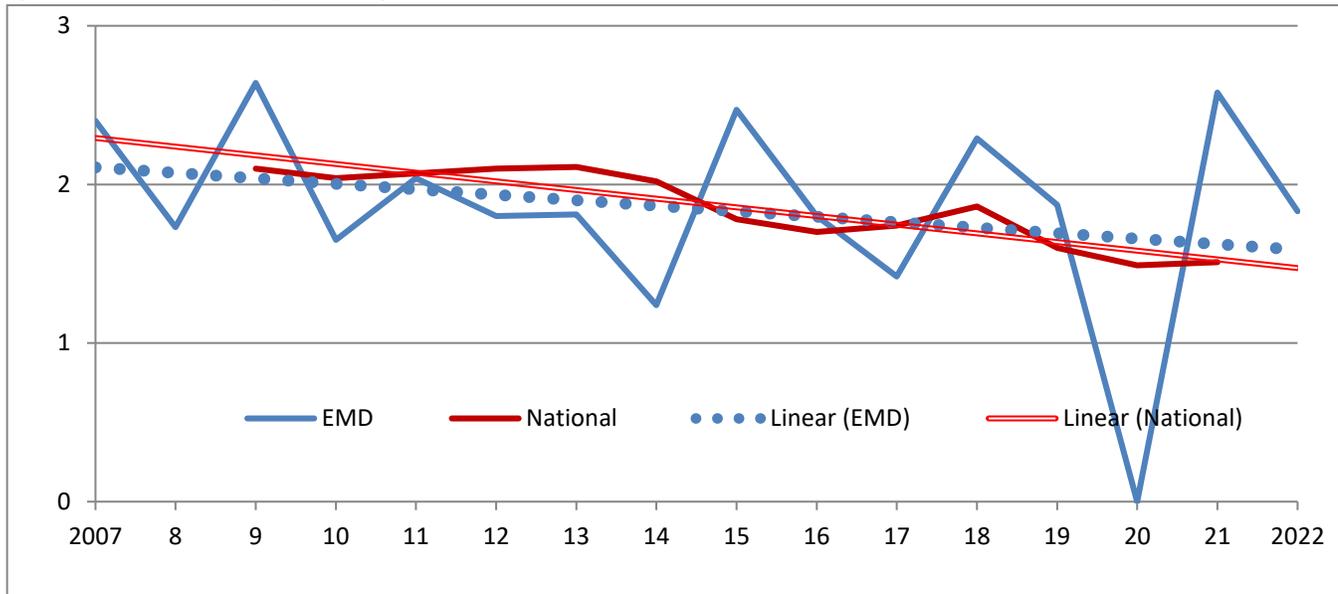
Figure 10: Fatalities: EMD/1000 starts; National/1000 starts on dirt tracks 2007-22



The trend in Washington of Fatalities Per 1000 Starts since 2007 has been a **decreasing** linear slope (depicted by blue dotted line). (figures 9, 11). During the years 2009–2021 (years available nationally) the slope at which this rate has been decreasing has been steeper nationally (depicted by red line) than at EMD, but from 2017–2022 are virtually identical (figure 11)

¹ http://jockeyclub.com/pdfs/eid_13_year_tables.pdf

Fig 11: EMD & National fatalities/1000 starts dirt tracks & linear trends 2007-22



Training fatalities

One (1) musculoskeletal failure fatality was associated with training in 2022 a significant decrease from 2021 with five (5), and the lowest number of training related fatalities over the last 14 years. **(figure 7)** The fatal musculoskeletal failure resulted from a fractured right 3rd metacarpal (cannon) bone which did not have any pre existing injury or evidence of chronic mechanical overloading.

Pre-existing injuries and fatalities

Correlation and direct links between racing fatalities and factors potentially contributing to the fatalities are frequently difficult to make. However there is a very strong statistical correlation between catastrophic injuries and pre-existing injury. Although the presence of a pre-existing injury does not necessarily indicate that it contributed to a fatal injury, they often do. In 2022, all of the racing associated musculoskeletal fatalities had findings consistent with chronic mechanical overloading.

Risk factors for racing fatal musculoskeletal injury (FMSI)

Factors known to increase the risk of fatal musculoskeletal injuries (FMSI) from racing have been researched and published. Some are well known and include previous history on veterinarian's list (VL). Others are not as well known, e.g. the accumulation of excessive high speed furlongs (race or timed works). Specifically, a horse with 35 high speed furlongs during the previous 2 months have a 3.9 fold risk of fatal injury compared to a horse accumulating 25 furlongs. Additionally, a horse accumulating 0.6F/day of high speed furlongs during last 2 months has a 1.8 greater risk than a horse with 0.5 F/day.² Although excessive high speed furlongs are statistically linked to racing FMSI, these risks have not been statistically linked to FMSI during training. That a connection exists would seem intuitive as high speed furlongs both from racing and timed works are included in the above statistics. This is discussed further in the section below: *Anti inflammatory Medication, Cyclic Loading, and Musculoskeletal Injury* under the Veterinarian's List section.

