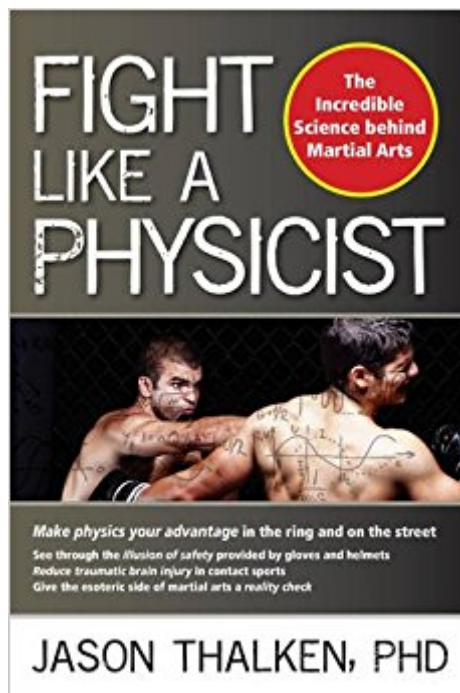




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Fight Like A Physicist: The Incredible Science Behind Martial Arts (Martial Science)



Synopsis

WINNER • SPORTS • USA Best Books Award 2015

Fight Like a Physicist provides an in-depth, sometimes whimsical look into the physics behind martial arts for sport and self-defense. Whether you are an experienced martial artist or a curious enthusiast, this book can give you an "unfair advantage" by unraveling the complex science of effective fighting techniques and examining the core principles that make them work. In addition to breaking down the principles behind the punches, Dr. Thalken, a computational physicist with a long history of martial arts across various styles, applies the mind-set of a physicist to a number of controversial topics in the martial arts: Making physics your "unfair advantage," in the ring and on the street; Examining center of mass, pi, levers, wedges, angular momentum, and linear momentum for martial artists; Protecting the brains of fighters and football players from concussions; Reducing traumatic brain injury in contact sports; Exposing the illusion of safety provided by gloves and helmets; Overturning conventional wisdom on compliance during an assault; Busting Hollywood action myths; Giving the mystical side of martial arts a much-needed reality check. Dr. Thalken invites readers to take a scientific approach to training and fighting, and provides all the tools necessary to get the most out of their experiences and make their training count.

Book Information

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Customer Reviews

Thalken explores how physics can be applied to martial arts. More than a body of facts, Thalken sees physics as a practical discipline: an approach that can be applied to any number of pursuits.

His chosen pursuit is martial arts. As in physics, the author says, no authority or status can make a martial artist's technique effective. Testable and reproducible results hold all the power. His thesis is that by understanding the way the human body moves and balances, a martial artist can gain the upper hand on opponents who do not approach their sport scientifically. Thalken outlines the way concepts from physics reveal strategies in fightingâ€”the center of mass is important for leg sweeps and grappling, hits that travel shorter distances will arrive with greater force and speed, etc. He also debunks common misconceptions about equipment. For example, boxing gloves are not as safe as than bare knuckles; while they distribute force over a wider area, causing fewer breaks in the skin, they allow the fist to strike with more momentum and hit hard surfaces (like the head) more frequently. He also delves into many of the myths propagated by media portrayals of martial arts as well as the pseudoscience propagated by practitioners of martial arts themselves. A relatively short book, the work is more primer than instruction manual, advocating a perspective as opposed to promoting individual exercises or training regimens. There is an infectious energy to Thalken's prose, one that sells both the no-nonsense combat analysis and the cool skepticism of the physics discussion. As a guidebook, the text has very little fat: section titles like, "Where Is My Center of Mass, and Why Do I Care?" keep readers assured Thalken isn't trying to force more information on them than needed. The author is an apt communicator of even the more abstract ideas, putting them into a simple, intuitive context. It's unclear if thinking like a physicist can actually win a fighter matches, but it certainly provides a new grammar for thinking about the ways in which our bodies move. An enlightening book for martial artists seeking a competitive edge. (Kirkus) Fight Like a Physicist is a cool concept that makes physics tangible for fans of fighting sports. As a martial arts practitioner with a doctorate in physics, Jason Thalken has an interesting perspective on fighting sports, and he applies his knowledge of scientific principles to his chosen sport in Fight Like a Physicist. Though there probably isn't quite enough material here for a full book, the early sections do a solid job explaining the physics in a relatable way that gives fighters some perspective on how to incorporate scientific knowledge to fight better. Fight Like a Physicist finds a nice middle ground in terms of the material's toneâ€”the writing is simple enough for its target audience to understand and apply, while it still delivers meaningful scientific concepts. For example, the book uses levers as a way to explain the relationship between distance and force, and explains how the dispersal of force on impact can make particular blows more or less effective. Thalken includes numerous charts and graphs throughout the book. Like many of the concepts he writes about, these visual representations will look familiar to anyone who took physics in high school, but may not have thought about the material since then. He throws in the occasional "math box," to highlight

