

Adonis Lifestyle



Peer Review Process With Geoff Dover

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From The Desk of **Brad Howard**



Dear Friend,

Welcome to the [Adonis Lifestyle Podcast!](#)

Inside this transcript, you'll find a lot of actionable information that you'll be able to put to use **TODAY** to help develop your body for maximum visual impact. With that said, here are a few things to remember as you're reading through this document.

1. Our trainings and opinions are based solely on the end goal of creating a body based on proportions and social influence. Just as baseball players, powerlifters, and MMA fighters train for a specific purpose, the techniques, tactics, and strategies we talk about revolve around "looks based" training and not "performance based" training. (although your average performance across most all regimes will, in fact, increase as a whole with our advice)
2. "Health" based training takes a backseat as the recommendations we give create bodies that fall within all of the generally accepted "parameters" for good health (blood pressure, heart health, etc) by default. And, although we do talk about health and aging from time to time, realize that "health" comes with the package, without having to **FOCUS** on it.
3. Our opinions are strictly our own and sometimes are about as un-PC as you can get, but we'll never hide from the truth or try to sugar coat reality. Our job is to help you get in the exact shape you want, with all the BS aside. So, if you think we're a little harsh sometimes... just know we've got your best interest at heart.

So, with all of that said, dive in and enjoy. If you'd like more information on our workout systems, just [click this link](#). We guarantee you'll save a bunch of time and energy in the process.

Your friend,

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John Barban: Welcome to the Adonis Lifestyle podcast. I am John Barban and with me is a good friend, Geoff Dover. He is an assistant professor in the Department of Exercise Science at Concordia University. He has extensive knowledge with exercise and rehab and what specifically was your research in?

Geoff Dover: I study why some people feel more pain than others.

John Barban: Right.

Geoff Dover: Because with some people at the gym, when they work out like you get sore and this is typical of what you feel and other people are really complaining about the soreness and so we are trying to study why some people are actually feeling more pain or there is more pain being generated in their muscles than others.

John Barban: Okay, that's great. And I just never actually knew how to say exactly what you are doing. I just want to make sure everyone has an idea. But today's podcast is about the peer review process and Geoff knows a lot about this because he does some reviewing of papers and I'm trying to show you guys the difference between going to buy a book with chapters and what goes in to getting a book published in chapters versus what you read on a blog or an e-book versus an actual scientific paper and the kind of the review process a piece of scientific research has to go through in order to make its way into an actual peer review journal. And by the end of this, you all will kind of hopefully get a better appreciation for it. There is a huge difference when you are looking at a peer reviewed piece of research versus just a book. And right now they

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may not seem that different, but by the end of this podcast, hopefully you will realize how massively different that really is.

Geoff, you and I, we were talking about this before and specifically with strength and conditioning and fitness. You brought up a point that I didn't even considered it with the way you said it, but up until maybe 10-15 years ago, there wasn't really any major strength and conditioning journals, especially the specific journal, the Journal of Strength & Conditioning, so it's very recent and very new for a lot of actual published research in that field to be available. So 20-30 years ago, most of what strength and conditioning coaches were doing were just going off with what they used to do with no real published research to sort of draw from, but rather just what they did as athletes and any information they picked up along the way.

Geoff Dover: Yeah, and it's very true, and the journals, the two main ones are Journal of Strength & Conditioning and then Strength & Conditioning Research, so there are two journals and they are called Index Medicus, which means they are recognized by PubMed, which is the major search engine for research for health science research. So those journals became what they call Index Medicus, meaning that PubMed recognize them about 10-15 years ago for the first time.

So you are right, so that access of that information before then, like if you went to search for this stuff, it wouldn't have even been listed up until that point, so anyone that has access to PubMed can search and find articles or at least, abstracts in Strength & Conditioning Research and Journal of Strength & Conditioning. So the Journal of Strength & Conditioning, that's the one that's official journal of the NSCA, which is the one that does the certification for certified strength and conditioning specialists.

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John Barban: Yeah, the National Strength and Conditioning Association.

Geoff Dover: Yeah, so that's the one that's the most recognized, at least, in North America as far as training. So let's talk a little bit about the peer review process first and then we can talk more about the journal. So let's say, for example, if I'm a professor and I'm doing some research and I have some athletes. We are doing a new workout routine and we measured their strength before and after and we see that it goes up and that it's something we want to publish in a journal. So I will write all that down into manuscript and I submit it to a journal, and there are some rules that go with that, like at that point, I'm only allowed to submit it to one journal at a time. And at the point that I submit it, they have all the access rights to that material, so I can't share that material with anyone else while the journal has it.

John Barban: So at that point, you actually have to choose the journal. Can you explain how people even choose which journal to submit to?