Prior to their occurrence, of the five (5) racing FMSI, two (2) horses had 4 and 5 factors raising their risk for FMSI, two (2) had 1 risk factor, and one (1) horse had no risk factors. The one (1) horse with a FMSI during training had no risk factors. **(figure 12)**

² **High-speed exercise history and catastrophic racing fracture of Thoroughbreds. Estberg L, et al. Am J Vet Res 1996;57(11)1549-55**
2022 WHRC Equine Health and Safety Report / p 6

Fig 12: Risk factors for fatal musculoskeletal injury (FMSI)

	RACING FATALITES					TRAINING
	1	2	3	4	5	A
Excess Accumulation of high speed work					X	
New Trainer	X			X		
Layoff > 60 days	X			X		
Quick turnaround (10 days)				X		
Drop in Class	X					
Drop in Class after claim	X					
Previous VL history						
Less than 2 works/races in 30 days				X		
No works since last race > 14 days	X	X				

Non racing Fatalities

One (1) fatality was due to a skull fracture unassociated with racing or training. The horse reared, flipped over backwards, striking its head, and being unresponsive to treatment, was euthanized.

Veterinarian’s List (VL)

Horseracing Integrity and Safety Authority (HISA) regulations on the VL

In addition to previous reasons for placement on VL for unsoundness, injury, and illness, HISA has added the following:

- Horses with medical compromise, infirmity, heat exhaustion, positive test or overage, administration of a medication invoking a mandatory stand down time.
- Horses not started in 365 days
- Horses not making a start prior to January 1 of their 4 year old year.
- Claimed horses if the claim is voided and placed on the VL.

HISA regulations on the duration a horse is to remain on the VL.

- Illness shall remain on the list for 7 days. (Prior to HISA was 14 days)
- Epistaxis or unsoundness will remain on the list for 14 days.
 - Epistaxis multiple times within the previous 365 days shall remain on
 - 30 days for the second time
 - 180 days for third time
 - Barred from further racing after the fourth time.
- Unsoundness, lameness multiple times within the previous 365 days shall remain
 - 45 days for the second time
 - 75 days for the third time
 - Barred from further racing after the fourth time.
- Horses treated with Shock Wave Therapy shall be placed on the VL for 30 days. (Prior to HISA was 10 days)
- If before, during, or after the workout for removal from the VL, the horse is deemed to be unsound or have epistaxis, the stay on the VL shall be extended 14 days.

Inclusion on the VL

Because placement on the VL for any unsoundness is recognition of a sports injury and sports injuries are a significant cause for the delay or end of an athletic career, only horses placed on the VL for musculoskeletal unsoundness will be discussed here. The VL numbers reported here do not include, with the few exceptions noted below, illness, heat stroke, EIPH, injuries unrelated to exercise or sports, or medication stand-down. They also do not include trainer scratches, which are put on the VL but usually not required to work off, or starting gate scratches, which are not usually placed on the VL or required to work off.

In 2022 sixty two (62) horses were placed on the VL at EMD for lameness or unsoundness, a 55% increase from the forty (40) horses in 2021. Six (6) horses had been placed on the VL multiple times in their careers: two (2) of which were their third time on the VL, and four (4) which were on the VL twice. Two (2) of those, had been on the VL twice during the previous 365 days and per HISA regulations had their listing extended 45 days.

VL –Association with career ending injury, fatalities

Statistically, a significant percentage of FMSI have pre existing pathology contributing to the fatality. In 2022 all five (5) horses with FMSI had pre existing pathology contributing to the fatality. Although racing fatalities are relatively rare events with 1.51 horses per 1000 starts nationally, and 1.83 per 1000 starts at EMD in 2022, preventing them is a primary and fundamental concern of all stakeholders. Due to their low incidence, it is difficult to find direct causative or predictive “cause and effect” factors which contribute to their occurrence.

The VL does however provide a strong association between the incidence of racing related injuries and their impact on the racing career of a horse. Numerous studies have reported that inclusion on the VL for unsoundness increases the risk of fatal injury, as well as non fatal injury, leading to interruptions in, or the end of a racing career of a horse. Horses with a history of being on the VL have: significantly longer interval to their next race, more will not race in 6 months or 12 months than horses never on VL, and have a 2-3 times greater interval to their next race compared to horses who have not appeared on the VL.

