

Science AMA Series: I'm Kathleen Bachynski, a doctoral student at Columbia University's Mailman School of Public Health. I study ethical questions related to the risks of brain injury in youth tackle f

MailmanSchoolAMA¹and/ScienceAMAs¹

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Abstract

Hi, Reddit! I argue that current efforts to reduce brain injuries in youth tackle football—whether through adult supervision, training, or new helmet designs—are largely not supported by scientific evidence, and are therefore insufficient to protect players. Instead, to significantly reduce the risk of concussive trauma, football organizations should consider changes to the way youth football is played—specifically, eliminating tackling, in favor of touch and flag versions of the game. Read my article that I co-authored with Daniel Goldberg of East Carolina University in the Journal of Law, Medicine and Ethics (http://aslme.org/pdfs/aslme_jlme-42-3_bachynski_goldberg.pdf). I will post a link to a second journal article as soon as it is published on Feb. 4. I'll be back at 1 pm et (10 am PT, 6 pm UTC) to answer your questions, ask me anything! EDIT: Here is a link to a Perspective article I wrote in this week's New England Journal of Medicine: <http://www.nejm.org/doi/full/10.1056/NEJMp1513993> EDIT: Hi Reddit! I'm arriving and I'll start answering in a few minutes. Thank you for all the great questions! EDIT: Thank you so much for all your fantastic questions. It was really a privilege to have so many people engage with this topic and share their thoughts. I have to leave now to get back to my dissertation (which I'm supposed to defend in April!). Thank you again.

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Science AMA Series: I'm Kathleen Bachynski, a doctoral student at Columbia University's Mailman School of Public Health. I study ethical questions related to the risks of brain injury in youth tackle f

MAILMANSCHOOL_AMA [R/SCIENCE](#)

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I'll be back at 1 pm et (10 am PT, 6 pm UTC) to answer your questions, ask me anything!

EDIT: Here is a link to a Perspective article I wrote in this week's *New England Journal of Medicine*:

<http://www.nejm.org/doi/full/10.1056/NEJMp1513993>

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Youth tackle football is an interesting subject, as is consent! Having studied ethics and consent (in a biobank context), what role do these two play in youth tackle football? At what age do you think that a teenager may understand the risks of tackles in football and what age is it acceptable for a child wanting to switch from touch to tackle football? (This is a particularly grey area in many jurisdictions regarding a child's legal understanding of consent in relation to actions such as consenting to assault) Do parental views override a teenagers developing ability to understand what they are consenting to when they tackle/are tackled?

[downunderguy](#)

Thank you so much! The question of what children can consent to is definitely a tricky issue with a lot of grey areas. This is going to be a somewhat longwinded answer because I think there are so many ways to think about this.

To start with, there are a number of activities our society has decided not even adults should be able to consent to because they are too dangerous. Some examples include driving a car without a seatbelt, or going out to a restaurant that is not subject to health inspections. Of course people can disagree with any of these particular laws or policies, but I think it's a useful starting point to remember that not even adults can consent to certain activities. Even a theoretically fully informed adult—somebody who understood exactly how dangerous driving without a seat belt is--would still be breaking the law in

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most U.S. states if they drove without a seat belt.

When it comes to the risks of repetitive brain trauma, it's not clear to me how informed adults, let alone children, are. I don't think the long-term risks of repeated head injuries are laid out to children or their parents in tackle football consent forms, for example. But even if the risks were fully laid out to adults, it is not clear to me that adults should be able to make the choice to expose their children to an activity that inherently involves the risks of repetitive brain trauma.

I don't think there is any single right answer to the age, but if I had to pick an age, I would say age 18. In our society, at age 18 you are considered an adult in many ways. I think that would be a reasonable cut-off at which time somebody might be able to consent to the risks of participating in an activity that inherently involves repetitive brain trauma.

Finally, I would add that how choices are structured in our society is also an important ethical issue, in addition to the issue of any individual's ability to give informed consent. If you are a child growing up in a marginalized community with poor schools, few jobs, limited access to resources of any kind, and one of the few (seeming) options to accessing higher education is a football scholarship, the choice to play tackle football looks different. In a lot of ways, then, I think the question isn't just what children can consent to, but why we as a society have structured incentives in such a way as to make tackle football the choice that it is.

At what age level do you think kids should be allowed to tackle at based on your research of CTE?

