**Supplementary Table S1:** Number of seasons raced by affected (n = 113) and unaffected (n = 303) horses in the study cohort. Some horses were still actively racing at the time of data collection. P-value reflects 2-sample test for equality of proportions with continuity correction.

|  |  |  |  |
| --- | --- | --- | --- |
| **Number of seasons raced** | **Unaffected** **[%]** | **Affected** **[%]** | **p-value** |
| 0 | 75 [24.8] | 24 [21.2] | 0.53 |
| 1 | 32 [10.6] | 11 [9.7] | 0.95 |
| 2 | 49 [16.2] | 22 [19.5] | 0.52 |
| 3 | 54 [17.8] | 22 [19.5] | 0.81 |
| 4 | 54 [17.8] | 24 [21.2] | 0.51 |
| 5 | 39 [12.9] | 10 [8.8] | 0.34 |

**Supplementary Table S2:** Regression analysis results for number of seasons raced. Periarticular osteophytes were considered as a dichotomous variable (present/absent) or as a categorical variable (size category). PAO = periarticular osteophyte; M = male; F = female; P = pace; T = trot; IRR = incident rate ratio; Cat = size category. The reference group for effect estimates is denoted by REF. P-values in **bold** are significant.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Outcome Variable** | **Predictor Variable** | **Estimate (IRR)** | **2.5%** | **97.5%** | **p-value** |
| Seasons raced | PAO (no) | REF | n/a | n/a | n/a |
| PAO (yes) | 0.97 | 0.82 | 1.13 | 0.67 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 1.22 | 1.06 | 1.42 | **0.006** |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.66 | 0.56 | 0.79 | **<0.0001** |
|  |
| Seasons raced | PAO (Cat 0) | REF | n/a | n/a | n/a |
| PAO (Cat 1) | 0.99 | 0.77 | 1.25 | 0.91 |
| PAO (Cat 2) | 0.97 | 0.74 | 1.25 | 0.79 |
| PAO (Cat 3) | 1.03 | 0.71 | 1.45 | 0.89 |
| PAO (Cat 4) | 0.87 | 0.61 | 1.22 | 0.43 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 1.23 | 1.06 | 1.42 | **0.006** |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.66 | 0.56 | 0.79 | **<0.0001** |

**Supplementary Table S3:** Regression analysis results for performance outcomes in the entire study cohort. Periarticular osteophytes were considered as a dichotomous variable (present/absent). PAO = periarticular osteophyte; M = male; F = female; P = pace; T = trot; IRR = incident rate ratio. The reference group for effect estimates is denoted by REF. P-values in **bold** are significant.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Outcome Variable** | **Predictor Variable** | **Estimate (IRR)** | **2.5%** | **97.5%** | **p-value** |
| Starts at 2 (number) | PAO (no) | REF | n/a | n/a | n/a |
| PAO (yes) | 1.15 | 0.85 | 1.59 | 0.37 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 1.10 | 0.83 | 1.45 | 0.51 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.84 | 0.62 | 1.15 | 0.26 |
|  |
| Starts at 3 (number) | PAO (no) | REF | n/a | n/a | n/a |
| PAO (yes) | 0.97 | 0.92 | 1.04 | 0.99 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 1.05 | 0.99 | 1.11 | **0.003** |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.67 | 0.63 | 0.72 | **<0.0001** |
|  |
| Starts at 4 (number) | PAO (no) | REF | n/a | n/a | n/a |
| PAO (yes) | 0.92 | 0.86 | 0.98 | **0.01** |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 1.52 | 1.43 | 1.62 | **<0.0001** |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.44 | 0.40 | 0.47 | **<0.0001** |