VL – Importance of closely monitoring injuries

Because the incidence of horses placed on the VL occurs in far greater numbers than fatalities, examining the circumstances and condition of horses placed on the VL may provide information on factors responsible for, or contributing to any injury. These factors may progress into injuries which contribute to a future musculoskeletal fatality, or far more commonly, non fatal injuries that add to the attrition of race horses in the EMD horse population. Consequently, injured horses regardless if placed on the VL or not, warrant close scrutiny. Before HISA implementation, the WHRC led the industry with rules formulated for private veterinarians, trainers, and official veterinarians regarding the sharing of information impacting horse health and safety. Unfortunately these rules have been met with almost complete obstruction, with stakeholders questioning the need for the State to have this information.

Claim Voids and VL

Per HISA regulations beginning July 1, 2022, all claimed horses were sent to test barn and examined by a WHRC veterinarian. Any horse placed on the VL had its claim voided. Claims were to be voided if the horse is vanned off the track or has a medication violation in a post race sample, neither occurring in 2022. The claiming trainer had the option to waive the void and retain the horse for any reason, other than euthanasia on the claim form.

From July 1 onwards, one hundred fifty two (152) horses were claimed and examined, with 17 claims voided. Reasons for voids were fifteen (15) for lameness, one (1) with a laceration (and concurrent lameness), one (1) with exercise

induced pulmonary hemorrhage (EIPH). Trainers of two (2) horses submitted a waiver if their claim was voided, one of which was voided and placed on the VL due to a laceration and lameness, and is included with “After Race” numbers.

VL – Claim Exams: Injury or Exam the Cause of Voids?

Complaints were received by the WHRC from stakeholders through the WHBPA that the void rate of 11% (17 out of 152 claims) was due to the exam procedures, rather than the injuries contributing to those voids. The WHBPA alleged, as an example, that the California Horse Racing Board (CHRB) had far fewer voids. It is relevant to note that the WHRC void rate for lameness was 10.5% (16 out of 152 claims). Review of the CHRB record demonstrates a far greater incidence of voids in the CHRB. For example, Golden Gate Fields a track sharing some of the same racehorse population reported 33 claims and 11 voids, or a 33% void rate in 2022. As of mid October 2022, the entire CHRB reported 757 claims and 106 voids for a rate of 14%.

Regarding the claims voided at EMD, a review of these horses on January 6, 2023 indicates that their lameness or unsoundness persists, or at the very least require extended layup. Of the sixteen (16) claim voids due to lameness or unsoundness, only five (5) worked off the VL. Two (2) were lame after the work, and failed to work off. The remaining nine (9) horses have been either retired or on extended layup as they have not recorded a timed work. Of the five (5) that worked off, three (3) have discontinued workouts and racing. In total, of the sixteen (16) claim voids, fully fourteen (14) or 88% are either retired or have significant delay in their racing careers. Although there are many reasons to rest or retire horses, if the horse was claimed to continue racing, it would be expected to remove the horse from VL promptly. If the exams were the problem, or if the lameness responsible for placement on the VL was short lived, it would be expected that more than two (2) of those sixteen (16) horses would have continued their racing careers.

Timing for Placing on VL: morning exam, post parade, after race, claim exam

As mentioned, in 2022 sixty two (62) horses were placed on the VL. Two thousand eight hundred thirty four (2,834) horses were examined during morning exams, two hundred twenty six (226) more than 2021, which itself was a three hundred forty five (345) increase from 2020. Due to the difficulty in securing official veterinarians, fifty seven (57) horses, or 1.97% of the horses entered, were not examined during morning pre race exams. This was a significant improvement from 2021 when one hundred eighty five (185) horses, or 6.6% of the horses entered, were not examined. **(figures 13, 14)**

- **Morning exam:** *Largest source of VL horses, more placed on VL compared to 2021*
Twenty nine (29) horses were placed on the VL during morning inspection, a 26% increase from the twenty three (23) horses placed on VL from morning inspection in 2021. As a percentage of the total number of horses placed on the VL, **47%** (of the 62 total) of the VL additions were from morning inspection, a decrease from 2021 when 58% of the (of the 40 total) were during morning inspection. **(figure 14)**
- **Post Parade (receiving barn to starting gate):** *Smallest source of VL horses, fewer compared to 2021*
Seven (7) horses were placed on the VL during the post parade, a 12.5% decrease from the eight (8) horses in 2021. As a percentage of the total horses placed on the VL, **11.3%** (of the total 62) were from post parade, an improvement from 2021 when with 20% (of the total 40) were placed on VL during post parade.
- **After Race:** *Greatest percentage of VL horses retired or extended delay in racing, more compared to 2021*
Ten (10) horses were placed on the VL after the race, a 25% increase from the eight (8) placed on the VL after the race in 2021. One (1) of these horses was observed lame the day after the race. Two (2) additional horses not included in these numbers were placed on the VL after the race for heat stroke, per HISA regulations. These numbers do not include claim voids, listed below. As a percentage of the total horses placed on the VL, **16%** (of the total 62) were placed on VL after the race in 2022, compared to the 18% (of the total 40) placed on the VL after the race in 2021. Four (4) of these horses were taken off the track by ambulance.

