### Appendix 2

**Supplementary Table A2. Ball velocity (m/s) and ball radial error (deg). Part 1**

| Pitcher | ID | VEL | DIS | IR | VEL | DIS | IS | VEL | DIS | IY | VEL | DIS | NS | VEL | DIS | OS | VEL | DIS |
|---------|----|-----|-----|----|-----|-----|----|-----|-----|----|-----|-----|----|-----|-----|----|-----|-----|
| Trial#  |    |     |     |    |     |     |    |     |     |    |     |     |    |     |     |    |     |     |
| 1       | 38.6 | 689 | 33.1 | 223 | 35.0 | 654 | 37.8 | 364 | 36.4 | 313 | 37.2 | 309 |
| 2       | 38.6 | 254 | 33.2 | 413 | 35.0 | 225 | 38.3 | 80  | 38.3 | 143 | 36.7 | 63  |
| 3       | 38.1 | 158 | 32.0 | 459 | 35.6 | 222 | 38.1 | 291 | 36.1 | 421 | 35.3 | 230 |
| 4       | 38.1 | 773 | 32.5 | 225 | 34.6 | 122 | 38.1 | 284 | 35.8 | 409 | 36.4 | 256 |
| 5       | 38.1 | 267 | 32.0 | 231 | —    | 245 | 38.3 | 437 | 36.9 | 427 | 36.4 | 553 |
| 6       | 37.8 | 158 | 36.4 | 469 | 33.9 | 76  | 37.5 | 267 | 38.3 | 215 | 36.4 | 426 |
| 7       | 37.8 | 382 | 37.1 | 63  | 34.2 | 174 | 37.8 | 38  | 38.1 | 285 | 36.9 | 160 |
| 8       | 37.8 | 88  | 36.8 | 391 | 34.2 | 650 | 38.3 | 73  | 37.2 | 61  | 36.7 | 331 |
| 9       | 37.2 | 95  | 36.6 | 581 | —    | 117 | 37.8 | 27  | 36.7 | 392 | 36.4 | 404 |
| 10      | 37.8 | 379 | 35.6 | 310 | 34.7 | 407 | 38.1 | 381 | 35.8 | 83  | 36.1 | 93  |
| 11      | 36.4 | 153 | 36.3 | 628 | —    | 291 | 38.3 | 90  | 36.1 | 108 | 36.7 | 220 |
| 12      | 36.9 | 193 | 35.3 | 71  | 36.7 | 124 | 38.3 | 162 | 36.1 | 432 | 37.5 | 80  |
| 13      | 36.9 | 371 | 35.7 | 364 | 36.4 | 189 | 38.3 | 424 | 35.6 | 530 | 36.7 | 279 |
| 14      | 36.4 | 167 | 35.8 | 567 | 37.2 | 13  | 38.3 | 191 | 37.8 | 361 | 36.9 | 81  |
| 15      | 36.4 | 131 | 35.6 | 169 | 37.5 | 198 | 38.3 | 284 | 36.7 | 118 | 36.7 | 415 |
| 16      | 36.9 | 484 | 34.7 | 431 | 34.4 | 671 | 38.3 | 151 | 36.7 | 199 | 34.2 | 183 |
| 17      | 35.8 | 105 | 34.9 | 402 | 34.4 | 36  | 37.8 | 230 | 36.7 | 435 | 34.7 | 384 |
| 18      | 36.1 | 534 | 35.7 | 204 | 35.3 | 342 | 38.1 | 161 | 37.5 | 227 | —    | 589 |
| 19      | 36.4 | 18  | 34.2 | 135 | 33.6 | 250 | 38.3 | 47  | 36.7 | 261 | 33.9 | 147 |
| 20      | 37.8 | 326 | 35.4 | 101 | 34.7 | 526 | 38.3 | 239 | 37.5 | 79  | 33.6 | 243 |
| 21      | 38.1 | 264 | 34.2 | 10  | 34.7 | 263 | 38.6 | 150 | 36.7 | 395 | 37.5 | 334 |
| 22      | 37.8 | 101 | 33.3 | 223 | 36.1 | 374 | 38.3 | 560 | 36.9 | 65  | 37.5 | 406 |
| 23      | 38.9 | 96  | 32.6 | 529 | —    | 319 | 38.6 | 89  | 36.1 | 281 | 37.2 | 562 |
| 24      | 38.6 | 186 | 32.8 | 214 | 36.4 | 233 | 38.6 | 543 | 36.1 | 266 | 36.4 | 253 |
| 25      | 38.1 | 373 | 32.5 | 118 | 35.8 | 137 | 38.3 | 462 | 36.9 | 269 | 37.2 | 178 |
| 26      | 37.2 | 95  | 36.1 | 58  | 34.7 | 306 | 38.1 | 245 | 36.7 | 147 | 38.3 | 215 |
| 27      | 37.2 | 332 | 36.2 | 220 | 34.2 | 566 | 37.8 | 84  | 36.4 | 273 | 37.8 | 366 |
| 28      | 38.1 | 419 | 36.1 | 815 | 35.6 | 137 | 37.5 | 111 | 36.9 | 186 | 37.5 | 269 |
| 29      | 36.9 | 237 | 35.6 | 551 | 34.4 | 466 | 37.8 | 288 | 36.7 | 257 | 38.9 | 287 |
| 30      | 38.1 | 177 | 36.1 | 554 | 35.3 | 382 | 37.8 | 381 | 37.8 | 177 | 39.2 | 186 |
| Mean    | 37.5 | 267 | 34.8 | 324 | 35.2 | 291 | 38.1 | 238 | 36.8 | 260 | 36.6 | 283 |
| SD      | 0.8  | 181 | 1.6  | 204 | 1.0  | 183 | 0.3  | 152 | 0.7  | 130 | 1.3  | 141 |

