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## ACSM “CrossFit Study” Fraud?

Researchers at Ohio State University refuse further comment on CrossFit study amidst allegations of inaccurate data from the study’s own coordinator.

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By Russell Berger

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A few weeks ago, I learned that researchers affiliated with the American College of Sports Medicine (ACSM) had published a study on CrossFit’s efficacy in the National Strength and Conditioning Association’s *Journal of Strength and Conditioning Research*.

The study—CrossFit-Based High-Intensity Power Training Improves Maximal Aerobic Fitness and Body Composition—was conducted by Michael Smith, Ph.D., a then-Ph.D. candidate at Ohio State University working under Steven Devor, Ph.D. and Fellow of the ACSM. Dr. Smith partnered with a local CrossFit affiliate, CrossFit 614, to create a study based on an annual 10-week challenge the gym holds.

The results of the study are rather anticlimactic. In simple terms, the study claims that CrossFit not only improves body composition and  $VO_2$  max, but it also does so more effectively than high-intensity interval training (HIIT) programs. In other words, CrossFit works. This isn’t news to most people, especially those who have tried CrossFit or know someone who has.

Nonetheless, much of the study struck me as odd. For example, if CrossFit training is so new to academia, why did the authors create the unexplained, redundant phrase “high-intensity power training” (HIPT) to refer to it? Why not just call it what it is: “CrossFit”?

Curious, I turned to CrossFit’s chief scientist, Dr. Jeff Glassman. Dr. Glassman, a specialist in applied mathematics, applied physics and information theory, has spent

much of his career focused on the philosophy of science, an interest that uniquely qualifies him to identify pseudo-scientific practices and claims. After analysis of Dr. Smith’s work, Dr. Glassman wrote a formal, comprehensive response to the study.

The response, which makes numerous claims about the validity and rigor of Dr. Smith’s paper, focuses heavily on this particular section:

“Out of the original 54 participants, a total of 43 (23 males, 20 females) fully completed the training program and returned for follow up testing. Of the 11 subjects who dropped out of the training program, two cited time concerns with the remaining nine subjects (16% of total recruited subjects) citing overuse or injury for failing to complete the program and finish follow up testing.”

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**The study also does not detail what specific cases of “overuse or injury” the subjects cited, what caused them, whether the cases were pre-existing conditions, or how long the subjects experienced “overuse or injury.”**

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What is “overuse or injury”? The study does not define what it means by the term “overuse.” The study also does not detail what specific cases of “overuse or injury” the subjects cited, what caused them, whether the cases were pre-existing conditions, or how long the subjects experienced “overuse or injury.”

Despite the ambiguity of this language, most readers would agree that a 16 percent injury rate demonstrates significant risk for an exercise program. Referring to this as a “notable” percentage, the researchers seem to assume this view. They go on to claim that there “are emerging reports of increased rates of musculoskeletal and metabolic injury in these programs.”

This quote, taken from the ACSM paper *Consortium for Health and Military Performance and American College of Sports Medicine Consensus Paper on Extreme Conditioning Programs in Military Personnel*, shows the author’s hand. The “CHAMP paper,” as it is called, is a beleaguered piece of pseudoscience Dr. Glassman has [thoroughly deconstructed in the CrossFit Journal](#)—to no response. Interestingly, William J. Kraemer, Ph.D., is both the co-author of the CHAMP paper and the current editor-in-chief of the *Journal of Strength and Conditioning Research*, which published Dr. Smith’s CrossFit study.

Having operated a CrossFit affiliate myself for three years and being a longtime member of the CrossFit community, I was skeptical of such a high injury rate. Worse, the ambiguity of “overuse or injury” adjacent to a direct implication of injury in what Dr. Glassman refers to as “an ACSM hit-piece against CrossFit” seemed troublesome. I decided to call Mitch Potterf, owner of CrossFit 614, to ask a few questions. Potterf was happy to give me his perspective on the study.

“I haven’t hurt nine people in four years,” he told me.

Potterf explained that he first learned the study had been published when a non-CrossFit gym in his area cited it on Facebook as a reason to avoid training at CrossFit 614. Frustrated, Potterf called Dr. Steven Devor, the corresponding author for the study. Potterf recalls the conversation well.

“Right away he told me that the study didn’t actually say that **CrossFit** (emphasis added) had caused the injuries,” Potterf said.

Potterf says Devor went on to explain that “this (the study) is really good for CrossFit.”

Potterf says he told Devor, “This isn’t good for me because you’re saying I hurt people, and I didn’t.” Potterf said Devor even claimed he would “post a retraction if he needed to.”