- **Claim Voids:** A new source of VL horses, second only to morning exams
Sixteen (16) or **26%** of the sixty two (62) VL horses were placed on the VL for lameness when examined for claim. Claim voids were for the following reasons: fifteen (15) for lameness, and one (1) horse with a laceration and accompanying lameness. One (1) horse with EIPH had its claim voided but as EIPH isn't a musculoskeletal injury, it was not counted in these statistics.

Figure 13: Examined, not examined, and Veterinarian's List

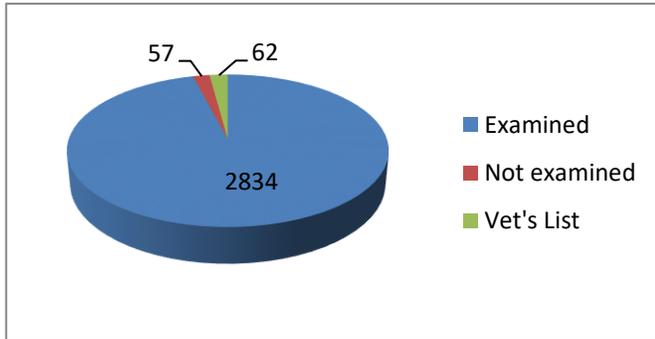
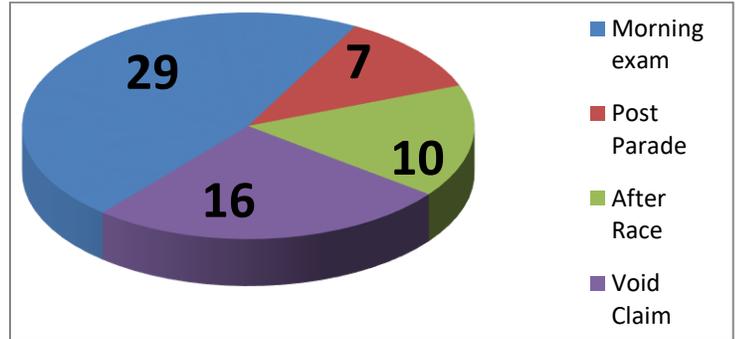


Figure 14: Vet's List- Timing of inclusion on List



Working off the VL

Horses placed on the VL for lameness, 'soreness', unsoundness, and on very rare occasion injuries, are required to work off the list and may do so seven days after being placed on the list. The work must be a minimum distance determined by an official veterinarian in a time comparable for the track condition that day. The horses undergo an exam by the official veterinarian after the work and occasionally before the work. Blood is tested and may not exceed WHRC medication racing thresholds. Of the sixty two (62) horses placed on the VL at EMD in 2022, forty (40) or **65%** have not worked off.

The time in which the horse is scratched (morning, post parade, after race, claim exam) may predict the severity of the injury when viewed by how quickly they can work off. This premise is validated when looking at the number of horses that retire or have extended delay of their racing careers and the time at which they were placed on the VL.

Time of placement on list: morning exam, post parade, after the race, claim void

- **Morning exam:** Twenty nine (29) scratched, placed on VL.
 - Ten (10) 34% worked off
 - Average time on VL 20 days
 - Range on VL: 8- 37 days
 - **Nineteen (19) or 66% retired/extended rest**
- **Post parade:** Seven (7) scratched, placed on VL. Two
 - Five (5) or 71% worked off
 - Average time on VL 12 days
 - Range on VL: 6-14 days
 - **(2) or 29% retired /extended rest**
- **After race:** Ten (10) placed on VL.
 - One (1) or 10% worked off
 - On VL for 7 days
 - **Nine (9) or 90% retired /extended rest**

- **Claim exam:** Sixteen (16) placed on VL
 - Five (5) or 31% worked off
 - Average time on VL 16 days
 - Range on VL: 14-20 days
 - **Eleven (11) or 69% retired /extended rest**

VL and Delay or End of Racing Career:

Horses placed on the VL *after a race*, including those with voided claim, more frequently sustained injuries which resulted in greater delays, or an end to their race careers than did horses placed on the VL before the race (morning exams, post parade).

In 2022, of the ten (10) horses placed on the VL after the race for lameness, only one (1) or 10% have worked off the VL. One (1) horse tried but failed in its attempt to work off the VL, being lame after the work. This trend is worsened with horses with claim voids. Of the sixteen (16) horses placed on the VL with a voided claim, only five (5) or 31% worked off successfully. An additional two (2) tried to work off but failed as they were lame after their work. Overall, **77%** of horses placed on VL after they raced are either retired or have not had a timed work as of the date of this report.