**VEL:** ball velocity (m/s). **DIS:** ball radial error (mm). Trials surrounded by square were selected to analyze as "successful trials."
Supplementary Table A2. Ball velocity (m/s) and ball radial error (deg). Part 2

| Pitcher | TU | VEL | DIS | YO | VEL | DIS | YZ | VEL | DIS | IW | VEL | DIS | No. | VEL | DIS |
|---------|----|-----|-----|----|-----|-----|----|-----|-----|----|-----|-----|-----|-----|-----|
| Trial#  | VEL | DIS | VEL | DIS | VEL | DIS | VEL | DIS | VEL | DIS | VEL | DIS |
| 1       | 36.1 | 543 | 36.1 | 397 | 36.4 | 448 | 35.3 | 463 | 31  | 33.9 | 523 |
| 2       | 36.7 | 226 | 36.9 | 436 | 36.9 | 553 | 36.1 | 660 | 32  | 33.9 | 352 |
| 3       | 37.2 | 334 | 37.8 | 572 | 36.9 | 476 | 36.7 | 467 | 33  | 36.4 | 376 |
| 4       | 37.2 | 393 | 36.9 | 241 | 37.2 | 249 | 36.1 | 299 | 34  | 34.2 | 713 |
| 5       | 37.5 | 189 | 37.8 | 160 | 37.2 | 168 | 35.6 | 140 | 35  | 35.6 | 229 |
| 6       | 36.9 | 108 | 38.1 | 497 | 37.5 | 237 | 35.8 | 421 | 36  | 35.6 | 725 |
| 7       | 36.9 | 90  | 38.1 | 177 | 37.5 | 181 | 35.6 | 411 | 37  | 35.3 | 372 |
| 8       | 37.5 | 335 | 38.6 | 414 | 36.7 | 612 | 35.8 | 185 | 38  | 35.6 | 439 |
| 9       | 37.8 | 338 | 37.8 | 170 | 36.9 | 453 | 34.4 | 327 | 39  | 34.4 | 580 |
| 10      | 37.5 | 336 | 37.2 | 402 | 36.9 | 161 | 35.0 | 318 | 40  | 36.1 | 103 |
| 11      | 38.6 | 129 | 38.1 | 316 | 34.2 | 714 | 37.5 | 181 | 41  | 36.9 | 463 |
| 12      | 38.3 | 194 | 37.2 | 267 | 36.1 | 150 | 37.8 | 104 | 42  | 36.4 | 125 |
| 13      | 39.2 | 542 | 37.8 | 81  | 35.8 | 28  | 36.7 | 313 | 43  | 35.3 | 370 |
| 14      | 38.9 | 116 | 37.8 | 319 | 35.6 | 337 | 35.8 | 493 | 44  | 35.8 | 97  |
| 15      | 38.9 | 476 | 38.6 | 90  | 35.8 | 466 | 37.5 | 210 | –   | –   | –   |
| 16      | 35.0 | 409 | 36.4 | 587 | 36.9 | 334 | 34.2 | 320 | –   | –   | –   |
| 17      | 36.4 | 286 | 38.1 | 321 | 36.4 | 166 | 33.3 | 438 | –   | –   | –   |
| 18      | 36.7 | 430 | 38.1 | 204 | 36.7 | 220 | 34.2 | 219 | –   | –   | –   |
| 19      | 37.2 | 201 | 38.6 | 137 | 36.1 | 252 | 34.4 | 250 | –   | –   | –   |
| 20      | 37.2 | 217 | 38.6 | 399 | 36.9 | 197 | 34.2 | 88  | –   | –   | –   |
| 21      | 37.5 | 217 | 38.1 | 604 | 36.4 | 310 | 37.5 | 411 | –   | –   | –   |
| 22      | 37.5 | 411 | 38.6 | 204 | 35.6 | 145 | 37.5 | 492 | –   | –   | –   |
| 23      | 37.5 | 121 | 38.6 | 352 | 35.6 | 201 | 35.3 | 246 | –   | –   | –   |
| 24      | 37.8 | 29  | 38.6 | 162 | 35.8 | 290 | 36.7 | 263 | –   | –   | –   |
| 25      | 37.8 | 186 | 38.9 | 520 | 35.3 | 172 | 35.0 | 726 | –   | –   | –   |
| 26      | 38.9 | 421 | 37.2 | 589 | 37.2 | 500 | 35.6 | 693 | –   | –   | –   |
| 27      | 38.9 | 33  | 38.1 | 480 | 37.2 | 330 | 35.0 | 187 | –   | –   | –   |
| 28      | 39.2 | 558 | 38.1 | 171 | 37.2 | 188 | 35.9 | 240 | –   | –   | –   |
| 29      | 38.6 | 140 | 38.1 | 63  | 37.2 | 180 | 35.6 | 150 | –   | –   | –   |
| 30      | 39.4 | 204 | 38.1 | 155 | 36.9 | 454 | 35.6 | 446 | –   | –   | –   |

