

**David Aldous**, U. C. Berkeley

*Sport rating algorithms – do 30 matches suffice?*

**Abstract**

Teaching Applied Probability as mathematics without any reference to data is (arguably) foreign to the spirit of the 21st century. One interface between Applied Probability and readily available data involves Elo-type rating algorithms for sports teams. Combined with a Bradley-Terry-type model for win/lose with given strengths, and a model for time-varying strengths, one gets a model within which one can compare observed algorithmic ratings to unseen strengths. In particular, the sentence “ratings tend to converge on a team’s true strength relative to its competitors after about 30 matches” has been widely copied online: is there any theory or data to support this assertion?