



## Supplementary Item 1: Multivariable modelling of the association between kinematic data and horse and surface.

| Variable | Activity | Model                 |      |    |    |                               |      |    |    |
|----------|----------|-----------------------|------|----|----|-------------------------------|------|----|----|
|          |          | By horse<br>(n = 282) |      |    |    | Surface corrected<br>(n =677) |      |    |    |
|          |          | LSM                   | SE   |    |    | LSM                           | SE   |    |    |
| HDmin    | Left     | 1.81                  | 0.95 | b  | a  | 1.66                          | 0.87 | b  | a* |
|          | Straight | 0.40                  | 0.95 | b  | a  | 0.43                          | 0.88 | b  | a  |
|          | Right    | -2.33                 | 0.95 | a  | a  | -2.55                         | 0.88 | a* | a  |
| HDmax    | Left     | -3.35                 | 0.73 | a  | a* | -3.32                         | 0.68 | a* | a* |
|          | Straight | -0.10                 | 0.73 | a  | a  | -0.09                         | 0.70 | a* | a  |
|          | Right    | 2.14                  | 0.73 | a* | a  | 2.69                          | 0.69 | a* | a  |
| PDmin    | Left     | -4.20                 | 0.46 | a* | a* | -4.00                         | 0.39 | a* | a* |
|          | Straight | -0.29                 | 0.46 | a* | a* | -0.27                         | 0.40 | a* | a* |
|          | Right    | 3.84                  | 0.46 | a* | a* | 3.87                          | 0.39 | a* | a* |
| PDmax    | Left     | 1.20                  | NA   | b  | a* | 1.03                          | NA   | b  | a* |
|          | Straight | 0.57                  | NA   | b  | a  | 0.65                          | NA   | b  | a  |
|          | Right    | -0.75                 | NA   | a* | a  | -0.41                         | NA   | a* | a  |

LSM = Least square means, SE = Standard error. Pair-wise comparison within a variable is indicated with a letter, a =  $p < 0.05$ , a\* =  $p < 0.001$ , b = non-significant.

