Nonlinear Dynamics in Sports ANETTE HOSOI, Massachusetts Institute of Technology — In celebration of Jerry Gollubs remarkable contributions to nonlinear dynamics, I would like to discuss a few examples of complex dynamical behavior in sports. In free-flowing team sports such as soccer, basketball, and hockey, the relationships between individual athletes can give rise to collective behavior that can enhance (or diminish) the effectiveness of the team. New high-quality tracking data of professional basketball and soccer players, i.e. center of mass coordinates at 25Hz with centimetric-scale resolution, reveals signatures of player fatigue, decision-making aptitude, and other athlete traits that have historically been unquantifiable. Here we borrow concepts from the analysis of the collective motion of birds and fish, e.g. schooling and flocking, to begin to draw insights from tracking data and construct a low dimensional portrait of athlete characteristics.

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