Potterf also explained that, contrary to what the study said, no ACSM researcher was ever present for any of his affiliate’s training. The participants went to an Ohio State lab once at the beginning of his gym’s 10-week challenge, and then went once more for a re-test at the conclusion of the study. The nine participants whom Dr. Smith vaguely categorized as having dropped out for “injury or overuse,” were part of a total of 11 participants who didn’t show up to re-test.

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I asked Potterf if he could remember who the individuals were and contact them for me. He did, and after about a week of emails, he had documented each person’s reason for not attending the re-test. Not one reason included injury. Skeptical of Potterf’s own potential bias, I checked in with a few of the subjects on Potterf’s list, and they all confirmed that they were not injured but had failed to show up to the final test due to a lack of time or interest.

With each person who failed to attend the re-test claiming he or she had not been injured, Dr. Smith’s data was beginning to look suspiciously inaccurate. It was as if the wording “injury or overuse” had been crafted to allow Dr. Smith to imply injury where there had been none.

But there was an even more pressing question. Potterf explained to me that the study was “blind,” meaning the researchers in the lab were only able to identify participants by a single number. If the 11 subjects who failed to show up for the test-out were de-identified in this way (and obviously not present at the Ohio State lab), how could Dr. Smith collect any data on the reason for their absence?

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Potterf agreed to put me in contact with Chelsea Rankin, a member of CrossFit 614 who worked as a clinical research coordinator for Nationwide Children's Hospital for five years. Because of her experience, she volunteered to be the study coordinator for Dr. Smith. During our conversation, I asked Rankin how Dr. Smith could have gathered data on why the 11 didn't show up to the lab.

"I'm the only one that knew who did or didn't show up. The participants were de-identified and were only known to the OSU researchers by a number. They (OSU) may have spoken to people there while they were doing the post-test, but they never had contact with the people who didn't show up, and I have no idea how they could have."

After I asked a few more questions, Rankin gave me her own opinion on Dr. Smith's work: "I did all the data collection for the study, and I know every person who didn't re-test. It was easy to figure out they weren't injured. This data is inaccurate. Those individuals were not injured, and that wasn't the reason they didn't test out. To me this questions the validity of the research."

What had at first sounded like ambiguous and editorialized injury data was beginning to look like fraud. Unable to think of a less malicious explanation for the discrepancies between the statements of the study coordinator and the data published in the study, I attempted to contact the researchers directly. I emailed Dr. Smith, who now works as a professor at Gonzaga University, and he immediately responded: he said he was not interested in an interview and requested that I not contact him again.

Luckily, the corresponding author, Dr. Devor, consented to a recorded phone interview, the full transcript of which is available [here](#). Dr. Devor was polite and happy to answer my questions on the study. As he did with Potterf, he was

quick to explain that the study, in his opinion, was good for CrossFit. Unlike his conversation with Potterf, Devor immediately attributed the injuries in the study to the CrossFit program, noting with a tone of certainty that the high injury rate was attributable to the intensity with which the program had been performed.

More problems became apparent during our conversation. When I asked him about the collection of data from the 11 participants who did not re-test, Dr. Devor did not seem confident in answering.

**Russell:** So, was this a blind study? Were they de-identified in this study?

**Dr. Devor:** Well, we, we don't know who the ones are that—. Well, no, we do. Well, we were blinded. I'm trying to remember back now, Russell, because it's been a while. We were blinded to their names, but we obviously saw them in the lab. I mean, they came into the lab, and tested them several times. And the ones that dropped, you know—. When we then, when they said, "OK, we're not coming back," we would query them, "OK, well, why?" Like, you know, "You gotta give us, like, why the hell aren't you comin' back?" kind of thing, and they all said, you know, again—. A couple of them were like, "No, I don't have time, I'm not going to do it," which is not uncommon.

**Russell:** So you collected the data on those reasons for why in the lab?

**Dr. Devor:** Absolutely. We queried them on why they weren't coming back.

Here, in a conversation with one of the researchers responsible for this study, we ran into the same logical problem: how did Dr. Smith, armed only with the identity of those participants present in the lab, collect data, in person, from individuals who were not present in the lab? At this point, Dr. Devor began waffling considerably and eventually deferred completely to Dr. Smith.

**Dr. Devor:** Yeah, we—. You're right. You're exactly right, Russell. They did not come back. And so then, when we would get a hold of them, or query as to why they didn't complete—that's what we were told—that they never—. You're right, they just never showed back up.

**Russell:** So, I guess my question then is, she (Rankin) said they (study participants) would be de-identified to you, and you only recognized them as a number, so you wouldn't have had any contact information in order to get that from them?

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**Dr. Devor:** No, that's not true. No, we, we were able to get a hold of them, because that's how we knew that they didn't—. That's how we knew—. That's how we were able to get in touch with them, because we did know their names. Because, you're right, it wasn't blinded, because they were in the lab and we were collecting, and they were getting a VO<sub>2</sub> max test, getting body comp, we were talking to them. So we knew who they were.