Geoff Dover: Sure. Well, everyone has a different opinion, but generally what you do is that when you are writing the article, you have to reference certain things, other journal articles, and so whichever journal you reference the most typically is the one that you submit to because it makes the most sense, like if I'm using a lot of references from the Journal of Strength & Conditioning, then it would make sense like whatever I'm doing, and if I'm referencing a lot from them, then it would make sense that that's the journal I want to send it to. Anybody's journal has a little bit different area like surgeons submit articles to Journal of Shoulder and Elbow Surgery because they are the ones that read it. And I would submit an article, if I have an interesting athletic therapy article,

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I would send it to the Journal of Athletic Training because athletic therapists read that journal. Do you know what I mean?

John Barban: So there needs to be a fit.

Geoff Dover: Yeah, it's a combination of readership but fit like scientifically, like why you are sending it there. Anyway, so I'm going to send the manuscript in and they will take my name off it and then they will send it to experts in the area, so each journal has a list of reviewers and each reviewer indicates what areas they have expertise in, and those reviewers you have to interview essentially for the position and then they will either make you a reviewer or not.

John Barban: So being a reviewer.

Geoff Dover: Yeah.

John Barban: Now, can you touch on what type of expertise you are talking about?

Geoff Dover: Yeah, sure. So typically what happens is that once you submit a paper to a journal and if it gets published, that means like it was good enough for it to get published and that you are good enough writer and so sometimes they will contact you afterwards saying like, "We like your paper. Would you care to be a reviewer in the future for this journal?" And then they will ask you what your expertise are in, and you are pretty specific with that, so like I would say stuff like I'm very familiar with EMG

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activity in muscles, measuring pain dysfunction, and things like that. And so they will usually have like a drop down menu and you just pick the areas that you are comfortable with.

John Barban: And then if you get accepted as a reviewer, they would have you in their list of people who could review papers within your area of expertise, but just because you are at that level doesn't mean you can review a paper, let's say, on the effects of carbohydrates on muscle, even though you are a PhD expert in 'exercise physiology' that gets quickly divided and drilled down into super-specific areas.

Geoff Dover: Yes, and they are very specific, like I even indicated that I'm comfortable with certain muscles and not with others, like with certain areas. I'm really comfortable with the knee and the shoulder, but if someone had wanted to do like a trunk muscle-type study, I would probably go to someone else. I probably wouldn't get that because that's not close enough to my area. So the papers I get from these journals to review are usually very bang on to what I'm studying.

John Barban: Right, and I just want to stop you there and I want everyone to really understand what you just said. You are an expert in literally certain muscles, but not all muscles.

Geoff Dover: Yeah.

John Barban: And you're in the Department of Exercise Science. You are an assistant professor and all that kind of stuff and people don't realize that it's still

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subdivided, like we have friends doing this type of research at University of Waterloo who do happen to be experts in the muscles of the lower back, in the abs and the trunk, but like you said, I mean, it gets that specific.

Geoff Dover: Yeah. Each journal has hundreds of reviewers to get better feedback on the articles.

John Barban: Yeah.

Geoff Dover: So the whole point with the peer review process is to submit the manuscript. They take my name off it and then they submit it to these reviewers who are experts in the field it's in. Usually they have to be experts in a couple of things like they will be experts in the measurement techniques that are indicated in the paper or the subject area and then the content, of course, of the actual manuscript, so like there will be a few things that they will put into that to decide the reviewer. So there will be always more than one reviewer who will review the paper. It will be anywhere from, at minimum, two, but they have had up to six reviewers with one paper before.

John Barban: Wow!

Geoff Dover: And what they will do is they will send it out to anywhere from two to six people. You will have six weeks to review the paper typically and then you make your comments and you start to have general comments and you will have line by line comments. So my general comments are usually stuff like, "The paper was done well. I like how they picked their subjects, but I have a real problem with the whole stat

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analysis section.” And then I will explain what I thought went wrong with it or something. Essentially journals are looking for a fatal flaw, like if there is something that was done incorrectly that’s bad enough that can warrant the paper not getting published and then after the general comments come the specific comments, so that will be grammar-type stuff or you can indicate previous studies that looked at shoulder pain like, “Why didn’t you include this other study.” Or “you indicate you had ten people” like, “Why didn’t you use more?”

So it’s a general comment and a line by line breakdown. And trust me, they are very picky. They literally look at each individual sentence and make comments on it and then send it to you and then so as an author, I will get those comments back to me. I won’t know who wrote them, but they will just say Reviewer 1, Reviewer 2, Reviewer 3 or whatever and they will have the general comments and then the line by line comments and then the editor of the journal will say, “These are the comments and do you think you can make the changes?” And then they will make a decision on the manuscript, and it will either be flat out rejected because of what the comments they said or they will say, “If you can make these changes we’ll consider it again.” Or every now and then you will get this, “Everyone liked it. We are going to publish the paper.” But that almost never happens.