Mean 37.7 274 37.9 316 36.5 306 – – 35.6 355
SD 1.0 154 0.7 168 0.8 163 – – 1.1 180

VEL: ball velocity (m/s). DIS: ball radial error (mm). Trials surrounded by square were selected to analyze as "successful trials."
### Supplementary Table A2. Ball velocity (m/s) and ball radial error (deg). Part 3

| Pitcher | NB  |  |  | SR  |  |  |
|---------|-----|---|---|-----|---|---|
| Trial#  | VEL| DIS| No | VEL| DIS| No | VEL| DIS | No | VEL| DIS|
| 1       | 34.8| 545| 31 | 35.3| 370| 36.7| 639| 31 | 35.3| 857|
| 2       | 35.5| 368| 32 | 35.0| 336| 37.1| 208| 32 | 35.0| 321|
| 3       | 35.7| 156| 33 | 35.6| 109| 37.4| 310| 33 | 35.4| 203|
| 4       | 35.1| 149| 34 | 35.3| 266| 37.2| 480| 34 | 35.0| 156|
| 5       | 35.8| 94 | 35 | 35.0| 121| 37.7| 266| 35 | 35.4| 316|
| 6       | 36.4| 729|   | 36.1| 122| 36 | 35.0| 362|   | 36.3| 21 |
| 7       | 37.0| 233|   | 36.3| 127| 37 | 34.3| 255|   | 36.3| 45 |
| 8       | 36.9| 431|   | 37.1| 250| 38 | 34.4| 471|   | 36.6| 20 |
| 9       | 37.2| 316|   | 36.4| 367| 39 | 34.6| 43 |   | 36.6| 200|
| 10      | 36.3| 602|   | 36.3| 21 |   |     |   |   | 36.3| 21 |
| 11      | 36.2| 117|   | 37.8| 459|   |     |   |   | 36.6| 200|
| 12      | 37.0| 269|   | 36.9| 536|   |     |   |   | 36.6| 200|
| 13      | 35.5| 602|   | 37.2| 559|   |     |   |   | 36.6| 200|
| 14      | 36.3| 61 |   | 36.6| 200|   |     |   |   | 36.6| 200|
| 15      | 36.4| 245|   | 37.0| 170|   |     |   |   | 36.6| 200|
| 16      | 36.7| 363|   | 36.9| 514|   |     |   |   | 36.6| 200|
| 17      | 36.9| 261|   | 36.5| 252|   |     |   |   | 36.6| 200|
| 18      | 36.4| 262|   | 36.8| 258|   |     |   |   | 36.6| 200|
| 19      | 36.9| 243|   | 36.5| 396|   |     |   |   | 36.6| 200|
| 20      | 36.4| 350|   | 37.1| 155|   |     |   |   | 36.6| 200|
| 21      | 37.8| 393|   | 36.2| 407|   |     |   |   | 36.6| 200|
| 22      | 36.7| 452|   | 36.8| 275|   |     |   |   | 36.6| 200|
| 23      | 37.8| 316|   | 35.0| 314|   |     |   |   | 36.6| 200|
| 24      | 38.1| 81 |   | 35.8| 88 |   |     |   |   | 36.6| 200|
| 25      | 37.8| 186|   | 36.8| 107|   |     |   |   | 36.6| 200|
| 26      | 35.0| 255|   | 37.1| 298|   |     |   |   | 36.6| 200|
| 27      | 34.4| 468|   | 36.1| 144|   |     |   |   | 36.6| 200|
| 28      | 34.4| 270|   | 36.5| 218|   |     |   |   | 36.6| 200|
| 29      | 35.0| 345|   | 36.3| 329|   |     |   |   | 36.6| 200|
| 30      | 35.0| 196|   | 35.6| 312|   |     |   |   | 36.6| 200|

| Mean   |   | 36.1| 302|   |   | 36.3| 302|
| SD     |   | 1.0 | 159|   |   | 0.9 | 172|

VEL: ball velocity (m/s). DIS: ball radial error (mm). Trials surrounded by square were selected to analyze as "successful trials."