[materhern](#)

With regard to the specific issue of CTE, I don't think the concern is only about starting at a specific age. The big issue seems to be about years of exposure. The more somebody is exposed to repetitive brain trauma, the more vulnerable they might be. So, somebody who starts tackling at age 8 and plays all the way through college would likely be at a higher risk than somebody who played two years of high school football.

So the benefit of younger children playing touch or flag football instead of tackle is not just that it would protect their developing brains from head trauma. It would also limit their cumulative exposure to head trauma if they choose later as adults to participate in collision sports. I think it's crucial to think about cumulative exposure when it comes to concussive or even sub-concussive hits.

Is there any way to reduce the risk of brain injury in football as it is currently played, in terms of equipment? Are players better off playing *without* helmets?

Or should we be thinking about switching to flag football or touch football?

[sonofabutch](#)

Based on my research, I believe the most effective way to reduce the risk of brain trauma is to remove tackling from football and switch to the flag or touch version of the game. But I do agree that helmets might give players a sense of false security while playing tackle football. I think many people still believe that helmets protect against concussions, but unfortunately they don't. (Helmets are great at protecting against skull fractures, however, so they're still a good idea for bike riding, skiing, and hockey!)

I'm a father of a 6 year old boy who loves football and I was the coach of his flag football team this year. He has 1 more year until he moves to pads and for the first time *ever* I'm considering taking him from

the sport.

My question, what positives are there for kids to play tackle football?

I understand teamwork, discipline, etc. but that can be found in *any* team sport. From what I can see best case scenario is scholarship and professional \$\$\$ with limited concussions (highly unlikely) and worst case is multiple concussions before leaving high school.(much more likely)

Knowing what you know, Why should any parent put their kid into football?

[TrainingTheBrain](#)

I think most of the positives associated with football are the ones you describe (teamwork, discipline, leadership) that could be found in any team sport, or even other activities associated such as music or theater. There is also the benefit of physical activity, but again, there are alternative options to get exercise that don't involve repeated collisions with the risk of repetitive head trauma.

Ultimately, then, I think continuing with flag, or other team sports that are not collision sports, is the best way to enjoy the physical and social/emotional benefits of sports without the particular risks of brain trauma.

All best wishes to you and your son!

How many youth brain injuries result from youth football compared to other common youth sports/activities (eg soccer, bike riding, climbing trees, skiing/snowboarding, having an older brother, etc...)

Have you considered whether your recommendation to eliminate tackling in youth football could increase risk of injury for players later in life? If, for example, you eliminate tackling in youth football - they cannot/will not be taught how to tackle "safely" until they are at an age/size/speed when they are already much more capable of injuring themselves or others... Is that ethical?

[Bruh Man 1](#)

Youth football is the sport with one of the highest risks of brain injuries, but you're absolutely right that there is brain trauma in other activities that is of significant concern. Just as an example, it looks like repetitive hits from headers in soccer might actually be a significant risk. Last fall, U.S. Soccer decided to change their policies to prohibit players 10 years of age or younger from heading the ball and to reduce the numbers of headers in practice for athletes 11 to 13 years of age. Also, as an older sister, I can corroborate the risks associated with having siblings!

But tackle football is exceptional in that the risks of concussion are unusually high, and the sport also involves repeated full-body collisions as an inherent part of the game. This means there are repeated hits that can cause sub-concussive trauma in tackle football. That kind of risk of repeated trauma doesn't exist in the same way in bike riding or climbing trees.

Unfortunately, there is no method of tackling that significantly reduces the risk of concussive or sub-concussive hits. There aren't any systematic studies of "Heads Up" tackling, for example, showing that the technique is associated with fewer concussions (although it's certainly better to keep your head up because using your helmet as a weapon is associated with catastrophic injuries such as quadriplegia.) So, it is my view that limiting exposure to repeated hits is of more benefit than learning any particular tackling technique at a young age.

Youth football means different things.

Would you let your child play tackle youth football at age 8? Age 14? Age 18?

[TheDevilsAgent](#)

It's a good point that 8 year old children are very different from 18 year olds in many ways, and that Pop Warner football for 8 year olds is a different sport than high school football in many ways as well.

While research indicates that children seem to be even more vulnerable to concussions than adults (studies have found that teenage children experience longer recovery times than adults, for example), there is still a lot we have to learn about exactly how different ages are associated with different levels of risk.

However, we can say with confidence that the anatomy of the human brain at any age means that it is vulnerable to significant harms caused by repeated brain trauma.

