Suppl. 1 Results of multiple regression analysis for each predicted variable and predictors.

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Independent variables | Dependent variables | SEB | *β* | P(*β*) | r | r2 | rxy･z |
| Thigh angle at the contralateral foot strike | Running speed | 2.54 | .191 | .161  | .413  | .171  | .163  |
| Leg length | 34.84 | .269 | .039  | .175  | .031  | .238  |
| Step frequency | 5.71 | .291 | .045  | .226  | .051  | .231  |
| Swing/support ratio | 4.20 | .236 | .042  | .216  | .047  | .234  |
| (constant) | 43.53 | 　 | 　 | 　 | 　 | 　 |
| Maximal thigh lift angle | Running speed | 1.42 | .454 | .002  | .310  | .096  | .350  |
| Leg length | 19.50 | .014 | .916  | .221  | .049  | .012  |
| Step frequency | 3.20 | −.290 | .056  | −.089  | .008  | −.220  |
| Swing/support ratio | 2.35 | −.125 | .301  | .023  | .001  | −.120  |
| (constant) | 24.37 | 　 | 　 | 　 | 　 | 　 |
| Maximal knee flexion angular velocity | Running speed | 25.07 | −.228 | .073  | −.222  | .049  | −.207  |
| Leg length | 344.35 | .401 | .001  | .441  | .194  | .366  |
| Step frequency | 56.43 | −.226 | .093  | −.494  | .244  | −.194  |
| Swing/support ratio | 41.51 | .104 | .331  | .063  | .004  | .113  |
| (constant) | 430.29  | 　 | 　 | 　 | 　 | 　 |
| Maximal thigh lift angular velocity | Running speed | 13.74 | .525 | <.001 | .217  | .047  | .411  |
| Leg length | 188.70 | −.530 | <.001 | −.272  | .074  | −.433  |
| Step frequency | 30.93 | −.366 | .013  | .100  | .010  | −.285  |
| Swing/support ratio | 22.75 | −.262 | .025  | −.052  | .003  | −.257  |
| (constant) | 235.79 | 　 | 　 | 　 | 　 | 　 |
| Maximal leg backward swing velocity | Running speed | 13.04 | −.454 | <.001 | −.447  | .199  | −.406  |
| Leg length | 179.08 | .279 | .015  | .184  | .034  | .277  |
| Step frequency | 29.35 | .084 | .508  | −.157  | .025  | .077  |
| Swing/support ratio | 21.59 | −.350 | <.001 | −.483  | .234  | −.375  |
| (constant) | 223.78 | 　 | 　 | 　 | 　 | 　 |
| Relative foot strike distance | Running speed | 0.82 | .544 | <.001 | −.019  | <.001  | .513  |
| Leg length | 11.32 | −.511 | <.001 | −.078  | .006  | −.510  |
| Step frequency | 1.86 | −.722 | <.001 | −.176  | .031  | −.600  |
| Swing/support ratio | 1.37 | −.762 | <.001 | −.493  | .243  | −.703  |
| (constant) | 14.15 | 　 | 　 | 　 | 　 | 　 |
| Relative toe-off distance | Running speed | 0.91 | .796 | <.001 | .269  | .072  | .660  |
| Leg length | 12.46 | −.546 | <.001 | −.098  | .010  | −.536  |
| Step frequency | 2.04 | −.650 | <.001 | .004  | <.001  | −.560  |
| Swing/support ratio | 1.50 | −.702 | <.001 | −.385  | .148  | −.674  |
| (constant) | 15.57 | 　 | 　 | 　 | 　 | 　 |
| Hip angle at the foot strike | Running speed | 1.11 | −.274 | .051  | −.039  | .002  | −.225  |
| Leg length | 15.29 | .104 | .429  | −.077  | .006  | .092  |
| Step frequency | 2.51 | .250 | .091  | .017  | .000  | .195  |
| Swing/support ratio | 1.84 | .499 | <.001 | .391  | .153  | .444  |
| (constant) | 19.10 | 　 | 　 | 　 | 　 | 　 |
| Knee angle at the foot strike | Running speed | 1.71 | −.042 | .767  | .045  | .002  | −.035  |
| Leg length | 23.50 | .171 | .202  | .168  | .028  | .148  |
| Step frequency | 3.85 | −.072 | .630  | −.216  | .046  | −.056  |
| Swing/support ratio | 2.83 | .373 | .002  | .364  | .133  | .343  |
| (constant) | 29.36 | 　 | 　 | 　 | 　 | 　 |