mathematical concepts like the force curve or the center of mass, while using both equations and sample fight-based scenarios. Combined, these elements make *Fight Like a Physicist* both a useful primer and an enjoyable refresher. Though the early chapters are strong, the book does lose its way a bit late, with chapters that seem shoehorned in. Thalken includes a chapter about brain injuries affecting football players (including Chronic Traumatic Encephalopathy), and posits a theory about how applied force might manifest in such injuries. However, the author also has a patent pending on a new helmet which he discloses honestly, but which does make an already tangential chapter feel like a sales pitch at times. Other sections criticize practices like tai chi for their lack of scientific basis, or advocate fighting back against criminals in dangerous real-life situations, but these parts feel unnecessary, and the tone deviates from the book's strengths. They don't quite fit the fighting-sports theme, and the science in these chapters is less than clear cut, especially when compared to the universal principles discussed earlier. At its best, in the early chapters, *Fight like a Physicist* is a cool concept that makes physics tangible for fans of fighting sports, and can just as easily get more science-minded readers interested in those sports. (Jeff Fleischer Foreword Reviews, March 12, 2015)

Jason Thalken has a PhD in computational condensed matter physics from the University of Southern California, and bachelor's degrees in physics, mathematics, and philosophy from the University of Texas. He is the inventor on eight patent applications for data science and modeling in the financial services industry, and one patent application for protecting the brain from trauma in such sports as boxing, MMA, and football. Jason has studied and competed in numerous martial arts styles since 1995 and has a black belt in hapkido under Grand Master Ho Jin Song. Jason Thalken resides in Seattle, Washington.

Really good. I'm an instructor in Krav Maga, and I've found this book useful in helping me to have the words and functions I need to put into words what I know from experience.

First 1/3 of the book was interesting but I wanted the author to go more in depth with the subject matter. Second 1/3 of the book was about brain injury, and while that was interesting it's not why I picked up the book. Last 1/3 was debunking mysticism in martial arts; again, not why I bought the book. I would have loved to see more math and physics (there is almost nothing), and more practical application of the subject matter to fighting. All in all a waste on time. (Note: I am a mechanical engineer and kung fu practitioner. I may want more in-depth analysis than the laymen reader. There

was still almost no subject matter to think about in this book, unfortunately.)

I enjoy science and I also am interested in martial arts, so this seemed like the perfect book for me. I'd say that the book is good but not great. There are some interesting topics discussed but I wouldn't say it was too enlightening. A good read but I'm not sure I will see myself going back to it in the future to reference any of the material.

Mostly accurate, more so than most "debunking" type books I've seen. However, I did find some inaccurate statements, which tell me they didn't investigate the biological mechanisms very well, so I can't give it 5 stars. I also can't really blame them for not knowing things that only martial arts people would know about.

A little boring to read but the layout of the book and the authors thoughts were spot on. It was easy to read and follow with each chapter building on the last. But the information seemed a bit jaded in the sense that the author is a self proclaimed fighter. He at most times boasted about his fighting background and then discounted himself making the book seem nonsensical.

I've said so since about 2 months into training karate. It's nothing but physics. And you having a basic understanding of physics will greatly improve your performance. A few years down the line now, that statement still holds. The first half (or thereabouts) of the book was genuinely interesting. But then we digressed into the rabbit hole. The CTE conversation was relevant but a lot less interesting - and the author lost me at the whole Qi conversation. That said, the first half of the book makes it worth the expense of time and money.

I like the science behind this because of the topic. In reality, science bores me. I never cared for it, I still don't, but at the minimum Jason did a really good job of drawing parallels and keeping it semi-interesting. I would recommend this book for sure, and I don't really recommend a lot of things.

As a 30 plus year Martial Arts Veteran, I can tell you this is one of the best books I've ever read on the Martial Arts. I particularly like the fact that it covers a lot of information very commonly left out of every other publication out there. I have this book on my list of must reads for all of my students. Highly recommended.

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