John Barban: Right.

Geoff Dover: Because there are so many things that you can look at.

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John Barban: So can you walk us through, or at least, give an example of the type of things that can be changed and bring it up and then compare to that to the type of thing that gets a paper flat out rejected.

Geoff Dover: Yeah, absolutely. So there are a couple of things, you can look at so many things with an actual paper. So sometimes it's the things that could be changed are stuff like previous studies have looked at the number of reps to increase hypertrophy and someone will have a couple of references, but they will miss some key ones and so that's something that a reviewer will say, "This person had a landmark study in that area, why didn't you include it?" And that's something that's easy to add, or at the end, let's say, you came up with an intervention to increase anaerobic sprinting, as a way to run faster, to sprint faster, and then maybe in your discussion you talked about how that might influence aerobic capacity and they might say, "Well, that's sort of outside your scope. I mean, you only measured anaerobic stuff, so take that out of your discussion because you can only generalize the anaerobic stuff." Those are things that are doable where you can make those changes.

An example of stuff that are fatal flaws; a good one is a supplement, so like we had ten people come in and we gave them this supplement. They exercise afterwards and all of them had a significant increase in strength. What a reviewer would say or what I would say would be like, "There is no control group and we know that the placebo effect has a significant effect, especially with supplements. So you can't conclude that your supplement worked because we don't know if a placebo would have done the same thing." So that's an example of something they can't fix, like they would have to go back and either they get the same people and do it all with the placebo or do a whole study again with separate groups.

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John Barban: And just so that people know, it's unlikely to do the whole study again.

Geoff Dover: Well, you can. I mean, theoretically you could.

John Barban: Theoretically you could, but the way funding works out like the study has already been funded, like if you make a mistake like that, you really botched it.

Geoff Dover: Yeah, you really botched that and you have to answer something again. But like for example, I talked with a colleague of mine the other day. He had a group. They were looking at a tactile sensation type of task and they had a group like no sensation with the group and the reviewers wanted an in-between group, a group with really mild sensation or something like that. And so they were going to have to test and they were going to have to find more people and test them. The reviewers asked if "That can be done."

John Barban: To continue the study.

Geoff Dover: Yeah.

John Barban: I guess it's dependent on funding availability.

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Geoff Dover: Right, but it all depends, like that study was flat out rejected, but they were like, “If you test more people, then we will consider it.” But something like supplements, you can’t go back in time and administer the drug to the same people again. Do you know what I mean?

John Barban: Right, yeah.

Geoff Dover: That’s like there is nothing you can do about it.

John Barban: So it’s situational. It’s case by case.

Geoff Dover: Yeah, each paper is different, but the key thing here is that there are experts in the area also with a measurement technique and that’s really important. So for example, if I got a paper compared to the average person reading it, if someone said, “We used EMG and we collected it at this frequency and we noticed that there was a muscle delay of 30 milliseconds, therefore the muscle doesn’t come in on time with this type of intervention.” I’ve used that equipment before and I know that I collected it at that frequency, I can’t measure differences that are that small, at 30 milliseconds in length. So that’s a specific case where I would say, “I don’t know. Explain to me how you’ve got that measurement because I know that with that frequency it’s not that accurate.”

John Barban: It’s kind of like trying to measure the difference of an inch, but only using a yardstick to do it.

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Geoff Dover: Yeah, exactly, because there is some really specific equipment out there. It's kind of like the difference between if you are trying to measure the difference in sprint time and you are using a handheld stopwatch instead of a laser timer, like the difference you are going to be measuring is in milliseconds, which is bigger than the standard error of using a handheld stopwatch. So that's another key with the experts you choose. Typically they are good at asking "why are you doing this study and how are they measuring it", but also with the specific methods and the equipment, they will be able to answer questions on that the average person wouldn't know.

So then you'll get those comments back and if you address the comments and you send it back to the journal and then the editor will decide if they will publish it then or sometimes they will send it to the same reviewers again and they will decide if you have addressed the comments enough and then you will get it back and then they will either say, "No, you still haven't addressed the comments." Or they will say it's flat out rejected or they will say, "Yes, you've made enough changes and so therefore we will accept it now with only minor revisions." So even then, journals tend have a two-submission maximum, like if you have to submit it again, and then that means you haven't addressed it enough or they will just decide that they will be able to tell from the beginning that this will take more than two revisions so they will just reject it from the beginning. So it's hard to get something published, it's not easy because there are a lot of people that look at it.