Here is a reference to an example of a study showing that children may need longer recovery times from a concussion than adults:

Field M, Collins MW, Lovell MR, Maroon J. Does age play a role in recovery from sports-related concussion? A comparison of high school and collegiate athletes. *Journal of Pediatrics*. 2003;142(5):546–553.

The CDC claims the number of RECORDED concussions has doubled in ten years, and calls it an epidemic. Do you think the number or severity of youth sports related concussions has actually increased, or is it just that awareness and incident reporting has increased? I know many times when we were told to "walk it off", and nothing was ever reported. I also know many club sports parents who contribute to the over-diagnosis of their children's injuries for some reason. In short, isn't the increase primarily due to accounting, and not the sport?

[lurkinginthepalms](#)

I think improved awareness and reporting accounts for the much of the increase in reported concussions. As you say, in the past, the attitude was often that players should just "walk it off" or that they had simply gotten their "bell rung." So often, only the most serious concussions where players needed to go to the hospital were reported.

Even with the increased reporting, however, I think concussions are still under-reported. Unfortunately many of the symptoms are relatively subtle (headaches, dizziness) and many youth teams still do not have an athletic trainer or other health professional on the sidelines available to examine players. And young children themselves may not always know to mention those symptoms (or they might even still be in leagues where they are expected to "walk it off," although fortunately I think that culture is changing.)

Then, of course, there is the issue of sub-concussive hits, where players might not be experiencing any symptoms, but the repeated hits might still be causing cumulative harm.

Former high school/college football player here. I spent around 10 years of my life playing tackle football. I also played hockey growing up--among other sports--and I have had 5 diagnosed concussions. Those are only the ones that I actually told people about when they happened.

After speaking with doctors, our best guess is that I've had 12-14. The culture of football for me growing up was, "You probably just got your bell rung. Take a few plays off, and get back out there." I was pressured to play while hurt both by coaches and by teammates. That, along with the fact that my dad was a coach for 22 years, made it feel like I was expected to suck it up and get back on the field.

I won't go through all the health issues I've dealt with because of the concussions--there are a lot of them--but I will say this: I really don't think putting your child into football is worth the risk to their health. There are plenty of safer sports/other activities that can teach the same lessons as you can learn on a football field.

[Foggy1092](#)

Thank you so much for sharing your experience.

I always appreciate when people look back on their own athletic experiences and try to think about whether or not the risks outweighed the benefits, because it is a truly challenging thing to do. Unfortunately the culture you describe of "take a few plays off, and get back out there" was very much the norm for decades. And while it's currently beginning to change, I think we still have a long way to go in that regard.

For me, what ended my (limited!) competitive soccer career was not a concussion, but ripping my ACL, MCL and meniscus after a collision. This was a serious knee injury that required surgery. I had a great surgeon and after months of physical therapy, I was able to do most everything I had done before. I felt able to play pick-up soccer games and had great fun kicking the ball around on the field, but didn't want to go back to the serious competition.

I think my ambivalence about the risk/benefits from my experience of competitive youth soccer, both the fun as well as the serious risks/injuries, helped inspire me to pursue this research.

Promoting fun recreation and physical activity for children that is as safe as possible is a very important public health issue in my opinion. I think people's willingness to speak out about the risks that they experienced while playing some of these sports is a huge part of this conversation and hopefully shifting the culture. Thank you again for sharing.

I have a child who is a very good football player. He loves the sport and it helps keep him physically fit when many of his peers have turned to jello in front of the xbox. He has played 4 years in a youth league and is a 4.0 student in a gifted program. He has never to my knowledge suffered a concussion or anything really close, but he does have repeated sub-concussive events, obviously.

Next year, many of his peers will be hitting puberty, and the speed and weight of the players will be jumping up considerably. I anecdotally think his risk for brain injury will increase. I do not want to pull him from football if I can avoid it, given the benefits I feel it provides. So I intend to let him play next year. But what should I watch for, aside from the obvious (staggering around the field holding his head, etc.)? Is there enough research on youth effects yet to tell me whether there are some signs and signals of the effects of repeated sub-concussive contacts?

[Grundy9999](#)

Unfortunately, individual sub-concussive hits don't tend to have obvious symptoms, but there are some signals you can look out for that would indicate a concussion. Other than the obvious signs (such as staggering around the field, obvious confusion), some of the less obvious symptoms of concussions to watch out for include: headache or a feeling of "pressure" in the head, sensitivity to light and noise, feeling sluggish, difficulty concentrating, or generally "feeling down."

