Science AMA Series: I'm Katie Rizzone, an assistant professor of Orthopaedics and non-operative sports medicine physician at the University of Rochester Medical Center in Rochester, New York. AMA!

Katie$_R$*izzone*[1]*andr/ScienceAMAs*[1]

[1]Affiliation not available

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Abstract

Hi Reddit! I'm Katie Rizzone and I'm a primary care sports medicine physician at the University of Rochester Medical Center. I specialize in musculoskeletal ailments including strains, sprains, tendonitis, fractures, sports concussions, and arthritis, as well as medical problems unique to the female athlete, and runners. As a lifelong athlete, with two young sons who are just getting into sports, I am very passionate about sports safety. One area I'm particularly concerned about is school-age athletes overtraining and specializing in one sport all year long, rather than resting in the off-season. My research looks at what this may be doing to their bodies not just during their competitive years, but in the long term. I'm also working to expand our understanding of who is most at risk from specialization and overtraining – Girls? Boys? Athletes in a particular sport? And I'm looking at the ages of athletes when these injuries start to occur. With that information, we can establish better sports safety guidelines for young athletes. The goal is to help young athletes continue to enjoy sports, and be able to maintain their physical health well into the future. Good morning! I'm here to answer your questions, ask me anything!**

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REDDIT

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KATIE_RIZZONE R/SCIENCE

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Hi Professor Rizzone, and thanks for doing this AMA!

Some radical treatments for long-term injuries involve some type of reinjury, where the idea is that a fresh wound will trigger a healing process, while an old injury stops healing after a certain time. What pros and cons have you seen for this approach? I'm especially interested in long-term Plantar fasciitis.

helm

Plantar fasciitis is an overuse injury of a tough tissue in the foot that runs from the heel to the ball of the foot. It can remain irritated for 9 to 12 months and so is a very stubborn injury. It is often a result of calves being tight and may also be as a result of shoes that don't provide enough support, either because they are too worn or their design doesn't provide adequate support.

Hi Katie!

I recently stumbled upon some literature regarding the "runner's knee" (patellofemoral syndrome). I was extremely puzzled by what I found out. It turns out that it's extremely common "overuse/inflammation-like thing", yet it does not respond to NSAID and does not produce any signal visible by imaging techniques (typically MRI).

What do we know about it? Is it really so poorly known like it seems? If so, how do you treat an athlet that has it?

lucaxx85

It is an overuse inflammation injury. While the symptoms appear in the knee, it is often a result of core and hip weakness and imbalances. This changes the forces on the knee, leading to irritation in the kneecap and the tendons, causing pain. Treatment involves taking care of the source of the imbalance through physical therapy and rehab, and rest from activity. NSAIDs can be helpful as well. Ice should not be underestimated! Ice can be administered after activity or whenever you have pain.

What's the current best evidence for warm-ups? I've looked into it in the past and most of the research was negative and loads of the text books simply say "You should warm-up" but provide no references to support the statement. Any thoughts?

Edit: and if it's good and beneficial then what works? How do you get the most from warming up? What are the best exercises to do? What's the dose?

Al_Bee

Everyone has different levels of flexibility and also the stage of fitness they are in.

Warming-up is definitely smart when it's cool outside to make sure your muscles and ligaments are moving smoothly before you do activity.

As you highlight, there is very little evidence on this topic, which would be helpful for many if it did exist.

Unfortunately, for right now, making sure to listen to your body and doing mild activity before strenuous is a good adage to follow.

Otherwise, working with a personal trainer (who is certified) can be helpful to find what routine may work best for you.

What's your opinion of Crossfit (as a regiment, not necessarily the quasi obsessive and badly performed implementation by Joe Couchpotato looking to lose a few pounds in his 40's).

What single piece of advice or foundational regiment would you give regarding overall injury prevention? As in yoga/ indian clubbell/ pilates? Mobility work via Kelly Starett or Scott Sonnon? Someone/ something else?

How do we balance the desire for sports safety with the comprehension that when you push yourself to the physical limits of your body, there are going to be things that break.

Isn't the risk of occasional acute injury, on average, preferable to a lifetime spent declining into obesity, cardiovascular disease, and diabetes? (I realize this is an "all or nothing" fallacy, but as a society we've reacted like it is).

apologize if this isn't as per comment rules...