|  |
| Lifetime Starts (number) | PAO (no) | REF | n/a | n/a | n/a |
| PAO (yes) | 0.95 | 0.91 | 0.98 | **0.003** |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 1.33 | 1.28 | 1.37 | **<0.0001** |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.55 | 0.53 | 0.58 | **<0.0001** |
|  |
| Wins at 2 (number) | PAO (no) | REF | n/a | n/a | n/a |
| PAO (yes) | 1.03 | 0.74 | 1.42 | 0.88 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 0.99 | 0.74 | 1.34 | 0.96 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.84 | 0.59 | 1.18 | 0.33 |
| Starts at 2 | 1.27 | 1.23 | 1.32 | **<0.0001** |
|  |
| Wins at 3 (number) | PAO (no) | REF | n/a | n/a | n/a |
| PAO (yes) | 0.89 | 0.68 | 1.16 | 0.39 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 1.05 | 0.83 | 1.33 | 0.68 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.97 | 0.74 | 1.27 | 0.84 |
| Starts at 3 | 1.11 | 1.09 | 1.12 | **<0.0001** |
|  |
| Wins at 4 (number) | PAO (no) | REF | n/a | n/a | n/a |
| PAO (yes) | 0.73 | 0.54 | 0.99 | **0.04** |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 1.54 | 1.17 | 2.02 | **0.002** |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.65 | 0.46 | 0.92 | **0.02** |
| Starts at 4 | 1.11 | 1.09 | 1.12 | **<0.0001** |
|  |
| Lifetime Wins (number) | PAO (no) | REF | n/a | n/a | n/a |
| PAO (yes) | 0.97 | 0.78 | 1.19 | 0.75 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 1.01 | 0.84 | 1.22 | 0.91 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 1.02 | 0.82 | 1.27 | 0.86 |
| Starts | 1.04 | 1.03 | 1.04 | **<0.0001** |
|  |
| **Outcome Variable** | **Predictor Variable** | **Estimate** | **2.5%** | **97.5%** | **p-value** |
| Earnings 2 (log[$]) | PAO (no) | REF | n/a | n/a | n/a |
| PAO (yes) | 0.03 | -0.23 | 2.40 | 0.80 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 0.07 | -0.16 | 0.30 | 0.55 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.24 | -0.03 | 0.52 | 0.08 |
| Starts at 2 | 0.18 | 0.14 | 0.20 | **<0.0001** |
|  |
| Earnings 3 (log[$]) | PAO (no) | REF | n/a | n/a | n/a |
| PAO (yes) | -0.004 | -0.24 | 0.24 | 0.97 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 0.07 | -0.15 | 0.28 | 0.55 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | -0.04 | -0.29 | 0.21 | 0.76 |
| Starts at 3 | 0.05 | 0.04 | 0.06 | **<0.0001** |
|  |
| Earnings 4 (log[$]) | PAO (no) | REF | n/a | n/a | n/a |
| PAO (yes) | -0.05 | -0.28 | 0.19 | 0.68 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 0.13 | -0.09 | 0.36 | 0.23 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | -0.25 | -0.53 | 0.02 | 0.08 |
| Starts  | 0.06 | 0.05 | 0.07 | **<0.0001** |
|  |
| Lifetime Earnings (log[$]) | PAO (no) | REF | n/a | n/a | n/a |
| PAO (yes) | 0.15 | -0.06 | 0.36 | 0.16 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 0.04 | -0.16 | 0.23 | 0.72 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.23 | 0.007 | 0.46 | **0.04** |
| Starts  | 0.02 | 0.02 | 0.03 | **<0.0001** |
|  |
| Earnings per Start (log[$]) | PAO (no) | REF | n/a | n/a | n/a |
| PAO (yes) | 0.06 | -0.12 | 0.23 | 0.52 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 0.09 | -0.06 | 0.25 | 0.24 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.04 | -0.14 | 0.22 | 0.66 |