**Russell:** But that was only for the first test that they were there to be able to talk to you, and you heard who they were by their first name. Chelsea says that—I'll quote her here—she says, "I'm the only one that knew who did or didn't show up. The participants were de-identified and were only known to the OSU researchers by a number." So that means that—

**Dr. Devor:** Well—

**Russell:** You knew them as a number. And if they'd been there, she actually said that—. Let me read you the second quote here. She said, "They," referring to you guys, the OSU researchers, "may have spoken to people while they were there doing the post-test, but they never had contact with the people who didn't show up, and I have no idea how they could have." So I followed up on this, and I have a list of eight people who I've identified from the study who did not show up for the retest or dropped out of the study. And I've been able to contact four of them so far, and all four of them said that they never supplied any reason to anyone as to why they didn't complete the study, because they never spoke to the researchers again.

**Dr. Devor:** I—. Well—. They never spoke to me, because I didn't collect the data.

**Russell:** Right, well, they didn't mean you. They meant they never spoke to anyone who was a representative of

the study to supply even a basic reason why they didn't complete it.

**Dr. Devor:** Yeah, Russell, I'm going to—. I don't—. I mean, I guess, I can't answer that intelligently, because I'm not the one that collected the data. And I'm not trying to skirt your question, because you have a legitimate question.

**Russell:** OK.

**Dr. Devor:** I just didn't—. I'm not the one who collected the data.

**Russell:** OK, so who's effectively responsible for being able to defend the study and its accuracy?

**Dr. Devor:** Well, that would—. Mike Smith is the one who collected the data.

**Russell:** Right, when I talked to him about it, he refused to comment. That's the only reason I called you

At the end of our interview, Dr. Devor suggested that I speak with Dr. Smith, whom he insisted would be able to answer all my questions. He even offered to help put me in touch with him. Considering the difficulty Dr. Devor had explaining the origin of Dr. Smith's data, the claim from the study coordinator and study participants that the data was fabricated, and my own inability to explain these two points in any reasonable way, I assumed Dr. Devor would begin working on a quiet retraction. To my surprise, I received this email from Dr. Devor two days later:

*Russell,*

*I have spoken with Dr. Smith at Gonzaga University. We will have no further comment on our Journal of Strength and Conditioning Research (JSCR) CrossFit publication.*

*We have published a completely unbiased, no agenda, thoroughly peer reviewed scientific paper in what is likely the most highly thought of scientific strength and conditioning journal. We stand behind all of the data that we either collected or that was reported to us. And in spite of what some might think, we have absolutely no reason to misrepresent any aspect of our publication to anyone.*

*We believe our paper provides a very positive outcome for the CrossFit industry. Our data clearly demonstrates many positive health and fitness outcomes are achievable by those that appropriately engage in high intensity power training (HIPT).*

*However, we also believe appropriate caution should be used when anyone engages in HIPT.*

*Thank you for your time and the opportunity to contribute to your writing.*

*Regards,*

*Dr. Devor*

In two days, Dr. Devor had gone from conceding that I had a legitimate question and assuring me that he would help answer it to defending his apparently fraudulent data solely on the merit and authority of the journal in which it was published. What happened in the interim, we can only speculate.

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Certainly, some of the study's conclusions appear favorable to CrossFit, but attempting to appease critics by pointing out favors within the study's conclusions only dodges the question of his allegedly fabricated data.

The importance of this investigation to CrossFit cannot be understated. To date, the two most prominent CrossFit studies—the CHAMP/ACSM paper and Dr. Smith's ACSM study published by the NSCA—both contain all the appearance of legitimate science, yet they contain no

substance. Worse, both the CHAMP study and NSCA publication are behind paywalls, reducing the likelihood that an average person will analyze the documents for himself or herself. The result is an undeserved facade of academic respectability that has fooled anyone too busy to thoroughly investigate the work of the ACSM and NSCA.

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Google finds nearly 8,000 cases of websites citing the Smith et al. study by its exact title. From what we can tell, the study duped most everyone with questionable conclusions that remain unexplained.

Those who have cited the study certainly have reason to demand answers to questions about the validity of the study's data and conclusions. Unfortunately, the authors have chosen to respond with silence:

*"We will have no further comment on our Journal of Strength and Conditioning Research (JSCR) CrossFit publication."*



#### **About the Author:**

*Raised in Atlanta, Russell Berger spent four years in 1st Ranger Battalion and saw numerous combat deployments. After leaving the military in 2008, he opened CrossFit Huntsville, where he spent three years as head trainer. He now works full-time for CrossFit HQ.*