Bbarakti

I encourage people to do Crossfit as long as they increase their activity slowly and appropriately. It can be tempting to go all out initially and oftentimes people end up hurting themselves as a result.

I like for people to do a variety of activities: both cardiovascular and also weights and so Crossfit does

both of those. But also has a lot of impact.

Start slow, listen to your body. Take breaks as needed. But I think in moderation all activity can be helpful to improve health and overall strength, conditioning and even mood.

I'm a pediatric neurosurgeon with an interest in concussion. One of my great frustrations with the current state of concussion research is the wealth of effort being expended on pathophysiology and what I perceive as a relative paucity of interest in the development of reliable return-to-play guidelines. While prevention is a laudable goal, it's not the present clinical reality, and a lot of kids are being seen by providers with minimal understanding of postconcussive symptomatology and rehab. What is your current personal return-to-play strategy, and how do you think return-to-play guidelines will evolve as we develop ever-more-expansive and sensitive inclusion criteria for sports-related mild TBI?

Porencephaly

There are published guidelines that give recommendations on return to play. I define return to play as returning to sport after the symptoms of concussion have completely resolved. In the United States, there is currently legislation in all 50 states that prevent return to competition same day if a concussion is suspected.

Hello Dr. Rizzone, Not research related, but with the increase utilization of chiropractors in professional sports, have you had the chance to work with any in the field? What are your impressions?

marathon_endurance

I do feel chiropractors can provide an important benefit for acute injuries. I refer patients to chiropractors in specific instances. I think acute injuries in the neck and lower back can obtain reduction in pain with manipulations. I will send patients to someone who incorporates other treatments as well, including myofascial release and other manual therapies beyond high velocity manipulations. Additionally, adjustments typically last for less than a few hours, so incorporating rehabilitation and strength training to keep those adjustments in place needs to be performed in conjunction with chiropractic manipulations.

Thanks for being here today, Katie.

RIT student here, I have a colleague who's interested in studying concussions. My question would be, what don't we know about them yet? And how do you think policies surrounding treatment and prevention will change in the coming years?

Eenjuneer645

We don't know a lot. We don't understand why some people get better quickly and others have symptoms that linger. The median number of days to resolution of symptoms is 10 to 14 days, but many people go outside that timeframe. We also have little understanding of how concussion impacts cognitive thinking and also mood and well being. I think as more research is focused on these knowledge gaps, policies will evolve as a result, because evidence will guide our recommendations. The Concussions Center at University of Rochester Medical Center is looking at novel imaging techniques and biomarkers to do just that.

Good Morning professor, thank you in advance for taking the time to answer: My question is: As a

begginning learner of gymnastics, my goal is to achieve a leg split (like that of Jean Claude Van Damme) but going from currently having little flexibility/stretching capacity, is it realistic for me to achieve that being in my mid thirties without spraining a muscle/tendon? What should I consider before trying? I m trying to get some objective feedback from a scientific POV. I know the younger you are the better to do those things, but could I realistically expect to achieve such stretching capacity without injuring mysel? Thank you again.

adrippingcock

I think that while you can likely gain a lot of flexibility and strength from doing new activities like this (yoga is another great example of people obtaining wonderful flexibility late in life) to have a goal to do a full split may be difficult to reach.

That said, it's amazing how people can increase their ability to do things as they get older.

My advice would be to go slow, be under the guidance of a good mentor who is experienced in this area of activity.

Labral tears in the hip (cartilage surrounding the hip joint) are very common with these motions and so going slow is best.

I tend to find I gain a lot of minor niggling injuries (mostly from running), rather than traumatic injuries. I am healthy weight and enjoy exercise.

What are some things that anyone can do to help prevent injury? Also what things ideally should always be done?

Awkward_moments

Running is a very straightforward motion and is by nature repetitive. So making sure you are doing a variety of activities that involve a diverse range of motion, such as yoga, pilates, ball sports or crossfit, would be a great way to give tissues commonly used in running a rest while also working small muscles that will help you be a stronger runner. Making sure to keep track of the mileage your shoes have seen is very important. I often find that a common cause of tendinitis in runners is from not switching their shoes frequently enough. Monitor tread wear on the bottom of your shoe, and if you feel you have more aches and pains but are still doing the same mileage, change your shoes to see if that helps.