People can get hung up on the wrong stuff, too, like you submitted a paper before where they only look at males because with the data at that point, we didn't know if it was going to have the same effect in females or not, so it decreased that variability, like

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we just used males and then one of the reviewers had a bit of problem with that. He said, "No, we can't generalize with the males and females." And I said, "No, we can't, but in order to answer the question, we just wanted to do this." And he wouldn't let go of that idea. I don't know who it was, but that was something that the editor had to decide on.

John Barban: That was not even your intention at all.

Geoff Dover: No. So it's tough getting things in there. So to put it in perspective, let's say you came up with a great training protocol and you wanted to submit it to a magazine like Flex Magazine or something, then you submit it to them and there is no one who reviews it, the editor will just make sure that it's spelled correctly and stuff, but that's about it and then it gets published in the magazine.

John Barban: And then it is catchy title you create.

Geoff Dover: And it hasn't been reviewed at all, so there might be methodological problems with it or they might not realize the average person might not know about things like a control group or with the placebo or not, so then you will read it and you will sort of assume that it's accurate, but it might not be because there is no double checking on it. I think this is a good point to mention too with the problem with anecdotal research because that's one of the main problems between peer reviewed and non-peer reviewed stuff is that the weakest type of evidence we have to see if something really works, but that's what you want to know like if this supplement really works, if this type of training program really works, that's what I want to know. And the

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weakest evidence we have for that stuff is called anecdotal evidence, which is essentially one person says, "I have a guy and I gave him this training program and oh man, you should see him now, like he's significantly stronger and in everything he's a monster." And so you would be like, "Oh man, if that works for him like I want to do it."

But there are so many factors that could have affected it like it could be that he went from not working out at all to doing something, so that's why the best way to see if something really works is that you do it in a group of people. You compare it to a group of people who are not doing it. And researchers know that, so if you try to submit that to the Journal of Strength & Conditioning Research, and you say like, "Hey, I've got this great program. I did it on this guy and he's like really strong now." Like they would immediately reject it because they would say, "Well, we don't know. We have no one to compare it to. We don't have a control group." Do you know what I mean? Like they wouldn't even review it, the editor would just send it back. They will flat out reject it.

John Barban: Sure, and they are going to check to see if it's done in a research facility that has some kind of ethics review and that people are trying to do this research on the up and up and not kind of fudge the data.

Geoff Dover: Yeah, because there is a certain amount of honor involved with what you submit and with the Journal, it's more authentic than with a magazine, like you might not even even talk to the editor of the magazine and they will just email with an article, but at least there is correspondence with the reviewer and the editor.

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John Barban: Yeah, it's a different group of people and they make their money a different way.

Geoff Dover: Yes.

John Barban: The magazine editor's job is to publish stuff that on a monthly basis is catchy and interesting to read, not difficult to read, that the layperson can get through it front to back and be entertained and maybe pull a little bit of "information" out of it, whereas in the scientific review process, that stuff is part of, "seeking of knowledge", so to speak and it's written from scientists, for scientists to further science and there is a bit of a gap between that information and the stuff that makes its way to the average person because the average person cannot read a scientific paper if they are not trained to. They will have no idea of what it's saying.

Geoff Dover: Yeah, that's true.

John Barban: Well, the conclusion in the abstract is irrelevant if the methods weren't done correctly and the statistics weren't done correctly. Let's touch on this for a bit, not all journals are equal and not all published papers are equal, and I don't know if people realized a paper can be published that still isn't of high quality, so to speak.

Geoff Dover: Yeah, so a good way to look at this is something called impact factor. Each journal is ranked with a number, the higher the number, the better and that number is called the impact factor. So for example, the Journal of Strength & Conditioning Research has an impact factor is 1.4. Now, that's not bad. There's a

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formula they use to generate the impact factor number and it's based on how many articles they publish and how many times they are cited. So you can imagine if someone is doing research and found the cure for cancer and they found it hypothetically in some sort of pill or something, that article would be cited a million times because everyone would also be doing studies on it and they will always reference that article, that first one that found it.

So to give you an idea again, like ten years ago, the Journal of Strength & Conditioning Research did not have an impact. It didn't have a number, like it wasn't even recorded and now it is 1.4, which isn't bad. It's ranked 34 out of 72 journals in the sport sciences, so it's in the top half, which is good, like there is a lot of journals in there and so that means that out of all the articles that they are publishing, people are citing them, meaning a researcher would have looked at an article in that journal and said, "That had a really good program and so now I'm trying to look at this or another type of question." So that really gives you an idea of that the stuff in there is pretty good. These people are citing it. If it's a bad article, then no one is going to reference it.

John Barban: And that's because reviewers will have gone through it or other people or other researchers who are looking around doing some research will look through it and say, "Oh yeah, but these methods aren't that good or their conclusions aren't."

Geoff Dover: Right.