|  |
| Fastest Time (secs) | PAO (no) | REF | n/a | n/a | n/a |
| PAO (yes) | 1.00 | -0.04 | 2.03 | 0.06 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | -1.88 | -2.83 | -0.94 | **0.0001** |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 4.03 | 2.92 | 5.15 | **<0.0001** |

**Supplementary Table S4:** Regression analysis results for performance outcomes in the affected individuals. Periarticular osteophytes were considered as a categorical variable (size category). PAO = periarticular osteophyte; M = male; F = female; P = pace; T = trot; IRR = incident rate ratio. The reference group for effect estimates is denoted by REF. P-values in **bold** are significant.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Outcome Variable** | **Predictor Variable** | **Estimate (IRR)** | **2.5%** | **97.5%** | **p-value** |
| Starts at 2 (number) | PAO (Cat 1) | REF | n/a | n/a | n/a |
| PAO (Cat 2) | 1.24 | 0.66 | 2.33 | 0.49 |
| PAO (Cat 3) | 1.31 | 0.61 | 2.95 | 0.50 |
| PAO (Cat 4) | 1.19 | 0.58 | 2.55 | 0.64 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 0.95 | 0.56 | 1.58 | 0.83 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 1.09 | 0.59 | 2.15 | 0.78 |
|  |
| Starts at 3 (number) | PAO (Cat 1) | REF | n/a | n/a | n/a |
| PAO (Cat 2) | 0.89 | 0.79 | 1.02 | 0.09 |
| PAO (Cat 3) | 1.06 | 0.91 | 1.23 | 0.47 |
| PAO (Cat 4) | 0.67 | 0.57 | 0.80 | **<0.0001** |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 0.87 | 0.78 | 0.97 | **0.009** |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.92 | 0.81 | 1.05 | 0.24 |
|  |
| Starts at 4 (number) | PAO (Cat 1) | REF | n/a | n/a | n/a |
| PAO (Cat 2) | 1.01 | 0.88 | 1.17 | 0.84 |
| PAO (Cat 3) | 1.02 | 0.85 | 1.21 | 0.83 |
| PAO (Cat 4) | 0.94 | 0.79 | 1.12 | 0.50 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 1.26 | 1.12 | 1.42 | **0.0001** |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.60 | 0.50 | 0.71 | **<0.0001** |
|  |
| Lifetime Starts (number) | PAO (Cat 1) | REF | n/a | n/a | n/a |
| PAO (Cat 2) | 1.03 | 0.54 | 1.97 | 0.93 |
| PAO (Cat 3) | 1.15 | 0.53 | 2.71 | 0.73 |
| PAO (Cat 4) | 0.93 | 0.44 | 2.07 | 0.85 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 1.10 | 0.64 | 1.89 | 0.71 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.83 | 0.44 | 1.69 | 0.59 |
|  |
| Wins at 2 (number) | PAO (Cat 1) | REF | n/a | n/a | n/a |
| PAO (Cat 2) | 1.55 | 0.87 | 2.80 | 0.14 |
| PAO (Cat 3) | 0.79 | 0.35 | 1.74 | 0.57 |
| PAO (Cat 4) | 0.54 | 0.22 | 1.26 | 0.15 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 0.97 | 0.58 | 1.62 | 0.91 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.62 | 0.31 | 1.18 | 0.15 |
| Starts at 2 | 1.25 | 1.19 | 1.34 | **<0.0001** |
|  |
| Wins at 3 (number) | PAO (Cat 1) | REF | n/a | n/a | n/a |
| PAO (Cat 2) | 0.79 | 0.24 | 1.29 | 0.34 |
| PAO (Cat 3) | 0.54 | 0.28 | 1.04 | 0.07 |
| PAO (Cat 4) | 0.62 | 0.32 | 1.19 | 0.15 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 0.90 | 0.59 | 1.37 | 0.63 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 1.11 | 0.66 | 1.85 | 0.69 |
| Starts at 3 | 1.10 | 1.07 | 1.12 | **<0.0001** |
|  |
| Wins at 4 (number) | PAO (Cat 1) | REF | n/a | n/a | n/a |
| PAO (Cat 2) | 0.86 | 0.43 | 1.72 | 0.67 |
