



Newton's Football: The Science Behind America's Game

By Allen St. John, Ainissa Ramirez

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In the bestselling tradition of *Freakonomics* and *Scorecasting* comes a clever and accessible look at the big ideas underlying the science of football.

Did you hear the one about the MacArthur genius physicist and the NFL coach? It's not a joke. It's actually an innovative way to understand chaos theory, and the remarkable complexity of modern professional football.

In *Newton's Football*, journalist and *New York Times* bestselling author Allen St. John and TED talker and former Yale professor Ainissa Ramirez explore the unexpected science behind America's Game. Whether it's Jerry Rice finding the common ground between quantum physics and the West Coast offense or an Ivy League biologist explaining--at a granular level--exactly how a Big Mac morphs into an outside linebacker, *Newton's Football* illuminates football--and science--through funny, insightful stories told by some of the world's sharpest minds.

With a clear-eyed empirical approach--and an exuberant affection for the game--St. John and Ramirez address topics that have long beguiled scientists and football fans alike, including:

- * the unlikely evolution of the football (or, as they put it, "The Divine Random Bounce of the Prolate Spheroid")
- * what Vince Lombardi has in common with Isaac Newton
- * how the hardwired behavior of monkeys can explain a head coach's reluctance to go for it on fourth-down
- * why a gruesome elevator accident jump-started the evolution of placekicking
- * how Teddy Roosevelt saved football using the same behavioral science concept that Dreamworks would use to save *Shrek*
- * why woodpeckers don't get concussions
- * how better helmets actually made the game more dangerous

Every Sunday the NFL shares a secret with only its savviest fans: The game isn't just a clash of bodies, it's a clash of ideas. The greatest minds in football have always possessed an instinctual grasp of science, understanding the big ideas and

gritty realities that inform the game's rich past, as well as its increasingly uncertain future.

Blending smart reporting, counterintuitive creativity, and compelling narrative, *Newton's Football* takes gridiron analysis to the next level, giving fans a book that entertains, enlightens, and explains the game anew.

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Editorial Review

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What prepared Vince Lombardi for phenomenal success in professional football? St. John and Ramirez believe it was the eight years Lombardi spent teaching high-school math and physics. For behind Lombardi's six NFL titles in the 1960s, the authors discern a brilliant application of Newtonian physics in the Green Bay Packers' famous power sweep and of probability theory in the Packers' run-oriented game plans. But Lombardi's storied career is but one gridiron setting in which readers discover hidden scientific and mathematical concepts. Readers will marvel, for instance, at how chaos theory connects an injury to a key player with the beginning of the West Coast offense. Just as amazing is the Boolean logic governing quarterback reads. Other analyses deploy the science of dynamic feedback to explain how adding a face mask to the helmet put players at greater risk of concussions, and combine the physics of pass-blocking with the thermodynamics of nutrition (and steroids?) to account for behemoth linemen. A delightfully improbable book putting science nerds and sports fans on the same page. --Bryce Christensen

Review

"It was with great interest that I read *Newton's Football*. I'm a fan of applying of science to sport and *Newton's Football* truly delivers. The stories are as engaging as they are informative. This is a great read for all football fans."—**Mark Cuban**

"A delightfully improbable book putting science nerds and sports fans on the same page."—**Booklist**

"This breezily-written but informative book should pique the interest of any serious football fan in the twenty-first century."—**The American Spectator**

"The authors have done a worthy job of combining popular science and sports into a work that features enough expertise on each topic to satisfy nerds and jocks alike. . . . The writers succeed in their task thanks to in-depth scientific knowledge, a wonderful grasp of football's past and present, interviews with a wide array of experts, and witty prose. . . . [*Newton's Football* is] fun and thought-provoking, proving that football is a mind game as much as it is a ball game."—**Publishers Weekly**

"Journalist St. John and former Yale engineering professor Ramirez use scientific principles to give a greater understanding of the spectacle of competitive violence that is American professional football. . . . What makes this book so enjoyable is the authors' revealing of how academic disciplines such as Boolean algebra and paleontology are present in such a brutish sport."—**Kirkus Reviews**

"Equal parts Isaac Newton and Cam Newton, this book is as thoroughly entertaining and engrossing as a fall Sunday afternoon on the couch."—**L. Jon Wertheim, executive editor of *Sports Illustrated* and bestselling co-author of *Scorecasting***

"Nothing is more bipartisan than America's love for football. And *Newton's Football* will unite readers of all stripes by merging science and sports in a fresh and fascinating fashion. Read this book and you'll never again watch a game the same way."—**Chris Mooney, New York Times bestselling author of *The Republican War on Science***

"What do you get when you pair a journalist and bestselling author with a materials scientist turned science

‘evangelist,’ and have them collaborate on a book about football? With any luck, you get *Newton’s Football*, a breezily informative and fun exploration of the science behind this popular pastime, from Vince Lombardi’s use of game theory to helmet design and why woodpeckers don’t get concussions.”—**Jennifer Ouellette, author of *The Calculus Diaries***

“Football is a great game to watch, but Allen St. John and Ainissa Ramirez make it a great game to think about as well. Where else are you going to find a discussion of Heisenberg’s influence on the NFL or a serious comparison of Isaac Newton and Vince Lombardi? This book is a terrific read.”—**James Trefil, Clarence J. Robinson Professor of Physics at George Mason University and co-author of *The Dictionary of Cultural Literacy***

“A fascinating melding of science and sport, at once lively and illuminating, rich with knowledge of the game and arresting explanations of its winning strategies.”—**Daniel J. Kevles, Yale University**

About the Author

An award-winning journalist, **Allen St. John** is the author of seven books, including *The Billion Dollar Game* and *Clapton’s Guitar*, and co-author of *The Mad Dog 100*. He has written for *The Wall Street Journal*, *The New York Times Magazine*, *U.S. News & World Report*, *Men’s Journal*, *Maxim*, *Playboy*, *Rolling Stone*, *The Village Voice*, *Esquire.com*, *theatlantic.com*, and *Salon.com*, and he blogs for *Forbes.com*. His work has been featured in *The Best American Sports Writing*. A graduate of the University of Chicago, he lives in Montclair, New Jersey, with his family.

Ainissa G. Ramirez, Ph.D., is dedicated to making science fun for people of all ages. She is the author of the TED Book *Save Our Science*, based on her TED talk on improving science education. She has also been an engineering professor at Yale University. She received her Ph.D. from Stanford University in materials science and engineering and holds several patents, one of which was awarded MIT’s top 100 young innovators award.

Users Review

From reader reviews:

Janice Nolan:

The particular book *Newton's Football: The Science Behind America's Game* has a lot associated with on it. So when you make sure to read this book you can get a lot of gain. The book was authored by the very famous author. Mcdougal makes some research just before write this book. This book very easy to read you can get the point easily after scanning this book.

Celia Redmond:

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