John Barban: And then it kind of gets left behind and it slowly just loses steam, even though it's published and it's sitting somewhere, it's of no real value to that area of

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science. So I'm just trying to get the point across that stuff that's published doesn't mean it's as good as something else that's published.

Geoff Dover: No, but I still feel like it's way better than anything that's published in a non-peer reviewed source.

John Barban: Oh, 100%.

Geoff Dover: Anything that has been published in a peer reviewed source is way better than something in a magazine.

John Barban: Yes.

Geoff Dover: But you are right. Some journals are better than others, and you can tell when you read them, like I can tell when I read them. An article from a good journal will be written better. The study will be done better compared to not as good of a journal. Now, the problem with this also is that there is a lot of clinicians that are going to read Journal of Strength & Conditioning Research, like there will be a lot of track coaches and things like that that will read it, but they are not conducting research. So the people who are reading it might not be doing a lot of research and therefore not citing the material, so that's part of the reason why the impact factor isn't even higher is because that part of the readership isn't in academia versus something like journals that look at the 'pig genome' will have a really high impact factor because there is a ton of people studying that, but everyone studying it is also conducting research, so those seem to be higher.

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John Barban: Yeah people like coaches are just going to take it and actually apply some of it and not use it for another piece of research.

Geoff Dover: That's right. So I think another thing to point out, which I thought was good too with this is the full peer review process is they are getting information from a peer review process versus somewhere else is the lag in time. So for example, the NSCA, The Essentials of Strength and Conditioning, that textbook that they have, with the new one; the latest edition came out a couple of years ago and a colleague of mine who teaches a class uses that book. He commented on how identical the book is to the previous one, which is eight years ago and so that implies that nothing has changed in almost ten years, give or take, as far as strength and conditioning information, which is clearly not the case. There are millions of people out there doing research on strength and conditioning type stuff all the time and it takes a lot of time to consolidate information and put it into a textbook, so the articles are the best and most recent source of information. Peer reviewed articles are the most recent and vast source of information now that you can get, and there are so many people out there studying stuff. If you are interested in training for a marathon or how to improve your bench press or something like that, there are articles out there. They are peer reviewed articles and people have studied that stuff and you can look at it and it's the best research we have out there. I think that time frame is important because it takes a while for the books to change.

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John Barban: But the textbooks are kind of like undergraduate curriculum and like position statements from those organizations or even on the website like, "This is our position on this or that."

Geoff Dover: Yeah.

John Barban: But at least with online, their websites can be updated a little quicker, but to get into curricula and into the kind of mass consciousness of people who are entering those fields as maybe undergrads who are looking to move on, it takes time, and like you've said and I think you can get even more up to date. So the journals are happening quicker than any textbook, but if you could get yourself to a conference, you can actually speak with these researchers and find out what they are studying like right now, like what they were doing a week ago in their lab in that stuff.

Geoff Dover: Yeah.

John Barban: Correct me if I'm wrong, that stuff won't even be into the peer review process until 8, 12, 15 months into the future, but you can kind of poke at them and get them to tell you what they are in the middle of and even though it's not reviewed yet, they are like, "Well, these are the sort of results we seemed to be getting right now." So if you can ever find yourself to one of these conferences, you can really find out what's happening right now. Research that shows up in the journal today was done maybe a year ago, or a year and a half ago maybe?

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Geoff Dover: Yeah, well, it would probably even be submitted up to eight months ago, so if it's submitted eight months ago, then it was probably completed like 16 months ago.

John Barban: So you and I, we can be in your lab studying some new exercise technique, a supplement or something. We could be doing the research today and be almost done and finishing and collecting the data on all of our subjects, but the "world" won't see it in a reviewed paper until almost two years from now.

Geoff Dover: Yeah, well, if we are finishing a study today, I'd like to get the paper out in print within a year, but at max two years, but either way, you are right. There is a delay, it's not fast. But it's still faster than a textbook.

You have a really good point about the conference because you can submit an abstract, which is also peer reviewed and then gets presented and then obviously it takes longer for the whole paper to be accepted, but that's best source of the information we have out there.

John Barban: As far as being completely up to date, so unless you actually have access to people like yourself where you can just you up and say, "Hey, what are you up to?" People won't realize what has been figured out to this point. Like you said, there are various levels of delays, so if you have taken an undergrad course on this stuff, based on what the textbooks say and how much extra sort of supplemental information your professor has decided to add in or not or if they just go straight from

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textbook, you could be getting, for lack of a better way of saying it, five to eight years outdated information.

Geoff Dover: Oh yeah, exactly. And to give you the specific example in my class that happened this semester, we are talking about injuries and we have to rehab them and tendonitis came up, and I mentioned to them that tendonitis doesn't exist anymore. It's called tendinopathy now and that tendonitis doesn't exist. "Tendonitis" is considered an inflammation condition because anything with an -itis just means inflamed and they have enough studies now where they dissected tendons that "have tendonitis" and there is not a single inflammation marker on them, so it's a degeneration disease. It's not inflammation, so like putting ice on it and stuff is not going to help it because it has degenerated. The only thing that's going help it is exercise, which is sort of counterintuitive to an inflammation condition.