| PAO (Cat 3) | 0.93 | 0.39 | 2.20 | 0.88 |
| PAO (Cat 4) | 0.61 | 0.25 | 1.45 | 0.27 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 1.50 | 0.81 | 2.82 | 0.20 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.74 | 0.32 | 1.67 | 0.49 |
| Starts at 4 | 1.12 | 1.09 | 1.15 | **<0.0001** |
|  |
| Lifetime Wins (number) | PAO (Cat 1) | REF | n/a | n/a | n/a |
| PAO (Cat 2) | 0.94 | 0.61 | 1.44 | 0.77 |
| PAO (Cat 3) | 0.78 | 0.45 | 1.38 | 0.39 |
| PAO (Cat 4) | 0.58 | 0.33 | 1.01 | 0.06 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | 1.00 | 0.69 | 1.44 | 0.99 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.87 | 0.54 | 1.39 | 0.55 |
| Starts | 1.03 | 1.03 | 1.04 | **<0.0001** |
|  |
| **Outcome Variable** | **Predictor Variable** | **Estimate** | **2.5%** | **97.5%** | **p-value** |
| Earnings 2 (log[$]) | PAO (Cat 1) | REF | n/a | n/a | n/a |
| PAO (Cat 2) | 0.10 | -0.37 | 0.59 | 0.67 |
| PAO (Cat 3) | -0.03 | -0.63 | 0.57 | 0.92 |
| PAO (Cat 4) | -0.10 | -0.71 | 0.51 | 0.75 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | -0.40 | -0.79 | 0.002 | 0.06 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.30 | -0.24 | 0.84 | 0.28 |
| Starts at 2 | 0.16 | 0.11 | 0.20 | **<0.0001** |
|  |
| Earnings 3 (log[$]) | PAO (Cat 1) | REF | n/a | n/a | n/a |
| PAO (Cat 2) | 0.02 | -0.26 | 0.30 | 0.89 |
| PAO (Cat 3) | -0.35 | -0.70 | -0.006 | **0.05** |
| PAO (Cat 4) | -0.20 | -0.56 | 0.17 | 0.30 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | -0.08 | -0.32 | 0.16 | 0.52 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.21 | -0.08 | 0.51 | 0.17 |
| Starts at 3 | 0.04 | 0.02 | 0.05 | **<0.0001** |
|  |
| Earnings 4 (log[$]) | PAO (Cat 1) | REF | n/a | n/a | n/a |
| PAO (Cat 2) | -0.06 | -0.50 | 0.38 | 0.79 |
| PAO (Cat 3) | 0.08 | -0.45 | 0.62 | 0.76 |
| PAO (Cat 4) | -0.11 | -0.67 | 0.45 | 0.71 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | -0.17 | -0.55 | 0.20 | 0.37 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | -0.12 | -0.64 | 0.39 | 0.64 |
| Starts  | 0.06 | 0.04 | 0.07 | **<0.0001** |
|  |
| Lifetime Earnings (log[$]) | PAO (Cat 1) | REF | n/a | n/a | n/a |
| PAO (Cat 2) | 0.11 | -0.21 | 0.43 | 0.50 |
| PAO (Cat 3) | -0.07 | -0.46 | 0.33 | 0.74 |
| PAO (Cat 4) | -0.32 | -0.71 | 0.07 | 0.11 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | -0.24 | -0.51 | 0.02 | 0.08 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.27 | -0.08 | 0.62 | 0.14 |
| Starts  | 0.02 | 0.01 | 0.02 | **<0.0001** |
|  |
| Earnings per Start (log[$]) | PAO (Cat 1) | REF | n/a | n/a | n/a |
| PAO (Cat 2) | 0.18 | -0.07 | 0.44 | 0.16 |
| PAO (Cat 3) | 0.03 | -0.28 | 0.35 | 0.84 |
| PAO (Cat 4) | -0.11 | -0.43 | 0.20 | 0.47 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | -0.20 | -0.41 | 0.02 | 0.08 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 0.29 | 0.01 | 0.57 | **0.05** |
|  |
| Fastest Time (secs) | PAO (Cat 1) | REF | n/a | n/a | n/a |
| PAO (Cat 2) | -0.97 | -2.71 | 0.79 | 0.29 |
| PAO (Cat 3) | 1.05 | -1.14 | 3.25 | 0.35 |
| PAO (Cat 4) | 0.15 | -2.20 | 2.51 | 0.90 |
| Sex (F) | REF | n/a | n/a | n/a |
| Sex (M) | -0.19 | -1.69 | 1.30 | 0.81 |
| Gait (P) | REF | n/a | n/a | n/a |
| Gait (T) | 2.23 | 0.30 | 4.16 | **0.03** |