| Ankle angle at the foot strike | Running speed | 1.35 | .189 | .188  | .059  | .004  | .153  |
| Leg length | 18.53 | .078 | .566  | .255  | .065  | .067  |
| Step frequency | 3.04 | −.366 | .017  | −.324  | .105  | −.272  |
| Swing/support ratio | 2.23 | .028 | .818  | .124  | .015  | .027  |
| (constant) | 23.15 | 　 | 　 | 　 | 　 | 　 |
| Hip angle at the toe-off | Running speed | 1.59 | .479 | <.001 | .148  | .022  | .373  |
| Leg length | 21.86 | −.456 | <.001 | −.184  | .034  | −.374  |
| Step frequency | 3.58 | −.409 | .007  | .022  | .001  | −.308  |
| Swing/support ratio | 2.63 | −.346 | .004  | −.145  | .021  | −.324  |
| (constant) | 27.32 | 　 | 　 | 　 | 　 | 　 |
| Knee angle at the toe-off  | Running speed | 1.52 | .161 | .267  | −.098  | .010  | .129  |
| Leg length | 20.81 | −.329 | .019  | −.119  | .014  | −.269  |
| Step frequency | 3.41 | −.448 | .005  | −.242  | .058  | −.322  |
| Swing/support ratio | 2.51 | −.064 | .605  | .065  | .004  | −.060  |
| (constant) | 26.00 | 　 | 　 | 　 | 　 | 　 |
| Ankle angle at the toe-off | Running speed | 1.43 | .224 | .126  | .041  | .002  | .177  |
| Leg length | 19.65 | −.017 | .903  | .188  | .035  | −.014  |
| Step frequency | 3.22 | −.403 | .010  | −.294  | .087  | −.292  |
| Swing/support ratio | 2.37 | −.063 | .609  | .053  | .003  | −.060  |
| (constant) | 24.55 | 　 | 　 | 　 | 　 | 　 |
| Knee flexion angular displacement | Running speed | 1.07 | −.168 | .217  | .150  | .023  | −.143  |
| Leg length | 14.64 | .099 | .442  | −.176  | .031  | .090  |
| Step frequency | 2.40 | .574 | <.001 | .421  | .177  | .424  |
| Swing/support ratio | 1.76 | .283 | .015  | .148  | .022  | .277  |
| (constant) | 18.29 | 　 | 　 | 　 | 　 | 　 |
| Hip extension angular displacement | Running speed | 1.22 | .691 | <.001 | .181  | .033  | .592  |
| Leg length | 16.75 | −.544 | <.001 | −.133  | .018  | −.521  |
| Step frequency | 2.75 | −.601 | <.001 | .010  | .000  | −.517  |
| Swing/support ratio | 2.02 | −.717 | <.001 | −.431  | .186  | −.669  |
| (constant) | 20.93 | 　 | 　 | 　 | 　 | 　 |
| Knee extension angular displacement | Running speed | 1.45 | .276 | .021  | −.223  | .050  | .264  |
| Leg length | 19.87 | −.499 | <.001 | −.151  | .023  | −.463  |
| Step frequency | 3.26 | −.656 | <.001 | −.250  | .062  | −.524  |
| Swing/support ratio | 2.40 | −.606 | <.001 | −.409  | .167  | −.578  |
| (constant) | 24.83 | 　 | 　 | 　 | 　 | 　 |
| Maximal hip extension velocity | Running speed | 20.34 | .630 | <.001 | .258  | .067  | .499  |
| Leg length | 279.30 | −.524 | <.001 | −.214  | .046  | −.451  |
| Step frequency | 45.77 | −.417 | .003  | .121  | .015  | −.339  |
| Swing/support ratio | 33.67 | −.457 | <.001 | −.216  | .046  | −.441  |
| (constant) | 349.01 | 　 | 　 | 　 | 　 | 　 |
| Maximal knee extension velocity | Running speed | 30.92 | .321 | .009  | −.167  | .028  | .296  |
| Leg length | 424.65 | −.530 | <.001 | −.187  | .035  | −.475  |
| Step frequency | 69.59 | −.623 | <.001 | −.189  | .036  | −.494  |
| Swing/support ratio | 51.19 | −.593 | <.001 | −.388  | .151  | −.559  |
| (constant) | 530.63 | 　 | 　 | 　 | 　 | 　 |
| Maximal ankle plantarflexion velocity | Running speed | 28.87 | .252 | .086  | .202  | .041  | .199  |
| Leg length | 396.48 | −.243 | .080  | −.168  | .028  | −.202  |
| Step frequency | 64.98 | −.098 | .523  | .076  | .006  | −.074  |