When comparing numbers of horses placed on VL before or after the race: horses which were placed on the VL before their race had twice the success in working off than horses placed on VL after the race. Overall **58%** of horses placed on VL before the race are either retired or have not had a timed work as of the date of this report.

Viewed from the perspective of mitigating racehorse attrition due to injury, statistically it would be beneficial for the career of the horse if at risk horses were detected prior to their race

Horses working off still had delay in racing

When considering that of all the sixty two (62) horses placed on VL in 2022, only twenty two (22) or 35% worked off successfully. Of the twenty two (22) successfully working off the VL, their stay on the VL ranged from 7 to 37 days with an average of seventeen (17) days. Of those twenty two (22) working off, three (3) horses have not completed a timed work or raced following their successful work off the VL in July. These horses have either been retired from racing or have an extended delay of their racing careers.

Having 61% of horses placed on the VL from morning exam and post parade in 2022 and subsequently withdrawn from racing is an indication that although the degree of their lameness or unsoundness was not detected by the trainers, they were serious enough to result in either prolonged layoff or retirement.

Conversely, the ease with which a horse works off the VL may be viewed as an indication as to the severity of the problem contributing to its placement on the list. As such, horses able to work off at the earliest opportunity have a less impactful injury, compared to a horse either requiring multiple works, or having a layoff extending into months, or resulting in retirement.

Vigorous objection is often made to scratches from morning exam or post parade. Working horses off the VL quickly may add validity to those objections. However, if entry into a race is an indication that a horse is sound for racing, then horses put on the VL during morning exams and the post parade, either had injuries that trainers did not detect, or believed to be minor. This is of concern because less than half worked off the VL.

In 2022 thirty six (36) horses were placed on the VL before the race:

- Twenty nine (29) from morning exam
- Seven (7) from post parade

Of these thirty six (36) horses, fifteen (15) or 42% worked off the VL

Unfortunately, 2022 saw an increase in the horses not working off the VL from morning exam or post parade. In previous years, the majority of horses placed on the VL during morning exams and post parade worked off successfully.

VL By Month

Historically the placement of a horse on the VL usually occurs in a similar pattern both monthly, as well as the numbers of horses placed during morning exam, post parade, and after the race observations. **(figures 15,16)**

- May - Five (5): Three (3) **morning exam (AM)**. One (1) **Post parade (PP)**. One (1) **After the race (AFTER)**
- June- Twelve (12): Six (6) AM. Two (2) PP. Four (4) AFTER.
- July - Twenty three (23): Ten (10) AM. Two (2) PP. Two (2) AFTER. Nine (9) **Claim Void (VOID)**
- August- Fifteen (15): Eight (8) AM. Two (2) PP. Two (2) AFTER. Three (3) VOID.
- September- Seven (7): Two (2) AM. One (1) AFTER. Four (4) VOID

