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Confirming The Coach's Bias: Power Begets Performance At The Plate

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Baseball coaches value specific traits in their batters; this is reflected in starting lineups. The success of those batters depends on their ability to produce base hits. This is a complex skill affected by many factors, but a key component is the kinematic fingerprint of the swing. **PURPOSE:** To test which biomechanical domains of a baseball swing predict entry into the starting lineup, and which associate with the likelihood of getting base hits. **METHODS:** We enrolled 13 batters from a D1 baseball team (7 starters, 6 non-starters) and conducted 3D analyses of swing mechanics using Proteus (Boston Biomotion, USA). Each athlete performed six sets of five swings at increasing loads between 1lb and 9lbs of magnetic resistance. Independent-samples t-tests measured the difference in performance between starters and non-starters, with special attention paid to mean swing power (MSP) and mean swing consistency (MSC, i.e., how accurately successive swings are replicated in 3D space). Logistic regression tested how MSP and MSC affected the odds of being in the starting lineup. Linear regressions measured the effect of MSP and MSC on the number of hits in a season and hits per at-bat. **RESULTS:** Players in the starting lineup had 0.27 ± 0.03 hits per at-bat; non-starters had 0.17 ± 0.15 ($p = 0.170$). Starters exhibited a weak trend for lower consistency ($p = 0.092$) but generated more power ($p = 0.003$) and achieved greater bat speed ($p = 0.009$). MSP and MSC were not significant predictors of starting status: for each additional point of MSP, the odds of being a starter increased 29% ($p = 0.106$); for each additional point of MSC, the odds were decreased by 24% ($p = 0.123$). Owing to a small sample, power was not significantly different throughout the lineup, but consistency was lowest in batters 3-5 ($p = 0.048$). Linear regressions found each additional point of MSC to predict 2.1 fewer hits per season ($p = 0.029$) while each additional point of MSP predicted an increase of 0.7 hits per season ($p = 0.014$). When measuring these effects per at-bat, significance was lost. A post hoc power analysis revealed a need for 6 additional athletes to achieve significance. **CONCLUSIONS:** Even in a small sample, analysis of swing mechanics is helpful in determining performance. An increase in swing power associated with more hits and an increase in consistency associated with fewer.