| Swing/support ratio | 47.79 | .160 | .197  | .247  | .061  | .150  |
| (constant) | 495.42 | 　 | 　 | 　 | 　 | 　 |
| Thigh angle at the foot strike | Running speed | 0.93 | .279 | .021  | −.062  | .004  | .264  |
| Leg length | 12.72 | −.330 | .004  | −.118  | .014  | −.323  |
| Step frequency | 2.09 | −.295 | .022  | .062  | .004  | −.263  |
| Swing/support ratio | 1.53 | −.706 | <.001 | −.576  | .332  | −.632  |
| (constant) | 15.90 | 　 | 　 | 　 | 　 | 　 |
| Shank angle at the foot strike | Running speed | 1.02 | .237 | .105  | .009  | <.001  | .187  |
| Leg length | 13.99 | −.069 | .615  | .161  | .026  | −.059  |
| Step frequency | 2.29 | −.450 | .004  | −.304  | .092  | −.324  |
| Swing/support ratio | 1.69 | −.135 | .272  | −.006  | <.001  | −.128  |
| (constant) | 17.48 | 　 | 　 | 　 | 　 | 　 |
| Thigh angle at the toe-off | Running speed | 1.00 | −.517 | <.001 | −.053  | .003  | −.424  |
| Leg length | 13.72 | .571 | <.001 | .204  | .041  | .479  |
| Step frequency | 2.25 | .612 | <.001 | .100  | .010  | .464  |
| Swing/support ratio | 1.65 | .472 | <.001 | .223  | .050  | .450  |
| (constant) | 17.14 | 　 | 　 | 　 | 　 | 　 |
| Shank angle at the toe-off | Running speed | 0.84 | −.366 | .007  | −.227  | .051  | −.306  |
| Leg length | 11.57 | .155 | .221  | .053  | .003  | .142  |
| Step frequency | 1.90 | .010 | .944  | −.276  | .076  | .008  |
| Swing/support ratio | 1.39 | .472 | <.001 | .379  | .143  | .439  |
| (constant) | 14.45 | 　 | 　 | 　 | 　 | 　 |
| Foot angle at the toe-off | Running speed | 1.44 | −.444 | .002  | −.181  | .033  | −.345  |
| Leg length | 19.75 | .113 | .401  | −.148  | .022  | .098  |
| Step frequency | 3.24 | .395 | .010  | .112  | .013  | .295  |
| Swing/support ratio | 2.38 | .355 | .004  | .185  | .034  | .327  |
| (constant) | 24.68 | 　 | 　 | 　 | 　 | 　 |
| Thigh angular displacement | Running speed | 1.07 | .557 | <.001 | −.006  | <.001  | .560  |
| Leg length | 14.64 | −.630 | <.001 | −.225  | .051  | −.628  |
| Step frequency | 2.40 | −.635 | <.001 | −.026  | .001  | −.588  |
| Swing/support ratio | 1.76 | −.825 | <.001 | −.559  | .313  | −.763  |
| (constant) | 18.29 | 　 | 　 | 　 | 　 | 　 |
| Shank angular displacement | Running speed | 1.04 | .510 | <.001 | .192  | .037  | .407  |
| Leg length | 14.34 | −.188 | .141  | .102  | .010  | −.170  |
| Step frequency | 2.35 | −.413 | .005  | −.049  | .002  | −.322  |
| Swing/support ratio | 1.73 | −.505 | <.001 | −.313  | .098  | −.461  |
| (constant) | 17.92 | 　 | 　 | 　 | 　 | 　 |
| Foot angular displacement | Running speed | 1.31 | .457 | .001  | .139  | .019  | .364  |
| Leg length | 18.03 | −.246 | .060  | .023  | .001  | −.217  |
| Step frequency | 2.95 | −.387 | .009  | −.023  | .001  | −.299  |
| Swing/support ratio | 2.17 | −.502 | <.001 | −.322  | .103  | −.452  |
| (constant) | 22.53 | 　 | 　 | 　 | 　 | 　 |
| Maximal leg backward swing velocity | Running speed | 6.97 | −.653 | <.001 | −.576  | .332  | −.715  |
| Leg length | 95.72 | .628 | <.001 | .540  | .292  | .720  |
| Step frequency | 15.69 | −.083 | .296  | −.594  | .353  | −.122  |
| Swing/support ratio | 11.54 | −.024 | .705  | −.197  | .039  | −.044  |
| (constant) | 119.61 | 　 | 　 | 　 | 　 | 　 |

SEB, Standard error of the regression coefficient; *β*, Standard partial regression coefficient; r, Pearson’s correlation coefficient; r2, determination coefficient; rxy･z, Partial correlation coefficient