Figure 15: Veterinarian's List by Month 2018-2022

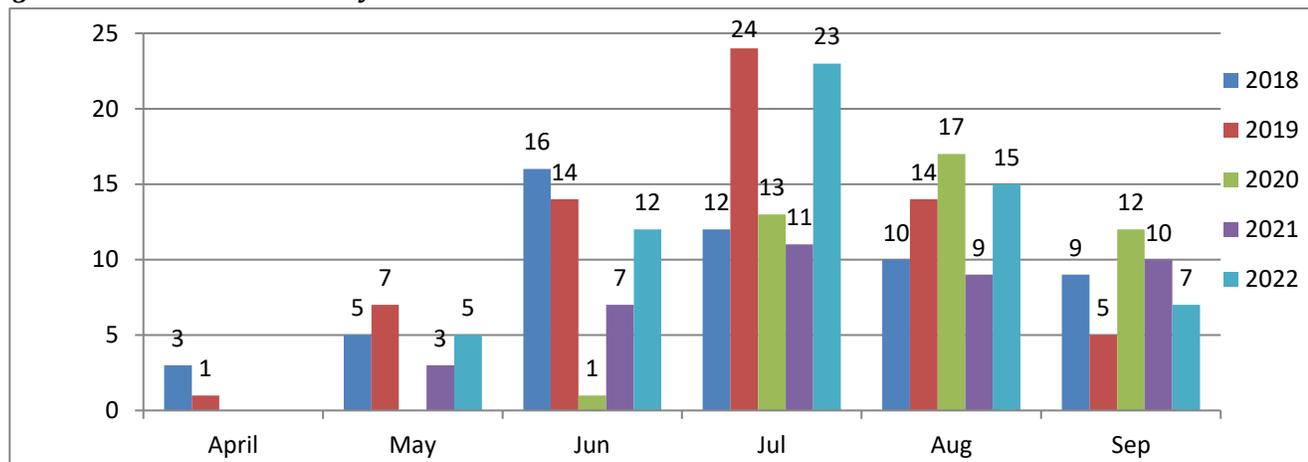
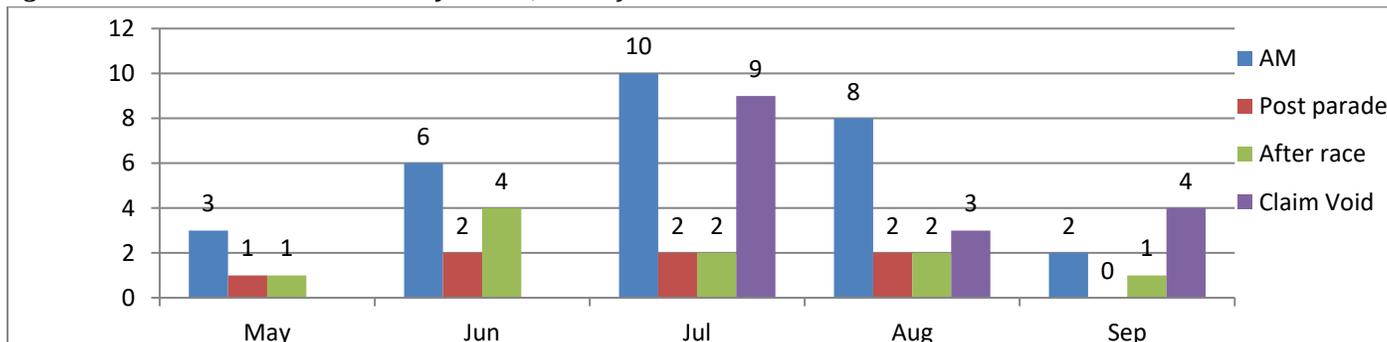


Figure 16: 2022 Veterinarians List by Month, time of inclusion

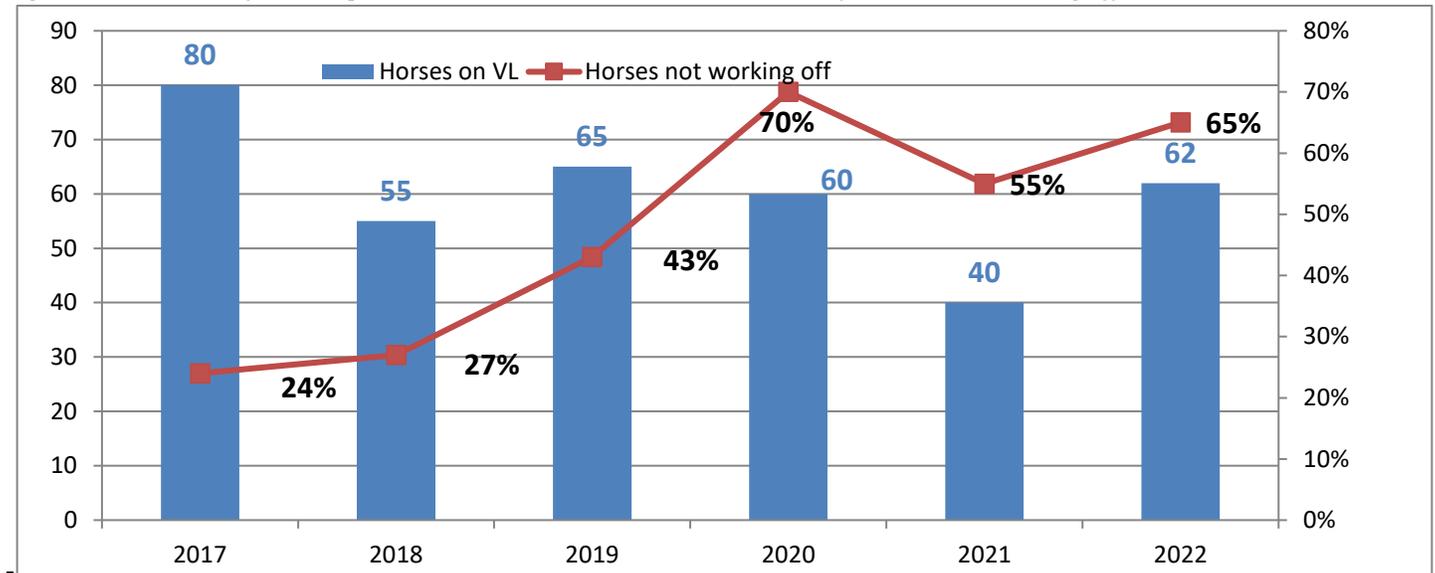


Attrition of Racehorse Population; Horses Unable to Work Off the VL

As mentioned above, of the sixty two (62) horses placed on the VL in 2022, forty (40) or 65% remain on the VL. If historical patterns continue, most are either retired or on extended delay in their careers as they have not recorded timed works since placement on the VL and the writing of this report.