John Barban: That's a massive paradigm shift.

Geoff Dover: And so it's a huge shift, and now, no one calls it tendonitis anymore. It's now called "tendinopathy" and we treat it differently.

John Barban: Whoa, back up, back up, when you said no one, you mean no one who is in the know?

Geoff Dover: Yes, that's right.

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John Barban: I would say 99.99% of the population still believes tendonitis is what it is.

Geoff Dover: Yes, and all the books, all the textbooks, say that. They all say “this is how you treat tendonitis”, but the next editions that come out won’t say that anymore. It will be tendinopathy, but that’s going to take sometime so these are the kind of examples of things. That’s why it’s so important to keep up with this. And you ran into a good point about the undergrad curriculum because as teachers we have a hard time. We’ve got to decide what they need to know, what would I like to teach, how current is it, how advanced can we get, do they have the foundation yet? And that’s why people use textbooks a lot because it walks you through it, but any good course, and especially at the graduate level, they almost never use textbooks now. It’s mostly course packs or articles because so much stuff has been done with this and that it changes so fast that there is no point in using a book. You may as well just use the best material like the peer review journal article.

John Barban: And I don’t know if this is my own personal bias based on our generation, but it seems as though from when I was in an undergrad, research is going lightning fast with the way information can be disseminated. I mean, when I started undergrad, there wasn’t really the Internet. A 486 was the fastest computer.

Geoff Dover: Yeah, exactly.

John Barban: I remember our university library was still a card catalog.

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Geoff Dover: That's right.

John Barban: Like these things are going so fast. The information is aggregating.

Geoff Dover: At risk of making us sound old, yeah, we didn't have the Internet when we went to university and to be honest, the faculty and researchers were handled different, too. My teachers when I was at Guelph and even when I was down in Florida, when they were students, the faculty would apply for a grant. That was great if you got it. That's great if you didn't, like that's okay too. They were just happy if you applied for one, and then if you published a couple of papers, they would be happy with that. But it is so different now, like you have to bring in money. You have to bring in a lot of money and you have to publish a lot of papers and everyone is doing this now.

John Barban: And you can. It's because you can.

Geoff Dover: Yeah, well, there are more people doing it and they have to do more of it, so there has been an exponential increase. I was at the University of Florida for nine years and my first year there, the university as a whole brought in a little over a \$100 million in funding for the research, and in my last year there, they brought in around \$600 million in one year for research. So it's going up exponentially, so like the amount of research you can get done was \$600 million is a lot more than \$100 million, so think about all those people and all those papers that are being submitted for the peer review process, and every institution is doing this, not at the same level, but every university in Canada and the States like they are putting an emphasis on research, so all those

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people now are submitting papers to get looked at, so there are people looking at everything.

There is another paper that I showed in my class this year from this guy. He came up with a balancing program to decrease ankle sprains in soccer players and so for 20 minutes before you do your warm up before every practice and every game, there is sort of this balancing program that you do and it cuts the incidences of ankle sprains by half. So imagine if you are working with a pro soccer team or something and you tell the coach "If we implement this program, we are going to have half as many ankle sprains." Like that's amazing, right?

John Barban: Especially with the high-priced athletes.

Geoff Dover: Yeah, he did it with hundreds of athletes. He did it across like an entire soccer league, so he had half of the people do the program and half the people didn't and that's how he could measure the ankle sprains, right?

John Barban: Yeah.

Geoff Dover: But that's new. It just came out like a year or so ago and that's not going to be in any book anytime soon, like that's just a new article right now. The program is in the article, so you can download the article and then implement if you work with a soccer team. So that's the speed that this stuff is going. The specific question that they are looking at is unbelievable.

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John Barban: Yeah, because like for instance with that example you just gave, there is no guarantee that that same protocol would work, let's say, for football.

Geoff Dover: No. Like was it done in healthy people or any injured people part of the study or not. Obviously, there are things you need to look at, but just an idea is that how fast something could be tested and implemented and then put in the paper.

John Barban: And broadcast to everyone who can find it.

Geoff Dover: Yeah, this is accessed through Internet, like it really is unlimited. It really has changed my teaching. I know that. It's like a lot of my students bring laptops to class now and we will be talking about something and they will be like, "Oh, have you heard or what about this test." And I'm like, "Oh, I'm not familiar with it." And then five seconds later, someone starts reading it out and they are like, "Oh, it's on Wikipedia." It's like I'm the student. They are reading out the definition right there and so it has really changed a lot in terms of me and teaching because like I have to be up on everything. Otherwise, someone is going to look it up in class and it's really changed. When we went to school our professors could tell you stuff from the textbook or study. We had no way of really checking it, but now I could tell you for ex: three sets of ten is the best way to increase strength and while you are sitting there listening to me, you can look on PubMed and see if I'm right.