My wife and I are convinced that (a) there is an epidemic of knee injuries among high-school and college female athletes, that (b) is caused by a small difference in the geometry of men's and women's hips and knees combined with the fact that all of our sports training is based on male bodies.

Is there any evidence to support our belief? If so, what modifications to training would we need to implement?

cmcfaul

That is definitely true, there is ample evidence to that. We do think it has something to do with the Q-angle (hips) and hamstring to quadriceps ratio (especially in growing teens) but newer evidence is starting to show that there is likely a hormonal difference basis as well.

As a female athlete with some scars on her knee, I have personal and professional interest in this topic. I think we are only seeing the beginning of our understanding of it.

I will point out, there are proven exercise programs known to decrease the incidence of knee injury, but teams aren't often consistent with them. Definitely check out some of the literature on this: 30-40% decrease in knee injuries.

Hi Dr. Rizzone,

What interested you in a career in medicine and particularly in sports medicine?

What is the ideal rest time between sports from your research? As you know, high school students sometimes compete on several different sports teams in a year with a few weeks break in between seasons.

relative_universal

I think a common problem in youth athletes is overscheduling which can easily lead to overtraining. There used to be break between seasons whereas now, kids compete on multiple teams at a time, as you highlight.

I think that taking a week in between seasons is really important to recover both physically and mentally (not to mention the importance of family time). An individual may need more time than that if they are injured.

It hard nowadays to be the one to stand up and say, "kids need a break" because coaches will often say "take your time" but then families get stressed out about losing a spot on a team or a starting position.

I think adults need to come together to help provide the time and space away from sports to allow kids' bodies to get needed rest.

Mononucleosis is very common under young athletes. Is the risk for overtraining higher in teenagers/adolescents that are starting to train aftet mono?

pack_of_wolves

Absolutely. Mono is a viral illness that causes symptoms such as muscle aches, fatigue, fevers, and rash. It can take months to fully recover from. And additionally, young athletes are likely still growing as they recover from illness, leading to increased energy needs. It's very difficult to give a set schedule of return as everyone is different. So it's very important to monitor symptoms of fatigue, soreness, irritability, and ensure proper nutrition intake in order to reduce risk of overtraining. Proper sleep hygiene, or making sure you are getting adequate sleep, cannot be emphasized enough.

I've heard a lot of conflicting things about how ligaments and tendons heal after an injury -- maybe because these tissues don't really have blood vessels permeating them. Can you describe a little about the way the body heals these tissues? Are there any non-obvious extra steps you can take to move the process along (akin to making sure you have sufficient dietary minerals after a bone injury)?

garnet420

We have one of the highest densities of tendon experts in the world at University of Rochester. Our discussions are always focused on the lack of literature about ligaments and tendons in injuries. We know the body makes scar tissue in response to injury and so the tissue is never "normal" again. What we don't know is why some people make a lot of scar and some people don't. Treatments can range

from simple rest to surgical repair, depending on the extent of injury. Unfortunately, we don't have the knowledge that I could recommend a "best-healing diet" for ligaments and tendons.

Hello,

Kinesiology student here. Do you see any significant improvements in the near future coming for people needing knee or hip replacements? Current lifespans are estimated about 15-20 years for either device depending on the make, (as far as I know) and I work with people as young as their 40s-50s in preventative measures to stave off these surgeries from arthritis and degenerative conditions.

Thank you for taking the time to do this AMA, and for your work.

SpecialK1391

The materials used in the hardware for hip and knee replacements are advancing every year, which has extended the lifespan of the artificial joints. Your point about people in their 40s and 50s is important because they don't have a great option. When people in that age group come in with pain as a result of hip and knee arthritis, I try to maximize all other options first. These can include strengthening and addressing muscle imbalances, weight loss, and injections into joints. I cannot emphasize enough the importance of weight loss for patients who are overweight and have joint pain. As you well know, 1 extra pound of weight in the abdominal area can create from 5 to 8 additional pounds of force on knee and hip joints.

Thanks for doing this AMA Katie!