Other considerations aside from injury may factor into the decision regarding layoff or retirement, however if we were able to analyze those horses that were retired due to injury we might find ways to lessen the impact. As it is, this trend continues to be a significant, and an increasing (~3x compared to 2017) contribution to racehorse attrition. Viewed in conjunction with the decreased racehorse numbers, it should raise concern and incentive to manage training practices as well as sports injuries differently. Understanding the details of these injury based retirements is the cornerstone to address it. (figure 17)

Figure 17: Number of horses placed on Veterinarian's List and Percent of horses not working off



All the above horses have been removed from racing, the majority permanently. Other horses have also been retired due to injury, but as they were unobserved by an Official Veterinarian, were not placed on the VL. The subject of racehorse attrition was discussed in a presentation at the Global Symposium on Racing in December 2021 by Dr. Susan Stover a professor at UC Davis and Chair of Horseracing Integrity and Safety Act (HISA) Racetrack Safety Committee, estimated that the attrition rate of racehorses in the U.S. is 3% per month, costing owners nearly \$82 million every month.³ The loss due to injury attrition of owners in Washington is unknown as the number of horses that were retired but not on the VL due to injury is unknown. The number of unreported horses retiring due to injury and unsoundness appears to be a greater than the horses placed on the VL and retiring but cannot be accurately assessed. Rules found under WAC regulations, which are not stipulated under HISA are potentially enforceable.

Anti Inflammatory Medications, Cyclic Loading, and Musculoskeletal Injury

Dr. Susan Stover in her presentation at the 2021 Global Symposium on Racing, previously mentioned, agreed that fatalities aren't the only concern. In addition to her comments on attrition of racehorses she reported that some form of pre-existing condition was detected in almost 90% of racing related fatalities. Other factors increasing risk included corticosteroid injections, recent lameness and abnormalities in pre race exams.

Intra articular corticosteroid (IACS) and non steroidal anti inflammatory drugs (NSAID) do not cause musculoskeletal injury or fatalities. However, the NSAID phenylbutazone has been shown to increase *risk* for fatal musculoskeletal

³ <https://www.paulickreport.com/news/ray-s-paddock/takeaways-from-tucson-hisa-talk-dominates-global-symposium-on-racing/>

injury.⁴ Also, horses injected with IACS have been shown to be at increased risk of additional injury for 49 days following injection.⁵ These increased risks, although being a factor for jurisdictions and HISA imposing a pre race stand downs for intra articular injections and NSAID's, do not explain the mechanism of action in which anti inflammatories are linked to injury. Additionally, horses receiving intra articular corticosteroid injections as 2 and 3 year olds are at greater risk.

Horses racing and training at high speed produce large loads on their musculoskeletal system of bones, cartilage, joints, tendons, and ligaments. Both fatal and non fatal musculoskeletal injuries in the racehorse are mostly due to repetitive loading (also known as cyclic loading) from high speed exercise and resultant tissue fatigue.^{6 7 8 9} Fatigue of any material, be it musculoskeletal or metal aircraft components, are a result of repeated high energy loading and the inevitable degradation of the material by the repetitive cyclic loading. The referenced **YouTube** video shows the actual progression of material fatigue, crack formation, and catastrophic failure of steel.¹⁰

One example of the result of cyclic loading is bone fatigue, a well documented cause of racing fatalities. The damage caused is by repetitive high speed or cyclic loading resulting in bone edema, micro fractures and weakening of bone.¹¹ A more recent publication from Dr. Stover's laboratory showed that proximal sesamoid bone fracture, the most common fatal racing musculoskeletal injury, is the acute result of chronic cyclic loading injury resulting in bone loss and failure of the sesamoid.¹² The damage to bone is slow in onset and the final injury not associated with a 'bad step'.

As sesamoid/fetlock injuries are the most common racehorse musculoskeletal fatality, and IACS promotes cyclic loading without appropriate time to heal, in 2021 the California Horse Racing Board prohibited any intra articular injections within 14 days of racing and extended that to 30 days for injections in the fetlock joint. This rule was extended to horses in training, prohibiting training within 10 days of fetlock injections. Preliminary results suggest that these practices may have significantly contributed to their dramatic reduction in racing and training fatalities. It is to be seen if HISA adopts these measures.

In 2022 all five (5) musculoskeletal fatalities from racing had evidence of a pre existing injury contributing to the catastrophic injury. Additionally, all five (5) had evidence of chronic mechanical overloading.

