The Engineering of Sport (e-book)
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The e-book includes over 45 papers from a Conference on the Engineering of Sport held in UK in 1996. The book is edited by Steve Haake, Professor of Sports Engineering at Sheffield Hallam University, UK. Numerous authors from around the world presented their research (as of 1996) on a multitude of sports engineering topics ranging from aerodynamics, biomechanics, 2D and 3D motion analyses, rigid body dynamics, materials and design, vibration, and simulation and experimental studies. The rationale for this book, according to Dr Haake, is: "researchers working in sports technology find that their work falls neither in the field of traditional sports science nor in mainstream engineering. Finding a suitable forum for publishing this kind of work becomes very difficult."

The common theme is the engineering or scientific analyses such as the static and dynamic investigations, computational motion and kinematic studies, numerical methods in fluid and solid mechanics, dimensional analyses, and statistical (regression) analyses as well as interdisciplinary studies. Papers are grouped under 9 themes (or chapters) with varying lengths, although some sports (such as golf, cricket, and selected Olympics games) are covered in several chapters. Not all sports are covered; especially US-centric sports such as football, basketball, and baseball are not even mentioned. The authors represent diverse communities from biomechanics, fluid mechanics, structural design, dynamics, material, sports science, and engineering physics communities.

The Aerodynamics part (Chapter 1) includes 3 papers that discuss the computational fluid dynamics of going faster, cricket ball swinging in the air, and the cyclist's posture to reduce the drag. Chapter 2 on Biomechanics includes 6 papers that address spine and hip flexibility, knee mechanics, ski jump performance, and walking mechanics. The Design section (Chapter 3) contains 6 articles on the tennis racket, pole vault, bicycle frame, badminton shuttlecock, sailing yacht, and underwater mechanics. Instrumentation aspects (Chapter 4) are covered here via 6 papers with focus on javelin release, tennis forehand, and kicking football. Next, 4 articles are included under the Materials section (Chapter 5) that describe the mountaineering equipment, cricket bat, and usage of composites or aluminum alloys. The Mechanics (Chapter 6) is the longest section with 9 papers on multidisciplinary topics covering golf balls, windsurfer mast, bobsled drivers, bow and arrow, artificial turf, bicycle chains, fishing gear, etc. The Modeling of Sport part (Chapter 7) describe the intricacies of golf balls, cricket bat, swimming, squash, rock climbing, and the like via 6 articles. Next, the Motion Analysis section (Chapter 8) includes only 3 papers on the statics and dynamics of 3D motions, water paddler study, and underwater motion analysis. Finally, the Vibration part (Chapter 9) contains 4 papers that focus on the golf clubs and cricket bats.

The e-book should be on interest to the noise and vibration control engineers (and the readers of NCEJ) for two reasons. First, from the general interest and curiosity perspective, most of us watch many games and sports while also indulging in some leisure activities ranging from walking, running, exercising, swimming, and the like. Second, there are several papers that specifically address vibration and dynamics issues. I personally enjoyed reading the book as one can arbitrarily select a theme or paper and read it without knowing other elements of the book. Articles on vibration and dynamics are quite interesting, although I would have liked to see more mathematical simulation and experimental details given my areas of interest.

Finally, the major shortcomings of this book are as follows. Information in the book is quite outdated (papers from 1996 in a book that was finally published in 2020). There is no cohesion in this book as authors simply present their own work (and do not connect the dots with other papers or chapters). Nevertheless, readers can look forward to an interesting compilation and then search the internet for related and contemporary papers on a specific sport engineering topic.

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