John Barban: Yeah.

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Geoff Dover: Like you could find a peer review article from strength and conditioning journal article and you could say, “Oh, this article has found something else.” That way of finding information and good information has been unprecedented.

John Barban: So it’s going to force people in your position to be really on the ball and more accountable for what you are teaching.

Geoff Dover: Absolutely, because you can find these articles and come back, like if I tell someone that this supplement doesn’t work and they go out and find an article that says it does, and that takes them about ten seconds, then I’m going to have to explain why I said that. This access of knowledge is unprecedented. I’ll tell you things where it affects it is in exercise compliance because I worked at a place before where the swimming coach once a week would take the whole team out and do a 45-minute jog and the coach thought it was really good to do cross training. And my thought was like, “What the hell does that have to do with swimming?” Nothing you get from once a week 45-minutes jog is going to help you in the pool, like that’s ridiculous. And so we know this. The body is so specific in how it trains and how it adapts that something like that would never work. It’s like running on a treadmill for a race that’s going to be on land.

John Barban: It doesn’t translate.

Geoff Dover: People have studied that stuff. You could find an article that says, “If you would train on the treadmill, but your VO2 max doesn’t change on land and stuff.” And so all of a sudden, like that coach has his athletes running around and the athlete shows up with this specific article showing peer reviewed evidence that running on land

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doesn't help with your swimming aerobic capacity. What are you going to say to that? Like you are going to have to come up with a reason, right?

John Barban: Yeah.

Geoff Dover: I think just the access to that good information is really changing on how people are handling stuff.

John Barban: Oh man, we've covered a lot of stuff. I think we can wrap this up, but in general, I guess the final point that we never really touched on is the difference between a peer reviewed paper and a book, like a book that does still cite research like the type of book you could buy at a bookstore on a diet or something like that. Books in bookstores are not peer reviewed to this rigorous degree the way Geoff just explained. A book in a bookstore is a deal between the author and the publishing house to write a book that can keep the customer's attention. First of all, it can get someone to convert from being a browser to a customer, so the book has to have that catchy title, an interesting topic and a hook, some kind of hook that gets your attention. None of this has anything to do with it being scientifically valid. It can be the most harebrained, ridiculous diet that came from Mars. It doesn't matter about scientific validity at all. As long as it's catchy and it gets you to pull out the credit card and buy it. That's all the publisher cares about and another big important thing is they are hoping that it's catchy enough that you will be interested in the second and third edition of the whatever said diet or said program was talking about.

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So again, none of this goes through scientific review. It doesn't matter if a hundred studies were cited. The person who wrote the book doesn't have to have intimate knowledge of any of those studies the way Geoff would have of EMG and the various techniques that he understands. So the point is anyone can throw in a hundred references to studies that they know nothing about, and that's essentially what you get when you read a book from the bookstore. So especially when it comes to things like diet, exercise, physiology, things about your body, that couldn't be any further from the accuracy and the validity of an actual peer-reviewed piece of research. I'm just trying to impress upon you that when you buy a book at the store, it's nothing even remotely close to the scientific and accountability and vigorous review that even one paper has.

Geoff Dover: Yeah, here is how I would explain it. When you write a book, the rules that govern what you can say in that book are the same for Steven King who is writing a fiction like novel.

John Barban: Yes, so there are none.

Geoff Dover: Yeah, there are none. We have a freedom. You can write a book on poetry or creative writing or make up a story or whatever. And we are allowed to do that because we have freedom of speech. We can be creative however we want. So that book is held by those standards. They are held by creative writing standards versus a peer review journal article is held by scientific standards. That's the difference.

John Barban: That's a huge difference.

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Geoff Dover: Yes.

John Barban: Let me work off of that point. There are people who have written books about how to lose weight and things like that who have been sued for fraudulent claims.

Geoff Dover: Exactly.

John Barban: And what they had to do is on the very first page of the book, they have one little paragraph, disclosure or disclaimer, that said, "Oh, these are just my opinions, or everything in this book is just based on my opinion, my recollection and it's just a fictional story."

Geoff Dover: Exactly.