Additional indirect but relevant evidence that cyclic loading and its resultant tissue fatigue and failure occur, is demonstrated by the predictable and repeated anatomical location and patterns of injury. For example, equine scapular fractures have highly predictable pre existing patterns of bone fatigue with predictable location of fracture lines, which was present in the 2022 scapular fracture fatality.

⁴ *Association between the administration of phenylbutazone prior to racing and musculoskeletal and fatal injuries in Thoroughbred racehorses in Argentina. Zambruno et.al. JAVMA 2020:257(6): 642-647*

⁵ *Musculoskeletal injury rates in Thoroughbred racehorses following local corticosteroid injection. Whitton RC, et.al. Vet J 2014:200(01): 71-16*

⁶ *Patterns of stress fractures associated with complete bone fractures in race horses. Stover SM, et al. Proc AAEP 1993:39, 131-2*

⁷ *Physical activity: Does long-term high-intensity exercise in horses result in tendon degeneration? Birch HI, et.al. J Appl Phys 2008:105, 1927-33*

⁸ *Third metacarpal condylar fatigue fractures in equine athletes occur within previously modeled subchondral bone. Whitton RC, et.al. Bone 2010: 47 826-31*

⁹ *Preexisting lesions associated with complete diaphyseal fractures of the third metacarpal bone in 12 Thoroughbred racehorses. Gray SN, et. al. J Vet Diag Invest 2017: 29(4) 437-41*

¹⁰ **YouTube video** demonstrating steel fatigue, crack formation, failure <https://www.youtube.com/watch?v=hASl6d3z3BM>

¹¹ *Bone fatigue and its implications for injuries in racehorses. Martig S, et.al. Eq Vet J 2014:46 408-15*

¹² *Subchondral focal osteopenia associated with proximal sesamoid bone fracture in Thoroughbred racehorses. Shaffer SK et.al. Eq Vet J 2021, Mar;53(2):294-305. <https://pubmed.ncbi.nlm.nih.gov/32474944/>*

In a similar manner, Thoroughbred racehorses compared to harness horses experience characteristically different types of cyclic loading, tissue fatigue, and subsequently different tissue pathology and injuries. As a consequence of cyclic loading, the most common fatal injury in the Thoroughbred racehorse in the United States are front limb proximal sesamoid bone fractures, while the Standardbred racehorse most commonly sustains non fatal suspensory ligament injury. When tissue fatigue related injuries progress into catastrophic failures, they often occur without previous lameness, or lameness associated with another anatomical location. Recognition of fatigue related injuries and responding in an appropriate manner before they develop into a non fatal end of career injuries would dampen the worsening attrition of VL horses at EMD.

Finally, the link between IACS, cyclic loading, and injury can be best demonstrated by considering that IACS are extremely effective at decreasing inflammation and pain, but have no efficacy at decreasing tissue fatigue if rest is not initiated. Anti inflammatory medications decrease heat, pain, and swelling, the hallmarks of inflammation, but do nothing to address the origin of that inflammation. In fact what anti inflammatory IACS injection and NSAID medications do is to influence a trainer's decision to either continue high speed exercise or begin a less traumatic low intensity exercise. As a result the horse remains at a higher risk of musculoskeletal injury than it may have had if the training workload decision was made with observations of the horse without the effect of these medications.

Equine Medical Director Concerns and Recommendations:

- **Racing in Washington has a “numbers” problem, with racehorse numbers decreasing dramatically in the last 6 years.**
- **Decreasing horse numbers results in horses running more races with shorter intervals to their next race and inevitably contributing to the incidence of exercise related injury.**
- **A 65% attrition rate of horses on the veterinarian's list due to injury, which are unable to work off, is a significant contributor to attrition. This rate is invariably greater when considering horses on extended layup or retirement not observed by official veterinarians nor placed on the veterinarian's list. Industry and market forces which previously worked to increase racehorse numbers have decreased significantly. As such, all options to minimize racehorse attrition, including alteration of training protocols, especially the widespread usage of anti inflammatories during training, must be considered.**
- **Horses placed on the veterinarian's list before their race were far more likely to return to racing than horses placed on the VL after the race.**

Recommendations:

- **It is difficult to make recommendations to the WHRC as it is unknown if and how HISA will continue. Additionally, if HISA remains, it is unknown which WHRC regulations not covered under HISA, will be permitted to continue.**
- **HISA implementation has brought and will continue to bring enormous changes to all aspects of racetrack operation. Additionally, HISA rules continue to evolve with numerous significant changes from the original framework. One major avoidable change regards which regulatory staff stakeholders interact with. If the WHRC does not sign the voluntary agreement with HISA, then HISA will select all the regulatory staff including stewards, investigators, and veterinarians. Maintaining continuity and familiarity with stakeholders is within the WHRC's ability. *As such, I strongly recommend the WHRC adopt the voluntary agreement with HISA for 2023 and evaluate its effect after one racing season.***