I think the saying "when in doubt, sit them out" is a good one. If anything seems "off" to you, in my view it is always worth taking the cautious route and having a health professional check out your son before returning him to play.

It's also worth noting that you don't have to be hit directly in the head to experience brain trauma. A common example of this is whiplash in a car crash (where you don't hit your head against the

dashboard or anything else, but can still experience brain trauma from the force of the car crashing). But trauma without head contact can also occur in football, for example from full body collisions or your body hitting the ground where forces are still transferred to the brain. I think that's important to be aware of.

Unfortunately because the symptoms of brain trauma can be so subtle and easy to miss, there's no perfect strategy, but I hope these strategies are helpful to you.

What do you think the most effective way to change existing norms around youth football tackling would be?

[firedrops](#)

This is a great question and in many ways one that a cultural anthropologist such as yourself may be better suited to answer! From my perspective, I think the most effective change will ultimately need to be led by the adults involved in running organized youth football (such as school leaders, coaches, parents, etc.). Having adult leaders who prioritize fun and physical activity over competition and big hits, and having schools and organizations who choose to offer flag or touch football instead of tackle football to youth participants, would shift the culture toward a safer form of football.

Is there a safe way to participate in football or other sports with a risk of traumatic brain injury like boxing? While for children, avoiding contact sports might be the best and most moral approach, is it possible for adults to make guidelines which could allow sports to continue in a modified form?

Sorry I realize this is kinda like asking a doctor if there's a safe level of cigarette smoking, but I imagine there might be other applications too, like helping the military reduce risk to members in warzones, or better evaluating the recovery time needed for athletes who don't regularly experience concussions but might through an uncommon accident.

[bbbberlin](#)

I of course have to start with the caveat that there really isn't a "safe" way, because there really isn't any strategy to make repeated brain trauma "safe."

At a minimum, if adults choose to participate in sports with like boxing or tackle football, I think strict return-to-play guidelines are essential. In other words, if somebody experiences a concussion, they need to be removed from the sport and not allowed to return until a week (or ideally several weeks) of no symptoms, depending on the severity of the injury.

This is because we have very good evidence that after 1 concussion, the brain is especially vulnerable to a second concussion. It is very important to protect athletes immediately after a concussion so that the harms are not compounded by another hit soon thereafter.

I would describe this as a "harm reduction" strategy, but unfortunately it still would not address sub-concussive hits that are inherent to football and boxing. Even with the best and strictest return-to-play guidelines, players would still be exposed to repeated head trauma. Unfortunately there are no guidelines or technologies that can resolve this fundamental issue.

Have you seen the movie Concussion and do you think it accurately represents the issue of brain injuries in football?

[moonsprite](#)

Yes, I did see the movie *Concussion* and overall I enjoyed it. While I had a few minor nitpicks (inevitably--I'm an academic, what can I say!), overall I thought it did a good job of showing the risks at the NFL level of play. In particular I liked the emphasis that the issue was one of exposure to cumulative brain trauma. I particularly appreciated when Dr. Omalu (the doctor played by Will Smith) pointed out that by his calculation, a former NFL player had been subjected to tens of thousands of hits over the course of their football playing days. If I recall the number correctly, he said that it was Mike Webster who sustained over 70,000 hits.

Another moment I especially appreciated was the scene where Dr. Omalu looks out across a field of young players, indicating that this issue is not just limited to the NFL level of play.

I wish *Concussion* had shown audiences some more close ups of the brain scans but that's probably because I am a nerd!

Have you personally ever played a contact sport? Have you ever been concussed?

[bstamp1](#)

Yes. I played organized soccer from elementary school through high school. I remember receiving at least one concussion in a high school game, although it was never diagnosed. I cannot recall how exactly how it happened—in itself, that is another indication that it was likely a concussion! I suspect it was through a collision with me and an opposing player both going for the ball.

Whatever happened, I was briefly knocked out. I came to while lying on my back with teammates and the referee standing around me looking concerned, and when I stood up everybody was relieved. I was confused and taken off to sideline for a while but I'm pretty sure I was put back in the game in the second half. There was no athletic trainer or other health professional to check me out. The decision to temporarily remove me from play and then put me back in later was the coach's. If he thought I was fine to go back in, I thought I was fine.

It is truly amazing in retrospect how much our attitude toward concussions has changed in just the last 10-15 years. It's also a good reminder that while the risks are especially high in tackle football, other sports including girls' soccer also have a lot of concussions. And I think it will be important to think about how to minimize the risks in those activities as well.