
Introduction

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The history of the applications of systems-analytic techniques to sports is very much the history of systems analysis and its application to many fields of human endeavour. In each such area, the substantive experts always start by saying “your theories may work well in other areas, but in my area of interest everything depends on people, and people are not covered by mathematics”. This concept has, of course, been proved false in each area, starting with the military in World War II, when the newly developed field of operations research was responsible for winning the Battle of Britain and the Battle of the Atlantic, and subsequently for innumerable improvements in strategy and tactics in other aspects of the war. Systems analysis is used by hard-headed operators throughout government, industry, transportation, and commerce, and increasingly it is being applied successfully to sports.

The first studies of sports were purely descriptive, the earliest such technical articles by Elderton in 1909 and later by Wood (their articles culminated in the readings of two papers to the Royal Statistical Society in 1945) were on cricket. The first optimisation studies were performed in the late 1950s and early 1960s. Many of these were applied to baseball, a particularly suitable topic because the action occurs in discrete events and because the state of the game can be described almost completely merely by specifying the number of outs, the position of men on base (if any), and the score. While football (American) does not lend itself so easily to analysis, because of its popularity it still attracted quite a number of research attempts. However, also other sports, namely light athletics (track-and-field), basketball, hockey, golf, weightlifting, rowing, swimming and tennis etc. were attacked by operations research analysts to improve performances and/or to maximise the probabilities of success. Concurrently, league scheduling problems and ranking issues of teams and individuals were investigated and improved.

The publication of articles dealing with quantitative approaches to analyse and improve sports activities reached its maturity – considered by some its Golden Age – in the middle of the 1970s. A two-pronged effort culminated in 1976 as a special issue of the journal *Management Science* called ‘Management Science in Sports’, (edited by Robert E. Machol and Shaul P. Ladany under the general supervision of Donald G. Morrison), and in the 1977 book *Optimal Strategies In Sports*, published by North-Holland and edited by Shaul P. Ladany and Robert E. Machol.

In the years that followed, Sport Management papers continued to be published in diverse publications. In 1994 Y. Gerchak analysed the ‘Operations Research in Sports’ papers in *Handbooks In OR & MS* edited by S.M. Pollock and published by Elsevier Science. In 1996 Shaul P. Ladany summarised the ‘Applications to Sports’ in the *Encyclopedia Of Operations Research And Management Science* edited by Saul I. Gass

and Carl M. Harris and published by Kluwer Academic Publishers. An updated summary listing 124 references was written by the same author and appeared in the 2001 Centennial Edition of the above mentioned *Encyclopedia*.

In recent years the interest in Sport Management issues has risen. The field merits now both a new *Special Issue on Sport Management*, as well as a regular journal devoted only to Sport Management and related topics. In this Special Issue, suggested by the late A. Mehrez, eight papers were selected, written by 11 authors, covering topics ranging from American football, via triple-jump, basketball, suggestion of rewards based on difficulty of achievements, selection of optimal thresholds in competitions, and up to soccer. The papers went through several stages of a refereeing process and revisions.

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