John Barban: And then the rest of the 200 pages of the book are detailed rules on how to lose weight, detailed rules on how this person says the body works, and like do this, not that. Exercise this or eat this, not that. It's ultra-complex, but the thing is legally, this guy has every right to say it because at the very, very beginning of the book, his lawyers consulted with whoever he needed to talk to and they were like, "No, as long as you explain that this is completely your opinion, the rest of the book can sound as "factual and rule-driven as you want it." But in a scientific peer review process, you would just be told to get out, but on a book on the shelf about the miracle weight loss and the miracle cure of everything, you need one little paragraph disclosing that, "No, I'm just exercising my right to express my opinion under the freedom of speech rules."

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Geoff Dover: Yeah, well, just like keep coming back with a little fiction. And it's really funny because when you read something like a couple of guys fighting with light sabers, you are like, "Oh, it could never happen, right?" But then if someone is writing about like what you can eat and what you can't, you would be like, "Well, it makes sense." For some reason, you take it and that it's more serious, but it isn't but they are held by the same rules. There is one last thing too about publishing which I thought was an interesting point is like you said, with the book they care about the money and selling and stuff like that, but the journals don't because they don't make, with every paper they print, like they don't get more money for it. In fact, it cost them money to print with the bigger journal with more articles. So they want to be really selective. They are proud of rejecting, like there is this one journal that rejects 90% of all their manuscripts that come in and they are proud of that number. They are like it's hard to get in here and the people who do publish in there walk around with their chest puffed out a little bit because like it's hard to get in there.

John Barban: In academic circles.

Geoff Dover: In academics. That's exactly.

John Barban: It's not like they are walking up and down the beach.

Geoff Dover: Yeah, I wouldn't try to meet girls that way and tell them what journal do you published in.

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John Barban: And then you drop the “impact factor” line on them.

Geoff Dover: Yeah.

John Barban: Well, that’s an impact.

Geoff Dover: If she is interested, I’d be kind of looking at her and going “What’s your problem?” No, but anyway, they would give you an idea like, “I work with some really successful researchers and very good professors that bring in millions of dollars in grant money and published lots of papers and here is a handful of journals that are just awesome with impact factors that are really high.” And I remember mentioning is the one professor one time, I’m like, “Oh man, could you imagine getting something published in science?” (Science is the name of the journal. It’s one of the best journals out there), he’s the most successful professor I know, he looked and he stopped and then he put his pen down and he’s like, “Oh man, Geoff,” he’s like, “if I could get one thing published in Science,” he’s like, “that would be the best thing in my career.” And I was like, “Wow!” Like this guy has everything in my opinion, like research money and he has written textbooks and everything, but he’s no more close to getting something published in a certain journal and that still makes him pause when I’m talking to him in his office.

John Barban: Yeah.

Geoff Dover: It’s just such a big deal, like if you can publish in it, it’s a really big deal.

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John Barban: That's the equivalent of him winning the MVP in sports.

Geoff Dover: Yeah, and it's funny because it would be like hearing it from someone that's like really successful, but just haven't won the World Series or something and you would be like, "Wow! But aren't you happy, like you've got everything else, like there are 30 teams that don't win the World Series every year." Like you kind of have to be happy just to be there, but like that's a really big deal with where it goes.

John Barban: Yeah, so I guess, we could wrap it up now. And obviously, this discussion can go on for like another five hours. There are just so many more things we could talk about. But in general, the closing point and I will let you have your closing points in a sec, there is a huge difference between an academic, scientific peer-reviewed paper and the rigors that it goes through before it even gets published. So before you even have a chance to see it, the people who wrote have been held to quite a high standard and it just does not end up published if it doesn't have some degree of credibility to it and that is just night and day compared to stuff you read online, in a magazine, at a book in a bookstore, but like Geoff said, the fiction and how to diet section are held with the same standard.

Geoff Dover: Yeah, exactly. I think that when you read a peer reviewed article, it's been reviewed by multiple people who do the same type of research and who have no vested interest in whether or not that gets published or not, it's not like they get any money or they don't. They get no benefit from it, so it's pure science that gets chosen to be put in there and if you had to pick something to read and say like, "This is something I want to give a try." Like the peer reviewed article would be it.

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John Barban: And then I guess we'll follow up at a later point. I want to cover how hard it is to actually even read a paper and if you are not trained for it, the average person couldn't pick up a paper and make heads or tails of it. You need to be trained in that field.

Geoff Dover: That would be a great follow-up podcast. If you want to, we could talk about how to read it. We could go over a landmark strength and conditioning article and then go over and pick out the important points from it if you want.

John Barban: Yeah, that would be awesome.

Geoff Dover: Yeah. It would probably be more interesting than how to pick up girls with the impact factors, right?

John Barban: Yeah.

Geoff Dover: It would be a better podcast.

John Barban: Yeah, the utter failure that that would turn into.

Geoff Dover: Yeah.

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John Barban: Oh man. All right, well, that was great. Thanks for being on and for Geoff Dover, I'm John Barban and that's your Adonis Lifestyle podcast.

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