Overtraining and "burnout" are becoming more and more talked about in the running world, especially at the high school and college level. Instead of coaches prescribing cookie-cutter programs with risk of overreaching/overtraining, the attention to the individuals' general health and well being alongside the training program is becoming more prevalent.

My question to you is when years down the road you have solid scientific research and backing, how do you implement a change in culture from the current norm? Do you let the facts speak for themselves? Work with governing bodies to educate coaches and officials? Or just let those coaches who are pursuing the latest and greatest information find the resources themselves? It is one thing to do the research, and another to provide that information to the userbase who needs it most.

Keep up the great work!

CatzerzMcGee

Great question - this is something I am passionate about. As we learn more about youth sports safety, there are national and state organizations that adjust their guidelines and recommendations to better protect young athletes. The challenge is making sure that everyone follows these guidelines at the same time to make sure athletes have a level playing field. We know that athletes, coaches and parents are all under a lot of pressure to participate many hours in practice, competition, skill training. I believe an important way to implement change is by having people agree that this is, first, a problem, and then work together toward a solution. For example, one community could implement a policy restricting how many hours a week youth athletes are allowed to train but if the town nearby doesn't adopt the same mindset, then the families in the first town will feel their athletes are at a competitive disadvantage. A great example would be the date that high school athletes are allowed to have formal practices begin. This is mandated, and yet, "captain practices" or "free gym practices" occur frequently outside of these known boundaries. So I really feel that everyone has to be on the same page. We know that knowledge dissemination from researchers to parents and coaches can take years, so it's

important that we focus on effective ways to communicate with communities, parents and athletes.

Hi Dr. Rizzone,

I am a graduate PT student in Buffalo, and I am very interested in working in the sports medicine realm. Manual Diagnosis and Therapy (MDT) is an important piece of our coursework as it relates to mechanical back pain or radicular/referred pain. In my clinicals, I have seen patients undergo spinal surgeries without success and others who have found temporary relief through cortisone shots. In your practice and research, have you found methods that you prefer to treat pain or deficits related to the spine, and do you have any experience with MDT? Also, what role do you see physical therapists occupying in the sports medicine team? Thank you for taking the time to answer all these questions!

MrSnapsCats

I refer patients to physical therapy all the time. You likely know of the studies showing that back surgery is oftentimes not very helpful. Strengthening musculature and improving mobility of the spine can lead to benefits with very little risk.

I think physical therapists and certified athletic trainers are the most important role in sports medicine and are often underutilized.

I am concerned, however, that with changes in the health care system, that coverage for these services will continue to be decreased. Your profession is actively lobbying for this not to occur but insurance companies will continue to press on this issue. Which is concerning and will increase the risk of poor outcomes.

Have you studied any common Quidditch related injuries? Since the University of Rochester Thestrals are one of the best teams in the northeast and concussions and broken bones are common.

UrsaPater

There's no published literature but I have seen injuries from it in my clinic. They can vary from ACL injury and concussion to sprains and strains. It's a very fast-moving sport and involves intended and unintended contact. As you well know, it has high intensity. My dragon heartstring wand core is awaiting replacement and therefore I only use Muggle medicine for these injuries!

Hello Katie thank you for coming on here. As a second year dental student, I have overheard a lot of talk about advanced sports mouthguard technologies that can act to reduce one's risk of developing a concussion or quantify the force delivered to the head. But a difficulty in our field is determining the utility of such idea-driven technology or seeing if it's just another biotech company's million dollar idea attempting to wrangle in dental support. Do you have any experiences with this advanced mouthguard technology and do you see any utility in advanced sports mouthguards in the future? And to follow up, do you see any foreseeable role that a dental professional could provide in the prevention of chronic traumatic encephalopathy?

Hey_Eugene

The most recent evidence I am aware of does not show that certain mouthguards decrease the risk of concussion.

I don't know how this will be taken but here's it anyway. I am an undergrad medical student in South Asia currently struggling with Orthopedics. Could you please point out the right textbook or online resources? Thank you.

snuff-kin

http://www.orthobullets.com/ is a really helpful site.

Are you familiar with Active Release Technique and if so what is your opinion of the practice?

campcabarita

I refer people for ART a lot. There are so many great modalities that are underused, this one including. I feel that many tendinopathies could benefit from this. Neck pain leading to headaches is another good example.